DRAFT

NOISE STUDY REPORT

Florida Department of Transportation
District Two

CR 210 at CR 2209 (St. Johns Parkway) Intersection Improvements
Project Development and Environment (PD&E) Study
St. Johns County, Florida

Financial Management Number: 441371-1-22-01
Federal Aid Project Number: D218-111-B

April 2026

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 USC § 327 and a Memorandum of Understanding dated May 26, 2022, and executed by the Federal Highway Administration and FDOT.

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Prepared For:

Florida Department of Transportation
District Two

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April 2026

EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT) District Two is preparing a Project Development & Environment (PD&E) Study for intersection improvements at CR 210 at CR 2209 (St. Johns Parkway) in St. Johns County. The project's location is illustrated in **Figure 1-1.** The need for the intersection improvements stems from anticipated development in the study area, including growing businesses, office and retail developments, and additional residential units, which will result in higher traffic demand at the intersection. The following lists the proposed safety and capacity improvements:

- Modifying the existing intersection to remove the CR 210 westbound through movement. Motorists wanting to continue westbound on CR 210 will be required to make a right turn onto CR 2209, make a U-turn just south of Shops Boulevard, and then make a right onto CR 210 on the west side of the intersection.
- Reconfiguring the southbound left-turn movement on CR 2209. Motorists traveling south wanting to turn left onto CR 210 will diverge to the right from CR 2209 north of Shops Boulevard; then make a slight right turn onto CR 210 westbound and immediately make a U-turn onto CR 210 on the west side of the intersection, then continue straight through the intersection onto CR 210.
- Removing of the CR 2209 northbound left turn movement. Motorists traveling north wanting to turn left onto CR 210 will continue traveling north through the intersection, make a U-turn just south of Shops Boulevard, and then make a right onto CR 210 on the west side of the intersection.

This PD&E Noise Study Report (NSR) presents the methodology and results of the traffic noise evaluation for the CR 210 at CR 2209 (St. Johns Parkway) intersection improvements (Financial Management Number 441371-1-22-01). The design layout on which this noise study is based is illustrated in **Appendix E**. The purpose of this noise study is to identify noise sensitive sites that the current design concept would impact, evaluate abatement measures at impacted noise sensitive sites, and determine where noise abatement (i.e., noise barriers) should be included with the project and re-evaluated in the project's Design Phase.

The Federal Highway Administration (FHWA) Traffic Noise Model (TNM), version 2.5, was used to predict noise levels at 30 receptor points representing 33 residences and four nonresidential special land uses (SLUs). For the design year 2050 build condition, noise levels are predicted to meet or exceed the FDOT Noise Abatement Criteria (NAC) at nine residences within the project limits. These impacted noise sensitive sites (represented by receptors NB2-02 through NB2-03.1, and NB2-03.4 through NB2-06) were evaluated to determine the feasibility and reasonableness of providing barriers to reduce traffic noise. Additionally, a substantial increase of 15 dB(A) is not predicted to occur at any residence or SLU (shown in **Appendix C**).

The noise barrier evaluation identified that a noise barrier would provide at least a 5 decibel (dB(A)) reduction in noise at all nine impacted residences in the Southern Grove neighborhood. Additionally, the noise barrier would also meet the FDOT Noise Reduction Design Goal (NRDG). However, due to additional costs required to relocate the existing drainage and overhead utilities beyond what is planned for the project, placing the noise barrier within the CR 210 right of way (ROW) exceeds what FDOT considers cost reasonable. Therefore, the noise barrier does not meet the criteria of feasibility and/or reasonableness to warrant its construction.

Based on the noise analyses performed to date, there are no feasible solutions available to mitigate the noise impacts at the locations identified in **Section 3.3.2**. Therefore, noise barriers are not recommended for further evaluation as part of this project at this time.

The date that FDOT approves the project's Environmental Document will be the Date of Public Knowledge (DPK). During the design phase, a land use review will be performed to identify all noise sensitive sites that may have received a building permit between the time the PD&E noise study began (July 8, 2025) and prior to the project's DPK. If the review identifies noise sensitive sites that have been permitted prior to the DPK, then those sensitive sites will be evaluated for traffic noise impacts and abatement considerations.

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ACRONYMS

C.F.R.	Code of Federal Regulations
CNE	Common Noise Environment
CR	County Road
dB	Decibels
dB(A)	A-weighted Decibels
DDHV	Design Year Demand Hourly Volumes
DPK	Date of Public Knowledge
EB	Eastbound
ER	Equivalent Residence
FDOT	Florida Department of Transportation
FHWA	Federal Highway Administration
FM No.	Financial Management Number
ft.	Feet
Leq(h)	Hourly Equivalent Noise Levels
LOS	Level of Service
mph	Miles Per Hour
NAC	Noise Abatement Criteria
NB	Northbound
NEPA	National Environmental Policy Act
NRDG	Noise Reduction Design Goal
NSR	Noise Study Report
PER	Preliminary Engineering Report
PD&E	Project Development and Environment
ROW	Right of Way
SB	Southbound
SLU	Special Land Use
sq. ft.	Square Feet
TNM	Traffic Noise Model
WB	Westbound

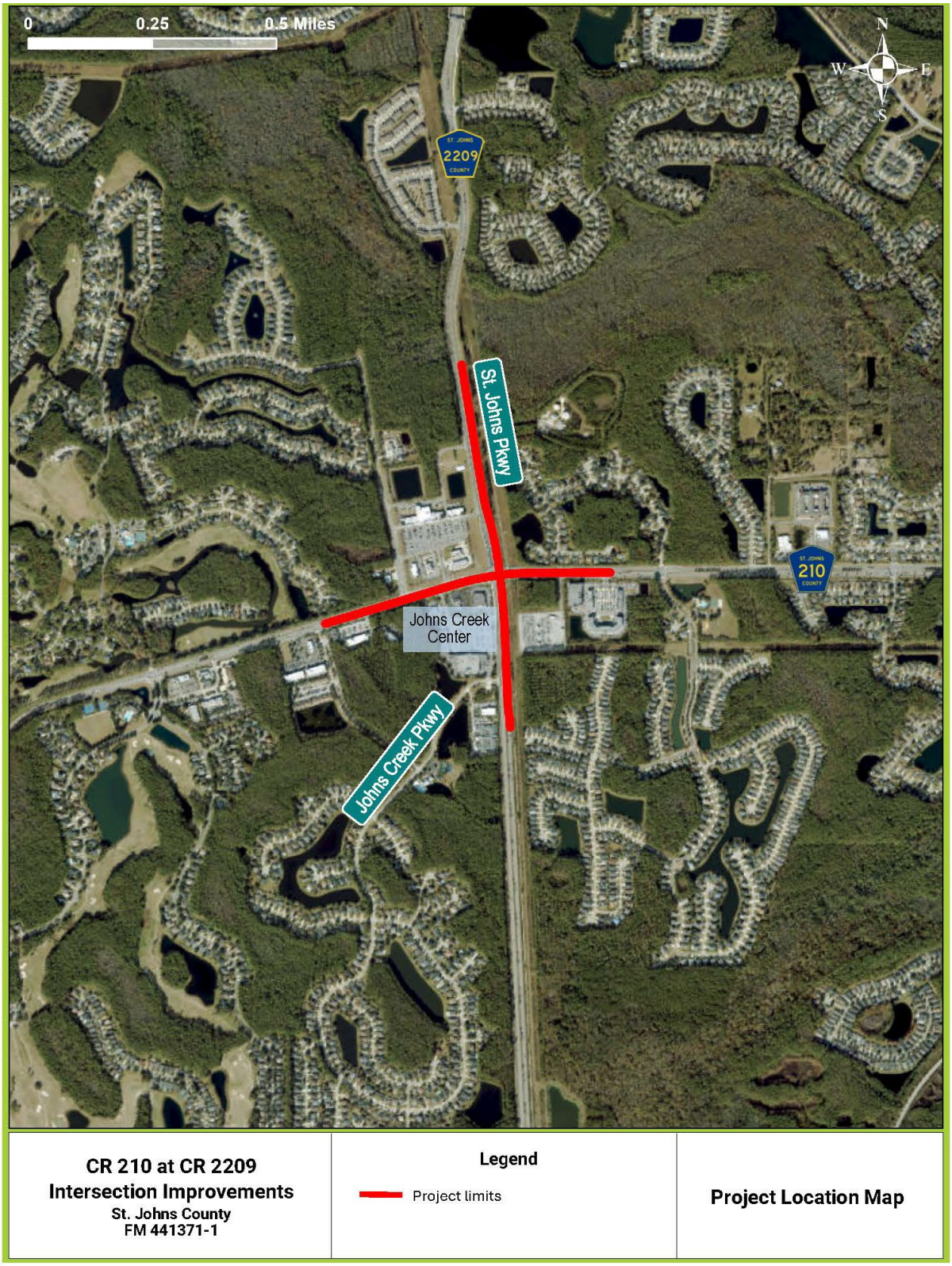
1.0 PROJECT DESCRIPTION

The Florida Department of Transportation (FDOT) District Two has initiated a Project Development and Environment (PD&E) study to evaluate intersection improvements to enhance traffic operations and safety at the intersection of County Road (CR) 210 and CR 2209 (St. Johns Parkway) in St. Johns County, Florida. This PD&E study is necessitated by the rapid growth in residential and commercial developments, which has led to increased traffic congestion. The project's location is illustrated in **Figure 1-1,** with the design layout on which this noise study is based, illustrated in **Appendix E**.

This PD&E Noise Study Report (NSR) presents the methodology and results of the traffic noise evaluation for the CR 210 at CR 2209 (St. Johns Parkway) intersection improvements (Financial Management Number 441371-1-22-01). The purpose of this noise study is to identify noise sensitive that would be impacted by the current design concept, evaluate abatement measures at impacted noise sensitive sites, and determine where noise abatement (i.e., noise barriers) should be included with the project and re-evaluated in the project's Design Phase.

Secondary objectives of this study include consideration of construction noise and vibration impacts, as well as the development of noise contours that local municipal and county government agencies can use in the future to identify compatible land uses along the project roadways. This report also provides technical documentation for the findings described in the project's Preliminary Engineering Report (PER) and the Type I Categorical Exclusion.

Figure 1-1: Project Location Map



1.1 PROPOSED IMPROVEMENTS

The following lists the proposed safety and capacity improvements at the project intersection:

- Modifying the existing intersection to remove the CR 210 westbound through movement. Motorists wanting to continue westbound on CR 210 will be required to make a right turn onto CR 2209, make a U-turn just south of Shops Boulevard, and then make a right onto CR 210 on the west side of the intersection.
- Reconfiguring the southbound left-turn movement on CR 2209. Motorists traveling south wanting to turn left onto CR 210 will diverge to the right from CR 2209 north of Shops Boulevard; then make a slight right turn onto CR 210 westbound and immediately make a U-turn onto CR 210 on the west side of the intersection, then continue straight through the intersection onto CR 210.
- Removing of the CR 2209 northbound left turn movement. Motorists traveling north wanting to turn left onto CR 210 will continue traveling north through the intersection, make a U-turn just south of Shops Boulevard, and then make a right onto CR 210 on the west side of the intersection.

Illustrations of the proposed typical sections are included in **Appendix A**, with the design layout on which this noise study is based, illustrated in **Appendix E**.

1.2 NO-BUILD ALTERNATIVE

Consistent with Federal Highway Administration (FHWA) guidelines, this analysis also considers an alternative that evaluates what would happen to the environment in the future if the proposed improvement were not built. This No-Build Alternative does not meet the project's needs, but it provides a baseline condition for comparing the proposed project's traffic noise effects.

2.0 METHODOLOGY

The traffic noise analysis conducted for this project is consistent with Title 23, Code of Federal Regulations (C.F.R.), § 772, Part II, Chapter 18 of the *FDOT Project Development and Environment Manual*, and Chapter 335, Section 335.17, *Florida Statutes*. This assessment also adheres to current FHWA traffic noise analysis guidelines contained in *FHWA-HEP-10-025*. The FHWA Traffic Noise Model (TNM), version 2.5, was used to predict traffic noise levels for this project, following guidelines set forth in the FDOT *Traffic Noise Modeling and Analysis Practitioners' Handbook*.

The analysis evaluated noise levels for the year 2025 Existing Condition, and the 2050 design year No-Build and Build Alternatives. The project design files were used to determine the build concept location for input into TNM. Vertical elevations for the project roadways (existing and proposed) and analyzed receptors were obtained from the United States Geological Survey digital elevation models and the project's engineering files.

2.1 NOISE METRICS

Noise levels for this traffic noise study are expressed in decibels (dB) using an "A"-scale (dB(A)) weighting. This scale most closely approximates the human ear's response characteristics to typical traffic noise levels. All reported noise levels are hourly equivalent noise levels [Leq(h)] unless otherwise specified. The Leq(h) is defined as the equivalent steady-state sound level that, in an hourly period, contains the same acoustic energy as the time-varying sound level for the same hourly period. Use of these metrics is consistent with the requirements of 23 C.F.R. 772.

2.2 TRAFFIC DATA

Traffic noise is highly dependent on traffic volume and speed, with the amount of generated noise increasing as vehicle speed and the number of vehicles increase. Characteristics contributing to the highest traffic noise levels were used to predict project noise levels. Worst-case noise conditions occur with the maximum traffic traveling at the posted speed and represent a Level of Service (LOS) C operating condition. However, if the traffic analysis indicates that the roadway will operate below LOS C, the project's design year demand hourly volumes (DDHV) are used per Chapter 18 of the FDOT PD&E Manual.

FDOT traffic data were obtained from the project's traffic report. Based on the data review, a combination of DDHV and LOS C volumes was used for all analysis scenarios. Traffic volumes and speeds used in the analysis are included in **Appendix B**.

2.3 NOISE ABATEMENT CRITERIA

Land use plays an important role in traffic noise analyses. Noise sensitive land uses are areas with frequent human use, where a lower noise level would be beneficial. To determine which land uses are "noise sensitive," this noise impact analysis used the FHWA Noise Abatement Criteria (NAC) shown in **Table 2-1**. The FDOT has established noise levels for each activity category at which noise abatement must be considered. In Florida, noise levels that meet or exceed 66 dB(A) at NAC B and C land uses require consideration of noise abatement. A 71 dB(A) noise level is required for an NAC E land use to be considered impacted by traffic noise. For perspective on the decibel values, **Table 2-2** provides typical noise levels of common indoor and outdoor activities.

Another criterion for determining when project impacts warrant abatement consideration occurs when project noise levels are below the FDOT NAC but show a substantial increase (15 dB(A) or more) over existing levels. A substantial increase typically occurs in areas where traffic noise is a minor component of the existing noise environment but would become a major component after the project is constructed. This occurs more frequently with new alignment projects.

Table 2-1: Noise Abatement Criteria

Hourly A-Weighted Sound Level-decibels (dB(A))				Description of Activity Category
Activity Category	Activity Leq(h) [1]		Evaluation Location	
	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 sports areas, amphitheaters, auditoriums, campgrounds, cemeteries, daycare centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public/nonprofit institutional structures, radio studios, recording studios, recreational 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/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.

(Based on Table 1 of 23 C.F.R. Part 772 and FDOT PD&E Manual Chapter 18)

[1] The Leq(h) Activity Criteria values are for impact determination only and are not design standards for noise abatement measures.

[2] Includes undeveloped lands permitted for this activity category.

Note: FDOT defines that a substantial noise increase occurs when the existing noise level is predicted to be exceeded by 15 decibels or more as a result of the transportation improvement project. When this occurs, the requirement for abatement consideration will be followed.

Table 2-2: Typical Noise Levels

Common Outdoor Activities	Noise Level dB(A)	Common Indoor Activities
	---110---	Rock Band
Jet Fly-Over 1000 ft.		
	---100---	
Gas Lawn Mower at 3 ft.		
	---90---	
Diesel Truck at 50 ft., at 50 mph		Food Blender at 3 ft.
	---80---	Garbage Disposal at 3 ft.
Busy Urban Area (Daytime)		
Gas Lawn Mower at 100 ft.	---70---	Vacuum Cleaner at 10 ft.
Commercial Area		Normal Speech at 3 ft.
Heavy Traffic at 300 ft.	---60---	
		Large Business Office
Quiet Urban Daytime	---50---	Dishwasher Next Room
Quiet Urban Nighttime	---40---	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime		
	---30---	Library
Quiet Rural Nighttime		
	---20---	
	---10---	
Lowest Threshold of Human Hearing	---0---	Lowest Threshold of Human Hearing

Source: California Dept. of Transportation Technical Noise Supplement, Sept. 2013, Page 2-20

2.4 NOISE ABATEMENT MEASURES

Noise abatement measures are considered when predicted traffic noise levels meet or exceed the NAC, as defined by FDOT, or when there is a substantial increase (15 dB[A]) in traffic noise levels. Abatement measures considered include traffic management, alignment modifications, noise buffer zones through the application of land use controls, and noise barriers. Each of these abatement measures is discussed further in the following sections.

2.4.1 Traffic Management

Traffic management techniques that limit motor vehicle speeds and/or restrict heavy trucks during certain hours of the day can be effective as a noise mitigation option; however, these measures may also compromise a project's ability to meet the facility's needs. Limiting heavy truck operations would affect the movement of materials and goods across a wide area. Therefore, prohibiting or limiting heavy truck traffic on either CR 210 or CR 2209 is not considered a reasonable abatement measure for this project. Moreover, a substantial speed reduction on either roadway would lower traffic noise levels but also reduce traffic capacity. Therefore, speed reduction is not a reasonable abatement measure for this project.

2.4.2 Alignment Modifications

Modifying the horizontal alignment and/or vertical profile of a roadway can influence highway traffic noise levels and can therefore be an effective abatement measure. However, the existing vertical alignment of CR 210 and CR 2209 is maintained as part of the project. The proposed design modifies the horizontal alignment of the intersection approaches and turn bays to meet project needs and minimize potential ROW costs. The cost of acquiring additional property for the sole purpose of abating highway traffic noise may exceed the cost reasonable limit of $64,000 per benefited receptor (defined as a noise sensitive site receiving at least a 5 dB(A) noise reduction from the abatement measure). Therefore, an alignment modification that could provide a substantial noise reduction is not a feasible or reasonable abatement measure.

2.4.3 Buffer Zones & Land Use Controls

Noise buffer zones that separate the roadway and noise sensitive land uses can minimize or eliminate noise impacts to areas of future development. This measure requires local land use planning, not currently in place within the project corridor. Because the noise impact analysis applies to existing land uses, buffer zones are not an applicable abatement measure. Local officials can use the information in **Table 6-1** to support their noise-compatible land-use planning activities.

2.4.4 Noise Barriers

The most common type of noise abatement measure is the construction of a noise barrier, and it is the only measure considered for this project. Noise barriers associated with transportation projects do not block all sound from the roadway. Rather, they can *reduce* traffic noise by interrupting the sound path between a highway and noise sensitive sites. To effectively reduce traffic noise, a noise barrier must be relatively long, continuous (with no intermittent openings), and sufficiently tall.

A noise barrier must be considered a feasible and reasonable noise abatement measure to be suggested for inclusion in the project. Feasibility factors are related to the acoustical and engineering properties of an abatement measure. Reasonableness factors are related to the economic, environmental, and social properties. For a noise barrier to be considered feasible and reasonable, the minimum conditions shown in **Table 2-3** should be met.

Table 2-3: Feasible and Reasonable Requirements for a Noise Barrier

Feasible	Reasonable
At least two impacted receptors must be provided a noise reduction of 5 dB(A).	A noise barrier must also meet the Noise Reduction Design Goal (NRDG), which requires a minimum noise reduction of 7 dB(A) for at least one benefited receptor. This receptor may also have been previously identified as meeting the feasibility requirement of receiving a 5 dB(A) reduction.
Engineering factors (design/construction, safety, access, ROW, maintenance, drainage, and utility) must be considered, and all conflicts must be resolved.	The cost of the noise barriers should not exceed $64,000 per benefited receptor. This is the upper-cost limit established by FDOT. A benefited receptor is defined as a recipient of an abatement measure that experiences at least a 5 dB(A) reduction as a result of providing a noise barrier. The current unit cost used to evaluate cost reasonableness is $40 per square foot (sq. ft.).
--	The viewpoint of benefited receptors must be considered.

Within the project limits, noise barrier locations are evaluated as follows:

- ROW noise barriers located outside the clear zone, which is defined in the FDOT Design Manual as 'the amount of recoverable area beyond the traveled way' but within the ROW, are initially considered at heights ranging from 8 feet to 22 feet in 2-foot increments. According to the FDOT Design Manual, noise barriers outside the clear zone shall not exceed a maximum height of 22 feet.
- If a ROW barrier cannot provide at least a 5 dB(A) reduction to an impacted receptor or the barrier is not feasible due to construction limitations, then a shoulder barrier is evaluated. According to the FDOT Design Manual, shoulder barriers shall not exceed 14 feet in height when on embankment and 8 feet in height when on structure or Mechanically Stabilized Earth (MSE).

The length and height of the noise barriers are optimized based on the benefit provided to noise sensitive sites with predicted noise levels that approach, meet, or exceed the NAC.

2.4.5 Nonresidential Barrier Analysis

The methodology used to evaluate noise barrier systems for nonresidential sites differs from that used for residential locations. The standard procedure for determining the feasibility and reasonableness of a noise barrier for a special land use (SLU) site is documented in Methodology to Evaluate Traffic Noise at Special Land Uses (FDOT 2025). This SLU evaluation is a multi-step process, as summarized below.

- If an impacted SLU receptor is not adjacent to impacted residences or other impacted SLUs such that a single noise barrier would not be a practical form of abatement for all impacted properties, it is considered isolated. It must undergo a preliminary screening analysis to determine whether it has sufficient person-hour usage to equate to at least two residences to be found feasible for noise abatement. To meet the feasibility requirement, the isolated SLU must have at least 44,326 person-hours of use per year in the benefited area for a noise barrier to be found as a feasible form of noise abatement.

- A noise barrier is evaluated if the preliminary screening results indicate that a full analysis is warranted or if the impacted SLU is adjacent to other impacted SLUs or residences.

- Once it is determined that impacted SLUs benefit from the analyzed noise barrier, the FDOT SLU Worksheet is utilized to assess whether a noise barrier is a reasonable form of abatement. The SLU Worksheet includes all residences and SLUs that would receive a benefit from the noise barrier. This methodology enables the combined evaluation of all impacted land-use activity categories that could benefit from a single noise barrier system.

3.0 TRAFFIC NOISE ANALYSIS AND ABATEMENT ASSESSMENT

Noise level predictions were produced using the FHWA's TNM. This model calculates estimated noise levels at noise sensitive receptor sites based on highway traffic parameters that are input to the model. Model-predicted noise levels are influenced by several factors, including vehicle speed and type, the distance between the noise source and receptor, the effects of intervening structures (buildings, barriers, etc.), ground surface type, and topography.

3.1 NOISE MODEL VALIDATION

Existing noise levels are measured in the project corridor to confirm whether traffic is the primary noise source and to verify the accuracy of the TNM 2.5 noise model before it is used to predict noise levels. Following the procedures documented in FHWA's Noise Measurement Handbook, a series of three 10-minute field measurements was performed on July 8, 2025, at the CR 2209 location shown as receptor point VS-1 on **Appendix E**.

The measurements were taken using an Extech Instruments Model 407780 Type 2 Integrating Sound Level Meter (SLM). The SLM was calibrated using an Extech Instruments Model 407766 calibrator before and after each session. Typical vehicle speeds were established by sampling with a Bushnell Speedster handheld radar gun. Vehicles generally traveled within a few mph of the 45-mph posted speed limit. Traffic volumes by vehicle classification were recorded for each monitoring event and then extrapolated to one-hour equivalent volumes for input within the TNM. During the monitoring session, the temperature was 83°F under clear skies, with 76% humidity and 9 mph winds from the south-south-east. No unusual noise events occurred.

Validation of TNM occurs when the model-predicted noise levels are within three decibels of the field-measured levels. As shown in **Table 3-1**, the variance between the measured and predicted noise levels was below 3.0 for all validation events. Therefore, the noise model can predict traffic-related noise for this project with the level of accuracy specified in the FDOT PD&E Manual.

Table 3-1: TNM Validation Summary

Location	Measurement Session	Start Time	Field Measured (dB(A))	TNM Predicted (dB(A))	Variance (dB(A))
VS-1	Session 1	9:15 AM	60.4	61.6	1.2
	Session 2	9:27 AM	60.3	60.9	0.6
	Session 3	9:39 AM	59.5	60.7	1.2

3.2 NOISE SENSITIVE RECEPTORS

Using **Table 2-1** as a guide, most noise sensitive land uses within the study corridor fall under Activity Category B - Residential. The SLU sites include Activity Category E land uses (outdoor seating at restaurants and a gas station) in the Shoppes of St. Johns Parkway commercial development. Analysis of interior (Category D) noise levels is not required for this project, because all locations have areas of exterior use. The remainder of the study area is Activity Category G, undeveloped land. Furthermore, no land uses in the study corridor warrant Activity Category A analysis.

A permit search of the study area was conducted to identify active building permits for noise sensitive properties. As of July 8, 2025, no such permits were discovered within the study corridor. If a building permit for a future noise sensitive property is obtained before the project's Date of Public Knowledge, that property will be evaluated for traffic noise impacts during the project's final design phase of development.

For the noise impact analysis, TNM receptor points are located in accordance with the FDOT PD&E Manual as follows:

- Residential receptor points are located at the edge of the dwelling closest to the major traffic noise source.
- Where residences are clustered together, single receptor points are analyzed as representative of a group of residences with similar characteristics.
- Ground floor receptor points are assumed to be five feet above the ground elevation, and all receptors are assumed to be at ground level unless otherwise noted.
- Nonresidential Activity Category E SLU receptor points are located in exterior areas where frequent human use may occur.

The noise analysis divided the study corridor into Common Noise Environments (CNEs) based on geographic boundaries, such as roads, large developments, or environmental areas. The reporting of project noise

levels was further simplified by using receptors representing similar adjacent noise sensitive sites. A group of receptors within the same activity category that are exposed to similar noise sources and levels, traffic volumes, traffic mix, speed, and topographic features are said to share a CNE. Generally, CNEs occur between two secondary noise sources, such as interchanges, intersections, and crossroads.

The alphanumeric identification for each receptor point associated with a noise sensitive receptor is formulated as follows:

- Receptor points are labeled according to the CNE within which they are located. CNEs are named as follows:
    - The first two letters describe on which side of CR 2209 the CNE is located (e.g., "NB" indicates the receptor is located in a CNE on the northbound side of CR 2209).
    - The number following the first two letters is a numeric sequencing number (e.g., NB2 is the 2nd CNE on the northbound side of the roadway).
    - The final two characters are the individual receptor number and are separated from the first string of characters with a dash (e.g., NB2-02 is the 2ND receptor in the 2nd CNE on the northbound side of the roadway).
    - Nonresidential sites are labeled "SLU" after the dash, followed by the sequential receptor number (e.g., NB2-SLU1).

3.3 PREDICTED NOISE LEVELS AND ABATEMENT ANALYSIS

Traffic noise levels were predicted at 30 receptors representing 33 residences (NAC B) and four SLU NAC E receptors.

When discussing noise level increases/decreases, the general rule that applies to perception is:

- A 3 dB(A) increase/decrease is barely perceptible to most people.
- A 5 dB(A) increase/decrease is noticeable to most people.
- A 10 dB(A) increase is perceived as twice as loud and is considered a doubling of noise.

The 2025 Existing and 2050 No-Build and Build noise levels discussed in the following sections are also summarized in **Appendix C**. The project aerial illustrating the CNEs and the analyzed sites is included in **Appendix E**.

3.3.1 CNE NB1

CNE NB1 is located in the southeast quadrant of the intersection adjacent to northbound (NB) CR 2209 and south of CR 210. There are no noise sensitive land uses within this CNE

3.3.2 CNE NB2

CNE NB2 is located in the northeast quadrant of the intersection adjacent to NB CR 2209 and north of CR 210. The residences in the Southern Grove neighborhood are the only noise sensitive land uses within this CNE. Twenty-six receptor points, identified as NB2-1 through NB2-20, were evaluated for traffic noise impacts and represent 33 homes, as shown in **Appendix E**.

The predicted noise levels for the CNE NB2 receptors for the Existing Condition average 60.6 dB(A), with the highest predicted noise level, 66.4 dB(A), occurring at receptor NB2-05. The predicted noise levels for the No-Build Alternative average 61.2 dB(A), with the highest level, 67.3 dB(A), also occurring at receptor NB2-05. The predicted noise levels for the Build Alternative average 61.9 dB(A), with the highest level, 67.7 dB(A), also occurring at receptor NB2-05. Overall, the noise levels are predicted to increase an average of 1.3 dB(A) compared to the existing condition, with the greatest increase being 1.9 dB(A) at receptor NB2-15. The project noise increases are not considered substantial. However, nine receptors are predicted to exceed the 66.0 dB(A) NAC. Therefore, a noise barrier for these impacted residences was further evaluated. The predicted noise levels for CNE NB2 are shown in **Appendix C.**

3.3.2.1 CNE NB2 Noise Barrier Evaluation

A noise barrier with a 5-foot offset from the ROW line was evaluated at heights ranging from 8 to 22 feet in 2-foot increments. The noise barrier evaluation, shown in **Table 3-2** found that the noise barrier would benefit at least two impacted residences and meet the 7 dB(A) NRDG, but it is not cost reasonable. There is not enough horizontal space within the ROW to construct the analyzed noise wall. To do so, the existing sidewalk would need to be replaced, the existing drainage reworked, and the overhead utility lines relocated. The estimated $552,800 in engineering and construction costs for these additional modifications are beyond what is planned for the project. Consequently, when these additional costs are added to the barrier's cost, even at the lowest analyzed height of 8 feet, the barrier cannot meet the $64,000 per benefited receptor cost criterion, as shown in Table 3-2. The lowest-cost barrier dimensions, along with their associated noise reduction benefits, are illustrated in **Appendix D**.

Table 3-2: CNE NB2 Noise Barrier Summary

				Noise Reduction at Impacted Residences			Number of Benefited Residences							
Height (feet)[1]	Length (feet)	Location [2]	No. of Residential Impacts	5-5.9 dB(A)	6-6.9 dB(A)	≥ 7.0 dB(A) [3]	Impacted [4]	Not Impacted [5]	Total	Avg. Reduction dB(A)	Impacted Res. Not Benefited [6]	Estimated Additional Utility Relocation Cost [7]	Total Estimated Cost [8]	Cost per Benefited Residence [9]
8	943	ROW	9	2	5	2	9	2	11	6.5	0	$552,800	$854,560	$77,687
10	943	ROW	9	0	1	8	9	2	11	7.9	0	$552,800	$930,000	$84,545
12	1,083	ROW	9	0	0	9	9	3	12	8.9	0	$552,800	$1,072,640	$89,387
14	1,083	ROW	9	0	0	9	9	3	12	9.7	0	$552,800	$1,159,280	$96,607
16	1,083	ROW	9	0	0	9	9	7	16	10.0	0	$552,800	$1,245,920	$77,870
18	1,083	ROW	9	0	0	9	9	7	16	10.5	0	$552,800	$1,332,560	$83,285
20	1,083	ROW	9	0	0	9	9	7	16	11.0	0	$552,800	$1,419,200	$88,700
22	1,083	ROW	9	0	0	9	9	7	16	11.4	0	$552,800	$1,505,840	$94,115

[1] Full height is for the length indicated.

[2] ROW (5' offset within CR 210 Right of Way).

[3] FDOT Noise Reduction Design Goal is 7 dB(A) at a minimum of 1 benefited receptor. Analysis ends if the goal is not achieved.

[4] Benefited residences with predicted noise levels that approach or exceed the NAC.

[5] Benefited residences with predicted noise levels that do not approach or exceed the NAC.

[6] Impacted residences that do not receive a minimum 5 dB(A) reduction from the analyzed noise barrier.

[7] Estimated cost to relocate sidewalk, drainage, and utilities due to noise barrier placement.

[8] Unit cost of $40/ft^2 plus the additional utility relocation costs.

[9] FDOT Reasonable Cost Guideline is $64,000 per benefited residence.

3.3.3 CNE SB1

CNE SB1 is located in the southwest quadrant of the intersection adjacent to SB CR 2209 and south of CR 210. There are no noise sensitive land uses within this CNE

3.3.4 CNE SB2

CNE SB2 is located in the northwest quadrant of the intersection adjacent to SB CR 2209 and north of CR 210. The outdoor seating area at the RaceTrac gas station, and the outdoor seating areas at Ember Iron, Al Dente's, and 1928 Cuban Bistro are the Activity Category E SLUs in this CNE. These four receptors, identified as SB2-SLU1 through SB2-SLU4, were evaluated for traffic noise impacts.

The predicted noise levels for the CNE SB2 receptors for the Existing Condition average 56.6 dB(A), with the highest predicted noise level, 61.0 dB(A), occurring at RaceTrac receptor SB2-SLU1. The predicted noise levels for the No-Build Alternative average 55.3 dB(A), with the highest level, 61.2 dB(A), also occurring at receptor SB2-SLU1. The predicted noise levels for the Build Alternative average 59.5 dB(A), with the highest level, 64.9 dB(A), also occurring at receptor SB2-SLU1. Overall, the noise levels are predicted to increase an average of 2.9 dB(A) compared to the existing condition, with the greatest increase being 3.9 dB(A) at SB2-SLU1. The project noise increases are not considered substantial, and the predicted noise levels do not meet or exceed the 71.0 dB(A) NAC. Thus, abatement consideration for CNE SB2 is not required.

The predicted noise levels for CNE SB2 are shown in **Appendix C**, and the receptor locations are shown in **Appendix E**.

4.0 CONCLUSIONS

Noise levels were predicted at 30 receptor points representing 33 residences and four SLUs. For the year 2050 Build condition, noise levels are predicted to meet or exceed the Activity Category B NAC at nine residences in the Southern Grove neighborhood (CNE NB2). These impacted sites were evaluated to determine the feasibility and cost reasonableness of providing a noise barrier to reduce traffic noise. Additionally, a substantial increase of 15 dB(A) is not predicted to occur at any residence or SLU (shown in **Appendix C**).

The noise barrier evaluation process identified that a noise barrier would provide at least a 5 decibel (dB(A)) reduction in noise at all nine impacted residences in the Southern Grove neighborhood and meet the NRDG. However, due to additional costs required to relocate the existing drainage and overhead utilities beyond what is planned for the project, placing the noise barrier within the CR 210 ROW exceeds what FDOT considers cost-reasonable. Therefore, the noise barrier does not meet the criteria of feasibility and/or reasonableness to warrant its construction.

Based on the noise analyses performed to date, there are no feasible solutions available to mitigate the noise impacts at the locations identified in **Section 3.3.2**. Therefore, noise barriers are not recommended for further evaluation as part of this project at this time.

The date that FDOT approves the project's Environmental Document will be the Date of Public Knowledge (DPK). During the design phase, a land use review will be performed to identify all noise sensitive sites that may have received a building permit between the time the PD&E noise study began (July 8, 2025) and prior to the project's DPK. If the review identifies noise sensitive sites that have been permitted prior to the DPK, then those sensitive sites will be evaluated for traffic noise impacts and abatement considerations.

5.0 CONSTRUCTION NOISE AND VIBRATION

Based on the existing land use within the project limits, construction of the proposed roadway improvements will have temporary noise and vibration impacts. Construction noise sensitive sites include all sites detailed in **Section 3.3** of this report. If noise sensitive land uses develop adjacent to the roadway prior to construction, additional impacts could result. It is anticipated that the application of the *FDOT Standard Specifications for Road and Bridge Construction* will minimize or eliminate most of the potential construction noise and vibration impacts. However, should unanticipated noise or vibration issues arise during the construction process, the Project Manager, in concert with the District Noise Specialist and the Contractor, will investigate additional methods of controlling these impacts.

6.0 COMMUNITY COORDINATION

Coordination with local agencies, officials, and the general public is ongoing. The public will have the opportunity to comment on the proposed project at planned public meetings and other outreach efforts. Any noise-related comments will be documented under separate cover.

6.1 NOISE IMPACT CONTOURS

To promote compatibility between land development planning and the CR 210/CR 2209 intersection, the distance between the edge of the outside travel lane and the point where the roadway-related noise is predicted to reach the NAC for each activity category was estimated. These estimates, referred to as noise contours, indicate the general distance at which traffic noise levels meet or exceed the FDOT NAC for each activity type in the 2050 Design Year. These contours do not account for any noise shielding provided by structures or vegetation between the receptor site and the proposed travel lanes.

A copy of the final NSR will be circulated to the appropriate local planning/zoning officials for their use upon approval of the Environmental Document. Planning/zoning officials should refer to **Table 6-1** to support their noise-compatible land-use planning activities.

Table 6-1: Project Noise Contours

Approximate Distance from Roadway			
Activity Category [1]	**Corresponding FDOT Noise Abatement Criterion**	**CR 210 [2]**	**CR 2209 [2]**
Category A	56 dB(A)	693'	642'
Category B and C	66 dB(A)	75'	140'
Category E	71 dB(A)	Within ROW	Within ROW

[1] Activity Categories as defined in 23 CFR 772.

[2] Proposed edge of pavement; does not account for variation caused by topography, local roads, intervening structures, etc.

7.0 REFERENCES

23 C.F.R. Part 772, *Procedures for Abatement of Highway Traffic Noise and Construction Noise*; Federal Register, Vol. 75, No. 133; July 13, 2010.

FHWA, *Highway Traffic Noise: Analysis and Abatement Guidance*, FHWA-HEP-10-025, December 2010.

FDOT, "Highway Traffic Noise", *Project Development and Environment Manual* Part 2, Chapter 18, July 31, 2024.

FDOT, *Methodology To Evaluate Highway Traffic Noise at Special Land Use Locations*, July 2025.

FDOT, *Standard Specifications for Road and Bridge Construction*.

FDOT, *Traffic Noise Modeling and Analysis Practitioners' Handbook*, September 2025.

Appendix A: Project Typical Sections

Typical sections will be included in the Final Noise Study Report.

Appendix B: Project Traffic Data

Highway Traffic Noise: Traffic Data

Project/Data Information	
Project Name	CR 210 at CR 2209
Project Number	
Condition	**Existing**
Year	2025
Source	Field Collected Counts, 2024 FDOT FTO, 2023 Multimodal Quality/Level of Service Handbook
Preparer [Traffic Engineer]	Festo Mjogolo
Prepared Date	7/1/2025
Notes	

	Roadway Details					Traffic Details										Raw Traffic Data Selection & Off-Peak Calculation		
Traffic Segment Number	**Roadway Name**	**From**	**To**	**Roadway Type**	**Number of Lanes** *In 1 direction	**Two-Way LOS C AADT**	**LOS C Peak Hour Peak Direction (PHPD)**	**Demand Hourly Volumes (DHV) Peak Hour Peak Direction (PHPD)**	**% Autos**	**% Medium Trucks**	**% Heavy Trucks**	**% Buses**	**% Motorcycles**	**Standard K-factor**	**D-factor**	**Posted Speed (mph)**	**LOS C vs. DHV Comparison**	**Peak Direction Volume*** *Used on both sides for LOS C	**Off-Peak Direction Volume*** *DHV only
1	CR 210	Southern Grove Dr	CR 2209 (St Johns Pkwy)	Arterial	2	32,235	1,520	1,293	99%	1%	0%	0%	0%	9.00%	55.20%	45	DHV	1293	1049
2	CR 210	CR 2209 (St Johns Pkwy)	Cartwheel Bay Ave	Arterial	2	32,235	1,520	1,664	99%	1%	0%	0%	0%	9.00%	55.20%	45	LOS C	1520	N/A
3	CR 210	Cartwheel Bay Ave	Nature Walk Pkwy	Arterial	2	32,235	1,520	1,664	99%	1%	0%	0%	0%	9.00%	55.20%	45	LOS C	1520	N/A
4	CR 2209 (St Johns Pkwy)	Begin of Project	John's Creek Pkwy	Arterial	2	32,235	1,520	1,413	99%	1%	0%	0%	0%	9.00%	55.20%	45	DHV	1413	1147
5	CR 2209 (St Johns Pkwy)	John's Creek Pkwy	John's Creek Center	Arterial	2	32,235	1,520	1,461	99%	1%	0%	0%	0%	9.00%	55.20%	45	DHV	1461	1186
6	CR 2209 (St Johns Pkwy)	John's Creek Center	CR 210	Arterial	2	32,235	1,520	1,428	99%	1%	0%	0%	0%	9.00%	55.20%	45	DHV	1428	1159
7	CR 2209 (St Johns Pkwy)	CR 210	Shops Blvd	Arterial	2	32,235	1,520	1,933	99%	1%	0%	0%	0%	9.00%	55.20%	45	LOS C	1520	N/A
8	CR 2209 (St Johns Pkwy)	Shops Blvd	North Entrance	Arterial	2	32,235	1,520	1,933	99%	1%	0%	0%	0%	9.00%	55.20%	45	LOS C	1520	N/A
9	CR 2209 (St Johns Pkwy)	North Entrance	End of Project	Arterial	2	32,235	1,520	2,167	99%	1%	0%	0%	0%	9.00%	55.20%	45	LOS C	1520	N/A

Highway Traffic Noise: Traffic Data

Project/Data Information	
Project Name	CR 210 at CR 2209
Project Number	
Condition	**No-Build**
Year	2050
Source	Field Collected Counts, 2024 FDOT FTO, 2023 Multimodal Quality/Level of Service Handbook
Preparer [Traffic Engineer]	Festo Mjogolo
Prepared Date	7/1/2025
Notes	

	Roadway Details					Traffic Details										Raw Traffic Data Selection & Off-Peak Calculation		
Traffic Segment Number	**Roadway Name**	**From**	**To**	**Roadway Type**	**Number of Lanes** *In 1 direction	**Two-Way LOS C AADT**	**LOS C Peak Hour Peak Direction (PHPD)**	**Demand Hourly Volumes (DHV) Peak Hour Peak Direction (PHPD)**	**% Autos**	**% Medium Trucks**	**% Heavy Trucks**	**% Buses**	**% Motorcycles**	**Standard K-factor**	**D-factor**	**Posted Speed (mph)**	**LOS C vs. DHV Comparison**	**Peak Direction Volume*** *Used on both sides for LOS C	**Off-Peak Direction Volume*** *DHV only
1	CR 210	Southern Grove Dr	CR 2209 (St Johns Pkwy)	Arterial	2	32,235	1,520	1,624	99%	1%	0%	0%	0%	9.00%	55.20%	45	LOS C	1520	N/A
2	CR 210	CR 2209 (St Johns Pkwy)	Cartwheel Bay Ave	Arterial	2	32,235	1,520	2,687	99%	1%	0%	0%	0%	9.00%	55.20%	45	LOS C	1520	N/A
3	CR 210	Cartwheel Bay Ave	Nature Walk Pkwy	Arterial	2	32,235	1,520	2,245	99%	1%	0%	0%	0%	9.00%	55.20%	45	LOS C	1520	N/A
4	CR 2209 (St Johns Pkwy)	Begin of Project	John's Creek Pkwy	Arterial	2	32,235	1,520	2,502	99%	1%	0%	0%	0%	9.00%	55.20%	45	LOS C	1520	N/A
5	CR 2209 (St Johns Pkwy)	John's Creek Pkwy	John's Creek Center	Arterial	2	32,235	1,520	2,524	99%	1%	0%	0%	0%	9.00%	55.20%	45	LOS C	1520	N/A
6	CR 2209 (St Johns Pkwy)	John's Creek Center	CR 210	Arterial	2	32,235	1,520	2,524	99%	1%	0%	0%	0%	9.00%	55.20%	45	LOS C	1520	N/A
7	CR 2209 (St Johns Pkwy)	CR 210	Shops Blvd	Arterial	2	32,235	1,520	3,838	99%	1%	0%	0%	0%	9.00%	55.20%	45	LOS C	1520	N/A
8	CR 2209 (St Johns Pkwy)	Shops Blvd	North Entrance	Arterial	2	32,235	1,520	3,838	99%	1%	0%	0%	0%	9.00%	55.20%	45	LOS C	1520	N/A
9	CR 2209 (St Johns Pkwy)	North Entrance	End of Project	Arterial	2	32,235	1,520	4,072	99%	1%	0%	0%	0%	9.00%	55.20%	45	LOS C	1520	N/A

Highway Traffic Noise: Traffic Data

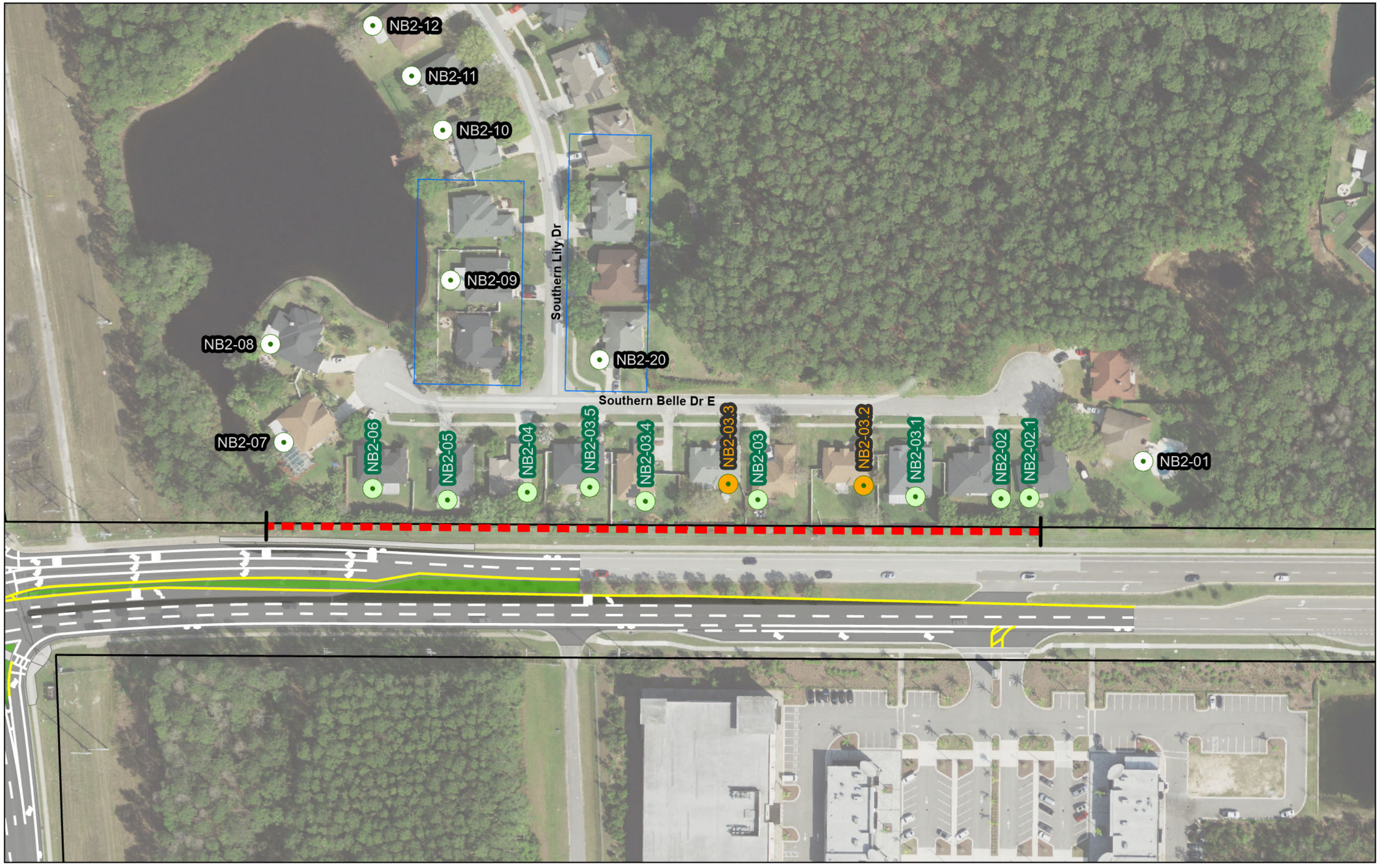
Project/Data Information	
Project Name	CR 210 at CR 2209
Project Number	
Condition	**Build**
Year	2050
Source	Field Collected Counts, 2024 FDOT FTO, 2023 Multimodal Quality/Level of Service Handbook
Preparer [Traffic Engineer]	Festo Mjogolo
Prepared Date	7/1/2025
Notes	

	Roadway Details					Traffic Details										Raw Traffic Data Selection & Off-Peak Calculation		
Traffic Segment Number	**Roadway Name**	**From**	**To**	**Roadway Type**	**Number of Lanes** *In 1 direction	**Two-Way LOS C AADT**	**LOS C Peak Hour Peak Direction (PHPD)**	**Demand Hourly Volumes (DHV) Peak Hour Peak Direction (PHPD)**	**% Autos**	**% Medium Trucks**	**% Heavy Trucks**	**% Buses**	**% Motorcycles**	**Standard K-factor**	**D-factor**	**Posted Speed (mph)**	**LOS C vs. DHV Comparison**	**Peak Direction Volume*** *Used on both sides for LOS C	**Off-Peak Direction Volume*** *DHV only
1	CR 210	Southern Grove Dr	CR 2209 (St Johns Pkwy)	Arterial	2	32,235	1,520	1,624	99%	1%	0%	0%	0%	9.00%	55.20%	45	LOS C	1520	N/A
2	CR 210	CR 2209 (St Johns Pkwy)	Cartwheel Bay Ave	Arterial	2	32,235	1,520	2,876	99%	1%	0%	0%	0%	9.00%	55.20%	45	LOS C	1520	N/A
3	CR 210	Cartwheel Bay Ave	Nature Walk Pkwy	Arterial	2	32,235	1,520	2,245	99%	1%	0%	0%	0%	9.00%	55.20%	45	LOS C	1520	N/A
4	CR 2209 (St Johns Pkwy)	Begin of Project	John's Creek Pkwy	Arterial	2	23,025	1,520	2,709	99%	1%	0%	0%	0%	9.00%	55.20%	45	LOS C	1520	N/A
5	CR 2209 (St Johns Pkwy)	John's Creek Pkwy	John's Creek Center	Arterial	2	32,235	1,520	2,703	99%	1%	0%	0%	0%	9.00%	55.20%	45	LOS C	1520	N/A
6	CR 2209 (St Johns Pkwy)	John's Creek Center	CR 210	Arterial	3	50,085	2,360	2,524	99%	1%	0%	0%	0%	9.00%	55.20%	45	LOS C	2360	N/A
7	CR 2209 (St Johns Pkwy)	CR 210	Shops Blvd	Arterial	3	35,775	2,360	3,011	99%	1%	0%	0%	0%	9.00%	55.20%	45	LOS C	2360	N/A
8	CR 2209 (St Johns Pkwy)	Shops Blvd	North Entrance	Arterial	3	47,700	2,360	4,027	99%	1%	0%	0%	0%	9.00%	55.20%	45	LOS C	2360	N/A
9	CR 2209 (St Johns Pkwy)	North Entrance	End of Project	Arterial	2	32,235	1,520	4,261	99%	1%	0%	0%	0%	9.00%	55.20%	45	LOS C	1520	N/A
10	CR 2209 (St Johns Pkwy) - SB Turn Lane	CR 210	Shops Blvd	Turn Lane	3	30,051	2,832	2,687	99%	1%	0%	0%	0%	9.00%	55.20%	35	DHV	2687	2181
11	CR 2209 (St Johns Pkwy) - NB Turn Lane	CR 210	Shops Blvd	Turn Lane	3	30,051	2,832	1,556	99%	1%	0%	0%	0%	9.00%	55.20%	35	DHV	1556	1263
12	CR 2209 (St Johns Pkwy) - SB Frontage Lane	Shops Blvd	North Entrance	Frontage Road	2	18,420	1,824	1,476	99%	1%	0%	0%	0%	9.00%	55.20%	45	DHV	1476	1198

Appendix C: Predicted Project Noise Levels

Common Noise Environment (CNE)	Receptor Name	No. of Sites Represented	NAC	FDOT Impact Criterion (dB(A))	2025 Existing LAeq1h (dB(A))	2050 No-Build LAeq1h (dB(A))	2050 Build LAeq1h (dB(A))	NAC Approach or Exceeded	Noise Level Change from Existing	Substantial Increase	Description
							XX.X	**Project Impacts**			
NB2	NB2-01	1	B	66.0	62.4	63.4	63.4	No	1.0	No	Southern Grove residence
NB2	NB2-02	1	B	66.0	65.6	66.6	**66.6**	Yes	1.0	No	Southern Grove residence
NB2	NB2-02.1	1	B	66.0	65.5	66.5	**66.6**	Yes	1.0	No	Southern Grove residence
NB2	NB2-03	1	B	66.0	65.9	66.9	**67.0**	Yes	1.1	No	Southern Grove residence
NB2	NB2-03.1	1	B	66.0	65.5	66.5	**66.6**	Yes	1.1	No	Southern Grove residence
NB2	NB2-03.2	1	B	66.0	64.7	65.7	65.7	No	1.0	No	Southern Grove residence
NB2	NB2-03.3	1	B	66.0	64.7	65.7	65.8	No	1.1	No	Southern Grove residence
NB2	NB2-03.4	1	B	66.0	66.3	67.2	**67.2**	Yes	0.9	No	Southern Grove residence
NB2	NB2-03.5	1	B	66.0	65.1	66.1	**66.2**	Yes	1.1	No	Southern Grove residence
NB2	NB2-04	1	B	66.0	65.6	66.6	**66.8**	Yes	1.2	No	Southern Grove residence
NB2	NB2-05	1	B	66.0	66.4	67.3	**67.7**	Yes	1.3	No	Southern Grove residence
NB2	NB2-06	1	B	66.0	65.6	66.5	**66.8**	Yes	1.2	No	Southern Grove residence
NB2	NB2-07	1	B	66.0	63.1	63.8	64.3	No	1.2	No	Southern Grove residence
NB2	NB2-08	1	B	66.0	59.8	60.4	61.2	No	1.4	No	Southern Grove residence
NB2	NB2-09	3	B	66.0	57.2	57.8	58.6	No	1.4	No	Southern Grove residence
NB2	NB2-10	1	B	66.0	55.8	56.3	57.3	No	1.5	No	Southern Grove residence
NB2	NB2-11	1	B	66.0	55.5	55.9	57.1	No	1.6	No	Southern Grove residence
NB2	NB2-12	1	B	66.0	55.6	56.0	57.3	No	1.7	No	Southern Grove residence
NB2	NB2-13	1	B	66.0	55.3	55.6	56.9	No	1.6	No	Southern Grove residence
NB2	NB2-14	1	B	66.0	55.0	55.3	56.8	No	1.8	No	Southern Grove residence
NB2	NB2-15	1	B	66.0	55.0	55.3	56.9	No	1.9	No	Southern Grove residence
NB2	NB2-16	1	B	66.0	55.6	55.8	57.3	No	1.7	No	Southern Grove residence
NB2	NB2-17	3	B	66.0	55.8	55.9	57.2	No	1.4	No	Southern Grove residence
NB2	NB2-18	1	B	66.0	55.8	55.8	56.9	No	1.1	No	Southern Grove residence
NB2	NB2-19	1	B	66.0	54.4	54.5	55.3	No	0.9	No	Southern Grove residence
NB2	NB2-20	4	B	66.0	58.2	59.0	59.5	No	1.3	No	Southern Grove residence
SB2	SB2-SLU1	1	E	71.0	61.0	61.2	64.9	No	3.9	No	RaceTrac outdoor tables
SB2	SB2-SLU2	1	E	71.0	55.8	56.0	59.0	No	3.2	No	Ember & Iron outdoor tables
SB2	SB2-SLU3	1	E	71.0	55.4	55.5	58.1	No	2.7	No	Al Dente's outdoor tables
SB2	SB2-SLU4	1	E	71.0	54.2	54.4	56.0	No	1.8	No	1928 Cuban Bistro outdoor tables

Appendix D: Barrier Analysis Detail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NB2-10
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NB2-08
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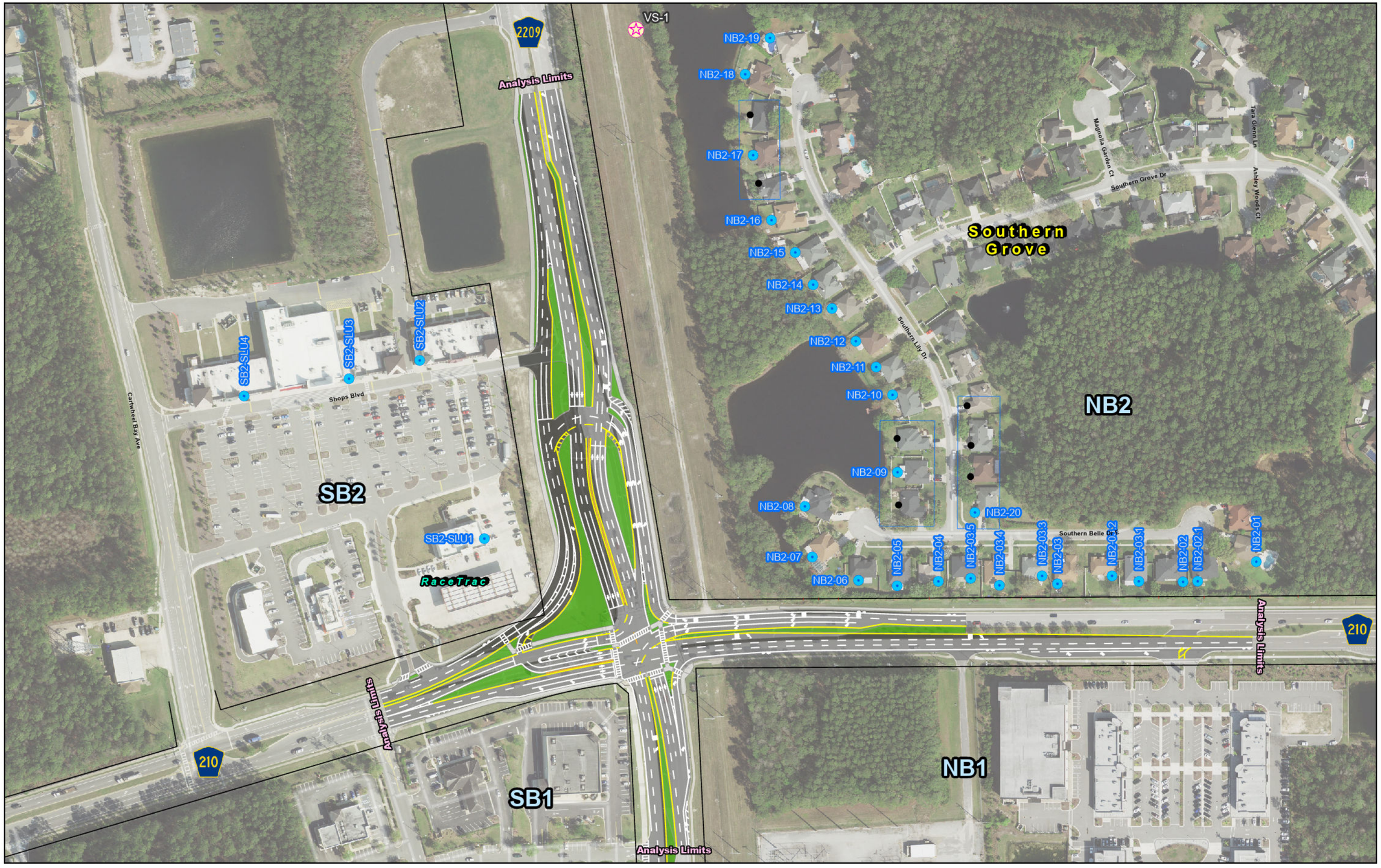
NB2-06
NB2-05
NB2-04
NB2-03.5
NB2-03.4
NB2-03.3
NB2-03
NB2-03.2
NB2-03.1
NB2-02
NB2-02.1
NB2-01
NB2-20
Southern Lily Dr
Southern Belle Dr E
Impact - Benefit
No Impact - Benefit
No Impact - No Benefit
Barrier Not Feasible/Reasonable
0
100 Feet

Appendix E: Project Aerial


VS-1
2209
Analysis Limits
NB2-19
NB2-18
NB2-17
NB2-16
NB2-15
NB2-14
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NB2-10
NB2-09
NB2-08
NB2-07
NB2-06
NB2-20
NB2-05
NB2-04
NB2-03-5
NB2-03-4
NB2-03-3
NB2-03
NB2-03-2
NB2-03-1
NB2-02
NB2-02-1
NB2-01
Southern Grove
Magnolia Garden Ct
Southern Grove Dr
Tara Glenn Ln
Ashley Woods Ct
Southern Lily Dr
Southern Belle Dr
NB2
NB1
SB2
SB1
SB2-SLU4
SB2-SLU3
SB2-SLU2
SB2-SLU1
Shops Blvd
Carnehel Bay Ave
RaceTrac
210
Analysis Limits
Representative
Analyzed Site
Validation Site
Receptor Group
0
200 Feet