

NOISE STUDY REPORT

Florida Department of Transportation

District 6

SR 994/SW 200th Street/Quail Roost Drive PD&E Study

From SW 137th Avenue to SW 127th Avenue

Miami-Dade County, Florida

Financial Management Number: 445804-1-22-01

ETDM Number: 14429

July 24, 2023

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



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Project Development & Environment Study
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Miami-Dade County, Florida**

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FAP Project Number: Not Assigned
Efficient Transportation Decision-Making Number: 14429

Prepared for:

*Florida Department of
Transportation District 6
1000 NW 111th Avenue
Miami, Florida 33172*

Prepared by:

*Gannett Fleming, Inc.
800 NW 62nd Avenue
Suite 490
Miami, Florida 33126*

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EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT) District Six is conducting a Project Development and Environment (PD&E) Study for SR 994/SW 200th Street/Quail Roost Drive, from west of SW 137th Avenue to east of SW 127th Avenue. The project corridor is approximately 1.67 miles in length. Within the project limits, the roadway is locally known as Quail Roost Drive. The PD&E Study is proposing widening of Quail Roost Drive up to four lanes from west of SW 137th Avenue to east of SW 127th Avenue. The project is located in Miami-Dade County, Florida and is contained within unincorporated Miami-Dade. As part of this PD&E Study, a traffic noise study was performed. The traffic noise study was performed in accordance with the Federal Highway Administration's (FHWA) noise policy, Title 23 of the Code of Federal Regulations, Part 772 (23 CFR 772) "Procedures for Abatement of Highway Traffic Noise and Construction Noise" (July 13, 2010), the FDOT's PD&E Manual, Part 2, Chapter 18, Highway Traffic Noise (July 1, 2020), and FDOT's Traffic Noise Modeling and Analysis Practitioners Handbook (December 31, 2018).

The primary objectives of this noise study were to describe the existing site conditions including noise sensitive land uses within the project limits, document the methodology used to conduct the noise assessment, assess the significance of traffic noise levels on noise sensitive land uses for the No-Build and recommended Build Alternative, and evaluate abatement measures for those noise sensitive sites that, under the recommended Build Alternative, approach, meet, or exceed the Noise Abatement Criteria (NAC) set forth by the FDOT and (Federal Highway Administration) FHWA or where a substantial increase in traffic noise occurs.

The existing noise levels and future design year (2045) noise levels for the no-build and the recommended Build Alternative 2 were predicted using the latest approved version of FHWA's Traffic Noise Model (TNM), Version 2.5. These predicted noise levels represent the hourly equivalent sound level [Leq(h)]. Leq(h) is the steady-state sound level, which contains the same amount of acoustic energy as the actual time-varying sound level over a 1-hour period. Leq(h) is measured in A-weighted decibels [dB(A)], which closely approximate the human frequency response.

Two hundred thirty-five noise sensitive land uses were identified along the project corridor that can potentially be impacted by traffic noise associated with the project. One hundred fourteen noise sensitive land uses are located north of Quail Roost Drive, and one hundred twenty-one noise sensitive land uses are located south of Quail Roost Drive. These noise sensitive land uses are comprised of two hundred twenty-nine single family residences, three of which are of historic significance, four places of worship, a public park and a shared use trail system.

Of all identified noise sensitive land uses analyzed within the project corridor, an average traffic related noise level of 58.2 dB(A), an increase of 0.4 dB(A) over existing, is predicted for the 2045 No-Build Alternative. An average traffic related noise level of 60.8 dB(A), an increase of 3.0 dB(A) over existing, is predicted for the preferred 2045 Build Alternative 2. Traffic noise levels are predicted to approach, meet, or exceed the NAC (noise impact) at sixty residences (NAC B) and two recreational outdoor uses (NAC C) along the project corridor with the Build Alternative 2. Of these project related impacts, thirty-two impacts are located north of Quail Roost Drive and thirty impacts are located south of Quail Roost Drive. All impacts are project-adjacent, first row land uses. Impacted land uses are predicted to

experience an average traffic noise level of 69 dB(A) with the Build Alternative 2, an average increase over existing of 3 dB(A). In accordance with FHWA and FDOT policies, noise barriers were considered for all noise sensitive land uses where design year (2045) noise levels approach, meet, or exceed the NAC. It was determined that conceptual noise barriers are feasible and reasonable in both Noise Sensitive Area 1 (NSA 1): Common Noise Environment 1A (CNE 1A), and Noise Sensitive Area 4: Common Noise Environment 4A and are both recommended for further consideration in the design phase.

The CNE 1A optimal conceptual noise barrier system is ten feet high and five hundred forty feet in total length, located at the project right-of-way and behind the proposed shared use path, north of Quail Roost Drive between SW 135th Avenue and SW 134th Avenue. The CNE 1A optimal conceptual noise barriers benefit all four traffic noise impacted receptor sites with an average noise level attenuation of 8.6 dB(A), at a total estimated cost of \$162,000 or \$40,500 per benefited receptor. The CNE 1A optimal conceptual noise barriers are recommended for further consideration in the design phase. See **Section 3.2.1** and **Table 3.2.1**.

The CNE 4A optimal conceptual noise barrier system is twelve feet high and one thousand two hundred sixty feet in total length, located at the project right-of-way and behind the proposed shared use path, south of Quail Roost Drive between SW 130th Avenue and SW 128th Avenue. The CNE 4A optimal conceptual noise barriers benefit fifteen of the sixteen traffic noise impacted receptor sites in CNE 4A with an average noise level attenuation of 9.3 dB(A), at a total estimated cost of \$453,600 or \$30,240 per benefited receptor. The CNE 4A optimal conceptual noise barriers are recommended for further consideration in the design phase. See **Section 3.2.4** and **Table 3.2.4a**.

Noise barriers were considered but determined to be not feasible for construction within NSA 1 (CNE 1C), NSA 2, NSA 3, and NSA 6. Noise barriers were considered but determined to be feasible but not cost reasonable within NSA 4 (CNE 4B and CNE 4C). See **Section 3.2** for details. Traffic noise impacted residential land uses not benefiting from noise abatement features are predicted to experience an average noise level of 69 dB(A) with the Build Alternative 2, an overall average increase over existing of 3.0 dB(A).

1.0 INTRODUCTION

The Florida Department of Transportation (FDOT) District Six is conducting a Project Development and Environment (PD&E) Study for SR 994/SW 200th Street/Quail Roost Drive, from west of SW 137th Avenue to east of SW 127th Avenue. The project corridor is approximately 1.67 miles in length (see **Figure 2-1**). Within the project limits, the roadway is locally known as Quail Roost Drive. As part of this PD&E Study, a traffic noise study was performed. The traffic noise study was performed in accordance with the Federal Highway Administration’s (FHWA) noise policy, Title 23 of the Code of Federal Regulations, Part 772 (23 CFR 772) “Procedures for Abatement of Highway Traffic Noise and Construction Noise” (July 13, 2010), the FDOT’s PD&E Manual, Part 2, Chapter 18, Highway Traffic Noise (July 1, 2020), and FDOT’s Traffic Noise Modeling and Analysis Practitioners Handbook (December 31, 2018).

The primary objectives of this noise study were to:

- Describe the existing site conditions including noise sensitive land uses within the project limits;
- Document the methodology used to conduct the noise assessment;
- Assess the significance of traffic noise levels on noise sensitive sites for the No-Build and Build Alternatives; and
- Evaluate abatement measures for those noise sensitive sites that, under the Build Alternative, approach, meet, or exceed the Noise Abatement Criteria (NAC) set forth by the FDOT and FHWA or where a substantial increase in traffic noise occurs.

Secondary objectives of this study included the consideration of construction-related noise and vibration impacts as well as the development of noise level contours, that can be used in the future by local municipal and county government agencies to identify compatible land uses along the project roadways.

This Noise Study Report (NSR) presents the findings of the traffic noise analysis. This report also provides technical documentation for the findings described in the project’s Preliminary Engineering Report (PER) and Type 2 Categorical Exclusion Environmental Determination Form.

A range of alternatives were considered for the study corridor including the No-Build option, Transportation System Management & Operations (TSM&O) improvements and three Build Alternative scenarios as described in Section 1.2. All alternatives were evaluated in terms of engineering, environmental, and socioeconomic aspects. However, the focus of this Noise Study Report is based upon the proposed improvements of the preferred alternative only.

1.1 PROJECT DESCRIPTION AND LOCATION

The project is located in southwest Miami-Dade County at SR 994/SW 200th Street/Quail Roost Drive, from west of SW 137th Avenue to east of SW 127th Avenue (see **Figure 1-1**). The project corridor is approximately 1.67 miles in length. Within the project limits, the roadway is locally known as Quail Roost Drive. This roadway project involves the potential widening of Quail Roost Drive up to four lanes from SW 137th Avenue to SW 127th Avenue.

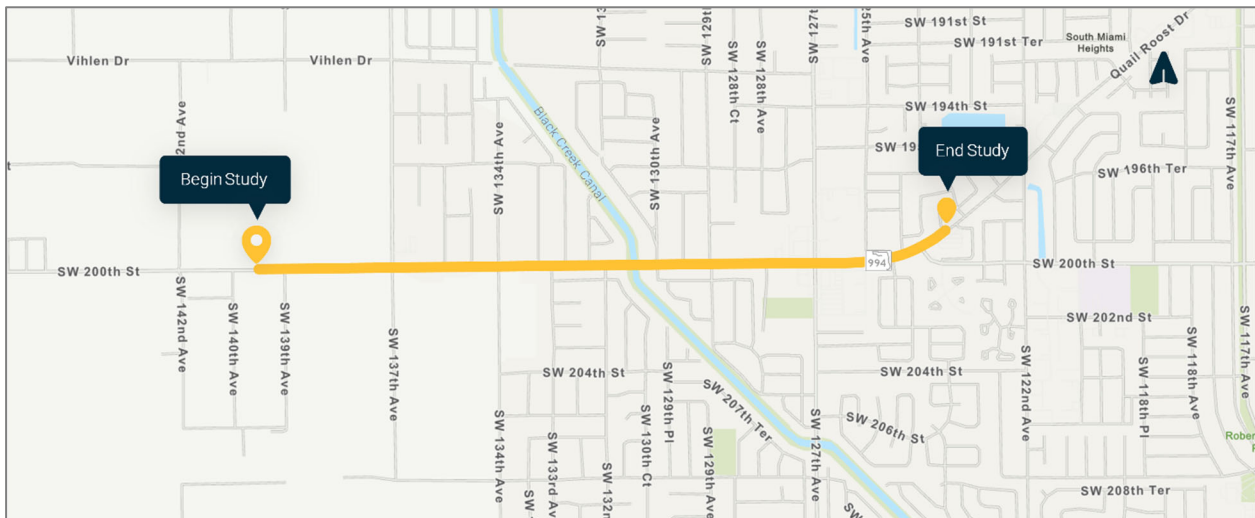


Figure 1-1: Project Location

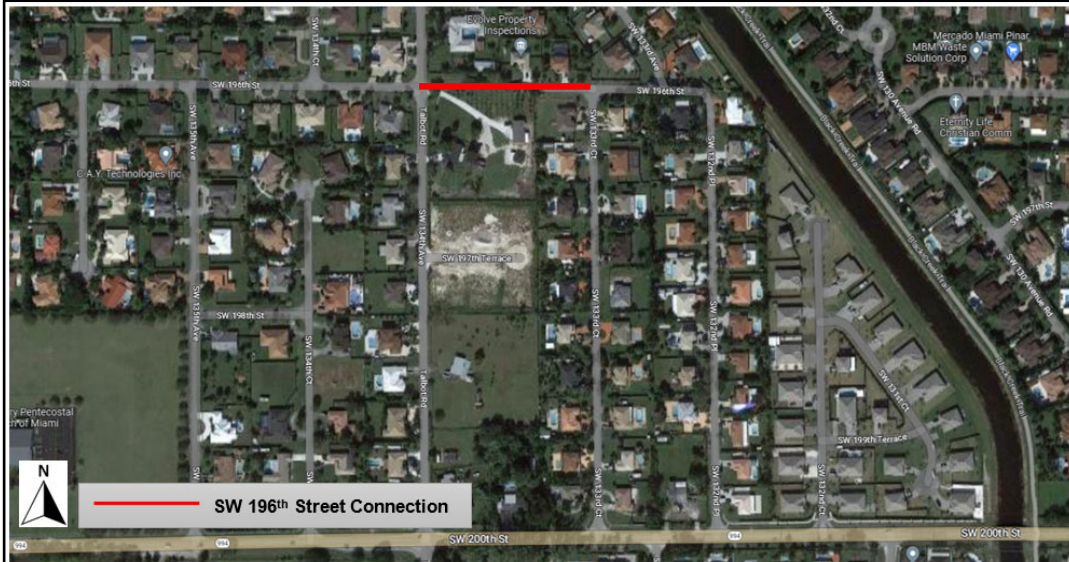


Figure 1-2: SW 196th Street Connection Location Map

While the project is located in southwest unincorporated Miami-Dade County, it occurs within the Miami Urbanized Area (as defined by the Miami-Dade County 2015 Urban Development Boundary). The project corridor primarily serves existing and future residential land uses and provides local east-west access and connectivity. Outside of the project limits, SR 994 connects directly to two Strategic Intermodal System (SIS) Highway Corridors at SR 997/Krome Avenue (west of study limits) and SR 821/HEFT (east of study limits).

Within the project limits, SR 994 is classified as a rural major collector to the west of SW 137th Avenue and an urban minor arterial to the east of SW 137th Avenue. The corridor primarily has a C3R Suburban Residential Context Classification and a posted speed of 40 miles per hour. Four major intersections are located along the project corridor, including two signalized intersections (SW 137th Avenue and SW 127th Avenue) and two unsignalized intersections (SW 134th Avenue and SW 132nd Avenue). Eight other minor (unsignalized) intersections are located within the study corridor. The project location map is shown in **Figure 1-1**.

Currently, SR 994 is a two-lane roadway (one lane in each direction) from west of 137th Avenue to west of 127th Avenue. From west of SW 127th Avenue to SR 821/HEFT, SR 994 is a four-lane roadway. The existing SR 994 typical section consists of two undivided 11.5-foot travel lanes with unpaved shoulders and open drainage. Curb and gutter exist at the SR 994/SW 134th Avenue intersection and east of SW 127th Avenue within the study limits. Sidewalks, varying in width, are noncontinuous and generally located at residential subdivisions along the study corridor. There are no existing designated bicycle lanes on SR 994 within the study limits. There is one unrecorded historic bridge within the study limits that spans over the Black Creek Canal. There is a pedestrian crossing just east of the bridge for access to the Black Creek Trail, which intersects SR 994. See **Figure 1-3** and **Figure 3-4** for details.

In addition to the potential widening, the proposed roadway improvements may include operational enhancements at the existing intersections, widening/reconstruction of the bridge structure over Black Creek Canal, access management measures, and stormwater management facilities. The PD&E Study will evaluate typical section alternatives based on design criteria, safety and operational needs, and the minimization of environmental effects and right-of-way needs. The

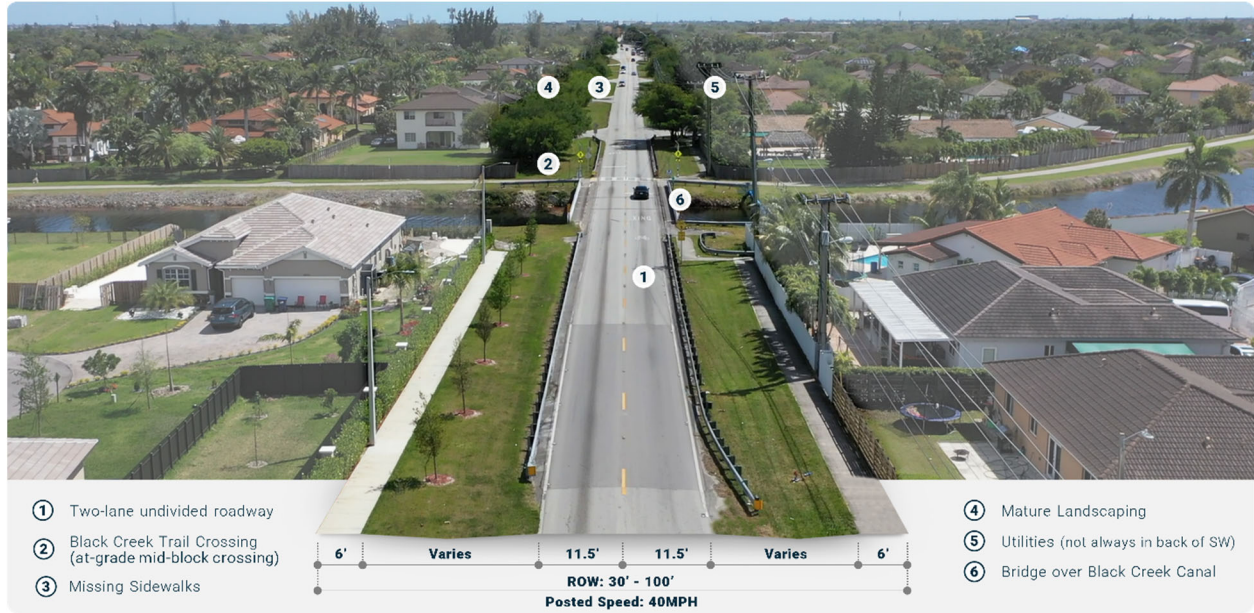


Figure 1-3: Existing Typical Section

PD&E Study will evaluate the provision of ADA compliant facilities as well as new/enhanced pedestrian and bicycle infrastructure, including paved shoulders/designated bicycle lanes,

sidewalks, and/or a shared-use path connection to the existing Black Creek Trail. Improvements at four intersections/cross streets are also proposed as part of this project.

- SR 994 and SW 137th Avenue
- SR 994 and SW 134th Avenue
- SR 994 and SW 132nd Avenue
- SR 994 and SW 127th Avenue

Refer to **Section 6.1.8 Intersection Concepts** in the Preliminary Engineering Report (PER) for detailed information regarding these improvements. Black Creek Trail- Segment of Route 7 is owned by the Miami-Dade County, Parks, Recreation and Open Spaces (MDPROS) and is located along the Black Creek Canal (C-1W). Black Creek Trail- Segment of Route 7 is an 8.7-mile-long greenway corridor that begins at Black Point Park and Marina and ends near Larry and Penny Thompson Park. The preferred alternative includes relocating the trail under the proposed new bridge over Black Creek Canal (C-1W). The advantages of this option include improved safety and traffic operations due to the elimination of conflicts between motor vehicles and bicyclists/pedestrians. In addition, this option provides improved overall bridge vertical clearance.

1.2 PURPOSE AND NEED

The purpose of this project is to address traffic operations and capacity constraints on SR 994 from west of SW 137th Avenue to east of SW 127th Avenue and SW 196th Street from SW 134th Avenue (Talbot Rd) to SW 133rd Court, in unincorporated Miami-Dade County (see **Figure 1-1**) in order to accommodate future travel demand projected as a result of population and employment growth along the corridor. Other goals of the project are to improve safety conditions along the corridor, including emergency evacuation and response times, and enhance mobility options and multimodal access. Each of the elements of need is described further below:

1.2.1 Capacity/Transportation Demand

This project is anticipated to improve traffic operations along SR 994 by increasing the capacity to meet projected travel demand as a result of Miami-Dade County population and employment growth. Miami-Dade County is the most populous county in Florida with almost 2.6 million residents in 2015. By 2045, the county's population is expected to grow by over 33% to over 3.5 million residents. Employment growth in the county is expected to increase from 1.4 million workers in 2015 to more than 1.7 million workers by 2045.

Between SW 137th Avenue and SW 127th Avenue, the corridor has experienced a 7% increase in Annual Average Daily Traffic (AADT) from 2015 to 2019 with traffic volumes growing from 17,900 to 19,200 vehicles per day. Traffic is anticipated to continue to increase due to population growth and residential development in the area.

A traffic level of service analysis was conducted for the Future Year 2045. The analysis determined that some intersections along the corridor as well as several intersecting roads are expected to operate at LOS F during the AM and PM Peak periods if no improvements are implemented.

1.2.2 Safety

A crash analysis was conducted from west of SW 137th Avenue to east of SW 127th Avenue. The crash data for the latest five-year period (January 2015 to December 2019) was downloaded from the FDOT's Crash Analysis Reporting System (CARS) and summarized for the project segment. A total of 422 crashes were documented for the five-year period within the project limits. The leading types of crashes along the corridor were rear-end (with 201 crashes), angle (with 97 crashes), and left turn (with 40 crashes). Based on crash severity, 67% (281 crashes) were property-damage-only crashes, 33% (139 crashes) were injury crashes, and <1% (2 crashes) were fatal crashes. Based on FDOT's 2015–2019 High Crash Lists, the following locations were considered high-crash spots/segments:

Spots

- SR 994 at SW 137th Avenue
- SR 994 at SW 134th Avenue
- SR 994 at SW 133rd Avenue
- SR 994 at SW 132nd Avenue
- SR 994 at SW 127th Avenue

Segment

- SR 994 from SW 137th Avenue to SW 127th Avenue

According to the safety review, congestion/lack of capacity and lack of left-turn lanes serve as the probable causes of the safety issues within the corridor. Providing additional capacity and improving intersections along the corridor are anticipated to result in reduced crashes and safety benefits. Improved traffic operations due to increased capacity are also anticipated to decrease emergency response times for emergency response vehicles.

1.2.3 Modal Interrelationships

There are no existing designated bicycle lanes within the project limits. Sidewalks are noncontinuous and generally located at residential subdivisions along the project corridor. The Black Creek Trail intersects the project corridor just east of the Black Creek Canal. The trail is a 17-mile-long greenway corridor that connects the Everglades Levee (L-31N Canal) with Black

Point Park and Marina in Homestead. There is a pedestrian crossing equipped with Rectangular Rapid Flashing Beacons (RRFBs) and pavement markings to facilitate pedestrian/bicycle crossing and alert drivers of the pedestrian traffic, just east of the bridge for access to the Black Creek Trail.

Based on 2010 United States Census Data, approximately 4% of the housing units (192 housing units) within the study area are transit-dependent (no vehicle available); in addition, approximately 392 housing units within the study area use public transportation for work. This noted transit-dependent population has a higher propensity to walk, bike, or take transit to access essential services. The project is anticipated to improve multi-modal connectivity and mobility options for the transit-dependent population and the overall residential population within the project area by providing continuous bicycle and pedestrian facilities along the entire corridor and improving access to the Black Creek Trail.

1.2.4 Evacuation Routes and Emergency Services

SR 994 connects directly to two Strategic Intermodal System (SIS) Highway Corridors at SR 997/Krome Avenue (west of the project limits) and SR 821/HEFT (east of the project limits). According to the Florida Division of Emergency Management, both SR 997/Krome Avenue and SR 821/HEFT are designated emergency evacuation routes. SR 997/Krome Avenue additionally provides regional connectivity to US 1, which is a major evacuation route for the Florida Keys. The project is anticipated to enhance emergency evacuation capabilities by improving the capacity of the roadway and, thereby, increasing the number of residents that can be evacuated safely during an emergency event and enhancing access from the residential areas along the corridor to designated emergency evacuation routes.

1.3 ALTERNATIVES ANALYSIS SUMMARY

A range of alternatives were considered for the study corridor including the No-Build option, Transportation System Management & Operations (TSM&O) improvements and three Build scenarios as described below. All alternatives were evaluated in terms of engineering, environmental, and socioeconomic aspects as outlined in the PER. However, the focus of this Noise Study Report is based upon the proposed improvements of the preferred alternative only.

No-Build: The No-Build Alternative proposes to keep the existing configuration throughout the corridor without further improvements. No operation, safety improvements, or traffic capacity would be implemented throughout the project limits. The No-Build Alternative has a number of positive aspects, since it would not require expenditure of public funds for design, construction, right of way and/or utility relocation. Traffic would not be temporarily disrupted due to construction, avoiding disruptions to local residents and businesses. Also, there would be no direct or secondary impacts to the environment, the socio-economic characteristics, community cohesion, or system linkage of the area. However, this alternative does not address existing and future congested traffic conditions. Travel demand and truck traffic will increase significantly over time, given the continued growth expected in this area of Miami-Dade County and future adjacent projects further connecting the corridor with high-volume roadways nearby. An example of a recently completed project nearby is the widening of SW 137 Avenue, a direct connection to SR 994. Furthermore, this alternative does not address safety concerns and multimodal deficiencies along the corridor.

The No-Build alternative is considered a viable alternative through the public hearing and final selection phase to serve as a comparison to the study proposed alternatives. However, the No-Build Alternative fails to fulfill the purpose and need of the project.

The No-Build roadway typical section within the study limits, is the same as the existing typical section. SR 994, between SW 137 Avenue and SW 127 Avenue, consists of two 11.5-ft wide general use lanes (one lane in the westbound direction and one lane in the eastbound direction).

Sidewalk sections are scattered throughout project limits and are mostly present near residential areas adjacent to the corridor. See **Figure 1-2** for details.

TSM&O: This alternative is a strategy aimed at improving the overall performance of the transportation network without resorting to large-scale, capital improvements. This alternative maintains one lane of traffic in both directions and proposes the following improvements:

- Signal optimization and one additional eastbound left-turn lane at the intersection of SW 137th Avenue and SR 994
- New signal and one additional left-turn lane on all approaches of the intersection of SW 134th Avenue and SR 994
- One additional westbound left-turn lane at the intersection of SW 132nd Ave and SR 994.
- New sidewalk on missing segments
- 5-ft outside paved shoulder along the study limits

This alternative presents significant impacts to the right of way and historic resources within the study limits, and it also requires the widening/replacement of the bridge over the Black Creek Canal. All of this while not sufficiently addressing the purpose and need of the project. The alternative was therefore considered non-viable as a TSM&O option (low cost and low impacts), and it evolved into Build Alternative 1.

Build Alternative 1: This alternative maintains one lane of traffic in each direction, while adding a 16.5-ft median with exclusive left turn lanes along SR 994. Curb and Gutter Type F is being proposed on the outside of the travel lanes while Type B curb is the typical condition on the inside to maximize the available landscaping area within the raised islands. This alternative proposes a 10-ft Shared Use Path (SUP) along both sides of the corridor, that are intended to be utilized by pedestrians as well as bicyclists. A minimum 4.5-ft buffer is proposed from the back of curb to the front of the SUP. A 2-ft buffer is proposed behind the SUPs to accommodate signing and lighting features. A traffic signal is proposed at the intersection of SR 994/Quail Roost Drive and SW 134th Avenue. See **Figure 1-4** for details.



Figure 1-4: Build Alternative 1 Typical Section

Build Alternative 3: Similar to Build Alternative 2, this alternative proposes adding one travel lane in each direction along SR 994 for a total of two 11-ft lanes on each bound. A 22-ft-wide raised median with exclusive left turn lanes is provided along the corridor, restricting access to the minor roads and driveways connecting to SR 994. At the intersections, a striped buffer is proposed at between the left turn lanes and the thru traffic. Curb and Gutter Type F is being proposed on the outside of the roadway while Type B curb is the typical condition on the inside to maximize the available landscaping area within the raised median when present. This alternative also proposes a 10-ft Shared Use Path (SUP) along both sides of the corridor, that are intended to be utilized by pedestrians as well as bicyclists. A minimum 4.5-ft buffer is proposed from the back of curb to the front of the SUP. A 2-ft buffer is proposed behind the SUPs to accommodate signing and lighting features. A traffic signal is proposed at the intersection of SR 994/Quail Roost Drive and SW 134th Avenue. This alternative has the greatest impact to the existing right-of-way and also the most access management restrictions. See **Figure 1-5** for details.



Figure 1-5: Build Alternative 3 Typical Section

1.4 DESCRIPTION OF PREFERRED ALTERNATIVE (BUILD ALTERNATIVE 2)

This alternative proposes one additional travel lane in each direction, for a total of two 11-ft lanes on each bound, and a 16.5-ft median with exclusive left turn lanes along SR 994. Curb and Gutter Type F is proposed on the outside of the travel lanes while Type B curb is the typical condition on the inside to maximize the available landscaping area within the raised islands. This alternative also proposes a 10-ft Shared Use Path (SUP) along both sides of the corridor, that are intended to be utilized by pedestrians as well as bicyclists. A minimum 4.5-ft buffer is proposed from the back of curb to the front of the SUP. A 2-ft buffer is proposed behind the SUPs to accommodate signing and lighting features. See **Figure 1-6** and **Figure 1-7** for details.

A traffic signal is proposed at the intersection of SR 994/Quail Roost Drive and SW 134th Avenue. The signalized intersections at SW 137th Avenue and SW 127th Avenue will be widened to accommodate auxiliary turn lanes to meet future travel demand. A new traffic signal is proposed at the intersection of SR 994 and SW 134th Avenue. Build Alternative 2 also includes the removal and replacement of the bridge structure (bridge #870633) over the Black Creek Canal (C-1W) as well as new/enhanced pedestrian and bicycle infrastructure, including paved shoulders/designated bicycle lanes, sidewalks, and/or a shared-use path connection to the existing Black Creek Trail. Refer to **Section 6.1.8 Intersection Concepts** in the PER for detailed information regarding these improvements.



Figure 1-6: Build Alternative 2 Typical Section

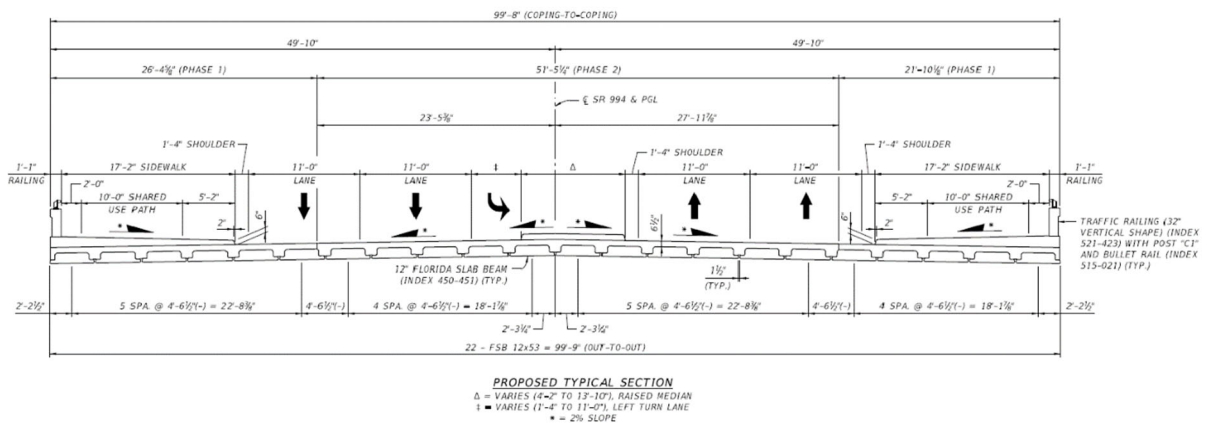


Figure 1-7: Build Alternative 2 Bridge Typical Section

The Preferred Alternative includes the removal and replacement of the bridge structure (bridge #870633) over the Black Creek Canal (C-1W) as well as new/enhanced pedestrian and bicycle infrastructure, including paved shoulders/designated bicycle lanes, sidewalks, and/or a shared-use path connection to the existing Black Creek Trail.

Build Alternative 2 was selected as the Preferred Alternative based on the evaluation results documented in the PER. Build Alternative 1 does not sufficiently address the purpose and need of the project while Build Alternative 3 meets the purpose and need, but results in greater impacts than Build Alternative 2. Build Alternative 2 addresses the purpose and need of the project while resulting in less impacts than Build Alternative 3. It is therefore recommended for the project.

Build Alternative 2 will be further evaluated and refined to minimize and mitigate impacts to the historic resources along the corridor. Build Alternative 2 also includes adverse effects (impacts) to the following three National Register-Eligible historic properties previously identified in the Cultural Resource Assessment Survey (CRAS) prepared for this PD&E Study.

- Talbot Estate, R3.05 (M6) (8DA2789) (SE corner of SW 134 Ave intersection)

- MacDonell House, R1.01 (M7) (8DA20712) (NW corner of SW 137 Ave intersection)
- 20000 SW 137th Avenue, R3.01 (8DA20713) (SW corner of SW 137 Ave intersection)

This alternative presents more physical impact than Build Alternative 1 in terms of the encroachment of the historic buildings, walls, and properties. This alternative will require property acquisition from each of the parcels, and the widened facility will encroach onto the historic properties, affecting the historic buildings, historic walls of the Talbot Estate and MacDonnell Residence, and overall setting and other aspects of their historic integrity. Right of way impacts occur at sixty-three total parcels with the Build Alternative 2 which includes eight potential relocations. Additional information about project right of way impacts and costs can be found in Section 4.5.7 of the PER.

2.0 METHODOLOGY

This study was conducted based on the methodology described in FDOT's *PD&E Manual, Part 2, Chapter 18, Highway Traffic Noise (July 1, 2020)* and in accordance with FHWA *Title 23 CFR Part 772 "Procedures for Abatement of Highway Traffic Noise and Construction Noise" (July 13, 2010)*. This noise study involved the following procedures:

- Measurement of Existing Noise Levels for the Purpose of TNM Noise Model Validation
- TNM Noise Model Validation (see Section 3.1, Appendix B, Appendix C);
- Identification of Noise Sensitive Receptor Sites (see Section 3.2, Appendix D, and **Figure 3-1 to 3-6**);
- Prediction of Existing and Future Noise Levels (see Section 3.2 and Appendix D);
- Assessment of Traffic Noise Impacts (see Section 3.2); and
- Consideration of Noise Barriers as a Noise Abatement Measure (see Section 3.2).

The latest approved version of the FHWA's Traffic Noise Model (TNM), Version 2.5 – dated February 2004, was used to predict existing and future traffic noise levels and to analyze the effectiveness of noise barriers, where warranted. This model estimates the acoustic intensity at noise sensitive receptor sites from a series of roadway segments (the source). Model-predicted noise levels are influenced by several factors, such as vehicle speed and distribution of vehicle types. Noise levels are also affected by characteristics of the source-to-receptor site path, including the effects of intervening barriers, structures (houses, trees, etc.), ground surface type (hard or soft), and topography.

Receptors sites were used as inputs to the TNM 2.5 to estimate noise levels associated with existing and future conditions within the project limits. These sites were chosen based on noise sensitivity, roadway proximity, anticipated impacts from the proposed project, and homogeneity (i.e., the site is representative of other nearby sites). For single-family residences, traffic noise levels were predicted at the edge of the dwelling unit closest to the nearest primary roadway. For other noise sensitive sites, traffic noise levels were predicted where the exterior activity occurs. For the prediction of interior noise levels, building noise reduction factors and window conditions identified in *Table 18.3 in Part 2, Chapter 18 of the PD&E Manual (July 1, 2020)* were used to estimate the noise reduction due to the physical structure. The following sections describe noise metrics, traffic data, and noise abatement criteria used in this study.

2.1 NOISE METRIC

Noise levels documented in this report represent the hourly equivalent sound level [Leq(h)]. Leq(h) is the steady-state sound level, which contains the same amount of acoustic energy as the actual time-varying sound level over a 1-hour period. Leq(h) is measured in A-weighted decibels [dB(A)], which closely approximate the human frequency response. Sound levels of typical noise sources and environments are provided in **Table 2.1** as a frame of reference.

2.2 TRAFFIC DATA

The traffic data used in the noise modeling to predict traffic noise levels for the Existing condition, the No-Build Alternative, and the recommended Build Alternative 2 are presented in **Appendix B**. These traffic data tables include peak hour intersection approach volumes, Level of Service (LOS) C volumes, and speeds for Quail Roost Drive and intersecting collector streets and summarizes the traffic data used in the prediction of traffic noise levels by vehicle type (cars, medium trucks, heavy trucks, buses, and motorcycles). According to *Part 2, Chapter 18 of the PD&E Manual*, “Maximum peak-hourly traffic representing Level of Service (LOS) “C”, or demand LOS of “A”, “B”, or “C” will be used (unless analysis shows that other conditions create a “worst-case” level)”. In cases where traffic volumes on project roadways were predicted to operate at worse than LOS C, the LOS C project data were used. In overcapacity situations, this represents the highest traffic volume traveling at the highest average speed, which typically generates the highest noise levels at a given site during a normal day.

Traffic data used for the Quail Roost Drive noise analysis was collected from “SR 994/SW 200/Quail Roost Drive from SW 137 Avenue to SW 127 Avenue – PD&E Traffic Analysis and Safety Methodology (FINAL), September 2021” and “SR 994/SW 200/Quail Roost Drive from SW 137 Avenue to SW 127 Avenue – PD&E Project Traffic Analysis Report (Draft #2), January 2023.” Loudest-hour conditions as described in this report were determined by comparing noise levels from AM peak traffic conditions to noise levels for PM peak traffic conditions for the Build Alternative 2. Due to the traffic inversion that occurs between these two conditions, loudest-hour occurs during AM peak traffic conditions for sites south of Quail Roost Drive and occurs during PM peak traffic conditions for sites north of Quail Roost Drive.

2.3 NOISE ABATEMENT CRITERIA

The FHWA has established Noise Abatement Criteria (NAC) for land use activity categories, which are presented in **Table 2.2**. Maximum noise threshold levels, or criteria levels, have been established for five of the seven activity categories. These criteria determine at what noise level, in A-weighted decibels (dB(A)), an impact occurs and when consideration of noise abatement is required. Noise abatement measures must be considered when predicted noise levels approach, meet, or exceed the NAC levels or when a substantial noise increase occurs at noise sensitive land uses. Noise sensitive land uses describe properties where frequent exterior human use occurs and where a lowered noise level would be of benefit. FDOT defines that a “substantial noise increase” occurs when the existing noise level is predicted to increase by 15 dB(A) or more as a result of the transportation improvement project. FDOT defines “approach” as within 1.0 dB(A) of the FHWA criteria.

Table 2.1 – Sound Levels of Typical Noise Sources and Environments

COMMON OUTDOOR ACTIVITIES	NOISE LEVEL dB(A)	COMMON INDOOR ACTIVITIES
Jet Fly-over at 1000 ft	---110---	Rock Band
Gas Lawn Mower at 3 ft	---100---	
Diesel Truck at 50 ft, at 50 mph	---90---	Food Blender at 1 m (3 ft)
Noise Urban Area (Daytime)	---80---	Garbage Disposal at 1 m (3 ft)
Gas Lawn Mower at 100 ft	---70---	Vacuum Cleaner at 10 ft
Commercial Area	---60---	Normal Speech at 3 ft
Heavy Traffic at 300 ft	---50---	Large Business Office
Quiet Urban Daytime	---40---	Dishwasher Next Room
Quiet Urban Nighttime	---30---	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime	---20---	Library
Quiet Rural Nighttime	---10---	Bedroom at Night, Concert Hall (Background)
	---0---	
Lowest Threshold of Human Hearing		Lowest Threshold of Human Hearing

Source: California Dept. of Transportation Technical Noise Supplement, Oct. 1998, Page 18.

2.4 NOISE ABATEMENT MEASURES

Noise abatement is warranted when project related traffic noise is predicted to approach, meet, or exceed the NAC at a noise sensitive location and in accordance with FHWA 23 CFR Part 772. The most effective and common method of noise abatement is the design and construction of noise barriers. Noise barriers reduce noise by blocking the sound's path between a noise source and the receptor under consideration.

For noise abatement measures to be recommended for further consideration in the design phase of the project, they must be determined to be both feasible and reasonable. Feasibility pertains to engineering considerations, including the ability to construct a noise barrier using standard construction methods and techniques, with consideration of topography, drainage, and safety, as well as the barrier's ability to provide a reduction of at least 5 dB(A) to the impacted receptor sites.

Additionally, for a noise barrier to be considered feasible, at least two impacted receptor sites must achieve a 5 dB(A) or greater noise reduction. Reasonableness pertains to the cost of abatement,

the amount of noise abatement benefit, and the consideration of the viewpoints of the impacted and benefited property owners and tenants. To be deemed reasonable, the estimated cost of the noise barrier, or other noise abatement measure, needs to be equal to or below FDOT's reasonable cost criteria (described below), must attain FDOT's noise reduction design goal of 7 dB(A) at one or more benefited receptor sites, and it is the desire of FDOT to obtain a response for or against the noise barrier from a numerical majority (greater than 50%) of the benefited receptors (owners and residents) that provide a response to the noise barrier survey used to solicit their viewpoints. If not supported by a majority of the survey respondents, a noise barrier or abatement measure will not be deemed reasonable.

The evaluation of noise barriers for impacted residential (Activity Category B) and non-residential areas (Activity Categories A, C, D, and E) is based on different methods and are evaluated separately. When determining the cost reasonableness of a conceptual noise barrier design for a residential area, an estimated cost of \$42,000 per benefited receptor is considered the upper limit, using the FDOT's current statewide average construction cost of \$30.00 per square foot. A benefited receptor site is defined as a noise sensitive site that will obtain a minimum of 5 dB(A) of noise reduction as a result of a specific noise abatement measure regardless of whether or not they are identified as impacted. Only benefited receptor sites are included in the calculation of reasonable cost for a particular noise abatement measure.

Noise barriers for non-residential areas are assessed using FDOT's "*A Method to Determine Reasonableness and Feasibility of Noise Abatement at Special Use Locations*" (July 22, 2009). The cost reasonableness of this method is based on the number of people (i.e., person-hours per day) benefited by a noise barrier under consideration. Using this methodology, to be considered cost reasonable, the cost of the noise barrier must have an Abatement Cost Factor less than \$995,935 per person-hour per square foot. The Abatement Cost Factor represents the upper limit of the cost per person-hour per square foot of noise barrier and does not represent any direct relation to real noise barrier construction costs such as dollar per square foot of a noise barrier. The derivation of the Abatement Cost Factor is based on the FDOT's reasonable cost criteria of equal to or less than \$42,000 per benefited receptor site.

If the noise abatement measure has been determined to be reasonable and feasible, the viewpoint of the impacted and benefited property owners must be considered. During a PD&E Study, the viewpoint of the potentially benefited receptors (property owners/tenants) regarding noise abatement is gathered during workshops and at the Public Hearing. During the design phase of the project, a more detailed process is implemented to include noise abatement workshops and/or public surveys, to determine the wishes of the benefited receptor sites. Each benefited receptor, including both the owner and resident, is given the opportunity to provide input regarding their desires to have the recommended noise abatement measure constructed. The goal of this process is to obtain a response for or against the noise barrier from a majority of benefited receptors (property owners and tenants) that respond to the survey. If not supported by a majority of the survey respondents, a noise barrier or abatement measure will not be deemed reasonable.

Table 2.2 – FHWA Noise Abatement Criteria

Activity Category	Activity Leq(h) ¹		Evaluation Location	Description of Activity Category
	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, amphitheatres, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or 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, day care 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.

(Based on Table 1 of 23 CFR Part 772)

¹ The Leq(h) Activity Criteria values are for impact determination only, and are not a design standard 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.

3.0 TRAFFIC NOISE ANALYSIS

3.1 MODEL VALIDATION

Ambient noise measurements were conducted throughout the project study area as shown in **Figure 3-1 to 3-6**. Throughout the project corridor, seven short-term (three 10-minute interval) noise measurements were performed at a height of five feet above land surface at seven locations using American National Standards Institute (ANSI) Type I sound level meters. The A-weighted frequency scale was used, and the sound level meters were calibrated at 94 dB(A) using an acoustical calibrator. **Appendix A** contains data sheets from these field measurements. Traffic volume figures are located in **Appendix B**. Calibration certificates related to noise meters and acoustic calibrators used are in **Appendix E**.

Field measurements were taken at various times of the day on June 27th. Noise levels observed during the validation measurements do not necessarily represent the noisiest condition at any measurement site, and recorded sound levels are used exclusively for model validation purposes. The locations of the measurement sites were selected explicitly to facilitate the validation of noise prediction models, and to assist in defining existing noise levels for second-row residences. Therefore, in certain locations noise measurement sites may not be coincidental with noise analysis sites. Weather conditions during the noise measurements were within acceptable ranges based on FHWA's established methodology.

Detailed traffic information was collected concurrently during each measurement, such as the volume, speed, and classification of vehicles. This information is outlined in **Appendix C**. Since both TNM and noise levels discussed in this report are based on hourly units, field-recorded traffic volumes are scaled up to hourly volumes.

Traffic noise was the dominant noise source at each of the monitoring sites. To verify the computer noise model, the TNM model-predicted noise levels for sites M1 through M7 were compared to measured noise levels. When measured versus modeled noise levels are within +/- 3.0 dB(A), the model is considered validated and therefore acceptable for predicting existing and future traffic noise levels along SR 994. All sites conducted for this study were within the acceptable range, with exception to M7, where agricultural activity adjacent to the site during the measurement period contributed to an excessively high noise level measurement.

3.2 PREDICTED NOISE LEVELS AND ABATEMENT ANALYSIS

To facilitate the noise impact analysis, the project was divided into four Noise Sensitive Areas which are divided into Common Noise Environments. NSAs are areas which share similar noise environments, and are typically divided by defining topography, land use categories, or roadways of acoustical significance. CNEs are areas within each NSA that are predicted to share similar benefit by a noise barrier or noise barrier system. Two hundred thirty-five (235) noise sensitive land uses were identified along the project corridor that will be potentially impacted by traffic noise associated with the project. One hundred fourteen (114) noise sensitive land uses are located north of the Quail Roost Drive project, and one hundred twenty-one (121) are located south of the project. Noise sensitive land uses along the project corridor include two hundred twenty-nine (229) single-family residences, four (4) places of worship, a shared use trail along Black Creek Canal, and a public park (Charles Burr Park). Each CNE was evaluated for impacts and noise abatement individually. Further detail about each CNE and their land uses are in the following Section 3.2.1 through Section 3.2.7. The locations of these NSAs and CNEs and their boundaries are described below and depicted in **Figure 2-2 – Noise Study Area and Land Use Map**. Existing land uses within the project area were categorized by FHWA's NAC Activity Categories and are also depicted in **Figure 2.2**.

Each noise sensitive land use is represented with a noise sensitive receptor and labeled with an alphanumeric designation or “Site ID”. For example, site R1.01 is the first site in NSA 1, from West to East. The Black Creek Canal and Charles Burr Park outdoor use areas are represented with multiple receptors for analysis purposes. **Appendix D** lists the noise sensitive receptors by NSA, and approximate location in relation to the project. Station numbers are also provided in **Appendix D** to facilitate locating receptor sites on **Figure 3-1 to 3-6**. **Appendix D** also includes the predicted existing (2022) and future design year (2045) No-Build and Build Alternative 2 noise levels. Predicted design year (2045) noise levels for the Build Alternative 2 were compared to the NAC and to the predicted existing noise levels to determine potential impacts associated with the project. As summarized in **Appendix D** and shown in **Figure 3-1 to 3-6**, traffic noise impacts occur in all NSAs, and therefore all NSAs warrant consideration for noise abatement features. With the recommended Build Alternative 2, design year (2045) traffic noise levels will approach, meet, or exceed the NAC at forty-five residences (NAC B) along the project corridor. Consideration of noise barriers at each of these impacted residential (NAC B) land uses, and other noise sensitive land uses (NAC C) are summarized in the following sections.

The FDOT noise policy requires that the reasonableness and feasibility of noise abatement be considered when the FHWA NAC is approached, met, or exceeded at a noise sensitive site. Abatement measures such as traffic management devices or roadway realignment were determined not to be feasible. In addition, the topography and development in the project area does not lend itself to the usage of noise berms as an effective noise abatement technique. The most common and effective noise abatement measure for projects such as this is the construction of noise barriers and therefore noise abatement evaluations in this study are specific to the development of noise barriers.

In addition to their use in evaluating noise impacts, noise sensitive receptors, or analysis sites, were used for the analysis of noise abatement features. The analysis of noise barriers and recommendations are summarized by each of NSA and furthermore by each CNE in the following Section 3.2.1 through Section 3.2.4.

3.2.1 NOISE SENSITIVE AREA 1 (NSA 1)

NSA 1 is located north of SR 994/Quail Roost Drive, adjacent to and east of SR 825/SW 137th Avenue, and west of the Black Creek Canal. Noise sensitive land uses within this NSA consist of a place of worship (Calvary Pentecostal Church of Miami, NAC D) and a historic residential property (R1.01, MacDonell House) near the intersection of Quail Roost Drive and SW 137th Avenue, fifty-three (53) single-family residences (NAC B) between SW 135th Avenue and the Black Creek Canal at the eastern NSA boundary. NSA 1 also includes nine (9) single-family residences east of SW 137th Avenue and south of SW 196th Street. This NSA contains a small tract of non-noise-sensitive agricultural use land (NAC F) north of SR 994/Quail Roost Drive and east of SW 137th Avenue. See **Figure 2-2** for NSA and land use delineations. This NSA contains residences from two communities, Kristina Estates and Black Creek Estates. Of the sixty-four (64) noise sensitive land uses within NSA 1, sixteen (16) are predicted to be impacted by traffic related noise, all of which are project-adjacent (first row) land uses. The analysis determined that the loudest hour for NSA 1 occurred during PM peak traffic conditions, however CNE 1C loudest hour occurs during AM peak traffic conditions.

Analysis for noise abatement was not conducted for the impacted R1.01 (Historic MacDonell House). Since FDOT policy requires a noise barrier to benefit two (2) or more receptors to be considered feasible, noise abatement for receptor site R1.01 could not meet this requirement and therefore was not analyzed at this location. Additionally, the construction of a noise barrier would not be feasible without restricting access to the driveway or acquisition of additional right-of-way,

which would further impact the effort to preserve its historical qualities. Receptor site R1.01 has a predicted noise level of 68 dB(A) with the Build Alternative 2, a 2.7 dB(A) increase over existing.

3.2.1.1 COMMON NOISE ENVIRONMENT 1A (CNE 1A)

CNE 1A consists of sixteen (16) single-family residences between SW 135th Avenue and SW 134th Avenue/Talbot Rd. Predicted loudest-hour traffic noise levels in CNE 1A for the Build Alternative 2 range from 54 to 70 dB(A) with an average noise level of 61 dB(A). Noise level increases over existing in CNE 1A range from 4.0 to 8.2 dB(A) with an average noise level of increase of 5.3 dB(A) with the Build Alternative 2. It should be noted that the necessary removal of existing privacy walls within CNE 1A contributes to the substantial increase in noise levels over existing. The following four (4) receptors within CNE 1A are impacted and are predicted to have an average traffic noise level of 69 dB(A), and an average increase of 7.7 dB(A) with the Build Alternative 2. Therefore, consideration of noise abatement features is warranted.

- R1.03 (19995 SW 135th Avenue)
- R1.07 (19990 SW 134th Court)
- R1.11 (19995 SW 134th Court)
- R1.14 (19980 SW 134th Avenue)

The analyzed CNE 1A noise barrier system consists of two (2) barrier segments (CNE 1A-B, CNE 1A-C) totaling five hundred forty (540) feet in length and is located at the project right-of-way and north of Quail Roost Drive from SW 135th Avenue continuing east to SW 134th Avenue, with a separation provided for SW 134th Court and proposed shared use paths. The system was analyzed at 8-, 10-, and 12-foot heights, all of which meet FDOT's reasonableness and feasibility criteria. The 10-foot barrier height benefits all four impacted receptor sites (R1.03, R1.07, R1.11, and R1.14) with an average attenuation of 8.6 dB(A) and cost per benefitted receptor (\$40,500/BR < \$42,000/BR), and therefore is recommended for further consideration in the design phase. The conceptual noise barrier design and cost analysis for CNE 1A can be found in **Table 3.2.1** and **Figure 3-3**.

3.2.1.2 COMMON NOISE ENVIRONMENT 1B (CNE 1B)

CNE 1B consists of thirty-seven (37) single-family residences north of SW 200th Street between SW 134th Avenue/Talbot Road and the Black Creek Canal. Predicted loudest-hour traffic noise levels in CNE 1B for the Build Alternative 2 range from 53 to 70 dB(A) with an average noise level of 60 dB(A). Noise level increases over existing in CNE 1B range from 2.0 to 4.4 dB(A) with an average noise level of increase of 3.4 dB(A) with the Build Alternative 2. The following seven (7) receptors within CNE 1B are impacted and are predicted to have an average traffic noise level of 69.1 dB(A), and an average increase of 2.8 dB(A) with the Build Alternative 2. Therefore, consideration of noise abatement features is warranted.

- R1.22 (13355 SW 200th Street)
- R1.27 (19953 SW 133rd Court)
- R1.31 (13295 SW 200th Street)
- R1.34 (19991 SW 132nd Place)
- R1.39 (19990 SW 132nd Court)

- R1.44 (19995 SW 132nd Court)
- R1.48 (19970 SW 131st Court)

The analyzed CNE 1B noise barrier system consists of four (4) barrier segments (CNE 1B-E, CNE 1B-F, CNE 1B-G, CNE 1B-H) totaling one thousand two hundred twenty (1220) feet in length and is located at the project right-of-way, north of Quail Roost Drive from SW 134th Avenue/Talbot Rd continuing east to the Black Creek Canal, with separations provided for a driveway at R1.31, SW 132nd Place, and SW 132nd Court, and proposed shared use paths. The system was analyzed at 10- and 14-foot heights. The 14-foot barrier meets FDOT’s cost reasonableness criteria (\$38,850/BR < \$42,000/BR) however it was determined that due to the close proximity of property features such as homes, pools, and driveways (at sites R1.22, R1.27, R1.34, R1.39, R1.44, R1.48, and R1.51), additional right-of-way acquisitions up to and including full property acquisitions would be required for the construction and maintenance of any noise abatement features along CNE 1B. Therefore, noise walls are not feasible and not reasonable for CNE 1B and not recommended for further consideration in the design phase. The conceptual noise barrier design and cost analysis for CNE 1B can be found in **Table 3.2.1** and **Figure 3-4**.

3.2.1.3 COMMON NOISE ENVIRONMENT 1C (CNE 1C)

CNE 1C consists of nine (9) single-family residences located near the northern project terminus and immediately east of SW 137th Avenue. Four (4) project-adjacent sites in this area (R1.56-R1.59) are predicted to be impacted with the Build Alternative 2 AM peak traffic conditions, experiencing an average noise level of 68.4 dB(A), a 5.5 dB(A) increase over existing. Noise level increases over existing in CNE 1C range from 4.7 to 6.8 dB(A). Analysis for traffic abatement is warranted, however due to the common occurrence of driveways requiring access to SW 137th Avenue, the construction of a noise barrier not feasible for CNE 1C and not recommended for further consideration in the design phase.

3.2.2 NOISE SENSITIVE AREA 2 (NSA 2)

NSA 2 is located north of SR 994/Quail Roost Drive, east of the Black Creek Canal and west of 127th Avenue/Burr Road. The noise sensitive land uses within this NSA consist of thirty-one (31) single-family residences (NAC B) and two (2) places of worship (R3.32 - Alianza Apostolica Iglesia Del Senor Jesucristo, and R2.33 - Peace United Methodist Church, NAC D). See **Figure 2-2** for NSA and land use delineations. This NSA contains residences from the Renaissance Ranches community. Of the thirty-three (33) noise sensitive land uses within NSA 2, four (4) were impacted by traffic related noise, all of which are project-adjacent (first row) land uses. The analysis determined that the loudest hour for NSA 2 occurred during PM peak traffic conditions.

3.2.2.1 COMMON NOISE ENVIRONMENT 2A (CNE 2A)

CNE 2A consists of thirty-one (31) single-family residences north of SW 200th Street between the Black Creek Canal and SW 127th Street. Predicted loudest-hour traffic noise levels in CNE 2A for the Build Alternative 2 range from 53 to 69 dB(A) with an average noise level of 59 dB(A). Noise level increases over existing in CNE 2A range from 1.8 to 4.3 dB(A) with an average noise level of increase of 3.6 dB(A) with the Build Alternative 2. The following four (4) receptor sites within CNE 2A are impacted and are predicted to have an average traffic noise level of 68.1 dB(A), and an average increase of 3 dB(A) with the Build Alternative 2. Therefore, consideration of noise abatement features is warranted.

- R2.01 (19996 SW 130th Avenue)

Table 3.2.1 – Conceptual Noise Barrier Design and Cost Analyses for NSA 1

Noise Sensitive Area Name / Number	Conceptual Noise Barrier Design Number	Noise Barrier Type	Noise Barrier Location	Height (feet)	Length (feet)	Begin Station Number	End Station Number	Number of Impacted Receptor Sites	Number of Impacted/Benefitted Receptor Sites	Number of Benefitted Receptor Sites/Not Impacted	Total Number of Benefitted Receptor Sites	Average Noise Reduction for all Benefitted Receptor Sites dB(A)	Maximum Noise Reduction for all Benefitted Receptor Sites dB(A)	Cost (\$30 per square foot)	Average Cost/ Site Benefitted	Does Optimal Barrier Design Meet FDOT's Reasonable and Feasible Noise Abatement Criteria of \$42,000 per Benefitted Receptor Site and 7.0 dB(A) Noise Reduction Design Goal?	Comments
NSA 1	CNE 1A-B	Ground Mounted	North of SW 200th between SW 135th Ave and SW 134th Ct, behind the proposed shared use path (SUP) but within the project right-of-way.	8	280	321+60	324+40	4	4	0	4	6.7	8.4	\$129,600	\$32,400	Yes	---
	CNE 1A-C	Ground Mounted	North of SW 200th between SW 134th Ct and SW 134th Ave/Talbot Rd, behind the proposed SUP but within the project right-of-way.		260	325+00	327+60										
	CNE 1A-B	Ground Mounted	North of SW 200th between SW 135th Ave and SW 134th Ct, behind the proposed SUP but within the project right-of-way.	10	280	321+60	324+40	4	4	0	4	8.6	10.1	\$162,000	\$40,500	Yes	---
	CNE 1A-C	Ground Mounted	North of SW 200th between SW 134th Ct and SW 134th Ave/Talbot Rd, behind the proposed SUP but within the project right-of-way.		260	325+00	327+60										
	CNE 1A-B	Ground Mounted	North of SW 200th between SW 135th Ave and SW 134th Ct, behind the proposed SUP but within the project right-of-way.	12	280	321+60	324+40	4	4	0	4	9.4	11.3	\$194,400	\$48,600	No	---
	CNE 1A-C	Ground Mounted	North of SW 200th between SW 134th Ct and SW 134th Ave/Talbot Rd, behind the proposed SUP but within the project right-of-way.		260	325+00	327+60										
	CNE 1B-E	Ground Mounted	North of SW 200th between the driveway of 13355 SW 200th St and SW 133rd Ct, behind the proposed SUP but within the project right-of-way.	10	240	330+45	332+75	7	5	3	8	9.9	13.8	\$420,000	\$52,500	No (Not feasible and not reasonable - insufficient right-of-way to construct noise barrier and noise barrier exceeds FDOT cost criteria of \$42,000 per benefited receptor)	---
	CNE 1B-F	Ground Mounted	North of SW 200th between SW 133rd Ct and SW 132nd Pl, behind the proposed SUP but within the project right-of-way.		280	333+35	336+20										
	CNE 1B-G	Ground Mounted	North of SW 200th between SW 132nd Pl and SW 132nd Ct, behind the proposed SUP but within the project right-of-way.		240	336+80	339+30										
	CNE 1B-H	Ground Mounted	North of SW 200th between SW 132nd Ct and the Black Creek Canal, behind the proposed SUP but within the project right-of-way.		460	339+95	344+35										
	CNE 1B-E	Ground Mounted	North of SW 200th between the driveway of 13355 SW 200th St and SW 133rd Ct, behind the proposed SUP but within the project right-of-way.	14	240	330+45	332+75	7	5	16	21	8.0	16.0	\$588,000	\$28,000	No (Reasonable but not feasible - insufficient right-of-way to construct noise barrier)	---
	CNE 1B-F	Ground Mounted	North of SW 200th between SW 133rd Ct and SW 132nd Pl, behind the proposed SUP but within the project right-of-way.		280	333+35	336+20										
	CNE 1B-G	Ground Mounted	North of SW 200th between SW 132nd Pl and SW 132nd Ct, behind the proposed SUP but within the project right-of-way.		240	336+80	339+30										
	CNE 1B-H	Ground Mounted	North of SW 200th between SW 132nd Ct and the Black Creek Canal, behind the proposed SUP but within the project right-of-way.		450	339+95	344+35										

Represents the optimal conceptual noise barrier design and is recommended for further consideration and public input in the project's design phase.

- R2.16 (19993 SW 129th Court)
- R2.21 (19970 SW 129th Avenue)
- R2.26 (19961 SW 129th Avenue)

The analyzed CNE 2A noise barrier system consists of four (4) barrier segments (CNE 2A-A, CNE 2A-B, CNE 2A-C, CNE 2A-D) totaling one thousand one hundred eighty (1180) feet in length and is located at the project right-of-way, north of Quail Roost Drive starting at the Black Creek Canal and continuing west until the access road for R2.32, with separations provided for SW 130th Avenue, SW 129th Court, SW 129th Avenue, and proposed shared use paths. The system was analyzed at 12-, 14-, and 16-foot heights. None of the noise abatement features meet FDOT’s cost reasonableness criteria, and it was determined that an additional right-of-way acquisition of four (4) feet would be required for noise wall construction and maintenance, however due to the close proximity of property features such as homes, pools, and driveways (at sites R2.11, R2.16, and R2.26) to the proposed improvements, additional right-of-way acquisition would result in potential property acquisitions or relocations. Therefore, noise abatement features are determined to be not feasible and not reasonable for CNE 2A and are not recommended for further consideration in the design phase. The conceptual noise barrier design and cost analysis for CNE 2A can be found in **Table 3.2.2** and **Figure 3-5**.

3.2.3 NOISE SENSITIVE AREA 3 (NSA 3)

NSA 3 is located south of SR 994/Quail Roost Drive, in the area near and east of SW 137th Avenue and west of the Black Creek Canal. The noise sensitive land uses in this NSA consist of forty-six (46) single-family residences (NAC B), two of historic significance. Non-noise-sensitive land uses within this NSA consist of agricultural land uses (NAC F) between SW 137th Avenue and SW 134th Avenue. See **Figure 2-2** for NSA and land use delineations. This NSA contains residences from the Valencia Grove Estates community. Of the forty-six (46) noise sensitive land uses within NSA 3, thirteen (13) were impacted by traffic related noise with the Build Alternative 2, all of which are project-adjacent (first row) land uses. The analysis determined that the loudest hour for NSA 3 occurred during AM peak traffic conditions. Since FDOT policy requires a noise barrier to benefit two (2) or more receptors to be considered feasible, noise abatement for receptor site R3.03 could not meet this requirement and therefore abatement was not analyzed at this location. Receptor site R3.03 has a predicted noise level of 68 dB(A) with the Build Alternative 2, a 3.3 dB(A) increase over existing.

3.2.3.1 COMMON NOISE ENVIRONMENT 3A (CNE 3A)

CNE 3A consists of two (2) single-family residences immediately southwest of the intersection of SW 200th Street and SW 137th Avenue. Due to the proximity of homes to the intersection, all receptor sites within CNE 3A are impacted and are predicted to have an average traffic noise level of 69.6 dB(A), and an average increase of 5.9 dB(A) with the Build Alternative 2 loudest-hour condition. Therefore, consideration of noise abatement features is warranted. The following receptor sites of CNE 3A are impacted;

- R3.01 (20000 SW 137th Avenue, historic property)
- R3.02 (20000 SW 137th Avenue)



Table 3.2.2 – Conceptual Noise Barrier Design and Cost Analyses for NSA 2

Noise Sensitive Area Name / Number	Conceptual Noise Barrier Design Number	Noise Barrier Type	Noise Barrier Location	Height (feet)	Length (feet)	Begin Station Number	End Station Number	Number of Impacted Receptor Sites	Number of Impacted/Benefitted Receptor Sites	Number of Benefitted Receptor Sites/ Not Impacted	Total Number of Benefitted Receptor Sites	Average Noise Reduction for all Benefitted Receptor Sites dB(A)	Maximum Noise Reduction for all Benefitted Receptor Sites dB(A)	Cost (\$30 per square foot)	Average Cost/Site Benefitted	Does Optimal Barrier Design Meet FDOT's Reasonable and Feasible Noise Abatement Criteria of \$42,000 per Benefitted Receptor Site and 7.0 dB(A) Noise Reduction Design Goal?	Comments
NSA 2	CNE 2A-A	Ground Mounted	North of SW 200th between Black Creek Canal and SW 130th Ave, behind the proposed shared use path (SUP) but within the project right-of-way.	12	180	346+00	347+80	4	4	5	9	7.3	10.6	\$424,800	\$47,200	No (Not feasible and not reasonable - exceeds FDOT cost criteria of \$42,000 per benefitted receptor)	---
	CNE 2A-B	Ground Mounted	North of SW 200th between SW 130th Ave and SW 129th Ct, behind the proposed SUP but within the project right-of-way.		280	348+40	351+20										
	CNE 2A-C	Ground Mounted	North of SW 200th between SW 129th Ct and SW 129th Ave, behind the proposed SUP but within the project right-of-way.		280	351+80	354+65										
	CNE 2A-D	Ground Mounted	North of SW 200th between SW 129th Ave and entrance to church (R2.32), behind the proposed SUP but within the project right-of-way.		440	355+25	359+70										
	CNE 2A-A	Ground Mounted	North of SW 200th between Black Creek Canal and SW 130th Ave, behind the proposed SUP but within the project right-of-way.	14	180	346+00	347+80	4	4	7	11	7.4	11.2	\$495,600	\$45,055	No (Not feasible and not reasonable - exceeds FDOT cost criteria of \$42,000 per benefitted receptor)	---
	CNE 2A-B	Ground Mounted	North of SW 200th between SW 130th Ave and SW 129th Ct, behind the proposed SUP but within the project right-of-way.		280	348+40	351+20										
	CNE 2A-C	Ground Mounted	North of SW 200th between SW 129th Ct and SW 129th Ave, behind the proposed SUP but within the project right-of-way.		280	351+80	354+65										
	CNE 2A-D	Ground Mounted	North of SW 200th between SW 129th Ave and entrance to church (R2.32), behind the proposed SUP but within the project right-of-way.		440	355+25	359+70										
	CNE 2A-A	Ground Mounted	North of SW 200th between Black Creek Canal and SW 130th Ave, behind the proposed SUP but within the project right-of-way.	16	180	346+00	347+80	4	4	7	11	7.9	11.6	\$566,400	\$51,491	No (Not feasible and not reasonable - exceeds FDOT cost criteria of \$42,000 per benefitted receptor)	---
	CNE 2A-B	Ground Mounted	North of SW 200th between SW 130th Ave and SW 129th Ct, behind the proposed SUP but within the project right-of-way.		280	348+40	351+20										
	CNE 2A-C	Ground Mounted	North of SW 200th between SW 129th Ct and SW 129th Ave, behind the proposed SUP but within the project right-of-way.		280	351+80	354+65										
	CNE 2A-D	Ground Mounted	North of SW 200th between SW 129th Ave and entrance to church (R2.32), behind the proposed SUP but within the project right-of-way.		440	355+25	359+70										

Represents the optimal conceptual noise barrier design and is recommended for further consideration and public input in the project's design phase.

the analyzed CNE 3A noise barrier system consists of a barrier segments (CNE 3A-A) totaling four hundred (400) feet in length and is located at the project right-of-way, south of Quail Roost Drive. Barrier CNE 3A-A starts southwest of the intersection and extends west by 400 feet. The barrier was analyzed at 8- and 12-foot heights. Neither of the analyzed noise abatement features meet FDOT’s cost reasonableness criteria, and it was determined that an additional right-of-way acquisition of four (4) feet would be required for noise wall construction and maintenance, however due to the close proximity of the home at sites R3.01 to the proposed improvements, additional right-of-way acquisition would result in a property acquisition or potential relocation. Additionally, noise barriers were not analyzed for CNE 3A along SW 137th Avenue due to the locations of the existing driveways and potential impact to aesthetic effects of the historic property. If necessary, these receptors can be further evaluated during the design phase in coordination with Miami Date County’s planning improvements (referenced in the PER as LRTP PW168 – Section 4.4 Future Conditions and the Traffic Study Report) at this intersection. Therefore, noise abatement features are determined to be not feasible and not reasonable for CNE 3A and not recommended for further consideration in the design phase. Noise levels for the historic property at R3.01 are predicted to be 67 dB(A) with the Build Alternative 2, a 2.6 dB(A) increase over existing. The conceptual noise barrier design and cost analysis for CNE 3A can be found in **Table 3.2.3** and **Figure 3-3**.

3.2.3.2 COMMON NOISE ENVIRONMENT 3B (CNE 3B)

CNE 3B consists of forty-two (42) single-family residences between SW 134th Avenue and the Black Creek Canal. Predicted loudest-hour traffic noise levels in CNE 3B for the Build Alternative 2 range from 54 to 72 dB(A) with an average noise level of 62 dB(A). Noise level increases over existing in CNE 3B range from 2.1 to 5.2 dB(A) with an average noise level of increase of 3.4 dB(A) with the Build Alternative 2. The following ten (10) receptor sites within CNE 3B are impacted and are predicted to have an average traffic noise level of 70.3 dB(A), and an average increase of 2.9 dB(A) with the Build Alternative 2. Therefore, consideration of noise abatement features is warranted.

- R3.05 (20003 SW 134th Avenue, historic property of Talbot Estate)
- R3.08 (20000 SW 133rd Avenue)
- R3.12 (13281 SW 200th Terrace)
- R3.13 (13265 SW 200th Terrace)
- R3.14 (13249 SW 200th Terrace)
- R3.15 (13233 SW 200th Terrace)
- R3.16 (13217 SW 200th Terrace)
- R3.17 (13201 SW 200th Terrace)
- R3.29 (13191 SW 200th Terrace)
- R3.30 (13181 SW 200th Terrace)

The analyzed CNE 3B noise barrier system consists of three (3) barrier segments (CNE 3B-C, CNE 3B-D, and CNE 3B-E) totaling one thousand four hundred eighty (1480) feet in length and is located at the project right-of-way, south of Quail Roost Drive, starting at the SW 134th Avenue and continuing east until the Black Creek Canal, with separations provided for SW 133rd Avenue, SW 132nd Avenue, and proposed shared use paths. The system was analyzed at 12-, 14-, and 16-foot heights. Only the 14-foot barrier system meets FDOT’s cost reasonableness criteria (\$38,850/BR



Table 3.2.3 – Conceptual Noise Barrier Design and Cost Analyses for NSA 3

Noise Sensitive Area Name / Number	Conceptual Noise Barrier Design Number	Noise Barrier Type	Noise Barrier Location	Height (feet)	Length (feet)	Begin Station Number	End Station Number	Number of Impacted Receptor Sites	Number of Impacted/Benefited Receptor Sites	Number of Benefited Receptor Sites/ Not Impacted	Total Number of Benefited Receptor Sites	Average Noise Reduction for all Benefited Receptor Sites dB(A)	Maximum Noise Reduction for all Benefited Receptor Sites dB(A)	Cost (\$30 per square foot)	Average Cost/Site Benefited	Does Optimal Barrier Design Meet FDOT's Reasonable and Feasible Noise Abatement Criteria of \$42,000 per Benefited Receptor Site and 7.0 dB(A) Noise Reduction Design Goal?	Comments
NSA 3	CNE 3A-A	Ground Mounted	South of and parallel to SW 200th St, west of SW 137th Ave, behind the proposed shared use path (SUP) but within the project right-of-way.	8	400	310+00	314+00	2	1	0	1	3.2	6.5	\$96,000	\$96,000	No (Not feasible and not reasonable - insufficient right-of-way to construct noise barrier, does not meet feasibility requirement of >2 benefited receptors, and noise barrier exceeds FDOT cost criteria of \$42,000 per benefited receptor)	---
	CNE 3A-A	Ground Mounted	South of and parallel to SW 200th St, west of SW 137th Ave, behind the proposed shared use path (SUP) but within the project right-of-way.	10	400	310+00	314+00	2	1	0	1	4.2	8.4	\$120,000	\$120,000	No (Not feasible and not reasonable - insufficient right-of-way to construct noise barrier, does not meet feasibility requirement of >2 benefited receptors, and noise barrier exceeds FDOT cost criteria of \$42,000 per benefited receptor)	---
	CNE 3B-C	Ground Mounted	South of SW 200th between SW 134th Ave and SW 133rd Ave, behind the proposed SUP but within the project right-of-way.	12	620	328+35	334+45	11	11	1	12	9.6	13.7	\$532,800	\$44,400	No (Not feasible and not reasonable - insufficient right-of-way to construct noise barrier and noise barrier exceeds FDOT cost criteria of \$42,000 per benefited receptor)	---
	CNE 3B-D	Ground Mounted	South of SW 200th between SW 133rd Ave and SW 132nd Ave, behind the proposed SUP but within the project right-of-way.		620	335+05	341+20										
	CNE 3B-E	Ground Mounted	South of SW 200th between SW 133rd Ave and Black Creek Canal, behind the proposed SUP but within the project right-of-way.		240	341+95	344+35										
	CNE 3B-C	Ground Mounted	South of SW 200th between SW 134th Ave and SW 133rd Ave, behind the proposed SUP but within the project right-of-way.	14	620	328+35	334+45	11	11	5	16	8.9	14.4	\$621,600	\$38,850	No (Not feasible - insufficient right-of-way to construct noise barrier)	---
	CNE 3B-D	Ground Mounted	South of SW 200th between SW 133rd Ave and SW 132nd Ave, behind the proposed SUP but within the project right-of-way.		620	335+05	341+20										
	CNE 3B-E	Ground Mounted	South of SW 200th between SW 133rd Ave and Black Creek Canal, behind the proposed SUP but within the project right-of-way.		240	341+95	344+35										
	CNE 3B-C	Ground Mounted	South of SW 200th between SW 134th Ave and SW 133rd Ave, behind the proposed SUP but within the project right-of-way.	16	620	328+35	334+45	11	11	5	16	9.4	14.9	\$710,400	\$44,400	No (Not feasible and not reasonable - insufficient right-of-way to construct noise barrier and noise barrier exceeds FDOT cost criteria of \$42,000 per benefited receptor)	---
	CNE 3B-D	Ground Mounted	South of SW 200th between SW 133rd Ave and SW 132nd Ave, behind the proposed SUP but within the project right-of-way.		620	335+05	341+20										
CNE 3B-E	Ground Mounted	South of SW 200th between SW 133rd Ave and Black Creek Canal, behind the proposed SUP but within the project right-of-way.	240		341+95	344+35											



Represents the optimal conceptual noise barrier design and is recommended for further consideration and public input in the project's design phase.

< \$42,000/BR), however it was determined that due to the close proximity of property features such as homes, pools, and driveways (at sites R3.05, R3.12, R3.13, R3.16, R3.30, and R3.31), additional right-of-way acquisitions up to and including full property acquisitions would be required for the construction and maintenance of any noise abatement features along CNE 3B. Therefore, noise walls are determined to be not feasible for CNE 3B and not recommended for further consideration in the design phase. Noise levels at the historic property (R3.05, Talbot Estate) are predicted to be 69 dB(A), a 5.2 dB(A) increase over existing. The conceptual noise barrier design and cost analysis for CNE 3B can be found in **Table 3.2.3** and **Figure 3-4**.

3.2.4 NOISE STUDY AREA 4 (NSA 4)

NSA 4 is located south of SR 994/Quail Roost Drive, east of the Black Creek Canal and west of 127th Avenue/Burr Road. Noise sensitive land uses within this NSA consist of fifty-nine (59) single-family residences (NAC B), a place of worship (R4.59 – Church of Christ on Quail, NAC C/D), Charles Burr Park (R4.60, NAC C), and sites along the Black Creek Trail (BCT.01-BCT.08, NAC C). Non-noise-sensitive land uses in this NSA consist of commercial retail facilities (NAC F) in the southwest quadrant of SR 994/Quail Roost Drive and SW 127th Street, and a small tract of undeveloped land immediately west of the retail facilities (NAC G). See **Figure 2-2** for NSA and land use delineations. Of the sixty-two (62) noise sensitive land uses within NSA 4, eighteen (18) were impacted by traffic related noise, all of which are project-adjacent (first row) land uses. The analysis determined that the loudest hour for NSA 4 occurred during AM peak traffic conditions.

3.2.4.1 COMMON NOISE AREA 4A (CNE 4A)

CNE 4A consists of fifty-eight (58) single-family residences between Black Creek Canal and SW 127th Street. Predicted loudest-hour traffic noise levels in CNE 4A for the Build Alternative 2 range from 51 to 71 dB(A) with an average noise level of 60 dB(A). Noise level increases over existing in CNE 4A range from 1.1 to 3.5 dB(A) with an average noise level of increase of 2.8 dB(A) with the Build Alternative 2. The following sixteen (16) receptor sites within CNE 4A are impacted and are predicted to have an average traffic noise level of 69.5 dB(A), and an average increase of 2.5 dB(A) with the Build Alternative 2. Therefore, consideration of noise abatement features is warranted.

- R4.01 (20000 SW 130th Avenue)
- R4.10 (12971 SW 200th Terrace)
- R1.11 (12961 SW 200th Terrace)
- R4.12 (12951 SW 200th Terrace)
- R4.13 (12941 SW 200th Terrace)
- R4.14 (12931 SW 200th Terrace)
- R4.15 (12921 SW 200th Terrace)
- R4.16 (12911 SW 200th Terrace)
- R4.17 (12901 SW 200th Terrace)
- R4.18 (12891 SW 200th Terrace)
- R4.19 (12881 SW 200th Terrace)
- R4.20 (12871 SW 200th Terrace)
- R4.21 (12861 SW 200th Terrace)
- R4.22 (12851 SW 200th Terrace)
- R4.23 (12841 SW 200th Terrace)

- R4.24 (12831 SW 200th Terrace)

The analyzed CNE 4A noise barrier system consists of two (2) barrier segments (CNE 4A-B, CNE 4A-C) totaling one thousand two hundred sixty (1260) feet in length and is located at the project right-of-way, north of Quail Roost Drive from SW 130th Avenue continuing east to the driveway for R4.59 (Church of Christ on Quail), with a separation provided for SW 129th Avenue and proposed shared use paths. The system was analyzed at 10-, 12-, 14- and 16-foot heights, all of which meet FDOT's reasonableness and feasibility criteria. The 12-foot barrier height benefits fifteen (15) of the impacted receptor sites within CNE 4A. It was determined that due to the close proximity of property features at site R4.01, an additional right-of-way acquisition up to and including a full property acquisition would be required for the construction and maintenance of noise abatement features along the R4.01 property. The predicted loudest hour noise level at the R4.01 property is 68.8 dB(A), a 1.1 dB(A) increase over existing. With an average noise level attenuation of 9.1 dB(A) for benefited properties, while meeting FDOT's criteria for cost per benefitted receptor (\$30,240/BR < \$42,000/BR), the CNE 4A abatement option is therefore recommended for further consideration in the design phase. The conceptual noise barrier design and cost analysis for CNE 4A can be found in **Table 3.2.4a** and **Figure 3-5**.

3.2.4.2 COMMON NOISE AREA 4B (CNE 4B)

CNE 4B represents the Black Creek Trail, a shared use path located on the eastern shore of Black Creek Canal, which runs north to south through the project corridor east of NSA 1 and 2, and west of NSA 3 and 4. The existing Black Creek Trail crosses Quail Roost Drive at grade at Sta. 345+80.00, however project improvements will provide an additional passage beneath the Quail Roost Drive bridge over Black Creek Canal. Receptors were placed along the Black Creek Trail, and the analysis predicted that traffic noise impacts occur at locations on the path within twenty (20) feet of the beginning of the trail crossing, or proposed bridge parapet barriers of the Black Creek Canal bridge shown in **Figure 1-7: Build Alternative 2 Bridge Typical Section**. Predicted noise levels on the Black Creek trail range from 61 dB(A) at a distance of one hundred forty-five (145) feet from trail crossing to 67 dB(A) within twenty (20) feet of the trail crossing. Therefore, analysis for noise abatement features is warranted for CNE 4B.

The analyzed noise barrier system for CNE 4B consists of six barrier (6) segments, with three barrier segments spanning both the north (CNE 4B (A-C)) and south sides (CNE 4B (D-F)) of the Black Creek Canal bridge and includes breaks for access to the Black Creek Trail on the east, and the canal access road on the west. The barrier system totals five hundred sixty (560) feet in length and eight (8) feet in height, the maximum permissible structure mounted barrier height per FDOT policy, however the barrier system does not meet FDOT's noise reduction design goal of 7 dB(A) for at least one benefited receptor. Additionally, FDOT's special land use methodology was used to determine if the 8-foot conceptual noise barrier design would be reasonable, considering the expected usage. The required daily usage for the CNE 4B barrier system is 378 total person hours per day. Usage data for the Black Creek Trail is not available, but it is reasonable to assume based on the existing facilities and the transient nature of trail crossing usage that this minimum usage would not be met. Based on this analysis, the CNE 4B barrier system is not feasible and not reasonable and should not be considered in the design phase. The conceptual noise barrier design

and cost analysis, and the special land use methodology for CNE 4C can be found in **Table 3.2.4b**, **Table 3.2.4.2**, and **Figure 3-4**.

Table 3.2.4.2 – Conceptual Noise Barrier Design – Usage Analysis for Black Creek Trail

Item	Criteria	Actual Usage	Minimum Usage Required to Conceptual Noise Barrier		Units
			CNE 4B (A-C)	CNE 4B (D-F)	
1	Enter Length of Proposed Noise Barrier	---	280	280	feet
2	Enter Height of Proposed Noise Barrier	---	16	16	feet
3	Total Square Feet of Proposed Noise Barrier (Multiply item 1 by Item 2)	---	4,480	4,480	feet ²
4	Enter the average amount of time that a person stays at the site per visit	Unavailable	---	---	hours
5	Enter the average number of people that use this site per day that will receive at least 5 dB(A) benefit from abatement at the site	Unavailable	---	---	persons
6	Total Person Hours per Day Benefited by Noise Barrier (Multiply Item 4 by Item 5 - N/A) - Minimum Usage Required to Meet FDOT's Cost Reasonableness Criteria (Divide Item 3 by 7)	---	189	189	person-hours
7	Average Square Foot of Noise Barrier per Person Hour (Divide Item 3 by Item 6)	---	23.71	23.71	feet ² /person-hours
8	Cost per Person Hour per Square Foot of Noise Barrier (Multiply Item 7 by \$42,000)	N/A	\$995,935	\$995,935	\$/person-hours/ft ²
9	Does item 8 exceed the "abatement cost factor" of: \$995,935/person-hour/ft ² ?	N/A	N/A	N/A	Yes/No
10	If item 9 is no, abatement is cost reasonable.	N/A	N/A	N/A	---
11	If item 9 is yes, abatement is not cost reasonable.	N/A	N/A	N/A	---

Source: FDOT Report - A Method to Determine Reasonableness and Feasibility of Noise Abatement at Special Use Locations (2009)

Table 3.2.4.3 – Conceptual Noise Barrier Design – Usage Analysis for Charles Burr Park

Item	Criteria	Actual Usage	Minimum Usage Required to Conceptual Noise Barrier		Units
			CNE 4C-A	CNE 4C-B	
1	Enter Length of Proposed Noise Barrier	---	80	140	feet
2	Enter Height of Proposed Noise Barrier	---	16	16	feet
3	Total Square Feet of Proposed Noise Barrier (Multiply item 1 by Item 2)	---	1,280	2,240	feet ²
4	Enter the average amount of time that a person stays at the site per visit	Unavailable	---	---	hours
5	Enter the average number of people that use this site per day that will receive at least 5 dB(A) benefit from abatement at the site	Unavailable	---	---	persons
6	Total Person Hours per Day Benefited by Noise Barrier (Multiply Item 4 by Item 5 - N/A) - Minimum Usage Required to Meet FDOT's Cost Reasonableness Criteria (Divide Item 3 by 7)	---	54	94	person-hours
7	Average Square Foot of Noise Barrier per Person Hour (Divide Item 3 by Item 6)	---	23.71	23.71	feet ² /person-hours
8	Cost per Person Hour per Square Foot of Noise Barrier (Multiply Item 7 by \$42,000)	N/A	\$995,935	\$995,935	\$/person-hours/ft ²
9	Does item 8 exceed the "abatement cost factor" of: \$995,935/person-hour/ft ² ?	N/A	N/A	N/A	Yes/No
10	If item 9 is no, abatement is cost reasonable.	N/A	N/A	N/A	---
11	If item 9 is yes, abatement is not cost reasonable.	N/A	N/A	N/A	---

Source: FDOT Report - A Method to Determine Reasonableness and Feasibility of Noise Abatement at Special Use Locations (2009)

3.2.4.3 COMMON NOISE AREA 4C (CNE 4C)

CNE 4C represents Charles Burr Park, a 3-acre outdoor use area within NSA 4 at 20150 SW 127th Avenue. Observable park features include an open grass field and a small, manicured area with a picnic bench at the northeast corner of the property. The park is owned and maintained by Miami-Dade County. No public usage data is available for Charles Burr Park, however the scale and lack of amenities such as a playground, walking path, or parking suggest that usage is limited to local residents and is infrequent and brief in nature. The park was analyzed using two receptor sites, one at the single picnic bench located at the front of the park along SW 127th Avenue (R4.60) and one placed within the open field, approximately sixty (60) feet from the proposed edge-of-road (R4.61). Receptor site R4.60 is predicted to have a noise level of 66.9 dB(A) with AM peak conditions under the Build Alternative 2, a 1.4 dB(A) increase over existing. Analysis for noise abatement for CNE 4C is therefore warranted.

The analyzed CNE 4C noise barrier system consists of two (2) barrier segments (CNE 4C-A and CNE 4C-B) totaling two hundred twenty (220) feet in length and is located at the eastern boundary of Charles Burr Park. The system was analyzed at 10- and 16-foot heights, neither of which meet FDOT's noise reduction design goal of 7 dB(A) for at least one benefited receptor. Additionally, FDOT's special land use methodology was used to determine if the 16-foot conceptual noise barrier design would be reasonable, considering the expected usage. The required daily usage rate (person-hours per day) for the CNE 4C barrier system is one hundred forty-eight (148) person hours per day. Considering the limited scale of the facilities at Charles Burr Park, it is reasonable to assume that usage would not meet the required daily rate for reasonability. Based on this analysis, noise abatement features are considered not feasible and not reasonable for CNE 4C. Therefore, noise abatement features for CNE 4C are not recommended for further consideration in the design phase. The conceptual noise barrier design and cost analysis, and the special land use methodology for CNE 4C can be found in **Table 3.2.4b**, **Table 3.2.4.3**, and **Figure 3-6**.

3.2.5 NOISE STUDY AREA 5 (NSA 5)

NSA 5 is located north of SR 994/Quail Roost Drive, east of SW 127th Avenue/Burr Road. Noise sensitive land uses within this NSA consist of sixteen (16) single-family residences (NAC B) north of and adjacent to Quail Roost Drive, and one (1) single-family residence east of and adjacent to SW 127th Avenue. Non-noise sensitive land uses in NSA 5 include a retail establishment northeast of the intersection of Quail Roost Drive and SW 127th Avenue, and undeveloped/uninhabitable land (NAC G) east of the retail establishment. **Figure 2-2** for NSA and land use delineations. Of the seventeen (17) noise sensitive land uses within NSA 4, four (4) are predicted to be impacted by traffic related noise, all of which are project-adjacent (first row) land uses. The analysis determined that the loudest hour for NSA 5 occurred during PM peak traffic conditions. Receptor sites R5.07 to R5.17 remain not impacted under the Build Alternative 2 due to the existing privacy wall between SW 124th Court and SW 123rd Place outside of the proposed project right of way.

3.2.5.1 COMMON NOISE AREA 5A (CNE 5A)

CNE 5A consists of four (4) single-family residences north of Quail Roost Drive between SW 125th Avenue and SW 124th Court. Predicted loudest-hour traffic noise levels in CNE 5A for the Build Alternative 2 range from 70 to 72 dB(A) with an average noise level of 70.8 dB(A). Noise level increases over existing in CNE 5A range from 2.0 to 2.5 dB(A) with an average noise level of increase of 2.4 dB(A) with the Build Alternative 2. The following four (4) receptor sites that make up CNE 5A are impacted and therefore consideration of noise abatement features is warranted,

Table 3.2.4a – Conceptual Noise Barrier Design and Cost Analyses for NSA 4

Noise Sensitive Area Name / Number	Conceptual Noise Barrier Design Number	Noise Barrier Type	Noise Barrier Location	Height (feet)	Length (feet)	Begin Station Number	End Station Number	Number of Impacted Receptor Sites	Number of Benefited Receptor Sites	Number of Benefited Sites/ Not Impacted	Total Number of Benefited Receptor Sites	Average Noise Reduction for all Benefited Receptor Sites dB(A)	Maximum Noise Reduction for all Benefited Receptor Sites dB(A)	Cost (\$30 per square foot)	Average Cost/Site Benefited	Does Optimal Barrier Design Meet FDOT's Reasonable and Feasible Noise Abatement Criteria of \$42,000 per Benefited Receptor Site and 7.0 dB(A) Noise Reduction Design Goal?	Comments
NSA 4	CNE 4A-B	Ground Mounted	South of SW 200th St between SW 130th Ave and SW 129th Ave, behind the proposed SUP but within the project right-of-way.	10	620	348+50	354+65	16	14	0	14	8.2	9.7	\$378,000	\$27,000	Yes	---
	CNE 4A-C	Ground Mounted	South of SW 200th St between SW 129th Ave and SW 128th Ave, behind the proposed SUP but within the project right-of-way.		640	355+50	361+90										
	CNE 4A-B	Ground Mounted	South of SW 200th St between SW 130th Ave and SW 129th Ave, behind the proposed SUP but within the project right-of-way.	12	620	348+50	354+65	16	15	0	15	9.3	10.9	\$453,600	\$30,240	Yes	---
	CNE 4A-C	Ground Mounted	South of SW 200th St between SW 129th Ave and SW 128th Ave, behind the proposed SUP but within the project right-of-way.		640	355+50	361+90										
	CNE 4A-B	Ground Mounted	South of SW 200th St between SW 130th Ave and SW 129th Ave, behind the proposed SUP but within the project right-of-way.	14	620	348+50	354+65	16	15	2	17	9.1	11.9	\$529,200	\$31,129	Yes	---
	CNE 4A-C	Ground Mounted	South of SW 200th St between SW 129th Ave and SW 128th Ave, behind the proposed SUP but within the project right-of-way.		640	355+50	361+90										
	CNE 4A-B	Ground Mounted	South of SW 200th St between SW 130th Ave and SW 129th Ave, behind the proposed SUP but within the project right-of-way.	16	620	348+50	354+65	16	15	2	17	9.7	12.8	\$604,800	\$35,576	Yes	---
	CNE 4A-C	Ground Mounted	South of SW 200th St between SW 129th Ave and SW 128th Ave, behind the proposed SUP but within the project right-of-way.		640	355+50	361+90										



Represents the optimal conceptual noise barrier design and is recommended for further consideration and public input in the project's design phase.

Table 3.2.4b – Conceptual Noise Barrier Design and Cost Analyses for NSA 4

Noise Sensitive Area Name / Number	Conceptual Noise Barrier Design Number	Noise Barrier Type	Noise Barrier Location	Height (feet)	Length (feet)	Begin Station Number	End Station Number	Number of Impacted Receptor Sites	Number of Impacted/Benefited Receptor Sites	Number of Benefited Receptor Sites/ Not Impacted	Total Number of Benefited Receptor Sites	Average Noise Reduction for all Benefited Receptor Sites dB(A)	Maximum Noise Reduction for all Benefited Receptor Sites dB(A)	Cost (\$30 per square foot)	Average Cost/Site Benefited	Does Optimal Barrier Design Meet FDOT's Reasonable and Feasible Noise Abatement Criteria of \$42,000 per Benefited Receptor Site and 7.0 dB(A) Noise Reduction Design Goal?	Comments
NSA 4	CNE 4B (A-C)	Ground Mounted	North of SW 200th St spanning the Black Creek Canal bridge and approaches, located behind the SUP but within right-of-way.	8	280	343+50	346+50	2	2	0	2	5.9	6.4	\$134,400	\$67,200	No (Not feasible and not reasonable - does not meet NRDG and exceeds cost criteria as determined by FDOT special land use methodology)	See Table 3.2.4.2 for FDOT special land use worksheet.
	CNE 4B (D-F)	Ground Mounted	South of SW 200th St spanning the Black Creek Canal bridge and approaches, located behind the SUP but within right-of-way.		280	343+50	346+50										
	CNE 4C-A	Ground Mounted	West of SW 127th Ave, at the back of the sidewalk adjacent to Charles Burr Park, north of park access sidewalk.	10	80	33+80	34+60	1	0	1	1	4.5	5.4	\$66,000	\$66,000	No (Not feasible and not reasonable - does not meet NRDG and exceeds cost criteria as determined by FDOT special land use methodology)	See Table 3.2.4.3 for FDOT special land use worksheet
	CNE 4C-B	Ground Mounted	West of SW 127th Ave, at the back of the sidewalk adjacent to Charles Burr Park, south of park access sidewalk.		140	34+80	36+20										
	CNE 4C-A	Ground Mounted	West of SW 127th Ave, at the back of the sidewalk adjacent to Charles Burr Park, north of park access sidewalk.	16	80	33+80	34+60	1	0	1	1	5.4	6.7	\$105,600	\$105,600	No (Not feasible and not reasonable - does not meet NRDG and exceeds cost criteria as determined by FDOT special land use methodology)	See Table 3.2.4.3 for FDOT special land use worksheet
	CNE 4C-B	Ground Mounted	West of SW 127th Ave, at the back of the sidewalk adjacent to Charles Burr Park, south of park access sidewalk.		140	34+80	36+20										

however due to the roadway geometry at the intersections of SW 125th Avenue and SW 124th Court at Quail Roost Drive, sight distance requirements (FDOT Design Manual Exhibit 212-5, *Intersection Sight Distance: 4-Lane Undivided*) render noise abatement features not feasible for construction due to safety factors.

- R5.02 (12498 SW 199th Terrace)
- R5.03 (12488 SW 199th Terrace)
- R5.04 (12478 SW 199th Terrace)
- R5.05 (12448 SW 199th Terrace)

3.2.6 NOISE STUDY AREA 6 (NSA 6)

NSA 6 is located south of SR 994/Quail Roost Drive, east of SW 127th Avenue/Burr Road. Noise sensitive land uses within this NSA consist of nine (9) single-family residences (NAC B) in the area of SW 124th Court, and two (2) single-family residences east of and adjacent to SW 127th Avenue. Non-noise sensitive land uses in NSA 5 includes retail facilities located southeast of the intersection of Quail Roost Drive and SW 127th Avenue. See **Figure 2-2** for NSA and land use delineations. Of the eleven (11) noise sensitive land uses within NSA 6, none are predicted to be impacted by traffic related noise and therefore analysis for traffic noise abatement is not warranted in NSA 6. See **Figure 3-6** for receptor site locations.

3.2.7 NOISE STUDY AREA 7 (NSA 7)

NSA 7 is located south of SR 994/Quail Roost Drive, west of SW 137th Avenue near the western project terminus. Noise sensitive land uses within this NSA consist of one (1) residential estate property (R7.01, NAC B). See **Figure 2-2** for NSA and land use delineations. The property at R7.01 is predicted to not be impacted by traffic related noise and therefore analysis for traffic noise abatement is not warranted in NSA 7. See **Figure 3-1** for receptor site location.

4.0 CONCLUSIONS

A traffic noise study was performed in accordance with FHWA 23 CFR 772, “Procedures for Abatement of Highway Traffic Noise and Construction Noise” (July 13, 2010), the FDOT’s PD&E Manual, Part 2,

Chapter 18, Highway Traffic Noise (July 1, 2020), and FDOT’s Traffic Noise Modeling and Analysis Practitioners Handbook (December 31, 2018). Design year (2045) traffic noise levels for the Build Alternative 2 will approach, meet, or exceed the NAC at fifty-five (53) residential sites, at Charles Burr Park, and within twenty (20) feet of the trail crossing of Black Creek Trail across Quail Roost Drive. In accordance with FHWA and FDOT policies, the feasibility and reasonableness of noise barriers were considered for these impacted noise sensitive sites. Noise barrier systems were evaluated for four (4) NSAs, and two (2) noise barrier systems are recommended for further consideration during the project’s design phase and for public input by nineteen (19) benefited residential land use sites within NSA 1 and NSA 4.

Noise barriers were considered a feasible and reasonable abatement option for CNE 1A. A two-part conceptual barrier system, totaling five hundred forty (540) feet in length and ten (10) feet in height, located near the project right-of-way between SW 135th Avenue and SW 134th Avenue

north of Quail Roost Drive, benefits four (4) impacted receptors at an estimated cost of \$162,000, or \$40,500 per benefited receptor.

Noise barriers were also considered a feasible and reasonable abatement option for CNE 4A. A two-part conceptual barrier system, one thousand two hundred sixty (1,260) feet in length and twelve (12) feet in height, located near the project right-of-way between SW 130th Avenue and SW 128th Avenue south of Quail Roost Drive, benefits fifteen (15) impacted receptors at an estimated cost of \$453,600 or \$30,240 per benefited receptor.

Noise barriers were considered not feasible and not reasonable for CNEs 1C, 2A, 3A, 4B, 4C, and 5A. Due to the close proximity of pools and residences adjacent to the proposed Quail Roost Drive improvements, it was determined that noise barriers within CNE 2A and 3A would require the acquisition of additional right-of-way for construction and continued maintenance, up to and including complete property acquisitions, and at locations determined to be of historic significance (R3.01, R3.05), in addition to not meeting FDOT cost criteria. Noise barriers were considered not feasible for CNE 1C due to design limitations caused by driveway access requirements by multiple project adjacent homes. Noise barriers were considered cost-reasonable but not feasible in CNEs 1B and 3B, also due to insufficient available right-of-way for construction and maintenance. Comparatively, residences in CNE 4A sit farther back from the existing facilities than CNE 3B, and additional area exists between the existing facilities and residential property lines in CNE 4A which facilitates the feasibility of noise barriers along CNE 4A. Noise barriers were considered not feasible and not reasonable for CNE 4B and CNE 4C as they do not meet the noise reduction design goal or cost criteria determined by FDOT's special land use methodology. Noise barriers were considered not feasible for CNE 5A due to intersection sight line requirements.

The locations of analyzed receptor sites and conceptual noise barriers are depicted in **Figures 3-1 through 3-3**. The locations and limits of the recommended noise barriers are depicted on **Figure 4 – Noise Barrier Recommendation Map**. The cost per benefited receptor of each noise barrier design is within FDOT's noise barrier cost criteria of equal to or less than \$42,000 per benefited receptor site and they will meet FDOT's noise reduction reasonableness criteria of 7 dB(A) at one or more impacted sites.

The recommended noise barriers along SR 994/Quail Roost Drive are expected to reduce traffic noise by an average of 8.7 dB(A) at twenty-two (22) of the forty-six (46) impacted residences along the project corridor. The estimated cost of the recommended noise barriers is \$680,400. Additional noise barrier analyses will be performed during the project's design phase when more detailed project design information is available. It is during the project's design phase that final decisions regarding noise barrier length and height are made, and an engineering constructability review is conducted to confirm that the noise barrier is feasible and support for noise barriers from the benefited noise sensitive sites is determined.

Statement of Likelihood

FDOT is committed to the construction of feasible noise abatement measures (i.e., recommended noise barriers) at the noise impacted locations identified in **Table 4.1** and **Figure 4** upon the

following conditions:

- Final recommendations on the construction of abatement measures are determined during the project’s design and through the public involvement process;
- Detailed noise analyses during the final design process support the need, feasibility and reasonableness of providing abatement;
- Cost analysis indicates that the cost of the noise barrier(s) will not exceed the cost reasonable criterion;
- Community input supporting types, heights, and locations of the noise barrier(s) is provided to the District Office; and
- Safety and engineering aspects as related to the roadway user and the adjacent property owner have been reviewed and any conflicts or issues resolved.

It is likely that the noise abatement measures for the identified locations will be constructed if found feasible based on the contingencies listed above. If, during the project’s design phase, any of the contingency conditions listed above cause abatement to no longer be considered reasonable or feasible for a given location(s), such determination(s) will be made prior to requesting approval for construction advertisement. Commitments regarding the exact abatement measure locations, heights, and type (or approved alternatives) will be made during project reevaluation and at a time before the construction advertisement is approved.

5.0 CONSTRUCTION NOISE AND VIBRATION

Identification of potential noise/vibration sensitive sites along the project corridor prior to the construction phase is critical in minimizing substantial noise and vibration impacts. The following seven sites have been identified as particularly sensitive to potential construction noise and vibration:

- (R1.01) MacDonell House, 13701 Quail Roost Drive (Historical)
- (R1.02) Calvary Pentecostal Church of Miami, 19901 SW 137th Avenue
- (R2.32) Alianza Apostolica Igelsia Del Señor Jesucristo, 12825 SW 200th Street
- (R2.33) Peace United Methodist Church, 12755 SW 200th Street
- (R3.01) 20000 SW 137th Avenue (Historical)
- (R3.05) Talbot Estate, 20003 SW 134th Avenue (Historical)
- (R4.59) Church of Christ on Quail, 12780 SW 200th Street

Vibration impacts to structures are typically associated with transit and rail systems, and construction activity that includes pile driving. While the proposed Black Creek Canal bridge replacement will require pile-driving, it is not located in the vicinity of the historic properties. The bridge is located at a distance of approximately 1,350 feet from the Talbot Estate and approximately 3,050 feet from the two historic properties (MacDonell House and 20000 SW 137th Ave) situated at the intersection of 137th Avenue. No adverse vibratory effects are anticipated for these structures from the bridge replacement construction activity.

Table 4.1 – Noise Barrier Evaluation Summary of Recommendations

Noise Sensitive Area Name/ Number	Conceptual Noise Barrier Design Number	Noise Barrier Type	Noise Barrier Location	Height (feet)	Length (feet)	Begin Station Number	End Station Number	Number of Impacted Receptor Sites	Number of Impacted/ Benefited Receptor Sites	Number of Benefited Receptor Sites/ Not Impacted	Total Number of Benefited Receptor Sites	Average Noise Reduction for all Benefited Receptor Sites dB(A)	Maximum Noise Reduction for all Benefited Receptor Sites dB(A)	Cost (\$30 per square foot)	Average Cost/Site Benefited	Does Optimal Barrier Design Meet FDOT's Reasonable and Feasible Noise Abatement Criteria of \$42,000 per Benefited Receptor Site and 7.0 dB(A) Noise Reduction Design Goal, and recommended for further consideration and public input?	Comments
NSA 1	CNE 1A-B	Ground Mounted	North of SW 200th between SW 135th Ave and SW 134th Ct, behind the proposed SUP but within the project right-of-way.	10	280	321+60	324+40	4	4	0	4	8.6	10.1	\$162,000	\$40,500	Yes	---
	CNE 1A-C	Ground Mounted	North of SW 200th between SW 134th Ct and SW 134th Ave/Talbot Rd, behind the proposed SUP but within the project right-of-way.		260	325+00	327+60										
NSA 4	CNE 4A-B	Ground Mounted	South of SW 200th St between SW 130th Ave and SW 129th Ave, behind the proposed SUP but within the project right-of-way.	12	620	348+50	354+65	16	15	0	15	9.3	10.9	\$453,600	\$30,240	Yes	---
	CNE 4A-C	Ground Mounted	South of SW 200th St between SW 129th Ave and SW 128th Ave, behind the proposed SUP but within the project right-of-way.		640	355+50	361+90										

Due to the proposed bridge replacement over the Black Creek Canal, existing utilities and nearby residences, predrilled pile holes in accordance with Specification Section 455 will be utilized to prevent refusal conditions and pile damage and to mitigate vibration to the existing facilities. Vibration and settlement monitoring shall be carried out in accordance with Specification Section 108.

Further vibration evaluation will be considered during the design phase to determine construction methods that would minimize the potential for any temporary vibratory effects to the historic structures. No other vibratory effects are anticipated following construction.

6.0 COMMUNITY COORDINATION

To aid in promoting land use compatibility, a copy of the Noise Study Report, which provides information that can be used to protect future land development from becoming incompatible with anticipated traffic noise levels, will be provided to Miami-Dade County. In addition, generalized future noise impact contours for the properties in the immediate vicinity of the project have been developed for Noise Abatement Activity Categories A, B/C, and E (i.e., residential and other sensitive land uses, and sensitive commercial land uses, respectively). These contours represent the approximate distance from the edge of the nearest proposed travel lane of SR 994 to the limits of the area predicted to approach [i.e., within 1 dB(A)] the NAC in the design year (2045). The contours do not consider any shielding of noise provided by structures between the receptor and the proposed travel lanes. Within the project corridor, the distance between the proposed edge of the outside travel lane and the contour at various locations are presented in **Table 6.1**. To minimize the potential for incompatible land use, noise sensitive land uses should be located beyond this distance.

7.0 REFERENCES

FHWA 23 CFR Part 772, “*Procedures for Abatement of Highway Traffic Noise and Construction Noise*”, July 13, 2010.

Florida Department of Transportation. “*Highway Traffic Noise*”, Part 2, Chapter 18. Project Development and Environment Manual, Florida Department of Transportation, Tallahassee, July 1, 2020.

Florida Department of Transportation “*Traffic Noise Modeling and Analysis Practitioners Handbook*”, December 31, 2018.

Florida Department of Transportation Design Manual Volume 1, Chapter 264, “*Noise Walls and Perimeter Walls*”, January 2019

Florida Department of Transportation “*Standard Specifications for Road and Bridge Construction*”, January 2019.

Florida Department of Transportation, “2012 FDOT Quality/Level of Service Handbook”, Tallahassee, Florida; 2012.

Florida Department of Transportation, “FDOT Design Manual”, Tallahassee, Florida; 2019.

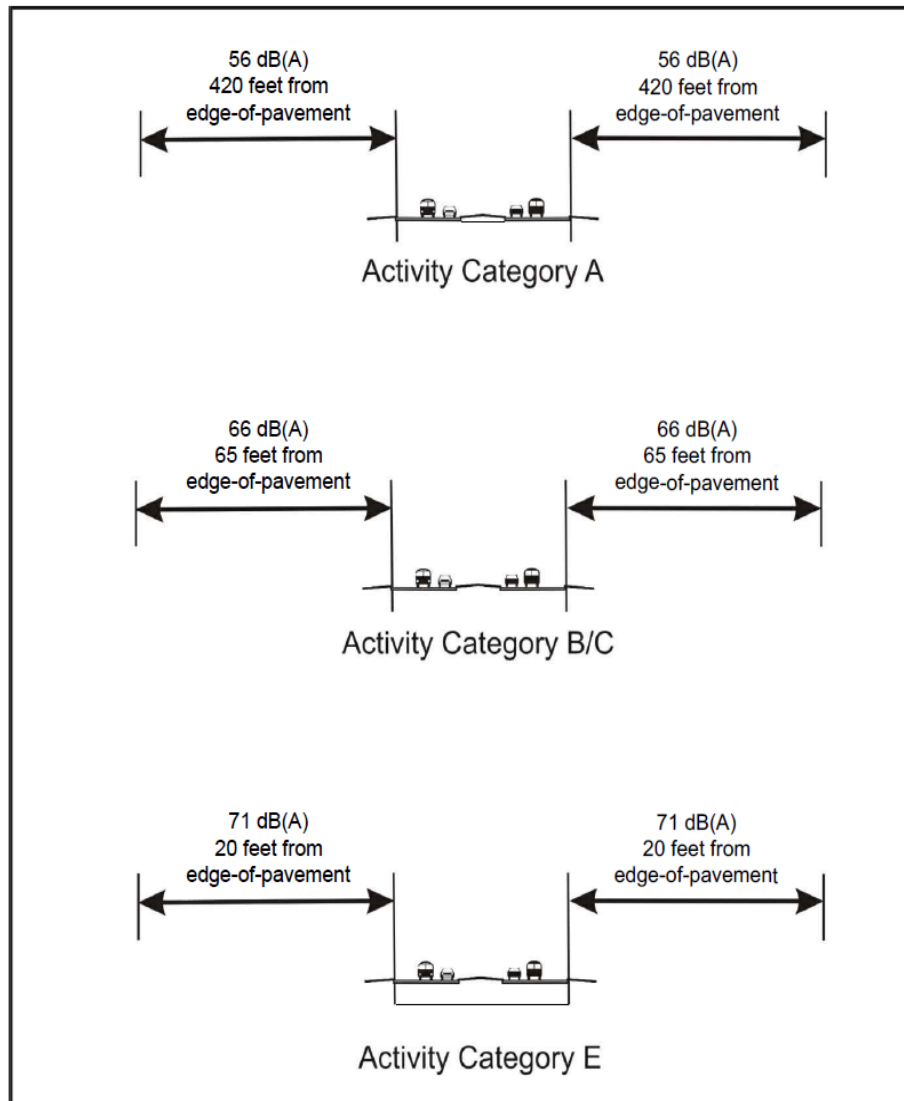
Federal Highway Administration Report FHWA-HEP-10-025, “Highway Traffic Noise: Analysis and Abatement Guidance”, June 2010 (revised December 2010); 76 pages.

Federal Highway Administration Report FHWA-PD-96-009, “FHWA Traffic Noise Model, Version 1.0 User’s Guide”, January 1998; 192 pages + supplements.

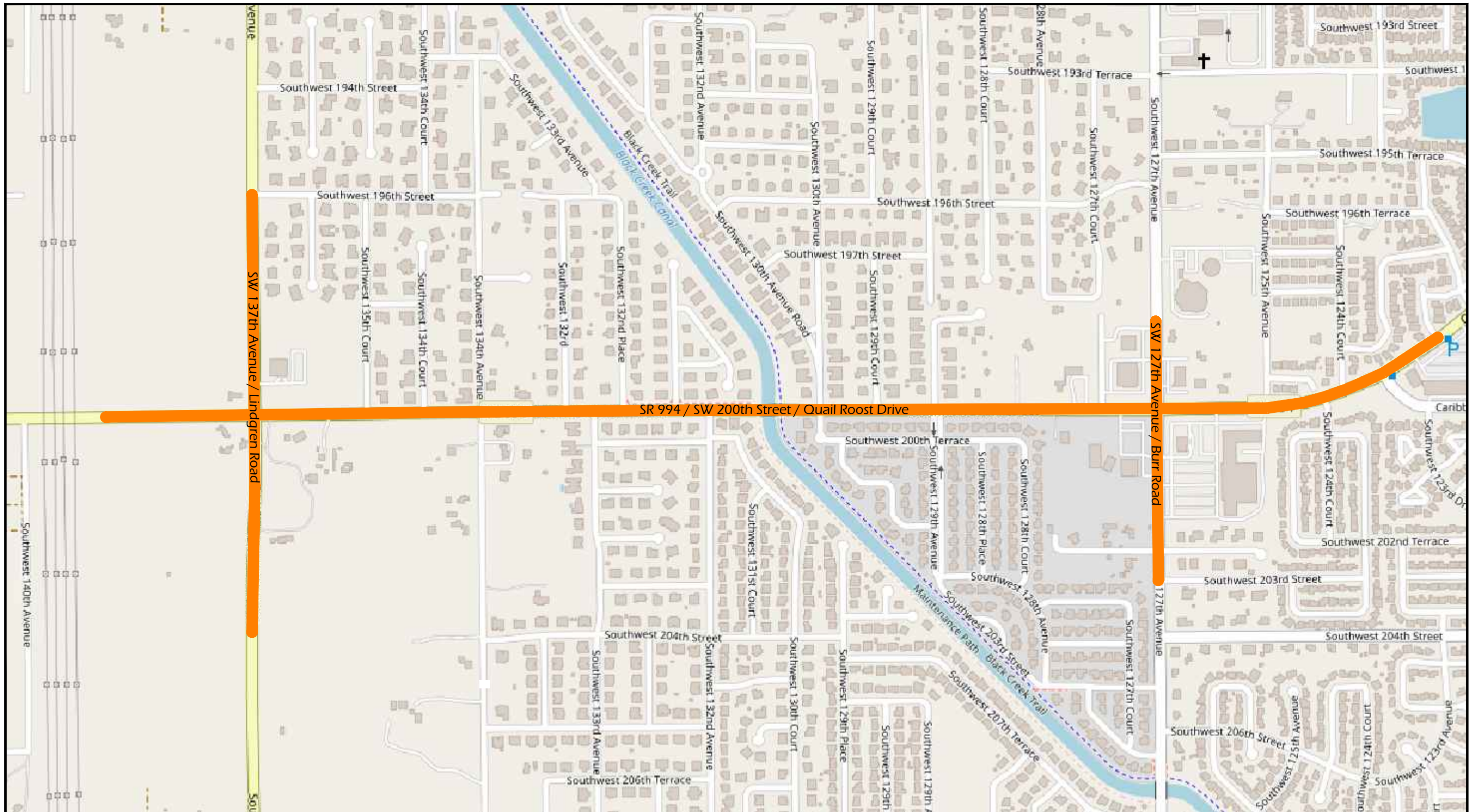
Federal Highway Administration Report Number FHWA-PD-96-046, “Measurement of Highway-Related Noise”, Cynthia S.Y. Lee and Gregg Fleming; May 1996; 206 pages.

Federal Highway Administration Report FHWA-HEP-06-015, “FHWA Highway Construction Noise Handbook: Final Report”. August 2006; 185 pages.

Table 6.1 – Contour Noise Analysis Results



FIGURES



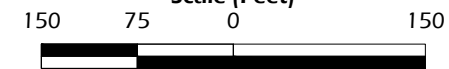
Proposed Improvements

Project Overview

SR 994/SW 200th Street/Quail Roost Drive PD&E Study
 Florida Department of Transportation
 Miami-Dade County, FL



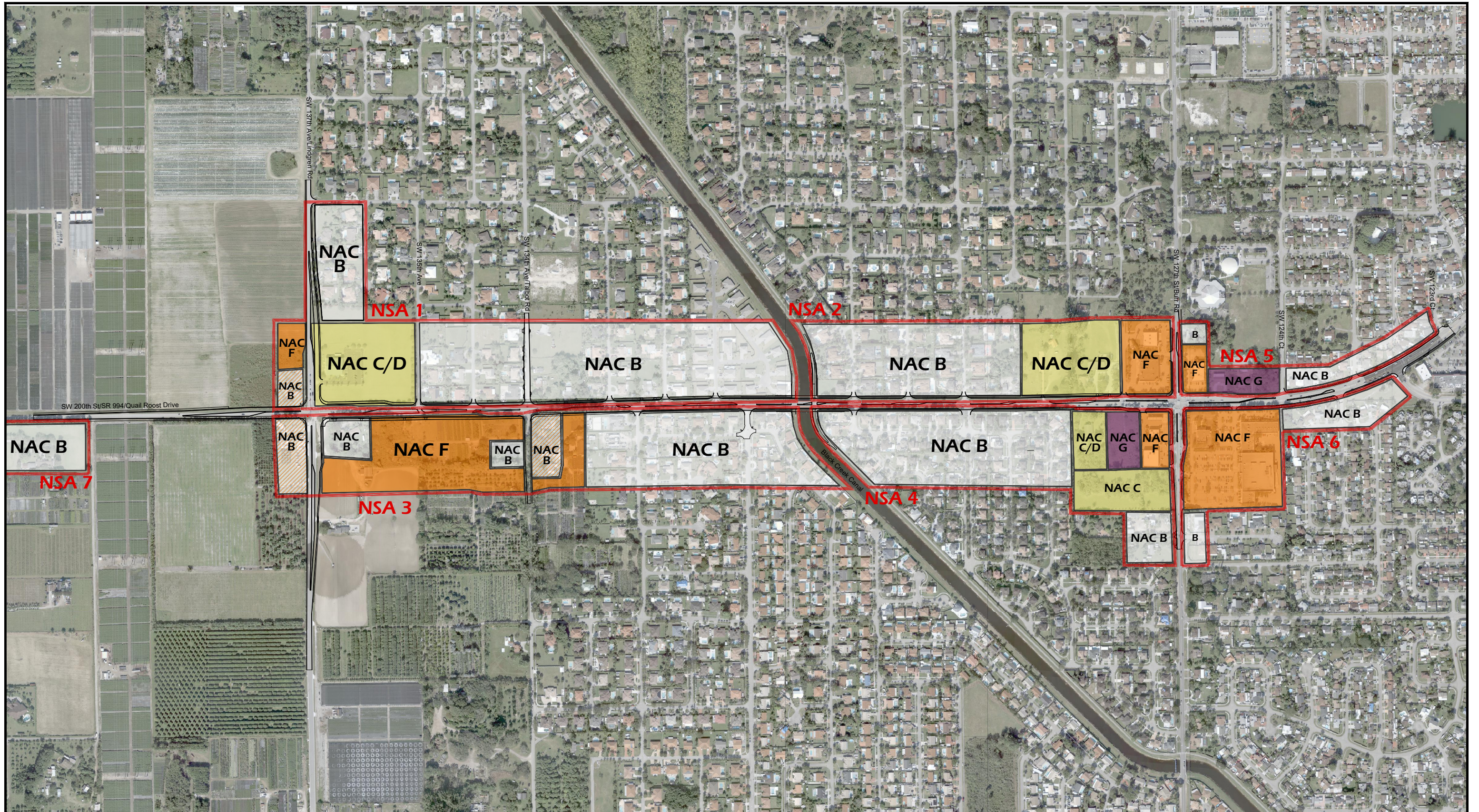
Scale (Feet)



GANNETT FLEMING

Figure 2-1

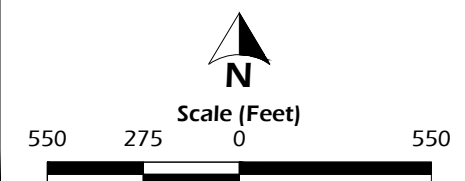
Map Created on 07.13.2023



- NSA Boundary
- NAC Boundary
- Contains Historical Property



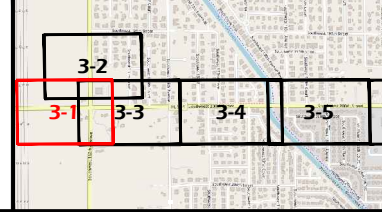
Noise Study Area and Land Use Map
 SR 994/SW 200th Street/Quail Roost Drive PD&E Study
 Florida Department of Transportation
 Miami-Dade County, FL



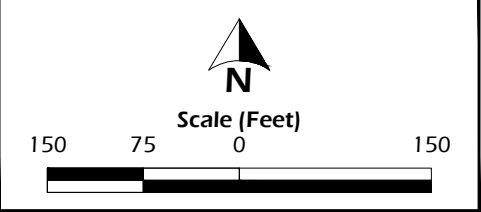
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Figure 2-2
 Created on 07.13.2023



- Noise Analysis Locations**
- Impacted, Benefitted
 - Impacted, Not Benefitted
 - Not Impacted, Benefitted
 - Not Impacted, Not Benefitted
 - Project Centerline
 - ⊙ Noise Measurement Location
- Analyzed Noise Barriers**
- Feasible and Reasonable
 - Not Feasible / Not Reasonable
 - ▨ Historic Property

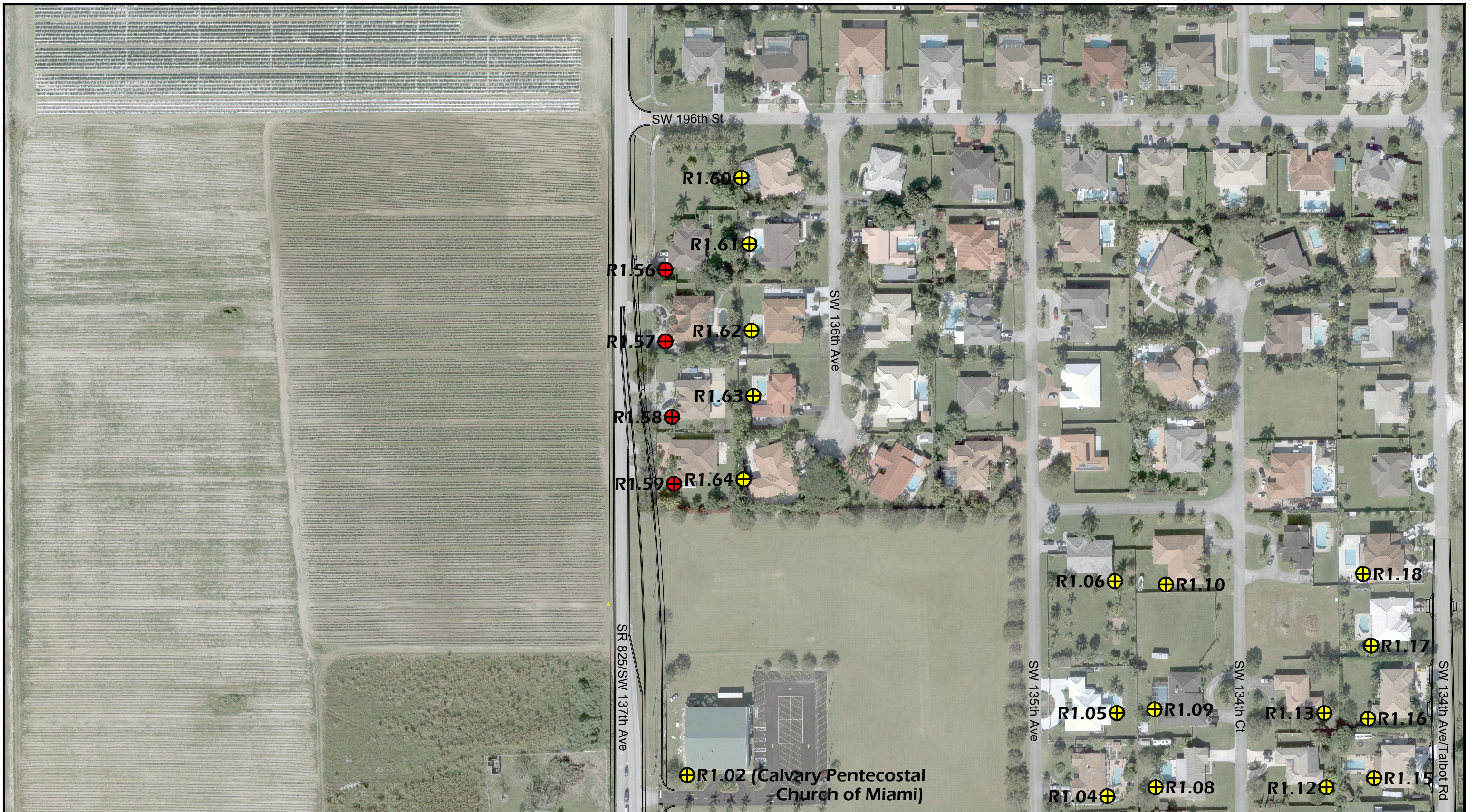


Barrier Analysis Results Summary
2045 Build Alternative 2
 SR 994/SW 200th Street/Quail Roost Drive PD&E Study
 Florida Department of Transportation
 Miami-Dade County, FL




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Figure 3-1

Map Created on 07.13.2023

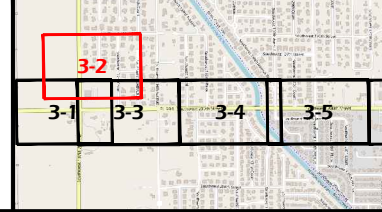


Noise Analysis Locations

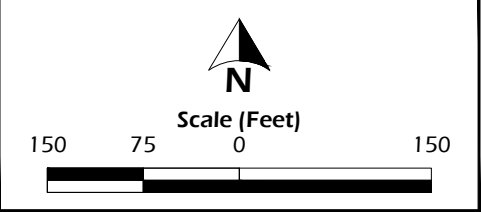
- Impacted, Benefitted
- Impacted, Not Benefitted
- Not Impacted, Benefitted
- Not Impacted, Not Benefitted
- Project Centerline
- ⊙ Noise Measurement Location

Analyzed Noise Barriers

- Feasible and Reasonable
- Not Feasible / Not Reasonable
- ▨ Historic Property



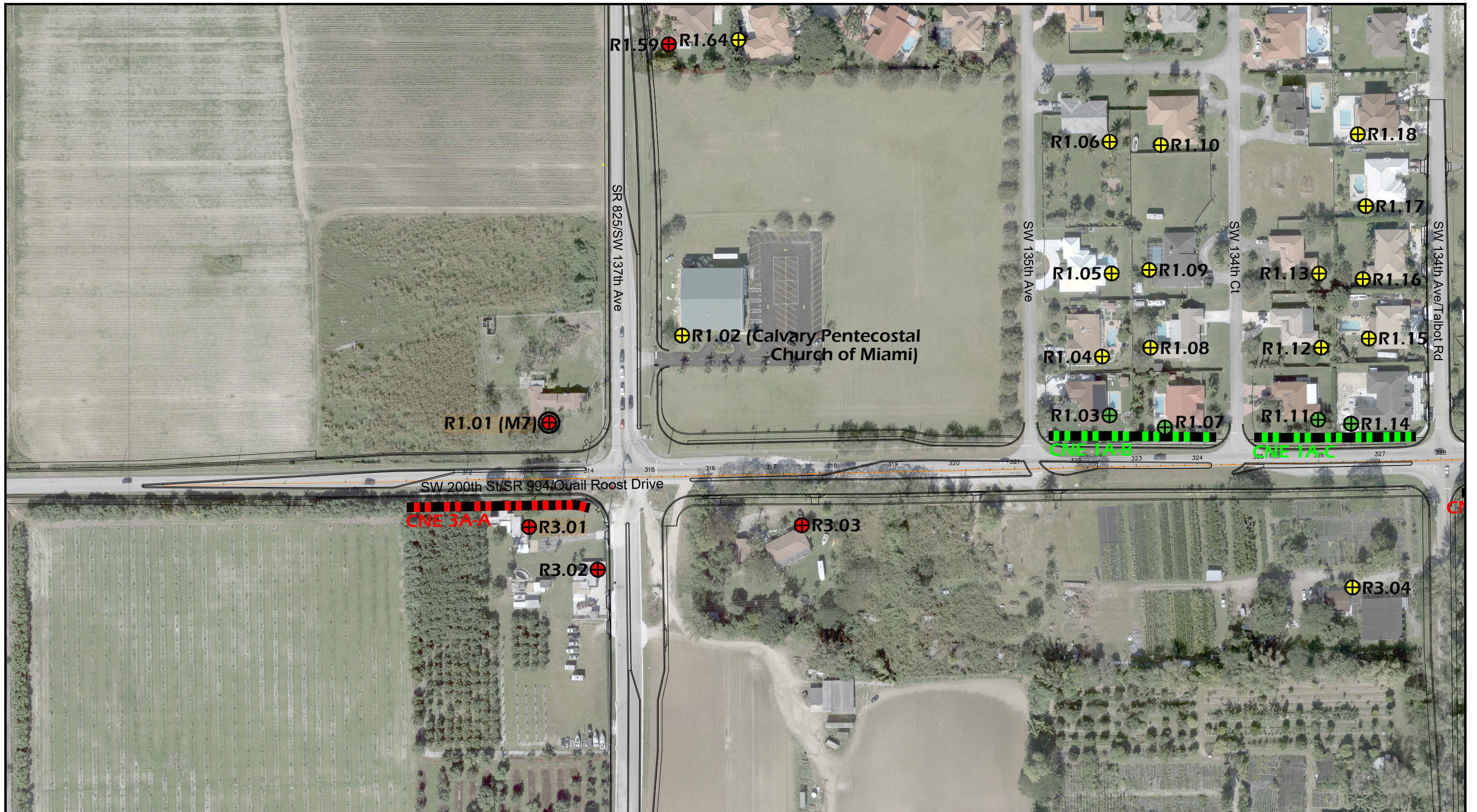
Barrier Analysis Results Summary
2045 Build Alternative 2
 SR 994/SW 200th Street/Quail Roost Drive PD&E Study
 Florida Department of Transportation
 Miami-Dade County, FL



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Figure 3-2

Map Created on 07.13.2023

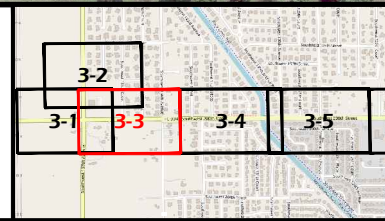


Noise Analysis Locations

- Impacted, Benefitted
- Impacted, Not Benefitted
- Not Impacted, Benefitted
- Not Impacted, Not Benefitted
- Project Centerline
- ⊙ Noise Measurement Location

Analyzed Noise Barriers

- ▬ Feasible and Reasonable
- ▬ Not Feasible / Not Reasonable
- ▨ Historic Property



Barrier Analysis Results Summary
2045 Build Alternative 2
 SR 994/SW 200th Street/Quail Roost Drive PD&E Study
 Florida Department of Transportation
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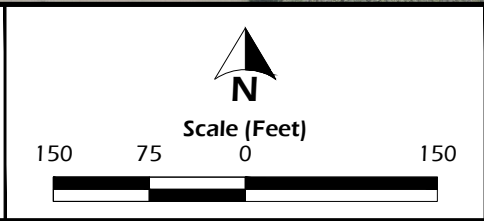
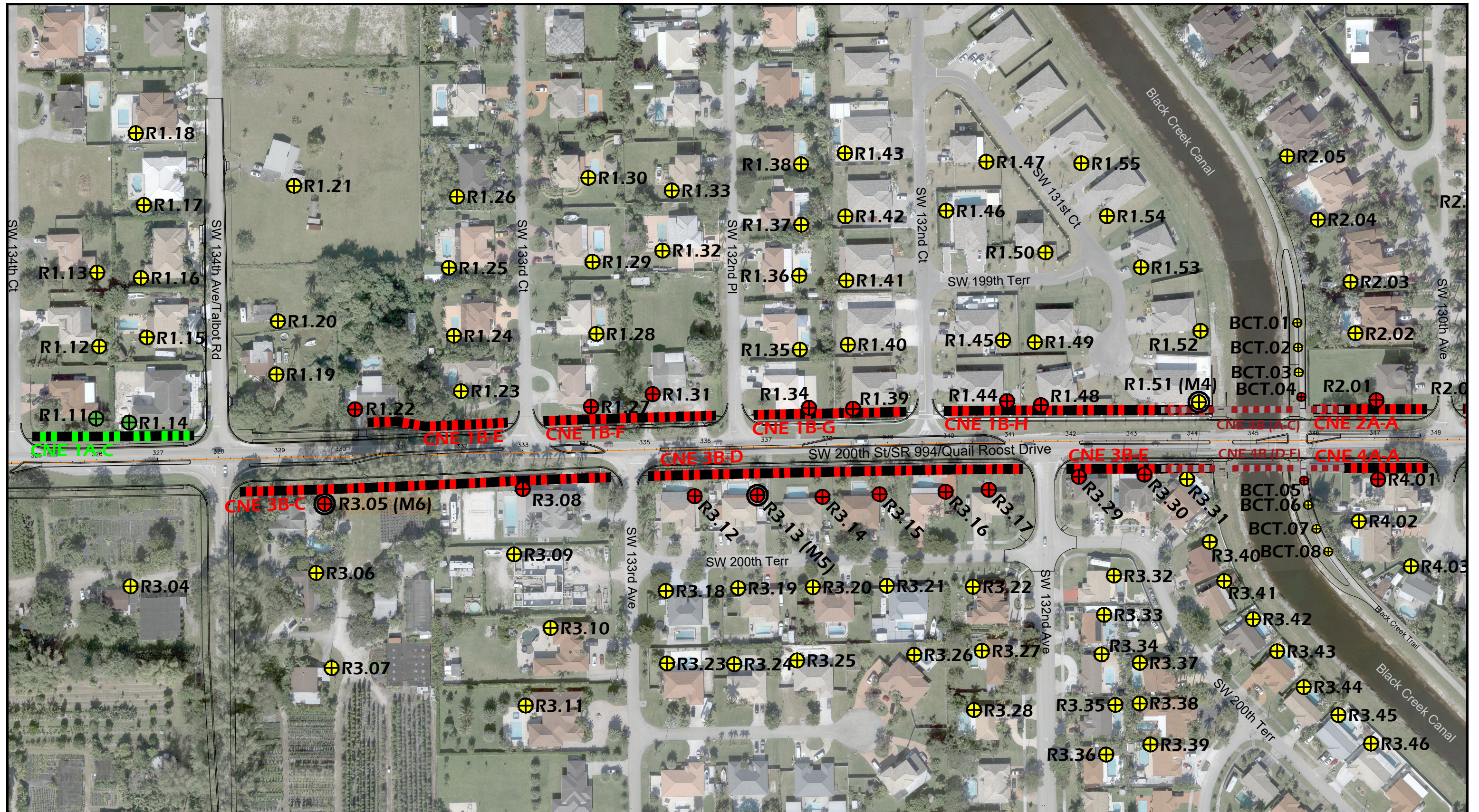


Figure 3-3

Map Created on 07.13.2023



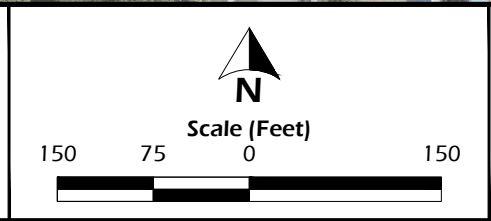
Noise Analysis Locations

- Impacted, Benefitted
- Impacted, Not Benefitted
- Not Impacted, Benefitted
- Not Impacted, Not Benefitted
- Project Centerline
- ⊙ Noise Measurement Location

Analyzed Noise Barriers

- Feasible and Reasonable
- Not Feasible / Not Reasonable
- ▨ Historic Property

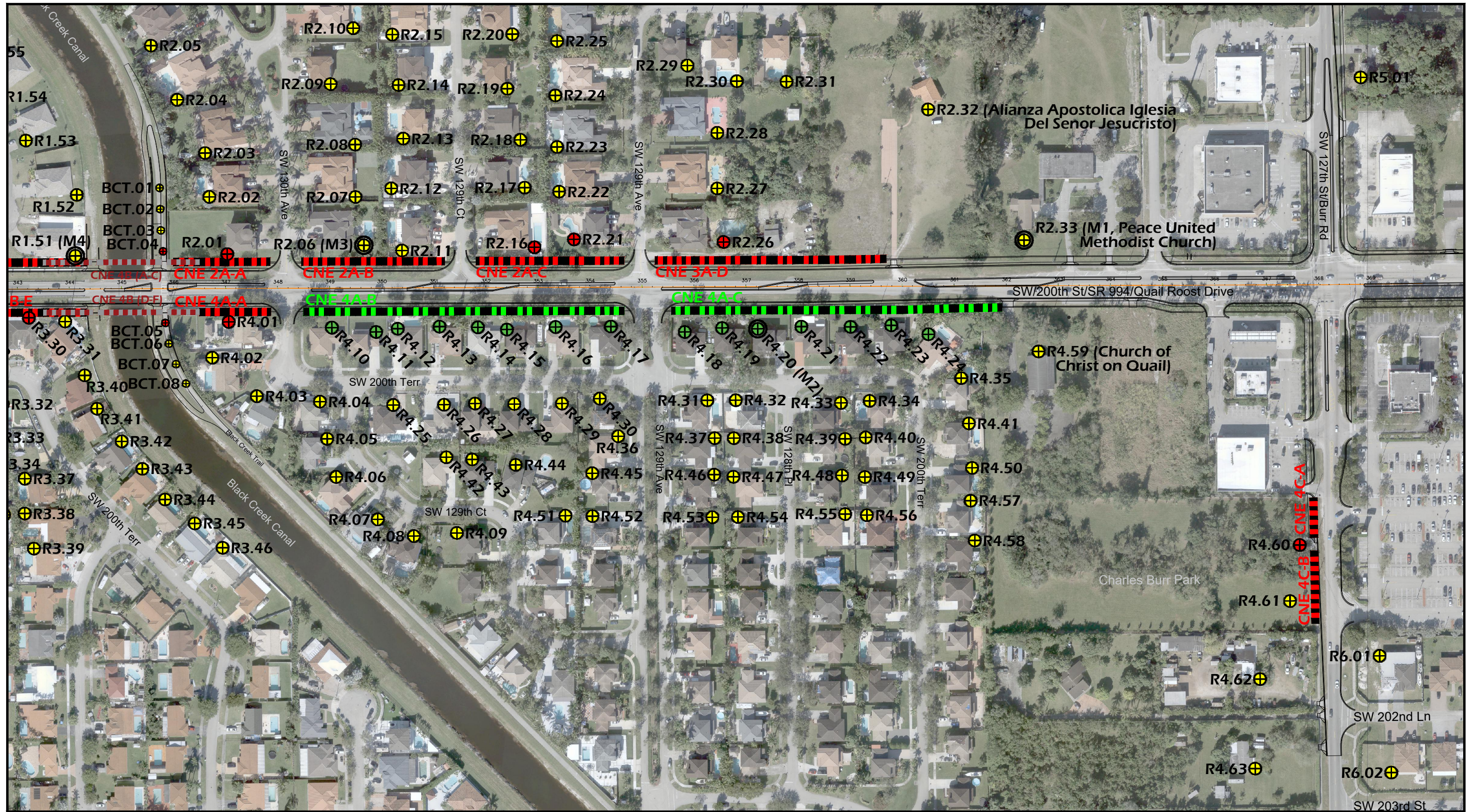
Barrier Analysis Results Summary
2045 Build Alternative 2
 SR 994/SW 200th Street/Quail Roost Drive PD&E Study
 Florida Department of Transportation
 Miami-Dade County, FL



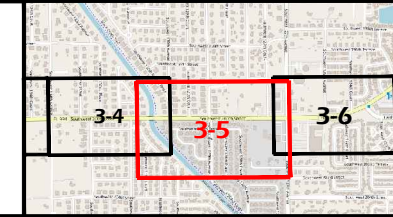
GANNETT FLEMING

Figure 3-4

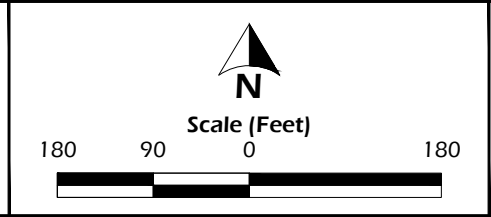
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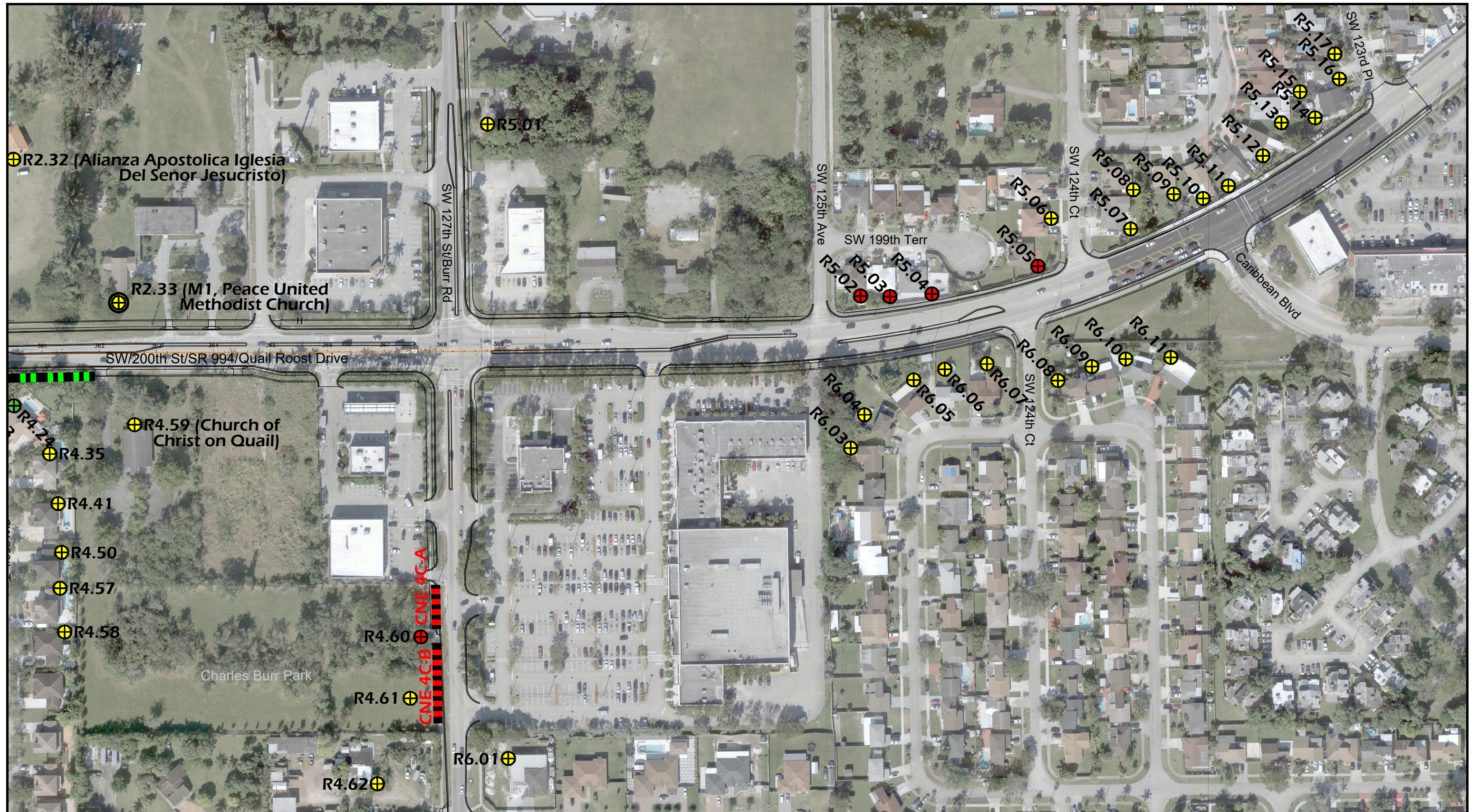
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<ul style="list-style-type: none"> ▨ Historic Property 	



Barrier Analysis Results Summary
2045 Build Alternative 2
 SR 994/SW 200th Street/Quail Roost Drive PD&E Study
 Florida Department of Transportation
 Miami-Dade County, FL

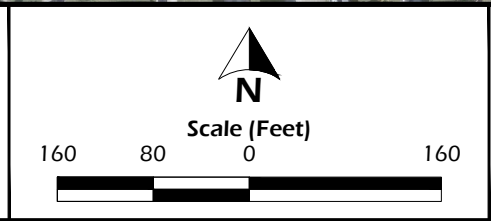



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 Map Created on 07.13.2023

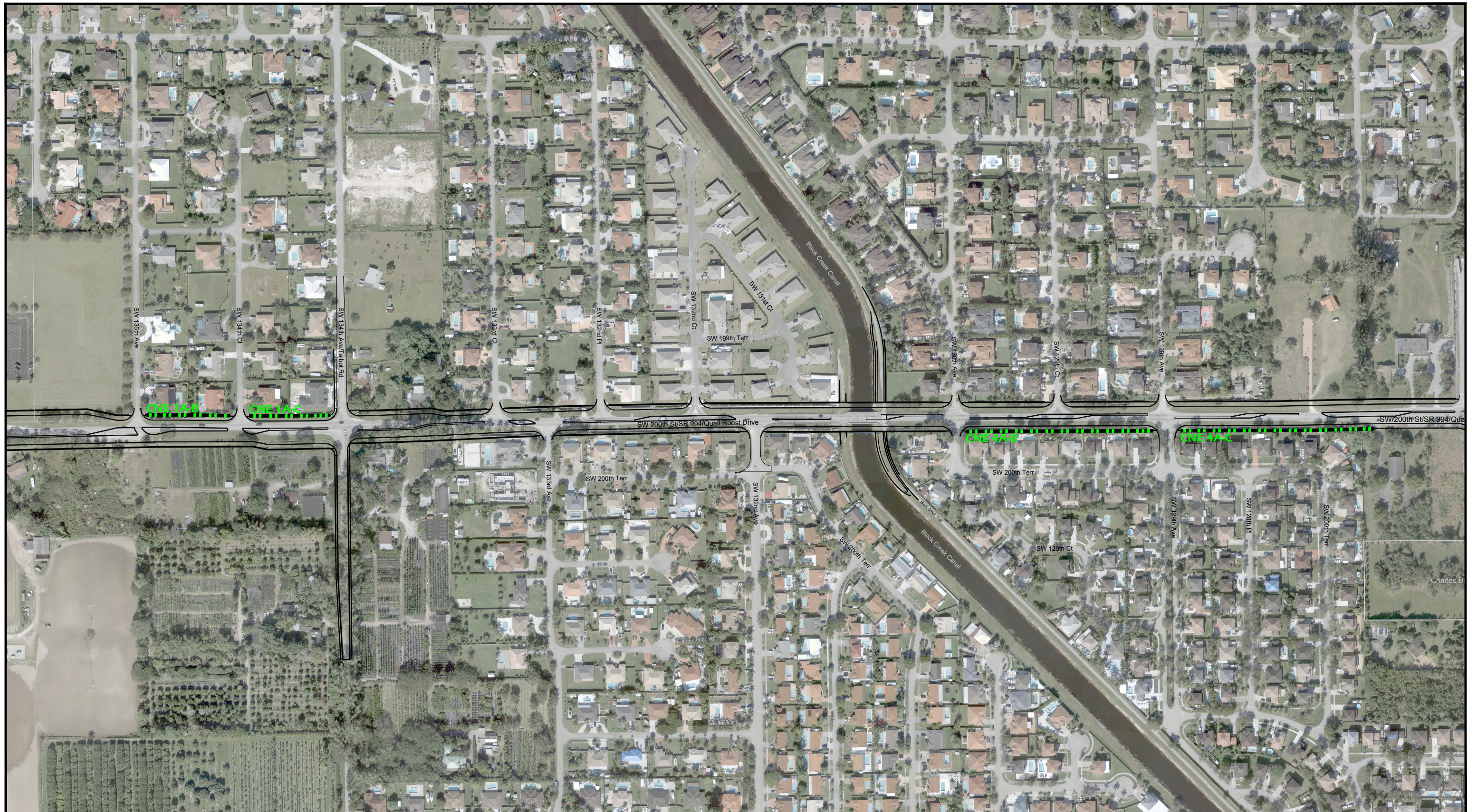


<p>Noise Analysis Locations</p> <ul style="list-style-type: none"> ● Impacted, Benefitted ● Impacted, Not Benefitted ● Not Impacted, Benefitted ● Not Impacted, Not Benefitted — Project Centerline ⊙ Noise Measurement Location 	<p>Analyzed Noise Barriers</p> <ul style="list-style-type: none"> ▬ Feasible and Reasonable ▬ Not Feasible / Not Reasonable 	
<ul style="list-style-type: none"> ▨ Historic Property 		

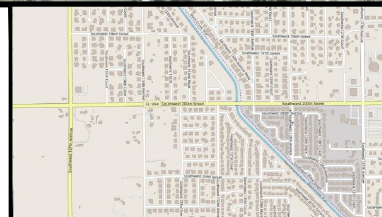
Barrier Analysis Results Summary
2045 Build Alternative 2
 SR 994/SW 200th Street/Quail Roost Drive PD&E Study
 Florida Department of Transportation
 Miami-Dade County, FL



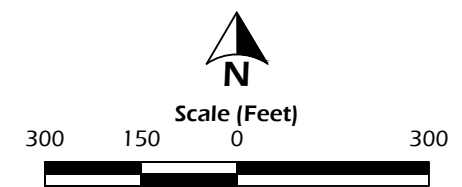
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 Figure 3-6
 Map Created on 07.13.2023



 Recommended Noise Barrier



Recommended Noise Barriers
 SR 994/SW 200th Street/Quail Roost Drive PD&E Study
 Florida Department of Transportation
 Miami-Dade County, FL



 **GANNETT FLEMING**

Figure 4

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APPENDIX A

Field Measurement Data Sheets

Highway Noise Monitoring Sheet

Date: June 27, 2022 9:10 AM
Project: FDOT: Quail Roost Drive
Setup#: 1
Site ID(s): M01



Temperature (F): 88
Cloud cvr: None Partly Cloudy
Wind speed (mph): 1
Wind direction: West

Measurement Data														
ID:	M01	Start A:	09:34	Stop A:	09:44	<input type="checkbox"/> 20 min <input type="checkbox"/> 30 min <input type="checkbox"/> 24 hr <input checked="" type="checkbox"/> 3x10min	SLM #:	4229	L_{eq} A(dB):	60.4	L _{min} A(dB):	0	L _{max} A(dB):	69.8
		Start B:	09:48	Stop B:	09:58		L_{eq} B(dB):	62.2	L _{min} B(dB):	0	L _{max} B(dB):	77		
		Start C:	10:03	Stop C:	10:13		L_{eq} C(dB):	61.8	L _{min} C(dB):	0	L _{max} C(dB):	77		
GPS (°N,°W):		25.5811165891712, -80.39875572836355					Stor A #:	196	Calib(dB):	94.11 / 01B		Meas. Ht(ft):		5
						Stor B #:	197							
						Stor C #:	198							
Location:		12755 W 200th St Miami, FL 33177				Relocated				Pre-	Post-			
						<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No								
Type(use, NAC):		Church				Site Photographed				Weighting:		<input checked="" type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> Z		
						<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No								

Traffic Data A

Roadway #1:	Quail Roost		Roadway #2:	Roadway #3:	Roadway #4:
Width(ft):			Width(ft):	Width(ft):	Width(ft):
Direction:	EB	WB	Direction:	Direction:	Direction:
Speed Limit:	40		Speed Limit:	Speed Limit:	Speed Limit:
Observed Spd:			Observed Spd:	Observed Spd:	Observed Spd:
Auto:	81	69	Auto:	Auto:	Auto:
Med Tk:	8	5	Med Tk:	Med Tk:	Med Tk:
Hvy Tk:	3	2	Hvy Tk:	Hvy Tk:	Hvy Tk:
Bus:			Bus:	Bus:	Bus:
MCycle:			MCycle:	MCycle:	MCycle:

Traffic Data B

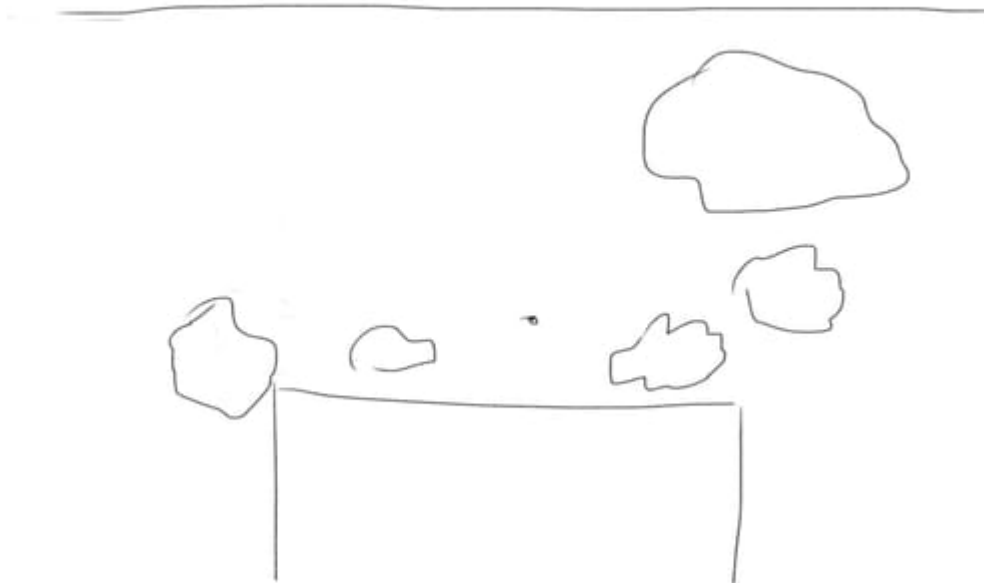
Roadway #1:	Quail Roost		Roadway #2:	Roadway #3:	Roadway #4:
Width(ft):			Width(ft):	Width(ft):	Width(ft):
Direction:	EB	WB	Direction:	Direction:	Direction:
Speed Limit:	40		Speed Limit:	Speed Limit:	Speed Limit:
Observed Spd:			Observed Spd:	Observed Spd:	Observed Spd:
Auto:	86	64	Auto:	Auto:	Auto:
Med Tk:	1	3	Med Tk:	Med Tk:	Med Tk:
Hvy Tk:	1	4	Hvy Tk:	Hvy Tk:	Hvy Tk:
Bus:			Bus:	Bus:	Bus:
MCycle:			MCycle:	MCycle:	MCycle:


Traffic Data C

Roadway #1:	Quail Roost		Roadway #2:		Roadway #3:		Roadway #4:	
Width(ft):			Width(ft):		Width(ft):		Width(ft):	
Direction:	EB	WB	Direction:		Direction:		Direction:	
Speed Limit:	40		Speed Limit:		Speed Limit:		Speed Limit:	
Observed Spd:			Observed Spd:		Observed Spd:		Observed Spd:	
Auto:	73	65	Auto:		Auto:		Auto:	
Med Tk:	3	4	Med Tk:		Med Tk:		Med Tk:	
Hvy Tk:	4	8	Hvy Tk:		Hvy Tk:		Hvy Tk:	
Bus:		1	Bus:		Bus:		Bus:	
MCycle:			MCycle:		MCycle:		MCycle:	

Notes:

Site Sketch:



Personnel: 

M01 Site Photos:
North:

East:



South:



West:



Highway Noise Monitoring Sheet

Date: June 27, 2022 9:35 AM
Project: FDOT: Quail Roost Drive
Setup#: 1
Site ID(s): M02



Temperature (F): 87
Cloud cvr: None Partly Cloudy
Wind speed (mph): 3
Wind direction: Southeast

Measurement Data														
ID:	M02	Start A:	09:34	Stop A:	09:44	<input type="checkbox"/> 20 min <input type="checkbox"/> 30 min <input type="checkbox"/> 24 hr <input checked="" type="checkbox"/> 3x10min	SLM #:	4228	L_{eq} A(dB):	61.5	L _{min} A(dB):	40.3	L _{max} A(dB):	76.4
		Start B:	09:48	Stop B:	09:58				L_{eq} B(dB):	60.6	L _{min} B(dB):	38.4	L _{max} B(dB):	71.3
		Start C:	10:03	Stop C:	10:13				L_{eq} C(dB):	61.4	L _{min} C(dB):	39.2	L _{max} C(dB):	73.2
GPS (°N,°W):		25.580645966666665, -80.400201					Stor A #:	201	Calib(dB):	93.94 / 01A		Meas. Ht(ft): 5		
						Stor B #:	202							
						Stor C #:	203							
Location:		12871 SW 200th Terrace Miami, FL 33177				Relocated <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Pre-	Post-					
Type(use, NAC):		Residential (B)				Site Photographed <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Weighting:		<input checked="" type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> Z				

Traffic Data A

Roadway #1:	Quail Roost Dr	Roadway #2:	Roadway #3:	Roadway #4:
Width(ft):		Width(ft):	Width(ft):	Width(ft):
Direction:	EB WB	Direction:	Direction:	Direction:
Speed Limit:	40	Speed Limit:	Speed Limit:	Speed Limit:
Observed Spd:	40	Observed Spd:	Observed Spd:	Observed Spd:
Auto:	81 69	Auto:	Auto:	Auto:
Med Tk:	8 5	Med Tk:	Med Tk:	Med Tk:
Hvy Tk:	3 2	Hvy Tk:	Hvy Tk:	Hvy Tk:
Bus:	0 0	Bus:	Bus:	Bus:
MCycle:	1 0	MCycle:	MCycle:	MCycle:

Traffic Data B

Roadway #1:	Quail Roost Dr	Roadway #2:	Roadway #3:	Roadway #4:
Width(ft):		Width(ft):	Width(ft):	Width(ft):
Direction:	EB WB	Direction:	Direction:	Direction:
Speed Limit:	40	Speed Limit:	Speed Limit:	Speed Limit:
Observed Spd:	40	Observed Spd:	Observed Spd:	Observed Spd:
Auto:	86 64	Auto:	Auto:	Auto:
Med Tk:	1 3	Med Tk:	Med Tk:	Med Tk:
Hvy Tk:	1 4	Hvy Tk:	Hvy Tk:	Hvy Tk:
Bus:	0 1	Bus:	Bus:	Bus:

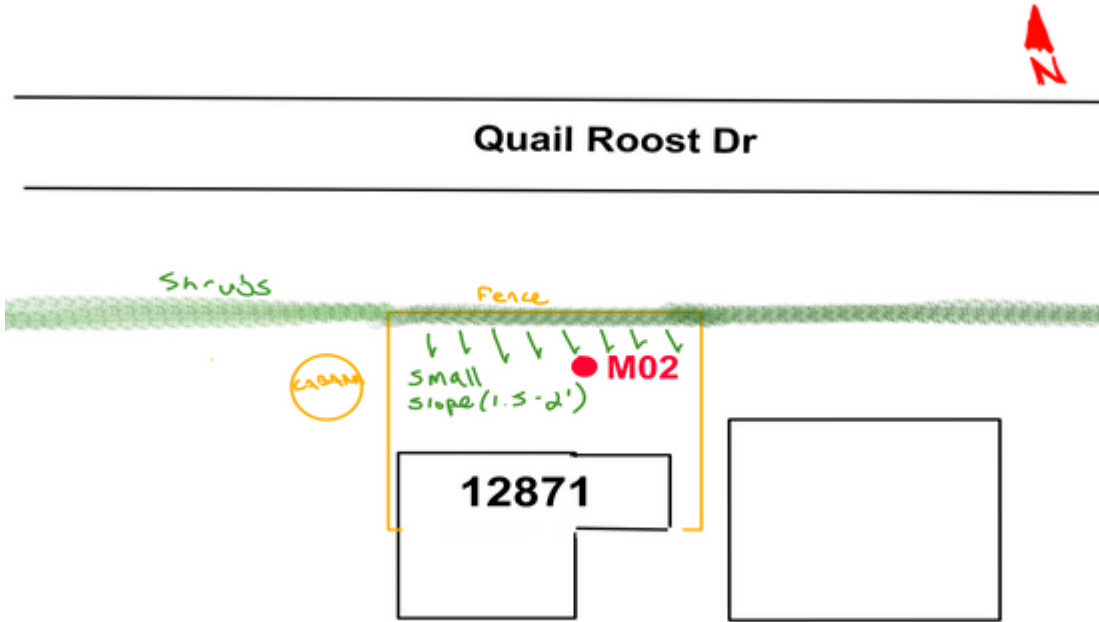
MCycle:	1	1	MCycle:			MCycle:			MCycle:		
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Traffic Data C

Roadway #1:	Quail Roost Dr		Roadway #2:		Roadway #3:		Roadway #4:	
Width(ft):			Width(ft):		Width(ft):		Width(ft):	
Direction:	EB	WB	Direction:		Direction:		Direction:	
Speed Limit:	40		Speed Limit:		Speed Limit:		Speed Limit:	
Observed Spd:	40		Observed Spd:		Observed Spd:		Observed Spd:	
Auto:	73	65	Auto:		Auto:		Auto:	
Med Tk:	3	4	Med Tk:		Med Tk:		Med Tk:	
Hvy Tk:	4	8	Hvy Tk:		Hvy Tk:		Hvy Tk:	
Bus:	0	1	Bus:		Bus:		Bus:	
MCycle:	0	0	MCycle:		MCycle:		MCycle:	

Notes: Relocated due to access issues at three properties east of measurement.

Site Sketch:



Personnel: *KAS*

M02 Site Photos:
North:

East:



South:



West:



Highway Noise Monitoring Sheet

Date: June 27, 2022 10:42 AM
Project: FDOT: Quail Roost Drive
Setup#: 2
Site ID(s): M03



Temperature (F): 88
Cloud cvr: None Partly Cloudy
Wind speed (mph): 0
Wind direction: West

Measurement Data															
ID:	M03	Start A:	10:41	Stop A:	10:51	<input type="checkbox"/> 20 min <input type="checkbox"/> 30 min <input type="checkbox"/> 24 hr <input checked="" type="checkbox"/> 3x10min	SLM #:	4229	L_{eq} A(dB):	62	L _{min} A(dB):	0	L _{max} A(dB):	72.7	
		Start B:	10:55	Stop B:	11:05		L_{eq} B(dB):	61	L _{min} B(dB):	0	L _{max} B(dB):	71.7			
		Start C:	11:09	Stop C:	11:19		L_{eq} C(dB):	61.9	L _{min} C(dB):	0	L _{max} C(dB):	69.4			
GPS (°N,°W):		25.58103735722376, -80.40281442625253					Stor A #:	199	Calib(dB):	94.11 / 01B		Meas. Ht(ft):		5	
		Stor B #:			200										
		Stor C #:			201										
Location:		19995 SW 130th Ave				Relocated				Pre-	Post-				
				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No								Weighting:		<input checked="" type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> Z	
Type(use, NAC):		Residential (B)				Site Photographed									
				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No											

Traffic Data A

Roadway #1:	Quail Roost		Roadway #2:	Roadway #3:	Roadway #4:
Width(ft):			Width(ft):	Width(ft):	Width(ft):
Direction:	EB	WB	Direction:	Direction:	Direction:
Speed Limit:	40	40	Speed Limit:	Speed Limit:	Speed Limit:
Observed Spd:			Observed Spd:	Observed Spd:	Observed Spd:
Auto:	51	64	Auto:	Auto:	Auto:
Med Tk:	2	3	Med Tk:	Med Tk:	Med Tk:
Hvy Tk:	0	5	Hvy Tk:	Hvy Tk:	Hvy Tk:
Bus:			Bus:	Bus:	Bus:
MCycle:			MCycle:	MCycle:	MCycle:

Traffic Data B

Roadway #1:	Quail Roost		Roadway #2:	Roadway #3:	Roadway #4:
Width(ft):			Width(ft):	Width(ft):	Width(ft):
Direction:	EB	WB	Direction:	Direction:	Direction:
Speed Limit:	40	40	Speed Limit:	Speed Limit:	Speed Limit:
Observed Spd:			Observed Spd:	Observed Spd:	Observed Spd:
Auto:	59	88	Auto:	Auto:	Auto:
Med Tk:	2	6	Med Tk:	Med Tk:	Med Tk:
Hvy Tk:	1	5	Hvy Tk:	Hvy Tk:	Hvy Tk:
Bus:			Bus:	Bus:	Bus:
MCycle:			MCycle:	MCycle:	MCycle:

Traffic Data C

Roadway #1:	Quail Roost		Roadway #2:		Roadway #3:		Roadway #4:	
Width(ft):			Width(ft):		Width(ft):		Width(ft):	
Direction:	EB	WB	Direction:		Direction:		Direction:	
Speed Limit:	40	40	Speed Limit:		Speed Limit:		Speed Limit:	
Observed Spd:			Observed Spd:		Observed Spd:		Observed Spd:	
Auto:	68	70	Auto:		Auto:		Auto:	
Med Tk:	5	5	Med Tk:		Med Tk:		Med Tk:	
Hvy Tk:	4	6	Hvy Tk:		Hvy Tk:		Hvy Tk:	
Bus:			Bus:		Bus:		Bus:	
MCycle:		1	MCycle:		MCycle:		MCycle:	

Notes: Lawn maintenance activity may be a weed eater to the south west

Site Sketch:



Personnel: *HA*

M03 Site Photos:
North:

East:



South:



West:



Highway Noise Monitoring Sheet

Date: June 27, 2022 10:46 AM
Project: FDOT: Quail Roost Drive
Setup#: 2
Site ID(s): M04



Temperature (F): 88
Cloud cvr: None Partly Cloudy
Wind speed (mph): 0
Wind direction:

Measurement Data														
ID:	M04	Start A:	10:41	Stop A:	10:51	<input type="checkbox"/> 20 min <input type="checkbox"/> 30 min <input type="checkbox"/> 24 hr <input checked="" type="checkbox"/> 3x10min	SLM #:	4228	L _{eq} A(dB):	62.9	L _{min} A(dB):	43.3	L _{max} A(dB):	76
		Start B:	10:55	Stop B:	11:05		L _{eq} B(dB):	62.3	L _{min} B(dB):	46	L _{max} B(dB):	78.1		
		Start C:	11:09	Stop C:	11:19		L _{eq} C(dB):	63.7	L _{min} C(dB):	43.4	L _{max} C(dB):	81.7		
GPS (°N,°W):		25.580983662468757, -80.4046619028458					Stor A #:	204	Calib(dB):	93.94 / 01A		Meas. Ht(ft): 5		
		Stor B #:			205									
		Stor C #:			206									
Location:		19975 SW 131st Ct Miami, FL, 33177, USA				Relocated <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			Pre-	Post-				
Type(use, NAC):		Residential (B)				Site Photographed <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				Weighting: <input checked="" type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> Z				

Traffic Data A

Roadway #1:	Quail Roost Dr		Roadway #2:	Roadway #3:	Roadway #4:
Width(ft):			Width(ft):	Width(ft):	Width(ft):
Direction:	EB	WB	Direction:	Direction:	Direction:
Speed Limit:	40	40	Speed Limit:	Speed Limit:	Speed Limit:
Observed Spd:	40	40	Observed Spd:	Observed Spd:	Observed Spd:
Auto:	51	64	Auto:	Auto:	Auto:
Med Tk:	2	3	Med Tk:	Med Tk:	Med Tk:
Hvy Tk:	0	5	Hvy Tk:	Hvy Tk:	Hvy Tk:
Bus:	0	0	Bus:	Bus:	Bus:
MCycle:	0	0	MCycle:	MCycle:	MCycle:

Traffic Data B

Roadway #1:	Quail Roost Dr		Roadway #2:	Roadway #3:	Roadway #4:
Width(ft):			Width(ft):	Width(ft):	Width(ft):
Direction:	EB	WB	Direction:	Direction:	Direction:
Speed Limit:	40	40	Speed Limit:	Speed Limit:	Speed Limit:
Observed Spd:	40	40	Observed Spd:	Observed Spd:	Observed Spd:
Auto:	59	88	Auto:	Auto:	Auto:
Med Tk:	2	6	Med Tk:	Med Tk:	Med Tk:
Hvy Tk:	1	5	Hvy Tk:	Hvy Tk:	Hvy Tk:
Bus:	0	0	Bus:	Bus:	Bus:

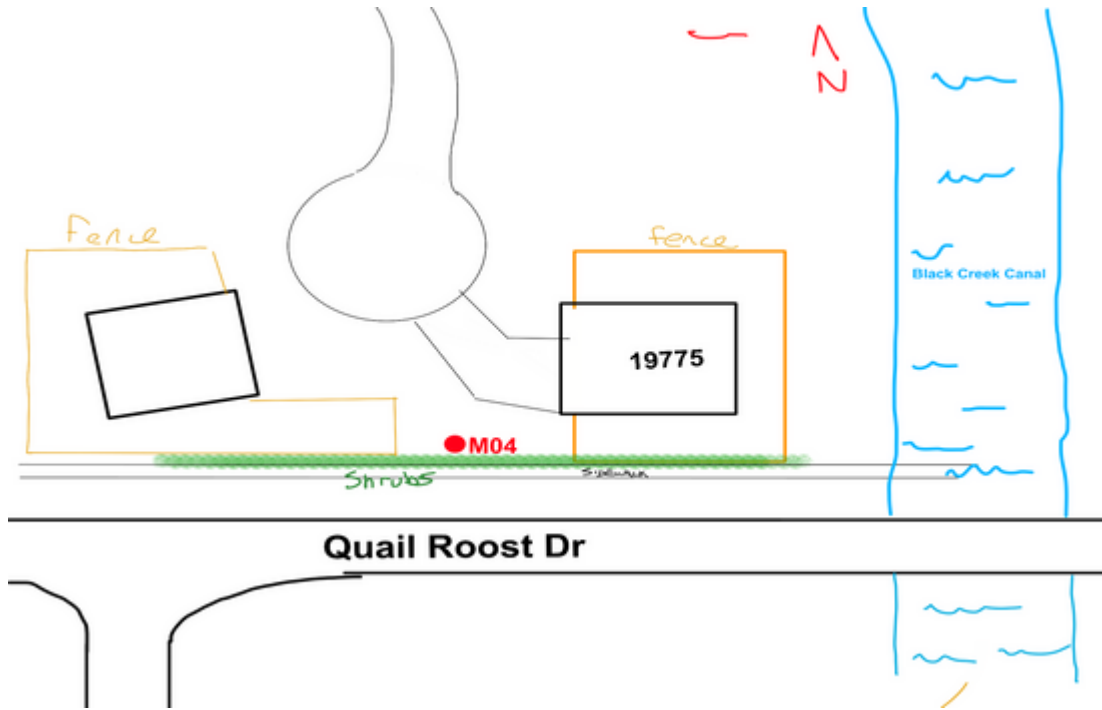
MCycle:	0	0	MCycle:		MCycle:		MCycle:	
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Traffic Data C

Roadway #1:	Quail Roost Dr		Roadway #2:		Roadway #3:		Roadway #4:	
Width(ft):			Width(ft):		Width(ft):		Width(ft):	
Direction:	EB	WB	Direction:		Direction:		Direction:	
Speed Limit:	40	40	Speed Limit:		Speed Limit:		Speed Limit:	
Observed Spd:	40	40	Observed Spd:		Observed Spd:		Observed Spd:	
Auto:	68	70	Auto:		Auto:		Auto:	
Med Tk:	5	4	Med Tk:		Med Tk:		Med Tk:	
Hvy Tk:	4	6	Hvy Tk:		Hvy Tk:		Hvy Tk:	
Bus:	0	0	Bus:		Bus:		Bus:	
MCycle:	0	1	MCycle:		MCycle:		MCycle:	

Notes: Relocated to outside of rear perimeter - homeowner did not understand English.

Site Sketch:



Personnel: *KS*

M04 Site Photos:
North:

East:



South:



West:



Highway Noise Monitoring Sheet

Date: June 27, 2022 11:37 AM
Project: FDOT: Quail Roost Drive
Setup#: 3
Site ID(s): M05



Temperature (F): 88
Cloud cvr: None Partly Cloudy
Wind speed (mph): 0
Wind direction: West

Measurement Data														
ID:	M05	Start A:	11:48	Stop A:	11:58	<input type="checkbox"/> 20 min	SLM #:	4229	L_{eq} A(dB):	60.	L _{min} A(dB):	0	L _{max} A(dB):	71
		Start B:	12:02	Stop B:	12:12	<input type="checkbox"/> 30 min			L_{eq} B(dB):	59.	L _{min} B(dB):	0	L _{max} B(dB):	72.1
		Start C:	12:16	Stop C:	12:26	<input type="checkbox"/> 24 hr			L_{eq} C(dB):	62.	L _{min} C(dB):	0	L _{max} C(dB):	73.5
						<input checked="" type="checkbox"/> 3x10min								
GPS (°N,°W):		25.580620219769504, -80.40636332633682				Stor A #:	202	Calib(dB):	94.11 / 01B		Meas. Ht(ft):		5	
		Stor B #:	203											
		Stor C #:	204											
Location:		13249 SW 200th Ter, Miami, FL, 33177, USA				Relocated <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Pre-	Post-					
Type(use, NAC):		Residential (B)				Site Photographed <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Weighting:		<input checked="" type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> Z				

Traffic Data A

Roadway #1:	Quail Roost		Roadway #2:	Roadway #3:	Roadway #4:
Width(ft):			Width(ft):	Width(ft):	Width(ft):
Direction:	EB	WB	Direction:	Direction:	Direction:
Speed Limit:	40	40	Speed Limit:	Speed Limit:	Speed Limit:
Observed Spd:			Observed Spd:	Observed Spd:	Observed Spd:
Auto:	66	44	Auto:	Auto:	Auto:
Med Tk:	8	3	Med Tk:	Med Tk:	Med Tk:
Hvy Tk:	1	3	Hvy Tk:	Hvy Tk:	Hvy Tk:
Bus:	0	0	Bus:	Bus:	Bus:
MCycle:	1	1	MCycle:	MCycle:	MCycle:

Traffic Data B

Roadway #1:	Quail Roost		Roadway #2:	Roadway #3:	Roadway #4:
Width(ft):			Width(ft):	Width(ft):	Width(ft):
Direction:	EB	WB	Direction:	Direction:	Direction:
Speed Limit:	40	40	Speed Limit:	Speed Limit:	Speed Limit:
Observed Spd:			Observed Spd:	Observed Spd:	Observed Spd:
Auto:	78	67	Auto:	Auto:	Auto:
Med Tk:	3	3	Med Tk:	Med Tk:	Med Tk:
Hvy Tk:	0	0	Hvy Tk:	Hvy Tk:	Hvy Tk:
Bus:	0	0	Bus:	Bus:	Bus:
MCycle:	1	0	MCycle:	MCycle:	MCycle:

Traffic Data C

Roadway #1:	Quail Roost		Roadway #2:		Roadway #3:		Roadway #4:	
Width(ft):			Width(ft):		Width(ft):		Width(ft):	
Direction:	EB	WB	Direction:		Direction:		Direction:	
Speed Limit:	40	40	Speed Limit:		Speed Limit:		Speed Limit:	
Observed Spd:			Observed Spd:		Observed Spd:		Observed Spd:	
Auto:	84	77	Auto:		Auto:		Auto:	
Med Tk:	6	5	Med Tk:		Med Tk:		Med Tk:	
Hvy Tk:	2	8	Hvy Tk:		Hvy Tk:		Hvy Tk:	
Bus:			Bus:		Bus:		Bus:	
MCycle:			MCycle:		MCycle:		MCycle:	

Notes: Dogs barking next door 1153

Site Sketch:



Personnel: *AP*

M05 Site Photos:
North:

East:



South:



West:



Highway Noise Monitoring Sheet

Date: June 27, 2022 11:48 AM
Project: FDOT: Quail Roost Drive
Setup#: 3
Site ID(s): M06



Temperature (F): 90
Cloud cvr: None Partly Cloudy
Wind speed (mph): 2
Wind direction: Southwest

Measurement Data														
ID:	M06	Start A:	11:48	Stop A:	11:58	<input type="checkbox"/> 20 min <input type="checkbox"/> 30 min <input type="checkbox"/> 24 hr <input checked="" type="checkbox"/> 3x10min	SLM #:	4228	L_{eq} A(dB):	64.4	L _{min} A(dB):	45	L _{max} A(dB):	80.4
		Start B:	00:02	Stop B:	12:12		L_{eq} B(dB):	62.2	L _{min} B(dB):	40.9	L _{max} B(dB):	72.7		
		Start C:	12:16	Stop C:	12:26		L_{eq} C(dB):	64.3	L _{min} C(dB):	46.3	L _{max} C(dB):	78.8		
GPS (°N,°W):		25.580700697805256, -80.40891328779323					Stor A #:	207	Calib(dB):	93.94 / 01A		Meas. Ht(ft):		5
						Stor B #:	208							
						Stor C #:	209							
Location:		20003 SW 134th Ave Miami, FL, 33177, USA				Relocated <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				Pre-	Post-			
Type(use, NAC):		Residential (B)				Site Photographed <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				Weighting:		<input checked="" type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> Z		

Traffic Data A

Roadway #1:	Quail Roost Dr		Roadway #2:	SW134th Ave		Roadway #3:	Roadway #4:	
Width(ft):			Width(ft):			Width(ft):		
Direction:	EB		Direction:	Both		Direction:		
Speed Limit:	40	40	Speed Limit:	25		Speed Limit:		
Observed Spd:	40	40	Observed Spd:	20		Observed Spd:		
Auto:	66	44	Auto:	9		Auto:		
Med Tk:	6	3	Med Tk:	4		Med Tk:		
Hvy Tk:	1	3	Hvy Tk:	3		Hvy Tk:		
Bus:	0	0	Bus:	0		Bus:		
MCycle:	1	1	MCycle:	0		MCycle:		

Traffic Data B

Roadway #1:	Quail Roost Dr		Roadway #2:	SW134th Ave		Roadway #3:	Roadway #4:	
Width(ft):			Width(ft):			Width(ft):		
Direction:	EB		Direction:	Both		Direction:		
Speed Limit:	40	40	Speed Limit:	25		Speed Limit:		
Observed Spd:	40	40	Observed Spd:	20		Observed Spd:		
Auto:	73	67	Auto:	25		Auto:		
Med Tk:	5	3	Med Tk:	4		Med Tk:		
Hvy Tk:	0	0	Hvy Tk:	1		Hvy Tk:		
Bus:	0	0	Bus:	1		Bus:		

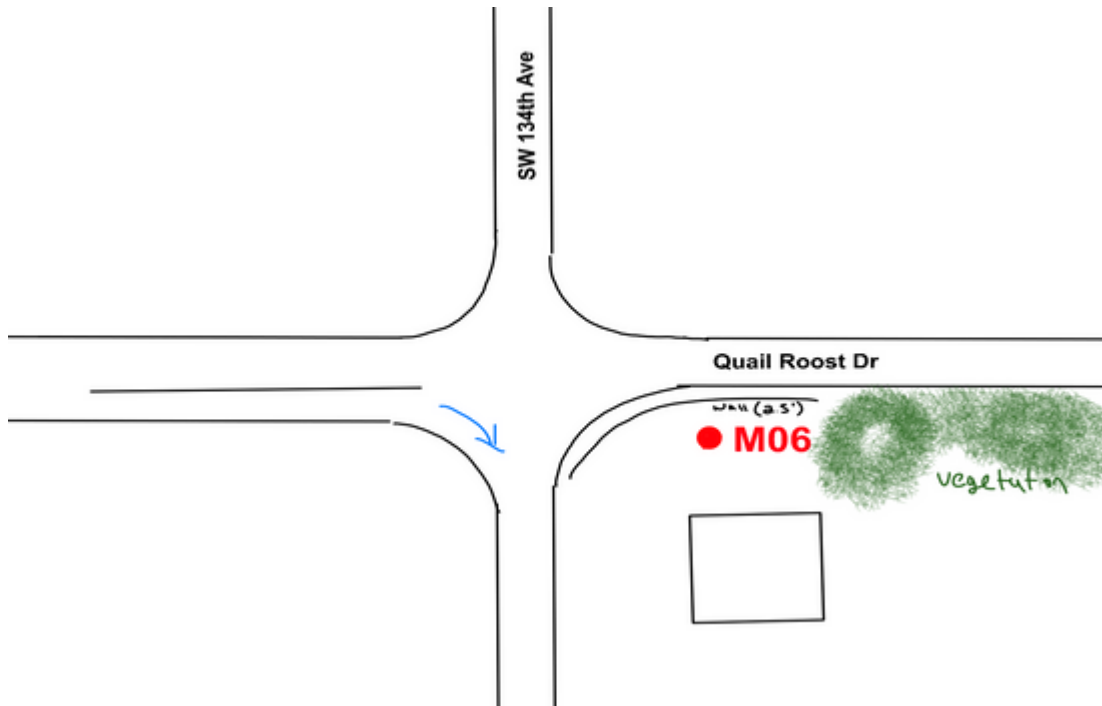
MCycle:	1	0	MCycle:	0	MCycle:		MCycle:	
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Traffic Data C

Roadway #1:	Quail Roost Dr		Roadway #2:	SW134th Ave		Roadway #3:			Roadway #4:		
Width(ft):			Width(ft):			Width(ft):			Width(ft):		
Direction:	EB		Direction:	Both		Direction:			Direction:		
Speed Limit:	40	40	Speed Limit:	25		Speed Limit:			Speed Limit:		
Observed Spd:	40	40	Observed Spd:	20		Observed Spd:			Observed Spd:		
Auto:	84	77	Auto:	30		Auto:			Auto:		
Med Tk:	6	5	Med Tk:	0		Med Tk:			Med Tk:		
Hvy Tk:	2	8	Hvy Tk:	0		Hvy Tk:			Hvy Tk:		
Bus:	9	0	Bus:	0		Bus:			Bus:		
MCycle:	0	0	MCycle:	0		MCycle:			MCycle:		

Notes: Trash truck 11:49 - 11:50 very loud. Note small property wall. Site relocated due to gated first row properties on SW 134th. Loud truck at 12:23.

Site Sketch:



Personnel: *KMS*

M06 Site Photos:
North:

East:



South:



West:



Highway Noise Monitoring Sheet

Date: June 27, 2022 1:02 PM
Project: FDOT: Quail Roost Drive
Setup#: 4
Site ID(s): M07



Temperature (F): 90
Cloud cvr: None Partly Cloudy
Wind speed (mph): 0
Wind direction: _____

Measurement Data														
ID:	M07	Start A:	13:04	Stop A:	13:14	<input type="checkbox"/> 20 min <input type="checkbox"/> 30 min <input type="checkbox"/> 24 hr <input checked="" type="checkbox"/> 3x10min	SLM #:	4228	L_{eq} A(dB):	63.9	L _{min} A(dB):	45.7	L _{max} A(dB):	79.4
		Start B:	13:27	Stop B:	13:37		L_{eq} B(dB):	62.6	L _{min} B(dB):	46.3	L _{max} B(dB):	79		
		Start C:	13:49	Stop C:	13:59		L_{eq} C(dB):	72	L _{min} C(dB):	46.7	L _{max} C(dB):	94		
GPS (°N,°W):		25.580831249999996, -80.41381718333334					Stor A #:	210	Calib(dB):	93.94 / 01A		Meas. Ht(ft):		5
						Stor B #:	211							
						Stor C #:	212							
Location:		19901 SW 137th Ave, Miami, FL 33177				Relocated				Pre-	Post-			
						<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No								
Type(use, NAC):		Residential (B)				Site Photographed				Weighting:		<input checked="" type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> Z		
						<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No								

Traffic Data A

Roadway #1:	Quail Roost Dr (East of SW 137 Ave)	Roadway #2:	Quail Roost (west of SW 137)	Roadway #3:	SW 137 Ave	Roadway #4:	
Width(ft):		Width(ft):		Width(ft):		Width(ft):	
Direction:	Both	Direction:	EB WB	Direction:		Direction:	
Speed Limit:	40	Speed Limit:	40 40	Speed Limit:	40	Speed Limit:	
Observed Spd:	40	Observed Spd:	40 40	Observed Spd:	40	Observed Spd:	
Auto:	117	Auto:	39 35	Auto:	0	Auto:	
Med Tk:	7	Med Tk:	4 5	Med Tk:	0	Med Tk:	
Hvy Tk:	2	Hvy Tk:	1 0	Hvy Tk:	0	Hvy Tk:	
Bus:	0	Bus:	0 0	Bus:	0	Bus:	
MCycle:	0	MCycle:	0 0	MCycle:	0	MCycle:	

Traffic Data B

Roadway #1:	Quail Roost Dr (East of SW 137 Ave)	Roadway #2:	Quail Roost (west of SW 137)	Roadway #3:	SW 137 Ave	Roadway #4:	
Width(ft):		Width(ft):		Width(ft):		Width(ft):	
Direction:	Both	Direction:	EB WB	Direction:		Direction:	
Speed Limit:	40	Speed Limit:	40 40	Speed Limit:	40	Speed Limit:	
Observed Spd:	40	Observed Spd:	40 40	Observed Spd:	40	Observed Spd:	
Auto:	151	Auto:	35 51	Auto:	91	Auto:	
Med Tk:	2	Med Tk:	5 1	Med Tk:	3	Med Tk:	
Hvy Tk:	1	Hvy Tk:	2 0	Hvy Tk:	1	Hvy Tk:	

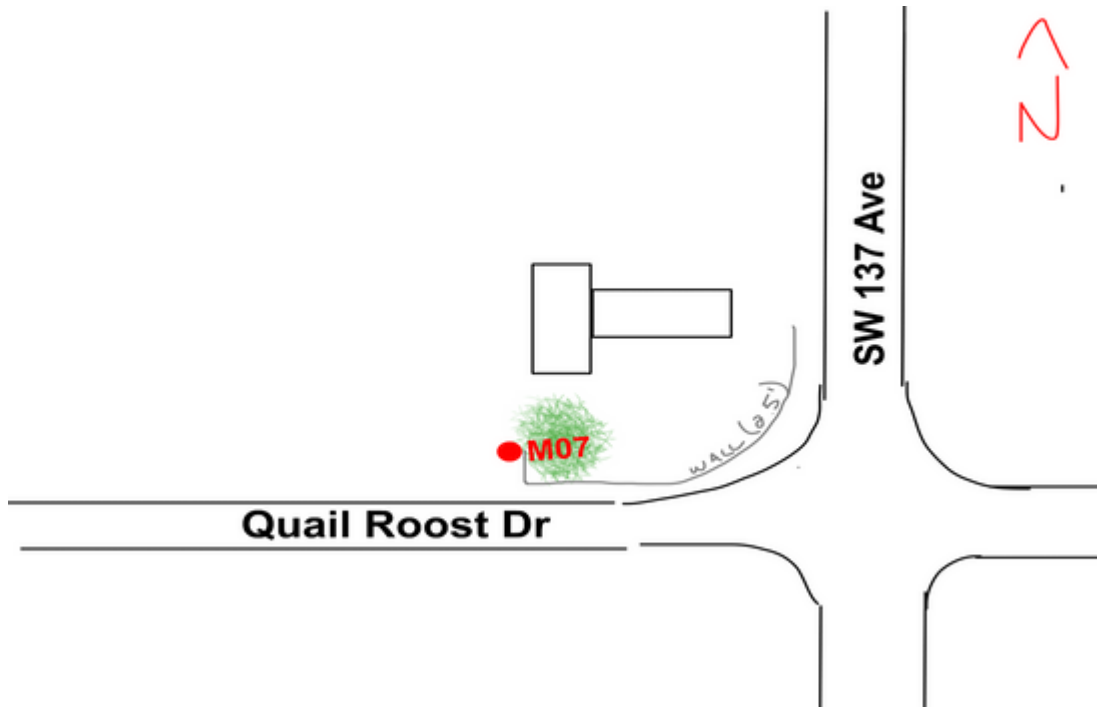
Bus:	0		Bus:	0	0	Bus:	0		Bus:		
MCycle:	0		MCycle:	0	0	MCycle:	0		MCycle:		

Traffic Data C

Roadway #1:	Quail Roost Dr (East of SW 137 Ave)		Roadway #2:	Quail Roost (west of SW 137)		Roadway #3:	SW 137 Ave		Roadway #4:		
Width(ft):			Width(ft):			Width(ft):			Width(ft):		
Direction:	Both		Direction:	EB	WB	Direction:			Direction:		
Speed Limit:	40		Speed Limit:	40	40	Speed Limit:	40		Speed Limit:		
Observed Spd:	40		Observed Spd:	40	40	Observed Spd:	40		Observed Spd:		
Auto:	151		Auto:	34	46	Auto:	99		Auto:		
Med Tk:	2		Med Tk:	2	2	Med Tk:	0		Med Tk:		
Hvy Tk:	7		Hvy Tk:	5	3	Hvy Tk:	0		Hvy Tk:		
Bus:	0		Bus:	0	0	Bus:	0		Bus:		
MCycle:	0		MCycle:	0	1	MCycle:	0		MCycle:		

Notes: Note small perimeter wall on SW 137 intersection.

Site Sketch:



Personnel: KAB

M07 Site Photos:
North:

East:



South:



West:



APPENDIX B

Peak Traffic Volumes and TNM Traffic Inputs

APPENDIX B

PEAK TRAFFIC AND TNM INPUT VOLUMES

SR 994/SW 200TH STREET/QUAIL ROOST DRIVE - PD STUDY

CEC Report Raw Values		TNM Segment Description										TNM Inputs													
Intersection of SR 994/SW 200 St at SW 137 Ave																									
AM Peak Period																									
Direction of traffic	Existing Posted Speed Limit (MPH)	Segment:	Number	Name:	Existing 2021							No Build 2045							Build 2045						
					LOS C / PHV	Travel Lanes:	Auto	MT	HT	B	MC	LOS C / PHV	Travel Lanes:	Auto	MT	HT	B	MC	LOS C / PHV	Travel Lanes:	Auto	MT	HT	B	MC
Eastbound	45	2 QR EB west of 137			453	1	381	27	36	0	5	535	1	449	32	43	0	5	526	1	442	32	42	0	5
Westbound	40	3 QR WB between 137 and Talbot			872	1	828	26	17	0	0	872	1	828	26	17	0	0	1201	2	1141	36	24	0	0
Northbound	40	10 137 NB S of QR			-	-	-	-	-	-	-	830	-	813	8	8	0	0	1126	2	1103	11	11	0	0
Southbound	40	11 137 SB N of QR			377	1	354	8	11	0	0	830	1	780	17	25	0	0	926	2	870	19	28	0	0
Northbound (D)	40	10A NB SW 137th Ave (825)			567	1	533	11	17	0	0	830	1	780	17	25	0	0	1378	2	1295	28	41	0	0
Westbound (D)	45	3A QR WB_E of 137			432	1	410	13	9	0	0	599	1	569	18	12	0	0	490	2	466	15	10	0	0
PM Off-Peak Period																									
Eastbound	45	2 QR EB west of 137			443	1	421	13	9	0	0	442	1	420	13	9	0	0	435	1	413	13	9	0	0
Westbound	40	3 QR WB between 137 and Talbot			732	1	652	29	44	7	0	872	1	776	35	52	9	0	1041	2	926	42	62	10	0
Northbound	40	10 137 NB S of QR			-	-	-	-	-	-	-	830	-	813	8	8	0	0	969	2	949	10	10	0	0
Southbound	40	11 137 SB N of QR			533	1	511	21	0	0	0	830	1	797	33	0	0	0	1265	2	1214	51	0	0	0
Northbound (D)	40	10A NB SW 137th Ave (825)			397	1	381	16	0	0	0	830	1	797	33	0	0	0	908	2	872	36	0	0	0
Westbound (D)	45	3A QR WB_E of 137			413	1	368	17	25	4	0	618	1	550	25	37	6	0	507	2	451	20	30	5	0
Intersection of SR 994/SW 200 St at SW 134 Ave (TALBOT)																									
AM Peak Period																									
Eastbound	40	4 QR EB 137 to 134			777	1	717	21	32	2	3	848	1	783	23	35	2	4	1115	2	1030	30	46	3	5
Westbound	40	5 QR WB 134 to 132			664	1	643	9	11	2	0	830	1	803	11	13	2	0	1121	2	1085	15	18	3	0
Northbound	35	12 134 NB S of QR			167	1	152	11	2	0	2	353	1	321	23	5	0	5	374	1	340	24	5	0	5
Southbound	35	13 134 SB N of QR			92	1	84	0	3	4	0	144	1	133	0	5	6	0	144	1	133	0	5	6	0
PM Off-Peak Period																									
Eastbound	40	4 QR EB 137 to 134			858	1	829	15	9	4	1	872	1	842	15	9	5	1	1245	2	1203	21	13	6	2
Westbound	40	5 QR WB 134 to 132			664	1	596	23	37	6	1	830	1	745	29	47	7	1	915	2	822	32	51	8	2
Northbound	35	12 134 NB S of QR			167	1	160	6	1	0	0	380	1	364	13	3	0	0	402	1	386	13	3	0	0
Southbound	35	13 134 SB N of QR			56	1	55	0	1	0	0	100	1	98	0	2	0	0	100	1	98	0	2	0	0
Intersection of SR 994/SW 200 St at SW 132 Ave																									
AM Peak Period																									
Eastbound	40	6 QR EB 134 to 132			664	1	606	15	40	2	2	664	1	606	15	40	2	2	1181	2	1078	26	70	3	3
Westbound	40	7 QR WB 132 to 137			664	1	642	7	13	2	0	664	1	642	7	13	2	0	1087	2	1052	12	21	3	0
(LT+RT)	30	14 SW 132 NB S of QR			244	1	235	3	5	0	1	336	1	323	4	7	0	1	336	1	323	4	7	0	1
PM Off-Peak Period																									
Eastbound	40	6 QR EB 134 to 132			664	1	638	15	10	1	0	664	1	638	15	10	1	0	1181	2	1135	27	18	2	0
Westbound	40	7 QR WB 132 to 137			664	1	606	21	32	4	1	664	1	606	21	32	4	1	1136	2	1037	35	56	7	1
(LT+RT)	30	14 SW 132 NB S of QR			91	1	85	2	4	0	0	161	1	150	4	7	0	0	161	1	150	4	7	0	0
Intersection of SR 994/SW 200 St at SW 127 Ave (BURR)																									
AM Peak Period																									
Eastbound	40	8 QR EB 132 to 127			830	2	749	16	59	3	4	830	2	749	16	59	3	4	1435	2	1295	28	102	5	6
Westbound	40	9 QR WB E of 127			847	2	807	8	26	5	0	872	2	831	9	27	5	0	1135	2	1082	11	35	7	0
Northbound	40	16 Burr NB S of QR			703	1	659	12	28	5	0	872	1	816	15	34	7	0	684	1	640	11	27	5	0
Southbound	40	17 Burr SB N of QR			321	2	311	2	5	2	1	493	2	478	3	8	3	2	326	1	316	2	5	2	1
Northbound (D)	40	16A 127NB N of QR			477	1	448	10	19	5	0	632	1	594	13	25	6	0	523	2	492	10	21	5	0
Eastbound (D)	40	8A QR *BRL E of 127			1299	2	1169	26	91	0	0	830	2	747	17	58	0	0	1483	2	1335	30	104	0	0
Southbound (D)	40	17A 127SB *L S of QR			404	2	392	4	8	4	0	766	2	743	8	15	8	0	616	2	598	6	12	6	0
PM Off-Peak Period																									
Eastbound	40	8 QR EB 132 to 127			768	2	717	27	23	2	0	830	2	775	29	24	2	0	1223	2	1141	43	36	3	0
Westbound	40	9 QR WB E of 127			872	2	810	19	36	5	1	872	2	810	19	36	5	1	1289	2	1198	28	54	7	1
Northbound	40	16 Burr NB S of QR			514	1	482	12	19	0	1	730	1	684	18	26	0	2	515	1	482	12	19	0	1
Southbound	40	17 Burr SB N of QR			480	2	440	11	23	5	0	659	2	605	15	32	7	0	436	1	400	10	21	5	0
Northbound (D)	40	16A 127NB N of QR			344	1	323	7	14	0	0	493	1	463	10	20	0	0	394	1	370	8	16	0	0
Eastbound (D)	40	8A QR *BRL E of 127			830	2	772	25	25	0	0	830	2	772	25	25	0	0	1230	2	1144	37	37	0	0
Southbound (D)	40	17A 127SB *L S of QR			619	2	569	12	31	6	0	830	2	764	17	42	8	0	798	2	734	16	40	8	0

- Notes:
- 1)- Information presented is as of 1/14/2022.
 - 2)- Only current posted speed limits are shown. Future speed limit changes, if any, are not known at this time.
 - 3)- Peak-Hour Volume for LOS C may change if intersection improvements are
 - 4)- Truck percentages for future conditions are the same as for existing conditions.
 - 5)- Truck percentages for existing conditions were determined based on review of video recordings for
 - 6)- LOS C Values in Red
 - 7)-Traffic volumes are "approach" volumes unless noted with (D)
 - 7)- Assumptions are noted on applicable cells (KAB)
 - 8)- Roadways with assumed values (departure values) are labeled in TNM roadway names (3A, 10A, etc.)
 - 9)- Roadways without traffic are labeled NT,"roadway"

APPENDIX C

Noise Measurement Data and TNM Validation Results

APPENDIX C
NOISE MEASUREMENT DATA AND TNM VALIDATION RESULTS
SR 994/SW 200TH STREET/QUAIL ROOST DRIVE - PD&E STUDY

Measurement ID Number	Date	Time Period	10 Minute Measurement Concurrent Traffic Counts							Hourly Traffic Based on Concurrent Traffic Counts						TNM Model Validation Noise Levels in dB(A)		
			Roadway	Autos	Medium Trucks	Heavy Trucks	Buses	Motor-cycles	Total	Autos	Medium Trucks	Heavy Trucks	Buses	Motor-cycles	Total	Modeled Leq(h)	Measured Leq	Difference
M1A	6.27.22	9:34-9:44am	EB Quail Roost	81	8	3	0	0	92	486	48	18	0	0	552	61.3	60.4	0.9
			WB Quail Roost	69	5	2	0	0	76	414	30	12	0	0	456			
M1B	6.27.22	9:48-9:58am	EB Quail Roost	86	1	1	0	0	88	516	6	6	0	0	528	60.3	62.2	-1.9
			WB Quail Roost	64	3	4	0	0	71	384	18	24	0	0	426			
M1C	6.27.22	10:03-10:13am	EB Quail Roost	73	3	4	0	0	80	438	18	24	0	0	480	62.1	61.8	0.3
			WB Quail Roost	65	4	8	1	0	78	390	24	48	6	0	468			
M2A	6.27.22	9:34-9:44am	EB Quail Roost	81	8	3	0	1	93	486	48	18	0	6	558	62.9	61.5	1.4
			WB Quail Roost	69	5	2	0	0	76	414	30	12	0	0	456			
M2B	6.27.23	9:48-9:58am	EB Quail Roost	86	1	1	0	0	88	516	6	6	0	0	528	61.7	60.6	1.1
			WB Quail Roost	64	3	4	1	0	72	384	18	24	6	0	432			
M2C	6.27.24	10:03-10:13am	EB Quail Roost	73	3	4	0	0	80	438	18	24	0	0	480	63.5	61.4	2.1
			WB Quail Roost	65	4	8	1	0	78	390	24	48	6	0	468			
M3A	6.27.25	10:41-10:51am	EB Quail Roost	51	2	1	0	0	54	306	12	6	0	0	324	60.6	62.0	-1.4
			WB Quail Roost	64	3	5	0	0	72	384	18	30	0	0	432			
M3B	6.27.23	10:55-11:05am	EB Quail Roost	59	2	1	0	0	62	354	12	6	0	0	372	61.3	61.0	0.3
			WB Quail Roost	88	6	5	0	0	99	528	36	30	0	0	594			
M3C	6.27.23	11:09-11:19am	EB Quail Roost	68	5	4	0	0	77	408	30	24	0	0	462	62.3	61.9	0.4
			WB Quail Roost	70	5	6	0	1	82	420	30	36	0	6	492			
M4A	6.27.25	10:41-10:51am	EB Quail Roost*	51	2	0	0	0	53	306	12	0	0	0	318	62.6	62.9	-0.3
			WB Quail Roost*	64	3	5	0	0	72	384	18	30	0	0	432			
M4B	6.27.23	10:55-11:05am	EB Quail Roost*	59	2	1	0	0	62	354	12	6	0	0	372	63.7	62.3	1.4
			WB Quail Roost*	88	6	5	0	0	99	528	36	30	0	0	594			
M4C	6.27.23	11:09-11:19am	EB Quail Roost*	68	5	4	0	0	77	408	30	24	0	0	462	64.5	63.7	0.8
			WB Quail Roost*	70	4	6	0	1	81	420	24	36	0	6	486			
M5A	6.27.25	11:48-11:58am	EB Quail Roost*	66	8	1	0	1	76	396	48	6	0	6	456	60.6	60.3	0.3
			WB Quail Roost*	44	3	3	0	1	51	264	18	18	0	6	306			
M5B	6.27.23	12:02-12:12pm	EB Quail Roost*	78	3	0	0	1	82	468	18	0	0	6	492	58.6	59.9	-1.3
			WB Quail Roost*	67	3	0	0	0	70	402	18	0	0	0	420			
M5C	6.27.23	12:16-12:26pm	EB Quail Roost*	84	6	2	0	0	92	504	36	12	0	0	552	62.3	62.4	-0.1
			WB Quail Roost*	77	5	8	0	0	90	462	30	48	0	0	540			
M6A	6.27.25	11:48-11:58am	EB Quail Roost	66	6	1	0	1	74	396	36	6	0	6	444	65.2	64.4	0.8
			WB Quail Roost	44	3	3	0	1	51	264	18	18	0	6	306			
M6B	6.27.23	12:02-12:12pm	SW 134 bothways	9	4	3	0	0	16	27	12	9	0	0	48	63.9	62.2	1.7
			EB Quail Roost	73	5	0	0	1	79	438	30	0	0	6	474			
			WB Quail Roost	67	3	0	0	0	70	402	18	0	0	0	420			
			SW 134 bothways	25	4	1	1	0	31	75	12	3	3	0	93			
M6C	6.27.23	12:16-12:26pm	EB Quail Roost	84	6	2	9	0	101	504	36	12	54	0	606	67.2	64.3	2.9
			WB Quail Roost	77	5	8	0	0	90	462	30	48	0	0	540			
			SW 134 bothways	30	0	0	0	0	30	90	0	0	0	0	90			
			EB Quail Roost	39	4	1	0	0	44	234	24	6	0	0	264			
M7A	6.27.25	1:04-1:14pm	WB Quail Roost	35	5	0	0	0	40	210	30	0	0	0	240	61.8	63.9	-2.1
			EB & WB East of 137	117	7	2	0	0	126	351	21	6	0	0	378			
			SW 137 bothways	91	3	1	0	0	95	273	9	3	0	0	285			
			EB Quail Roost	35	5	2	0	1	43	210	30	12	0	6	258			
M7B	6.27.23	1:13-1:337pm	WB Quail Roost	51	1	0	0	0	52	306	6	0	0	0	312	61.8	62.6	-0.8
			EB & WB East of 137	151	2	1	0	0	154	453	6	3	0	0	462			
			SW 137 bothways	91	3	1	0	0	95	273	9	3	0	0	285			
			EB Quail Roost	34	2	5	0	0	41	204	12	30	0	0	246			
M7C	6.27.23	1:49-1:59pm	WB Quail Roost	46	2	3	0	1	52	276	12	18	0	6	312	63.8	72.0**	8.2
			EB & WB East of 137	151	2	7	0	0	160	453	6	21	0	0	480			
			SW 137 bothways	99	0	0	0	0	0	297	0	0	0	0	297			
			EB Quail Roost	34	2	5	0	0	41	204	12	30	0	0	246			

*Reduced traffic speed used due to crosswalk over Quail Roost Drive near measurement site.

**Interference during part of measurement period from agricultural spraying activity on opposing side of Quail Roost Drive.

APPENDIX D

Location and Description of Representative Receptor Sites and Noise Analysis Results

APPENDIX D
LOCATION AND DESCRIPTION OF REPRESENTATIVE NOISE SENSITIVE RECEPTOR SITES AND NOISE ANALYSIS
RESULTS 994/SW 200TH STREET/QUAIL ROOST DRIVE - PD&E STUDY

Name of Noise Sensitive Area/Site	Representative Noise Receptor Site Designation	Noise Sensitive Site Description	Number of Noise Sensitive Sites Represented	Noise Abatement Activity Category - Criteria	Station Number	TNM Predicted Noise Levels (dB(A))					Noise Abatement Criteria Status / Consideration of Noise Abatement Warranted?
						Existing Condition (2021)	Design Year (2045)				
							No-Build Alternative	Increase Over Existing	Build Alternative	Increase Over Existing	
NSA 1 - North of Quail Roost Drive from SW 137th Ave to Black Creek Canal	R1.01 (M7)	Single-Family Residence	1	NAC B (residential) - 66 dB(A)	313+15	64.3	66.4	2.1	67.1	2.8	Exceeds / Yes
	R1.02 (Church A, Calvary Pentacostal Church of Miami)	Interior Measurement, Place of Worship	1	NAC D (interior) - 51 dB(A)	315+50	37.0	39.3	27.3	42.3	5.3	Below / No
	R1.03	First Row Single-Family Residence	1	NAC B (residential) - 66 dB(A)	322+50	60.6	61.3	0.7	67.7	7.1	Exceeds / Yes
	R1.04	Second Row Single-Family Residence	1		322+50	56.8	57.6	0.8	61.7	4.9	Below / No
	R1.05	Single-Family Residence	1		322+50	53.1	54.2	1.1	57.7	4.6	Below / No
	R1.06	Single-Family Residence	1		322+50	49.3	50.7	1.4	53.6	4.3	Below / No
	R1.07	First Row Single-Family Residence	1		323+50	62.1	62.8	0.7	69.8	7.7	Exceeds / Yes
	R1.08	Second Row Single-Family Residence	1		323+50	55.8	56.8	1.0	61.0	5.2	Below / No
	R1.09	Single-Family Residence	1		323+50	52.7	53.8	1.1	57.4	4.7	Below / No
	R1.10	Single-Family Residence	1		323+50	49.7	51.2	1.5	53.9	4.2	Below / No
	R1.11	First Row Single-Family Residence	1		326+00	60.6	62.3	1.7	68.2	7.6	Exceeds / Yes
	R1.12	Second Row Single-Family Residence	1		326+00	55.8	57.1	1.3	60.6	4.8	Below / No
	R1.13	Single-Family Residence	1		326+00	53.0	54.4	1.4	57.6	4.6	Below / No
	R1.14	First Row Single-Family Residence	1		326+00	60.7	62.4	1.7	68.9	8.2	Exceeds / Yes
	R1.15	Second Row Single-Family Residence	1		327+00	56.6	58.1	1.5	61.1	4.5	Below / No
	R1.16	Single-Family Residence	1		327+00	54.2	55.8	1.6	58.6	4.4	Below / No
	R1.17	Single-Family Residence	1		327+00	52.8	54.6	1.8	56.8	4.0	Below / No
	R1.18	Single-Family Residence	1		327+00	50.6	52.4	1.8	54.6	4.0	Below / No
	R1.19	First Row Single-Family Residence	1		329+00	60.4	61.5	1.1	63.2	2.8	Below / No
	R1.20	Second Row Single-Family Residence	1		329+00	56.4	57.8	1.4	60.2	3.8	Below / No
	R1.21	Single-Family Residence	1		329+00	51.5	53.1	1.6	55.3	3.8	Below / No
	R1.22	First Row Single-Family Residence	1		330+30	65.7	66.5	0.8	67.4	1.7	Exceeds / Yes
	R1.23	First Row Single-Family Residence	1		332+00	63.3	64.0	0.7	65.5	2.2	Below / No
	R1.24	Second Row Single-Family Residence	1		332+00	57.6	58.4	0.8	60.8	3.2	Below / No
	R1.25	Single-Family Residence	1		332+00	53.5	54.4	0.9	57.4	3.9	Below / No
	R1.26	Single-Family Residence	1		332+00	50.4	51.4	1.0	54.5	4.1	Below / No
	R1.27	First Row Single-Family Residence	1		334+15	66.1	66.8	0.7	68.7	2.6	Exceeds / Yes
	R1.28	Second Row Single-Family Residence	1		334+15	57.2	57.9	0.7	60.6	3.4	Below / No
	R1.29	Single-Family Residence	1		334+15	53.0	53.8	0.8	57.1	4.1	Below / No
	R1.30	Single-Family Residence	1		334+15	49.6	50.4	0.8	53.6	4.0	Below / No
	R1.31	First Row Single-Family Residence	1		335+00	63.9	64.6	0.7	67.0	3.1	Exceeds / Yes
	R1.32	Single-Family Residence	1		335+00	52.6	53.4	0.8	56.9	4.3	Below / No
	R1.33	Single-Family Residence	1		335+00	49.8	50.6	0.8	53.9	4.1	Below / No
	R1.34	First Row Single-Family Residence	1		337+60	67.4	68.1	0.7	70.4	3.0	Exceeds / Yes
	R1.35	Second Row Single-Family Residence	1		337+60	58.3	59.0	0.7	61.7	3.4	Below / No
	R1.36	Single-Family Residence	1		337+60	53.4	54.0	0.6	57.6	4.2	Below / No

APPENDIX D
LOCATION AND DESCRIPTION OF REPRESENTATIVE NOISE SENSITIVE RECEPTOR SITES AND NOISE ANALYSIS
RESULTS 994/SW 200TH STREET/QUAIL ROOST DRIVE - PD&E STUDY

Name of Noise Sensitive Area/Site	Representative Noise Receptor Site Designation	Noise Sensitive Site Description	Number of Noise Sensitive Sites Represented	Noise Abatement Activity Category - Criteria	Station Number	TNM Predicted Noise Levels (dB(A))					Noise Abatement Criteria Status / Consideration of Noise Abatement Warranted?
						Existing Condition (2021)	Design Year (2045)				
							No-Build Alternative	Increase Over Existing	Build Alternative	Increase Over Existing	
NSA 1 - North of Quail Roost Drive from SW 137th Ave to Black Creek Canal	R1.37	Single-Family Residence	1	NAC B (residential) - 66 dB(A)	337+60	51.3	52.0	0.7	55.7	4.4	Below / No
	R1.38	Single-Family Residence	1		337+60	49.2	49.8	0.6	53.3	4.1	Below / No
	R1.39	First Row Single-Family Residence	1		338+40	67.4	68.0	0.6	70.3	2.9	Exceeds / Yes
	R1.40	Second Row Single-Family Residence	1		338+40	58.0	58.7	0.7	61.7	3.7	Below / No
	R1.41	Single-Family Residence	1		338+40	53.8	54.4	0.6	58.2	4.4	Below / No
	R1.42	Single-Family Residence	1		338+40	51.1	51.8	0.7	55.5	4.4	Below / No
	R1.43	Single-Family Residence	1		338+40	48.8	49.5	0.7	52.9	4.1	Below / No
	R1.44	First Row Single-Family Residence	1		341+00	66.3	66.9	0.6	69.4	3.1	Exceeds / Yes
	R1.45	Second Row Single-Family Residence	1		341+00	57.8	58.4	0.6	61.6	3.8	Below / No
	R1.46	Single-Family Residence	1		340+00	51.2	51.9	0.7	55.2	4.0	Below / No
	R1.47	Single-Family Residence	1		341+00	49.7	50.2	0.5	53.9	4.2	Below / No
	R1.48	First Row Single-Family Residence	1		341+50	67.4	67.9	0.5	70.4	3.0	Exceeds / Yes
	R1.49	Second Row Single-Family Residence	1		341+50	58.3	58.9	0.6	62.1	3.8	Below / No
	R1.50	Single-Family Residence	1		341+50	53.4	54.0	0.6	57.7	4.3	Below / No
	R1.51 (M4)	First Row Single-Family Residence	1		344+00	66.5	66.7	0.2	60.8	-5.7	Exceeds / Yes
	R1.52	Second Row Single-Family Residence	1		344+00	57.0	57.2	0.2	59.5	2.5	Below / No
	R1.53	Single-Family Residence	1		343+00	53.5	53.9	0.4	57.3	3.8	Below / No
	R1.54	Single-Family Residence	1		342+50	51.7	52.1	0.4	55.9	4.2	Below / No
	R1.55	Single-Family Residence	1		342+00	49.9	50.5	0.6	54.0	4.1	Below / No
	R1.56	Single-Family Residence	1		N/A	63.6	66.1	2.5	68.3	4.7	Exceeds / Yes
R1.57	Single-Family Residence	1	N/A	63.7	66.1	2.4	68.5	4.8	Exceeds / Yes		
R1.58	Single-Family Residence	1	N/A	62.3	64.7	2.4	67.9	5.6	Exceeds / Yes		
R1.59	Single-Family Residence	1	N/A	62.1	64.5	2.4	68.9	6.8	Exceeds / Yes		
R1.60	Single-Family Residence	1	N/A	52.9	55.3	2.4	57.2	4.3	Below / No		
R1.61	Single-Family Residence	1	N/A	50.2	52.7	2.5	54.6	4.4	Below / No		
R1.62	Single-Family Residence	1	N/A	49.6	51.9	2.3	54.7	5.1	Below / No		
R1.63	Single-Family Residence	1	N/A	49.6	51.9	2.3	54.7	5.1	Below / No		
R1.64	Single-Family Residence	1	N/A	52.8	55.2	2.4	58.5	5.7	Below / No		
Minimum						37.0	39.3	0.2	42.3	-5.7	---
Maximum						67.4	68.1	27.3	70.4	8.2	---
Total Number of Residential Sites Equal to or Greater than the Noise Abatement Criteria (NAC) of 66 dB(A) (Impacted)						1	10	---	16	---	---
NSA 2 - North of Quail Roost Drive from Black Creek Canal to SW 127th Ave	R2.01	First Row Single-Family Residence	1	NAC B (residential) - 66 dB(A)	347+00	66.8	67.0	0.2	68.6	1.8	Exceeds / Yes
	R2.02	Second Row Single-Family Residence	1		347+00	57.5	57.7	0.2	60.7	3.2	Below / No
	R2.03	Single-Family Residence	1		347+00	54.3	54.5	0.2	58.1	3.8	Below / No
	R2.04	Single-Family Residence	1		346+00	51.6	51.8	0.2	55.2	3.6	Below / No
	R2.05	Single-Family Residence	1		345+00	49.5	49.8	0.3	53.1	3.6	Below / No
	R2.06 (M3)	First Row Single-Family Residence	1		349+50	61.5	61.7	0.2	64.7	3.2	Below / No
	R2.07	Second Row Single-Family Residence	1		349+50	57.6	57.7	0.1	60.9	3.3	Below / No
	R2.08	Single-Family Residence	1		349+50	54.0	54.2	0.2	57.8	3.8	Below / No
	R2.09	Single-Family Residence	1		349+50	50.5	50.6	0.1	54.2	3.7	Below / No
	R2.10	Single-Family Residence	1		349+50	49.4	49.6	0.2	53.1	3.7	Below / No
	R2.11	First Row Single-Family Residence	1		350+50	62.0	62.2	0.2	65.1	3.1	Below / No
	R2.12	Second Row Single-Family Residence	1		350+50	56.7	56.8	0.1	59.7	3.0	Below / No
	R2.13	Single-Family Residence	1		350+50	53.2	53.3	0.1	56.6	3.4	Below / No
R2.14	Single-Family Residence	1	350+50	51.1	51.2	0.1	55.0	3.9	Below / No		

APPENDIX D
LOCATION AND DESCRIPTION OF REPRESENTATIVE NOISE SENSITIVE RECEPTOR SITES AND NOISE ANALYSIS
RESULTS 994/SW 200TH STREET/QUAIL ROOST DRIVE - PD&E STUDY

Name of Noise Sensitive Area/Site	Representative Noise Receptor Site Designation	Noise Sensitive Site Description	Number of Noise Sensitive Sites Represented	Noise Abatement Activity Category - Criteria	Station Number	TNM Predicted Noise Levels (dB(A))					Noise Abatement Criteria Status / Consideration of Noise Abatement Warranted?	
						Existing Condition (2021)	Design Year (2045)					
							No-Build Alternative	Increase Over Existing	Build Alternative	Increase Over Existing		
NSA 2 - North of Quail Roost Dive from Black Creek Canal to SW 127th Ave	R2.15	Single-Family Residence	1	NAC B (residential) - 66 dB(A)	350+50	49.3	49.5	0.2	53.6	4.3	Below / No	
	R2.16	First Row Single-Family Residence	1		353+00	65.6	65.7	0.2	68.8	3.2	Exceeds / Yes	
	R2.17	Second Row Single-Family Residence	1		353+00	56.9	57.0	0.2	60.7	3.8	Below / No	
	R2.18	Single-Family Residence	1		353+00	53.5	53.7	0.2	57.7	4.2	Below / No	
	R2.19	Single-Family Residence	1		353+00	50.9	51.0	0.2	54.8	3.9	Below / No	
	R2.20	Single-Family Residence	1		353+00	49.4	49.6	0.2	53.2	3.8	Below / No	
	R2.21	First Row Single-Family Residence	1		353+50	63.9	64.1	0.2	67.3	3.4	Exceeds / Yes	
	R2.22	Second Row Single-Family Residence	1		353+50	57.8	57.9	0.2	61.6	3.8	Below / No	
	R2.23	Single-Family Residence	1		353+50	54.4	54.5	0.2	58.6	4.2	Below / No	
	R2.24	Single-Family Residence	1		353+50	51.7	51.8	0.2	55.9	4.2	Below / No	
	R2.25	Single-Family Residence	1		353+50	49.6	49.8	0.2	53.4	3.8	Below / No	
	R2.26	First Row Single-Family Residence	1		356+50	64.2	64.3	0.2	67.7	3.5	Exceeds / Yes	
	R2.27	Second Row Single-Family Residence	1		356+50	57.1	57.3	0.2	60.9	3.8	Below / No	
	R2.28	Single-Family Residence	1		356+50	53.8	54.0	0.2	58.0	4.2	Below / No	
	R2.29	Single-Family Residence	1		355+50	50.5	50.7	0.2	54.2	3.7	Below / No	
	R2.30	Single-Family Residence	1		356+50	51.5	51.7	0.2	55.4	3.9	Below / No	
	R2.31	Single-Family Residence	1		357+50	51.8	52.0	0.2	55.7	3.9	Below / No	
	R2.32 (Alianza Apostolica Igelsia Del Señor Jesucristo)	Interior Measurement, Place of Worship	1	NAC D (interior) - 51 dB(A)	360+50	28.8	29.0	0.2	32.5	3.7	Below / No	
	R2.33 (M1, Peace United Methodist Church)	Interior Measurement, Place of Worship	1		362+50	39.6	39.8	0.2	43.3	3.7	Below / No	
						Minimum	28.8	29.0	0.1	32.5	1.8	---
						Maximum	66.8	67.0	0.3	68.8	4.3	---
Total Number of Residential Sites Equal to or Greater than the Noise Abatement Criteria (NAC) of 66 dB(A) (Impacted)						1	1	---	4	---	---	
NSA 3 - South of Quail Roost Drive from SW 137th Ave to Black Creek Canal	R3.01	First Row Single-Family Residence	1	NAC B (residential) - 66 dB(A)	313+00	64.8	66.2	1.4	67.4	2.6	Exceeds / Yes	
	R3.02	First Row Single-Family Residence	1		314+00	61.3	68.8	7.5	70.1	8.8	Exceeds / Yes	
	R3.03	First Row Single-Family Residence	1		317+40	64.6	65.1	0.5	67.9	3.3	Exceeds / Yes	
	R3.04	Single-Family Residence and Farm Stand	1		326+50	58.5	59.4	0.9	61.5	3.0	Below / No	
	R3.05 (M6)	First Row Single-Family Residence	1		329+65	63.8	64.2	0.4	69.0	5.2	Exceeds / Yes	
	R3.06	Second Row Single-Family Residence	1		329+50	57.5	58.4	0.9	61.7	4.2	Below / No	
	R3.07	Single-Family Residence	1		329+65	53.5	54.8	1.3	57.7	4.2	Below / No	
	R3.08	First Row Single-Family Residence	1		333+00	66.9	67.2	0.3	70.2	3.3	Exceeds / Yes	
	R3.09	Second Row Single-Family Residence	1		333+00	58.1	58.4	0.3	61.9	3.8	Below / No	
	R3.10	Single-Family Residence	1		333+50	53.7	54.1	0.4	58.2	4.5	Below / No	
	R3.11	Single-Family Residence	1		333+00	51.1	51.6	0.5	55.2	4.1	Below / No	
	R3.12	First Row Single-Family Residence	1		335+80	68.3	68.6	0.3	71.1	2.8	Exceeds / Yes	

APPENDIX D
LOCATION AND DESCRIPTION OF REPRESENTATIVE NOISE SENSITIVE RECEPTOR SITES AND NOISE ANALYSIS
RESULTS 994/SW 200TH STREET/QUAIL ROOST DRIVE - PD&E STUDY

Name of Noise Sensitive Area/Site	Representative Noise Receptor Site Designation	Noise Sensitive Site Description	Number of Noise Sensitive Sites Represented	Noise Abatement Activity Category - Criteria	Station Number	TNM Predicted Noise Levels (dB(A))					Noise Abatement Criteria Status / Consideration of Noise Abatement Warranted?
						Existing Condition (2021)	Design Year (2045)				
							No-Build Alternative	Increase Over Existing	Build Alternative	Increase Over Existing	
NSA 3 - South of Quail Roost Drive from SW 137th Ave to Black Creek Canal	R3.13 (M5)	First Row Single-Family Residence	1	NAC B (residential) - 66 dB(A)	336+80	67.7	68.0	0.3	70.4	2.7	Exceeds / Yes
	R3.14	First Row Single-Family Residence	1		337+80	66.7	67.0	0.3	69.2	2.5	Exceeds / Yes
	R3.15	First Row Single-Family Residence	1		338+80	67.7	68.0	0.3	70.3	2.6	Exceeds / Yes
	R3.16	First Row Single-Family Residence	1		339+85	68.3	68.7	0.4	70.9	2.6	Exceeds / Yes
	R3.17	First Row Single-Family Residence	1		340+60	65.9	66.2	0.3	68.2	2.3	Exceeds / Yes
	R3.18	Second Row Single-Family Residence	1		335+20	55.2	55.6	0.4	59.1	3.9	Below / No
	R3.19	Second Row Single-Family Residence	1		336+40	55.4	55.7	0.3	59.0	3.6	Below / No
	R3.20	Second Row Single-Family Residence	1		337+60	55.5	55.9	0.4	59.1	3.6	Below / No
	R3.21	Second Row Single-Family Residence	1		338+80	55.8	56.2	0.4	59.3	3.5	Below / No
	R3.22	Second Row Single-Family Residence	1		340+25	57.7	58.4	0.7	60.9	3.2	Below / No
	R3.23	Single-Family Residence	1		335+20	52.0	52.4	0.4	56.3	4.3	Below / No
	R3.24	Single-Family Residence	1		336+40	51.7	52.1	0.4	56.0	4.3	Below / No
	R3.25	Single-Family Residence	1		337+60	51.8	52.3	0.5	56.0	4.2	Below / No
	R3.26	Single-Family Residence	1		339+20	53.3	54.0	0.7	57.4	4.1	Below / No
	R3.27	Single-Family Residence	1		340+20	57.0	58.0	1.0	60.1	3.1	Below / No
	R3.28	Single-Family Residence	1		340+00	55.7	56.8	1.1	58.7	3.0	Below / No
	R3.29	First Row Single-Family Residence	1		342+30	68.9	69.0	0.1	72.0	3.1	Exceeds / Yes
	R3.30	First Row Single-Family Residence	1		343+00	69.0	69.1	0.1	69.7	0.7	Exceeds / Yes
	R3.31	First Row Single-Family Residence	1		343+90	67.7	68.0	0.3	65.5	-2.2	Below / No
	R3.32	Second Row Single-Family Residence	1		342+50	58.8	59.5	0.7	62.0	3.2	Below / No
	R3.33	Single-Family Residence	1		342+50	58.1	59.0	0.9	61.2	3.1	Below / No
	R3.34	Single-Family Residence	1		342+50	57.6	58.6	1.0	60.5	2.9	Below / No
	R3.35	Single-Family Residence	1		342+50	56.0	57.0	1.0	58.8	2.8	Below / No
	R3.36	Single-Family Residence	1		342+50	56.1	57.2	1.1	58.5	2.4	Below / No
	R3.37	Single-Family Residence	1		343+00	55.3	56.0	0.7	58.8	3.5	Below / No
	R3.38	Single-Family Residence	1		343+00	54.5	55.3	0.8	57.9	3.4	Below / No
R3.39	Single-Family Residence	1	343+00	53.2	54.1	0.9	56.8	3.6	Below / No		
R3.40	Second Row Single-Family Residence	1	344+20	59.1	59.6	0.5	61.7	2.6	Below / No		
R3.41	Single-Family Residence	1	344+40	56.5	56.9	0.4	59.5	3.0	Below / No		
R3.42	Single-Family Residence	1	344+60	54.7	55.0	0.3	57.9	3.2	Below / No		
R3.43	Single-Family Residence	1	345+00	53.4	53.7	0.3	56.7	3.3	Below / No		
R3.44	Single-Family Residence	1	345+50	52.1	52.4	0.3	55.6	3.5	Below / No		
R3.45	Single-Family Residence	1	346+00	51.3	51.5	0.2	54.7	3.4	Below / No		
R3.46	Single-Family Residence	1	346+50	50.5	50.7	0.2	53.7	3.2	Below / No		
Minimum						50.5	50.7	0.1	53.7	-2.2	---
Maximum						69.0	69.1	7.5	72.0	8.8	---
Total Number of Residential Sites Equal to or Greater than the Noise Abatement Criteria (NAC) of 66 dB(A) (Impacted)						9	12	---	13	---	---

APPENDIX D
LOCATION AND DESCRIPTION OF REPRESENTATIVE NOISE SENSITIVE RECEPTOR SITES AND NOISE ANALYSIS
RESULTS 994/SW 200TH STREET/QUAIL ROOST DRIVE - PD&E STUDY

Name of Noise Sensitive Area/Site	Representative Noise Receptor Site Designation	Noise Sensitive Site Description	Number of Noise Sensitive Sites Represented	Noise Abatement Activity Category - Criteria	Station Number	TNM Predicted Noise Levels (dB(A))					Noise Abatement Criteria Status / Consideration of Noise Abatement Warranted?
						Existing Condition (2021)	Design Year (2045)				
							No-Build Alternative	Increase Over Existing	Build Alternative	Increase Over Existing	
NSA 4 - South of Quail Roost Drive from Black Creek Canal to SW 127th Ave	R4.01	First Row Single-Family Residence	1	NAC B (residential) - 66 dB(A)	347+00	67.6	67.8	0.2	68.8	1.2	Exceeds / Yes
	R4.02	Second Row Single-Family Residence	1		346+50	61.1	61.3	0.2	63.3	2.2	Below / No
	R4.03	Second Row Single-Family Residence	1		347+50	57.1	57.3	0.2	60.6	3.5	Below / No
	R4.04	Second Row Single-Family Residence	1		348+75	55.9	56.0	0.1	59.3	3.4	Below / No
	R4.05	Single-Family Residence	1		348+75	54.1	54.2	0.1	57.7	3.6	Below / No
	R4.06	Single-Family Residence	1		348+75	52.4	52.5	0.1	55.9	3.5	Below / No
	R4.07	Single-Family Residence	1		349+75	50.6	50.7	0.1	54.0	3.4	Below / No
	R4.08	Single-Family Residence	1		350+25	49.9	50.0	0.1	53.2	3.3	Below / No
	R4.09	Single-Family Residence	1		351+20	49.8	49.9	0.1	53.1	3.3	Below / No
	R4.10	First Row Single-Family Residence	1		349+00	66.7	66.7	0.0	69.3	2.6	Exceeds / Yes
	R4.11	First Row Single-Family Residence	1		349+80	65.3	65.3	0.0	67.9	2.6	Exceeds / Yes
	R4.12	First Row Single-Family Residence	1		350+25	68.0	68.0	0.0	70.8	2.8	Exceeds / Yes
	R4.13	First Row Single-Family Residence	1		351+00	66.6	66.6	0.0	69.1	2.5	Exceeds / Yes
	R4.14	First Row Single-Family Residence	1		351+80	66.4	66.4	0.0	68.9	2.5	Exceeds / Yes
	R4.15	First Row Single-Family Residence	1		352+40	68.0	68.0	0.0	70.9	2.9	Exceeds / Yes
	R4.16	First Row Single-Family Residence	1		353+25	68.2	68.2	0.0	71.1	2.9	Exceeds / Yes
	R4.17	First Row Single-Family Residence	1		354+40	68.3	68.3	0.0	71.2	2.9	Exceeds / Yes
	R4.18	First Row Single-Family Residence	1		355+80	67.7	67.7	0.0	70.6	2.9	Exceeds / Yes
	R4.19	First Row Single-Family Residence	1		356+50	63.4	63.4	0.0	66.2	2.8	Exceeds / Yes
	R4.20 (M2)	First Row Single-Family Residence	1		357+20	67.5	67.5	0.0	70.4	2.9	Exceeds / Yes
	R4.21	First Row Single-Family Residence	1		358+00	68.5	68.5	0.0	71.4	2.9	Exceeds / Yes
	R4.22	First Row Single-Family Residence	1		359+00	65.5	65.6	0.1	67.9	2.4	Exceeds / Yes
	R4.23	First Row Single-Family Residence	1		359+80	66.5	66.5	0.0	68.8	2.3	Exceeds / Yes
	R4.24	First Row Single-Family Residence	1		360+50	66.6	66.6	0.0	68.6	2.0	Exceeds / Yes
	R4.25	Second Row Single-Family Residence	1		350+20	54.8	54.9	0.1	58.2	3.4	Below / No
	R4.26	Second Row Single-Family Residence	1		351+00	54.7	54.8	0.1	57.9	3.2	Below / No
	R4.27	Second Row Single-Family Residence	1		351+75	54.8	54.9	0.1	57.9	3.1	Below / No
	R4.28	Second Row Single-Family Residence	1		352+50	54.8	54.8	0.0	57.9	3.1	Below / No
	R4.29	Second Row Single-Family Residence	1		353+40	55.0	55.1	0.1	58.2	3.2	Below / No
	R4.30	Second Row Single-Family Residence	1		354+00	56.1	56.2	0.1	59.0	2.9	Below / No
	R4.31	Second Row Single-Family Residence	1		356+20	55.8	55.8	0.0	58.8	3.0	Below / No
	R4.32	Second Row Single-Family Residence	1		356+60	55.5	55.6	0.1	58.4	2.9	Below / No
	R4.33	Second Row Single-Family Residence	1		358+75	55.6	55.6	0.0	58.1	2.5	Below / No
	R4.34	Second Row Single-Family Residence	1		359+25	55.8	55.8	0.0	58.4	2.6	Below / No
	R4.35	Second Row Single-Family Residence	1		361+00	60.5	60.5	0.0	62.6	2.1	Below / No
	R4.36	Single-Family Residence	1		354+50	53.4	53.4	0.0	56.6	3.2	Below / No
	R4.37	Single-Family Residence	1		356+20	51.7	51.7	0.0	54.4	2.7	Below / No

APPENDIX D
LOCATION AND DESCRIPTION OF REPRESENTATIVE NOISE SENSITIVE RECEPTOR SITES AND NOISE ANALYSIS
RESULTS 994/SW 200TH STREET/QUAIL ROOST DRIVE - PD&E STUDY

Name of Noise Sensitive Area/Site	Representative Noise Receptor Site Designation	Noise Sensitive Site Description	Number of Noise Sensitive Sites Represented	Noise Abatement Activity Category - Criteria	Station Number	TNM Predicted Noise Levels (dB(A))					Noise Abatement Criteria Status / Consideration of Noise Abatement Warranted?
						Existing Condition (2021)	Design Year (2045)				
							No-Build Alternative	Increase Over Existing	Build Alternative	Increase Over Existing	
NSA 4 - South of Quail Roost Drive from Black Creek Canal to SW 127th Ave	R4.38	Single-Family Residence	1	NAC B (residential) - 66 dB(A)	356+60	52.0	52.0	0.0	54.9	2.9	Below / No
	R4.39	Single-Family Residence	1		358+75	52.3	52.3	0.0	55.0	2.7	Below / No
	R4.40	Single-Family Residence	1		359+25	52.4	52.4	0.0	55.1	2.7	Below / No
	R4.41	Single-Family Residence	1		361+00	55.4	55.5	0.1	57.8	2.4	Below / No
	R4.42	Single-Family Residence	1		351+00	51.4	51.5	0.1	55.0	3.6	Below / No
	R4.43	Single-Family Residence	1		351+50	51.0	51.1	0.1	54.5	3.5	Below / No
	R4.44	Single-Family Residence	1		352+50	50.8	50.9	0.1	54.3	3.5	Below / No
	R4.45	Single-Family Residence	1		353+75	49.4	49.5	0.1	52.9	3.5	Below / No
	R4.46	Single-Family Residence	1		356+20	49.7	49.7	0.0	52.5	2.8	Below / No
	R4.47	Single-Family Residence	1		356+60	49.7	49.7	0.0	52.5	2.8	Below / No
	R4.48	Single-Family Residence	1		358+75	50.4	50.4	0.0	53.1	2.7	Below / No
	R4.49	Single-Family Residence	1		359+25	50.3	50.3	0.0	53.0	2.7	Below / No
	R4.50	Single-Family Residence	1		361+00	52.9	53.0	0.1	55.7	2.8	Below / No
	R4.51	Single-Family Residence	1		353+40	49.2	49.2	0.0	52.5	3.3	Below / No
	R4.52	Single-Family Residence	1		353+75	48.4	48.5	0.1	51.8	3.4	Below / No
	R4.53	Single-Family Residence	1		356+20	48.0	48.1	0.1	50.8	2.8	Below / No
	R4.54	Single-Family Residence	1		356+60	48.2	48.2	0.0	50.9	2.7	Below / No
	R4.55	Single-Family Residence	1		358+75	48.9	49.0	0.1	51.7	2.8	Below / No
	R4.56	Single-Family Residence	1		359+25	48.8	48.9	0.1	51.6	2.8	Below / No
	R4.57	Single-Family Residence	1	361+00	51.3	51.5	0.2	54.1	2.8	Below / No	
R4.58	Single-Family Residence	1	361+00	50.1	50.3	0.2	52.7	2.6	Below / No		
R4.59 (Church of Christ On Quail)	Interior Measurement, Place of Worship	1	NAC D (interior) - 51 dB(A)	362+50	37.8	37.9	0.1	39.4	1.6	Below / No	
Minimum						37.8	37.9	0.0	39.4	1.2	---
Maximum						68.5	68.5	0.2	71.4	3.6	---
Total Number of Residential Sites Equal to or Greater than the Noise Abatement Criteria (NAC) of 66 dB(A) (Impacted)						13	13	---	16	---	---

APPENDIX D
LOCATION AND DESCRIPTION OF REPRESENTATIVE NOISE SENSITIVE RECEPTOR SITES AND NOISE ANALYSIS
RESULTS 994/SW 200TH STREET/QUAIL ROOST DRIVE - PD&E STUDY

Name of Noise Sensitive Area/Site	Representative Noise Receptor Site Designation	Noise Sensitive Site Description	Number of Noise Sensitive Sites Represented	Noise Abatement Activity Category Criteria	Station Number	TNM Predicted Noise Levels (dB(A))					Noise Abatement Criteria Status / Consideration of Noise Abatement Warranted?
						Existing Condition (2021)	Design Year (2045)				
							No-Build Alternative	Increase Over Existing	Build Alternative	Increase Over Existing	
NSA 4 - SLU	BCT.01	Black Creek Trl , 150' N of Crossing	1	NAC C - 66 dB(A)	345+80	57.2	57.3	0.1	60.5	3.3	Below / No
	BCT.02	Black Creek Trl , 100' N of Crossing	1		345+80	59.2	59.2	0.0	62.0	2.8	Below / No
	BCT.03	Black Creek Trl , 60' N of Crossing	1		345+80	61.7	61.7	0.0	63.8	2.1	Below / No
	BCT.04	Black Creek Trl , 20' N of Crossing	1		345+80	65.4	65.5	0.1	66.5	1.1	Exceeds / Yes
	BCT.05	Black Creek Trl , 20' S of Crossing	1		345+80	66.8	67.7	0.9	67.6	0.8	Exceeds / Yes
	BCT.06	Black Creek Trl , 60' S of Crossing	1		345+80	62.7	63.4	0.7	64.5	1.8	Below / No
	BCT.07	Black Creek Trl , 100' S of Crossing	1		345+80	60.0	60.5	0.5	62.7	2.7	Below / No
	BCT.08	Black Creek Trl , 150' S of Crossing	1		345+80	58.2	58.5	0.3	61.4	3.2	Below / No
	R4.60	Charles Burr Park, Picnic Bench	1		N/A	64.8	66.1	1.3	65.8	1.0	Below / No
	R4.61	Charles Burr Park, Grass Field	1		N/A	62.8	63.9	1.1	63.4	0.6	Below / No
					Minimum	57.2	57.3	0.0	60.5	0.6	---
					Maximum	66.8	67.7	1.3	67.6	3.3	---
Total Number of Residential Sites Equal to or Greater than the Noise Abatement Criteria (NAC) of 66 dB(A) (Impacted)						1	2	---	2	---	---
NSA 5 - North of Quail Roost Drive and east of SW 127th Ave	R5.01	Single-Family Residence	1	NAC B (residential) - 66 dB(A)	N/A	65.2	67.4	2.2	65.4	0.2	Below / No
	R5.02	Single-Family Residence	1		N/A	67.2	67.3	0.1	69.7	2.5	Exceeds / Yes
	R5.03	Single-Family Residence	1		N/A	68.2	68.2	0.0	70.6	2.4	Exceeds / Yes
	R5.04	Single-Family Residence	1		N/A	69.2	69.3	0.1	71.7	2.5	Exceeds / Yes
	R5.05	Single-Family Residence	1		N/A	69.2	69.3	0.1	71.2	2.0	Exceeds / Yes
	R5.06	Single-Family Residence	1		N/A	61.6	61.7	0.1	63.3	1.7	Below / No
	R5.07	Single-Family Residence	1		N/A	63.1	63.2	0.1	65.0	1.9	Below / No
	R5.08	Single-Family Residence	1		N/A	56.7	56.8	0.1	58.5	1.8	Below / No
	R5.09	Single-Family Residence	1		N/A	60.1	60.1	0.0	61.9	1.8	Below / No
	R5.10	Single-Family Residence	1		N/A	62.5	62.6	0.1	64.3	1.8	Below / No
	R5.11	Single-Family Residence	1		N/A	62.3	62.3	0.0	64.3	2.0	Below / No
	R5.12	Single-Family Residence	1		N/A	61.6	61.6	0.0	63.2	1.6	Below / No
	R5.13	Single-Family Residence	1		N/A	58.9	58.9	0.0	60.6	1.7	Below / No
	R5.14	Single-Family Residence	1		N/A	61.0	61.0	0.0	62.6	1.6	Below / No
	R5.15	Single-Family Residence	1		N/A	57.2	57.2	0.0	58.6	1.4	Below / No
	R5.16	Single-Family Residence	1		N/A	61.2	61.3	0.1	62.3	1.1	Below / No
	R5.17	Single-Family Residence	1		N/A	59.6	59.6	0.0	60.7	1.1	Below / No
					Minimum	56.7	56.8	0.0	58.5	0.2	---
					Maximum	69.2	69.3	2.2	71.7	2.5	---
Total Number of Residential Sites Equal to or Greater than the Noise Abatement Criteria (NAC) of 66 dB(A) (Impacted)						4	5	---	4	---	---

APPENDIX D
LOCATION AND DESCRIPTION OF REPRESENTATIVE NOISE SENSITIVE RECEPTOR SITES AND NOISE ANALYSIS
RESULTS 994/SW 200TH STREET/QUAIL ROOST DRIVE - PD&E STUDY

Name of Noise Sensitive Area/Site	Representative Noise Receptor Site Designation	Noise Sensitive Site Description	Number of Noise Sensitive Sites Represented	Noise Abatement Activity Category Criteria	Station Number	TNM Predicted Noise Levels (dB(A))					Noise Abatement Criteria Status / Consideration of Noise Abatement Warranted?
						Existing Condition (2021)	Design Year (2045)				
							No-Build Alternative	Increase Over Existing	Build Alternative	Increase Over Existing	
NSA 6 - South of Quail Roost Drive east of SW 127th Ave	R6.01	Single-Family Residence	1	NAC B (residential) - 66 dB(A)	N/A	63.0	60.0	-3.0	63.9	0.9	Below / No
	R6.02	Single-Family Residence	1		N/A	60.5	61.7	1.2	59.8	-0.7	Below / No
	R6.03	Single-Family Residence	1		N/A	59.4	58.4	-1.0	59.8	0.4	Below / No
	R6.04	Single-Family Residence	1		N/A	62.1	61.2	-0.9	62.8	0.7	Below / No
	R6.05	Single-Family Residence	1		N/A	63.8	62.6	-1.2	64.5	0.7	Below / No
	R6.06	Single-Family Residence	1		N/A	64.2	62.8	-1.4	64.9	0.7	Below / No
	R6.07	Single-Family Residence	1		N/A	63.5	62.2	-1.3	64.2	0.7	Below / No
	R6.08	Single-Family Residence	1		N/A	61.0	59.9	-1.1	61.9	0.9	Below / No
	R6.09	Single-Family Residence	1		N/A	60.6	59.4	-1.2	61.3	0.7	Below / No
	R6.10	Single-Family Residence	1		N/A	59.9	58.8	-1.1	60.7	0.8	Below / No
	R6.11	Single-Family Residence	1		N/A	58.6	57.5	-1.1	59.4	0.8	Below / No
					Minimum	58.6	57.5	-3.0	59.4	-0.7	---
					Maximum	64.2	62.8	1.2	64.9	0.9	---
Total Number of Residential Sites Equal to or Greater than the Noise Abatement Criteria (NAC) of 66 dB(A) (Impacted)						0	0	---	0	---	---
NSA 7 - South of Quail Roost Drive east of SW 127th Ave	R7.01	Single-Family Residence	1	NAC B (residential) - 66 dB(A)	N/A	54.0	54.9	0.9	55.2	1.2	Below / No
	Total Number of Residential Sites Equal to or Greater than the Noise Abatement Criteria (NAC) of 66 dB(A) (Impacted)						0	0	---	0	---

APPENDIX E

SLM Calibration Certificates

Calibration Certificate No.47717

Instrument: Sound Level Meter
Model: 831
Manufacturer: Larson Davis
Serial number: 0004228
Tested with: Microphone 377C20 s/n 163246
Preamplifier PRM831 s/n 046381
Type (class): 1
Customer: Environmental Acoustics
Tel/Fax: 717-886-5291 / 717-763-8150

Date Calibrated: 3/16/2022 **Cal Due:** 3/16/2023
Status:

Received	Sent
X	X

In tolerance:

X	X
---	---

Out of tolerance:

--	--

See comments:

--	--

Contains non-accredited tests: Yes X No
Calibration service: Basic X Standard
Address: 207 Senate Avenue,
Camp Hill, PA 17011

Tested in accordance with the following procedures and standards:
Calibration of Sound Level Meters, Scantek Inc., Rev. 6/26/2015
SLM & Dosimeters – Acoustical Tests, Scantek Inc., Rev. 7/6/2011

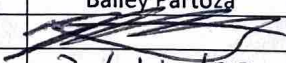
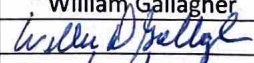
Instrumentation used for calibration: Nor-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence	Cal. Due
				Cal. Lab / Accreditation	
483B-Norsonic	SME Cal Unit	31052	Nov 8, 2021	Scantek, Inc./ NVLAP	Nov 8, 2022
DS-360-SRS	Function Generator	88077	Dec 3, 2020	ACR Env./ A2LA	Dec 3, 2022
34401A-Agilent Technologies	Digital Voltmeter	MY47011118	Mar 10, 2022	ACR Env. / A2LA	Mar 10, 2023
PTU300-Vaisala	Environmental Monitor	P5011262	Sept 10, 2021	ACR Env./ A2LA	Sept 10, 2022
PC Program 1019 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1251-Norsonic	Calibrator	30878	Oct 27, 2021	Scantek, Inc./ NVLAP	Oct 27, 2022

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK).

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
21.5	100.03	35.5

Calibrated by:	Bailey Partoza	Authorized signatory:	William Gallagher
Signature		Signature	
Date	3/16/22	Date	3/22/2022

Calibration Certificates or Test Reports shall not be reproduced, except in full, without written approval of the laboratory.
This Calibration Certificate or Test Reports shall not be used to claim product certification, approval or endorsement by NVLAP, NIST, or any agency of the federal government.
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Scantek, Inc.

CALIBRATION LABORATORY

ISO 17025: 2017, ANSI/NCCL Z540:1994 Part 1
ACCREDITED by NVLAP (an ILAC MRA signatory)

NVLAP[®]
CALIBRATION
NVLAP Lab Code: 200625-0

Calibration Certificate No.47721

Instrument: Microphone
Model: 377C20
Manufacturer: PCB Piezotronics
Serial number: 163246
Composed of:

Date Calibrated: 3/15/2022 **Cal Due:** 3/15/2023
Status:

Received	Sent
X	X

In tolerance:

X	X
---	---

Out of tolerance:

--	--

See comments:

--	--

Contains non-accredited tests: Yes No

Customer: Environmental Acoustics
Tel/Fax: 717-886-5291/717-763-8150

Address: 207 Senate Avenue,
Camp Hill, PA 17011

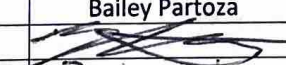
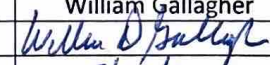
Tested in accordance with the following procedures and standards:

Calibration of Measurement Microphones, Scantek, Inc., Rev. 2/25/2015

Instrumentation used for calibration: N-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence	Cal. Due
				Cal. Lab / Accreditation	
483B-Norsonic	SME Cal Unit	31052	Nov 8, 2021	Scantek, Inc./ NVLAP	Nov 8, 2022
DS-360-SRS	Function Generator	88077	Dec 3, 2020	ACR Env./ A2LA	Dec 3, 2022
34401A-Agilent Technologies	Digital Voltmeter	MY47011118	Mar 10, 2022	ACR Env. / A2LA	Mar 10, 2023
PTU300-Vaisala	Environmental Monitor	P5011262	Sept 10, 2021	ACR Env./ A2LA	Sept 10, 2022
PC Program 1017 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1253-Norsonic	Calibrator	28326	Oct 27, 2021	Scantek, Inc./ NVLAP	Oct 27, 2022
1203-Norsonic	Preamplifier	14059	Mar 7, 2022	Scantek, Inc./ NVLAP	Mar 7, 2023
4180-Brüel&Kjær	Microphone	2246115	Oct 6, 2021	DPLA / DANAK	Oct 6, 2023

Instrumentation and test results are traceable to SI - BIPM through standards maintained by NPL (UK) and NIST (USA)

Calibrated by:	Bailey Partoza	Authorized signatory:	William Gallagher
Signature		Signature	
Date	3/15/22	Date	3/22/2022

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Document stored as: Y:\Calibration Lab\Mic 2022\PCB377C20_163246_M1.doc

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