

Noise Study Report

Florida Department of Transportation

District 1

SR 865 (San Carlos Boulevard) From North of Crescent Street to North of Hurricane Pass Bridge

Lee County, Florida

Financial Project ID: 433726-2-32-01

ETDM Number: 14124

May 2021

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 December 14, 2016 and executed by FHWA and FDOT.

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Executive Summary

This Project Development and Environment (PD&E) study *Noise Study Report* (NSR) documents the project summary, project purpose and need, methodology, analysis, and conclusions of the traffic noise analysis conducted for the State Road (SR) 865 (San Carlos Boulevard) project (Financial Project ID: 433726-2-32-01). This document has been prepared in accordance with the Florida Department of Transportation's (FDOT) *Project Development and Environment Manual Part 2: Analysis and Documentation, Highway Traffic Noise*, Chapter 18 (effective July 1, 2020); the FDOT's *Traffic Noise Modeling and Analysis Practitioners Handbook*; the Federal Highway Administration (FHWA) *Procedures for Abatement of Highway Traffic Noise and Construction Noise* (FHWA 23 CFR 772); the FHWA *Traffic Noise: Analysis and Abatement Guidance* (75 FR 39820-39838); and in consultation with FDOT District 1.

This noise study has been completed as part of a PD&E study to consider the proposed improvements for a portion of SR 865. Located in Lee County, the limits of this study are from Crescent Street to North of Hurricane Pass Bridge, a distance of approximately 1.2 miles (refer to **Figure 1-1**). This project was analyzed for the 2040 design year, based on Demand and Level of Service (LOS) C traffic volumes, where appropriate.

- The determination of traffic noise impacts is based on the relationship between noise levels: the predicted loudest-hour traffic noise levels, and the noise abatement criteria (NAC) dictated by land use in the project area. The study area was divided into 76 distinct noise sensitive common noise environments (CNEs).
- In addition to four field measurement sites, 249 receptor locations were modeled within these 76 CNEs. As a result of the proposed design, a total of ten traffic noise impacted receptors, located within three CNEs, are predicted, consisting of Category B and E land uses within the project vicinity, as a result of them approaching or exceeding the Federal and State Noise Abatement Criteria; substantial noise increase impacts are not predicted.
- With three CNE's predicted to be impacted, two CNEs Were further evaluated and one was deemed not acoustically feasible.

The Florida Department of Transportation is committed to the construction of feasible and reasonable noise abatement measures where recommended. Within the two CNEs for which noise barriers were further evaluated, the potential barrier in CNE 26 would not meet the reasonable cost effectiveness criteria and the potential barrier for CNE 42 would not be feasible to construct due to construction issues. Therefore, potential noise barriers are not recommended for further consideration for this project.

Based on the noise analyses performed to date, there are no solutions that are both feasible and reasonable to mitigate the noise impacts at CNEs 26, 37 and 42. Construction of the proposed roadway improvements of SR 865 may cause temporary noise and/or vibration impacts to nearby developed land uses. Should anticipated noise or vibration issues arise during the construction process, the Project Manager, in coordination with the District Noise Specialist and the Contractor, will investigate additional methods of controlling these impacts.

Upon approval of the project's environmental document, a copy of the final NSR will be provided to the Lee County Department of Community Development, Lee County Metropolitan Planning

Organization (MPO) and the Town of Fort Myers Beach for their use associated with planning for development after the date of public knowledge (i.e., when the Type 2 CE is approved). Noise contours are discussed in Section 6.0 and shown on Figure 6-1 to assist planning and zoning with a best estimate on distances from the proposed edge-of-pavement at which traffic noise levels would meet or exceed the FDOT's NAC for activity categories A through E.

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1 INTRODUCTION

1.1 Project Description

The Florida Department of Transportation (FDOT) is conducting a Project Development & Environment (PD&E) study to consider the proposed improvements of a portion of State Road (SR) 865 (San Carlos Boulevard) from Crescent Street to North of Hurricane Pass Bridge (also known as Hurricane Bay Bridge) in Lee County (see **Figure 1-1**). The project length is approximately 1.2 miles. The purpose of the project is to increase accessibility and enhancement of mobility and safety for vehicular and non-vehicular transportation.

The project includes improving San Carlos Boulevard to better serve the diverse transportation needs of the corridor. Within the project limits, Estero Boulevard from Crescent Street to the intersection at 5th Street is a two-lane undivided roadway. The posted speed limit is 25 miles per hour (mph). San Carlos Boulevard is primarily an elevated two-lane undivided urban minor arterial roadway with a dedicated southbound Bus/Bicycle-Only lane and a barrier-protected sidewalk on the east side of the bridge. The posted speed limit is 35 mph. From Main Street to north of Hurricane Pass Bridge, the roadway transitions to a four-lane divided minor arterial roadway with a two-way left-turn lane median and sidewalks on both sides of the roadway. The posted speed limit is 45 mph. San Carlos Boulevard serves as the primary route to Fort Myers Beach.

The proposed improvements include adding a bus bay adjacent to Crescent Beach Family Park; widening the Matanzas Pass Bridge to accommodate a new shared-use path along the west side of the bridge and restriping to include two southbound lanes and one northbound lane; new and modification to existing traffic signals and crosswalks, and restriping the Hurricane Pass Bridge to accommodate bicycle lanes in each direction of travel and a barrier-separated shared use path along the west side of the bridge. The project was evaluated through FDOT's Efficient Transportation Decision Making (ETDM) process as project #14124.

Figure 1-1 Project Location Map



1.2 Proposed Improvements

An *Operational Analysis Report* (OAR) was prepared in December 2018 to document and summarize the analysis of the traffic operations and develop feasible improvements for San Carlos Boulevard. Within this study, six build alternatives were evaluated. Of these, four Beach Alternatives were evaluated that included work within the Town of Fort Myers on Estero Island and the Matanzas Pass Bridge. Two Island Alternatives were evaluated which included work on San Carlos Island and improvements to Hurricane Pass Bridge. These build alternatives were presented at a public workshop in February 2018 and as a result, Beach Alternative 1 and Island Alternative 2 were recommended for design along the San Carlos Boulevard corridor from Estero Boulevard to north of Hurricane Pass Bridge. The alternative descriptions below were extracted from the *Operational Analysis Report*.

Beach Alternative 1

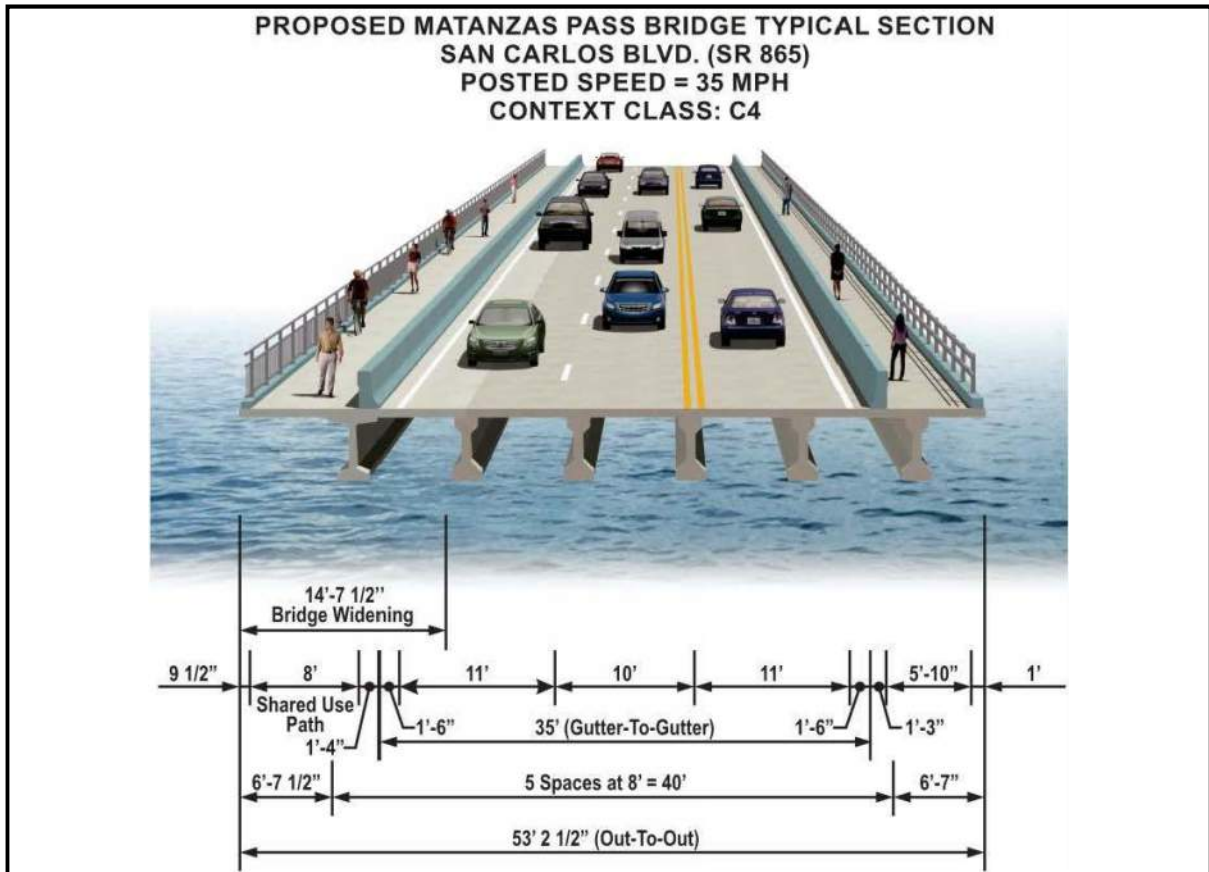
Beach Alternative 1 would add three signals and remove the right turn from northbound (NB) SR 865 to Eastbound Fifth Street. This alternative includes milling and resurfacing SR 865 from the existing pedestrian crossing to Matanzas Pass Bridge; milling and resurfacing Estero Boulevard from SR 865 to Old San Carlos Boulevard; new sidewalk on the west side of SR 865 from Fifth Street to the Matanzas Pass Bridge; removal of the existing pedestrian signal and crosswalk between Crescent Street and Fifth Street; and a total of three new traffic signals at Estero Boulevard/SR 865/Fifth Street, Old San Carlos Boulevard/Estero Boulevard, and Estero Boulevard/Crescent Street. Following the February 2018 public workshop, the alternative was revised to remove the right turn from NB SR 865 to eastbound (EB) Fifth Street to address existing safety and operational issues. The existing pedestrian island would be expanded/connected to the existing sidewalk along Fifth Street to accomplish this lane closure. This expanded pedestrian island provides a landscape opportunity area for a gateway feature for Fort Myers Beach.

The typical section for Beach Alternative 1 includes milling and resurfacing of SR 865 from the intersection at Fifth Street to Matanzas Pass Bridge. The existing roadway will be re-striped to accommodate one NB travel lane and two southbound (SB) travel lanes. The SB outside travel lane will become right turn only at Estero Boulevard. New sidewalk or shared-use path will be added on the west side of SR 865 from Fifth Street across Matanzas Pass Bridge (**Figure 1-2**). Except for the milling and resurfacing along Estero Boulevard (FMB) and the proposed signals at Old San Carlos Boulevard/Estero Boulevard (FMB) and Estero Boulevard/Crescent Street (Lee County), all work is within the FDOT right-of-way (ROW) and no additional ROW is required in this area.

To meet the proposed bridge typical section, the west overhang for the existing bridge over Matanzas Pass will be widened from 2'-10.5" to 6'-10". By limiting the bridge work to an overhang replacement, in lieu of a traditional bridge widening, the existing bridge will not require new beams or new foundation work. A feasible method of construction during deck removal is to provide a lightweight excavator equipped with a Slab Crab attachment to remove rectangular sections of concrete deck. A Slab Crab system will allow for large debris to be collected from the deck surface, while minimizing impacts to the water channel below. Small debris will be collected via a netting system that is installed beneath each bridge span, funneled down the existing bridge piers and stored on the top of the existing pier footings. The accumulated debris on each pier footing will be contained by temporary barriers/fencing and regularly collected to avoid impacts to Matanzas Pass. During collection,

unanchored floating barges (approx. 10' wide x 20' long) will travel within the existing waterway. Barges will not be allowed in environmentally sensitive areas and will be limited to regions of Matanzas Pass where recreational boats currently have permitted access. During construction of the overhang system, concrete/reinforcing steel can be delivered to the jobsite by bridge with all formwork being installed from the existing bridge deck. As a precaution, the netting/small debris system will remain in place during all phases of demolition and overhang reconstruction. Nighttime lane closures along SR 865 (San Carlos Blvd) are anticipated during construction.

Figure 1-2 Typical Section of the Matanzas Pass Bridge improvements



Island Alternative 2

Island Alternative 2 includes milling and resurfacing SR 865 between Main Street and Prescott Street/Buttonwood Drive to add bike lanes and a new signal at Main Street. SR 865 would be widened to the west to accommodate two SB lanes and a sidewalk onto the Matanzas Pass Bridge south of Main Street. Southbound Fisherman’s Wharf frontage road will have to be shifted to accommodate the SR 865 widening. The existing metered signal at Prescott Street/Buttonwood Drive would be modified to an actuated metered signal that would only run as metered (one lane at a time) when SB traffic backs up across the Matanzas Pass Bridge. Landscape opportunity areas would be provided on both sides of SR 865 south of Main Street between SR 865 and the Fisherman’s Wharf frontage roads.

The typical section for Island Alternative 2 includes milling and resurfacing of SR 865 from Main Street to north of Hurricane Pass Bridge. The existing roadway will be re-stripped to accommodate two NB travel lanes, two SB travel lanes, a two-way left-turn lane median, and bicycle lanes in each direction of travel (**Figure 1-3**). Existing sidewalks will remain. Hurricane Pass Bridge will be modified to accommodate two northbound travel lanes, two SB travel lanes, a median left-turn lane, bicycle lanes in each direction of travel, and barrier-protected sidewalk in each direction of travel (**Figure 1-4**). South of Main Street, SR 865 will be widened to accommodate two SB travel lanes across Matanzas Pass Bridge and new sidewalk or shared-use path on the west side of SR 865. The SB Fisherman's Wharf frontage road will be shifted to accommodate the SR 865 widening. All work is within the existing FDOT ROW and no additional ROW is required.

Bridge improvements for the SR 856 (San Carlos Blvd) over Hurricane Bay include: installing a permanent rigid concrete barrier, replacing existing expansion joints and milling/resurfacing the roadway to meet the proposed typical section. All bridge construction activities will occur within the footprint of the existing bridge, therefore no additional slab construction, or foundation installation will be required at Hurricane Bay. The proposed rigid concrete barrier will be constructed by drilling $\frac{3}{4}$ " diameter x 9" deep dowel holes into the existing 18" thick cast-in-place flat slab structure. All holes will be cleaned, and #5 dowels will be epoxied into each hole to anchor the barrier system. The excess deck thickness will block any epoxy from spilling into the waterway below and all excess epoxy will be removed after dowel placement. All existing bridge expansion joints will be placed with a poured joint with backer rod system and all milling/resurfacing operations will replace the existing 2" thick bridge surface.

Figure 1-3 Typical Section of the SR 865 (San Carlos Boulevard) improvements from Main Street north to Hurricane Pass Bridge

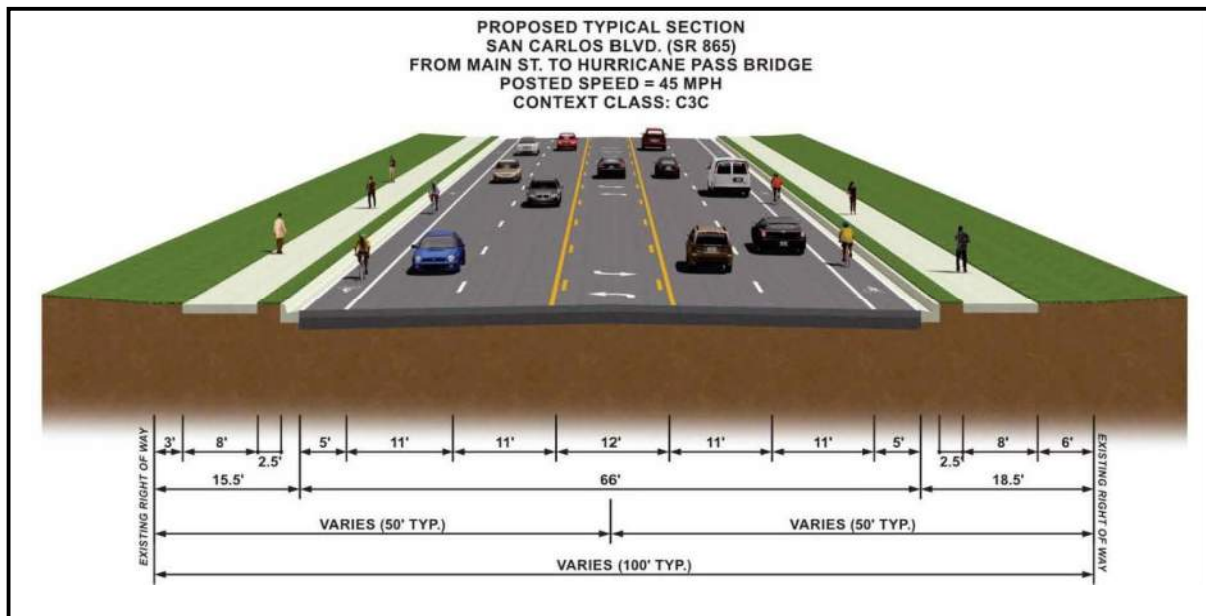


Figure 1-4 Typical Section of the proposed Hurricane Pass Bridge improvements



Seafarer’s Alternative

An alternative for improvements to the intersection of Estero Boulevard and Fifth Street was developed after the completion of the 2018 *Operational Analysis Report*. In partnership with Lee County, LeeTran, and Town of Fort Myers Beach, this project will incorporate Lee County's Seafarers Alternative at the intersection of Estero Boulevard and Fifth Street (see **Figure 1-5**). New traffic signals will be constructed at Fifth Street to replace the existing pedestrian crosswalk signals. The posted speed limit will remain 25 mph. Associated with the reconfiguration of the SR 865 intersection at Estero Boulevard/Fifth Street, a new bus bay is proposed to service LeeTran Route 400 (Beach Park & Ride/Lovers Key). The reconstructed intersection will enhance public transit mobility, pedestrian safety, and provide opportunity areas for landscaping and other aesthetic features. The total ROW to be acquired for the proposed intersection improvements is approximately 0.94 acres, affecting three parcels.

Figure 1-5 Seafarers Alternative improvements concept



2 METHODOLOGY

This traffic noise analysis was conducted in accordance with the FDOT's *Project Development and Environment Manual Part 2: Analysis and Documentation, Highway Traffic Noise* (Part 2, Chapter 18 (effective July 1, 2020)); the FDOT *Traffic Noise Modeling and Analysis Practitioners Handbook*; the FHWA *Procedures for Abatement of Highway Traffic Noise and Construction Noise* (FHWA 23 CFR 772), required in the noise impact assessment process, regardless of funding, in accordance with Chapter 335.17, Florida Statute; and FHWA's *Highway Traffic Noise: Analysis and Abatement Guidance* (75 FR 39820-39838).

As defined in FHWA 23 CFR 772, and adopted by FDOT's PD&E 2020 Manual, this project will result in changes in the horizontal roadway geometry and is expected to meet FHWA and FDOT's definition of a "Type I" project for which traffic noise impacts and abatement measures will be evaluated.

This noise analysis was evaluated based on the Beach Alternative 1 and Island Alternative 2 build alternatives presented at a public workshop in February 2018 and recommended for design. In addition, the Seafarer Alternate for improvements to the intersection of Estero Boulevard and Fifth Street was developed after the completion of the 2018 *Operational Analysis Report* and included in this analysis.

The procedures by which this NSR was conducted are as follows:

- *Initial project scoping*: Obtain project preliminary design; prepare field maps; review project mapping, GIS data, aerial photography, traffic data, and other available pertinent information.
- *Noise monitoring / traffic collection / fieldwork*: Identify all land uses, addresses, and locations of all noise sensitive receptors within the project corridor; obtain noise monitoring data; obtain weather data for noise monitoring sessions; collect traffic data during noise monitoring, create field data logs and site sketches; photograph noise monitoring locations and other relevant visual data; process noise monitoring data.
- *Traffic Evaluation*: Process both existing traffic collected from field and proposed traffic data into 5 TNM-designated vehicle classifications. For all modeled scenarios, determine if Level of Service (LOS) C or Demand volumes will be used in TNM.
- *Baseline TNM modeling*: Create a comprehensive but efficient representation of the existing condition project corridor utilizing receptors, roadways, terrain lines, ground zones, and barriers to represent structures within TNM.
- *TNM Model Validation Analyses*: Validate the baseline model in TNM to confirm the accuracy of the baseline models to predict traffic noise levels within acceptable tolerances of the traffic noise levels obtained at noise monitoring locations for which traffic noise was dominant.
- *Impact Assessment*: Input existing and 2040 design year no-build condition TNM traffic volumes and speeds into the validated baseline TNM models to evaluate existing and design-year no-build condition traffic noise levels. Update the validated baseline models with the preliminary project design and design year build-condition traffic volumes and speeds to evaluate design year build-condition traffic noise levels. Determine if future noise levels approach or exceed the Noise Abatement Criteria (NAC) and/ or if a substantial increase occurs.

- *Noise Abatement Evaluation:* When traffic noise impacts are identified above, noise abatement shall be considered and evaluated for feasibility and reasonableness. Model traffic noise barriers; calculate TNM-predicted with-barrier traffic noise levels; evaluate with-barrier noise level reductions; and optimize potentially feasible and reasonable barriers.
- *Noise Study Report:* The results of the noise analysis are documented in the NSR.

2.1 Noise Metrics

All noise levels were assessed as the hourly equivalent sound level, $Leq(h)$, in terms of A-weighted decibels, dB(A). The hourly equivalent sound level, $Leq(h)$, is the equivalent steady-state sound level which in a period of one hour contains the same acoustic energy as the time-varying sound level during that hour. The A-weighted decibel filtering scale applies numerical adjustments to sound frequencies to emphasize the frequencies at which human hearing is sensitive, and to minimize the frequencies to which human hearing is not as sensitive.

As shown in the several examples of A-weighted noise levels expressed in dB(A) listed in **Table 2-1**, most individuals are exposed to fairly high noise levels from many sources on a regular basis. In order to perceive sounds of greatly varying pressure levels, human hearing has a non-linear sensitivity to sound pressure exposure. For example, doubling the sound pressure results in a three decibel change in the noise level; however, variations of three decibels (3 dB(A)) or less are commonly considered “barely perceptible” to normal human hearing. A five decibel (5 dB(A)) change is more readily noticeable. By definition, a ten-fold increase in the sound pressure level correlates to a 10 decibel (10 dB(A)) noise level increase; however, it is judged by most people as only a doubling of the loudness – sounding “twice as loud”.

In March 1998, the FHWA, Office of Natural and Human Environment, released the FHWA Traffic Noise Model, Version 1.0, a state-of-the-art computer model for highway traffic noise prediction and analysis. TNM 2.5 (TNM) is the latest approved version of the Traffic Noise Model program. Within TNM, roadway elements, terrain lines, barriers building rows, and ground zones are used to represent the existing and build-condition topography of the project and noise study areas. With the exception of ground zones, each of these elements defines the horizontal (x, y) and vertical (z) coordinates for the model. The discrete point locations at which TNM calculates traffic noise levels are modeled as receptors. The horizontal and vertical coordinates define a point for each modeled receptor; however, TNM does not interpolate ground elevations between receptors as it does between terrain lines, roads, barriers, and building rows.

Table 2-1: Common Indoor and Outdoor Noise Levels

Common Outdoor Noise Levels	Noise Level (dB(A))	Common Indoor Noise Levels
	110	Rock Band
Jet Flyover at 1,000 feet	100	Inside Subway Train (NY)
Gas Lawn Mower at 3 feet		
Diesel Truck at 50 feet	90	Food Blender at 3 feet
Noisy Urban Daytime	80	Garbage Disposal at 3 feet
Gas Lawn Mower at 100 feet	70	Vacuum Cleaner at 10 feet
Commercial Area		Normal Speech at 3 feet
	60	
		Large Business Office
Quiet Urban Daytime	50	Dishwasher Next Room
Quiet Urban Nighttime	40	Small Theater, Large Conference Room (Background)
Quiet Suburban Nighttime		Library
	30	
Quiet Rural Nighttime		Bedroom at Night, Concert Hall (Background)
	20	
		Broadcast and Recording Studio
	10	
	0	Threshold of Hearing

Adapted from Guide on Evaluation and Attenuation of Traffic Noise, American Association of State Highway and Transportation Officials (AASHTO), 1974 (revised 1993).

2.2 Traffic Evaluation

The FHWA standard vehicle classification scheme defines 13 different vehicle types to identify vehicles by use, weight, axles, wheels, and other distinguishing characteristics. The TNM algorithm combines the 13 types of vehicles into 5 classifications: automobiles, medium trucks, heavy trucks, buses, and motorcycles (see **Table 2-2**).

Table 2-2: FHWA Traffic Noise Model (TNM) Vehicle Types

TNM Vehicle Type	Description	FHWA Vehicle Classification
Autos	All vehicles with two axles and four tires, including passenger cars and light trucks, weighing 10,000 pounds or less ¹	2, 3
Medium Trucks	All vehicles having two axles and six tires, weighing between 10,000 and 26,000 pounds ¹	5
Heavy Trucks	All vehicles having three or more axles, weighing more than 26,000 pounds ¹	6 – 13
Buses	All vehicles designed to carry more than nine passengers	4
Motorcycles	All vehicles with two or three tires and an open-air driver / passenger compartment	1

Since the January 1998 publication of the *FHWA Traffic Noise Model User's Guide*, the FHWA GVWR have been restored from metric to the English weights cited above. As noted in the *Guide* preface, the English values for the metric weights cited for Automobiles, Medium Trucks, and Heavy Trucks were "generally" <9,900 lb., 9,900 lb. – 26,400 lb., and >26,400 lb., respectively.

In predicting traffic noise levels and assessing impacts, traffic characteristics that would yield the highest traffic noise impact for the 2040 design year shall be used. It is known that the highest traffic volume (also taking into consideration truck percentages) and the highest average speed usually create the noisiest conditions. Maximum peak-hourly traffic representing Level of Service (LOS) "C" will be used, unless traffic analysis shows that LOS C will not be reached. If LOS C will not be reached, demand volumes shall be used.

The traffic volumes used for this study were specifically obtained from the *SR 865 Project Traffic Report* completed in December 2018 in support of the *Operational Analysis Report* referenced previously. The traffic volumes generated by the *FDOT Traffic Volumes for Noise Analysis Spreadsheet* indicate the number of each TNM vehicle type (automobiles, medium trucks, heavy trucks, buses, and motorcycles) on each project segment for each direction of travel, and whether peak-hour demand or LOS "C" volumes should be used for TNM input on each project roadway segment. In accordance with FHWA TNM modeling guidance, each roadway travel lane was modeled as a separate TNM roadway element and TNM roadway element widths were established to ensure that roadways overlap. In order to represent vehicle traffic on all modeled travel lanes, the traffic volumes generated by the *FDOT Traffic Volumes for Noise Analysis Spreadsheet* for each direction of travel were divided by two or three or three for each direction of the 4-lane and 6-lane project roadway segments, respectively (refer to **Appendix A**).

2.3 Noise Abatement Criteria

The FHWA has developed Noise Abatement Criteria (NAC) and procedures to be used in the planning and design of highways. A traffic noise impact can occur in two ways; one of which is when the modeled future highway traffic noise levels for the worst-case noise condition approach or exceed the NAC. FDOT has determined that the NAC is approached when it is within 1 dB(A) of the appropriate NAC.

A summary of the NAC for various land uses is presented in **Table 2-3**.

Table 2-3: Noise Abatement Criteria

Hourly Equivalent A-Weighted Sound Level (decibels (dB(A)))				
Activity Category	Activity Leq(h) ¹		Evaluation Location	Activity Description
	FHWA	FDOT		
A	57	56	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B ²	67	66	Exterior	Residential
C ²	67	66	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, daycare centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings
D	52	51	Interior	Auditoriums, 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
¹ The Leq(h) Activity Criteria values are for impact determination only and are not design standards for noise abatement measures. ² Includes undeveloped lands permitted for this activity category.				
Source: Table 1 of 23 CFR Part 772				

In determining traffic noise impacts for properties with Activity Category A, B, C or E, areas of frequent exterior human use should be identified. For those properties with Activity Category D, interior areas of frequent human use should be identified. Unless the area of exterior frequent human use is identified elsewhere, residential receptor sites are placed at the edge of the dwelling unit closest to the major traffic noise source

When more than one unit is clustered together, a single receptor can be analyzed as representative of a group of noise sensitive sites. Each residence in a multifamily dwelling is counted as one receptor when determining impacted and benefited receptors. Noise sensitive receptors may also consist of parks, schools, hospitals, and other sites where quiet is important for normal activities. The location of the receptor in these cases will be dictated by the location of the noise source and the exterior activity that may be impacted, if any.

2.3.1 Interior Noise Level Assessment

In determining traffic noise impacts, primary consideration shall be given to exterior areas where frequent human use occurs, unless no exterior activities are likely based on field observation. In accordance with applicable guidance, the attenuation of exterior noise levels at interior noise level receptors is based upon the building construction and window condition.

Several land uses within the project corridor qualify for NAC D interior noise analysis where field observation indicates that no noise sensitive exterior uses are likely. For this type of traffic noise analysis, an exterior noise level is first predicted at a building corner closest to the proposed project. The appropriate building noise reduction factor (see **Table 2-4**) is then subtracted from the exterior noise level to predict the interior noise level.

Table 2-4: Building Noise Reduction Factors

Building Type	Window Condition ¹	Noise Reduction Due to Exterior of Structure
All	Open	10 dB
Light Frame	Ordinary Sash (closed)	20 dB
	Storm Windows	25 dB
Masonry	Single Glazed	25 dB
	Double Glazed	35 dB
The windows shall be considered open unless there is firm knowledge that windows are in fact kept closed almost every day of the year.		
Source: FHWA Highway Traffic Noise Analysis and Abatement Guidance. December 2011		

2.4 Noise Abatement Measures

The NAC, as shown in **Table 2-3**, is used to determine whether a highway traffic noise impact occurs. A traffic noise impact occurs when one of two criteria are met:

1. When the modeled future highway traffic noise levels for the worst-case noise condition approaches or exceeds the NAC.
2. When modeled future highway traffic noise levels substantially exceed the existing highway traffic noise level, even though the modeled levels may not exceed the NAC.

FDOT determines that the NAC is approached when noise levels are within 1 dB(A) of the appropriate NAC; a substantial increase occurs when the increase over existing conditions (measured or predicted) is 15 dB(A) or greater. To assess the highway traffic noise impact of a project, FDOT must evaluate both criteria (approach and substantial increase).

Design year traffic noise impacts are based on the modeled future build noise levels, or the difference between the future build and existing measured or predicted traffic noise levels. If one or more noise sensitive receptors are impacted by project related traffic noise levels, which approach or exceed the NAC, or substantially increase when compared to existing (measured or predicted) noise levels, then abatement measures must be considered. If the abatement criteria are not approached or exceeded, or if projected traffic noise levels do not substantially exceed existing noise levels, abatement measures will not be considered.

Per FHWA procedures, when traffic noise impacts are identified, noise abatement shall be considered and evaluated for feasibility and reasonableness. In abating traffic noise impacts, FDOT shall give primary consideration to exterior areas where frequent human use occurs. Traffic noise abatement is considered only if the predicted future build traffic noise level approach or exceed abatement levels in the NAC, or if build traffic noise levels substantially increase from existing noise levels (either measured or predicted). When considering noise barriers for noise abatement, the feasibility and reasonableness factors must be evaluated for each viable alternative under detailed analysis. The most common type of traffic noise abatement measure, and the only viable abatement measure at the PD&E stage, is the construction of a noise barrier.

Feasibility Criteria

- At least a 5-dB(A) highway traffic noise reduction at a minimum of two (2) impacted receptors; and
- The determination that it is possible to design and construct the noise abatement measure. The factors related to the design and construction include: safety, access, barrier height, topography, drainage, utilities, maintenance of the abatement measure, maintenance access to adjacent properties, right of way, and general access to adjacent properties (i.e., arterial widening projects).

A determination of noise barrier reasonableness includes the consideration of the parameters listed below. All the reasonableness factors must collectively be achieved in order for a noise abatement measure to be deemed reasonable.

Reasonableness Criteria

- Noise Reduction Design Goals. FDOT's design goal is 7 dB(A) for at least one (1) benefited receptor.
- Cost-effectiveness. FDOT's noise barrier cost effectiveness value is based on an approximately 1,400 SF of noise barrier per benefited receptor. Using a current unit cost of \$30/SF, a reasonable cost of \$42,000 per benefited receptor is looked upon as the upper limit.
- Viewpoints of the benefited receptors. FDOT shall solicit the viewpoints of all benefited receptors. It is the desire of the FDOT to obtain a response for or against the noise barrier from a numerical majority (greater than 50%) of the respondents. If, after multiple attempts to gather the input from the benefited receptors, a minimum response rate of 50% is not achieved, the FDOT will determine the abatement measure to be not reasonable. If a numerical majority of the benefited residents and property owners that provide a response to the survey do not favor construction of a noise barrier, FDOT will not provide the noise barrier.

The Florida Department of Transportation is committed to the construction of feasible and reasonable noise abatement measures contingent upon the following conditions:

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

The FDOT's PD&E 2020 Manual and FHWA 23 CFR 772.17 regulation require that to minimize future traffic noise impacts on currently undeveloped lands for Type I projects, highway agencies shall inform local officials within whose jurisdiction the highway project is located of noise compatible planning concepts, and the best estimation of the future design year noise levels at various distances (traffic noise level contours) from the edge of the nearest travel lane of the highway improvement where the future noise levels meet the highway agency's definition of "approach" for undeveloped lands or properties within the project limits.

3 TRAFFIC NOISE ANALYSIS

The noise impacts and abatement assessments summarized in this NSR were completed in accordance with the FDOT's *Project Development and Environment Manual Part 2: Analysis and Documentation, Highway Traffic Noise*, Chapter 18 (effective July 1, 2020); the FDOT's *Traffic Noise Modeling and Analysis Practitioners Handbook*; and the FHWA's *Procedures for Abatement of Highway Traffic Noise and Construction Noise* (FHWA 23 CFR 772).

For the purposes of this traffic noise analysis, the project study area acoustic environment evaluation was based upon noise from highway traffic, assessed using FHWA's TNM, representations of the project study area, for which predicted traffic noise levels were validated to within acceptable tolerances of monitored traffic noise levels generated by classified traffic volumes.

3.1 Land Uses

The study area was divided into seventy-six (76) distinct areas of similar land use called a common noise environment (CNE), in accordance with FDOT and FHWA policies and guidance. A common noise environment is a group of receptors within the same NAC that are exposed to similar noise sources and levels; traffic volumes, traffic mix, speed and topographic features. Generally, common noise environments occur between two secondary noise sources, such as interchanges, intersections and/or cross-roads (see **Table 2-3**).

Within the project area, the 76 distinct CNEs are comprised of eleven NAC B; eleven NAC C; four NAC D; 25 NAC E; 23 NAC F; and two NAC G. A map of these CNEs can be found in **Appendix C**.

CNEs 01, 02, 03, and 04 represent the future Margaritaville Beach Resort complex. The design of this complex was based on conceptual site plans available from the developer's website. While the Town of Fort Myers Beach approved the application for a Land Development Code Development Order as of February 2021, a building permit has not yet been issued at the time of this noise analysis. Based on a proposed construction schedule beginning in June 2021, and a Public Hearing the end of May, it is assumed a building permit will be approved before the Date of Public Knowledge. Therefore, based on the above assumptions and with approval from FDOT, the proposed Margaritaville Beach Resort complex, and the four CNEs that correlate, has been included in this noise analysis and Noise Study Report.

CNE 01: This CNE is located on the northbound side of the intersection of SR 865 and Crescent Street and represents future Margaritaville Beach Resort multi-story guestrooms. With sensitive outdoor use, it is evaluated as NAC E.

CNE 02: This CNE is located on the northbound side of SR 865 adjacent to CNE E-01 and represents the future Margaritaville Beach Resort recreation area. This CNE is evaluated as NAC C.

CNE 03: This CNE is located on the northbound side of SR 865 and represents vacant land near the future Margaritaville Beach Resort. It is evaluated as NAC G.

- CNE 04: This CNE is located on the northbound side of SR 865 south of Fifth Street and represents a parking area for the future Margaritaville Beach Resort. With no sensitive outdoor use, it is evaluated as NAC F.
- CNE 05: This CNE is located on the northbound side of SR 865 and represents the portion of Lighthouse Resort between Fifth and Fourth Streets. With sensitive outdoor use, it is evaluated as NAC E.
- CNE 06: This CNE is located on the northbound side of SR 865 within CNE E-07 and represents a swimming pool within the Lighthouse Resort. This CNE is evaluated as NAC C.
- CNE 07: This CNE is located on the northbound side of SR 865 and represents the portion of Lighthouse Resort between Fourth and Third Streets. With sensitive outdoor use, it is evaluated as NAC E.
- CNE 08: This CNE is located on the northbound side of SR 865 within CNE E-07 and represents a swimming pool within the Lighthouse Resort. This CNE is evaluated as NAC C.
- CNE 09: This CNE is located on the northbound side of SR 865 near the intersection with Third Street and represents a multi-unit residential building. This CNE is evaluated as NAC B.
- CNE 10: This CNE is located on the northbound side of SR 865 near the intersection with Third Street and represents the Sun Deck Inn & Suites. With sensitive outdoor use, it is evaluated as NAC E.
- CNE 11: This CNE is located on the northbound side of SR 865 near the intersection with Second Street and represents a commercial property. With no sensitive outdoor use, it is evaluated as NAC F.
- CNE 12: This CNE is located on the northbound side of SR 865 near the intersection with Second Street and represents cottages for the Matanzas Inn. With sensitive outdoor use, it is evaluated as NAC E.
- CNE 13: This CNE is located on the northbound side of Crescent Street near the intersection with Third Street and represents the Teepee Villas Resort. With sensitive outdoor use, it is evaluated as NAC E.
- CNE 14: This CNE is located on the northbound side of Crescent Street near the intersection with Third Street and represents a swimming pool at the rear of the Teepee Villas Resort. This CNE is evaluated as NAC C.
- CNE 15: This CNE is located on the northbound side of Crescent Street near the intersection with Second Street and represents the Matanzas Inn. With sensitive outdoor use, it is evaluated as NAC E.
- CNE 16: This CNE is located on the northbound side of Crescent Street near the intersection with Second Street and represents a swimming pool within the Matanzas Inn. This CNE is evaluated as NAC C.
- CNE 17: This CNE is located on the northbound side of Crescent Street near the intersection with Third Street and represents the Matanzas on the Bay business office. With no sensitive outdoor use, it is evaluated as NAC F.

- CNE 18: This CNE is located on the northbound side of Crescent Street near the intersection with First Street and represents rental units at the Matanzas Inn. With sensitive outdoor use, it is evaluated as NAC E.
- CNE 19: This CNE is located on the northbound side of Crescent Street near the intersection with First Street and represents a restaurant at Matanzas on the Bay. With sensitive outdoor use, it is evaluated as NAC E.
- CNE 20: This CNE is located on the northbound side of SR 865 near the south side of the bridge at Matanzas Pass and represents a dock with electrical hookups for boating residents. This CNE is evaluated as NAC B.
- CNE 21: This CNE is located on the northbound side of SR 865 near the north side of the bridge at Matanzas Pass and represents a dock with electrical hookups for boating residents. This CNE is evaluated as NAC B.
- CNE 22: This CNE is located on the northbound side of SR 865, north of the bridge at Matanzas Pass, and represents Semmer Dock's which includes the Estero Bay Aquatic Preserve and Bonita Bill's cafe. With sensitive outdoor use, this CNE is evaluated as NAC E.
- CNE 23: This CNE is located on the northbound side of SR 865 near the intersection with Fisherman's Wharf and represents the Marine Science Center. This CNE is an institutional land use, evaluated for interior noise as NAC D.
- CNE 24: This CNE is located on the northbound side of SR 865 near Fisherman's Wharf and represents the Gulf Star Marina. With no sensitive outdoor use, it is evaluated as NAC F.
- CNE 25: This CNE is located on the northbound side of SR 865, south of Main Street, and represents the Gulf Cove Mobile Home Park. With sensitive outdoor use, it is evaluated as NAC B.
- CNE 26: This CNE is located on the northbound side of SR 865, north of Main Street, and represents the Sunnyland Mobile Home Park. With sensitive outdoor use, it is evaluated as NAC B.
- CNE 27: This CNE is located on the northbound side of SR 865, north of Main Street, and represents the Sunoco Gas Station. With no sensitive outdoor use, it is NAC F.
- CNE 28: This CNE is located on the northbound side of SR 865, north of Main Street, and represents the Shriner Club. This CNE is an institutional land use, evaluated for interior noise as NAC D.
- CNE 29: This CNE is located on the northbound side of SR 865, north of Main Street, and represents Jolly Roger Pizza. This land use is evaluated as NAC E, however there is no sensitive outdoor use.
- CNE 30: This CNE is located on the northbound side of SR 865, north of Main Street, and represents the Fort Myers Beach Plaza. With no sensitive outdoor use, it is evaluated as NAC F.
- CNE 31: This CNE is located on the northbound side of SR 865, north of Main Street, and represents Tina's Bar. With sensitive outdoor use, it is evaluated as NAC E.

- CNE 32: This CNE is located on the northbound side of SR 865, north of Main Street, and represents Beach Tobacco and Beer. With no sensitive outdoor use, it is evaluated as NAC F.
- CNE 33: This CNE is located on the northbound side of SR 865, on Buttonwood Drive, and represents the American Legion. This CNE is an institutional land use, evaluated for interior noise as NAC D.
- CNE 34: This CNE is located on the northbound side of SR 865, south of Buttonwood Drive, and represents AFA Auto Rental. With no sensitive outdoor use, it is evaluated as NAC F.
- CNE 35: This CNE is located on the northbound side of SR 865, on Buttonwood Drive, and represents one of the two residential two-story building unit at the Sportsman's Cove Yacht & Racquet Club. With sensitive outdoor use, it is evaluated as NAC B.
- CNE 36: This CNE is located on the northbound side of SR 865, on Buttonwood Drive, and represents a swimming pool at the Sportsman's Cove Yacht & Racquet Club. This CNE is evaluated as NAC C.
- CNE 37: This CNE is located on the northbound side of SR 865, on Buttonwood Drive, and represents a second of the two residential two-story building unit at the Sportsman's Cove Yacht & Racquet Club. With sensitive outdoor use, it is evaluated as NAC B.
- CNE 38: This CNE is located on the northbound side of SR 865, south of Hurricane Pass, and represents Nauti Parrot Dock Bar. With sensitive outdoor use, it is evaluated as NAC E.
- CNE 39: This CNE is located on the northbound side of SR 865, north of Hurricane Pass, and represents Carefree Boat Club. With no sensitive outdoor use, it is evaluated as NAC F.
- CNE 40: This CNE is located on the northbound side of SR 865, north of Hurricane Pass, and represents a recreational area including a swimming pool within the San Carlos RV Park. This CNE is evaluated as NAC C.
- CNE 41: This CNE is located on the northbound side of SR 865, north of Hurricane Pass, and represents the residential area within the San Carlos RV Park. This CNE is evaluated as NAC B.
- CNE 42: This CNE is located on the southbound side of SR 865, north of Hurricane Pass, and represents Maria's Smokehouse and Seafood. With a screened dining area enclosure, it is evaluated as NAC E.
- CNE 43: This CNE is located on the southbound side of SR 865, north of Hurricane Pass, and represents Trader Todd's Marina, Marina Mike's Boat Club & Rentals, Captain Tony's Fishing Adventures and Pontoon Boat Tours. With no sensitive outdoor use, this CNE is evaluated as NAC F.
- CNE 44: This CNE is located on the southbound side of SR 865, south of Hurricane Pass at Prescott Street and San Carlos Court, and represents vacant land. With no current sensitive outdoor use, this CNE is evaluated as NAC G.
- CNE 45: This CNE is located on the southbound side of SR 865, south of Prescott Street, and represents Mojoe's Reef Bar & Grille. With an outdoor dining area at the rear of the building, this CNE is evaluated as NAC E.

- CNE 46: This CNE is located on the southbound side of SR 865, south of Prescott Street, and represents Leisure American Vacation Rentals. With no sensitive outdoor use, this CNE is evaluated as NAC F.
- CNE 47: This CNE is located on the southbound side of SR 865, south of Prescott Street, and represents a chiropractor office. This CNE is an institutional land use, evaluated for interior noise as NAC D.
- CNE 48: This CNE is located on the southbound side of SR 865, south of Prescott Street, and represents the Moose Lodge. With an exterior patio, this institutional land use is evaluated as NAC C.
- CNE 49: This CNE is located on the southbound side of SR 865, north of Main Street, and represents various commercial businesses including Southwest Marine and Hurricane Henry's. With no sensitive outdoor use, this CNE is evaluated as NAC F.
- CNE 50: This CNE is located on the southbound side of SR 865, north of Main Street, and represents the Fantasies at the Beach bar. This land use is evaluated as NAC E, however there is no sensitive outdoor use.
- CNE 51: This CNE is located on the southbound side of SR 865, north of Main Street, and represents the Fort Myers Beach Bulletin. With no sensitive outdoor use, this CNE is evaluated as NAC F.
- CNE 52: This CNE is located on the southbound side of SR 865, south of Main Street, representing a Park & Ride. With no sensitive outdoor use, this CNE is evaluated as NAC F.
- CNE 53: This CNE is located on the southbound side of SR 865, south of Main Street, and represents the BonAir and San Carlos Lodge mobile home parks. This CNE is evaluated as NAC B.
- CNE 54: This CNE is located on the southbound side of SR 865, north of Matanzas Pass Bridge, and represents the Diversified Yacht Services boat yard and tackle shop. With no sensitive outdoor use, this CNE is evaluated as NAC F.
- CNE 55: This CNE is located on the southbound side of SR 865 near the north side of the bridge at Matanzas Pass and represents a boat dock with industrial and temporary use. This CNE is evaluated as NAC F.
- CNE 56: This CNE is located on the southbound side of SR 865 near the south side of the bridge at Matanzas Pass and represents a boat dock with industrial and temporary use. This CNE is evaluated as NAC F.
- CNE 57: This CNE is located on the southbound side of SR 865, on First Street west of the Matanzas Pass Bridge, and represents Ugly's Waterside Bar. With exterior seating, this CNE is evaluated as NAC E.
- CNE 58: This CNE is located on the southbound side of SR 865, south of Matanzas Pass Bridge, and represents the Fort Myers Beach Sea & Sun Rentals shop. With no sensitive outdoor use, this CNE is evaluated as NAC F.

- CNE 59: This CNE is located on the southbound side of SR 865, on Old San Carlos Blvd, and represents the Harbour House at the Inn condo-hotel. With exterior patios, this CNE is evaluated as NAC E.
- CNE 60: This CNE is located on the southbound side of SR 865, on Old San Carlos Blvd, and represents the swimming pool at Harbour House at the Inn. This CNE is evaluated as NAC C.
- CNE 61: This CNE is located on the southbound side of SR 865, on Second Street, and represents a multi-use commercial property. This CNE is evaluated as NAC E.
- CNE 62: This CNE is located on the southbound side of SR 865, on Second Street, and represents the Pierhouse residential and rental units. With exterior porches, this CNE is evaluated as NAC B.
- CNE 63: This CNE is located on the southbound side of SR 865, on Third Street, and represents a residential zoned property. This CNE is evaluated as NAC B.
- CNE 64: This CNE is located on the southbound side of SR 865, on Second Street, and represents the condo rental units and The Cigar Hut store. With exterior use, this CNE is evaluated as NAC E.
- CNE 65: This CNE is located on the southbound side of SR 865, on Third Street, and represents a paid parking lot. With no sensitive exterior use, this CNE is evaluated as NAC F.
- CNE 66: This CNE is located on the southbound side of SR 865, on Old San Carlos Blvd, and represents a paid parking lot. With no sensitive exterior use, this CNE is evaluated as NAC F.
- CNE 67: This CNE is located on the southbound side of SR 865, on Old San Carlos Blvd, and represents the Smokin Oyster Brewery and Felipe's Mexican Taqueria. With exterior use, this CNE is evaluated as NAC E.
- CNE 68: This CNE is located on the southbound side of SR 865, on Old San Carlos Blvd, and represents The Yucatan Beach Stand. With exterior use, this CNE is NAC E.
- CNE 69: This CNE is located on the southbound side of SR 865 and represents the 200 Old San Carlos Blvd Parking paid lot and gift shop. With no sensitive exterior use, this CNE is evaluated as NAC F.
- CNE 70: This CNE is located on the southbound side of SR 865 at Fifth Street and represents the Times Square Shopping Mall, H2O gift shop and Tiki Hut souvenir store. With no sensitive exterior use, this CNE is evaluated as NAC F.
- CNE 71: This CNE is located on the southbound side of SR 865 at Fifth Street and Estero Blvd and represents the Mr. G's House of 2000 Flavors ice cream shop and the Plaka restaurant. With sensitive outdoor use, this CNE is evaluated as NAC E.
- CNE 72: This CNE is located on the southbound side of SR 865 at Estero Blvd and represents the Sunset Beach Tropical Grill. With sensitive outdoor use, it is evaluated as NAC E.
- CNE 73: This CNE is located on the southbound side of SR 865 and represents the 1046 Estero Blvd Parking paid lot. With no sensitive exterior use, this CNE is evaluated as NAC F.

CNE 74: This CNE is located on the southbound side of SR 865 near Estero Blvd and represents the Crescent Beach Family Park. With sensitive exterior use, this park is evaluated as NAC C.

CNE 75: This CNE is located on the southbound side of the intersection of SR 865 at Crescent Street and represents future Margaritaville Beach Resort guestrooms. With sensitive outdoor use, it is evaluated as NAC E.

CNE 76: This CNE is located on the southbound side of the intersection of SR 865 south of Crescent Street and represents future Margaritaville Beach Resort swimming pool and recreation area. With sensitive outdoor use, it is evaluated as NAC C.

3.2 Existing Noise Levels

The primary purpose of field work is to ensure that traffic noise is the primary source of noise, and for validating TNM accuracy.

3.2.1 Noise Monitoring

Short-term noise monitoring data was acquired at four (4) receptor locations within influence of highway traffic noise from SR 865 on Wednesday, December 2, 2020. These locations were determined based on common noise environments: a group of receptors within the same activity category that are exposed to similar noise sources and levels; traffic volumes, traffic mix, speed and topographic features. Site sketch information on the noise measurements can be found in **Appendix F**.

Classified vehicle traffic counts from SR 865 were acquired concurrently with each of the short-term noise monitoring sessions. During the field measurements, speeds were obtained through radar. Measurements were taken for three ten-minute intervals.

Since wind, temperature inversions, and precipitation can have varying effects upon sound propagation, fair-weather is desirable for ambient noise monitoring. As indicated in **Table 3-1**, the weather conditions for the short-term noise monitoring session were favorable for obtaining noise level data.

Table 3-1: Traffic Noise Monitoring Weather Data

TMS	Temperature (°F)	Dew Point (°F)	Pressure (in)	Wind Direction	Wind Speed (mph)	Relative Humidity	Precip. (in)
1	67°	41°	30.18"	ENE	7 mph	39%	0
2	59°	43°	30.26"	ENE	7 mph	58%	0
3	60°	44°	30.24"	ENE	9mph	55%	0
4	55°	41°	30.26"	NE	9 mph	59%	0

Source: Weather Underground®

TMS #1: Crescent Beach Family Park (CNE 74)

Short-term ambient noise level data and concurrent classified SR 865 traffic counts were obtained on San Carlos Boulevard (SR 865) along the intersection of Estero Boulevard and SR 865 between 1:20 p.m. - 1:55 p.m. on Wednesday, December 2, 2020. SR 865 traffic was the dominant source of ambient noise at monitoring location M-01 during the short-term monitoring session.

TMS #2: Sunnyland Mobile Home Park (CNE 26)

Short-term ambient noise level data and concurrent classified SR 865 traffic counts were obtained along San Carlos Boulevard (SR 865) between the two entrances to Sunnyland Mobile Home Park between 11:00 a.m. - 11:30 a.m. on Wednesday, December 2, 2020. SR 865 traffic was the dominant source of ambient noise at monitoring location M-02 during the short-term monitoring session.

TMS #3: Sunnyland Mobile Home Park (CNE 26)

Short-term ambient noise level data and concurrent classified SR 865 traffic counts were obtained along San Carlos Boulevard (SR 865) at the north end of Sunnyland Mobile Home Park between 11:40 a.m. - 12:00 p.m. on Wednesday, December 2, 2020. SR 865 traffic was the dominant source of ambient noise at monitoring location M-03 during the short-term monitoring session.

TMS #4: San Carlos Boulevard (CNE 43)

Short-term ambient noise level data and concurrent classified SR 865 traffic counts were obtained along San Carlos Boulevard (SR 865) between 10:10 a.m. – 10:40 a.m. on Wednesday, December 2, 2020. SR 865 traffic was the dominant source of ambient noise at monitoring location M-04 during the short-term monitoring session. The original monitoring location at CNE 41 was moved due to acoustical conflicts caused by a private perimeter wall against the roadway, which would have significant impact on the ability to validate the receiver. This receptor will be used for validation purposes only.

3.3 TNM Validation

To ensure modeling consistency for the assessment of all predicted traffic noise levels, a single comprehensive but efficient TNM representation of the existing condition project corridor utilizing receptors, roadways, terrain lines, ground zones, and barriers to represent structures was created for the entire project limits.

TNM validation is the process by which the precision of the modeled relationship between traffic and equivalent noise levels is refined and/or confirmed. If the model is well-constituted, it should generate predicted traffic noise levels that are similar to the noise levels obtained in the field. A model is considered validated if the TNM-predicted noise levels are within ± 3.0 dB(A) at all monitoring locations for which traffic was the dominant noise source.

The SR 865 models for the areas in which noise monitoring and traffic count data were acquired validated predicted traffic noise levels to within acceptable tolerance levels for all four of the monitoring locations for which traffic noise was the dominant source, as seen in **Table 3-2**. A copy of these models can be found in the project file (**Appendix D**).

Two validation measurement sites, M-02 and M-03, show measured levels that exceed modeled levels by a margin greater than or equal to 2 dBA. This slight difference at M-02 can be attributed to the operation of a bus stop and foot traffic close by to the noise monitor; at the M-03 receptor, the difference can in part be attributed to distant construction and operation of a table saw that was consistent throughout the measurement. Although, it is assumed that each of these instances of ambient noise may have had minor influence, at the time of the field measurement operator observation confirmed that the traffic of SR 865 remained the predominant source of noise. Furthermore, both receiver M-02 and M-03 are within the allowable threshold of 3 dBA determined by FHWA criteria. These ambient noise sources are detailed in the Noise Monitoring Field Data Sheets found in Appendix F.

Table 3-2: TNM Validation Table

Receptor	CNE	Land Use NAC ¹	Date Start – Stop Time	Distance to Existing Edge of Road (feet)	TNM-Predicted $L_{eq(h)}$ dB(A) ²	Measured $L_{eq(h)}$ dB(A) ²	Validation Delta (Pred. – Meas.) ²	Validate?
M-01	74	C	12/02/2020 1:20 - 1:30 p.m.	58'	60.2	60.2	0.0	Yes
			12/02/2020 1:30 - 1:40 p.m.		59.9	57.5	-2.4	
			12/02/2020 1:45 - 1:55 p.m.		57.4	57.3	-0.1	
M-02	25	B	12/02/2020 11:00 - 11:10 a.m.	17'	71.2	72.8	1.6	Yes
			12/02/2020 11:10 - 11:20 a.m.		70.9	72.9	2.0	
			12/02/2020 11:20 - 11:30 a.m.		70.8	72.3	1.5	
M-03	25	B	12/02/2020 11:40 - 11:50 p.m	25'	70.2	73.1	2.9	Yes
			12/02/2020 11:50 - 12:00 p.m		69.5	71.7	2.2	
M-04	43	F	12/02/2020 10:10 - 10:20 a.m	56'	68.3	68.8	-0.5	Yes
			12/02/2020 10:20 - 10:30 a.m		67.9	67.3	0.6	
			12/02/2020 10:30 - 10:40 a.m		68.4	68.2	0.2	

1. Land uses in this table are identified only for the exact noise monitoring locations. Noise monitoring locations were selected to represent the overall noise environment and for optimal TNM model validation throughout each Common Noise Environment (CNE), regardless of land use.

2. Hourly equivalent noise levels, $L_{eq(h)}$, are expressed to the nearest one-tenth decibels to ensure that TNM-predicted noise levels validate to within ± 3.0 dB(A) of measured noise levels without the benefits of rounding.

3.4 Predicted Noise Levels and Abatement Analysis

FHWA 23 CFR 772.9 requires that traffic noise analyses use the FHWA TNM. In order to maximize efficiency and ensure optimal compliance with FHWA 23 CFR 772.9, predicted 2015 existing, 2040 design year no-build, and 2040 design year build condition traffic noise levels were calculated using validated models for each of the 245 discrete noise-sensitive land use receptors throughout the project corridor (refer to **Appendix B**).

For the purposes of this traffic noise analysis, the project study area acoustic environment evaluation was based upon highway traffic noise. Highway traffic noise was assessed using FHWA's TNM representations of the project study area, for which predicted traffic noise levels were validated to within acceptable tolerances of monitored traffic noise levels generated by classified traffic volumes and traffic noise level data acquired during ambient noise monitoring.

3.4.1 Traffic Analysis

In predicting traffic noise levels and assessing impacts, traffic characteristics that would yield the highest traffic noise impact for the 2040 design year shall be used. The traffic volumes generated by the FDOT *Traffic Volumes for Noise Analysis Spreadsheet* indicate the number of each TNM vehicle type (automobiles, medium trucks, heavy trucks, buses, and motorcycles) on each project segment for each direction of travel, and whether peak-hour demand or LOS "C" volumes should be used for TNM input on each project roadway segment.

The tables for all Demand versus LOS C traffic can be found in **Appendix A**.

3.4.2 Predicted Noise Level Results

The FHWA has developed NAC and procedures to be used in the planning and design of highways. A traffic noise impact can occur in two ways; one of which is when the modeled future highway traffic noise levels for the worst-case noise condition approach or exceed the NAC. FDOT has determined that the NAC is approached when it is within 1 dB(A) of the appropriate NAC. The second is a substantial noise increase - when modeled future highway traffic noise levels substantially exceed the existing highway traffic noise level, even though the modeled levels may not exceed the NAC. FDOT has determined that a substantial increase occurs when the increase over existing conditions (measured or predicted) is 15 dB(A) or greater. To assess the highway traffic noise impact of a project, FDOT must evaluate both criteria (approach and substantial increase).

Predicted 2015 existing noise levels were compared to 2040 design-year no-build and build noise levels. There are no predicted substantial noise increase impacts directly associated with the SR 865 project. Of the 245 receptors modeled, six receptors were predicted to be impacted by the project, as seen in **Appendix B**. A total of 73 CNEs were found to have no noise impacts for this project and three (3) were found to be impacted, as seen on **Table 3-3**.

Table 3-3: Noise Level Impacts by CNE

CNE	NAC	Receptors	Total Receptors in CNE	Impacted CNE? Y/N	Warrant Abatement Analysis? ¹ Y/N	Includes Special Land Use? ² Y/N
1	E	01-E-01A thru 01-E-01C, 01-E-02A thru 01-E-02A	6	No	No	n/a
2	C	02-C-01 thru 02-C-11	11	No	No	n/a
3	G	n/a	n/a	n/a	n/a	n/a
4	F	n/a	n/a	n/a	n/a	n/a
5	E	05-E-01A thru 05-E-01C, 05-E-02A thru 05-E-02C, 05-E-03A thru 05-E-03C	9	No	No	n/a
6	E	06-C-01 thru 06-C-03	3	No	No	n/a
7	E	07-E-01 thru 07-E-03, 07-E-04A & 07-E-04B, 07-E-05A & 07-E-05B	7	No	No	n/a
8	C	08-C-01 thru 08-C-04	4	No	No	n/a
9	B	09-B-01 & 09-B-02	2	No	No	n/a
10	E	10-E-01A & 10-E-01B, 10-E-02A & 10-E-02B	4	No	No	n/a
11	F	n/a	n/a	n/a	n/a	n/a
12	E	12-E-01 & 12-E-02	2	No	No	n/a
13	E	13-E-01, 13-E-02A & 13-E-02B	3	No	No	n/a
14	C	14-C-01 & 14-C-02	2	No	No	n/a
15	E	15-E-01	1	No	No	n/a
16	C	16-C-01 thru 16-C-04	4	No	No	n/a
17	F	n/a	n/a	n/a	n/a	n/a
18	E	18-E-01A & 18-E-01B	2	No	No	n/a
19	E	19-E-01	1	No	No	n/a
20	B	20-B-01 & 20-B-02	2	No	No	n/a
21	B	21-B-01 thru 21-B-04	4	No	No	n/a
22	E	22-E-01 thru 22-E-03	3	No	No	n/a
23	D	23-D-01	1	No	No	n/a
24	F	n/a	n/a	n/a	n/a	n/a
25	B	25-B-01 thru 25-B-15	15	No	No	n/a
26	B	26-B-01 thru 26-B-09	9	YES	YES	No
27	F	n/a	n/a	n/a	n/a	n/a
28	D	28-D-01	1	No	No	n/a
29	E	29-E-01	1	No	No	n/a
30	F	n/a	n/a	n/a	n/a	n/a
31	E	31-E-01	1	No	No	n/a

CNE	NAC	Receptors	Total Receptors in CNE	Impacted CNE? Y/N	Warrant Abatement Analysis? ¹ Y/N	Includes Special Land Use? ² Y/N
32	F	n/a	n/a	n/a	n/a	n/a
33	D	33-D-01	1	No	No	n/a
34	F	n/a	n/a	n/a	n/a	n/a
35	B	35-B-01A & 35-B-01B	2	No	No	n/a
36	C	36-C-01 thru 36-C-04	4	No	No	n/a
37	B	37-B-01A & 37-B-01B, 37-B-02A & 37-B-02B	4	YES	No	n/a
38	E	38-E-01 & 38-E-02	2	No	No	n/a
39	F	n/a	0	No	No	n/a
40	C	40-C-01 thru 40-C-09	9	No	No	n/a
41	B	41-B-01 thru 41-B-32	32	No	No	n/a
42	E	42-E-01, 42-E-02, 42-E-03, 42-E-04, 42-E-05	5	YES	YES	YES
43	F	n/a	n/a	n/a	n/a	n/a
44	G	n/a	n/a	n/a	n/a	n/a
45	E	45-E-01	1	No	No	n/a
46	F	n/a	n/a	n/a	n/a	n/a
47	D	47-D-01	1	No	No	n/a
48	E	48-E-01	1	No	No	n/a
49	F	n/a	n/a	n/a	n/a	n/a
50	E	n/a	n/a	n/a	n/a	n/a
51	F	n/a	n/a	n/a	n/a	n/a
52	F	n/a	n/a	n/a	n/a	n/a
53	B	53-B-01 thru 53-B-13	13	No	No	n/a
54	F	n/a	n/a	n/a	n/a	n/a
55	F	n/a	n/a	n/a	n/a	n/a
56	F	n/a	n/a	n/a	n/a	n/a
57	E	57-E-01A & 57-E-01B, 57-E-02A & 57-E-02B	4	No	No	n/a
58	F	n/a	n/a	n/a	n/a	n/a
59	B	59-B-01A & 59-B-01B, 59-B-02A & 59-B-02B, 59-B-03A & 59-B-03B	6	No	No	n/a
60	C	60-C-01	1	No	No	n/a
61	E	61-E-01	1	No	No	n/a
62	B	62-B-01	1	No	No	n/a
63	B	63-B-01	1	No	No	n/a
64	E	64-E-01 thru 64-E-03	3	No	No	n/a

CNE	NAC	Receptors	Total Receptors in CNE	Impacted CNE? Y/N	Warrant Abatement Analysis? ¹ Y/N	Includes Special Land Use? ² Y/N
65	F	n/a	n/a	n/a	n/a	n/a
66	F	n/a	n/a	n/a	n/a	n/a
67	E	67-E-01	1	No	No	n/a
68	E	68-E-01	1	No	No	n/a
69	F	n/a	n/a	n/a	n/a	n/a
70	F	n/a	n/a	n/a	n/a	n/a
71	E	71-E-01	1	No	No	n/a
72	E	72-E-01	1	No	No	n/a
73	F	n/a	n/a	n/a	n/a	n/a
74	C	74-C-01 thru 74-C-33	33	No	No	n/a
75	E	75-E-01A thru 75-E-01D, 75-E-02A thru 75-E-02D	8	No	No	n/a
76	C	76-C-01 thru 76-C-14	14	No	No	n/a
TOTAL			249	3	2	1
<p>¹ An impacted CNE may not warrant abatement analysis due to many reasons, including isolated receptors, design/construction, safety, access, right-of-way, maintenance, drainage, and utility limitations.</p> <p>² Special land use (SLU), analyzed during the mitigation analysis, is defined as an outdoor activity area at facilities such as parks, churches and schools where factors such as frequency and duration are assessed to determine activity level and abatement reasonableness. If a SLU analysis was performed during mitigation analysis, the grids for the receptors will be shown in Appendix C.</p>						

3.4.3 Abatement Analysis

Of the three impacted CNE's, one was found to not warrant mitigation analysis as it was determined noise abatement was not feasible for this area. The remaining two CNEs were found to warrant mitigation analysis, which includes a feasible and reasonable analysis and optimization of noise barriers.

CNE 26

This CNE, on the northbound side of SR 865, north of Main Street, represents the Sunnyland Mobile Home Park. Existing and 2040 future no-build and build-condition hourly equivalent sound levels were predicted at 9 noise-sensitive receptors (refer to **Table 3-3**). Future build-condition noise levels approach or exceed the applicable NAC for 4 sites; no receptors are impacted by a substantial increase.

Under FDOT policy, noise abatement must provide benefit to at least two impacted receptors to be considered feasible and to one receptor receiving a minimum of 7 dB(A) to be considered reasonable. Another aspect to determining if a noise barrier is feasible is analyzing factors related to the design and construction include: safety, access, barrier height, topography, drainage, utilities, maintenance of the abatement measure, maintenance access to adjacent properties, right of way, and general access to adjacent properties. Additionally, a cost of less than \$42,000 per benefited receptor must be met to in order for a barrier to be considered reasonable.

For this CNE, a potential noise barrier was analyzed. Based on preliminary findings, it was determined that a 124' long and 8' tall noise barrier is needed in order to meet the feasible noise reduction criteria and reasonable noise reduction design goal. In examining this potential noise barrier in more detail, it was determined that factors such as existing utilities, right of way acquisition, drainage, and maintenance of the noise barrier could be factors that would impact the feasibility. In addition, these additional elements might require additional costs.

A more detailed cost estimate was completed of the items needed for the CNE 26 potential noise barrier that would be additional from the highway improvement project. These items include removal and replacing of the existing sidewalk for construction purposes, drainage needs, right of way acquisition, and utility relocation, if deemed necessary.

As seen in **Table 3-4**, a noise barrier 8 to 16 feet in height, located approximately 12' from the existing edge of pavement within the right of way, meets the feasible and reasonable insertion loss criteria. However, with these additional items, the total cost of the noise barrier is \$288,501.69. Based on two benefitted receptors, the reasonable cost effectiveness criteria is exceeded with a cost per benefitted receptor at \$144,250.84.

Based on the noise analyses performed to date, there are no feasible solutions available to mitigate the noise impacts for CNE 26 (refer to **Table 4-1** for impacted receptors not benefitted). Therefore, a noise barrier is not recommended for further consideration.

Table 3-4: Noise Barrier Analysis Results – Barrier System CNE 26

Average Barrier Height (feet)	Barrier Length (feet)	Number of Impacted Receptors	Noise Reduction at Impacted Receptors ¹ (dB(A))			Number of Benefited Receptors ²			Average Reduction for Benefited Receptors (dB(A)) ¹	Total Estimated Cost ³	Cost per Benefited Receptor ⁴
			5 - 5.9 dB(A)	6 - 6.9 dB(A)	>7 dB(A)	Impacted	Not Impacted	Total			
8	124	4	1	0	1	2	0	2	7.4	\$288,502	\$144,251
10	124	4	0	1	1	2	0	2	8.5	\$296,686	\$148,343
12	124	4	0	0	2	2	0	2	8.9	\$304,870	\$152,435
14	124	4	0	0	2	2	0	2	9.3	\$313,054	\$156,527
16	124	4	0	0	2	2	0	2	9.5	\$321,238	\$160,619
18	124	4	0	0	2	2	0	2	9.7	\$329,422	\$164,711
20	124	4	0	0	2	2	0	2	9.8	\$337,606	\$168,803
22	124	4	0	0	2	2	0	2	9.9	\$345,790	\$172,895

¹ Receptors with a predicted noise level of 66 dB(A) or greater.

² Receptors with a predicted reduction of 5 dB(A) or more are considered benefited.

³ Based on the FDOT standard unit cost of \$30 per square foot; right-of-way cost of \$250,000; clearing and grubbing, concrete sidewalk and driveways, embankment, sod cost of \$5,242, and a contingency of 10% added to those costs but not including the cost of right of way.

⁴ FDOT cost reasonable criterion is \$42,000 per benefited receptor.

CNE 37

This CNE is located on the northbound side of SR 865, on Buttonwood Drive, and represents a residential two-story building unit at the Sportsman’s Cove Yacht & Racquet Club. This property is analyzed as NAC B. Existing and 2040 future no-build and build-condition hourly equivalent sound levels were predicted at two noise-sensitive receptors (refer to **Table 3-3**). Future build-condition noise levels approach or exceed the applicable NAC for one residential site; no receptors are impacted by a substantial increase.

Impacted receptor 37-B-01 is an isolated impacted receptor. Abatement would not be feasible because under FDOT policy, noise abatement must provide a benefit at a minimum of two impacted receptors. Therefore, based on the noise analyses performed to date, there are no feasible solutions available to mitigate the noise impact for CNE 37 (refer to **Table 4-1** for impacted receptors not benefited).

CNE 42

This CNE is located on the southbound side of SR 865, north of Hurricane Pass, and represents Maria's Smokehouse and Seafood. With a screened dining area enclosure, it is evaluated as NAC E. Existing and 2040 future no-build and build-condition hourly equivalent sound levels were predicted at 5 noise-sensitive receptors (refer to **Table 3-3**). Future build-condition noise levels approach or exceed the applicable NAC for the screened in area of this restaurant; no receptors are impacted by a substantial increase.

A noise barrier was evaluated following FDOT Special Land Use procedures. A noise barrier, outside of the ROW, was evaluated at heights ranging from 8 – 22 ft. and is shown in Table 3-5. The noise barrier evaluation found that a noise barrier at heights ranging from 8-22 ft. would provide a benefit to all the impacted area and meet the noise reduction design goal. For a 10 ft. noise barrier to be cost reasonable, 41 people need to use the facility per day for one hour. The seating capacity of the screened in dining area is about 40 persons; with about 10 tables and 40 chairs for accommodating patrons. It is assumed that use of the area would exceed 10 person per hour during the lunch hours of 11am to 1pm, then dinner hours 5pm to 7pm; therefore, it is possible for the person-hours requirement to be met for a noise barrier 10 feet in height. The noise barrier with a height of 10 ft. provides as much of a benefit as a 22 ft. barrier (100% of the impacted receptors). This 10 ft. noise barrier is shown on aerial sheets 7 and 8 found in **Appendix D**.

To meet safety requirements, such as access sight distance, a set back from each access point would be needed to provide horizontal sight distance of a stopped vehicle being able to view traffic on the mainline and safely proceed onto SR 865. In addition, in order to meet clear zone safety requirements, the noise barrier would need to be constructed along the backside of the sidewalk. This would place the potential noise barrier approximately 4 feet from the front of the building. The proximity to the building would require substantial impacts to the building during construction. Therefore, construction of the noise barrier would not be feasible without impacting the building. In addition, factors such as existing utilities, right of way acquisition, drainage, and maintenance of the noise barrier could impact the feasibility, and might require additional costs.

Based on the noise analyses performed to date, while the potential noise barrier could meet reasonable noise criteria, there are no feasible solutions available to mitigate the noise impacts for CNE 42 due to construction feasibility issues (refer to **Table 4.1** for impacted receptors not benefited).

Table 3-5: Noise Barrier Analysis Results – Barrier System CNE 42

Average Barrier Height (feet)	Barrier Length (feet)	Noise Reduction at Impacted Area ¹ (dB(A))			Average Reduction for Benefited Area (dB(A)) ²	Average Person/Hour Needed	Special Land Use Reasonable? ³
		5 - 5.9 dB(A)	6 - 6.9 dB(A)	>7 dB(A)			
8	96	Yes	Yes	0	6.2	n/a	n/a
10	96	0	Yes	Yes	7.1	41	YES
12	96	0	Yes	Yes	7.4	n/a	n/a
14	96	0	0	Yes	7.6	n/a	n/a
16	96	0	0	Yes	7.7	n/a	n/a
18	96	0	0	Yes	7.8	n/a	n/a
20	96	0	0	Yes	7.9	n/a	n/a
22	96	0	0	Yes	7.9	n/a	n/a

¹ Receptors with a predicted noise level of 66 dB(A) or greater.
² Receptors with a predicted reduction of 5 dB(A) or more are considered benefited.
³ Reasonable based on if site can sustain the number of person/hours needed and research/capacity of site.

Table 3-6: Noise Barrier Analysis SLU Results – Barrier System CNE 42

Average Barrier Height (feet)	Barrier Length (feet) ¹	Barrier Location	Total Cost ²	Benefited Acreage within 0.04 Acre Impact Area	Percentage of Impacted Area Benefitted	Average Reduction in Benefited Area (db(A))	Required Person-Hours of Daily Use Within Benefited Area ³	Possible for Person-Hours of Daily Use Within Entire Facility to be met?
8	96	NA ⁴						
10	96	ROW	\$28,800	0.04	75	7.1	41	YES
12	96	ROW	\$34,560	0.04	75	7.4	49	
14	96	ROW	\$40,320	0.04	75	7.6	57	
16	96	ROW	\$46,080	0.04	75	7.7	65	
18	96	ROW	\$51,840	0.04	75	7.8	73	
20	96	ROW	\$57,600	0.04	75	7.9	81	
22	96	ROW	\$63,360	0.04	75	7.9	90	

¹ Full height is for the length indicated. If a shoulder noise barrier location is indicated, the length of vertical height tapers at the shoulder barrier's terminus (See FDOT Standard Plans) would be in addition to the length indicated.
² Based on the FDOT standard unit cost of \$30 per square foot.
³ Based the abatement cost factor of \$995,935/person-our/ft² as the limit for cost reasonableness.
⁴ NRDG not met.

4 CONCLUSIONS

This noise study has been completed as part of a PD&E study to consider the proposed improvements to a portion of SR 865 from Crescent Street to North of Hurricane Pass Bridge.

This traffic noise analysis was conducted in accordance with the FDOT *Project Development and Environment Manual Part 2: Analysis and Documentation, Highway Traffic Noise*, Chapter 18 (effective July 1, 2020); the FDOT *Traffic Noise Modeling and Analysis Practitioners Handbook*; the FHWA *Procedures for Abatement of Highway Traffic Noise and Construction Noise* (FHWA 23 CFR 772); FHWA *Highway Traffic Noise: Analysis and Abatement Guidance* (75 FR 39820-39838); and in consultation with FDOT District 1.

The conclusions of this traffic noise analysis are as follows:

- Noise levels are predicted to exceed FHWA NAC noise impact criteria for ten receptors within three CNEs in the vicinity of the proposed project, as shown below in **Table 4-1**. Due to existing traffic and non-traffic noise sources, the proposed project will not create any noise impacts due to a substantial noise increase over predicted existing noise levels.
- Traffic noise abatement was considered for all predicted noise impacts.
- Based on the noise analyses performed to date, there are no solutions that are both feasible and reasonable available to mitigate the noise impacts shown below in **Table 4-1**.

Table 4-1: Impacted Receptors Not Benefited

CNE	Total Impacted Modeled Receptors	# Impacted Receptors not Benefited	Impacted Receptors not Benefited
26	4	4	26-B-01, 26-B-02, 26-B-03, 26-B-04
37	1	1	37-B-01B
42	5	5	42-E-05

Table 4-2 below summarizes the feasible and reasonableness criteria for each impacted common noise environment.

Table 4-2: Noise Barrier Abatement Analysis Summary

Barrier Location	CNE 26	CNE 37	CNE 42
Feasibility (Acoustic)	YES	NO	YES
Provides at least 5-dB(A) noise reduction at a minimum 2 of impacted receptors	Yes	No	n/a
Non-highway noise sources limit effectiveness	No	No	No
Feasibility (Engineering)	NO	n/a	NO
Known Design and Construction Factors	Yes	n/a	Yes
Known Safety Issues	No	n/a	Yes
Known Access Factors	No	n/a	Yes
Known Right of Way Issues	Yes	n/a	Yes
Known Maintenance Issues	n/a	n/a	n/a
Known Drainage Factors	Yes	n/a	n/a
Known Utility Factors	Yes	n/a	Yes
Reasonableness (Viewpoints)	1	n/a	1
>50% Responses of Residences want noise abatement	1	n/a	1
Reasonableness (Noise Reduction Design Goal)	YES	n/a	Yes
Achieves 7 dB(A) reduction to at least one benefited receptor	Yes	n/a	Yes
Reasonableness (Cost Effectiveness)	NO	n/a	n/a
Total Cost of Barrier	\$288,502	n/a	n/a
Total Number of Benefited Receptors	2	n/a	n/a
≤ \$42,000 per benefited receptor	No	n/a	n/a
Meets Technical Eligibility Criteria	NO	NO	NO
¹ Determined during design phase noise analysis only if noise abatement is determined to be potentially reasonable and feasible.			

Statement of Likelihood

The Florida Department of Transportation is committed to the construction of feasible and reasonable noise abatement measures where recommended. Within the two CNEs for which noise barriers were further evaluated, the potential barrier in CNE 26 would not meet the reasonable cost effectiveness criteria and the potential barrier for CNE 42 would not be feasible to construct due to construction issues. Therefore, potential noise barriers are not recommended for further consideration for this project. Locations of these potential noise barriers can be seen in **Appendix C** and **Figures 4-1 and 4-2**.

Based on the noise analyses performed to date, there are no solutions that are both feasible and reasonable to mitigate the noise impacts at CNEs 26, 37 and 42.

Figure 4-1 CNE 26 Noise Barrier Location



Figure 4-2 CNE 42 Noise Barrier Location



5 CONSTRUCTION NOISE AND VIBRATION

Based on the existing land use within the limits of this project, construction of the proposed SR 865 roadway improvements may cause temporary noise and/or vibration impacts. If additional land uses are developed in the vicinity of the proposed project prior to construction, then additional construction noise and vibration impacts could occur. It is anticipated that application of the FDOT *Standard Specifications for Road and Bridge Construction* will minimize or eliminate potential construction noise and vibration impacts. However, should unanticipated noise or vibration issues arise during project construction, the Project Manager, in concert with the District Noise Specialist and the Contractor, will investigate additional methods of controlling these impacts.

The following table are noise and vibration sensitive sites found within this project area.

Table 5-1: Construction Noise and Vibration Sensitive Sites

Noise	Vibration
Medical Centers Residences Educational Centers Motels/Hotels Lodges/ Union Halls Parks	Medical Centers Residences
Note: This list is not meant to be all inclusive or exclusive, but rather an indication of the type of sites likely to be sensitive to construction noise and/or vibration.	
Adapted from: FDOT Noise and Vibration Task Team; August 17, 1999.	

6 COMMUNITY COORDINATION

Coordination with local agencies and officials will be accomplished in conjunction with the project development process. Local and community officials will have the opportunity to comment on the proposed project at public meetings. Upon approval of the project’s environmental document, a copy of the final NSR will be provided to the Lee County Department of Community Development, Lee County MPO and the Town of Fort Myers Beach for their use associated with planning for development after the date of public knowledge (i.e., when the Type 2 CE is approved).

Traffic noise level contours represent the approximate distances for each project segment from the edge of the nearest proposed travel lane of SR 865, respectively, to the limits of the area predicted to approach within 1 decibel (1 dB(A)) the design-year build-condition NAC. The contour distances do not include consideration for shielding by intervening structures or forestation within the source-to-receptor traffic noise propagation paths. In accordance with the FDOT definition of “approach” to be within 1 decibel (1 dB(A)) of the FHWA NAC, the 56 dB(A) contour distances, provided in **Table 6-1** and in **Figure 6-1**, correlate to NAC “A” land uses, the 66 dB(A) contour distances correlate to NAC “B” and NAC “C” land uses, and the 71 dB(A) contour distances correlate to NAC “E” land uses.

The 56 dB(A), 66 dB(A), and 71 dB(A) noise level contour information provided should assist local authorities in exercising land use control over the remaining undeveloped lands, so as to avoid development of lands for use by incompatible activities adjacent to the roadways within the local jurisdictions.

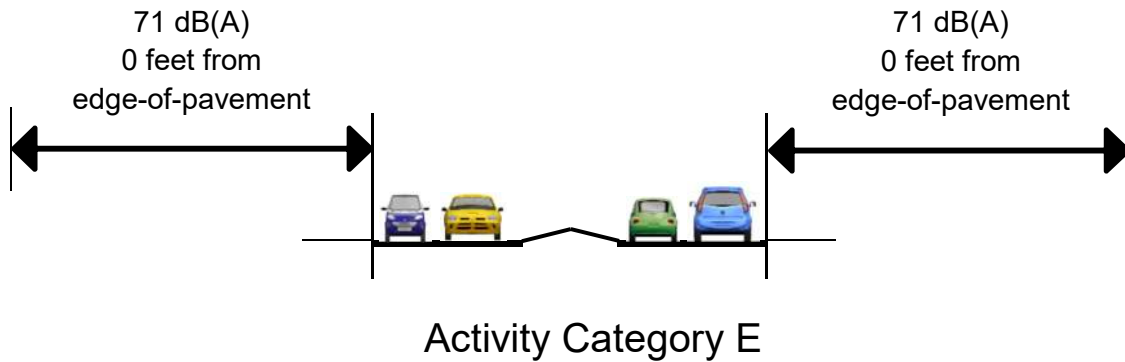
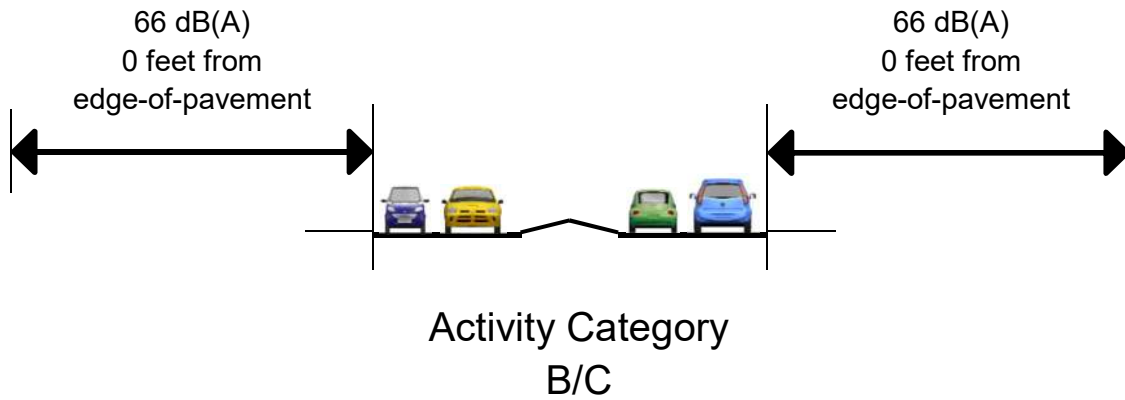
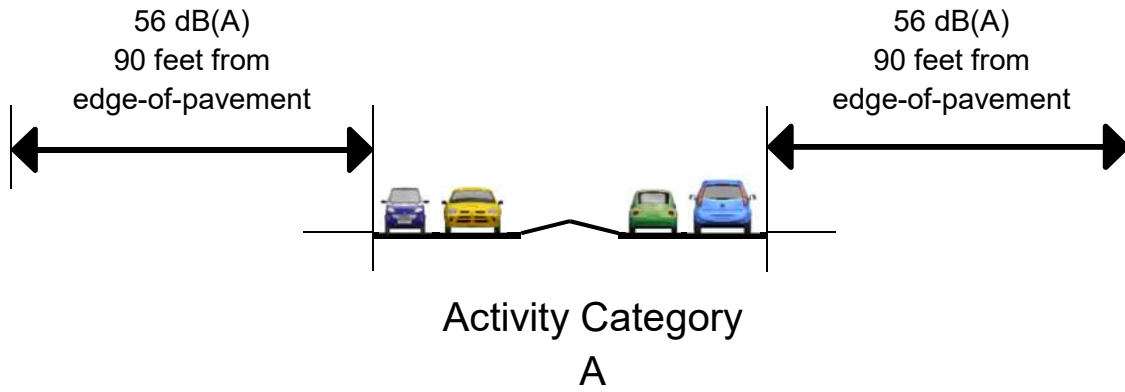
Table 6-1: Design Year Build-Condition Noise Abatement Criteria Contours

Locations	Distance from Proposed Nearest Travel Lane to Noise Contour (Feet)		
	56 dB(A) NAC A	66 dB(A) NAC B & C	71 dB(A) NAC E
Crescent St to 5 th St	90	n/a	n/a
5 th St to Main St	170	15	n/a
Main St to Prescott St	380	90	30
Prescott St to RV Park	350	90	30

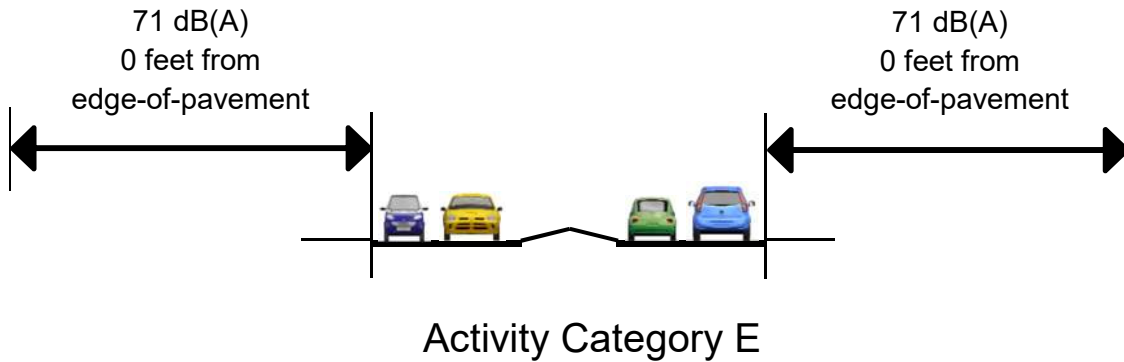
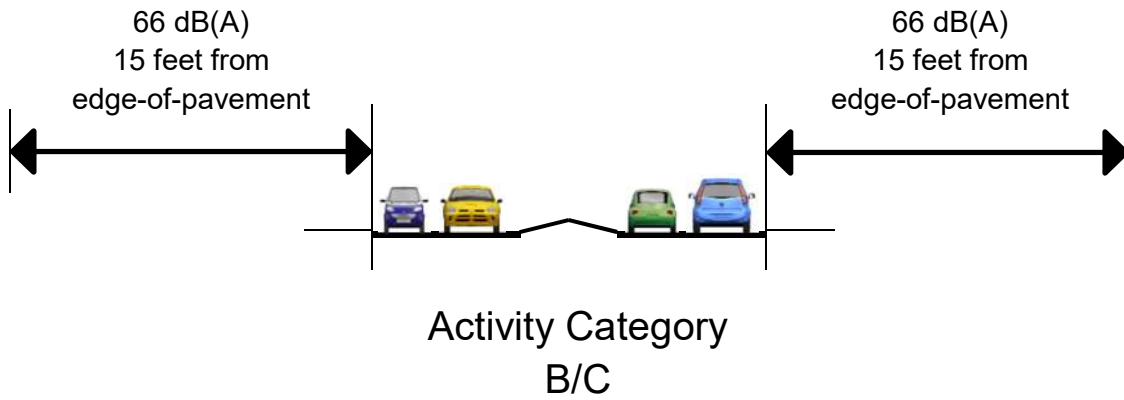
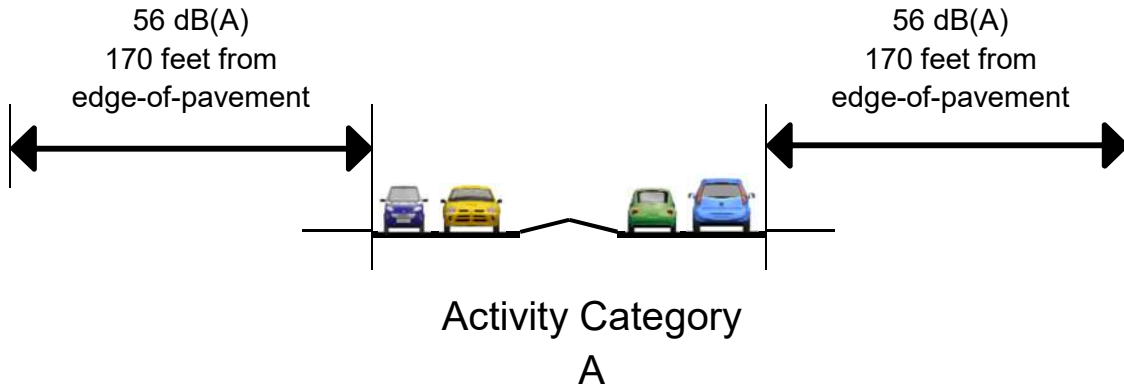
A graphic of the 56 dB(A), 66 dB(A), and 71 dB(A) noise level contour information, separated by roadway segments, are shown on **Figure 6-1** to assist planning and zoning with a best estimate on distances from the proposed edge-of-pavement at which traffic noise levels would meet or exceed the FDOT’s NAC for activity categories A through E.

Figure 6-1 Noise Contours for Local Officials

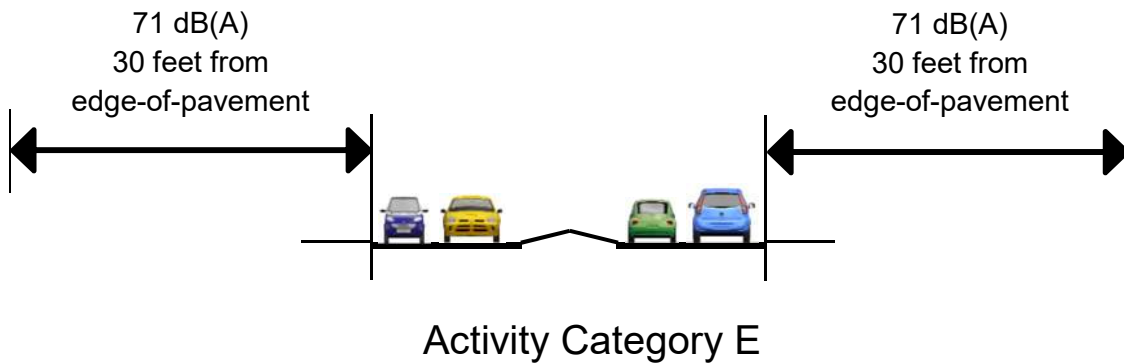
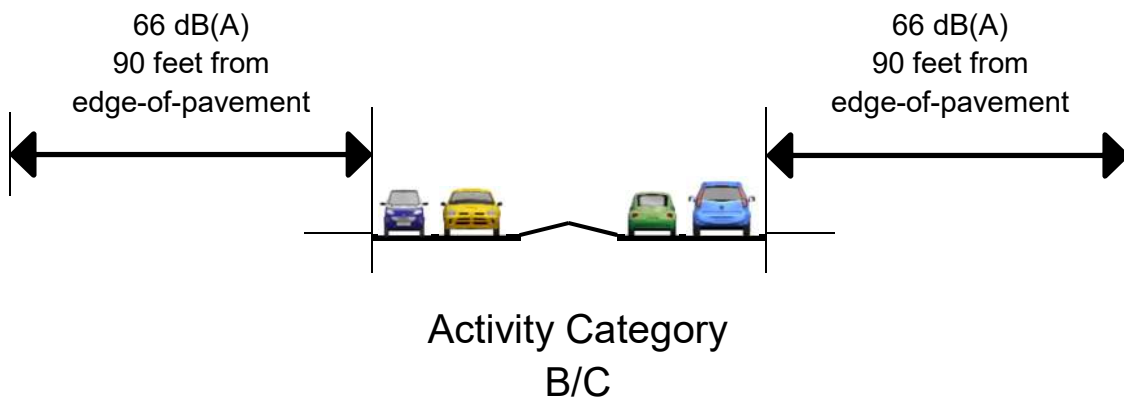
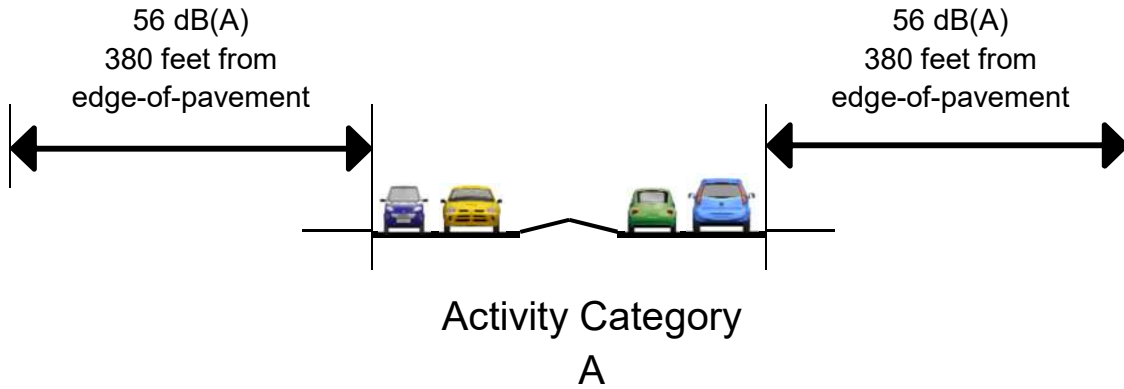
Crescent Street to 5th Street



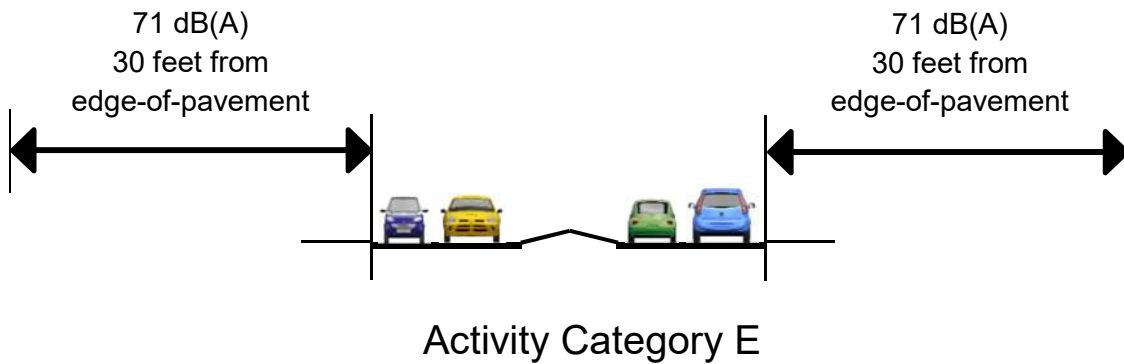
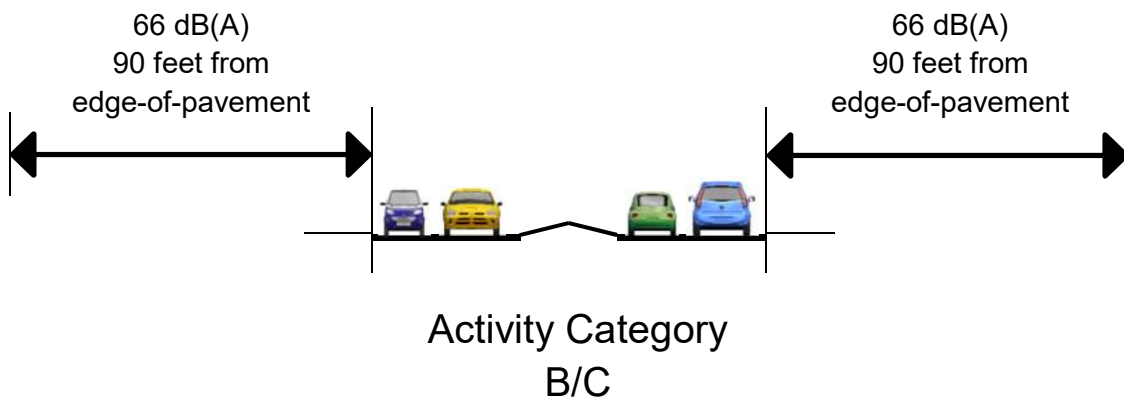
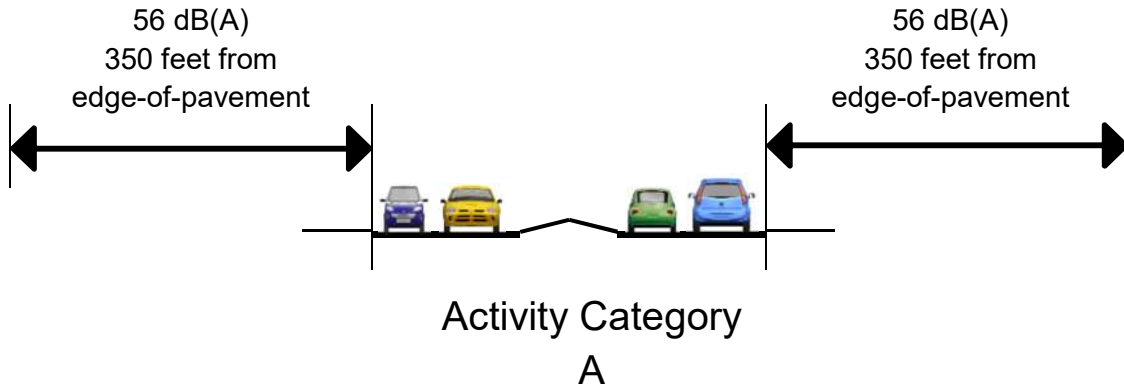
5th Street to Main Street



Main Street to Prescott Street



Prescott Street to RV Park



7 REFERENCES

- Federal Highway Administration. Title 23 CFR, Part 772 – *Procedures for Abatement of Highway Traffic Noise and Construction Noise*. July 13, 2010.
- Federal Highway Administration. Report FHWA-PD-96-009, FHWA Traffic Noise Model User’s Guide (Version 2.5 Addendum). April 2004.
- Federal Highway Administration. Report FHWA-HEP-10-025, *Highway Traffic Noise: Analysis and Abatement Guidance*. December 2011.
- Florida Department of Transportation. *Traffic Noise Modeling and Analysis Practitioners Handbook*. December 2018.
- Florida Department of Transportation. *Operational Analysis Report*, SR 865 (San Carlos Boulevard) from South of Estero Boulevard to CR 869 (Summerlin Road), Lee County, Florida, Financial Project ID: 433726-1-22-01. December 2018.
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- Florida Department of Transportation. *FDOT Design Manual (FDM)*. Topic No. 625-000-002, January 1, 2020
- Florida Department of Transportation. *A Method to Determine Reasonableness and Feasibility of Noise Abatement at Special Use Locations*. FL-ER-65-97. July 22, 2009.
- Florida Department of Transportation. *Project Development and Environment Manual Part 2, Chapter 18 – Analysis and Documentation, Highway Traffic Noise*. July 1, 2020.
- Florida Department of Transportation. *Standard Specifications for Road and Bridge Construction*. January 2019.

APPENDICES

Appendix A – Traffic Data

Appendix B – Predicted Noise Levels

Appendix C – Traffic Noise Analysis Receptor Maps

**Appendix D – TNM Modeling Files and PDF of the NSR (on disc, including
“Read Me” file)**

Appendix E – Abatement Analysis

Appendix F – Noise Monitoring Field Data Sheets

Appendix G – Special Land Use Analysis

APPENDIX A

Traffic Data

**TRAFFIC DATA FOR NOISE STUDIES - SUMMARY OUTPUT
FDOT DISTRICT 1**

Federal Aid Number(s):	0
FPID Number(s):	433726-1-22-01
State/Federal Route No.:	SR 865
Road Name:	SR 865 San Carlos Boulevard
Project Description:	SR 865
Segment Description:	from Crescent to 5th St
Section Number:	12004000
Mile Post To/From:	Off System to 0.049

Existing Facility:		D =	54.30%	%
Year:	2015	T24 =	3.59%	% of 24 Hour Volume
LOS C Peak Hour Directional Volume:	370	Tpeak =	1.80%	% of Design Hour Volume
Demand Peak Hour Volume:	875	MT =	2.24%	% of Design Hour Volume
Posted Speed:	25	HT =	1.35%	% of Design Hour Volume
		B =	0.08%	% of Design Hour Volume
		MC =	1.29%	% of Design Hour Volume

No Build Alternative (Design Year):		D =	54.30%	%
Year:	2040	T24 =	3.59%	% of 24 Hour Volume
LOS C Peak Hour Directional Volume:	370	Tpeak =	1.80%	% of Design Hour Volume
Demand Peak Hour Volume:	904	MT =	2.24%	% of Design Hour Volume
Posted Speed:	25	HT =	1.35%	% of Design Hour Volume
		B =	0.08%	% of Design Hour Volume
		MC =	1.29%	% of Design Hour Volume

Build Alternative (Design Year):		D =	54.30%	%
Year:	2040	T24 =	3.59%	% of 24 Hour Volume
LOS C Peak Hour Directional Volume:	370	Tpeak =	1.80%	% of Design Hour Volume
Demand Peak Hour Volume:	904	MT =	2.24%	% of Design Hour Volume
Posted Speed:	25	HT =	1.35%	% of Design Hour Volume
		B =	0.08%	% of Design Hour Volume
		MC =	1.29%	% of Design Hour Volume

I certify that the above information is accurate and appropriate for use with the traffic noise analysis.

Prepared By: Daniel R. Miller, P.E. Date: 12/24/2020
Print Name Signature

I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis.

FDOT Reviewer: Christopher Simpson Date: 12/30/2020
Print Name Signature

Digitally signed by Daniel Miller
DN: Engineering@dm.com, CN=Daniel Miller,
O=Districts, C=FL, OU=District Accounts, DN=dm,
DC=dm, DC=com
Reason: I signed to the accuracy and integrity of this
document.
Date: 2020.12.25 02:12:19-0500'

FDOT TRAFFIC DATA FOR NOISE STUDIES - DETAILED OUTPUT

Prepared By: Daniel R. Miller, P.E. **Date:** 12/24/2020 **Approved for Use By:** _____ **Date:** _____
Federal Aid Number(s): 0 **Section Number:** 12004000
FPID Number(s): 433726-1-22-01 **Mile Post To/From:** Off System to 0.049
State/Federal Route No.: SR 865
Road Name: SR 865 San Carlos Boulevard
Project Description: SR 865
Segment Description: from Crescent to 5th St

Note: Data sheets are to be completed for each segment having a change in traffic parameters (i.e., volume posted speed, typical section)

Demand Peak Hour/LOS C	Peak or Off-Peak Direction	Vehicle Type	Existing		No Build (Design Year)		Build (Design Year)	
			Year: 2015	Year: 2040	Year: 2040	Year: 2040		
			Posted Speed: 25	Posted Speed: 25	Posted Speed: 25	Posted Speed: 25	Posted Speed: 25	Posted Speed: 25
			Number of Travel Lanes: 2	Number of Travel Lanes: 2	Number of Travel Lanes: 2	Number of Travel Lanes: 2	Number of Travel Lanes: 2	Number of Travel Lanes: 2
			Number of Vehicles		Number of Vehicles		Number of Vehicles	
			Use LOS C		Use LOS C		Use LOS C	
Demand Peak Hour	Peak Direction	Autos	831	859	859	859	859	859
		Med Trucks	20	20	20	20	20	
		Heavy Trucks	12	12	12	12	12	
		Buses	1	1	1	1	1	
		Motorcycles	11	12	12	12	12	
	Total	875	904	904	904	904		
	Off-Peak Direction	Autos	700	723	723	723	723	
		Med Trucks	16	17	17	17	17	
		Heavy Trucks	10	10	10	10	10	
		Buses	1	1	1	1	1	
Motorcycles		9	10	10	10	10		
Total	736	761	761	761	761			
LOS C	Peak Direction	Autos	351	351	351	351	351	
		Med Trucks	8	8	8	8	8	
		Heavy Trucks	5	5	5	5	5	
		Buses	1	1	1	1	1	
		Motorcycles	5	5	5	5	5	
	Total	370	370	370	370	370		
	Off-Peak Direction	Autos	351	351	351	351	351	
		Med Trucks	8	8	8	8	8	
		Heavy Trucks	5	5	5	5	5	
		Buses	1	1	1	1	1	
Motorcycles		5	5	5	5	5		
Total	370	370	370	370	370			

TRAFFIC DATA FOR NOISE STUDIES - SUMMARY OUTPUT
FDOT DISTRICT 1

Federal Aid Number(s):	0
FPID Number(s):	433726-1-22-01
State/Federal Route No.:	SR 865
Road Name:	SR 865 San Carlos Boulevard
Project Description:	SR 865
Segment Description:	from 5th St to Main St
Section Number:	12004000
Mile Post To/From:	0.049 to 0.643

Existing Facility:		D =	54.30%	%
Year:	2015	T24 =	3.59%	% of 24 Hour Volume
LOS C Peak Hour Directional Volume:	370	Tpeak =	1.80%	% of Design Hour Volume
Demand Peak Hour Volume:	1051	MT =	2.24%	% of Design Hour Volume
Posted Speed:	35	HT =	1.35%	% of Design Hour Volume
		B =	0.08%	% of Design Hour Volume
		MC =	1.29%	% of Design Hour Volume

No Build Alternative (Design Year):		D =	54.30%	%
Year:	2040	T24 =	3.59%	% of 24 Hour Volume
LOS C Peak Hour Directional Volume:	370	Tpeak =	1.80%	% of Design Hour Volume
Demand Peak Hour Volume:	1202	MT =	2.24%	% of Design Hour Volume
Posted Speed:	35	HT =	1.35%	% of Design Hour Volume
		B =	0.08%	% of Design Hour Volume
		MC =	1.29%	% of Design Hour Volume

Build Alternative (Design Year):		D =	54.30%	%
Year:	2040	T24 =	3.59%	% of 24 Hour Volume
LOS C Peak Hour Directional Volume:	730	Tpeak =	1.80%	% of Design Hour Volume
Demand Peak Hour Volume:	1202	MT =	2.24%	% of Design Hour Volume
Posted Speed:	35	HT =	1.35%	% of Design Hour Volume
		B =	0.08%	% of Design Hour Volume
		MC =	1.29%	% of Design Hour Volume

I certify that the above information is accurate and appropriate for use with the traffic noise analysis.

Prepared By:

Daniel R. Miller, P.E.

Print Name

Daniel Miller

Signature

Date: 12/24/2020

I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis.

FDOT Reviewer:

Christopher Simpson

Print Name



Signature

Date: 12/30/2020

Digitally signed by Daniel Miller
 DN: cn=danielm@fla.com, o=Central Florida
 DOT, ou=DOT, ou=Accounts, DN=, DN=, DN=
 Reason: I attest to the accuracy and integrity of this
 document
 Date: 2020.12.24 02:10:48-0500

FDOT TRAFFIC DATA FOR NOISE STUDIES - DETAILED OUTPUT

Prepared By: Daniel R. Miller, P.E. Date: 12/24/2020 Approved for Use By: _____ Date: _____
 Federal Aid Number(s): 0 Section Number: 12004000
 FPID Number(s): 433726-1-22-01 Mile Post To/From: 0.049 to 0.643
 State/Federal Route No.: SR 865
 Road Name: SR 865 San Carlos Boulevard
 Project Description: SR 865
 Segment Description: from 5th St to Main St

Note: Data sheets are to be completed for each segment having a change in traffic parameters (i.e., volume posted speed, typical section)

Demand Peak Hour/LOS C	Peak or Off-Peak Direction	Vehicle Type	Existing		No Build (Design Year)		Build (Design Year)		
			Year: 2015	Posted Speed: 35	Year: 2040	Posted Speed: 35	Year: 2040	Posted Speed: 35	
			Number of Travel Lanes: 1 SB		Number of Travel Lanes: 1 SB		Number of Travel Lanes: 2 SB		
			Number of Vehicles		Number of Vehicles		Number of Vehicles		
			Use LOS C		Use LOS C		Use LOS C		
Demand Peak Hour	Peak Direction	Autos	998		1142		1142		
		Med Trucks	24		27		27		
		Heavy Trucks	14		16		16		
		Buses	1		1		1		
		Motorcycles	14		16		16		
			Total	1051		1202		1202	
	Off-Peak Direction	Autos	840		961		961		
		Med Trucks	20		23		23		
		Heavy Trucks	12		14		14		
		Buses	1		1		1		
Motorcycles		11		13		13			
		Total	884		1012		1012		
LOS C	Peak Direction	Autos	351		351		694		
		Med Trucks	8		8		16		
		Heavy Trucks	5		5		10		
		Buses	1		1		1		
		Motorcycles	5		5		9		
			Total	370		370		730	
	Off-Peak Direction	Autos	351		351		694		
		Med Trucks	8		8		16		
		Heavy Trucks	5		5		10		
		Buses	1		1		1		
Motorcycles		5		5		9			
		Total	370		370		730		

TRAFFIC DATA FOR NOISE STUDIES - SUMMARY OUTPUT
FDOT DISTRICT 1

Federal Aid Number(s):	0
FPID Number(s):	433726-1-22-01
State/Federal Route No.:	SR 865
Road Name:	SR 865 San Carlos Boulevard
Project Description:	SR 865
Segment Description:	from Main St to Buttonwood Dr / Prescott St
Section Number:	12004000
Mile Post To/From:	0.643 to 0.900

Existing Facility:		D =	54.30%	%
		T24 =	3.59%	% of 24 Hour Volume
Year:	2015	Tpeak =	1.80%	% of Design Hour Volume
		MT =	2.24%	% of Design Hour Volume
LOS C Peak Hour Directional Volume:	1910	HT =	1.35%	% of Design Hour Volume
Demand Peak Hour Volume:	1109	B =	0.08%	% of Design Hour Volume
Posted Speed:	45	MC =	1.29%	% of Design Hour Volume

No Build Alternative (Design Year):		D =	54.30%	%
		T24 =	3.59%	% of 24 Hour Volume
Year:	2040	Tpeak =	1.80%	% of Design Hour Volume
		MT =	2.24%	% of Design Hour Volume
LOS C Peak Hour Directional Volume:	1910	HT =	1.35%	% of Design Hour Volume
Demand Peak Hour Volume:	1290	B =	0.08%	% of Design Hour Volume
Posted Speed:	45	MC =	1.29%	% of Design Hour Volume

Build Alternative (Design Year):		D =	54.30%	%
		T24 =	3.59%	% of 24 Hour Volume
Year:	2040	Tpeak =	1.80%	% of Design Hour Volume
		MT =	2.24%	% of Design Hour Volume
LOS C Peak Hour Directional Volume:	1910	HT =	1.35%	% of Design Hour Volume
Demand Peak Hour Volume:	1290	B =	0.08%	% of Design Hour Volume
Posted Speed:	45	MC =	1.29%	% of Design Hour Volume

I certify that the above information is accurate and appropriate for use with the traffic noise analysis.

Prepared By: Daniel R. Miller, P.E. **Daniel Miller** Date: 12/25/2020

Print Name Signature

I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis.

FDOT Reviewer: Christopher Simpson *CS* Date: 12/30/2020

Print Name Signature

Digitally signed by Daniel Miller
 DN: cn=Daniel Miller, o=Daniel Miller
 Engineering, c=Florida, ou=Daniel Miller
 Engineering, DC=Daniel Miller, DC=Daniel Miller
 Reason: I certify the accuracy and integrity of this
 document.
 Date: 2020.12.25 02:10:04 -0500

FDOT TRAFFIC DATA FOR NOISE STUDIES - DETAILED OUTPUT

Prepared By: Daniel R. Miller, P.E. Date: 12/25/2020 Approved for Use By: _____ Date: _____
 Federal Aid Number(s): 0 Section Number: 12004000
 FPID Number(s): 433726-1-22-01 Mile Post To/From: 0.643 to 0.900
 State/Federal Route No.: SR 865
 Road Name: SR 865 San Carlos Boulevard
 Project Description: SR 865
 Segment Description: from Main St to Buttonwood Dr / Prescott St

Note: Data sheets are to be completed for each segment having a change in traffic parameters (i.e., volume posted speed, typical section)

Demand Peak Hour/LOS C	Peak or Off-Peak Direction	Vehicle Type	Existing		No Build (Design Year)		Build (Design Year)		
			Year: 2015	Posted Speed: 45	Year: 2040	Posted Speed: 45	Year: 2040	Posted Speed: 45	
			Number of Travel Lanes: 4		Number of Travel Lanes: 4		Number of Travel Lanes: 4		
			Number of Vehicles		Number of Vehicles		Number of Vehicles		
			Use Demand Volumes		Use Demand Volumes		Use Demand Volumes		
Demand Peak Hour	Peak Direction	Autos	1054		1226		1226		
		Med Trucks	25		29		29		
		Heavy Trucks	15		17		17		
		Buses	1		1		1		
		Motorcycles	14		17		17		
			Total	1109		1290		1290	
	Off-Peak Direction	Autos	887		1032		1032		
		Med Trucks	21		24		24		
		Heavy Trucks	13		15		15		
		Buses	1		1		1		
Motorcycles		12		14		14			
		Total	934		1086		1086		
LOS C	Peak Direction	Autos	1814		1814		1814		
		Med Trucks	43		43		43		
		Heavy Trucks	26		26		26		
		Buses	2		2		2		
		Motorcycles	25		25		25		
			Total	1910		1910		1910	
	Off-Peak Direction	Autos	1814		1814		1814		
		Med Trucks	43		43		43		
		Heavy Trucks	26		26		26		
		Buses	2		2		2		
Motorcycles		25		25		25			
		Total	1910		1910		1910		

**TRAFFIC DATA FOR NOISE STUDIES - SUMMARY OUTPUT
FDOT DISTRICT 1**

Federal Aid Number(s):	0
FPID Number(s):	433726-1-22-01
State/Federal Route No.:	SR 865
Road Name:	SR 865 San Carlos Boulevard
Project Description:	SR 865
Segment Description:	from Prescott St to RV Park
Section Number:	12004000
Mile Post To/From:	0.900 to 1.100

Existing Facility:		D =	54.30%	%
Year:	2015	T24 =	3.59%	% of 24 Hour Volume
LOS C Peak Hour Directional Volume:	1910	Tpeak =	1.80%	% of Design Hour Volume
Demand Peak Hour Volume:	1227	MT =	2.24%	% of Design Hour Volume
Posted Speed:	45	HT =	1.35%	% of Design Hour Volume
		B =	0.08%	% of Design Hour Volume
		MC =	1.29%	% of Design Hour Volume

No Build Alternative (Design Year):		D =	54.30%	%
Year:	2040	T24 =	3.59%	% of 24 Hour Volume
LOS C Peak Hour Directional Volume:	1910	Tpeak =	1.80%	% of Design Hour Volume
Demand Peak Hour Volume:	1417	MT =	2.24%	% of Design Hour Volume
Posted Speed:	45	HT =	1.35%	% of Design Hour Volume
		B =	0.08%	% of Design Hour Volume
		MC =	1.29%	% of Design Hour Volume

Build Alternative (Design Year):		D =	54.30%	%
Year:	2040	T24 =	3.59%	% of 24 Hour Volume
LOS C Peak Hour Directional Volume:	1910	Tpeak =	1.80%	% of Design Hour Volume
Demand Peak Hour Volume:	1417	MT =	2.24%	% of Design Hour Volume
Posted Speed:	45	HT =	1.35%	% of Design Hour Volume
		B =	0.08%	% of Design Hour Volume
		MC =	1.29%	% of Design Hour Volume

I certify that the above information is accurate and appropriate for use with the traffic noise analysis.

Prepared By: Daniel R. Miller, P.E. Date: 12/25/2020

Print Name Signature

I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis.

FDOT Reviewer: Christopher Simpron Date: 12/30/2020

Print Name Signature

Digitally signed by Daniel Miller
DN: email=@nrc.com, cn=Daniel Miller, o=Portland
City&County, DC=OR, C=US
Reason: I attest to the accuracy and integrity of this
document
Date: 2020.12.25 08:49:02-07'

FDOT TRAFFIC DATA FOR NOISE STUDIES - DETAILED OUTPUT

Prepared By: Daniel R. Miller, P.E. **Date:** 12/25/2020 **Approved for Use By:** _____ **Date:** _____
Federal Aid Number(s): 0 **Section Number:** 12004000
FPID Number(s): 433726-1-22-01 **Mile Post To/From:** 0.900 to 1.100
State/Federal Route No.: SR 865
Road Name: SR 865 San Carlos Boulevard
Project Description: SR 865
Segment Description: from Prescott St to RV Park

Note: Data sheets are to be completed for each segment having a change in traffic parameters (i.e., volume posted speed, typical section)

Demand Peak Hour/LOS C	Peak or Off-Peak Direction	Vehicle Type	Existing		No Build (Design Year)		Build (Design Year)		
			Year: 2015	Posted Speed: 45	Year: 2040	Posted Speed: 45	Year: 2040	Posted Speed: 45	
			Number of Travel Lanes: 4		Number of Travel Lanes: 4		Number of Travel Lanes: 4		
			Number of Vehicles		Number of Vehicles		Number of Vehicles		
			Use Demand Volumes		Use Demand Volumes		Use Demand Volumes		
Demand Peak Hour	Peak Direction	Autos	1166		1347		1347		
		Med Trucks	27		32		32		
		Heavy Trucks	17		19		19		
		Buses	1		1		1		
		Motorcycles	16		18		18		
			Total	1227		1417		1417	
	Off-Peak Direction	Autos	981		1134		1134		
		Med Trucks	23		27		27		
		Heavy Trucks	14		16		16		
		Buses	1		1		1		
Motorcycles		13		15		15			
		Total	1032		1193		1193		
LOS C	Peak Direction	Autos	1814		1814		1814		
		Med Trucks	43		43		43		
		Heavy Trucks	26		26		26		
		Buses	2		2		2		
		Motorcycles	25		25		25		
			Total	1910		1910		1910	
	Off-Peak Direction	Autos	1814		1814		1814		
		Med Trucks	43		43		43		
		Heavy Trucks	26		26		26		
		Buses	2		2		2		
Motorcycles		25		25		25			
		Total	1910		1910		1910		

APPENDIX B

Predicted Noise Levels

Table B-1: Noise Levels

Noise-Sensitive Receptors				Predicted Noise Levels (dB(A))						
				2015 Existing		2040 No-Build		2040 Build		Δ
Rec. No.	Use	NAC	Address	NB	SB	NB	SB	NB	SB	
01-E-01A	Mixed Use	E	1133-1155 Estero Blvd	59.5	59.5	59.5	59.5	59.4	59.4	-0.1
01-E-01B	Mixed Use	E	1133-1155 Estero Blvd	59.1	59.1	59.1	59.1	59.1	59.1	0
01-E-01C	Mixed Use	E	1133-1155 Estero Blvd	59.0	59.0	59.0	59.0	59	59	0
01-E-02A	Mixed Use	E	1133-1155 Estero Blvd	58.1	58.1	58.1	58.1	58	58	-0.1
01-E-02B	Mixed Use	E	1133-1155 Estero Blvd	57.8	57.8	57.8	57.8	57.7	57.7	-0.1
01-E-02C	Mixed Use	E	1133-1155 Estero Blvd	57.5	57.5	57.5	57.5	57.5	57.5	0
02-C-01	Mixed Use	C	1133-1155 Estero Blvd	42.8	42.8	42.8	42.8	42.9	42.9	0.1
02-C-02	Mixed Use	C	1133-1155 Estero Blvd	42.1	42.1	42.1	42.1	42.3	42.3	0.2
02-C-03	Mixed Use	C	1133-1155 Estero Blvd	46.4	46.4	46.4	46.4	46.1	46.1	-0.3
02-C-04	Mixed Use	C	1133-1155 Estero Blvd	49.3	49.3	49.3	49.3	49.3	49.3	0
02-C-05	Mixed Use	C	1133-1155 Estero Blvd	50.0	50.0	50.0	50.0	50.1	50.1	0.1
02-C-06	Mixed Use	C	1133-1155 Estero Blvd	51.2	51.2	51.2	51.2	51.9	51.9	0.7
02-C-07	Mixed Use	C	1133-1155 Estero Blvd	51.7	51.7	51.7	51.7	53.3	53.3	1.6
02-C-08	Mixed Use	C	1133-1155 Estero Blvd	53.5	53.5	53.5	53.5	54.6	54.6	1.1
02-C-09	Mixed Use	C	1133-1155 Estero Blvd	52.2	52.2	52.2	52.2	53.1	53.1	0.9
02-C-10	Mixed Use	C	1133-1155 Estero Blvd	60.0	60.0	60.0	60.0	60.7	60.7	0.7
02-C-11	Mixed Use	C	1133-1155 Estero Blvd	60.3	60.3	60.3	60.3	60.4	60.4	0.1
05-E-01A	Motel	E	1051 Fifth St	55.4	55.4	55.4	55.4	58.6	58.6	3.2
05-E-01B	Motel	E	1051 Fifth St	58.4	58.4	58.4	58.4	62.3	62.3	3.9
05-E-01C	Motel	E	1051 Fifth St	59.0	59.0	59.0	59.0	63.4	63.4	4.4
05-E-02A	Motel	E	1051 Fifth St	56.0	56.0	56.0	56.0	58.1	58.1	2.1
05-E-02B	Motel	E	1051 Fifth St	59.9	59.9	59.9	59.9	61.4	61.4	1.5
05-E-02C	Motel	E	1051 Fifth St	60.5	60.5	60.5	60.5	64	64	3.5

Noise-Sensitive Receptors				Predicted Noise Levels (dB(A))						
				2015 Existing		2040 No-Build		2040 Build		Δ
Rec. No.	Use	NAC	Address	NB	SB	NB	SB	NB	SB	
05-E-03A	Motel	E	1051 Fifth St	49.7	49.7	49.7	49.7	52.4	52.4	2.7
05-E-03B	Motel	E	1051 Fifth St	52.5	52.5	52.5	52.5	55.7	55.7	3.2
05-E-03C	Motel	E	1051 Fifth St	53.7	53.7	53.7	53.7	57.3	57.3	3.6
06-C-01	Motel	E	1051 Fifth St	47.1	47.1	47.1	47.1	50.6	50.6	3.5
06-C-02	Recreational	E	1051 Fifth St	40.6	40.6	40.6	40.6	44.3	44.2	3.7
06-C-03	Motel	E	1051 Fifth St	42.4	42.4	42.4	42.4	45.2	45.2	2.8
07-E-01	Motel	E	1051 Fifth St	55.1	55.1	55.1	55.1	57.1	57.1	2
07-E-02	Motel	E	1051 Fifth St	52.7	52.7	52.7	52.7	54.5	54.5	1.8
07-E-03	Motel	E	1051 Fifth St	49.2	49.2	49.2	49.2	51.9	51.9	2.7
07-E-04A	Motel	E	1052 Fifth St	47.4	47.4	47.4	47.4	49.4	49.4	2
07-E-04B	Motel	E	1053 Fifth St	52.4	52.4	52.4	52.4	55.1	55.1	2.7
07-E-05A	Motel	E	1051 Fifth St	46.4	46.4	46.4	46.4	49.3	49.3	2.9
07-E-05B	Motel	E	1052 Fifth St	49.5	49.5	49.5	49.5	52.8	52.8	3.3
08-C-01	Recreational	C	1051 Fifth St	45.9	45.9	45.9	45.9	49.5	49.5	3.6
08-C-02	Motel	E	1051 Fifth St	45.2	45.2	45.2	45.2	48.2	48.2	3
08-C-03	Recreational	C	1051 Fifth St	46.3	46.3	46.3	46.3	49.5	49.5	3.2
08-C-04	Recreational	C	1051 Fifth St	43.8	43.8	43.8	43.8	46.9	46.9	3.1
09-B-01	Hotel / Multifamily	B	1037/1039 Third St	46.8	46.8	46.8	46.8	48.5	48.5	1.7
09-B-02	Hotel / Multifamily	B	1037/1039 Third St	45.8	45.8	45.8	45.8	47.3	47.3	1.5
10-E-01A	Hotel / Multifamily	E	1041 Third St	50.3	50.3	50.3	50.3	52.3	52.3	2
10-E-01B	Hotel / Multifamily	E	1042 Third St	51.8	51.8	51.8	51.8	54.1	54.1	2.3
10-E-02A	Hotel / Multifamily	E	1041 Third St	49.6	49.6	49.7	49.7	51	51	1.4
10-E-02B	Hotel / Multifamily	E	1042 Third St	52.0	52.0	52.1	52.1	53.7	53.7	1.7
12-E-01	Hotel / Multifamily	E	1407 Second St	46.5	46.5	46.5	46.5	48.4	48.4	1.9

Noise-Sensitive Receptors				Predicted Noise Levels (dB(A))						
				2015 Existing		2040 No-Build		2040 Build		Δ
Rec. No.	Use	NAC	Address	NB	SB	NB	SB	NB	SB	
12-E-02	Hotel / Multifamily	E	1409 Second St	46.3	46.3	46.3	46.3	48.2	48.2	1.9
13-E-01	Hotel / Multifamily	E	402 Crescent St	46.8	46.8	46.8	46.8	49.2	49.2	2.4
13-E-02A	Hotel / Multifamily	E	403 Crescent St	45.2	45.2	45.2	45.2	47.9	47.9	2.7
13-E-02B	Hotel / Multifamily	E	404 Crescent St	47.9	47.9	47.9	47.9	50.5	50.5	2.6
14-C-01	Hotel / Multifamily	C	405 Crescent St	44.5	44.5	44.5	44.5	47.2	47.2	2.7
14-C-02	Hotel / Multifamily	C	406 Crescent St	43.3	43.3	43.3	43.3	46.1	46.1	2.8
15-E-01	Hotel / Multifamily	E	414/416 Crescent St	48.8	48.8	48.8	48.8	50.8	50.8	2
16-C-01	Recreational	C	414/416 Crescent St	48.3	48.3	48.3	48.3	50.3	50.3	2
16-C-02	Recreational	C	414/416 Crescent St	46.5	46.5	46.5	46.5	48.7	48.7	2.2
16-C-03	Recreational	C	414/416 Crescent St	46.3	46.3	46.3	46.3	48.3	48.3	2
16-C-04	Recreational	C	414/416 Crescent St	48.3	48.3	48.3	48.3	50.4	50.4	2.1
18-E-01A	Hotel	E	414/416 Crescent St	48.8	48.9	48.9	48.9	50.9	50.9	2.1
18-E-01B	Hotel	E	414/416 Crescent St	51.3	51.3	51.3	51.3	52.2	52.2	0.9
19-E-01	Restaurant	E	414/416 Crescent St	43.3	43.3	43.4	43.4	45.7	45.7	2.4
20-B-01	Dock	B	414/416 Crescent St	44.6	44.6	44.7	44.7	47.4	47.4	2.8
20-B-02	Dock	B	414/416 Crescent St	44.0	44.0	44.1	44.1	46.8	46.9	2.8
21-B-01	Residential	B	511 San Carlos Blvd	45.6	45.6	45.6	45.6	50.4	50.4	4.8
21-B-02	Residential	B	511 San Carlos Blvd	44.8	44.8	44.8	44.8	50.6	50.6	5.8
21-B-03	Residential	B	702 Fisherman's Wharf	47.6	47.6	47.6	47.6	50.9	50.9	3.3
21-B-04	Residential	B	702 Fisherman's Wharf	47.5	47.5	47.5	47.5	50.3	50.3	2.8
22-E-01	Commercial	E	700 Fisherman's Wharf	45.4	45.4	45.4	45.4	47.7	47.7	2.3
22-E-02	Restaurant	E	702 Fisherman's Wharf	46.7	46.7	46.7	46.7	50.9	50.9	4.2
22-E-03	Restaurant	E	702 Fisherman's Wharf	43.8	43.8	43.8	43.8	47.1	47.1	3.3
23-D-01	Museum	D	718 Fisherman's Wharf	22.2	22.2	22.2	22.2	24.9	24.9	2.7

Noise-Sensitive Receptors				Predicted Noise Levels (dB(A))						
				2015 Existing		2040 No-Build		2040 Build		Δ
Rec. No.	Use	NAC	Address	NB	SB	NB	SB	NB	SB	
25-B-01	Co-Operative	B	19281 #25 San Carlos Blvd	54.3	54.3	54.5	54.5	57.8	57.8	3.5
25-B-03	Co-Operative	B	19281 #28 San Carlos Blvd	57.1	57.1	57.3	57.3	60.2	60.2	3.1
25-B-04	Co-Operative	B	19281 #29 San Carlos Blvd	54.6	54.6	54.6	54.6	58.4	58.4	3.8
25-B-05	Co-Operative	B	19281 San Carlos Blvd	51.6	51.6	51.8	51.8	54.6	54.6	3
25-B-06	Co-Operative	B	19281 San Carlos Blvd	58.4	58.4	58.7	58.7	61.3	61.3	2.9
25-B-08	Co-Operative	B	19281 #34 San Carlos Blvd	59.5	59.5	59.8	59.8	62.5	62.5	3
25-B-09	Co-Operative	B	19281 #34 San Carlos Blvd	60.5	60.5	60.8	60.8	63.4	63.4	2.9
25-B-10	Co-Operative	B	19281 San Carlos Blvd	54.2	54.2	54.2	54.2	57.9	57.9	3.7
25-B-11	Co-Operative	B	19281 San Carlos Blvd	52.8	52.8	53.0	53.0	56.1	56.1	3.3
25-B-12	Co-Operative	B	19281 #35 San Carlos Blvd	60.9	61.0	61.3	61.3	63.6	63.6	2.7
25-B-13	Co-Operative	B	19281 #38 San Carlos Blvd	58.7	58.9	59.2	59.4	60.9	60.8	2.2
25-B-14	Co-Operative	B	19281 #38 San Carlos Blvd	59.4	59.5	59.9	60.0	61.2	61.1	1.8
25-B-15	Co-Operative	B	19281 #39 San Carlos Blvd	53.3	53.5	53.9	54.1	54.3	54.1	1
25-C-02	Recreational	C	19281 San Carlos Blvd	54.4	54.4	54.4	54.4	56.8	56.8	2.4
25-C-07	Recreational	C	19281 San Carlos Blvd	52.6	52.6	52.7	52.7	56.6	56.6	4
26-B-01	Mobile Home Rental	B	19241 San Carlos Blvd	66.8	66.6	67.4	67.2	67.6	67.3	0.8
26-B-02	Mobile Home Rental	B	19241 San Carlos Blvd	70.3	70.0	70.9	70.6	70.7	70.4	0.4
26-B-03	Mobile Home Rental	B	19241 San Carlos Blvd	68.8	68.6	69.4	69.2	69.4	69.2	0.6
26-B-04	Mobile Home Rental	B	19241 San Carlos Blvd	69.9	69.6	70.5	70.2	70.4	70.2	0.5
26-B-05	Mobile Home Rental	B	19241 San Carlos Blvd	59.8	60.0	60.5	60.6	60.7	60.6	0.9
26-B-06	Mobile Home Rental	B	19241 San Carlos Blvd	61.4	61.4	62.0	62.0	62.4	62.2	1
26-B-07	Mobile Home Rental	B	19241 San Carlos Blvd	62.4	62.4	63.0	63.0	63.5	63.4	1.1
26-B-08	Mobile Home Rental	B	19241 San Carlos Blvd	57.9	58.0	58.5	58.7	59.6	59.6	1.7
26-B-09	Mobile Home Rental	B0	19241 San Carlos Blvd	58.6	58.7	59.2	59.4	60.2	60.2	1.6

Noise-Sensitive Receptors				Predicted Noise Levels (dB(A))						
				2015 Existing		2040 No-Build		2040 Build		Δ
Rec. No.	Use	NAC	Address	NB	SB	NB	SB	NB	SB	
28-D-01	Commercial Shopping	D	19111 San Carlos Blvd	44.3	44.1	44.9	44.7	45.0	44.9	0.7
29-E-01	Commercial Shopping	E	19051 San Carlos Blvd	64.0	64.0	64.7	64.7	64.9	64.9	0.9
31-E-01	Commercial Shopping	E	19051 San Carlos Blvd	65.5	65.5	66.1	66.1	66.3	66.3	0.8
33-D-01	Commercial Shopping	D	19041 San Carlos Blvd	24.1	24.1	24.7	24.7	25.1	25.1	1
35-B-01A	Residential	C	896 Buttonwood Dr	54.0	54.1	54.6	54.7	55.8	56.1	1.8
35-B-01B	Residential	B	896 Buttonwood Dr	56.6	56.6	57.2	57.2	57.7	57.7	1.1
36-C-01	Recreational	C	896/898 Buttonwood Dr	44.5	44.4	45.2	45.0	45.5	45.4	1
36-C-02	Recreational	C	896/898 Buttonwood Dr	53.2	53.2	53.8	53.8	54.3	54.3	1.1
36-C-03	Recreational	C	896/898 Buttonwood Dr	50.8	50.8	51.4	51.4	52	52	1.2
36-C-04	Recreational	C	896/898 Buttonwood Dr	51.8	51.9	52.4	52.5	52.8	52.9	1
37-B-01A	Residential	B	898 Buttonwood Dr	64.4	64.3	65.0	65.0	65.7	65.7	1.3
37-B-01B	Residential	B	898 Buttonwood Dr	65.9	65.7	66.5	66.4	66.6	66.5	0.7
37-B-02A	Residential	B	898 Buttonwood Dr	59.8	59.6	60.4	60.2	61.6	61.6	1.8
37-B-02B	Residential	B	898 Buttonwood Dr	62.3	62.3	62.9	62.9	63.1	63.1	0.8
38-E-01	Restaurant	E	19001 San Carlos Blvd	63.5	63.3	64.1	63.8	64.1	63.9	0.6
38-E-02	Restaurant	E	19002 San Carlos Blvd	59.1	58.8	59.7	59.4	59.8	59.6	0.7
40-C-01	Recreational	C	18701 San Carlos Blvd	57.7	57.5	58.3	58.1	58.3	58.1	0.6
40-C-02	Rental RV	C	18701 San Carlos Blvd	59.5	59.3	60.1	59.9	60	59.9	0.5
40-C-04	Rental RV	C	18701 San Carlos Blvd	61.3	61.2	61.9	61.8	61.6	61.5	0.3
40-C-05	Recreational	C	18701 San Carlos Blvd	58.5	58.3	59.0	58.9	58.9	58.8	0.4
40-C-06	Recreational	C	18701 San Carlos Blvd	59.4	59.2	60.0	59.8	59.9	59.7	0.5
40-C-06	Recreational	C	18701 San Carlos Blvd	60.6	60.4	61.2	61.0	61	61	0.4
40-C-07	Recreational	C	18701 San Carlos Blvd	57.1	57.0	57.7	57.6	57.5	57.6	0.4
40-C-08	Recreational	C	18701 San Carlos Blvd	58.1	58.0	58.6	58.6	58.3	58.4	0.2

Noise-Sensitive Receptors				Predicted Noise Levels (dB(A))						
				2015 Existing		2040 No-Build		2040 Build		Δ
Rec. No.	Use	NAC	Address	NB	SB	NB	SB	NB	SB	
40-C-09	Recreational	C	18701 San Carlos Blvd	59.5	59.4	60.1	60.0	59.8	59.8	0.3
41-B-01	Rental RV	B	18701 San Carlos Blvd	53.6	53.6	54.2	54.2	54.1	54	0.5
41-B-02	Rental RV	B	18701 San Carlos Blvd	54.6	54.5	55.2	55.1	55	54.9	0.4
41-B-03	Rental RV	B	18701 San Carlos Blvd	54.9	54.7	55.5	55.3	55.3	55.2	0.4
41-B-04	Rental RV	B	18701 San Carlos Blvd	55.7	55.6	56.3	56.2	56	55.9	0.3
41-B-05	Rental RV	B	18701 San Carlos Blvd	53.5	53.4	54.1	54.0	54	54	0.5
41-B-06	Rental RV	B	18701 San Carlos Blvd	53.3	53.2	53.9	53.8	53.7	53.7	0.4
41-B-07	Rental RV	B	18701 San Carlos Blvd	54.6	54.5	55.2	55.1	54.7	54.7	0.1
41-B-08	Rental RV	B	18701 San Carlos Blvd	55.7	55.6	56.3	56.2	55.8	55.8	0.1
41-B-09	Rental RV	B	18701 San Carlos Blvd	56.1	56.1	56.7	56.7	56.2	56.2	0.1
41-B-10	Rental RV	B	18701 San Carlos Blvd	55.9	55.9	56.5	56.5	56.1	56.1	0.2
41-B-11	Rental RV	B	18701 San Carlos Blvd	54.5	54.5	55.1	55.1	55	55.1	0.5
41-B-12	Rental RV	B	18701 San Carlos Blvd	55.3	55.3	55.9	55.9	55.8	55.9	0.5
41-B-13	Rental RV	B	18701 San Carlos Blvd	55.8	55.8	56.4	56.4	56.4	56.5	0.6
41-B-14	Rental RV	B	18701 San Carlos Blvd	54.9	54.9	55.5	55.5	55.5	55.7	0.6
41-B-15	Rental RV	B	18701 San Carlos Blvd	55.6	55.6	56.2	56.2	56.2	56.3	0.6
41-B-16	Rental RV	B	18701 San Carlos Blvd	56.2	56.2	56.8	56.8	56.9	57	0.7
41-B-17	Rental RV	B	18701 San Carlos Blvd	57.0	57.0	57.6	57.6	57.6	57.7	0.6
41-B-18	Rental RV	B	18701 San Carlos Blvd	57.8	57.8	58.4	58.3	58.4	58.5	0.6
41-B-19	Rental RV	B	18701 San Carlos Blvd	58.6	58.6	59.2	59.2	59.1	59.3	0.5
41-B-20	Rental RV	B	18701 San Carlos Blvd	59.6	59.5	60.2	60.1	60	60.1	0.4
41-B-21	Rental RV	B	18701 San Carlos Blvd	60.6	60.6	61.2	61.2	60.9	61	0.3
41-B-22	Rental RV	B	18701 San Carlos Blvd	61.2	61.2	61.8	61.8	61.5	61.6	0.3
41-B-23	Rental RV	B	18701 San Carlos Blvd	62.1	62.0	62.6	62.6	62.3	62.3	0.2

Noise-Sensitive Receptors				Predicted Noise Levels (dB(A))						
				2015 Existing		2040 No-Build		2040 Build		Δ
Rec. No.	Use	NAC	Address	NB	SB	NB	SB	NB	SB	
41-B-24	Rental RV	B	18701 San Carlos Blvd	61.7	61.6	62.3	62.2	62	62	0.3
41-B-25	Rental RV	B	18701 San Carlos Blvd	61.2	61.1	61.8	61.7	61.4	61.5	0.2
41-B-26	Rental RV	B	18701 San Carlos Blvd	61.3	61.3	61.9	61.9	61.4	61.5	0.1
41-B-27	Rental RV	B	18701 San Carlos Blvd	57.7	57.4	58.3	58.0	58.2	57.9	0.5
41-B-28	Rental RV	B	18701 San Carlos Blvd	59.6	59.3	60.2	59.9	60.2	59.9	0.6
41-B-29	Rental RV	B	18701 San Carlos Blvd	59.9	59.6	60.5	60.2	60.5	60.3	0.6
41-B-30	Rental RV	B	18701 San Carlos Blvd	58.2	57.9	58.8	58.5	58.8	58.5	0.6
41-B-31	Rental RV	B	18701 San Carlos Blvd	59.2	59.0	59.8	59.6	59.8	59.6	0.6
41-B-32	Rental RV	B	18701 San Carlos Blvd	58.5	58.2	59.1	58.8	59	58.8	0.5
42-E-01	Restaurant	E	18540 #550 San Carlos Blvd	72.3	72.7	72.9	73.3	73	73.3	0.7
42-E-02	Restaurant	E	18540 #550 San Carlos Blvd	71.7	72.0	72.3	72.6	72.4	72.7	0.7
42-E-03	Restaurant	E	18540 #550 San Carlos Blvd	71.7	72.0	72.3	72.6	72.4	72.7	0.7
42-E-04	Restaurant	E	18540 #550 San Carlos Blvd	71.8	72.1	72.4	72.7	72.5	72.8	0.7
42-E-05	Restaurant	E	18540 #550 San Carlos Blvd	68.0	68.2	68.6	68.8	68.7	68.8	0.7
45-E-01	Restaurant	E	19030 #034 San Carlos Blvd	62.1	62.1	62.7	62.7	62.8	62.8	0.7
47-D-01	Commercial	D	19050 San Carlos Blvd	39.5	39.5	40.1	40.1	40.2	40.2	0.7
48-E-01	Lodge / Union Hall	E	19090 San Carlos Blvd	67.1	67.2	67.8	67.9	67.8	67.9	0.7
53-B-01	Rental Mobile Home	B	790 San Carlos Blvd	54.7	54.6	55.2	55.0	56.5	56.2	1.8
53-B-02	Rental Mobile Home	B	790 San Carlos Blvd	54.5	54.3	54.9	54.8	55.9	55.8	1.4
53-B-03	Rental Mobile Home	B	790 San Carlos Blvd	61.2	61.2	61.6	61.6	63.9	63.8	2.7
53-B-04	Rental Mobile Home	B	790 San Carlos Blvd	59.8	59.8	60.2	60.2	62.9	62.8	3.1
53-B-05	Rental Mobile Home	B	760 San Carlos Blvd	54.3	54.1	54.8	54.6	55.4	55.3	1.1
53-B-06	Rental Mobile Home	B	760 San Carlos Blvd	55.1	55.0	55.6	55.4	56.8	56.6	1.7
53-B-07	Rental Mobile Home	B	760 San Carlos Blvd	56.2	56.1	56.6	56.6	59.1	58.9	2.9

Noise-Sensitive Receptors				Predicted Noise Levels (dB(A))						
				2015 Existing		2040 No-Build		2040 Build		Δ
Rec. No.	Use	NAC	Address	NB	SB	NB	SB	NB	SB	
53-B-08	Rental Mobile Home	B	760 San Carlos Blvd	58.2	58.2	58.5	58.5	63	63	4.8
53-B-09	Rental Mobile Home	B	760 San Carlos Blvd	49.7	49.7	49.7	49.7	54.3	54.3	4.6
53-B-10	Rental Mobile Home	B	760 San Carlos Blvd	47.1	47.0	47.1	47.1	51.8	51.8	4.7
53-B-11	Rental Mobile Home	B	760 San Carlos Blvd	48.8	48.8	48.9	48.9	53.7	53.7	4.9
53-B-12	Rental Mobile Home	B	760 San Carlos Blvd	51.0	51.0	51.1	51.0	55.9	55.9	4.9
53-B-13	Rental Mobile Home	B	760 San Carlos Blvd	57.1	57.1	57.4	57.3	61.2	61.2	4.1
57-E-01A	Restaurant	E	1131 First St	45.0	44.9	45.1	45.0	46.3	46.3	1.3
57-E-01B	Restaurant	E	1132 First St	47.2	47.1	47.2	47.2	49	49	1.8
57-E-02A	Restaurant	E	1133 First St	44.9	45.0	45.0	45.0	45.5	45.5	0.6
57-E-02B	Restaurant	E	1134 First St	43.3	43.3	43.4	43.5	43.6	43.6	0.3
59-B-01A	Condominium	B	450 #203 Old San Carlos Blvd	47.4	47.4	47.4	47.4	50.1	50.1	2.7
59-B-01B	Condominium	B	451 #203 Old San Carlos Blvd	49.5	49.5	49.5	49.5	51.7	51.7	2.2
59-B-02A	Condominium	B	453 #203 Old San Carlos Blvd	50.3	50.3	50.3	50.3	46.4	46.4	-3.9
59-B-02B	Condominium	B	454 #203 Old San Carlos Blvd	50.8	50.8	50.8	50.8	47.9	47.9	-2.9
59-B-03A	Condominium	B	450 Old San Carlos Blvd	52.1	52.1	52.1	52.1	52	52	-0.1
59-B-03B	Condominium		451 Old San Carlos Blvd	52.2	52.2	52.2	52.2	53.8	53.8	1.6
60-C-01	Commercial	E	1025 Second St	47.2	47.2	47.2	47.2	47.8	47.8	0.6
61-E-01	Restaurant	E	1025 Second St	45.3	45.3	45.3	45.4	45.4	45.5	0.1
62-B-01	Residential	B	1030 Second St	47.3	47.3	47.3	47.3	47.7	47.7	0.4
63-B-01	Multi-Family Residential	B	1011 #1-4 Third St	47.9	47.9	47.9	47.9	48.4	48.4	0.5
64-E-01	Commercial	E	1020 Second St	49.6	49.6	49.6	49.6	50.2	50.2	0.6
64-E-02	Commercial	E	430 Old San Carlos Blvd	51.1	51.1	51.2	51.2	50.8	50.8	-0.3
64-E-03	Commercial	E	430 Old San Carlos Blvd	50.5	50.5	50.5	50.5	51.1	51.1	0.6
66-E-01	Commercial	E	320 Old San Carlos Blvd	52.8	52.8	52.8	52.8	53.6	53.6	0.8

Noise-Sensitive Receptors				Predicted Noise Levels (dB(A))						
				2015 Existing		2040 No-Build		2040 Build		Δ
Rec. No.	Use	NAC	Address	NB	SB	NB	SB	NB	SB	
67-E-01	Commercial	E	320 Old San Carlos Blvd	51.4	51.4	51.4	51.4	53	53	1.6
68-E-01	Restaurant	E	250 Old San Carlos Blvd	54.7	54.7	54.7	54.7	56.7	56.7	2
71-E-01	Restaurant	E	1000 Fifth St	51.2	51.2	51.2	51.2	55.4	55.4	4.2
72-E-01	Bar / Club	E	1028 Estero Blvd	51.6	51.6	51.6	51.6	50.5	50.5	-1.1
74-C-01	Recreational	C	1100 Estero Blvd	48.7	48.7	48.7	48.7	49.2	49.2	0.5
74-C-02	Recreational	C	1100 Estero Blvd	49.0	49.0	49.0	49.0	49.5	49.5	0.5
74-C-03	Recreational	C	1100 Estero Blvd	49.2	49.2	49.2	49.2	49.9	49.9	0.7
74-C-04	Recreational	C	1100 Estero Blvd	49.5	49.5	49.5	49.5	49.8	49.8	0.3
74-C-05	Recreational	C	1100 Estero Blvd	49.5	49.5	49.5	49.5	49.7	49.7	0.2
74-C-06	Recreational	C	1100 Estero Blvd	49.2	49.2	49.2	49.2	49.6	49.6	0.4
74-C-07	Recreational	C	1100 Estero Blvd	48.6	48.6	48.6	48.6	49.2	49.2	0.6
74-C-08	Recreational	C	1100 Estero Blvd	50.9	50.9	50.9	50.9	51.2	51.2	0.3
74-C-09	Recreational	C	1100 Estero Blvd	51.3	51.3	51.3	51.3	51.3	51.3	0
74-C-10	Recreational	C	1100 Estero Blvd	51.9	51.9	51.9	51.9	51.7	51.7	-0.2
74-C-11	Recreational	C	1100 Estero Blvd	52.2	52.2	52.2	52.2	51.9	51.9	-0.3
74-C-12	Recreational	C	1100 Estero Blvd	52.2	52.2	52.2	52.2	52.1	52.1	-0.1
74-C-13	Recreational	C	1100 Estero Blvd	51.8	51.8	51.8	51.8	51.9	51.9	0.1
74-C-14	Recreational	C	1100 Estero Blvd	51.0	51.0	51.0	51.0	51.3	51.3	0.3
74-C-15	Recreational	C	1100 Estero Blvd	53.6	53.6	53.6	53.6	53.4	53.4	-0.2
74-C-16	Recreational	C	1100 Estero Blvd	54.1	54.1	54.1	54.1	53.7	53.7	-0.4
74-C-17	Recreational	C	1100 Estero Blvd	55.0	55.0	55.0	55.0	54.3	54.3	-0.7
74-C-18	Recreational	C	1100 Estero Blvd	55.3	55.3	55.3	55.3	54.7	54.7	-0.6
74-C-19	Recreational	C	1100 Estero Blvd	55.2	55.2	55.2	55.2	55	55	-0.2
74-C-20	Recreational	C	1100 Estero Blvd	55.0	55.0	55.0	55.0	55	55	0

Noise-Sensitive Receptors				Predicted Noise Levels (dB(A))						
				2015 Existing		2040 No-Build		2040 Build		Δ
Rec. No.	Use	NAC	Address	NB	SB	NB	SB	NB	SB	
74-C-21	Recreational	C	1100 Estero Blvd	54.3	54.3	54.3	54.3	54.5	54.5	0.2
74-C-22	Recreational	C	1100 Estero Blvd	57.3	57.3	57.3	57.3	57	57	-0.3
74-C-23	Recreational	C	1100 Estero Blvd	53.3	53.3	53.3	53.3	53.2	53.2	-0.1
74-C-24	Recreational	C	1100 Estero Blvd	53.7	53.7	53.7	53.7	53.5	53.5	-0.2
74-C-25	Recreational	C	1100 Estero Blvd	54.7	54.7	54.7	54.7	54.4	54.4	-0.3
74-C-26	Recreational	C	1100 Estero Blvd	55.1	55.1	55.1	55.1	54.7	54.7	-0.4
74-C-27	Recreational	C	1100 Estero Blvd	57.0	57.0	57.0	57.0	56.2	56.2	-0.8
74-C-28	Recreational	C	1100 Estero Blvd	57.3	57.3	57.3	57.3	56.7	56.7	-0.6
74-C-29	Recreational	C	1100 Estero Blvd	58.4	58.4	58.4	58.4	57.7	57.7	-0.7
74-C-30	Recreational	C	1100 Estero Blvd	58.7	58.7	58.7	58.7	58	58	-0.7
74-C-31	Recreational	C	1100 Estero Blvd	57.6	57.6	57.6	57.6	57.8	57.8	0.2
74-C-32	Recreational	C	1100 Estero Blvd	59.5	59.5	59.5	59.5	59.7	59.7	0.2
74-C-33	Recreational	C	1100 Estero Blvd	59.2	59.2	59.2	59.2	59.4	59.4	0.2
75-E-01A	Restaurant	E	1154 Estero Blvd	63.3	63.3	63.3	63.3	63.6	63.6	0.3
75-E-01B	Restaurant	E	1155 Estero Blvd	62.8	62.8	62.8	62.8	63.2	63.2	0.4
75-E-01C	Restaurant	E	1156 Estero Blvd	62.7	62.7	62.7	62.7	63	63	0.3
75-E-01D	Restaurant	E	1157 Estero Blvd	62.6	62.6	62.6	62.6	63.1	63.1	0.5
75-E-02A	Motel	E	1160 Estero Blvd	64.1	64.1	64.1	64.1	64.7	64.7	0.6
75-E-02B	Motel	E	1161 Estero Blvd	63.8	63.8	63.8	63.8	64.3	64.3	0.5
75-E-02C	Motel	E	1162 Estero Blvd	63.6	63.6	63.6	63.6	64.1	64.1	0.5
75-E-02D	Motel	E	1163 Estero Blvd	63.7	63.7	63.7	63.7	64.2	64.2	0.5
76-C-01	Recreational	C	1133-1155 Estero Blvd	62.4	62.4	62.4	62.4	62.5	62.5	0.1
76-C-02	Recreational	C	1133-1155 Estero Blvd	60.8	60.8	60.8	60.8	60.8	60.8	0
76-C-03	Recreational	C	1133-1155 Estero Blvd	58.4	58.4	58.4	58.4	58.4	58.4	0

Noise-Sensitive Receptors				Predicted Noise Levels (dB(A))						
				2015 Existing		2040 No-Build		2040 Build		Δ
Rec. No.	Use	NAC	Address	NB	SB	NB	SB	NB	SB	
76-C-04	Recreational	C	1133-1155 Estero Blvd	52.6	52.6	52.6	52.6	52.7	52.7	0.1
76-C-05	Recreational	C	1133-1155 Estero Blvd	49.3	49.3	49.3	49.3	49.4	49.4	0.1
76-C-06	Recreational	C	1133-1155 Estero Blvd	52.8	52.8	52.8	52.8	52.9	52.9	0.1
76-C-07	Recreational	C	1133-1155 Estero Blvd	53.3	53.3	53.3	53.3	53.3	53.3	0
76-C-08	Recreational	C	1133-1155 Estero Blvd	44.6	44.6	44.6	44.6	44.7	44.7	0.1
76-C-09	Recreational	C	1133-1155 Estero Blvd	52.2	52.2	52.2	52.2	52.2	52.2	0
76-C-10	Recreational	C	1133-1155 Estero Blvd	47.1	47.1	47.1	47.1	47.3	47.3	0.2
76-C-11	Recreational	C	1133-1155 Estero Blvd	48.2	48.2	48.2	48.2	48.2	48.2	0
76-C-12	Recreational	C	1133-1155 Estero Blvd	48.3	48.3	48.3	48.3	48.4	48.4	0.1
76-C-13	Recreational	C	1133-1155 Estero Blvd	47.8	47.8	47.8	47.8	48	48	0.2
76-C-14	Recreational	C	1133-1155 Estero Blvd	46.0	46.0	46.0	46.0	46.3	46.3	0.3
M-01	Recreational	C	1100 Estero Blvd	57.7	57.7	57.7	57.7	57.5	57.5	-0.2
M-02	Rental Mobile Home	B	19241 San Carlos Blvd	71.5	71.2	72.2	71.8	71.9	71.5	0.4
M-03	Rental Mobile Home	B	19241 San Carlos Blvd	70.7	70.5	71.4	71.1	71.2	71	0.5

¹ Northbound peak traffic yields the highest traffic noise impact for the 2040 design year, providing the most conservative representation of noise analysis.

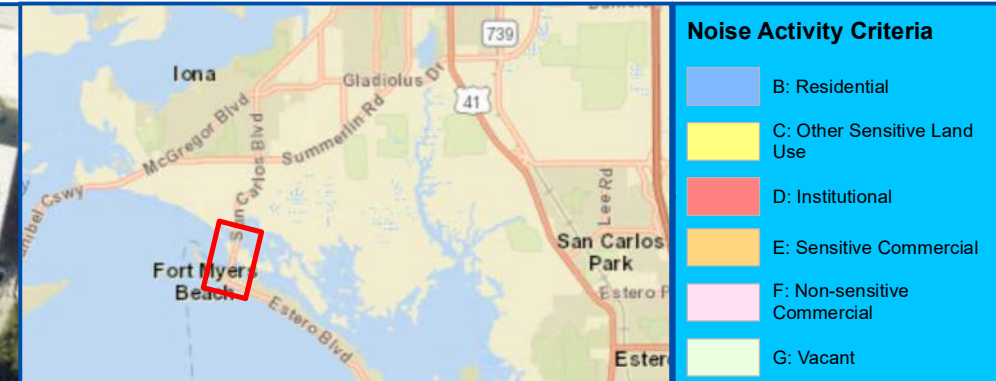
² An impacted CNE may not warrant abatement analysis due to many reasons, including design/construction, safety, access, right-of-way, maintenance, drainage, and utility limitations.

³ Receptors with a predicted noise level that approach or exceed the NAC are highlighted red with yellow text.

⁴ Δ is the difference of 2040 Build Conditions (Peak) to 2015 Existing Worst Case (Peak).

APPENDIX C

Noise CNE & Measurement Map



Noise Activity Criteria

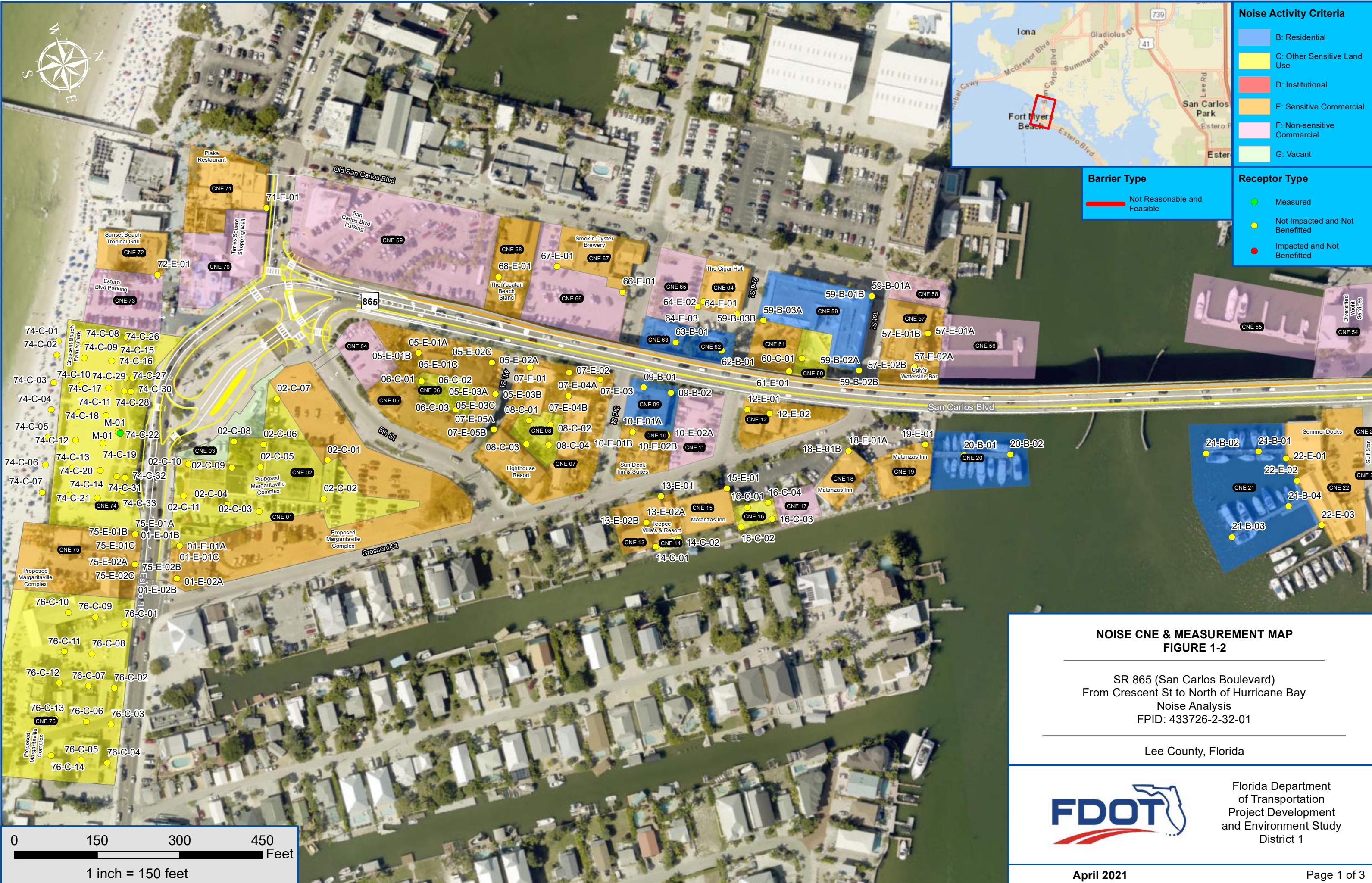
Blue	B: Residential
Yellow	C: Other Sensitive Land Use
Red	D: Institutional
Orange	E: Sensitive Commercial
Pink	F: Non-sensitive Commercial
Light Green	G: Vacant

Barrier Type

Not Reasonable and Feasible

Receptor Type

Green dot	Measured
Yellow dot	Not Impacted and Not Benefitted
Red dot	Impacted and Not Benefitted



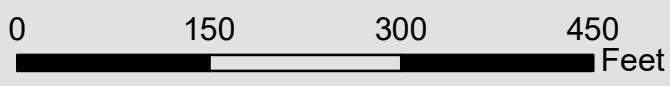
**NOISE CNE & MEASUREMENT MAP
FIGURE 1-2**

SR 865 (San Carlos Boulevard)
From Crescent St to North of Hurricane Bay
Noise Analysis
FPID: 433726-2-32-01

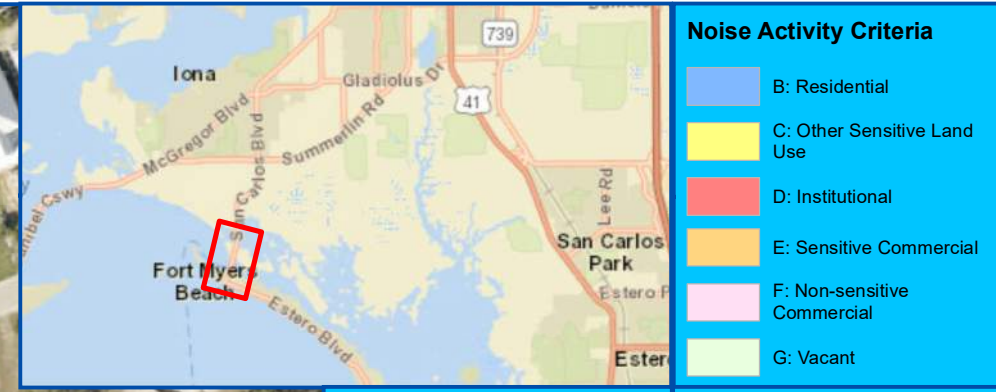
Lee County, Florida



Florida Department
of Transportation
Project Development
and Environment Study
District 1



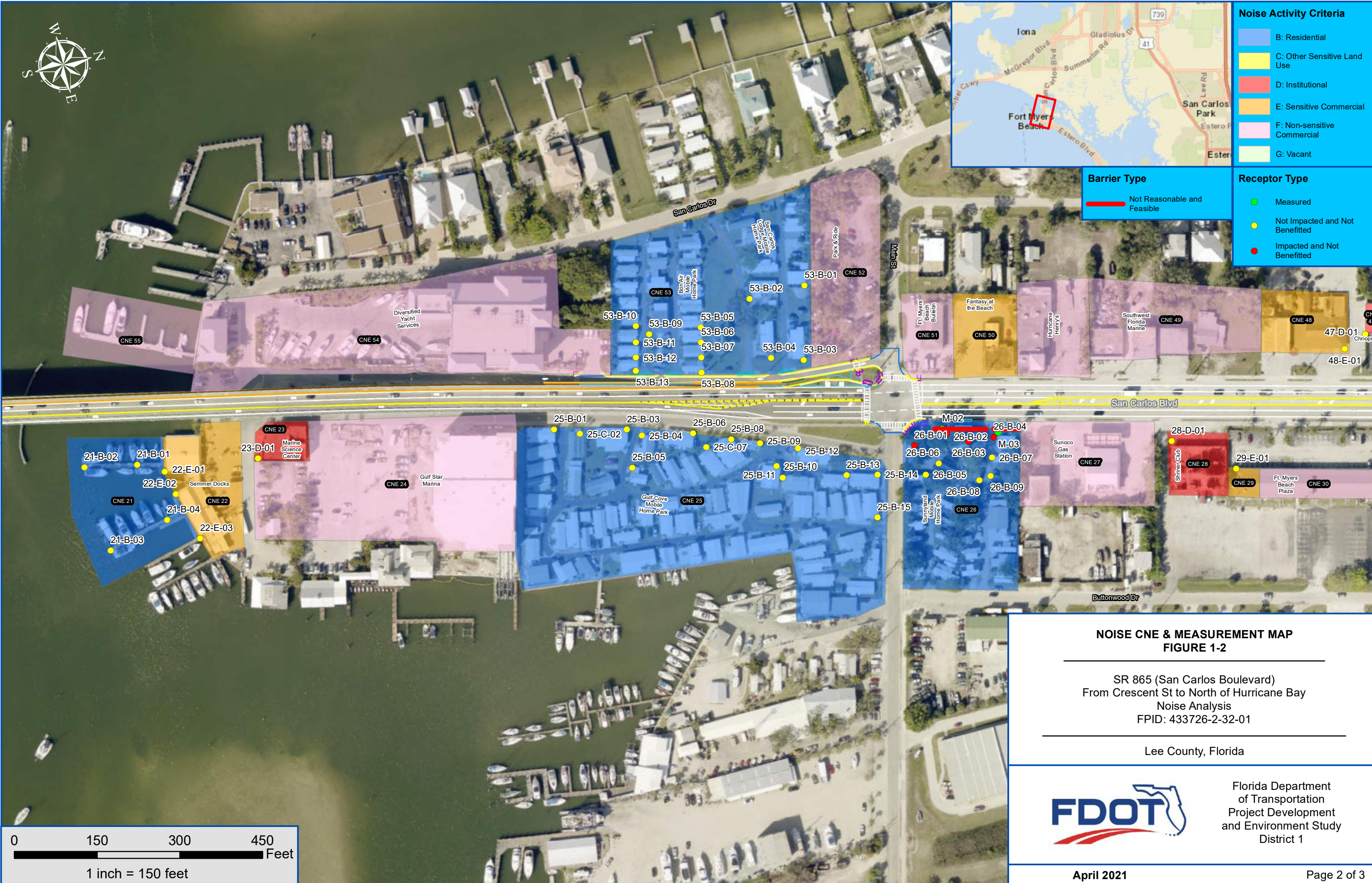
1 inch = 150 feet



Noise Activity Criteria	
■	B: Residential
■	C: Other Sensitive Land Use
■	D: Institutional
■	E: Sensitive Commercial
■	F: Non-sensitive Commercial
■	G: Vacant

Barrier Type	
—	Not Reasonable and Feasible

Receptor Type	
●	Measured
●	Not Impacted and Not Benefitted
●	Impacted and Not Benefitted



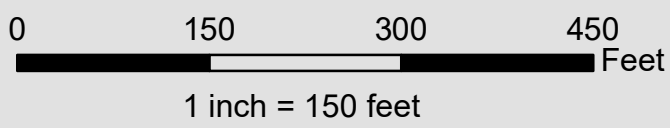
**NOISE CNE & MEASUREMENT MAP
FIGURE 1-2**

SR 865 (San Carlos Boulevard)
From Crescent St to North of Hurricane Bay
Noise Analysis
FPID: 433726-2-32-01

Lee County, Florida



Florida Department
of Transportation
Project Development
and Environment Study
District 1





Noise Activity Criteria	
■	B: Residential
■	C: Other Sensitive Land Use
■	D: Institutional
■	E: Sensitive Commercial
■	F: Non-sensitive Commercial
■	G: Vacant

Barrier Type	
—	Not Reasonable and Feasible

Receptor Type	
●	Measured
●	Not Impacted and Not Benefitted
●	Impacted and Not Benefitted

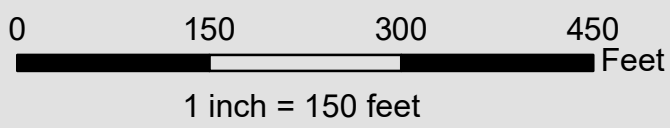
**NOISE CNE & MEASUREMENT MAP
FIGURE 1-2**

SR 865 (San Carlos Boulevard)
From Crescent St to North of Hurricane Bay
Noise Analysis
FPID: 433726-2-32-01

Lee County, Florida



Florida Department
of Transportation
Project Development
and Environment Study
District 1



APPENDIX D

TNM Modeling Files and PDF of the NSR
(on Project File, including “Read Me” file)

APPENDIX E

Abatement Analysis

Table E-1: CNE 26 Abatement Analysis

Impacted Noise-Sensitive Receptors – CNE 9					Abatement Analysis			
Rec. No.	Use	NAC	Address	2040 Predicted Build-Condition Noise Levels (dB(A)) ¹	With-Barrier (dB(A)) ³	IL ²	Benefit ²	Abatement Feasible & Reasonable
26-B-01	Residential	B	19241 SAN CARLOS BLVD	67.6	67.3	0.3	NO	NO ⁴
26-B-02	Residential	B	19241 SAN CARLOS BLVD	70.7	61.9	8.8	YES	NO ⁴
26-B-03	Residential	B	19241 SAN CARLOS BLVD	69.4	63.5	5.9	YES	NO ⁴
26-B-04	Residential	B	19241 SAN CARLOS BLVD	70.4	68.2	2.2	NO	NO ⁴
26-B-05	Residential	B	19241 SAN CARLOS BLVD	60.7	59.4	1.3	NO	NO ⁴
26-B-06	Residential	B	19241 SAN CARLOS BLVD	62.4	61.0	1.4	NO	NO ⁴
26-B-07	Residential	B	19241 SAN CARLOS BLVD	63.5	60.4	3.1	NO	NO ⁴
26-B-08	Residential	B	19241 SAN CARLOS BLVD	59.6	56.4	3.2	NO	NO ⁴
26-B-09	Residential	B	19241 SAN CARLOS BLVD	60.2	57.1	3.1	NO	NO ⁴

¹ Receptors with a predicted noise level that approach or exceed the NAC are highlighted yellow and red.
² IL = "Insertion Loss" = the difference between Predicted Build-condition noise level and the With-Barrier noise level. "Benefit" = a receptor that receives at least a (5 dB(A)) IL. Receptors with an insertion loss greater than seven are highlighted yellow and green, receptors with an insertion loss greater than five and less than seven are highlighted white and blue.
³ The with-barrier noise level = TNM-predicted traffic noise level.
⁴ ROW and construction costs at this CNE is above the level sufficient to meet cost criterion necessary for the reasonable abatement of this noise barrier.

Table E-2: CNE 42 Abatement Analysis

Impacted Noise-Sensitive Receptors – CNE 42					Abatement Analysis			
Rec. No.	Use	NAC	Address	2040 Predicted Build-Condition Noise Levels (dB(A)) ¹	With-Barrier (dB(A)) ³	IL ²	Benefit ²	Abatement Feasible & Reasonable
42-E-02	Restaurant	E	18540 #550 San Carlos Blvd	72.4	66.0	6.8	YES	NO ⁴
42-E-03	Restaurant	E	18540 #550 San Carlos Blvd	72.4	65.5	7.4	YES	NO ⁴
42-E-04	Restaurant	E	18540 #550 San Carlos Blvd	72.5	65.8	7.1	YES	NO ⁴
42-E-05	Restaurant	E	18540 #550 San Carlos Blvd	68.7	65.8	3	NO	NO ⁴

¹ Receptors with a predicted noise level that approach or exceed the NAC are highlighted yellow and red.
² IL = "Insertion Loss" = the difference between Predicted Build-condition noise level and the With-Barrier noise level. "Benefit" = a receptor that receives at least a (5 dB(A)) IL. Receptors with an insertion loss greater than seven are highlighted yellow and green, receptors with an insertion loss greater than five and less than seven are highlighted white and blue.
³ The with-barrier noise level = TNM-predicted traffic noise level.
⁴ ROW and construction costs at this CNE is above the level sufficient to meet cost criterion necessary for the reasonable abatement of this noise barrier.

APPENDIX F

Noise Monitoring Field Data Sheets

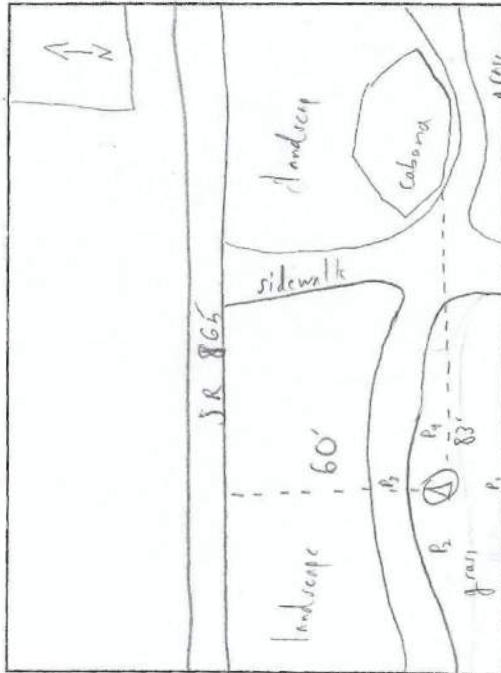
RK&K
Noise Measurement Data Sheet

Project:	SR 865	Date:	12/2/20
Meter Number	4	Traffic Monitoring Session (TMS):	01
Noise Measurement Site Number:		Start Time:	1:20 PM
File Number (on Meter):	8001	End Time:	1:55 PM
Location/Address:	1100 Estero Blvd	Wind Speed/Direction:	NE 2 mph
Name of Meter Operator:	BARB		

Checklist

- Data: Fill out all data in the above table and complete this checklist.
- Announce Presence: Knock on door and leave a letter in doorway or under mat.
- Meter Location: Set meter in common use area, between building and noise source. Minimum of 15' from building and minimum of 50' from noise source.
- Meter Height: Set microphone to 5' height.
- Events & Notes: Record any non-traffic noise events (i.e. sirens, talking, mowers, jake brakes) or other misc. notes.
- Measurements: Take measurements from permanent objects on photogrammetry such as buildings or curb lines, but not trees or poles. Measure at right angles if possible and put on site sketch.
- Photos: Take at least 4 photos showing the entire meter including tripod. 1 towards the building and 1 towards the noise source, one to both remaining directions. Mark photo location on site sketch.

Site Sketch



Events & Notes

1:29 plane
 1:35 tires squeal
 1:39 car horn
 1:40 engine back fire
 1:46 loud music in car
 1:47 loud truck accelerating
 1:48 loud music in car

 1:40-143 meter failure

 1:50 police speaking over loud speaker

 Note - location moved east away from live music coming from restaurants @ Estero on San Carlos

North



South



East



West



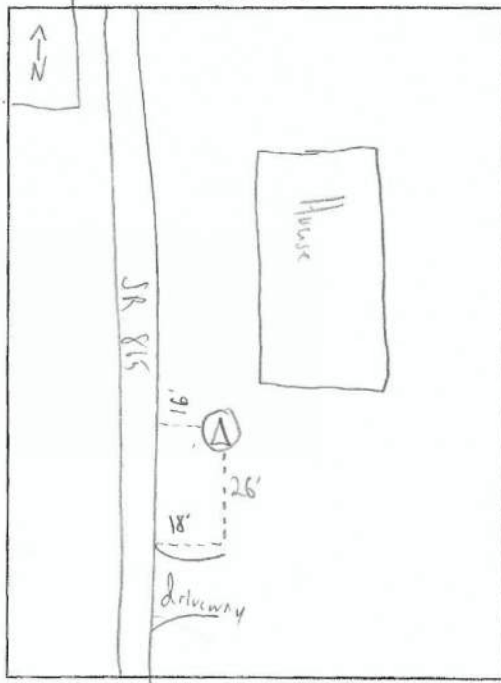
RK&K
Noise Measurement Data Sheet

Project:	SR 865	Date:	11/2/20
Meter Number	4	Traffic Monitoring Session (TMS):	3A
Noise Measurement Site Number:		Start Time:	11:00 AM
File Number (on Meter):	8003	End Time:	11:30 AM
Location/Address:		Wind Speed/Direction:	NE 3 mph
Name of Meter Operator:	668 9 BRB		

Checklist

- Data:** Fill out all data in the above table and complete this checklist.
- Announce Presence:** Knock on door and leave a letter in doorway or under mat.
- Meter Location:** Set meter in common use area, between building and noise source. Minimum of 15' from building and minimum of 50' from noise source.
- Meter Height:** Set microphone to 5' height.
- Events & Notes:** Record any non-traffic noise events (i.e. sirens, talking, mowers, jake brakes) or other misc. notes.
- Measurements:** Take measurements from permanent objects on photogrammetry such as buildings or curb lines, but not trees or poles. Measure at right angles if possible and put on site sketch.
- Photos:** Take at least 4 photos showing the entire meter including tripod. 1 towards the building and 1 towards the noise source, one to both remaining directions. Mark photo location on site sketch.

Site Sketch



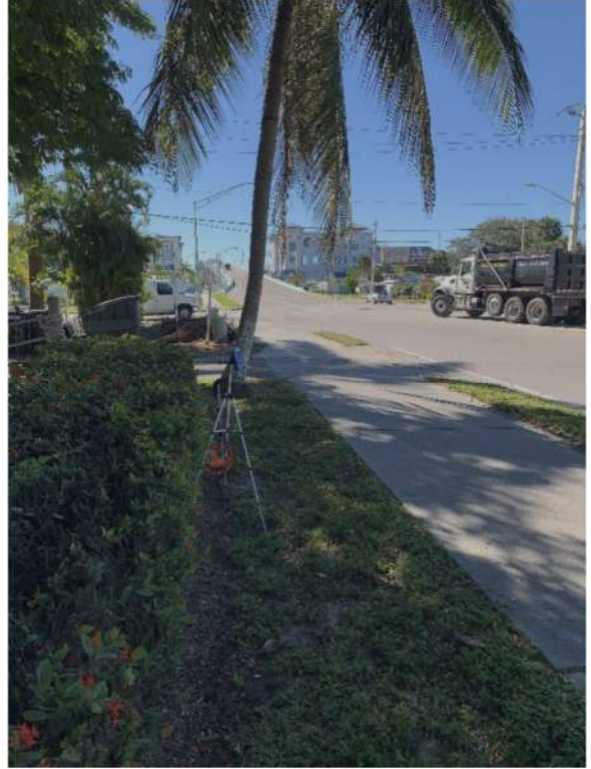
Events & Notes

- 11:03 diesel truck acceleration
- 11:04 guy on phone
- 11:08 trolley stop at location
- 11:29 car honk

North



South



East



West



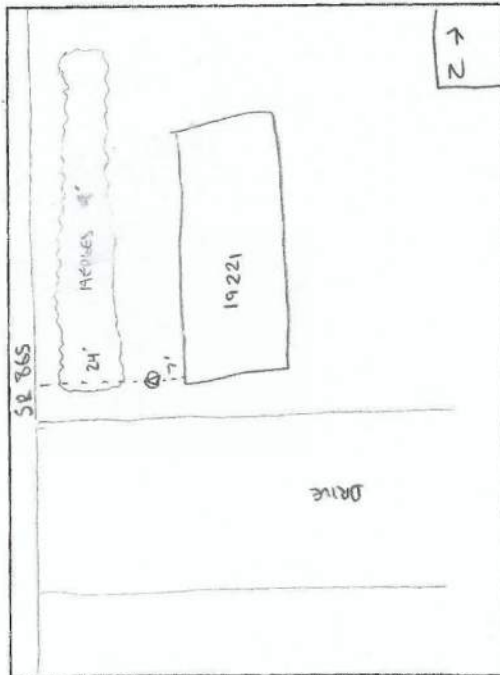
RK&K
Noise Measurement Data Sheet

Project:	SR 865	Date:	12 / 2 / 20
Meter Number	4	Traffic Monitoring Session (TMS):	TMS 03 B
Noise Measurement Site Number:		Start Time:	11:40 am
File Number (on Meter):	8030	End Time:	12:10 pm
Location/Address:	19221 San Carlos Blvd	Wind Speed/Direction:	
Name of Meter Operator:			

Checklist

- Data:** Fill out all data in the above table and complete this checklist.
- Announce Presence:** Knock on door and leave a letter in doorway or under mat.
- Meter Location:** Set meter in common use area, between building and noise source. Minimum of 15' from building and minimum of 50' from noise source.
- Meter Height:** Set microphone to 5' height.
- Events & Notes:** Record any non-traffic noise events (i.e. sirens, talking, mowers, jake brakes) or other misc. notes.
- Measurements:** Take measurements from permanent objects on photogrammetry such as buildings or curb lines, but not trees or poles. Measure at right angles if possible and put on site sketch.
- Photos:** Take at least 4 photos showing the entire meter including tripod. 1 towards the building and 1 towards the noise source, one to both remaining directions. Mark photo location on site sketch.

Site Sketch



Events & Notes

- 11:55 construction vehicle
- 11:58 multiple car maneuvering
- 12:00 car horn
- 12:04 table saw
- 12:06 table saw
- 12:07 table saw

North



South



East



West



RK&K
Noise Measurement Data Sheet

Project:	SR 865	Date:	12 / 2
Meter Number	4	Traffic Monitoring Session (TMS):	TMS 04
Noise Measurement Site Number:	M04	Start Time:	10 ¹⁰
File Number (on Meter):	8004	End Time:	10 ⁴⁰
Location/Address:	18800 San Carlos Blvd	Wind Speed/Direction:	NE ~ 8 mph
Name of Meter Operator:	GJB		

Checklist

- Data:** Fill out all data in the above table and complete this checklist.
- Announce Presence:** Knock on door and leave a letter in doorway or under mat.
- Meter Location:** Set meter in common use area, between building and noise source. Minimum of 15' from building and minimum of 50' from noise source.
- Meter Height:** Set microphone to 5' height.
- Events & Notes:** Record any non-traffic noise events (i.e. sirens, talking, mowers, jake brakes) or other misc. notes.
- Measurements:** Take measurements from permanent objects on photogrammetry such as buildings or curb lines, but not trees or poles. Measure at right angles if possible and put on site sketch.
- Photos:** Take at least 4 photos showing the entire meter including tripod. 1 towards the building and 1 towards the noise source, one to both remaining directions. Mark photo location on site sketch.

Site Sketch



Events & Notes

10¹⁶ Plans

North



South



East



West



APPENDIX G

Special Land Use Analysis

CNE 42

Maria's Smokehouse and Seafood Restaurant Special Land Use Reasonableness Matrix

Item	Criteria	Input		Units
		Minimum Usage to Achieve Threshold	Maximum Usage Short of Threshold	
1	Length of proposed barrier	96	96	feet
2	Height of Proposed barrier	10	10	feet
3	Multiply item 1 by item 2	960	960	feet ²
4	Enter the average amount of time that a person stays at the site per visit	1	1	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	41	40	person
6	Multiply time 4 by item 5	41	40	person-hour
7	Divide item 3 by item 6	23.4	24	feet ² /person-hours
8	Multiply item 7 by \$42,000	983,415	1,008,000	\$/person-hours/ft ²
9	Does item 8 exceed the "abatement cost factor" of: English units = \$995,935/person-hr/ft ² ?	No	Yes	Yes/No
10	If item 9 is no, abatement is reasonable	N/A	N/A	
11	If item 9 is yes, abatement is not reasonable	N/A	N/A	