

NOISE STUDY REPORT ADDENDUM

Florida Department of Transportation

District One

Harborview Road PD&E Re-evaluation

Limits of Project: From Melbourne Street to I-75

Charlotte County, Florida

Financial Management Number: 434965-2-32-01

ETDM Number: 5351

Date: November 2023

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

## EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT) is preparing a Design Change and Right-of-Way Authorization Re-evaluation for this project. This Noise Study Report Addendum (NSRA) is being prepared to support this re-evaluation effort by documenting changes and providing updated information since the October 2018 Noise Study Report was completed for the Project Development and Environment (PD&E) Study.

Traffic noise levels were evaluated for 140 receptors with noise sensitive land uses. Following Federal Highway Administration (FHWA)/FDOT policy, the residences were evaluated as Activity Category “B” and the pools were evaluated as Activity Category “C” [i.e., abatement was considered at a predicted exterior traffic noise level of 66 decibels on the “A”-weighted scale (dB(A))]. The places of worship were evaluated as Activity Category “D” [i.e., abatement was considered at a predicted interior traffic noise level of 51 dB(A)]. The proposed build alternative is predicted to result in traffic noise levels ranging from 53.0 dB(A) to 69.7 dB(A) for Activity Category B/C (exterior) and 31.7 dB(A) to 44.7 dB(A) for NAC Activity Category D (interior). Due to the change in alignment, eight of the evaluated receptors are now relocations. Of the remaining 132 noise sensitive receptors residences evaluated, 29 residences are predicted to experience future noise levels with the proposed widening of Harborview Road. Six of the impacted receptors were considered isolated and therefore, noise abatement was not evaluated for these locations.

Noise barriers were evaluated in TNM for the remaining 23 impacted noise sensitive receptors. The results of the evaluation indicated that constructing barriers would be a potentially cost reasonable and feasible abatement measure for 17 of the 23 impacted noise sensitive receptors along Harborview Road. The locations are described in more detail below:

- Birchwood Condominium - The proposed barrier is 395 feet long, 16 feet tall and will achieve the FDOT Noise Reduction Design Goal (NRDG) of at least a 7 dB(A) reduction at one or more benefitted receptors.
- Multi-family residences east of Drance Street - The proposed barrier is 175 feet long, 8 feet tall and will achieve the FDOT NRDG of at least a 7 dB(A) reduction at one or more benefitted receptors.
- Harborview Mobile Home Park - The proposed barrier is 405 feet long, 8 feet tall and will achieve the FDOT NRDG of at least a 7 dB(A) reduction at one or more benefitted receptors.
- Multi and single-family residences located south of Harborview Road between Date Street and Drance Street. This barrier system consists of four barrier segments:
  - Between Date Street and the first driveway - 90 feet long and 8 feet tall
  - Between the first driveway and Coconut Street - 185 feet long and 8 feet tall
  - Between Coconut Street and the second driveway - 150 feet long and 8 feet tall
  - Between the second driveway and Drance Street - 215 feet long and 8 feet tall

This barrier system will achieve the FDOT NRDG of at least a 7dB(A) reduction at one or more benefitted receptors.

A detailed engineering review will be conducted to determine if any design or construction factors would negate the FDOT's ability to construct noise barriers at the evaluated locations. Once the engineering review has been completed, surveys will be sent to the benefited residences to determine their support for or opposition to construction of the barriers, as well as provide input on the color and texture of the barrier on the residential side. Final determination of barrier heights and lengths will be made after the barrier engineering review and survey have been completed.

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# 1 INTRODUCTION

## 1.1 Project Description

The Florida Department of Transportation (FDOT), District One, is proposing to widen Harborview Road from two to four lanes between Melbourne Street and I-75 to address capacity needs based on projected travel demand generated by future population and economic growth. The total project length is approximately 2.3 miles. The project is located just northeast of Charlotte Harbor, Florida and falls within Sections 20, 21, 29 and 30, Township 40 South, Range 23 East, and Section 25, Township 40 South, Range 22 East. The project location is shown in **Figure 1-1**. The proposed roadwork consists of widening, drainage improvements, and safety-related improvements. The PD&E Study (FPID 434965-1-22-01) was approved by the Office of Environmental Management as a Type 2 Categorical Exclusion (CE) on October 14, 2019.



**Figure 1-1 Project Location Map**

The PD&E Preferred Alternative included an urban typical section of a four-lane divided roadway with 11-foot travel lanes, curb and gutter along the inside and outside edges of pavement, a 30-foot grassed median, six-foot sidewalks and seven-foot buffered bicycle lanes (see **Appendix A** for typical sections). This alternative recommended shifting to both the north and south of the existing roadway

to minimize residential relocations. It required 114-feet of ROW, resulting in an expansion of approximately 34 feet.

Since approval of the PD&E Study, the typical section was modified and approved and now consists of a four-lane divided urban roadway with 11-foot travel lanes bordered by Type F curb and gutter, 10-foot shared use paths on both sides of the roadway, and a raised 22-foot median (see **Appendix A** for typical sections). The reduced median width did not affect the posted speed limit and did not require a design variation. The shared-use paths were agreed upon by Charlotte County and offer a safer travel environment for bicyclists.

The primary design change in the horizontal alignment occurs at the first road curve near Laverne Street. The curve is being flattened from the PD&E recommended alignment to enhance safety for motorists. It will also improve access to the parcels on the south side of the roadway. Additionally, an existing conservation easement associated with the Rolls Landing Condominium property was avoided by limiting ROW acquisition to the north side of Harborview Road in this location. Additional ROW is required throughout the corridor to raise the road profile due to the high-water table and account for sea-level rise in the design.

The proposed stormwater management pond site locations also changed. There were seven preferred pond locations in the PD&E Study; one pond site alternative for each of the six drainage basins, as well as one historic drainage basin pond to address floodplain storage. The PD&E-identified pond locations, as well as additional pond locations within each basin, were more fully evaluated during the design phase. Evaluation factors included engineering considerations, environmental data, social impacts such as relocations, and cost. Following the pond siting analysis, a total of five pond sites have been selected. Two sites are the same as PD&E-identified ponds while the remaining three sites are new locations identified during the design phase of the project. Of these sites, Pond 1-2B uses remainders of parcels proposed for impact by mainline widening.

As a result of these design changes, additional ROW width is needed for the roadway mainline which varies along the corridor but on average, is approximately 133 feet, which requires approximately 53 feet of additional ROW.

The FDOT is preparing a Design Change and Right-of-Way (ROW) Authorization Re-evaluation for this project. This Noise Study Report Addendum is being prepared to support this re-evaluation effort by documenting changes and providing updated information since the October 2018 Noise Study Report was completed for the PD&E Study.

This Noise Study Report Addendum (NSRA) provides the results of three tasks:

- A land use review was performed to determine if any land uses for which there are Noise Abatement Criteria (NAC) were permitted for construction prior to the project's Date of Public Knowledge (DOPK),
- A review of current regulations as they relate to highway noise, and
- A review of the design phase roadway plans to determine if there were any changes to the approved PD&E concept that warrant a new traffic noise analysis.

## **1.2 Summary of PD&E Results and Commitments**

The 2018 PD&E Noise Study Report evaluated a total of 140 noise sensitive sites. Of those, 38 residences were predicted to experience future noise levels that approach, meet, or exceed the NAC as a result of the proposed widening of Harborview Road.

There were several instances where only one impacted receptor occurred in a particular area along the Harborview Road study area. Because a minimum of two impacted receptors must achieve a 5 dB(A) or greater reduction in order for a noise barrier to be considered feasible, noise barriers were not considered for these locations.

Noise barriers were evaluated for the remaining 24 residences that were predicted to experience noise levels that approach, meet, or exceed the NAC for Activity Category B. Noise barriers were found to be a potentially cost reasonable and feasible abatement measure for the 21 of the 24 impacted noise sensitive receptors at five different locations along Harborview Road. Noise barrier systems consisting of several barriers of the same height were the most common configuration modeled in this analysis due to numerous driveway access points that would cause breaks in a continuous barrier. Depending on the physical location and proximity of the impacted noise sensitive receptors to the breaks in the barrier, the effectiveness of the barrier reduction provided with each barrier system varied between locations.

The five locations where noise barrier systems were potentially cost reasonable and feasible are as follows:

### **Noise Barrier Systems located on the north side of Harborview Road**

- Birchwood Condominiums - 4 impacted residences may be benefited.
- Multi-Family residences east of Drance Street - 3 impacted residences may be benefited

### **Noise Barrier Systems located on the south side of Harborview Road**

- Harbor View Mobile Home Park - 7 impacted residences may be benefited.
- Multi-Family residences between Date Street and Coconut Street - 4 impacted residences may be benefited.
- Single-Family residences between Coconut Street and Drance Street - 3 impacted residences may be benefited.

This Noise Study Report Addendum (NSRA) documents the results of the traffic noise analysis that was performed to evaluate the improvements that are currently planned for Harborview Road and for which the PD&E analysis indicated abatement was potentially feasible and cost reasonable.



## 2 NOISE METHODOLOGY

### 2.1 Noise Metrics

The highway traffic noise analysis discussed in this NSRA was prepared in accordance with Part 772 of Title 23 of the Code of Federal Regulations (23 CFR 772), Procedures for Abatement of Highway Traffic Noise and Construction Noise (July 13, 2010); the policies/procedures documented in the FDOT's *PD&E Manual*, and guidance from the FDOT's Traffic Noise Modeling and Analysis Practitioners Handbook (December 2018). The predicted highway traffic noise levels presented in this report are expressed in decibels on the "A"-weighted scale (dB(A)). This scale most closely approximates the response characteristics of the human ear to traffic noise. The noise levels in this NSRA are reported as equivalent levels (Leq), which are equivalent steady-state sound levels that contain the same acoustic energy as time-varying sound levels over a period of one-hour (Leq(h)).

The prediction of existing and future highway traffic noise levels with and without the roadway improvements was performed using the Federal Highway Administration's (FHWA's) computer model for highway traffic noise prediction and analysis – the Traffic Noise Model (TNM - Version 2.5). The TNM propagates sound energy, in one-third octave bands, between highways and nearby receptors taking the intervening ground's acoustical characteristics/topography and rows of buildings into account.

#### 2.1.1 Traffic Data

Traffic noise levels are low when traffic volumes are low (LOS A or B) and when traffic is so congested that movement is slow (LOS D, E, or F). For the purpose of a highway traffic noise assessment, it is assumed that the maximum hourly traffic noise level occurs between these two conditions—when operating conditions are considered to be LOS C. As such, the traffic volume characteristics used in the analysis reflect either the forecast demand volumes, if the level met the LOS A or B criteria, or the LOS C volume, whichever is less. The operating conditions used in TNM to predict existing (year 2017) highway traffic noise and future (year 2045) levels with and without the design improvements are in **Appendix B**. Traffic volumes did not change from the PD&E NSR.

### 2.2 Noise Abatement Criteria

A noise sensitive receptor is any property (owner occupied, rented, or leased) where frequent exterior human use occurs. To evaluate traffic noise, the FHWA has established noise levels at which abatement must be considered. These noise levels are referred to as the NAC. The NAC are noise impact thresholds for considering abatement measures. As shown in **Table 2-1** NAC vary according to land use activity.

**Table 2-1 FHWA/FDOT Noise Abatement Criteria [Leq(h) Expressed in dB(A)]**

Activity Category	Description of Activity Category	Activity Leq(h) <sup>1</sup>	
		FHWA	FDOT
A	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.	57 (Exterior)	56 (Exterior)
B <sup>2</sup>	Residential.	67 (Exterior)	66 (Exterior)
C <sup>2</sup>	Active sports areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreational areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.	67 (Exterior)	66 (Exterior)
D	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.	52 (Interior)	51 (Interior)
E <sup>2</sup>	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F.	72 (Exterior)	71 (Exterior)
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.	--	--

<sup>1</sup> The Leq(h) Activity Criteria values are for impact determination only and are not design standards for noise abatement measures.

<sup>2</sup> Includes undeveloped lands permitted for this activity category.

Source: CFR, Title 23, Part 772.

As defined in 23 CFR 772, traffic noise impacts occur when predicted future traffic noise levels associated with the proposed improvements approach or exceed the NAC or when predicted future traffic noise levels substantially exceed the existing condition noise levels. The FDOT defines “approach” to mean within 1 dB(A) of the NAC. A substantial increase in noise is defined as an increase of 15 or more decibels above the existing noise level as a direct result of the transportation improvement project in question.

For example, Activity Category B (residential) applies to a majority of the noise sensitive land uses within the study limits. Under Activity Category B, noise abatement measures would be considered if the predicted future exterior levels from the proposed improvements are 66 dB(A) or higher, or if the predicted future traffic noise levels exceed the existing condition noise levels by 15 dB(A) or more. Common noise environments are defined in the *PD&E Manual*, as groups of receptors within the same activity category of NAC that are exposed to similar noise sources and levels, traffic volumes, traffic mix, speed, and topographic features. The developed lands along the project corridor include both noise sensitive and non-noise sensitive land uses. Field reviews within the project limits

revealed 140 noise sensitive receptors in the vicinity of Harborview Road for inclusion in the analysis. The locations of these receptors are shown on the aerials (with concept plan and receptor locations) provided in **Appendix C**. The noise sensitive receptors adjacent to Harborview Road have been divided into two groups. The letter “N” or “S” at the beginning of each receptor name indicates whether the receptor is located north or south of Harborview Road, respectively. For example, receptor N3 represents the third receptor north of Harborview Road when traveling from west to east. A summary description of the noise sensitive receptors modeled in this analysis as detailed by each NAC Activity Category is provided below.

### **Activity Category B**

Activity Category B includes the exterior impact criteria for single-family and multi-family residences. There were 133 residences within the study limits that were evaluated as part of this analysis. With the design improvements, seven residential receptors are planned for relocation resulting in 126 residences being evaluated for this NSRA.

Receptor S15 was evaluated as a residence in PD&E. However, the land use is currently identified as an office. Since the receptor is planned for relocation, it was not evaluated for potential traffic noise impacts with the proposed improvements.

### **Activity Category C**

Activity Category C applies to the exterior traffic noise levels at a variety of noise sensitive land uses that include active sports areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreational areas, Section 4(f) sites, schools, television studios, trails and trail crossings. Two Activity Category C land uses (swimming pools) are located adjacent to the study limits of Harborview Road and are represented by receptors N65 and S51.

### **Activity Category D**

Activity Category D applies to the interior traffic noise levels at a variety of noise sensitive land uses that include 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. Four Activity Category D land uses are located adjacent to the study limits of Harborview Road and are represented by receptors N3 (Trinity Community Church), N26 (Bethanie French SDA Church), N70 (Islamic Community of SWF) and N71 (Peace River Wesleyan Church). The FHWA Guidance Document *Highway Traffic Noise: Analysis and Abatement Guidance* (December 2011), Table 6, provides the reduction factor that was applied to obtain the interior noise levels based on building construction material. Each of the buildings were evaluated as being constructed of masonry with single pane windows and a noise reduction factor of 25 decibels was applied to obtain the interior noise levels.

## 2.3 Noise Abatement Measures

FDOT considers noise abatement measures when future traffic noise levels attributed to a proposed roadway widening approach, meet, or exceed the NAC, or when levels increase substantially. Since noise levels from the preferred build alternative are predicted to approach or exceed the NAC at 29 noise sensitive receptors, the feasibility and cost reasonableness of noise abatement measures were evaluated for these individual receptors. As outlined in the *PD&E Manual*, these measures may include traffic management, alignment modifications, land use controls, and noise barriers. The following discusses the feasibility (i.e., amount of noise reduction, engineering considerations, etc.) and/or reasonableness (i.e., viewpoints of benefited property owners, cost, and achievement of the noise reduction design goal) of these measures.

### 2.3.1 Traffic Management Measures

Traffic control measures that limit motor vehicle speeds and restrict certain vehicle types can be effective noise mitigation measures. However, these measures may also negate a project's ability to meet the need of the facility. For example, prohibiting heavy trucks from using Harborview Road would lower traffic noise levels; however, it would also eliminate the ability to efficiently move people and goods through the study limits. Therefore, this method of noise mitigation is not reasonable.

### 2.3.2 Alignment Modifications

Alignment modification involves shifting the roadway alignment at sufficient distances from residential areas to minimize traffic noise. Since this project involves lane additions to the existing road, the existing alignment dictates the proposed horizontal alignment. Several alternatives were analyzed. Because of limited ROW, shifting the Harborview Road alignment to reduce impacts would likely result in more severe impacts, including property acquisitions, residential and business relocations, and other environmental impacts. For these reasons, shifting the Harborview Road alignment to reduce traffic noise impacts would result in other undesirable impacts and is not a reasonable measure to reduce noise levels associated with this project.

### 2.3.3 Land Use Controls

Another noise abatement measure is to use land use controls to minimize impacts to future development. Providing a buffer between a highway and future noise sensitive land uses is an abatement measure that can minimize/eliminate noise impacts in areas of future development. To encourage use of this abatement measure through local land use planning, noise contours have been developed.

## 3 TRAFFIC NOISE ANALYSIS

### 3.1 Predicted Noise Levels

The predicted traffic noise levels modeled for 140 noise sensitive receptors along Harborview Road are shown in the Predicted Noise Level table located in **Appendix D**. The existing (2017) and future year (2045) noise levels with and without the proposed widening are provided. The existing condition traffic noise levels are predicted to range from 25.6 dB(A) to 38.2 dB(A) for NAC Activity Category D (interior) and 50.6 dB(A) to 64.8 dB(A) for Activity Category B/C (exterior). The no-build condition traffic noise levels are predicted to range from 28.0 dB(A) to 40.7 dB(A) for NAC Activity Category D (interior) and 53.2 dB(A) to 67.4 dB(A) for Activity Category B/C (exterior). Both the existing and no-build condition noise levels reported are those that were modeled during the 2018 NSR.

The proposed updated build alternative is predicted to result in traffic noise levels ranging from 31.7 dB(A) to 44.7 dB(A) for NAC Activity Category D (interior) and 53.0 dB(A) to 69.7 dB(A) for Activity Category B/C (exterior). As stated previously, eight of the evaluated receptors are now relocations. Of the remaining 132 noise sensitive receptors evaluated, 29 residences are predicted to experience future noise levels with the proposed widening of Harborview Road that approach, meet, or exceed the NAC for Activity Category B. None of the evaluated receptors are predicted to experience a substantial increase [15 dB(A) or more] in traffic noise levels as a result of the proposed project.

During a project's design phase, a land use review is performed to determine if any land uses for which there are NAC received a building permit/construction approval between the time the PD&E traffic noise analysis was performed (October 2018) and the project's DOPK. The FDOT does not consider noise abatement for noise sensitive land uses that are permitted after a project's DOPK. The DOPK for this project is October 14, 2019. Based on the land use review, which compared the information/data from the Charlotte County Property Appraiser to the aerials/information from the PD&E NSR, there are no new developments that require analysis.

### 3.2 Abatement Analysis

TNM was used to evaluate the ability of noise barriers to reduce traffic noise levels for the impacted noise sensitive receptors adjacent to Harborview Road. As stated previously, a noise barrier must provide a minimum 5 dB(A) reduction for at least two impacted receptors to meet the minimum feasibility requirements. As such, noise barriers were not evaluated for the six isolated receptors listed below:

- A single-family residence located east of Lebeth Street (receptor N20) is the only impacted noise sensitive receptor among the five evaluated in this area.
- A single residential unit within a quadplex located at Sharamere Woods (receptor N56) is the only impacted noise sensitive receptor among the ten evaluated in this area.
- A single-family residence located just east of Sapodilla Street (receptor N69) is the only impacted noise sensitive receptor among the three evaluated in this area.

- A single-family residence located west of Dale Street (receptor S33) within the Mary Lu Mobile Home Park is the only impacted noise sensitive receptor evaluated in this area.
- A single-family residence located east of Guava Street (receptor S53) is the only impacted noise sensitive receptor evaluated in this area.
- A single-family residence located east of Northside Terrace (receptor S55) is the only impacted noise sensitive receptor evaluated in this area.

The following provides the results of the noise barrier evaluation for the remaining 23 residences predicted to be impacted by traffic noise.

### 3.2.1 Noise Barriers Evaluated

#### 3.2.1.1 Multi-Family Residences Between Date Street and Coconut Street

With the proposed widening of Harborview Road, two residences represented by receptors N28 and N29 located between Date Street and Coconut Street are predicted to experience future noise levels that approach or exceed the NAC for Activity Category B. Of note, these residences were designated as relocations in the PD&E Study and therefore, were not previously evaluated for traffic noise impacts with the proposed improvements. As such, a noise barrier was evaluated across the frontage of the multi-family residences adjacent to Harborview Road. Due to a limitation on the length of the barrier to allow access to the property, the FDOT Noise Reduction Design Goal (NRDG) of at least a 7 dB(A) reduction at one or more benefitted receptors could not be achieved at any of the evaluated barrier heights. Therefore, the barrier is not considered a reasonable abatement measure for these residences.

#### 3.2.1.2 Birchwood Condominiums

With the proposed widening of Harborview Road, four residences represented by receptors N38, N39, N42, and N43 at the Birchwood Condominiums are predicted to experience future noise levels that approach or exceed the NAC for Activity Category B. A noise barrier was evaluated across the entire frontage of the condominium property adjacent to Harborview Road to abate for these future noise levels, as shown in **Figure 3-1** and **Table 3-1**. Once the barrier exceeds 16 feet in height, no additional receptors are benefitted. Although shorter lengths would also benefit the community, a maximum length of 395 feet is proposed to provide better neighborhood continuity. The proposed barrier is 395 feet long and 16 feet tall, as summarized in **Table 3-5**. The proposed barrier benefits a total of 11 receptors, including all four of the impacted receptors. In addition, the barrier achieves the FDOT NRDG of at least a 7 dB(A) reduction at one or more benefitted receptors. Figure 3-1 also shows the impacted/benefitted receptors. The length and height of the barrier were optimized to provide the greatest amount of noise reduction for the most receptors.



**Figure 3-1 Birchwood Condominiums Barrier**



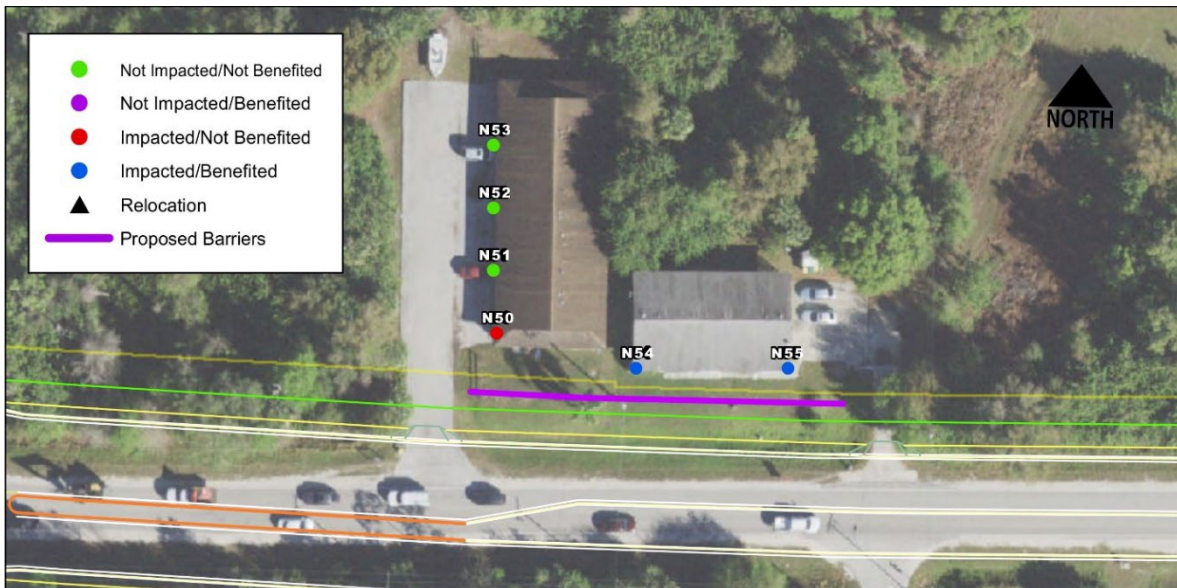
**Table 3-2 Heights Analyzed for 395' Birchwood Condominiums Barrier**

Height	# Impacted Receptors	Impacted and Benefited	Total Benefited	Avg. Noise Reduction (dB(A))	Maximum Noise Reduction (dB(A))	Area (Sq. Ft.)	Total Estimated Cost	Cost per Benefited Receptor
8	4	4	6	8.9	9.2	3,160	\$94,800	\$15,800
10		4	9	10.8	11.3	3,950	\$118,500	\$13,167
12		4	10	12.3	12.8	4,740	\$142,200	\$14,220
14		4	10	13.6	14.3	5,530	\$165,900	\$16,590
16		4	11	14.4	15.1	6,320	\$189,600	\$17,236
18		4	11	15.3	16.1	7,110	\$213,300	\$19,391
20		4	11	16.0	17.1	7,900	\$237,000	\$21,545
22		4	11	16.7	17.9	8,690	\$260,700	\$23,700

**3.2.1.3 Multi-Family Residences east of Drance Street**

With the proposed widening of Harborview Road, three residences represented by N50, N54, and N55 located east of Drance Street are predicted to experience future noise levels that approach or exceed the NAC for Activity Category B. A noise barrier was evaluated across the entire frontage of the multi-family residences adjacent to Harborview Road to abate for these future noise levels, as shown in **Figure 3-2** and **Table 3-2**. Although shorter lengths would also benefit the community, a maximum length of 175 feet is proposed to provide better neighborhood continuity.

The proposed barrier is 175 feet long and 8 feet tall, as summarized in **Table 3-5**. The proposed barrier benefits two of the three the impacted receptors. In addition, the barrier achieves the FDOT NRDG of at least a 7 dB(A) reduction at one or more benefitted receptors. Figure 3-2 also shows the impacted/benefited receptors. The length and height of the barrier were optimized to provide the greatest amount of noise reduction for the most receptors.



**Figure 3-2 Drance Street Barrier**

**Table 3-2 Heights Analyzed for 175’ Drance Street Barrier**

Height	# Impacted Receptors	Impacted and Benefited	Total Benefited	Avg. Noise Reduction (dB(A))	Maximum Noise Reduction (dB(A))	Area (Sq. Ft.)	Total Estimated Cost	Cost per Benefited Receptor
8	3	2	2	7.4	8.3	1,400	\$42,000	\$21,000
10		2	2	8.2	9.3	1,750	\$52,500	\$26,250
12		2	2	8.8	10.1	2,100	\$63,000	\$31,500
14		2	2	9.1	10.5	2,450	\$73,500	\$36,750
16		2	2	9.3	10.7	2,800	\$84,000	\$42,000



3.2.1.4 Harbor View Mobile Home Park

With the proposed widening of Harborview Road, seven of the mobile homes represented by receptors S16 through S22 at the Harbor View Mobile Home Park are predicted to experience future noise levels that approach or exceed the NAC for Activity Category B. A noise barrier was evaluated to abate for future noise levels as shown in **Figure 3-3** and **Table 3-3**. The barrier is located to the east of the main driveway and is limited to a length of 405 feet due to a line of sight (i.e. loss of a safe sight distance) issue affecting vehicles exiting the Mary Lu Mobile Home Park. Various heights were analyzed at this location. Although additional benefits can be achieved with a taller barrier, the proposed barrier height is 8 feet tall, as summarized in **Table 3-5**. In addition, the barrier achieves the FDOT NRDG of at least a 7 dB(A) reduction at one or more benefitted receptors. This barrier was optimized to provide the greatest amount of noise reduction to the most receptors.



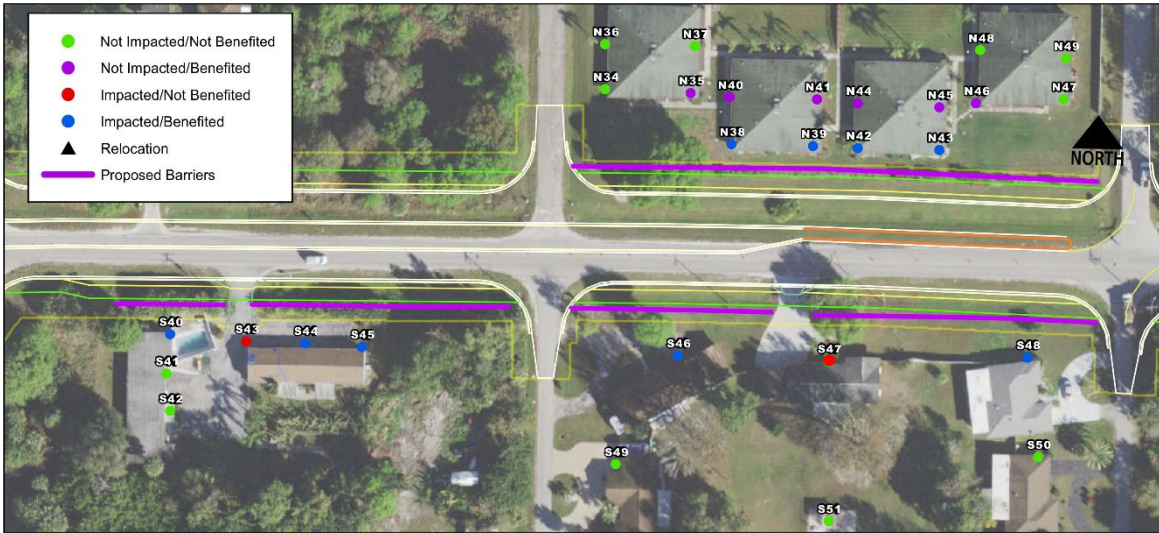
Figure 3-3 Harbor View Mobile Home Park Barrier

Table 3-3 Heights Analyzed for 405' Harbor View Mobile Home Park Barrier

Height	# Impacted Receptors	Impacted and Benefitted	Total Benefitted	Avg. Noise Reduction (dB(A))	Maximum Noise Reduction (dB(A))	Area (Sq. Ft.)	Total Estimated Cost	Cost per Benefitted Receptor
8	7	6	6	6.8	7.8	3,240	\$97,200	\$16,200
10		6	6	8.2	9.4	4,050	\$121,500	\$20,250
12		6	6	9.0	10.4	4,860	\$145,800	\$24,300
14		6	8	9.7	11.2	5,670	\$170,100	\$21,263
16		6	9	10.1	11.8	6,480	\$194,400	\$21,600
18		7	10	9.7	12.4	7,290	\$218,700	\$21,870
20		7	10	10.0	12.8	8,100	\$243,000	\$24,300
22		7	11	10.2	13.1	8,910	\$267,300	\$24,300

3.2.1.5 Single-family residences between Date Street and Drance Street

With the proposed widening of Harborview Road, seven residences represented by receptors S40 and S43-S48 are predicted to experience future noise levels that approach, meet, or exceed the NAC. To accommodate the cross streets and driveways a barrier system consisting of four segments was evaluated to abate for future noise levels as shown in **Figure 3-4** and **Table 3-4**. The first segment is located between Date Street and the first driveway and is 90 feet long. The length of this barrier segment is constrained at the west end due to line of sight from the driveway. The second segment is located between the first driveway and Coconut Street and is 185 feet long. The third segment is located between Coconut Street and the second driveway and is 150 feet long. The fourth segment is located between the second driveway and Drance Street and is 215 feet long, for a total barrier system length of 640 feet. Various heights were analyzed for this barrier system. Once the barrier exceeds a height of 12 feet tall, it no longer meets the FDOT’s cost effectiveness criteria of \$42,000 per benefitted receptor. In addition, no additional receptors are benefitted with an increase in wall height from 8 to 10 feet. Therefore, the proposed height for all four segments is 8 feet tall, as summarized in **Table 3-5**. In addition, the barrier system achieves the FDOT NRDG of at least a 7 dB(A) reduction at one or more benefitted receptors. This barrier was optimized to provide the greatest amount of noise reduction to the most receptors.



**Figure 3-4 Single-Family Residences between Date Street and Drance Street Barrier**

**Table 3-4 Heights Analyzed for 640’ Single-Family Residences Barrier**

Height	# Impacted Receptors	Impacted and Benefitted	Total Benefitted	Avg. Noise Reduction (dB(A))	Maximum Noise Reduction (dB(A))	Area (Sq. Ft.)	Total Estimated Cost	Cost per Benefitted Receptor
8	7	5	5	6.5	7.1	5,120	\$153,600	\$30,720
10		5	5	7.0	7.9	6,400	\$192,000	\$38,400
12		5	6	7.4	8.5	7,680	\$230,400	\$38,400
14		5	6	7.7	8.9	8,960	\$268,800	\$44,800

**Table 3-5 Summary of Proposed Noise Barriers**

<b>Community</b>	<b># Impacted Receptors</b>	<b># Impacted and Benefited Receptors</b>	<b>Total Benefited Receptors</b>	<b>Average Noise Reduction (dB(A))</b>	<b>Maximum Noise Reduction (dB(A))</b>	<b>Length (feet)</b>	<b>Height (feet)</b>	<b>Area (Square feet)</b>	<b>Total Cost</b>	<b>Cost per Benefited Receptor</b>
Birchwood Condominiums	4	4	11	14.4	15.1	395	16	6,320	\$189,600	\$17,236
Multi-family Residences East of Drance Street	3	2	2	7.4	8.3	175	8	1,400	\$42,000	\$21,000
Harbor View Mobile Home Park	7	6	6	6.8	7.8	405	8	3,240	\$97,200	\$16,200
Single-Family Residences between Date Street and Drance Street	7	5	5	6.5	7.9	90	8	5,120	\$153,600	\$30,720.00
						185	8			
						150	8			
						215	8			

## 4 CONCLUSIONS

Due to the change in alignment since the PD&E study in 2018, a noise re-evaluation was warranted. The existing (2017) and future year (2045) no-build PD&E results, as well as the future year (2045) design build condition results, are documented in **Appendix D**. The TNM noise prediction model was used to predict traffic noise levels at 140 noise sensitive receptors located adjacent to Harborview Road for the future year (2045) condition with the updated proposed widening.

The existing condition traffic noise levels are predicted to range from 25.6 dB(A) to 38.2 dB(A) for NAC Activity Category D (interior) and 50.6 dB(A) to 64.8 dB(A) for Activity Category B/C (exterior). The no-build condition traffic noise levels are predicted to range from 28.0 dB(A) to 40.7 dB(A) for NAC Activity Category D (interior) and 53.2 dB(A) to 67.4 dB(A) for Activity Category B/C (exterior). Both the existing and no-build noise levels are from the 2018 NSR and did not require re-evaluation.

The proposed build alternative is predicted to result in traffic noise levels ranging from 31.7 dB(A) to 44.7 dB(A) for NAC Activity Category D (interior) and 53.0 dB(A) to 69.7 dB(A) for Activity Category B/C (exterior). Of the 140 noise sensitive receptors evaluated, 29 residences are predicted to experience future noise levels with the proposed widening of Harborview Road that approach, meet, or exceed the NAC for Activity Category B. None of the evaluated receptors are predicted to experience a substantial increase [15 dB(A) or more] of traffic noise as a result of the proposed widening.

According to the *PD&E Manual*, a minimum of two impacted receptors must achieve a 5 dB(A) or greater reduction for a noise barrier to be considered feasible. There are six locations where only one impacted receptor occurs in a particular area along the Harborview Road study area (i.e. receptors N20, N56, N69, S33, S53, and S55). Because these receptors are considered isolated, noise abatement was not evaluated for these locations.

Noise barriers were evaluated for the 23 remaining noise sensitive receptors that are predicted to experience future noise levels that approach, meet, or exceed the NAC as a result of the proposed widening of Harborview Road. Noise barriers were evaluated to determine the optimum height and length. The barriers were optimized to minimize cost while trying to maintain the required 5 dB(A) reduction at two or more impacted noise sensitive receptors and a 7 dB(A) reduction at one benefitted noise sensitive receptor.

Noise barriers were found to be a cost reasonable and feasible abatement measure for the 17 of the 23 impacted noise sensitive receptors along Harborview Road. Four barrier systems are proposed for public involvement and construction and are described below:

- Birchwood Condominiums - A barrier 395 feet long and 16 feet tall is proposed for the impacted receptors at the Birchwood Condominiums. This barrier benefits the four impacted receptors and provides benefit for an additional seven receptors and meets the FDOT NRDG



of a 7 dB(A) reduction at one or more benefitted receptors. The proposed barrier costs a total of \$142,200 or \$14,220 per benefitted receptor.

- Multi-family residences east of Drance Street - A barrier 175 feet long and 8 feet tall is proposed for the impacted receptors for the multi-family residences east of Drance Street. This barrier benefits two of the three impacted receptors and meets the FDOT NRDG of a 7 dB(A) reduction at one or more benefitted receptors. The proposed barrier costs a total of \$42,000 or \$21,000 per benefitted receptor.
- Harbor View Mobile Home Park - A barrier is proposed to abate the noise impacts for the Harbor View Mobile Home Park. The barrier extends across the main portion of the Mobile Home Park and is 405 feet long and 8 feet tall. The barrier benefits six of the seven impacted receptors and meets the FDOT NRDG of a 7 dB(A) reduction at one or more benefitted receptors. The total cost of the barrier is \$97,200 or \$16,200 per benefitted receptor.
- Multi and single-family residences between Date Street and Drance Street - This barrier system is a combination of four barriers to abate the impacted receptors between Date Street and Drance Street. The first barrier segment is 90 feet long and 8 feet tall. The length of this segment is constrained by line-of-sight from the adjacent driveway. The remaining barrier segment lengths are 185 feet, 150 feet, and 215 feet long, respectively, for a total barrier length of 640 feet and 8 feet tall. The proposed barrier system benefits five of the seven impacted receptors. The barrier system costs a total of \$153,600 or \$30,720 per benefitted receptor.

A detailed engineering review will be conducted to determine if any design or construction factors would negate the FDOT's ability to construct noise barriers at the evaluated locations, or if modifications of the barriers are needed. Once the engineering review has been completed, surveys will be sent to the benefitted residences to determine their support for or opposition to construction of the barriers, as well as provide input on the color and texture of the barrier on the residential side. Final determination of barrier heights and lengths will be made after the barrier engineering review and survey have been completed.

## 5 CONSTRUCTION NOISE AND VIBRATION

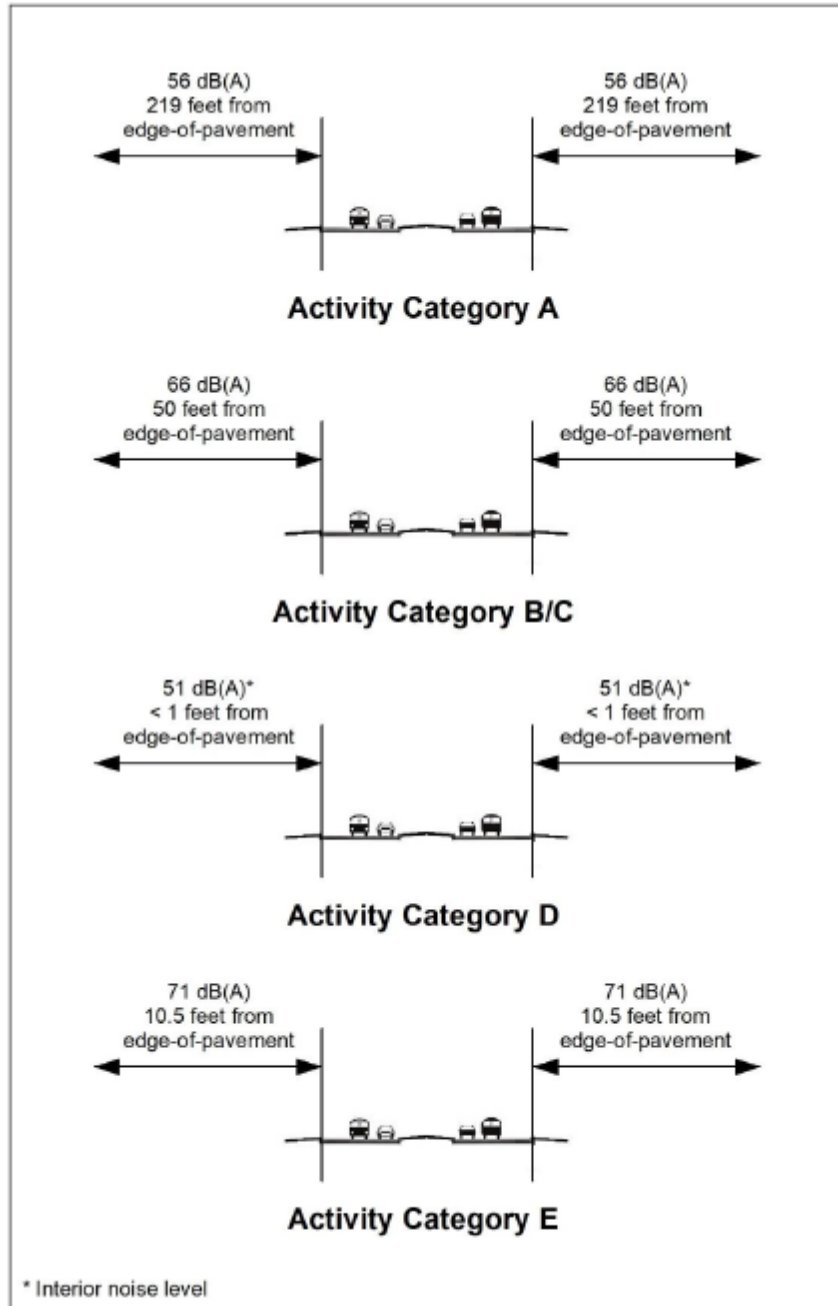
Within the project limits, land uses adjacent to Harborview Road are identified on the FDOT listing of noise- and vibration-sensitive sites (e.g., residences) as shown in **Table 5-1**. Construction of the proposed roadway improvements is not expected to have any significant noise and vibration impact. If sensitive land uses develop adjacent to the roadway prior to construction, increased potential for noise and vibration impacts could result. It is anticipated that the 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 and vibration issues arise during the construction process, the Project Engineer, in coordination with the District Noise Specialist and the Contractor, will investigate additional methods of controlling these impacts.

**Table 5-1 Construction Noise and Vibration Sensitive Sites**

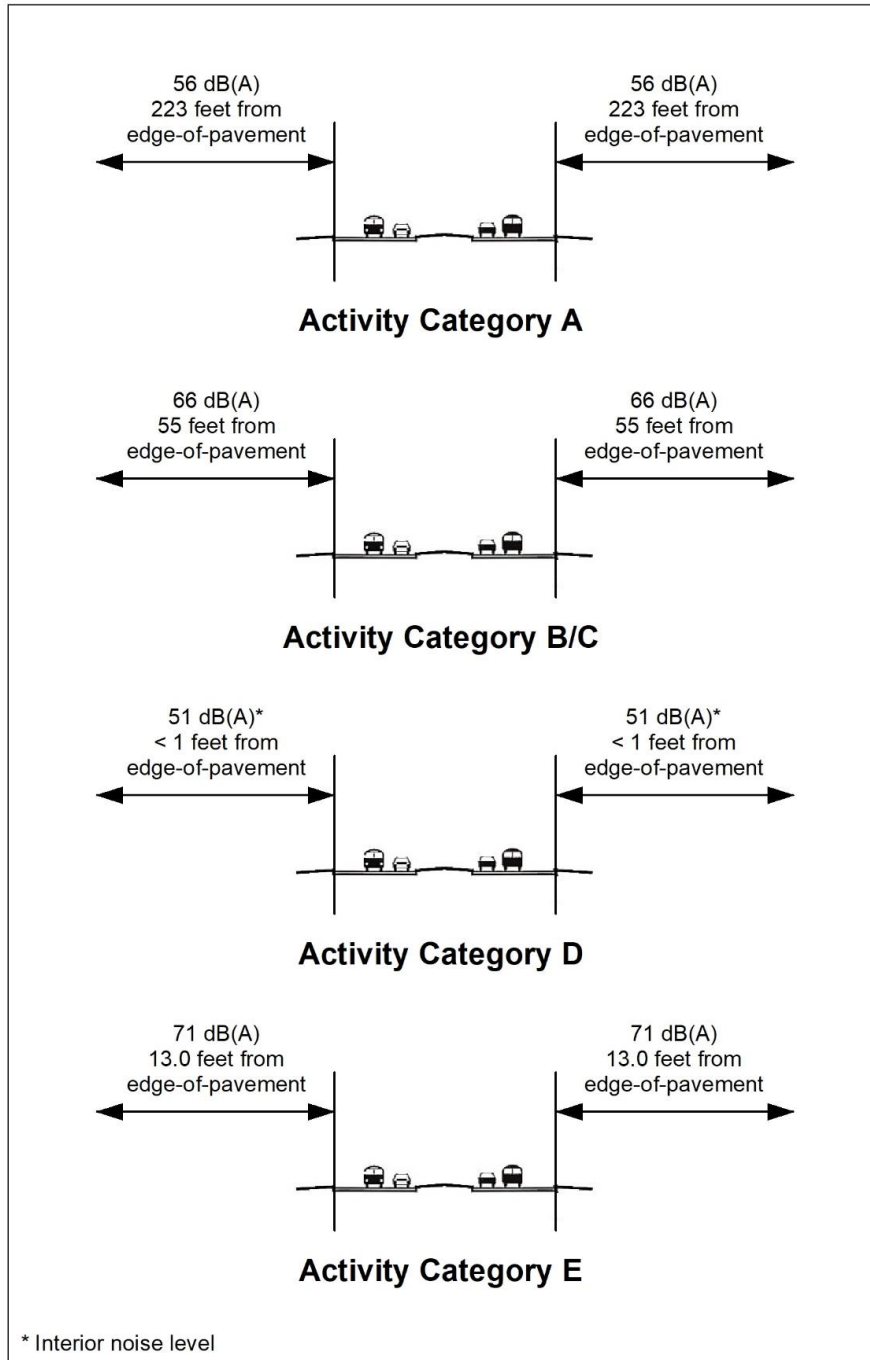
Noise	Vibration
Eye Centers/Clinics Medical Centers Hospitals Geriatric Centers Sound Recording Studios TV/Radio Stations Residences Technical Laboratories Hearing Testing Centers Theaters Schools Motels/Hotels Funeral Homes Libraries Meditation Centers Places of Worship Parks Day Care Centers Outdoor Theaters	Eye Centers/Clinics Medical Centers Hospitals Geriatric Centers Sound Recording Studios TV/Radio Stations Residences Technical Laboratories Antique Shops Museums Historic Buildings Places of Worship
Note: This list is not meant to be all inclusive, but rather an indication of the type of sites likely to be sensitive to construction noise and/or vibrations.	
Source: FDOT Noise and Vibration Task Team; August 17, 1999.	

## 6 COMMUNITY COORDINATION

Local officials can promote compatibility between land development and highways. FDOT will send copies of this report, which includes the noise contours shown in **Figure 6-1** through **Figure 6-3**, to Charlotte County to assist them in permitting future noise-compatible land uses along Harborview Road.

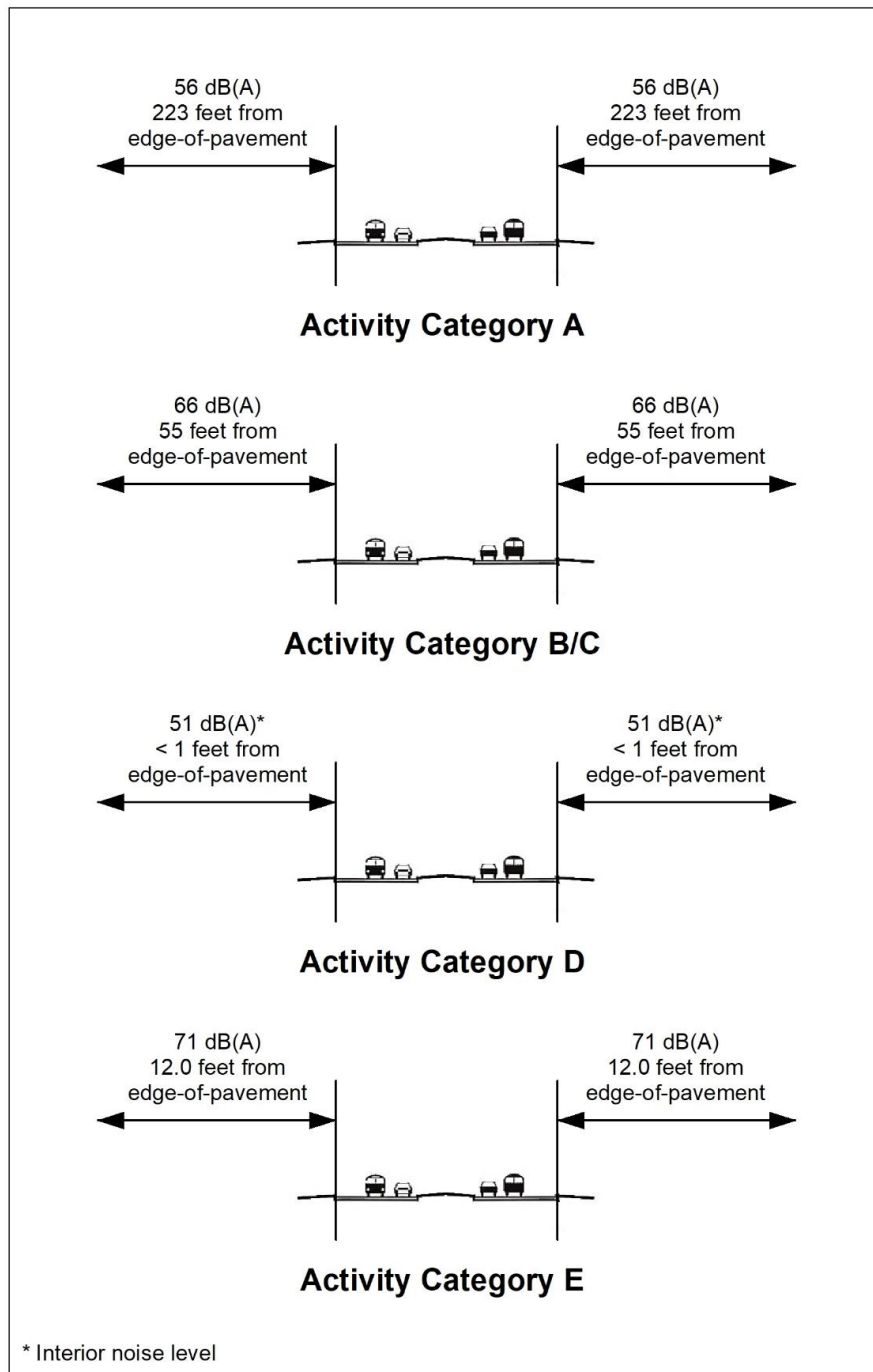


**Figure 6-1 Noise Contours (Melbourne Street to Oakview Drive)**



**Figure 6-2 Noise Contours (Oakview Drive to Mary Lu Mobile Home Park)**





**Figure 6-3 Noise Contours (Mary Lu Mobile Home Park to Charlotte MPO)**

## 7 REFERENCES

FDOT. Project Development and Environment Manual, Part 2, Chapter 18 – Highway Traffic Noise, July 2023.

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FDOT. Traffic Noise Modeling and Analysis Practitioners Handbook, December 2018.

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University of Central Florida, 2009. A Method to Determine Reasonableness and Feasibility of Noise Abatement at Special Use Locations. Roger L. Wayson and John M. MacDonald. July 22, 2009 Update.

<https://www.fdot.gov/environment/publications.shtm>

FHWA. Report FHWA-HEP-18-065, Noise Measurement Handbook: Final Report, June 2018.

<https://www.fhwa.dot.gov/environment/noise/measurement/fhwahep18065.pdf>

Title 23 CFR § 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise, Tuesday, July 13, 2010.

[http://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title23/23cfr772\\_main\\_02.tpl](http://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title23/23cfr772_main_02.tpl)

California Department of Transportation. Technical Noise Supplement to the Traffic Noise Analysis Protocol, September 2013.

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FHWA. Report Number FHWA-PD-96-009, FHWA Traffic Noise Model User's Guide (Version 2.5 Addendum). April 2004.

[http://www.fhwa.dot.gov/environment/noise/traffic\\_noise\\_model/tnm\\_v25/users\\_manual/index.cfm](http://www.fhwa.dot.gov/environment/noise/traffic_noise_model/tnm_v25/users_manual/index.cfm)

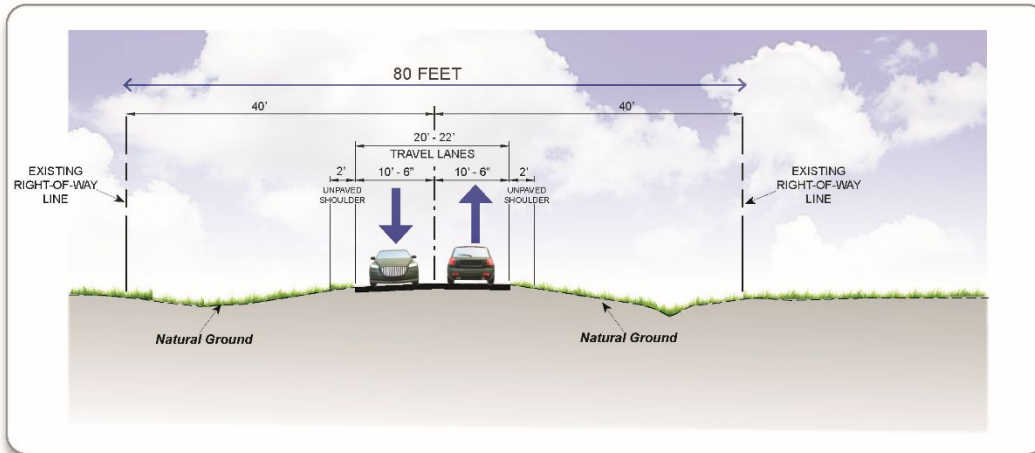
FDOT. Standard Plans for Road and Bridge Construction. July 2022.

<https://www.fdot.gov/design/standardplans/default.shtm>

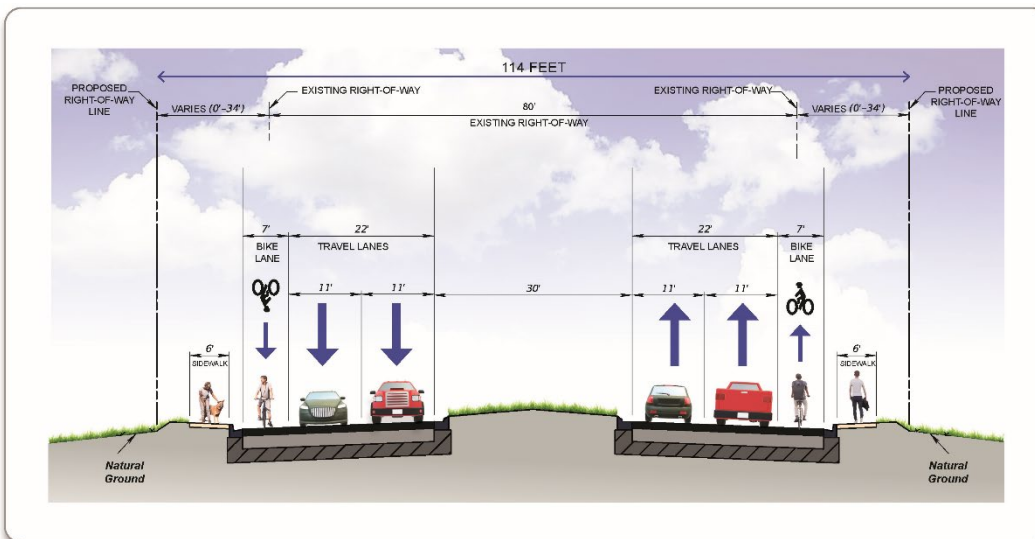
FHWA. Report Number FHWA-HEP-10-025, Highway Traffic Noise: Analysis and Abatement Guidance. December 2011.

[https://www.fhwa.dot.gov/environment/noise/regulations\\_and\\_guidance/analysis\\_and\\_abatement\\_guidance/revguidance.pdf](https://www.fhwa.dot.gov/environment/noise/regulations_and_guidance/analysis_and_abatement_guidance/revguidance.pdf)

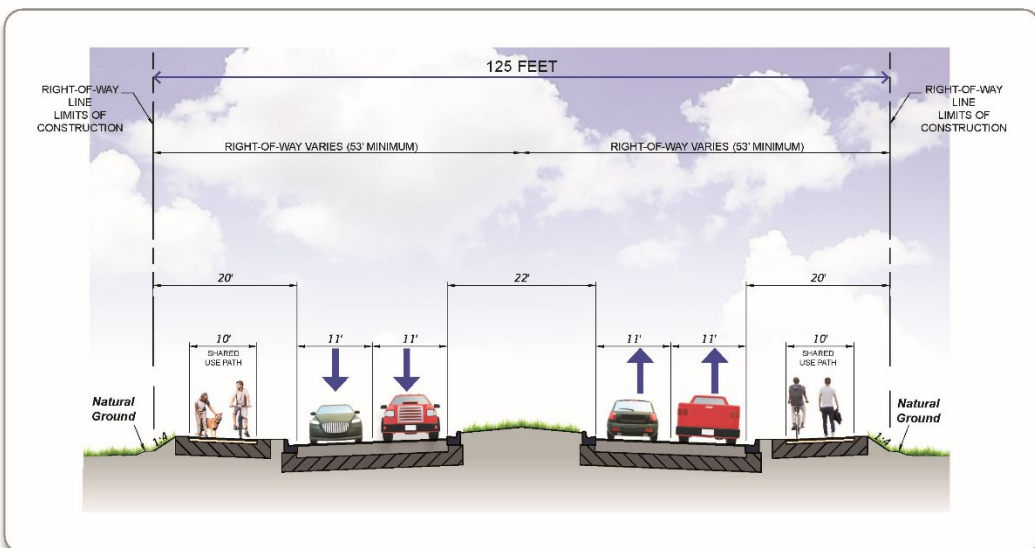
# Appendix A – Typical Sections



Existing Typical Section



2019 PD&E Typical Section



2023 Design Typical Section

## Appendix B - Traffic Data

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

Federal Aid Number(s): \_\_\_\_\_  
 FPID Number(s): 434965-1  
 State/Federal Route No.: \_\_\_\_\_  
 Road Name: Harborview Road  
 Project Description: Harborview Road - Melbourne Street to I-75 (Project Traffic Report)  
 Segment Description: Harborview Road - Melbourne Street to Oakview Drive  
 Section Number: 1560000  
 Mile Post To/From: 0.859 to 3.588

<b>Existing Facility:</b>		D =	<b>53.80%</b>	%
Year:	<b>2017</b>	T24 =	<b>6.70%</b>	% of 24 Hour Volume
LOS C Peak Hour Directional Volume:	<b>840</b>	Tpeak =	<b>6.00%</b>	% of Design Hour Volume
Demand Peak Hour Volume:	<b>378</b>	MT =	<b>4.50%</b>	% of Design Hour Volume
Posted Speed:	<b>45</b>	HT =	<b>1.00%</b>	% of Design Hour Volume
		B =	<b>0.50%</b>	% of Design Hour Volume
		MC =	<b>0.50%</b>	% of Design Hour Volume

<b>No Build Alternative (Design Year):</b>		D =	<b>53.80%</b>	%
Year:	<b>2045</b>	T24 =	<b>6.70%</b>	% of 24 Hour Volume
LOS C Peak Hour Directional Volume:	<b>871</b>	Tpeak =	<b>6.00%</b>	% of Design Hour Volume
Demand Peak Hour Volume:	<b>678</b>	MT =	<b>4.50%</b>	% of Design Hour Volume
Posted Speed:	<b>45</b>	HT =	<b>1.00%</b>	% of Design Hour Volume
		B =	<b>0.50%</b>	% of Design Hour Volume
		MC =	<b>0.50%</b>	% of Design Hour Volume

<b>Build Alternative (Design Year):</b>		D =	<b>53.80%</b>	%
Year:	<b>2045</b>	T24 =	<b>6.70%</b>	% of 24 Hour Volume
LOS C Peak Hour Directional Volume:	<b>2005</b>	Tpeak =	<b>6.00%</b>	% of Design Hour Volume
Demand Peak Hour Volume:	<b>920</b>	MT =	<b>4.50%</b>	% of Design Hour Volume
Posted Speed:	<b>45</b>	HT =	<b>1.00%</b>	% of Design Hour Volume
		B =	<b>0.50%</b>	% of Design Hour Volume
		MC =	<b>0.50%</b>	% of Design Hour Volume

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

Prepared By: Srinivas Kandala K. S. Kiran Date: 6/5/2017  
 Print Name Signature

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

FDOT Reviewer: Christopher L. Simpron [Signature] Date: 5/9/18  
 Print Name Signature

**FDOT TRAFFIC DATA FOR NOISE STUDIES - DETAILED OUTPUT**

Prepared By: VHB Date: 6/5/2017 Approved for Use By: Section Number: 1560000  
 Federal Aid Number(s): 0 Mile Post To/From: 0.859 to 3.588  
 FPID Number(s): 434955-1  
 State/Federal Route No.: 0

Road Name: Harborview Road  
 Project Description: Harborview Road - Melbourne Street to I-75 (Project Traffic Report)  
 Segment Description: Harborview Road - Melbourne Street to Oakview Drive

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: 2017	Year: 2045	Year: 2045	Year: 2045	Year: 2045	Year: 2045	Year: 2045	Year: 2045	
See Columns to Right > for Which Volumes To Use (Demand or LOS C)			Posted Speed: 45	Posted Speed: 45	Posted Speed: 45	Posted Speed: 45	Posted Speed: 45	Posted Speed: 45	Posted Speed: 45	Posted Speed: 45	Posted Speed: 45
			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 Travel Lanes: 2	Number of Travel Lanes: 2	Number of Travel Lanes: 2
			Number of Vehicles			Number of Vehicles			Number of Vehicles		
			Use Demand Volumes			Use Demand Volumes			Use Demand Volumes		
Demand Peak Hour	Peak Direction	Autos	353	378	324	678	582	790	860	860	860
		Med Trucks	17	31	31	31	31	31	31	31	31
		Heavy Trucks	4	7	7	7	7	7	7	7	7
		Buses	2	3	3	3	3	3	3	3	3
		Motorcycles	2	3	3	3	3	3	3	3	3
	Total	378	378	324	678	582	790	860	860	860	
	Off-Peak Direction	Autos	302	302	302	544	544	738	738	738	738
		Med Trucks	15	26	26	26	26	26	26	26	26
		Heavy Trucks	3	6	6	6	6	6	6	6	6
		Buses	2	3	3	3	3	3	3	3	3
Motorcycles		2	3	3	3	3	3	3	3	3	
Total	324	324	302	544	544	738	738	738	738		
LOS C	Peak Direction	Autos	786	840	871	1875	1875	2005	2005	2005	2005
		Med Trucks	38	4	4	39	39	90	90	90	90
		Heavy Trucks	8	4	4	9	9	20	20	20	20
		Buses	4	4	4	4	4	10	10	10	10
		Motorcycles	4	4	4	4	4	10	10	10	10
	Total	840	840	871	1875	1875	2005	2005	2005	2005	
	Off-Peak Direction	Autos	786	786	786	1875	1875	1875	1875	1875	1875
		Med Trucks	38	38	38	38	38	90	90	90	90
		Heavy Trucks	8	8	8	8	8	20	20	20	20
		Buses	4	4	4	4	4	10	10	10	10
Motorcycles		4	4	4	4	4	10	10	10	10	
Total	840	840	840	1875	1875	2005	2005	2005	2005		

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

Federal Aid Number(s): \_\_\_\_\_  
 FPID Number(s): 434965-1  
 State/Federal Route No.: \_\_\_\_\_  
 Road Name: Harborview Road  
 Project Description: Harborview Road - Melbourne Street to I-75 (Project Traffic Report)  
 Segment Description: Harborview Road - Oakview Drive to Rowland Drive  
 Section Number: 1560000  
 Mile Post To/From: 0.859 to 3.588

<b>Existing Facility:</b>		D =	<b>53.80%</b>	%
Year: <u>2017</u>		T24 =	<b>6.70%</b>	% of 24 Hour Volume
LOS C Peak Hour Directional Volume: <u>840</u>		Tpeak =	<b>6.00%</b>	% of Design Hour Volume
Demand Peak Hour Volume: <u>402</u>		MT =	<b>4.50%</b>	% of Design Hour Volume
Posted Speed: <u>45</u>		HT =	<b>1.00%</b>	% of Design Hour Volume
		B =	<b>0.50%</b>	% of Design Hour Volume
		MC =	<b>0.50%</b>	% of Design Hour Volume

<b>No Build Alternative (Design Year):</b>		D =	<b>53.80%</b>	%
Year: <u>2045</u>		T24 =	<b>6.70%</b>	% of 24 Hour Volume
LOS C Peak Hour Directional Volume: <u>871</u>		Tpeak =	<b>6.00%</b>	% of Design Hour Volume
Demand Peak Hour Volume: <u>678</u>		MT =	<b>4.50%</b>	% of Design Hour Volume
Posted Speed: <u>45</u>		HT =	<b>1.00%</b>	% of Design Hour Volume
		B =	<b>0.50%</b>	% of Design Hour Volume
		MC =	<b>0.50%</b>	% of Design Hour Volume

<b>Build Alternative (Design Year):</b>		D =	<b>53.80%</b>	%
Year: <u>2045</u>		T24 =	<b>6.70%</b>	% of 24 Hour Volume
LOS C Peak Hour Directional Volume: <u>2005</u>		Tpeak =	<b>6.00%</b>	% of Design Hour Volume
Demand Peak Hour Volume: <u>1017</u>		MT =	<b>4.50%</b>	% of Design Hour Volume
Posted Speed: <u>45</u>		HT =	<b>1.00%</b>	% of Design Hour Volume
		B =	<b>0.50%</b>	% of Design Hour Volume
		MC =	<b>0.50%</b>	% of Design Hour Volume

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

Prepared By: Srinivas Kandala K. S. Kiran Date: 6/5/2017  
 Print Name Signature

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

FDOT Reviewer: Christopher L. Simpron [Signature] Date: 5/9/18  
 Print Name Signature



**FDOT TRAFFIC DATA FOR NOISE STUDIES - DETAILED OUTPUT**

Prepared By: VHB Date: 6/5/2017 Approved for Use By: Section Number: 1560000  
 Federal Aid Number(s): 0 Mile Post To/From: 0.859 to 3.588  
 FPD Number(s): 434965-1  
 State/Federal Route No.: 0

Road Name: Harborview Road  
 Project Description: Harborview Road - Melbourne Street to I-75 (Project Traffic Report)  
 Segment Description: Harborview Road - Oakview Drive to Rowland Drive

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: 2017 Posted Speed: 45 Number of Travel Lanes: 2	Number of Vehicles Use Demand Volumes	Year: 2045 Posted Speed: 45 Number of Travel Lanes: 2	Number of Vehicles Use Demand Volumes	Year: 2045 Posted Speed: 45 Number of Travel Lanes: 2	Number of Vehicles Use Demand Volumes
Demand Peak Hour	Peak Direction	Autos	376	634		951		2045
		Med Trucks	18	31		46		45
		Heavy Trucks	4	7		10		4
		Buses	2	3		5		5
		Motorcycles	2	3		5		5
	Total	402	678		1017		1017	
	Off-Peak Direction	Autos	322	544		817		2045
		Med Trucks	16	26		39		45
		Heavy Trucks	3	6		9		4
		Buses	2	3		4		4
Motorcycles		2	3		4		4	
Total	345	582		873		873		
LOS C	Peak Direction	Autos	786	815		1875		2005
		Med Trucks	38	39		90		20
		Heavy Trucks	8	9		20		10
		Buses	4	4		10		10
		Motorcycles	4	4		10		10
	Total	840	871		2005		2005	
	Off-Peak Direction	Autos	786	786		1875		2005
		Med Trucks	38	38		90		20
		Heavy Trucks	8	8		20		10
		Buses	4	4		10		10
Motorcycles		4	4		10		10	
Total	840	840		2005		2005		

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

Federal Aid Number(s): \_\_\_\_\_  
 FPID Number(s): 434965-1  
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 Segment Description: Harborview Road - Rowland Drive to Mary Lu Mhp  
 Section Number: 1560000  
 Mile Post To/From: 0.859 to 3.588

<b>Existing Facility:</b>		D =	<b>53.80%</b>	%
		T24 =	<b>6.70%</b>	% of 24 Hour Volume
<b>Year:</b>	<b>2017</b>	Tpeak =	<b>6.00%</b>	% of Design Hour Volume
		MT =	<b>4.50%</b>	% of Design Hour Volume
<b>LOS C Peak Hour Directional Volume:</b>	<b>840</b>	HT =	<b>1.00%</b>	% of Design Hour Volume
<b>Demand Peak Hour Volume:</b>	<b>407</b>	B =	<b>0.50%</b>	% of Design Hour Volume
<b>Posted Speed:</b>	<b>45</b>	MC =	<b>0.50%</b>	% of Design Hour Volume

<b>No Build Alternative (Design Year):</b>		D =	<b>53.80%</b>	%
		T24 =	<b>6.70%</b>	% of 24 Hour Volume
<b>Year:</b>	<b>2045</b>	Tpeak =	<b>6.00%</b>	% of Design Hour Volume
		MT =	<b>4.50%</b>	% of Design Hour Volume
<b>LOS C Peak Hour Directional Volume:</b>	<b>871</b>	HT =	<b>1.00%</b>	% of Design Hour Volume
<b>Demand Peak Hour Volume:</b>	<b>726</b>	B =	<b>0.50%</b>	% of Design Hour Volume
<b>Posted Speed:</b>	<b>45</b>	MC =	<b>0.50%</b>	% of Design Hour Volume

<b>Build Alternative (Design Year):</b>		D =	<b>53.80%</b>	%
		T24 =	<b>6.70%</b>	% of 24 Hour Volume
<b>Year:</b>	<b>2045</b>	Tpeak =	<b>6.00%</b>	% of Design Hour Volume
		MT =	<b>4.50%</b>	% of Design Hour Volume
<b>LOS C Peak Hour Directional Volume:</b>	<b>2005</b>	HT =	<b>1.00%</b>	% of Design Hour Volume
<b>Demand Peak Hour Volume:</b>	<b>1017</b>	B =	<b>0.50%</b>	% of Design Hour Volume
<b>Posted Speed:</b>	<b>45</b>	MC =	<b>0.50%</b>	% of Design Hour Volume

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

Prepared By: Srinivas Kandala *V. S. Kandala* Date: 6/5/2017  
 Print Name Signature

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

FDOT Reviewer: Christopher L. Simpron *C. L. Simpron* Date: 5/9/18  
 Print Name Signature

**FDOT TRAFFIC DATA FOR NOISE STUDIES - DETAILED OUTPUT**

Prepared By: VHB  
 Federal Aid Number(s): 0  
 Date: 6/5/2017  
 Approved for Use By: 1560000  
 Section Number: 1560000  
 FPID Number(s): 434965-1  
 Mile Post To/From: 0.859 to 3.588  
 State/Federal Route No.: 0  
 Road Name: Harborview Road  
 Project Description: Harborview Road - Melbourne Street to I-75 (Project Traffic Report)  
 Segment Description: Harborview Road - Rowland Drive to Mary Lu Mhp

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: 2017	Year: 2045	Year: 2045	Year: 2045	Year: 2045	Year: 2045	Year: 2045	Year: 2045	Year: 2045
See Columns to Right > for Which Volumes To Use (Demand or LOS C)			Posted Speed: 45	Posted Speed: 45	Posted Speed: 45	Posted Speed: 45	Posted Speed: 45	Posted Speed: 45	Posted Speed: 45	Posted Speed: 45	Posted Speed: 45
			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 Travel Lanes: 2	Number of Travel Lanes: 2	Number of Travel Lanes: 2
			Number of Vehicles			Number of Vehicles			Number of Vehicles		
			Use Demand Volumes			Use Demand Volumes			Use Demand Volumes		
Demand Peak Hour	Peak Direction	Autos	381			678			951		
		Med Trucks	18			33			46		
		Heavy Trucks	4			7			10		
		Buses	2			4			5		
		Motorcycles	2			4			5		
		<b>Total</b>	<b>407</b>			<b>726</b>			<b>1017</b>		
Demand Peak Hour	Off-Peak Direction	Autos	326			584			817		
		Med Trucks	16			28			39		
		Heavy Trucks	3			6			9		
		Buses	2			3			4		
		Motorcycles	2			3			4		
		<b>Total</b>	<b>349</b>			<b>624</b>			<b>873</b>		
LOS C	Peak Direction	Autos	786			815			1875		
		Med Trucks	38			39			90		
		Heavy Trucks	8			9			20		
		Buses	4			4			10		
		Motorcycles	4			4			10		
		<b>Total</b>	<b>840</b>			<b>871</b>			<b>2005</b>		
LOS C	Off-Peak Direction	Autos	786			786			1875		
		Med Trucks	38			38			90		
		Heavy Trucks	8			8			20		
		Buses	4			4			10		
		Motorcycles	4			4			10		
		<b>Total</b>	<b>840</b>			<b>840</b>			<b>2005</b>		

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

Federal Aid Number(s): \_\_\_\_\_  
 FPID Number(s): 434965-1  
 State/Federal Route No.: \_\_\_\_\_  
 Road Name: Harborview Road  
 Project Description: Harborview Road - Melbourne Street to I-75 (Project Traffic Report)  
 Segment Description: Harborview Road - Mary Lu Mhp to Charlotte MPO Access Road  
 Section Number: 1560000  
 Mile Post To/From: 0.859 to 3.588

Existing Facility:		D =	<b>53.80%</b>	%
Year:	<b>2017</b>	T24 =	<b>6.70%</b>	% of 24 Hour Volume
LOS C Peak Hour Directional Volume:	<b>840</b>	Tpeak =	<b>6.00%</b>	% of Design Hour Volume
Demand Peak Hour Volume:	<b>397</b>	MT =	<b>4.50%</b>	% of Design Hour Volume
Posted Speed:	<b>45</b>	HT =	<b>1.00%</b>	% of Design Hour Volume
		B =	<b>0.50%</b>	% of Design Hour Volume
		MC =	<b>0.50%</b>	% of Design Hour Volume

No Build Alternative (Design Year):		D =	<b>53.80%</b>	%
Year:	<b>2045</b>	T24 =	<b>6.70%</b>	% of 24 Hour Volume
LOS C Peak Hour Directional Volume:	<b>871</b>	Tpeak =	<b>6.00%</b>	% of Design Hour Volume
Demand Peak Hour Volume:	<b>678</b>	MT =	<b>4.50%</b>	% of Design Hour Volume
Posted Speed:	<b>45</b>	HT =	<b>1.00%</b>	% of Design Hour Volume
		B =	<b>0.50%</b>	% of Design Hour Volume
		MC =	<b>0.50%</b>	% of Design Hour Volume

Build Alternative (Design Year):		D =	<b>53.80%</b>	%
Year:	<b>2045</b>	T24 =	<b>6.70%</b>	% of 24 Hour Volume
LOS C Peak Hour Directional Volume:	<b>2005</b>	Tpeak =	<b>6.00%</b>	% of Design Hour Volume
Demand Peak Hour Volume:	<b>968</b>	MT =	<b>4.50%</b>	% of Design Hour Volume
Posted Speed:	<b>45</b>	HT =	<b>1.00%</b>	% of Design Hour Volume
		B =	<b>0.50%</b>	% of Design Hour Volume
		MC =	<b>0.50%</b>	% of Design Hour Volume

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

Prepared By: Srinivas Kandala V.S. Kiran Date: 6/5/2017  
 Print Name Signature

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

FDOT Reviewer: Christopher L. Simpron [Signature] Date: 5/9/18  
 Print Name Signature

**FDOT TRAFFIC DATA FOR NOISE STUDIES - DETAILED OUTPUT**

Prepared By: VHB  
 Federal Aid Number(s): 0  
 Date: 6/5/2017  
 Approved for Use By: Section Number: 1550000  
 FPID Number(s): 434965-1  
 Mile Post To/From: 0.859 to 3.588  
 State/Federal Route No.: 0

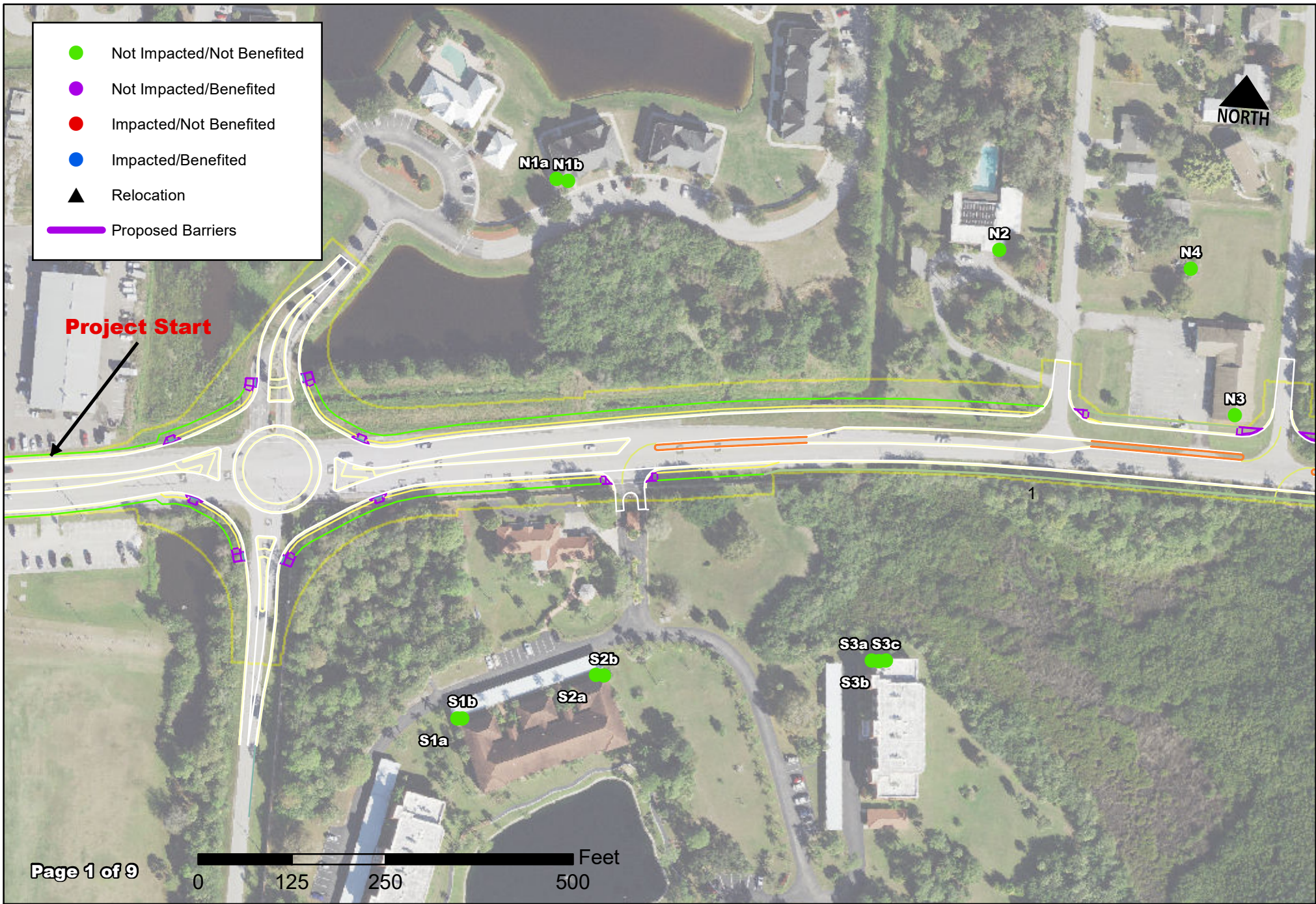
Road Name: Harborview Road  
 Project Description: Harborview Road - Melbourne Street to I-75 (Project Traffic Report)  
 Segment Description: Harborview Road - Mary Lu Mhp to Charlotte MPO Access Road

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

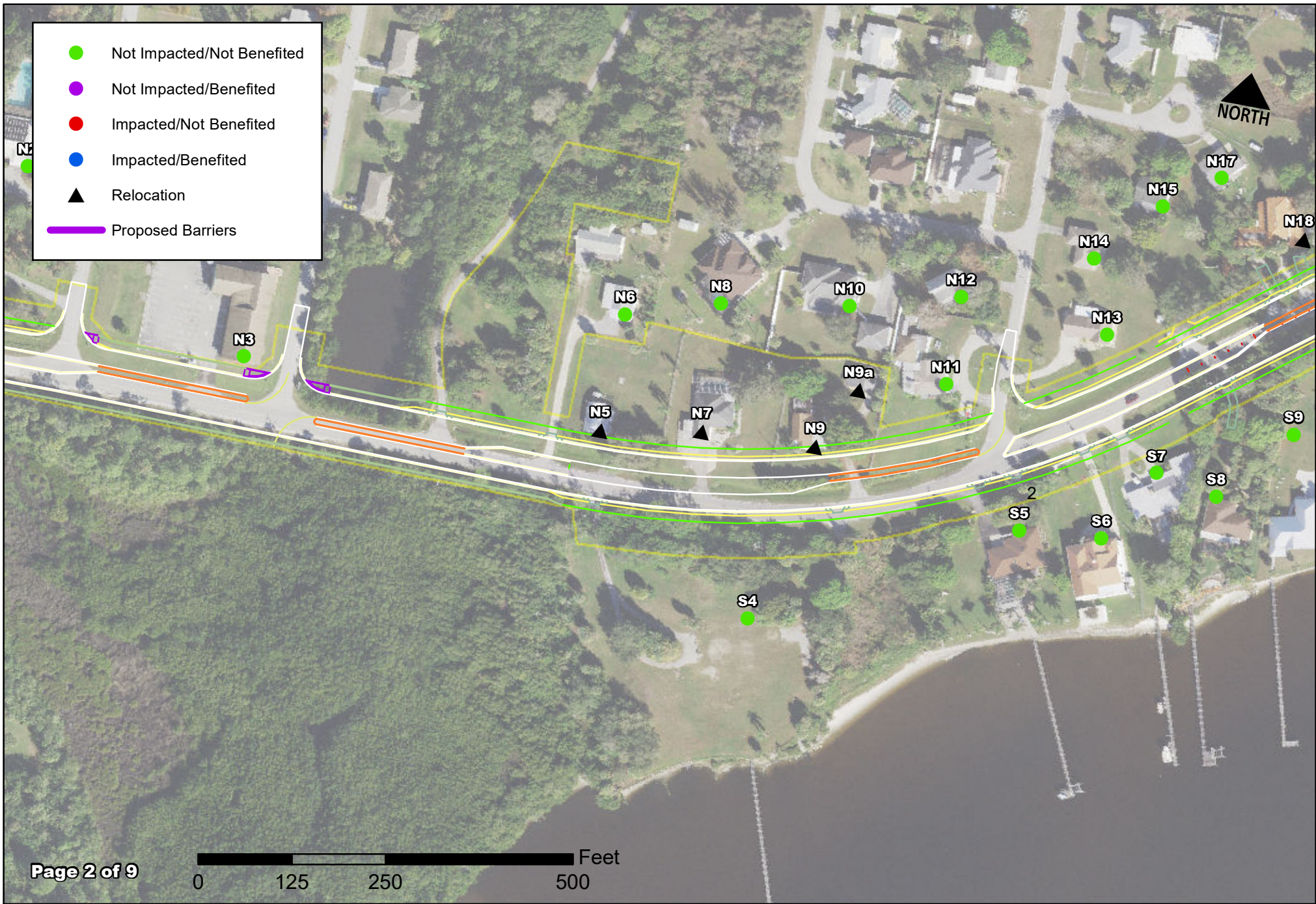
Demand Peak Hour/LOS C	Peak or Off-Peak Direction	Vehicle Type	Existing		No Build (Design Year)		Build (Design Year)	
			Year: 2017 Posted Speed: 45 Number of Travel Lanes: 2	Number of Vehicles Use Demand Volumes	Year: 2045 Posted Speed: 45 Number of Travel Lanes: 2	Number of Vehicles Use Demand Volumes	Year: 2045 Posted Speed: 45 Number of Travel Lanes: 4	Number of Vehicles Use Demand Volumes
Demand Peak Hour	Peak Direction	Autos	371	634		904		
		Med Trucks	18	31		44		
		Heavy Trucks	4	7		10		
		Buses	2	3		5		
		Motorcycles	2	3		5		
	Total	397	678		968			
	Off-Peak Direction	Autos	319	544		779		
		Med Trucks	15	26		37		
		Heavy Trucks	3	6		8		
		Buses	2	3		4		
Motorcycles		2	3		4			
Total	341	582		832				
LOS C	Peak Direction	Autos	786	815		1875		
		Med Trucks	38	39		90		
		Heavy Trucks	8	9		20		
		Buses	4	4		10		
		Motorcycles	4	4		10		
	Total	840	871		2005			
	Off-Peak Direction	Autos	786	786		1875		
		Med Trucks	38	38		90		
		Heavy Trucks	8	8		20		
		Buses	4	4		10		
Motorcycles		4	4		10			
Total	840	840		2005				

## Appendix C - Project Aerials





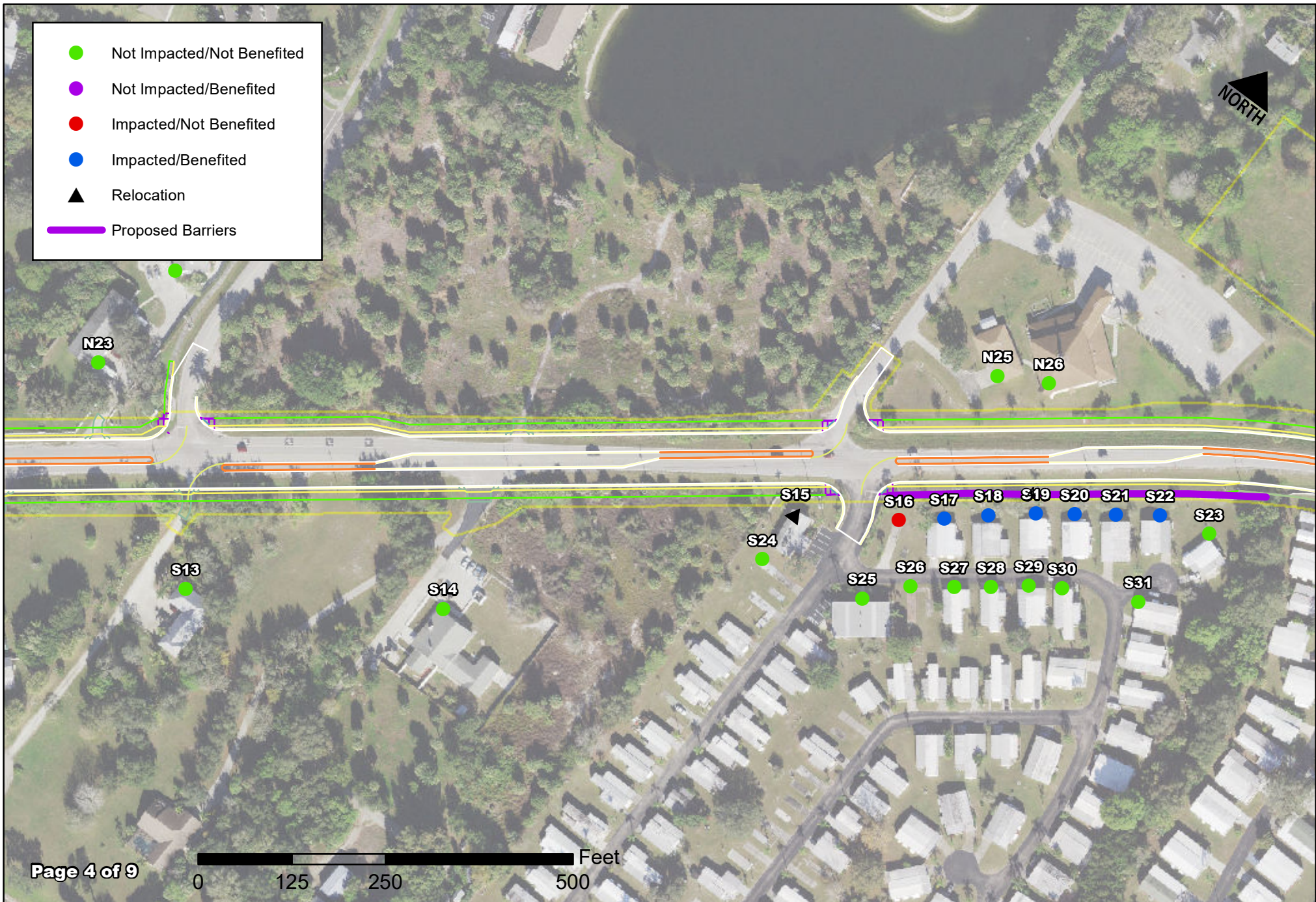




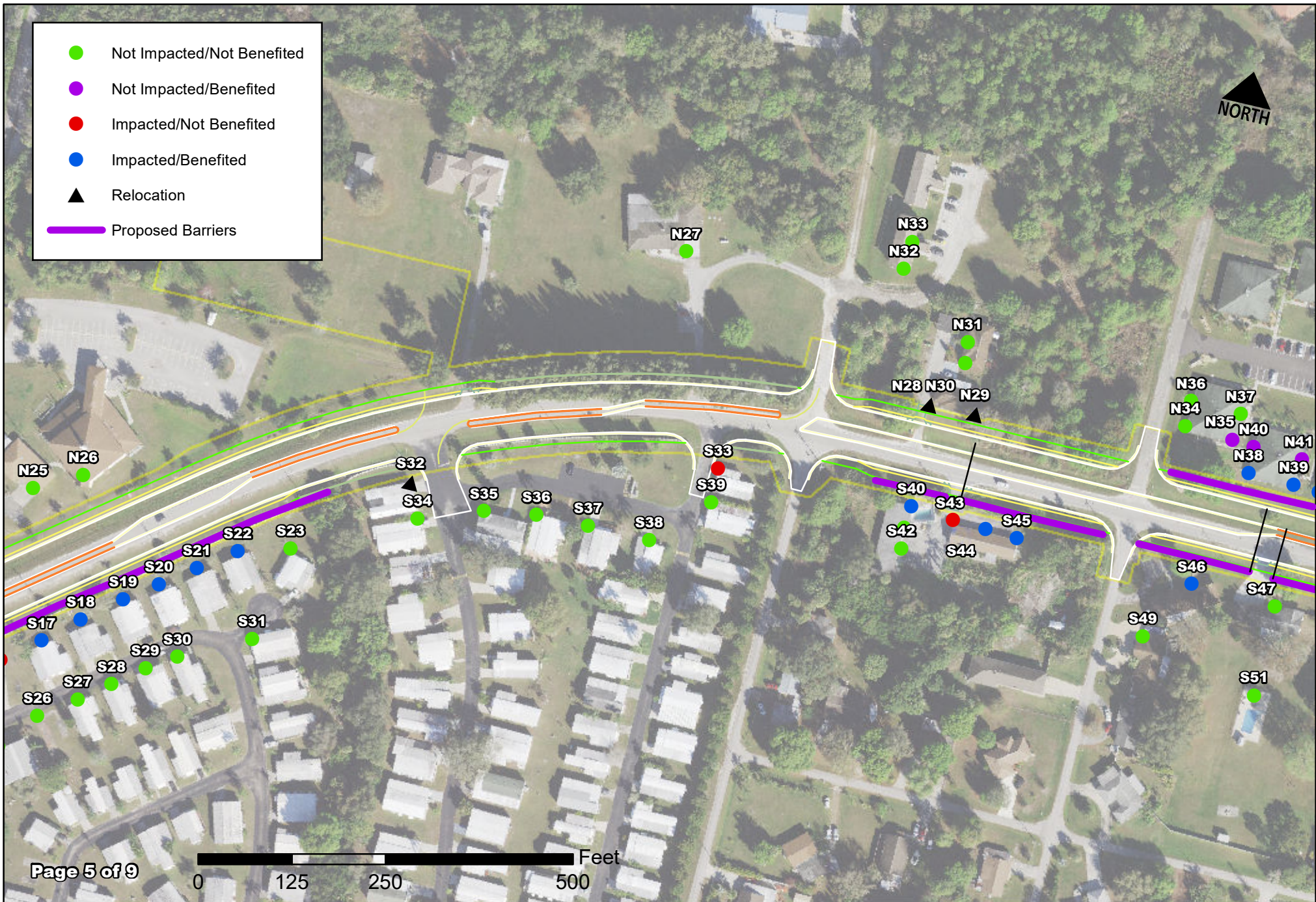






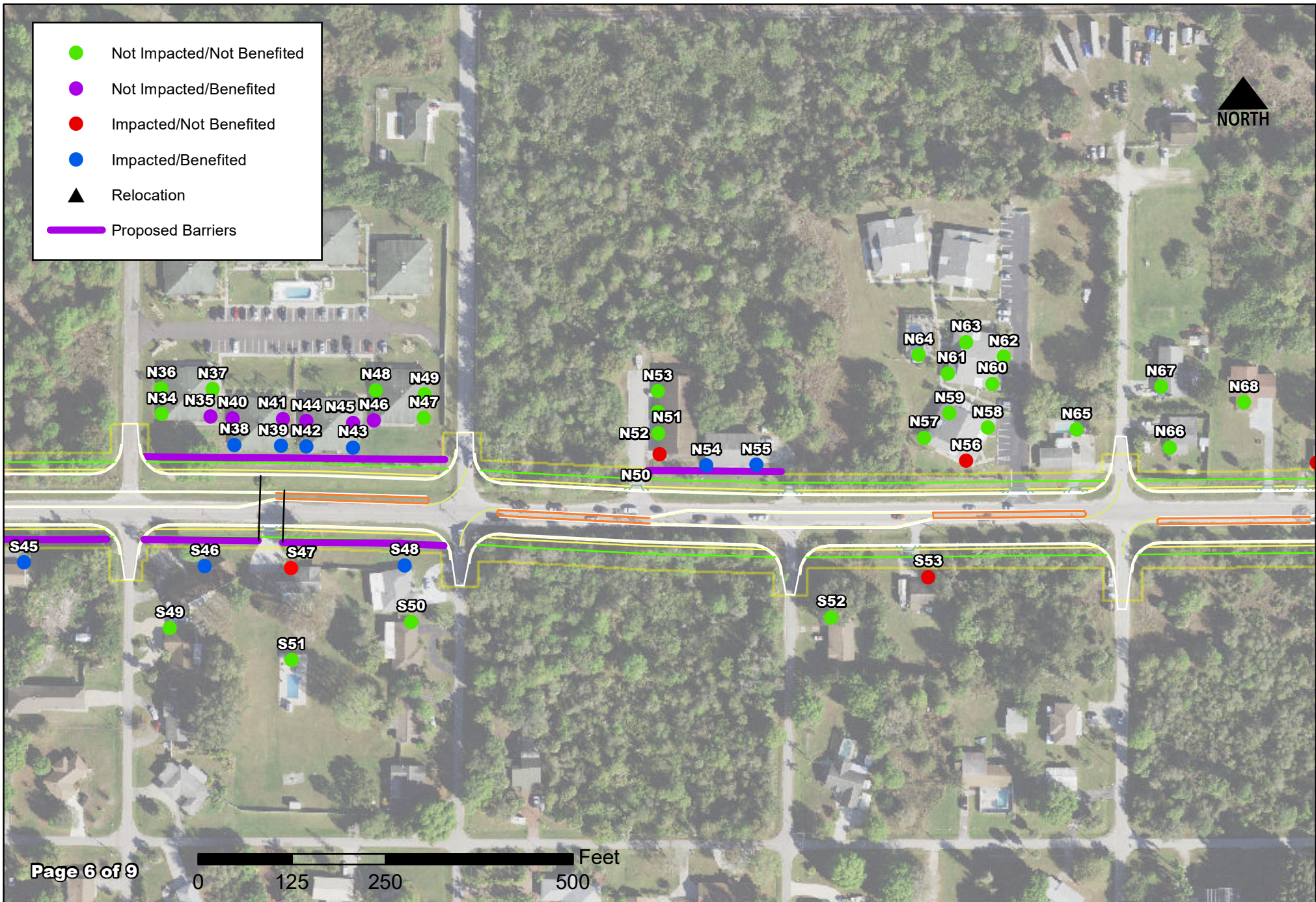






Noise Sensitive Receptors and Proposed Barrier Locations  
 Harborview Road Design  
 FPID # 434965-2





Noise Sensitive Receptors and Proposed Barrier Locations  
 Harborview Road Design  
 FPID # 434965-2



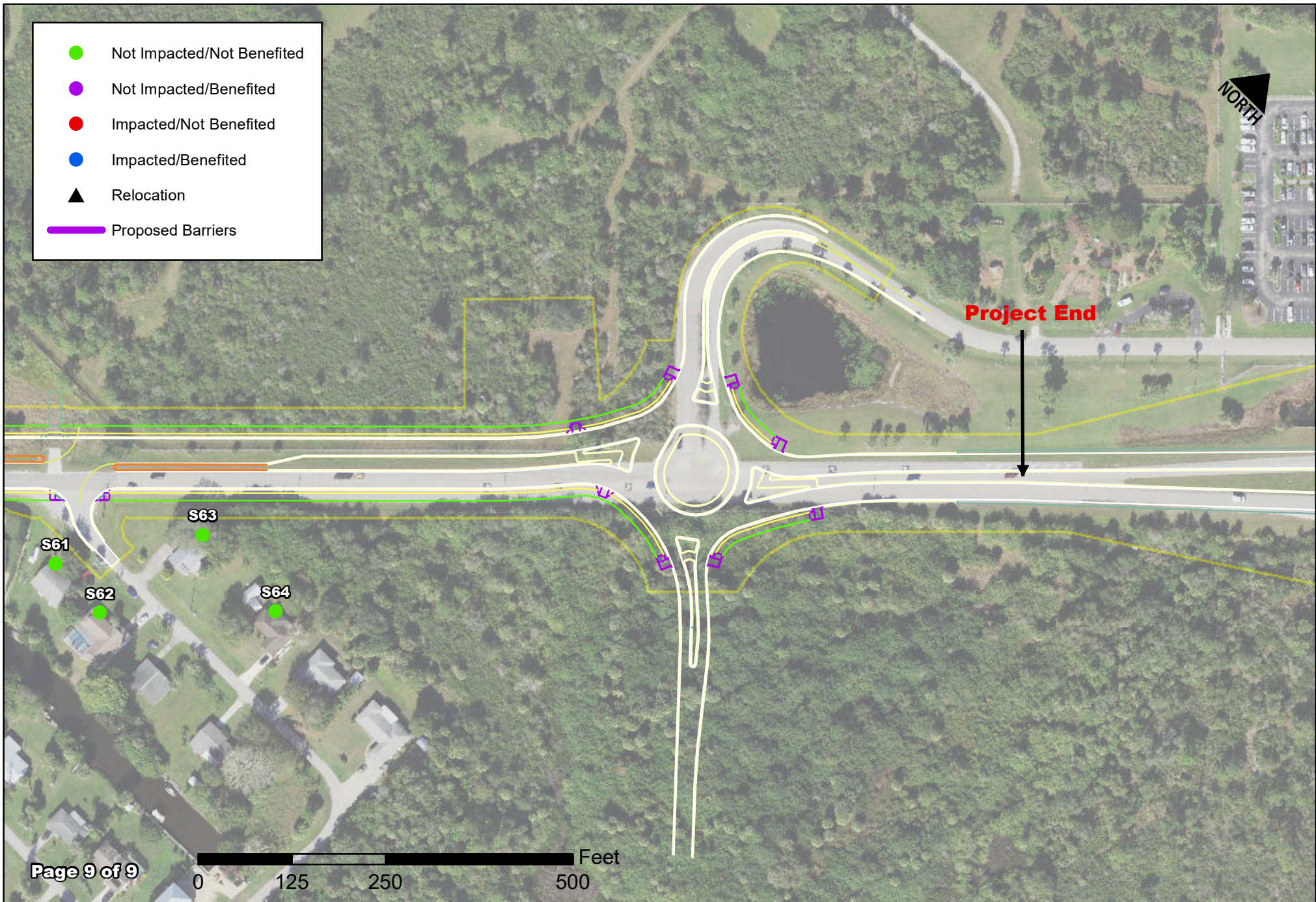




- Not Impacted/Not Benefited
- Not Impacted/Benefited
- Impacted/Not Benefited
- Impacted/Benefited
- ▲ Relocation
- Proposed Barriers







- Not Impacted/Not Benefited
- Not Impacted/Benefited
- Impacted/Not Benefited
- Impacted/Benefited
- ▲ Relocation
- Proposed Barriers



Noise Sensitive Receptors and Proposed Barrier Locations  
 Harborview Road Design  
 FPID # 434965-2

## Appendix D - Predicted Noise Levels



Receptor ID	# Dwelling Units	NAC Category	NAC	Existing (2017) Noise Level (dB(A))	No Build (2045) Noise Level (dB(A))	Build (2045) Noise Level (dB(A))	Increase (dB(A))	Impact
N1a	1	B	66	50.6	53.2	53.2	2.6	No
N1b	1	B	66	53.9	56.4	55.6	1.7	No
N2	1	B	66	52.3	54.9	56.8	4.5	No
N3	0	D	51	38.2	40.7	44.7	6.5	No
N4	1	B	66	51.6	54.1	57.2	5.6	No
N5	1	B	66	63.5	66.0	N/A*	N/A	N/A
N6	1	B	66	52.4	54.9	58.4	6	No
N7	1	B	66	60.4	62.9	N/A*	N/A	N/A
N8	1	B	66	51.3	53.8	57.5	6.2	No
N9	1	B	66	61.3	63.8	N/A*	N/A	N/A
N9a	1	B	66	56.4	59	N/A*	N/A	N/A
N10	1	B	66	51.7	54.2	58.2	6.5	No
N11	1	B	66	58.0	60.5	64.2	6.2	No
N12	1	B	66	53.0	55.5	58.9	5.9	No
N13	1	B	66	61.2	63.8	65.4	4.2	No
N14	1	B	66	54.4	56.9	59.4	5.0	No
N15	1	B	66	53.8	56.3	58.6	4.8	No
N17	1	B	66	54.1	56.6	58.6	4.5	No
N18	1	B	66	62.5	65.0	N/A*	N/A	N/A
N19	1	B	66	62.1	64.6	64.8	2.7	No
N20	1	B	66	64.8	67.4	68.2	3.4	Yes
N21	1	B	66	54.1	56.6	58.1	4	No
N22	1	B	66	60.6	63.1	63.4	2.8	No
N23	1	B	66	59.1	61.5	61.4	2.3	No
N24	1	B	66	53.8	56.2	56.8	3	No
N25	1	B	66	59.7	62.2	64.4	4.7	No
N26	0	D	51	35.6	38.1	40.7	5.1	No
N27	1	B	66	53.4	55.8	59.6	6.2	No
N28	1	B	66	63.3	65.7	69.7	6.4	Yes
N29	1	B	66	62.9	65.3	69.4	6.5	Yes
N30	1	B	66	57.2	59.6	62.4	5.2	No
N31	1	B	66	55.6	57.9	61.1	5.5	No
N32	1	B	66	52.2	54.6	58.4	6.2	No
N33	1	B	66	50.9	53.4	57.4	6.5	No
N34	1	B	66	57.7	60.1	63.0	5.3	No
N35	1	B	66	57.9	60.2	62.5	4.6	No
N36	1	B	66	55.5	57.9	60.7	5.2	No
N37	1	B	66	55.5	57.9	59.7	4.2	No
N38	1	B	66	61.3	63.7	67.9	6.6	Yes
N39	1	B	66	61.3	63.7	67.7	6.4	Yes
N40	1	B	66	58.1	60.4	61.4	3.3	No
N41	1	B	66	58.0	60.4	59.4	1.4	No
N42	1	B	66	61.5	63.8	68.1	6.6	Yes

Receptor ID	# Dwelling Units	NAC Category	NAC	Existing (2017) Noise Level (dB(A))	No Build (2045) Noise Level (dB(A))	Build (2045) Noise Level (dB(A))	Increase (dB(A))	Impact
N43	1	B	66	61.5	63.8	68.2	6.7	Yes
N44	1	B	66	58.2	60.6	59.7	1.5	No
N45	1	B	66	58.4	60.7	61.5	3.1	No
N46	1	B	66	58.1	60.4	62.6	4.5	No
N47	1	B	66	57.7	60.1	62.8	5.1	No
N48	1	B	66	55.4	57.7	59.3	3.9	No
N49	1	B	66	55.7	58.0	60.4	4.7	No
N50	1	B	66	62.3	64.6	66.4	4.1	Yes
N51	1	B	66	58.5	60.9	62.6	4.1	No
N52	1	B	66	55.8	58.2	60.2	4.4	No
N53	1	B	66	53.8	56.2	58.6	4.8	No
N54	1	B	66	64.5	66.8	68.4	3.9	Yes
N55	1	B	66	64.4	66.8	68.2	3.8	Yes
N56	1	B	66	63.8	66.1	68.0	4.2	Yes
N57	1	B	66	60.1	62.4	64.2	4.1	No
N58	1	B	66	58.9	61.2	62.8	3.9	No
N59	1	B	66	57.3	59.6	61.5	4.2	No
N60	1	B	66	54.8	57.2	59.8	5.0	No
N61	1	B	66	54.1	56.4	59.2	5.1	No
N62	1	B	66	53.1	55.4	58.4	5.3	No
N63	1	B	66	52.2	54.5	57.6	5.4	No
N64	1	B	66	52.9	55.2	58.2	5.3	No
N65	0	C	66	59.1	61.5	62.7	3.6	No
N66	1	B	66	61.6	64.0	65.3	3.7	No
N67	1	B	66	55.2	57.5	59.9	4.7	No
N68	1	B	66	56.5	58.8	60.7	4.2	No
N69	1	B	66	64.5	66.9	68.2	3.7	Yes
N70	0	D	51	25.9	28.3	31.7	5.8	No
N71	0	D	51	25.6	28.0	31.8	6.2	No
S1a	1	B	66	51.8	54.3	53.0	1.2	No
S1b	1	B	66	54.6	57.1	55.4	0.8	No
S2a	1	B	66	53.1	55.6	55.2	2.1	No
S2b	1	B	66	55.6	58.1	57.5	1.9	No
S3a	1	B	66	52.3	54.8	55.7	3.4	No
S3b	1	B	66	55.6	58.1	58.4	2.8	No
S3c	1	B	66	57.0	59.5	60.1	3.1	No
S4	1	B	66	56.7	59.2	61.5	4.8	No
S5	1	B	66	60.6	63.1	63.2	2.6	No
S6	1	B	66	56.6	59.1	60.3	3.7	No
S7	1	B	66	59.3	61.8	63.8	4.5	No
S8	1	B	66	55.4	57.9	60.2	4.8	No
S9	1	B	66	57.2	59.7	61.6	4.4	No
S10	1	B	66	55.9	58.4	60.0	4.1	No

Receptor ID	# Dwelling Units	NAC Category	NAC	Existing (2017) Noise Level (dB(A))	No Build (2045) Noise Level (dB(A))	Build (2045) Noise Level (dB(A))	Increase (dB(A))	Impact
S11	1	B	66	52.0	54.5	57.1	5.1	No
S12	1	B	66	51.3	53.8	56.7	5.4	No
S13	1	B	66	56.5	58.9	60.4	3.9	No
S14	1	B	66	54.9	57.2	59.3	4.4	No
S15	0	N/A*	N/A*	63.3	65.7	N/A*	N/A	N/A
S16	1	B	66	61.9	64.4	66.5	4.6	Yes
S17	1	B	66	61.7	64.2	66.7	5	Yes
S18	1	B	66	61.9	64.5	67.4	5.5	Yes
S19	1	B	66	62.2	64.8	67.7	5.5	Yes
S20	1	B	66	61.9	64.4	67.4	5.5	Yes
S21	1	B	66	61.6	64.1	67.3	5.7	Yes
S22	1	B	66	61.5	64.0	67.1	5.6	Yes
S23	1	B	66	59.1	61.6	64.4	5.3	No
S24	1	B	66	58.9	61.3	61.8	2.9	No
S25	1	B	66	55.0	57.5	59.6	4.6	No
S26	1	B	66	55.7	58.2	60.2	4.5	No
S27	1	B	66	55.3	57.8	60.1	4.8	No
S28	1	B	66	55.3	57.8	60.1	4.8	No
S29	1	B	66	55.3	57.8	60.2	4.9	No
S30	1	B	66	55.0	57.5	60.1	5.1	No
S31	1	B	66	54.2	56.7	59.6	5.4	No
S32	1	B	66	63.0	65.6	N/A*	N/A	N/A
S33	1	B	66	62.8	65.2	67.7	4.9	Yes
S34	1	B	66	58.3	60.8	63.9	5.6	No
S35	1	B	66	57.7	60.2	63.7	6	No
S36	1	B	66	56.7	59.2	63.0	6.3	No
S37	1	B	66	55.6	58.1	62.0	6.4	No
S38	1	B	66	54.7	57.2	60.9	6.2	No
S39	1	B	66	58.2	60.7	63.8	5.6	No
S40	1	B	66	63.8	66.1	67.8	4	Yes
S41	1	B	66	60.1	62.5	64.3	4.2	No
S42	1	B	66	57.7	60.1	62.2	4.5	No
S43	1	B	66	63.2	65.5	66.9	3.7	Yes
S44	1	B	66	63.1	65.4	66.7	3.6	Yes
S45	1	B	66	62.8	65.2	66.4	3.6	Yes
S46	1	B	66	62.5	64.8	67.3	4.8	Yes
S47	1	B	66	62.2	64.6	66.9	4.7	Yes
S48	1	B	66	63.0	65.3	67.2	4.2	Yes
S49	1	B	66	55.4	57.8	60.2	4.8	No
S50	1	B	66	56.1	58.5	60.9	4.8	No
S51	0	C	66	53.3	55.7	58.9	5.6	No
S52	1	B	66	56.5	58.9	62.3	5.8	No
S53	1	B	66	61.0	63.4	67.7	6.7	Yes

Receptor ID	# Dwelling Units	NAC Category	NAC	Existing (2017) Noise Level (dB(A))	No Build (2045) Noise Level (dB(A))	Build (2045) Noise Level (dB(A))	Increase (dB(A))	Impact
S54	1	B	66	62.3	64.6	N/A*	N/A	N/A
S55	1	B	66	61.6	64.0	66.6	5.0	Yes
S56	1	B	66	57.4	59.8	60.7	3.3	No
S57	1	B	66	59.0	61.4	61.9	2.9	No
S58	1	B	66	51.2	53.6	56.2	5.0	No
S59	1	B	66	62.4	64.7	64.9	2.5	No
S60	1	B	66	62.3	64.6	64.7	2.4	No
S61	1	B	66	59.3	61.7	61.9	2.6	No
S62	1	B	66	55.3	57.6	59.0	3.7	No
S63	1	B	66	63.9	66.2	65.5	1.6	No
S64	1	B	66	56.1	58.4	58.7	2.6	No

\* Site will be a relocation in the Build Year.