

# Appendix F

Noise Analysis Memorandum



***Draft Noise Technical Memorandum***

**Plantation Midtown Bridge  
Project Development and Environment Study**

Broward County, Florida

Work Program ID No. 448884-1

ETDM Number: 14481

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. Code (U.S.C.) §327 and a Memorandum of Understanding (MOU) dated December 14, 2016 and executed by Federal Highway Administration and FDOT.

March 2022

**Date:** March 21, 2022

**To:** Samir Shalan, P.E., Engineering Director  
City of Plantation Engineering Department

**Prepared By:** Timothy W.A. Ogle, Marlin Engineering

**Reference:** Noise Technical Memorandum – Plantation Midtown Bridge Improvement PD&E Study (FPID No. 448884-1-22-1; ETDM No. 14481)

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## **INTRODUCTION**

The City of Plantation is conducting a Project Development and Environment (PD&E) Study to evaluate alternative alignments for a vehicular connection bridge over the New River Canal, in the City of Plantation, Broward County, Florida. A project location map is shown in **Figure 1**. The objective of this PD&E Study is to assist the City of Plantation in reaching a decision on a preferred alignment for the proposed vehicular bridge. This study documents the need for the bridge as well as the procedures utilized to develop and evaluate preliminary alignments. The PD&E Study satisfies all applicable requirements, including the National Environmental Policy Act (NEPA), to qualify for federal-aid funding of subsequent development phases (design, right of way acquisition, and construction). The Federal Highway Administration (FHWA) has determined that this project qualified as a Type 2 Categorical Exclusion.

This Noise Technical Memorandum has been prepared in accordance with Title 23 Code of Federal Regulations Part 772 (23CFR772), *Procedures for Abatement of Highway Traffic Noise and Construction Noise* (July 13, 2010) and Part 2, Chapter 18 *Highway Traffic Noise* of the FDOT PD&E Manual (dated July 1, 2020).

## **PROJECT STUDY AREA AND LAND USE**

The project study area is bounded by the Pine Island Road intersections at Peters Road and SR84/I-595 to the west, Peters Road on the north, SR 84 to the south, and the University Drive intersections at Peters Road and SR 84/I595 to the east. The total proposed new connection is expected to be approximately 200 feet in length between westbound SR 84 to the south and SW 17<sup>th</sup> Street to the north. The land use in the project area is dominated by residential, commercial, and light industrial land uses, with commercial and services land uses being the most prevalent.





**Figure 1 – Project Location Map**

**PLANNED IMPROVEMENTS**

This study analyzes the impacts of a new bridge crossing of the South Florida Water Management District (SFWMD) New River Canal between Westbound SR 84 and SW 17<sup>th</sup> Street in the City of Plantation, Broward County, Florida (Please see **Figure 2**). The typical section is anticipated to accommodate motorized traffic only as there are no existing or planned non-motorized facilities on Westbound SR 84. The proposed bridge was identified in the joint Broward Metropolitan Planning Organization (MPO) and Florida Department of Transportation District 4 (FDOT 4) I-595 Arterial Connectivity Study (I-595 ACS) as an alternative that has the potential to relieve congestion on Pine Island Road and University Drive and to provide a new system linkage between Westbound SR 84 and the Midtown Plantation Business District. The I-595 ACS analyzed daily traffic impacts for the bridge that shows potential to reduce traffic on both University Drive and Pine Island Road.



**Figure 2 – Planned Improvements**

**TRAFFIC NOISE ANALYSIS**

A review of the planned improvements was conducted to determine if the project met the Federal Highway Administration (FHWA) and FDOT definition of a “Type I” project and would require consideration of noise impacts. In general, a Type I project is defined as a highway construction project (new location or physical alteration of existing highway) which substantially changes horizontal and vertical alignment, alters the roadway profile or adds through lanes. Figure 18-2 in Chapter 18 of the PD&E Manual provides a list of project activities that require consideration of traffic noise impacts.

Two multi-family residential complexes are located along the north side of the canal within the project study area. These sites are shown in **Figure 3**. The Plantation One condominium complex is located approximately 1,000 feet to the east at the S. University Drive/I-595 interchange and includes two high-rise buildings with balconies facing north and south towards SR 84 and I-595. The Plantation Colony Apartments are located approximately 850 feet to the west and include



two-story buildings with patios and balconies generally facing away from the roadway. Neither of these communities are protected from traffic noise with existing noise barriers along I-595 or SR 84. A Noise Study Report was prepared for the area just east of these sites as part of the FDOT’s 2006 I-595 Corridor PD&E Study. Design Year (2034) traffic noise levels for the nearest homes adjacent to University Drive were predicted to range from approximately 63 to 64 dB(A) with the Build Alternatives. Since construction of this project has been completed, these levels are considered representative of the current noise levels along this segment of I-595.



**Figure 3 – Noise Sensitive Sites**

The FHWA has established Noise Abatement Criteria (NAC) for seven (7) land use activity categories that determine when an impact occurs and when consideration of noise abatement is required. Maximum noise level thresholds have been established for five (5) of these activity categories. These maximum thresholds, or criteria levels, represent acceptable traffic noise level conditions. For the noise sensitive sites near the planned improvements, the NAC for residences (Activity Category C) is 67 dB(A). Noise abatement measures must be considered for residential

sites when predicted noise level approaches or exceeds this NAC level or when a substantial noise increase occurs. The FDOT defines “approach” as within one (1) dB(A) of the FHWA criteria. A substantial noise increase is defined as when the existing noise level is predicted to be exceeded by 15 dB(A) or more as a result of the transportation improvement project.

The existing roadway network near the noise sensitive sites north of the canal includes low-speed, two-lane roadways with a center turn-lane; including SW 80<sup>th</sup> Terrace to the west, SW 17<sup>th</sup> Street to the south and SW 78<sup>th</sup> Avenue to the east. These roadways form a loop around the surrounding commercial and residential areas. The speed limit on all of these roadways is 25 miles per hour (MPH). SR 84 and I-595 to the south of the New River Canal are both high-volume, high-speed roadways. The new bridge over the New River Canal will include three new low-speed traffic lanes and new intersections at each end of the bridge. The intersection at SW 17<sup>th</sup> Street will be a four-way stop, while the intersection at SR 84 will remain in a free-flow condition northbound and stop-controlled for the southbound turn onto westbound SR 84. Otherwise, the project will not substantially change the horizontal/vertical alignment or profile of the existing nearby roadways. However, given the addition of the new bridge, the project was screened for traffic noise impacts.

The traffic noise levels for the screening analysis for the Existing and Design Year Build Alternative were estimated using the FHWA’s Traffic Noise Model (TNM), Version 2.5. This screening analysis was conducted using peak-hour traffic on the local roadway network near the Plantation One community. These conditions are considered worst-case condition due to the proximity of the local roadway (SW 78<sup>th</sup> Avenue) to these residences. The traffic noise estimates developed from TNM for this screening analysis did not include noise from I-595 and SR 84, for which configuration and traffic volumes will be negligibly affected by this project. Afternoon (PM) Peak-Hour traffic volumes are predicted to be higher overall at this intersection and were used for this analysis. The traffic data input used in the evaluation is shown in **Table 1**.

**TABLE 1 – NOISE ANALYSIS PEAK-HOUR TRAFFIC VOLUMES**

Roadway	Direction of Travel	PM Peak-Hour Directional Volume			Speed (Miles per Hour)
		Existing (2021)	Design Year (2045) No Build Alternative	Design Year (2045) Build Alternative	
SW 78 <sup>th</sup> Avenue	Northbound	90	113	438	25
	Southbound	128	155	447	25

The predicted Existing (2021) and Design Year (2045) No Build and Build alternative traffic noise levels from only the local roadway network were estimated for the location at Plantation One nearest SW 78<sup>th</sup> Avenue, a distance of approximately 100 feet. The distance that the 67 dB(A) noise level isopleth for the Build Alternative extends from the roadway edge-of-pavement was also estimated as an indicator of where impacts might be expected to occur due to the planned improvements.

The results of this screening analysis are shown in **Table 2**. The predicted Design Year Build Alternative noise level from only the local roadway network is expected to be approximately 53.2 dB(A) at the nearest location in the Plantation One community. This low noise level is due to the low volume of peak-hour traffic and slow speeds on the local roadways. The estimated Build Alternative noise level is just over 6 dB(A) greater than the peak-hour existing traffic noise level from the local roadways. However, the actual increase is expected to be negligible since the overall traffic noise levels in this area are predicted to be at least 10 dB(A) greater, as indicated by the 2006 I-595 Corridor NSR.

**TABLE 2 – ESTIMATED TRAFFIC NOISE LEVELS**

Alternative	Plantation One Estimated Traffic Noise Level [dB(A)]	Distance to 67 dB(A) Noise Level Isopleth
Existing	46.9	At Edge-of-Pavement
Design Year (2045) No Build	48.1	
Design Year (2045) Build	53.2	

Notes: The estimated traffic noise level is due only to traffic from the local roadway network north of the New River Canal.

Based on the results on this screening analysis, the project will not cause an exceedance of the NAC for residential noise sensitive sites and a substantial noise level increase is not expected to occur. Also, the 67 dB(A) noise level isopleth from the local roadway network is not expected to extend beyond the roadway edge. Therefore, traffic noise from the planned improvements will not cause new traffic noise impacts.

**CONSTRUCTION NOISE AND VIBRATION**

During construction of the project, there is the potential for noise impacts to be substantially greater than those resulting from normal traffic operations because heavy equipment is typically used to build roadways and bridges. In addition, construction activities may result in vibration impacts. Therefore, early identification of potential noise/vibration sensitive sites along the



project corridor is important in minimizing noise and vibration impacts. The project area includes residential areas that may be affected by noise and vibration associated with construction activities. Construction noise and vibration impacts to these sites will be minimized by adherence to the controls listed in the latest edition of the FDOT's *Standard Specifications for Road and Bridge Construction*.