Technical Memorandum

TO: HNTB Corporation

FROM: Bill Kirk, P.G., Senior Consultant - Hydrogeologist

Cc: Kevin Muldrew, Director of PD&E Studies

DATE: January 9, 2008

RE: CR 19A from Old US 441 to US 441/ SR 19A
Noise Study
Lake County Job No. 06-052

Introduction

EMS has conducted a noise study along County Road (CR) 19A from old US 441 to US 441 in Lake County, Florida (Figure 1). This study was conducted under the guidelines contained within Chapter 16 of the Florida Department of Transportation (FDOT) Project Development and Environment (PD&E) Manual. Several noise sensitive sites (Riley's Park, Central Christian Church, Lake Sanders Mobile Home Park, Lake Receptions, several residential homes) are located along CR19A adjacent to the right-of-way (ROW). CR 19A currently is a rural, two-lane paved roadway with a posted speed limit of 45 mph within the study area. Lake County is proposing to improve this segment and include a bidirectional left turn lane and bicycle lanes to the outside of the two travel lanes.

Existing noise levels were recorded during the field study. Level of Service (LOS) C traffic data was used to predict future (year 2030) traffic levels. If predicted noise levels equal or exceed 66 decibels (dBA) on the A-weighted scale, then a noise barrier analysis would be warranted. The A-weighted scale encompasses the range of sound levels detectable by the human ear.

Methodology

Physical characteristics, existing traffic counts (cars, medium trucks, heavy trucks), and noise data were collected on December 6, 2006 when atmospheric conditions consisted of partly cloudy skies, light wind, and a temperature of approximately 75°F. The potential noise sensitive receptors consisted of single family residential dwellings, churches, and a reception hall, located adjacent to CR 19A.

In order to vaildate the Traffic Noise Model (TNM), Quest Electronics noise-logging dosimeters were used to record existing noise levels for three (3) fifteen-minute events at the potential noise sensitive sites. Traffic counts, roadway characteristics and receptor locations were input into TNM. The speed used in TNM modeling program was based on the 45 mph posted speed limit within this segment of the project.

Results

To validate TNM, the difference between field recorded noise levels and predicted noise levels must be no greater than 3 dBA. The human ear cannot detect differences in noise levels of less than 3 dBA. As shown in **Table 1** below, the TNM predicted noise level is lower than the actual field recorded noise levels. The TNM model did not predict within 3 dBA, due to construction activities occurring on the opposite side of CR 19A associated with the Lake County Veterinary Clinic just south of this residential development. Additionally, some of the heavy vehicles were using the Park's entrance to turn around. Based on the construction noise and unusual truck traffic at the site, we feel the TNM is valid in its prediction along this segment of CR 19A.

Table 1. Summary of Noise Model Validation.

Noise Receiver	Noise Levels (dBA)		
	Field recorded	Predicted	Difference
Riley's Park	63.6	58.9	-4.7

Nine front-row potential noise sensitive receivers were identified adjacent to the ROW within the Riley Park community (**see Results Table**). LOS C traffic data, and a posted speed of 45 mph, were input to the model. The results indicate that predicted noise levels at these receivers range from 53.0 dBA to 61.3 dBA, which is below the 66 dBA threshold for noise abatement consideration. Based on the TNM analysis, the 66 dBA contour for the year 2030 is predicted to be approximately a few feet from the proposed edge of pavement.

Conclusion

Based on FDOT guidelines, noise abatement **is not warranted** for this project**.**

DeLORME

Street Atlas USA® 2007 Plus

TN

MN (5.3°W)

Scale 1 : 225,000

0 1 2 3 4 5 mi

0 2 4 6 8 10 km

1" = 3.55 mi

Data Zoom 9-7

SCIENTISTS
ENGINEERS
PLANNERS

407.260.0883

CR 19A
Location Map
Lake County, FL

Date: 1/2/2007

Figure 1

G:\06049\mxd\CR19A.mxd

EMS scientists, engineers, planners, Inc
Setup:Dana Ragusa; Model: Bill Kirk

19 December 2007
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS

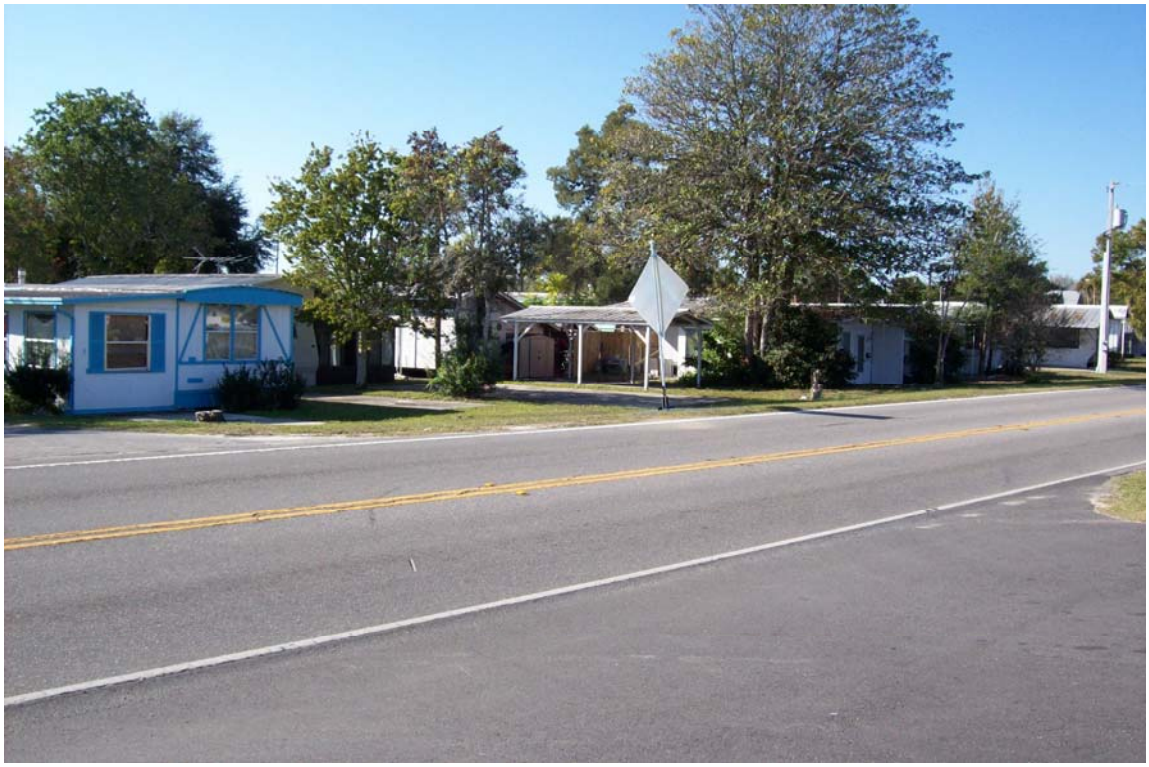
PROJECT/CONTRACT: CR 19A PD&E Study
RUN: CR 19A validation
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

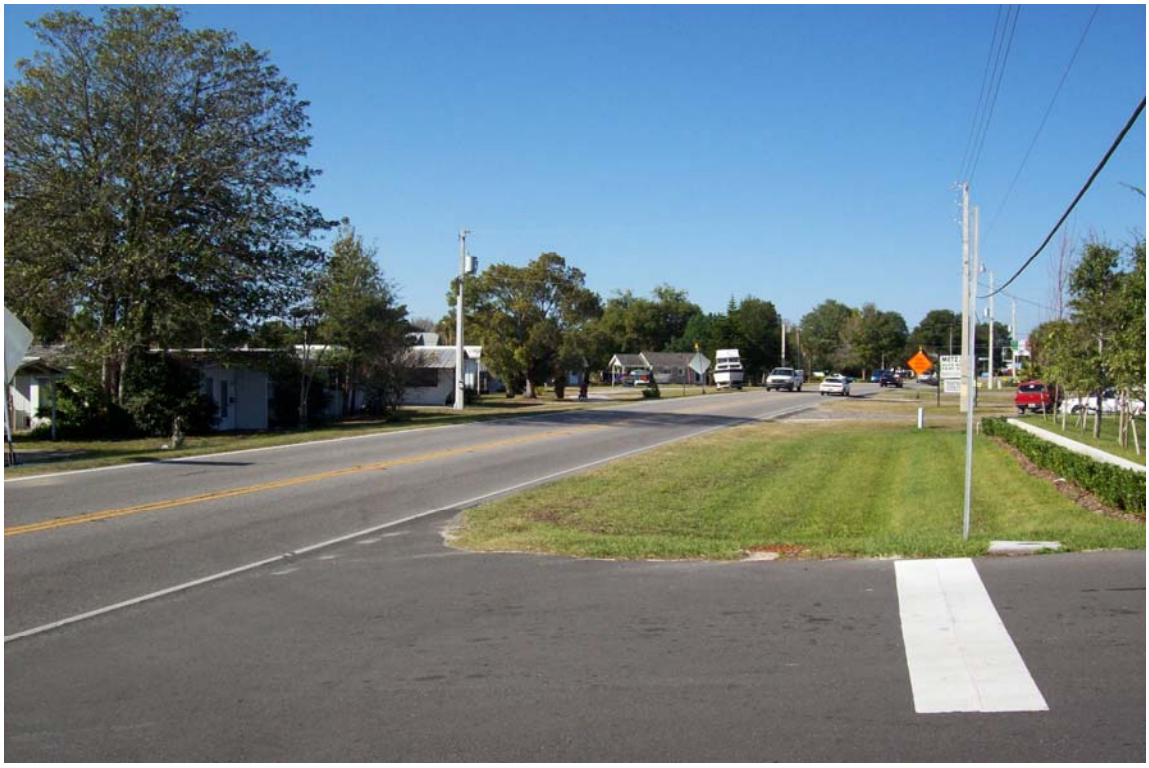
Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Increase over existing Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver3	3	1	63.6	59.5	66	-4.1	10	----	59.5	0.0	8	-8.0
Receiver4	4	1	0.0	54.4	66	54.4	10	----	54.4	0.0	8	-8.0
Receiver5	5	1	0.0	53.0	66	53.0	10	----	53.0	0.0	8	-8.0
Receiver6	6	1	0.0	54.3	66	54.3	10	----	54.3	0.0	8	-8.0
Receiver7	7	1	0.0	55.5	66	55.5	10	----	55.5	0.0	8	-8.0
Receiver8	8	1	0.0	56.5	66	56.5	10	----	56.5	0.0	8	-8.0
Receiver9	9	1	0.0	58.4	66	58.4	10	----	58.4	0.0	8	-8.0
Receiver10	10	1	0.0	60.4	66	60.4	10	----	60.4	0.0	8	-8.0
Receiver11	11	1	0.0	61.3	66	61.3	10	----	61.3	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	9	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Receivers



Rileys Park



Rileys Park