



**DRAFT
NOISE STUDY REPORT**

**U.S. 301 (S.R. 41)
From S.R. 39 to C.R. 54
Pasco County, Florida**

**Financial Project Number 256422 1
Federal Aid Program Number 1455-001-U**

This project evaluates adding through lanes on U.S. 301 from S.R. 39 to C.R. 54 through Zephyrhills. A one-way pair system using 6th Street and/or 7th Street is being considered. The approximate length of the project is 2.6.miles



January 2001

**DRAFT
NOISE STUDY REPORT**

**U.S. 301 (S.R. 41)
From S.R. 39 to C.R. 54
Pasco County, Florida**

**Financial Project Number 256422 1
Federal Aid Program Number 1455-001-U**

This project evaluates adding through lanes on U.S. 301 from S.R. 39 to C.R. 54 through Zephyrhills. A one-way pair system using 6th Street and/or 7th Street is being considered. The approximate length of the project is 2.6.miles

Prepared By:

**Florida Department of Transportation
District Seven
Tampa**

January 2001

EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT) is conducting a Project Development and Environment (PD&E) Study for the proposed improvements to U.S. 301 (S.R. 41) from S.R. 39 to C.R. 54 in Pasco County, Florida. A Noise Study Report (NSR) was prepared to support the PD&E Study for the proposed improvements in accordance with the methodology established by the Federal Highway Administration (FHWA) in Title 23 CFR, Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise, and the FDOT in the PD&E Manual, Part 2, Chapter 17 (September 2000).

The objectives of the noise study are to identify noise sensitive sites adjacent to the proposed project, compare and evaluate traffic noise levels at these sites with and without the project, and evaluate the need for and effectiveness of noise abatement measures. Construction noise and predicted noise level isopleths for the build condition are also addressed.

For the design year (2025) Build Alternative, 101 noise sensitive sites are predicted to experience outdoor traffic noise levels that approach, meet, or exceed the FHWA Noise Abatement Criteria (NAC) for Activity Category B. Noise levels at the affected sites are predicted to range from 66.0 to 74.8 dBA. Predicted increases above existing noise levels range from 0.6 to 14.5 dBA. Three noise sensitive sites adjacent to the existing S.R.39 and U.S. 301 apex are predicted to have 1.1 to 2.5 dBA decrease in noise levels with the proposed realignment of S.R. 39 (Financial Project Numbers 255099 and 256289). No noise sensitive sites are predicted to experience interior noise levels that approach or exceed the FHWA NAC for Activity Category E.

Noise abatement measures were evaluated for the affected noise sensitive sites. Abatement measures considered include traffic management, alignment modifications, property acquisition, land use controls and noise barriers. Noise barriers were determined not feasible and cost reasonable due to numerous driveway openings and side streets along the project limits. Noise effects have been determined to be an unavoidable consequence of the proposed project. A copy of the final Noise Study Report will be furnished to the City of Zephyrhills and Pasco County to assist them in development of compatible land uses for future development.

TABLE OF CONTENTS

<u>Section</u>	<u>Title</u>	<u>Page</u>
	EXECUTIVE SUMMARY	i
	TABLE OF CONTENTS	ii
	LIST OF TABLES	iii
	LIST OF FIGURES	iv
1.0	INTRODUCTION	1
2.0	PROJECT DESCRIPTION	1
2.1	Proposed Improvement	1
2.2	Need for Project	1
3.0	METHODOGY	2
4.0	TRAFFICE NOISE ANALYSIS	3
4.1	Noise Sensitive Receivers	3
4.2	Measured Noise Levels	4
4.3	Predicted Noise Levels	5
4.4	Noise Analysis	7
4.5	Noise Abatement Techniques	11
4.5.1	Traffic System Management	12
4.5.2	Alignment Modifications	12
4.5.3	Property Acquisition	12
4.5.4	Land Use Controls	12
4.5.5	Noise Barriers	12
4.6	Conclusions	13
5.0	CONSTRUCTION NOISE AND VIBRATION	13
6.0	PUBLIC INVOLEMENT	13
7.0	REFERENCES	14
	APPENDIX	published separately

LIST OF TABLES

<u>Table Number</u>	<u>Title</u>	<u>Page</u>
1	FHWA Noise Abatement Criteria	3
2	Validation	5
3 – 4	66 dBA Noise Isopleth for Design Year Build Conditions	6
5	Predicted Existing and Future Noise Levels	8 – 11

LIST OF FIGURES

<u>Figure Number</u>	<u>Title</u>	<u>Follows Page</u>
1	Project Location Map	1
2	Recommended Alternative	1
3 – 5	Demand Traffic Data	2
6	Modeled Noise Receivers	4

1.0 INTRODUCTION

The Florida Department of Transportation (FDOT) is conducting a U.S. 301 Project Development and Environment (PD&E) study, which evaluates improvements to U.S. 301 from S.R. 39 to C.R. 54 in Pasco County, Florida (See Figure 1).

The objective of the PD&E Study is to provide documented information and analyses that will help the FDOT reach a decision on the type, design, and location of the necessary improvements to accommodate future transportation needs in a safe and efficient manner.

2.0 PROJECT DESCRIPTION

The U.S. 301 corridor is a north/south primary arterial facility. The proposed corridor study length is an approximate distance of 4.2 kilometers (2.6 miles). Portions of the Study, from S.R. 39 to Avenue C, are located in unincorporated Pasco County. The remainder, Avenue C to C.R. 54, is within the limits of the City of Zephyrhills.

The existing facility is a two-lane rural roadway with twelve-foot lanes, four-foot paved shoulders, and open drainage ditches. A one-way pair system was created in 1996 by the City of Zephyrhills using 6th and 7th Streets as an alternate route to U.S. 301. The City's one-way pair system begins at Avenue A for northbound traffic on 7th Street and terminates at Avenue C for southbound traffic on 6th Street.

2.1 Proposed Improvements

The proposed project involves widening the existing U.S. 301 and the extension of the one-way streets, either 6th and/or 7th Streets, to S.R. 39. The improvements will also include a closed stormwater system with curb and gutter along with sidewalk accommodations. The recommended alternative is depicted in Figure 2.

2.2 Need For Project

U.S. 301 between S.R. 39 and C.R. 54 is a two-lane roadway that has operated since its original construction without any major improvements. The 1997 traffic volume along this portion of U.S. 301 was 17,300 vehicles per day (vpd). The projected traffic volume for the design year of 2025 is expected to be 38,200 vpd. To accommodate the projected traffic increase, this section of U.S. 301 will require additional through lanes, three lanes in each direction.

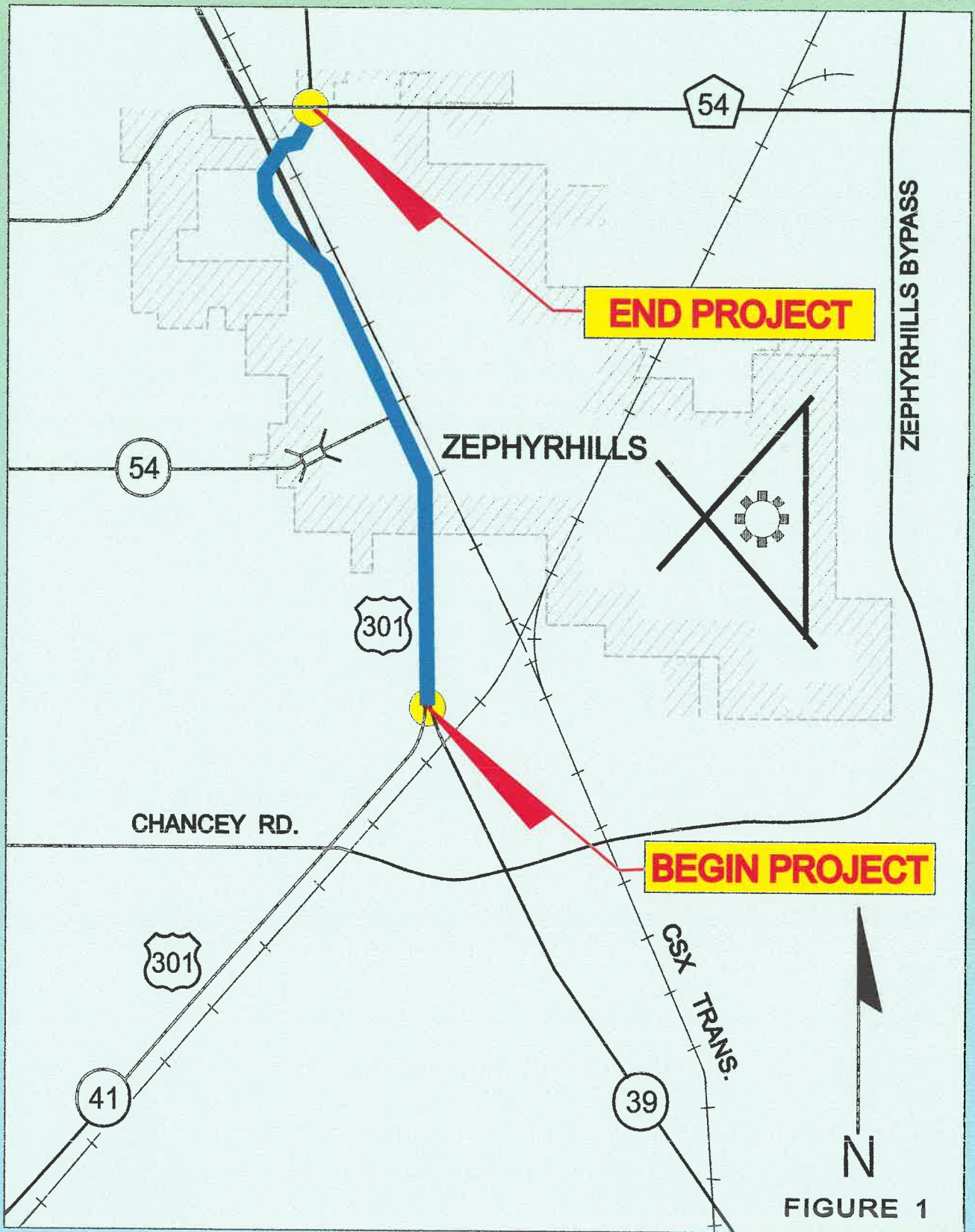


FIGURE 1



U.S. 301 PD&E STUDY
 (S.R. 39 TO C.R. 54)
 PASCO COUNTY

PROJECT LOCATION MAP
 W.P.I. SEG. No. 256422 1
 F.A.P. No. 1455-001-U

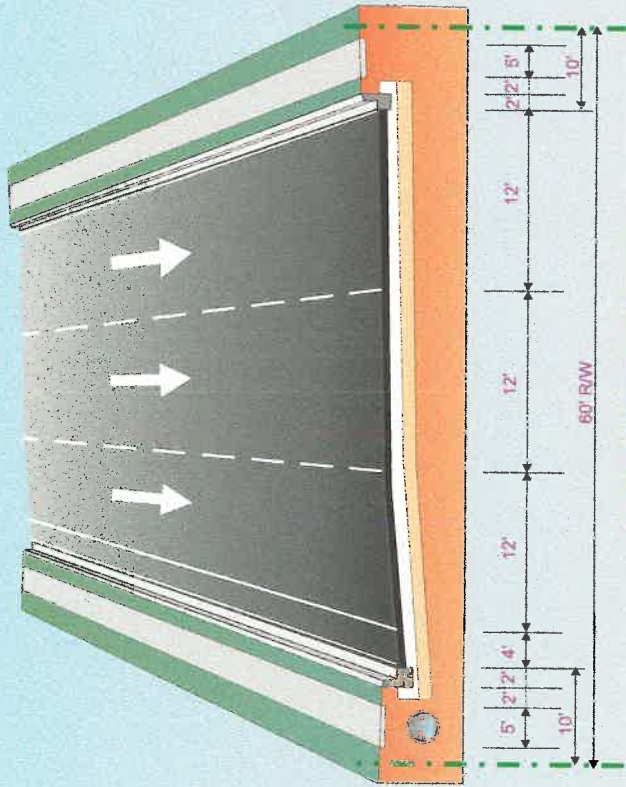


**U.S. 301 ZEPHYRHILLS PD&E STUDY
FROM S.R. 39 TO C.R. 54**

W.P.I. SEC. 256422 1

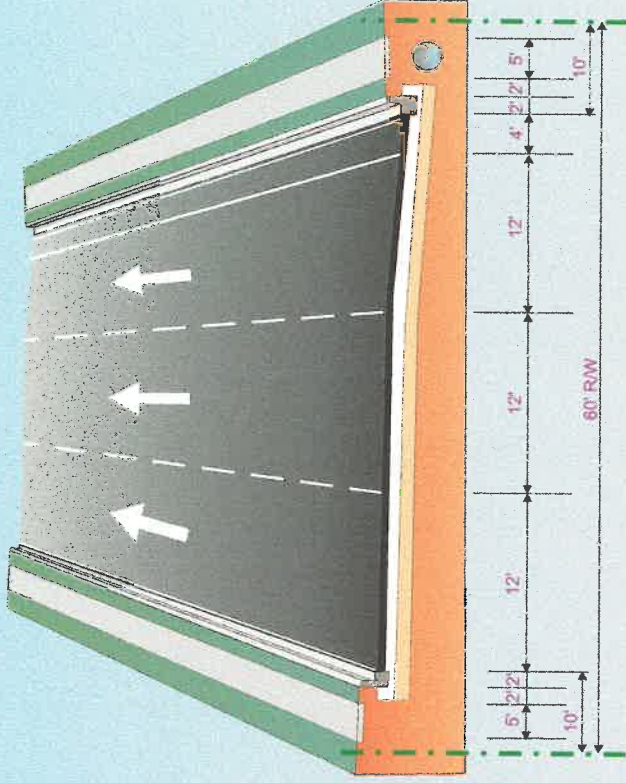
FEDERAL AID NO. 1455-001-U

**PROPOSED THREE LANE ONE WAY
TYPICAL SECTION**



6TH STREET

**PROPOSED THREE LANE ONE WAY
TYPICAL SECTION**



U.S. 301



ALTERNATIVE 2

FIGURE 2

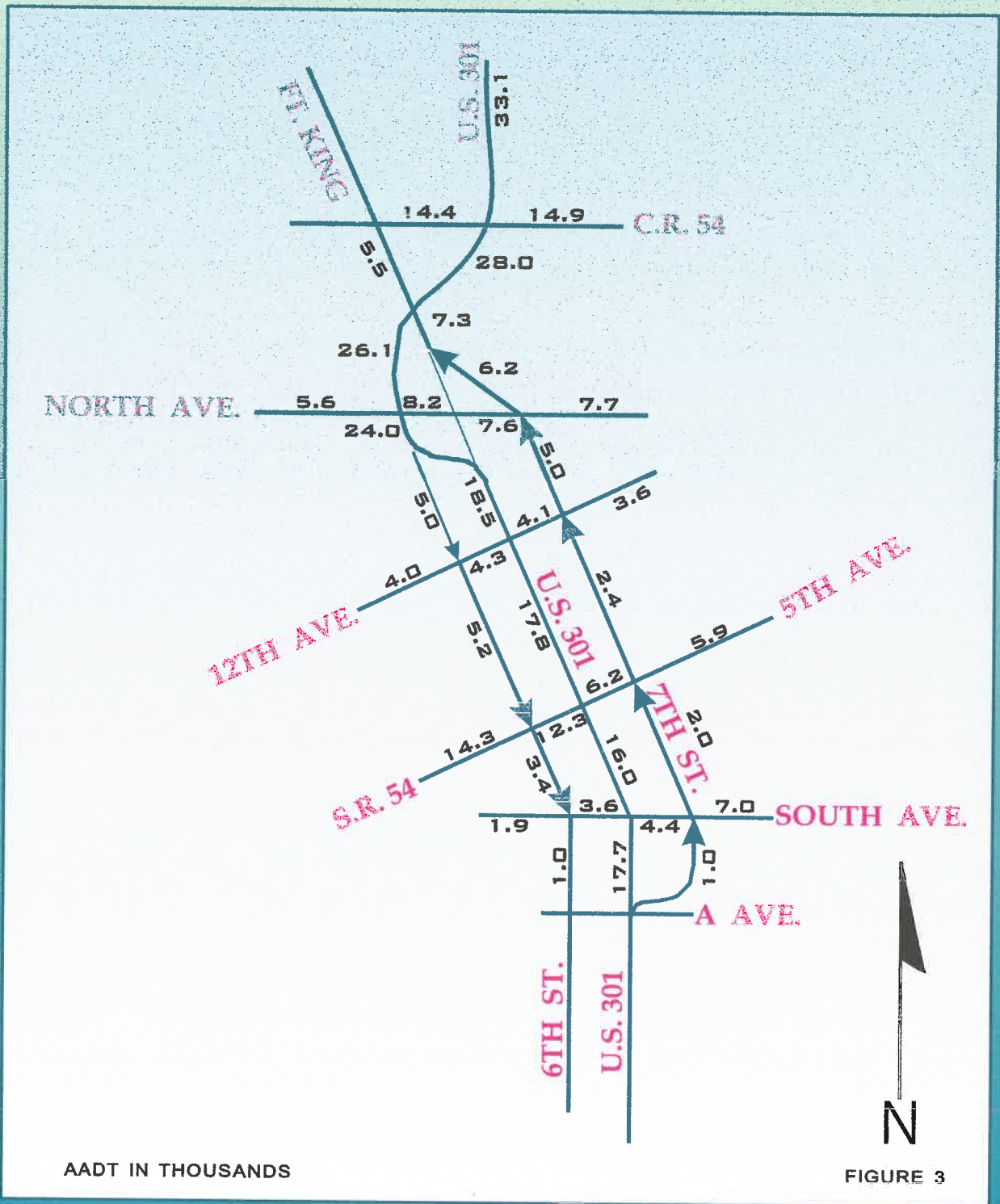
The Pasco County Metropolitan Planning Organization (MPO) has the responsibility of developing a Long Range Transportation Plan (LRTP) for the county to serve the needs of the metropolitan area over the next 20 to 25 years. The adopted 2020 LRTP, updated in 1999, has identified 6th Street and/or 7th Street to be extended as one-way roads with three lanes in each direction. The LRTP recognizes 6th Street to be extended from Avenue C south to connect with U.S. 301 just north of S.R. 39. Currently this portion of the road is a two-way street. The LRTP also identifies 7th Street to be extended from Avenue A south to connect with U.S. 301 just north of S.R. 39. The existing road terminates at this point.

The Department has requested the Pasco County MPO amend the LRTP to change the northern limits from Avenue A to C.R. 54. Although 6th and 7th Streets are currently two lane, one-way roads north of Avenue A, the sections from Avenue A north to S.R. 54 will need to be upgraded to accommodate the additional traffic volumes and truck traffic anticipated after the one-way roads are extended. Pavement reconstruction, drainage improvements, and C.R. 54 intersection improvements are being investigated as part of this project.

3.0 METHODOLOGY

Predicted noise levels generated for this study were produced using the Federal Highway Administration, (FHWA) Traffic Noise Model (TNM), version 1.0b. All noise levels, measured and predicted, are expressed in decibels (dB) on the "A"-scale (dBA). This scale most closely approximates the response characteristics of the human ear. All noise levels are reported as hourly equivalent noise levels (L_{Aeq1h}). The L_{Aeq1h} is defined as the equivalent steady-state sound level that, in a given hourly period, contains the same acoustic energy as the time-varying sound level for the same hourly period.

To simulate "worst case" conditions, level of service (LOS) "C" or demand traffic volumes, whichever is less, was modeled. Assigned vehicle speeds were based on the existing posted speed limits. The demand average daily traffic (ADT) volumes are provided in Figures 3-5. A K-factor of 9.69 percent was used to reduce the ADT to hourly volumes. The hourly traffic volumes were divided between cars, medium trucks and heavy trucks using a 2.5 percent truck factor (1.25 percent of the vehicles were designated as medium trucks and 1.25 percent of the vehicles were designated as heavy trucks). A directional factor of 53 percent was used where the proposed typical section would not be a one-way pair scenario.



EXISTING TRAFFIC DATA (AADT)



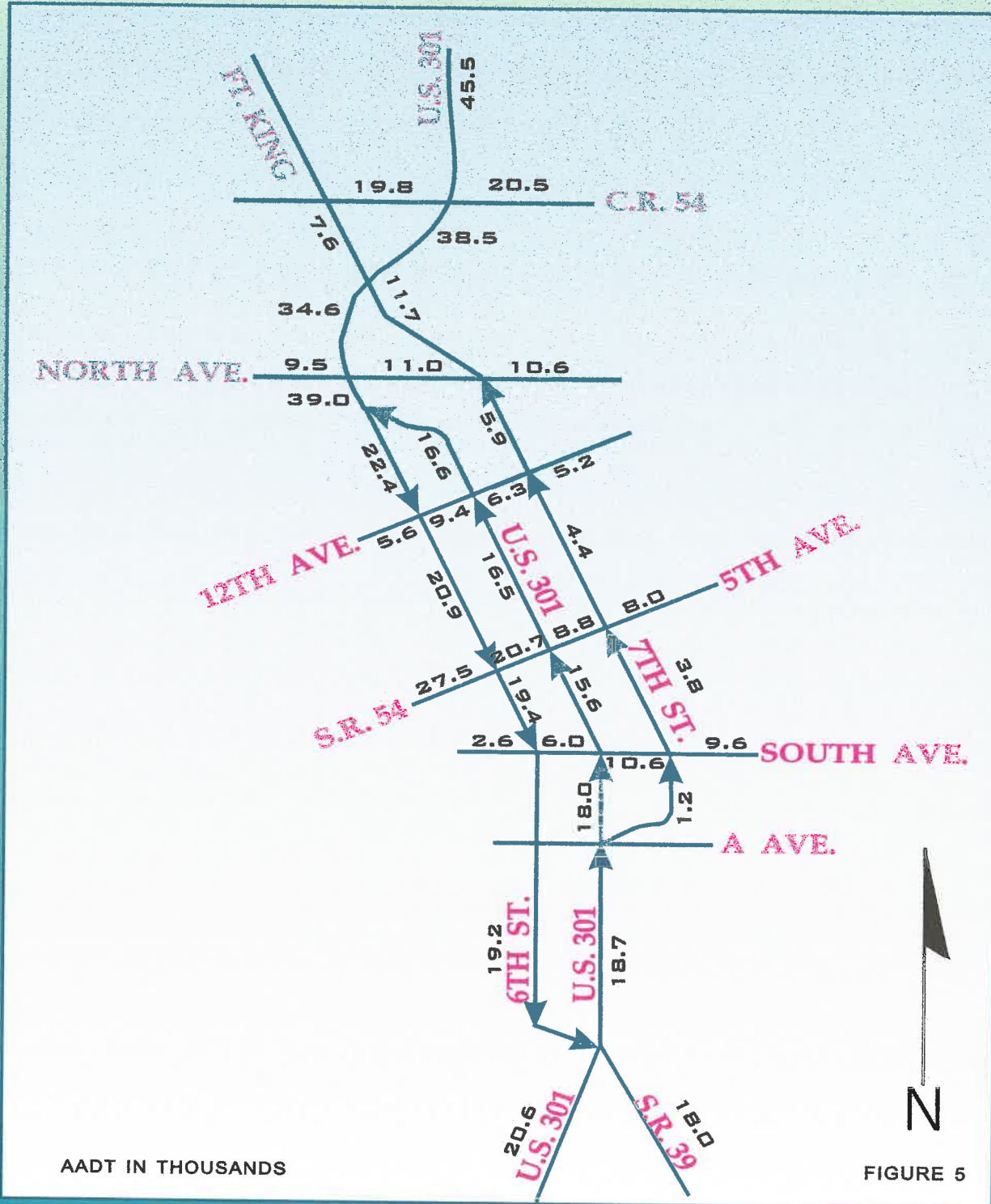


FIGURE 5



DESIGN YEAR
RECOMMENDED ALTERNATIVE
TRAFFIC DATA (AADT)



4.0 TRAFFIC NOISE ANALYSIS

4.1 Noise Sensitive Receivers

Noise sensitive sites include any property (owner-occupied, rented, or leased) where frequent exterior human use occurs and where a lowered noise level would be of benefit. The FHWA has established noise levels at which noise abatement must be considered. These noise levels are referred to as the Noise Abatement Criteria (NAC). As shown in Table 1, the NAC vary according to the activity category. Noise abatement measures were considered when future predicted traffic noise levels "approached" or exceeded the NAC. The FDOT considers the term "approach" to mean within 1 dBA of the FHWA criteria.

Table 1
FHWA Noise Abatement Criteria

Activity Category	Leq (h)	Description of Land Use Activity Category
A	57 (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	67 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (Exterior)	Developed lands, properties, or activities not included in Categories A or B.
D	--	Undeveloped lands.
E	52 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

Source: 23 CFR Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise, Federal Highway Administration, U.S. Department of Transportation, as amended.

The existing land use pattern along U.S. 301 is predominately commercial mixed with some residential use. The existing land use pattern along 6th Street is predominately residential mixed with some commercial use.

Noise sensitive land uses along the project corridor are residential areas that are in Activity Category B of the NAC. Residences were represented by receiver points located in accordance with the PD&E Manual, Part 2, Chapter 17, (revised September 2000) as follows:

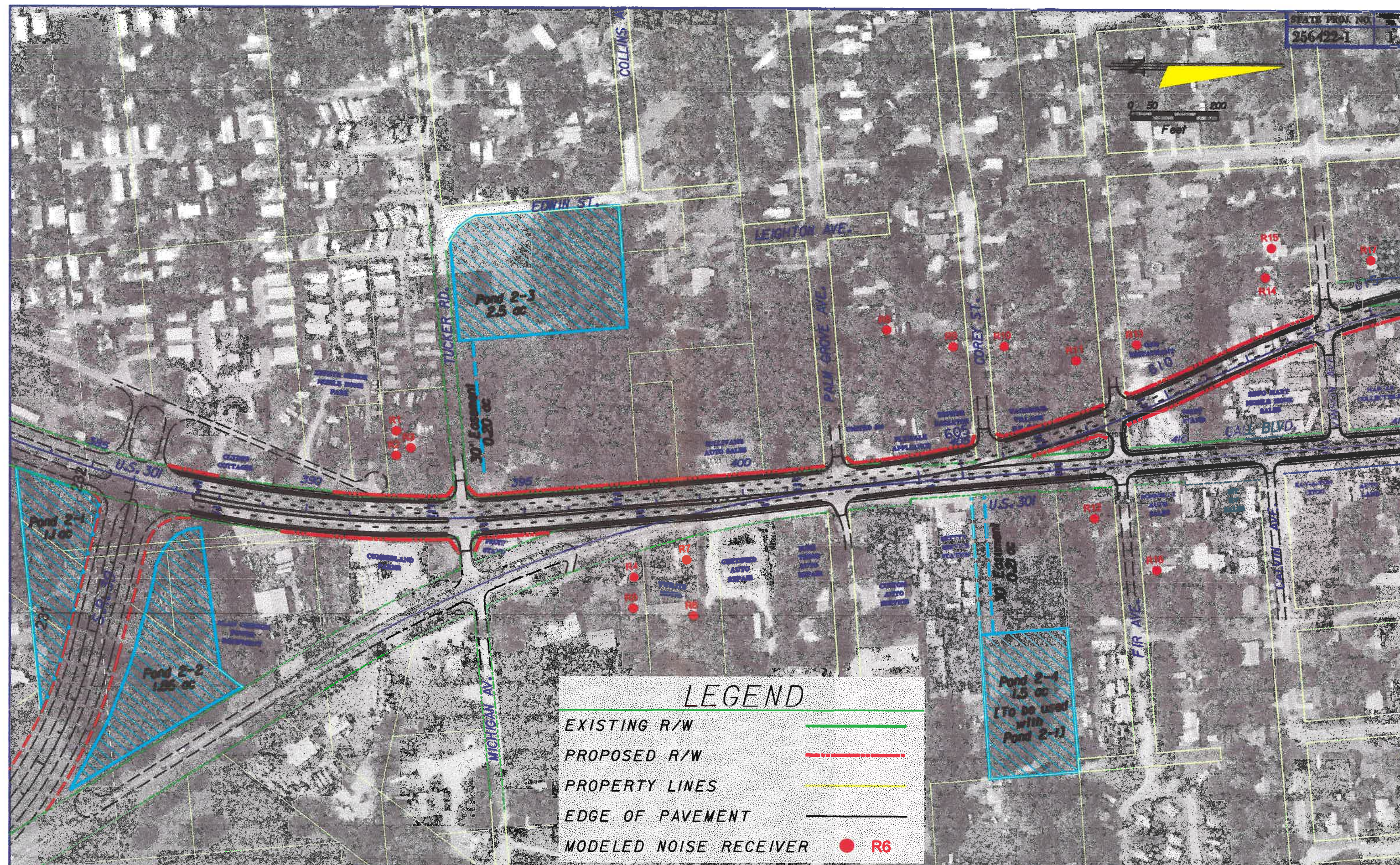
1. Unless the area of exterior frequent use was identified elsewhere, residential receptor sites were placed at the edge of the dwelling unit closest to the major traffic noise source or as dictated by professional judgment.
2. Where more than one unit was clustered together, single sites were analyzed as representative of the group.
3. Receptor heights for first floor receivers were always assumed to be 5 feet above ground.

Receivers were located at hotels and motels located along US 301. These noise sensitive sites are also in Activity Category B of the NAC; however, exposed outdoor use areas (e.g., swimming pools) are uncommon at the motels and hotels. Figure 6 illustrates the locations where noise levels were modeled. Based on FHWA's Highway Traffic Noise Analysis and Abatement, Policy and Guidance, interior noise levels can be calculated by reducing the exterior noise level by 20 dBA or 25 dBA depending if the building is of light frame or masonry construction.

3.3 Measured Noise Levels

To validate the computer noise model, field measurements were taken within the project area following procedures documented in FHWA's Measurement of Highway Related Noise. Field measurements were obtained using a CEL 593 Type 1 Sound Level Analyzer. The noise meter was calibrated using a CEL 284 Class 1 Acoustic Calibrator. Speeds were recorded with a MPH Model K-15, K-band, hand-held radar gun.

Site selection for the field measurements was based on a location where a representative sampling of free-flow traffic could be obtained. Traffic volumes by vehicle classification and vehicle speeds were also recorded. The field measurements and the validation results using the TNM computer model are shown in Table 2. The computer model is predicting noise levels at an accepted level of accuracy if the difference between the measured and predicted noise levels are within the FDOT tolerance standard of 3 dBA. Field staff determined that the measurements taken along U.S. 301 south of C Avenue did not validate because of congestion created by vehicles making turning left hand turns onto westbound C Avenue.



LEGEND

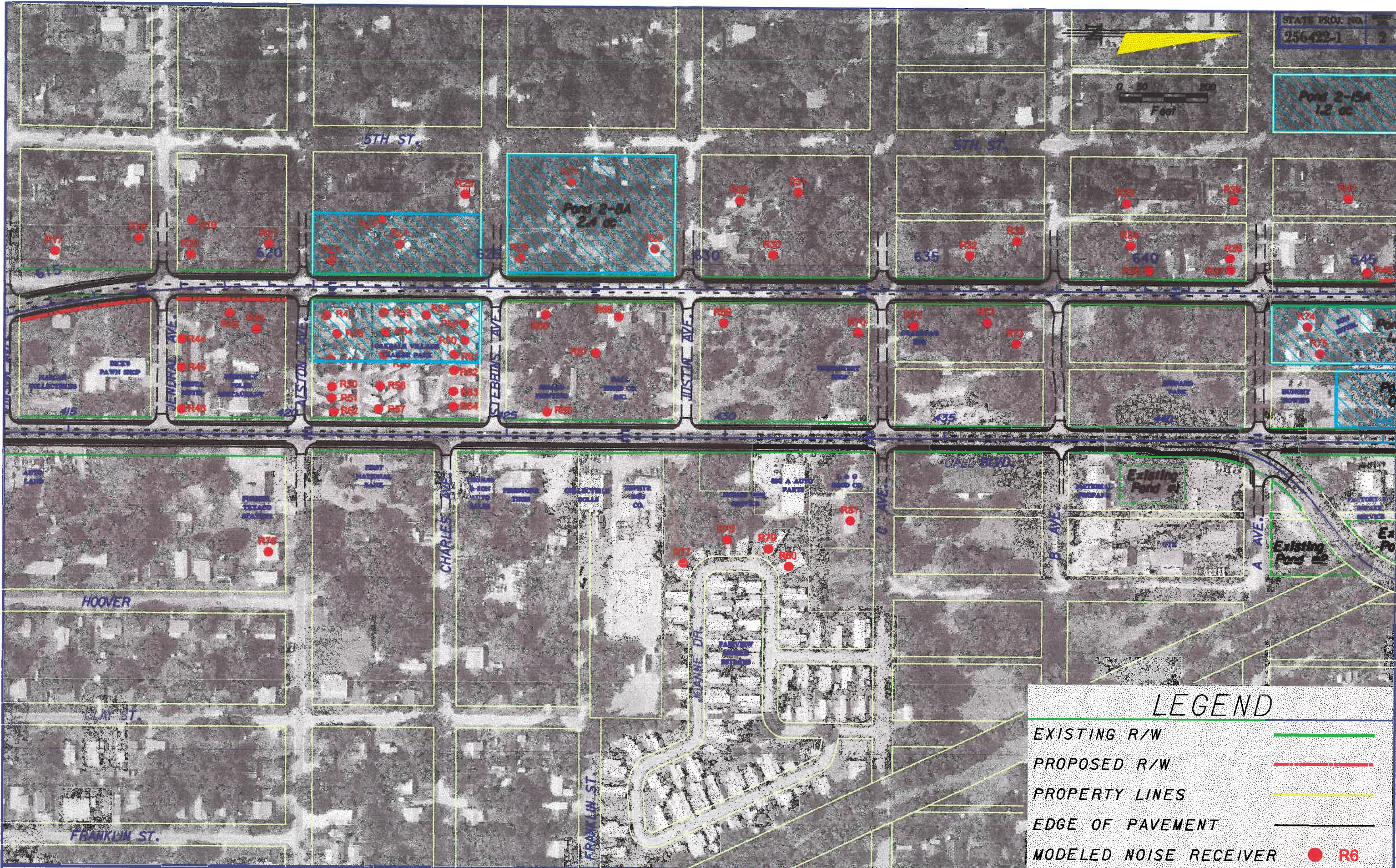
EXISTING R/W	
PROPOSED R/W	
PROPERTY LINES	
EDGE OF PAVEMENT	
MODELED NOISE RECEIVER	R6

REVISIONS							
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY

**RECOMMENDED
ALTERNATIVE**

FLORIDA DEPARTMENT OF
TRANSPORTATION

**U.S. 301 MODELED NOISE RECEIVERS
FIGURE 6**



LEGEND

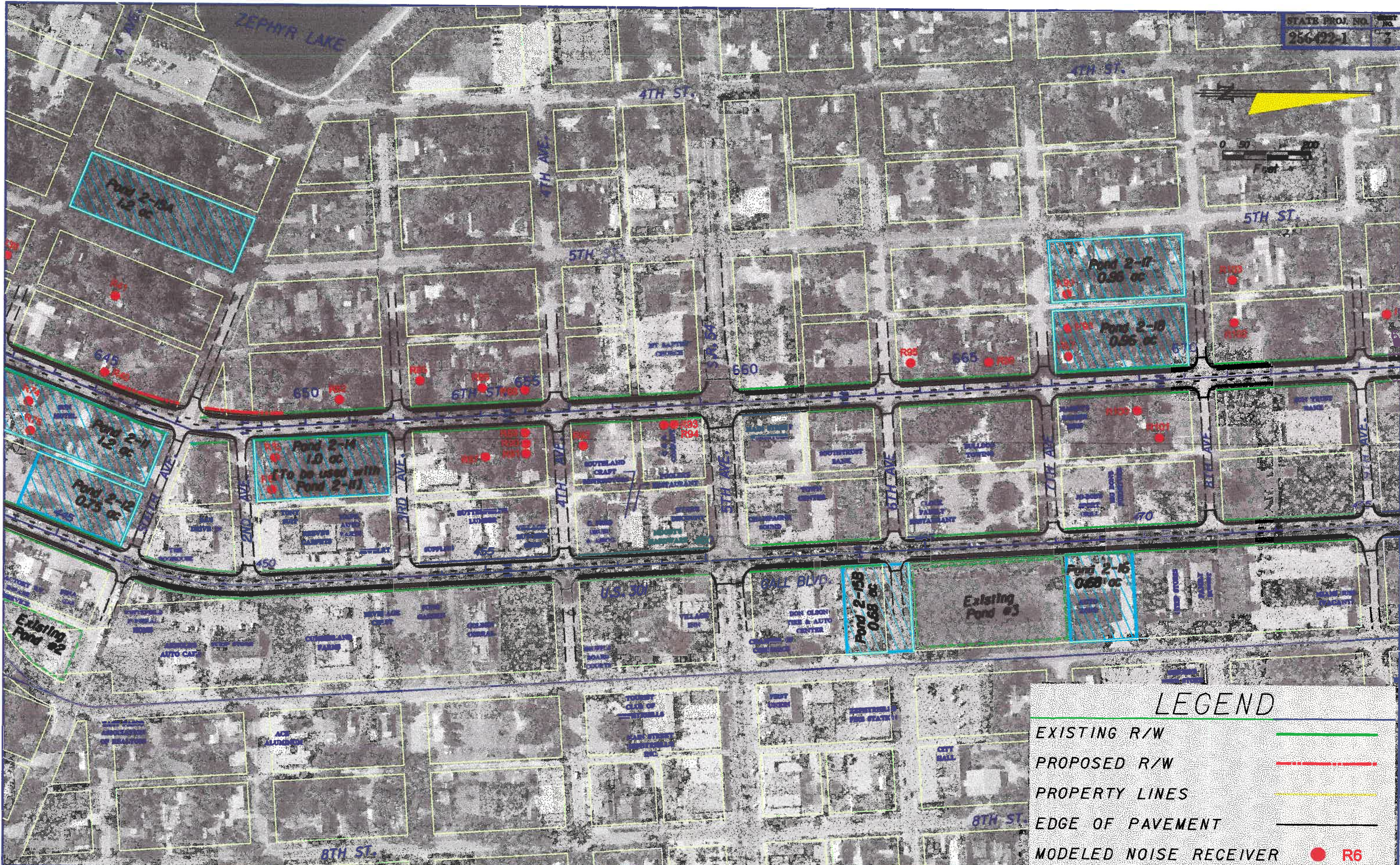
- EXISTING R/W ———
- PROPOSED R/W - - - - -
- PROPERTY LINES ———
- EDGE OF PAVEMENT ———
- MODELED NOISE RECEIVER ● R6

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

**RECOMMENDED
ALTERNATIVE**

FLORIDA DEPARTMENT OF
TRANSPORTATION

**U.S. 301 MODELED NOISE RECEIVERS
FIGURE 6**



LEGEND

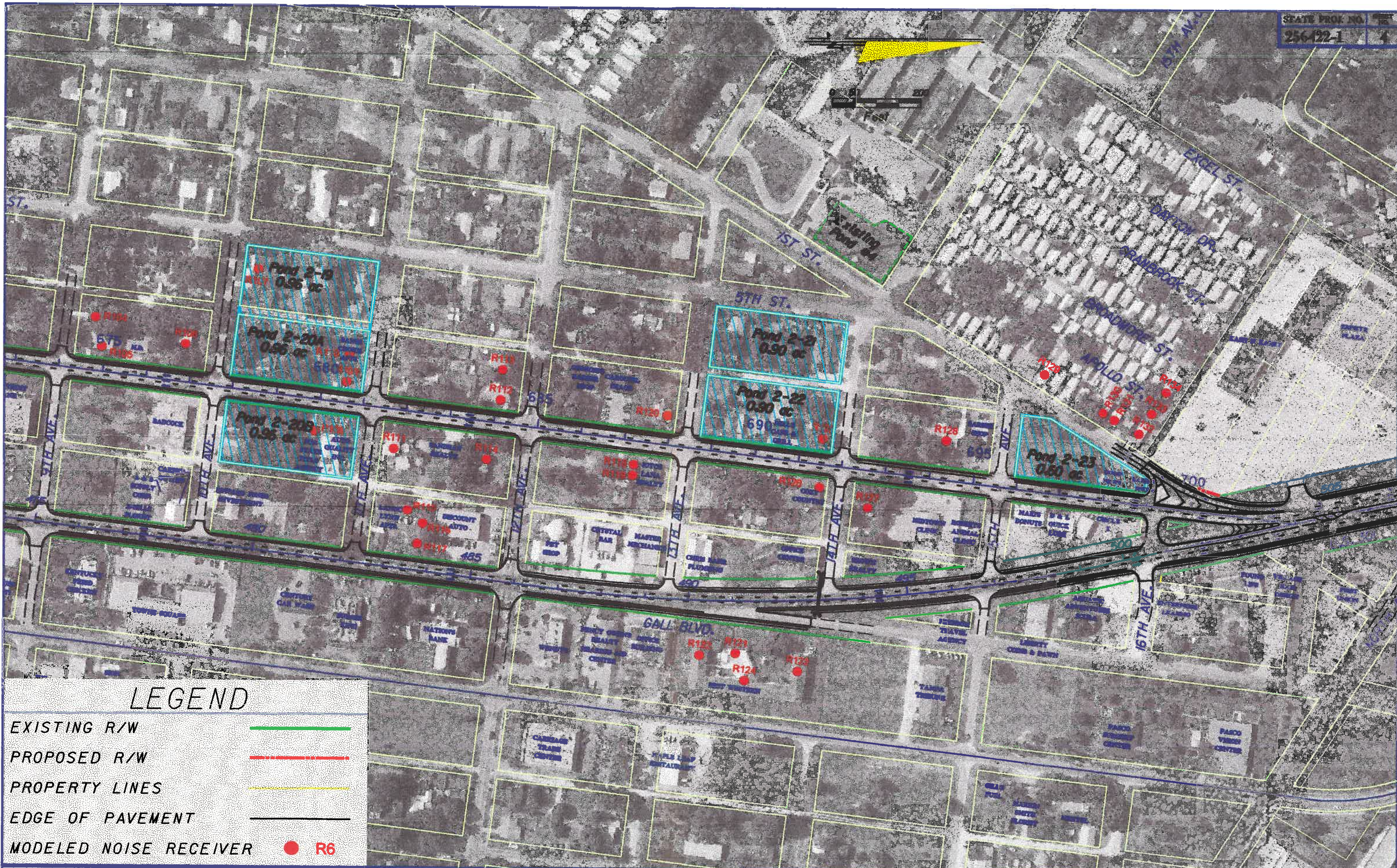
- EXISTING R/W ———
- PROPOSED R/W - - - - -
- PROPERTY LINES ———
- EDGE OF PAVEMENT ———
- MODELED NOISE RECEIVER ● R6

REVISIONS											
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

**RECOMMENDED
ALTERNATIVE**

FLORIDA DEPARTMENT OF
TRANSPORTATION

**U.S. 301 MODELED NOISE RECEIVERS
FIGURE 6**



LEGEND

- EXISTING R/W ———
- PROPOSED R/W - - - - -
- PROPERTY LINES ———
- EDGE OF PAVEMENT ———
- MODELED NOISE RECEIVER ● R6

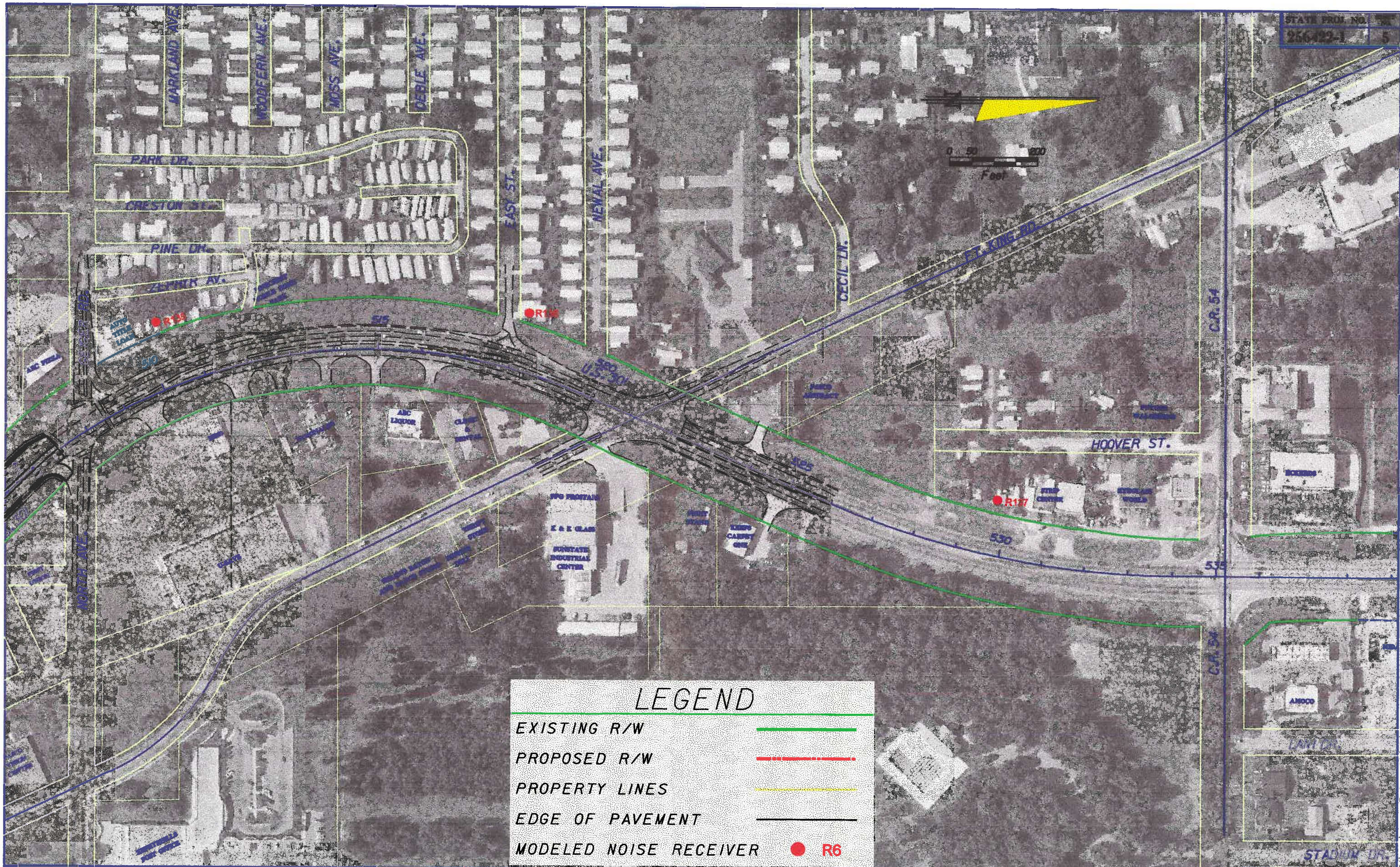
REVISIONS

DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

**RECOMMENDED
ALTERNATIVE**

FLORIDA DEPARTMENT OF
TRANSPORTATION

**U.S. 301 MODELED NOISE RECEIVERS
FIGURE 6**



LEGEND

EXISTING R/W	—
PROPOSED R/W	- - -
PROPERTY LINES	—
EDGE OF PAVEMENT	—
MODELED NOISE RECEIVER	● R6

REVISIONS			
DATE	BY	DESCRIPTION	

RECOMMENDED
ALTERNATIVE

FLORIDA DEPARTMENT OF
TRANSPORTATION

U.S. 301 MODELED NOISE RECEIVERS
FIGURE 6

**Table 2
Validation***

Location	Time/ Date	Field Measure	Computer Validation *	Decibel Difference
East of US 301, south of C Avenue	10:44 a.m. 11-12-00	66.0	64.1	1.9
East of US 301, south of C Avenue	2:05 p.m. 1-12-00	66.3	70.0	3.7
West of US 301, south of C.R. 54	11:30 a.m. 1-12-00	68.4	68.8	0.9
West of US 301, south of C.R. 54	11:50 a.m. 1-12-00	68.6	68.2	0.4
West of US 301, south of C.R. 54	2:25 p.m. 1-12-00	68.3	70.3	2.0

* Computer output is provided in Appendix B.

4.3 Predicted Noise Levels

The 66 dBA noise contour (isopleth) for the Build Alternative was estimated using the TNM computer model and previously discussed traffic volumes and speed data. The 66 dBA contour, which delineates points of equal noise level, does not consider any shielding of noise provided by structures between the receiver and the roadway. Additionally, the noise contours do not account for traffic noise from sources other than U.S. 301 and 6th Street. The contours are provided in Table 3 and 4.

Table 3
66 dBA Noise Isopleth for Design Year Build Conditions

Segment of U.S. 301	Distance from Proposed Centerline
S.R. 39 – to U.S. 301	100 ft
U.S. 301 to C Ave	65 ft
C Ave. to S Avenue	65 ft
S Ave. to 5 th Avenue	65 ft
5 th Ave. to 12 th Avenue	65 ft
12 th Ave. to N Avenue	65 ft
N Ave. to Ft. King Highway	100 ft
Ft. King Highway to CR 54	115 ft

Table 4
66 dBA Noise Isopleth for Design Year Build Conditions

Segment of 6 th Street	Distance from Proposed Centerline
U.S. 301 to C Avenue	70 ft
C Ave. to S Avenue	70 ft
S Ave. to 5 th Avenue	70 ft
5 th Ave. to 12 th Avenue	70 ft
12 th Ave. to N Avenue	75 ft

4.4 Noise Analysis

Based on the noise contour data, a review of land use data, proximity of noise sensitive sites to U.S. 301 and 6th Street, and field verification of noise sensitive site locations, a total of 137 receivers were evaluated representing 229 noise sensitive sites. Predicted noise levels are summarized in Table 5.

For the 2025 Build Alternative, 101 of 229 noise sensitive sites would approach or exceed the NAC. These noise sensitive sites are generally located in the first-row of residences (i.e., single-family houses, apartment/ duplexes, etc.) in closest proximity to 6th Street.

In addition to approaching or exceeding the NAC, sensitive sites are considered affected if the Build Alternative is predicted to cause a substantial increase in the noise level. The FDOT defines the term “substantial increase” as 15 or more dBA above the existing noise level as a direct result of the transportation improvement project. Comparing the existing to the design year build condition, the range of increase for the predicted noise levels is from 0.6 to 14.5 dBA. Higher traffic volumes on 6th Street for the 2025 Build condition cause most increases. The proposed improvements are planned to occur within the existing right of way where the noise sensitive sites are already in close proximity to the right of way line.

Some receivers are predicted to experience a small decrease in traffic noise. The decrease is a result of shifting the alignment of S.R. 39 away from the receivers.

Table 5
Predicted Existing and Future Noise Levels

Receiver Identification	Dwelling Units Represented	2000 Existing	2025 No-Build	2025 Build	Difference dBA	Approaches/ Exceeds NAC
<i>Clyde's Cottages</i>						
R1	1	57.3	57.3	62.1	4.8	No
R2	1	59.4	59.4	65.8	6.4	No
R3	1	58.2	58.2	63.8	5.6	No
<i>Twilight Motel</i>						
R4	1	64.8	64.8	62.3	-2.5	No outdoor use
R5	1	61.1	61.1	59.8	-1.3	No outdoor use
R6	1	57.3	57.3	57.9	.6	No outdoor use
R7	Pool	66.9	66.9	65.8	-1.1	No
<i>Between Palm Grove Ave and C Ave</i>						
R8	1	52.6	52.6	58.9	6.3	No
R9	1	53.3	53.3	58.2	4.9	No
R10	1	53.2	53.2	58.4	5.2	No
R11	1	54.6	54.6	62.2	7.6	No
R12	1	63.0	63.0	65.7	2.7	No
R13	1	54.2	54.2	64.4	10.2	No
R14	1	51.0	51.1	61.4	10.4	No
R15	1	49.8	50.1	57.8	8.0	No
R16	1	54.5	54.5	57.4	2.9	No
R17	1	54.2	55.7	62.6	8.4	No
R18	1	51.6	52.7	61.4	9.8	No
R19	1	50.4	51.2	59.6	9.2	No
R20	1	54.3	55.8	63.9	9.6	No
R21	1	51.7	52.7	61.9	10.2	No
R22	1	57.6	59.4	70.6	13.0	No
R23	1	51.7	52.8	62.7	11.0	No
R24	1	52.7	54.0	64.7	12.0	No
R25	1	49.3	49.9	57.8	8.5	No
R26	1	55.7	57.4	69.4	13.7	No
R27	1	48.6	49.2	56.4	7.8	No
R28	1	52.7	54.0	65.1	12.4	No
R29	1	49.2	49.9	57.9	8.7	No
R30	5	53.4	54.8	66.7	13.3	Yes
R31	1	48.9	49.5	57.1	8.2	No
R42	4	54.8	55.8	68.8	14.0	Yes
R43	2	54.5	55.2	65.7	11.2	No
<i>Siesta Motel</i>						
R44	1	55.3	55.6	62.2	6.9	No outdoor use

Receiver Identification	Dwelling Units Represented	2000 Existing	2025 No-Build	2025 Build	Difference dBA	Approaches/ Exceeds NAC
R45	1	57.9	58.0	61.2	3.3	No outdoor use
R46	1	62.0	62.1	63.7	1.7	No outdoor use
<i>Between Palm Grove Ave and C Ave (cont'd)</i>						
R47	1	55.4	56.6	70.1	14.7	Yes
R48	1	54.7	55.2	63.6	8.9	No
R49	3	55.8	56.0	61.2	5.4	No
R50	5	60.4	60.4	62.5	2.1	No
R51	4	63.5	63.5	65.2	1.7	No
R52	3	67.1	67.1	68.8	1.7	Yes
R53	3	55.4	56.6	69.9	14.5	Yes
R54	2	55.0	55.3	62.3	7.3	No
R55	2	55.8	56.0	61.2	5.4	No
R56	3	58.5	58.5	61.3	2.8	No
R57	2	67.1	67.1	68.9	1.8	Yes
R58	2	54.8	55.9	68.1	13.3	Yes
R59	2	54.4	55.1	65.3	10.9	No
R60	2	54.8	55.2	62.8	8.0	No
R61	2	56.6	56.7	60.8	4.2	No
R62	1	59.1	59.1	61.6	2.5	No
R63	1	62.0	62.1	64.0	2.0	No
R64	1	64.1	64.1	66.0	1.9	Yes
R65	2	55.4	56.6	69.5	14.1	Yes
R66	2	65.4	65.4	67.6	2.2	Yes
R67	1	55.0	55.3	62.1	7.1	No
R68	3	54.8	55.9	67.6	12.8	Yes
R69	1	54.8	55.9	67.6	12.8	Yes
R70	1	54.4	55.1	64.7	10.3	No
R76	1	54.1	54.1	55.9	1.8	No
R77	1	52.5	52.5	54.8	2.3	No
R78	1	55.6	55.6	56.8	1.2	No
R79	1	55.2	55.2	56.5	1.3	No
R80	1	53.5	53.6	55.0	1.5	No
R81	1	57.6	57.6	58.6	1.0	No
<i>C Ave to South Ave</i>						
R32	5	54.4	55.9	68.5	14.1	Yes
R33	1	51.2	52.3	62.5	11.3	No
R34	1	51.7	52.8	63.4	11.7	No
R35	1	49.1	49.8	57.5	8.4	No
R36	3	54.4	55.9	68.5	14.1	Yes
R37	2	55.8	57.4	70.3	14.5	Yes
R38	1	52.2	53.4	64.4	12.2	No
R39	1	48.8	49.6	56.7	7.9	No

Receiver Identification	Dwelling Units Represented	2000 Existing	2025 No-Build	2025 Build	Difference dBA	Approaches/ Exceeds NAC
R40	3	54.5	56.4	68.5	14.0	Yes
R41	1	49.4	50.7	57.6	8.2	No
R71	1	54.5	55.4	65.7	11.2	No
R72	2	55.4	56.6	68.6	13.2	Yes
R73	1	54.6	55.2	63.8	9.2	No
R74	3	56.4	57.9	70.4	14.0	Yes
R75	6	55.1	55.6	61.9	6.8	No
<i>South Ave to 5th Ave</i>						
R82	4	57.4	65.2	70.7	13.3	Yes
R83	1	55.8	62.3	67.8	12.0	Yes
R84	1	54.8	59.0	64.1	9.3	No
R85	1	55.9	62.2	67.5	11.6	Yes
R86	2	61.3	65.3	70.3	9.0	Yes
R87	1	57.1	60.3	64.6	7.5	No
R88	1	58.6	62.2	67.0	8.4	Yes
R89	2	60.5	64.1	69.0	8.5	Yes
R90	2	58.1	61.3	65.7	7.6	No
R91	2	56.8	59.6	63.5	6.7	No
R92	1	59.5	62.9	67.6	8.1	Yes
R93	2	60.2	63.7	68.6	8.4	Yes
R94	2	62.3	65.7	69.6	7.3	Yes
<i>5th Ave to 12th Ave</i>						
R95	2	60.5	64.2	69.1	8.6	Yes
R96	1	57.7	61.2	65.7	8.0	No
R97	4	63.2	67.0	71.7	8.5	Yes
R98	1	54.4	57.5	61.5	7.1	No
R99	1	51.4	54.0	57.5	6.1	No
R100	2	60.6	64.1	69.1	8.5	Yes
R101	1	56.2	58.1	61.1	4.9	No
R102	1	55.4	58.7	62.8	7.4	No
R103	1	51.2	53.7	57.2	6.0	No
R104	1	55.2	58.2	62.2	7.0	No
R105	1	60.7	64.1	69.0	8.3	Yes
R106	1	58.4	60.8	65.1	6.7	No
R107	1	55.6	57.7	61.6	6.0	No
R108	2	60.5	62.6	67.1	6.6	Yes
R109	3	62.8	65.1	70.0	7.2	Yes
R110	1	59.0	61.3	65.6	6.6	No
R111	1	59.0	61.3	65.6	6.6	No
R112	4	64.0	66.4	71.1	7.1	Yes
R113	1	56.0	58.0	61.9	5.9	No
R114	1	57.7	59.4	62.8	5.9	No

Receiver Identification	Dwelling Units Represented	2000 Existing	2025 No-Build	2025 Build	Difference dBA	Approaches/ Exceeds NAC
<i>Zephyr Inn Hotel</i>						
R115	1	60.5	60.7	61.8	1.3	No outdoor use
R116	1	62.5	62.7	63.5	1.0	No outdoor use
R117	1	65.6	65.7	66.5	1.0	No outdoor use
<i>12th Ave to 13th Ave</i>						
R118	2	62.2	64.9	69.4	7.2	Yes
R119	2	60.3	62.7	66.8	6.5	Yes
R120	2	63.8	66.7	71.2	7.4	Yes
<i>Best Western Hotel</i>						
R121	Pool	55.8	56.1	57.0	1.2	No
R122	1	56.3	56.6	57.4	1.1	No outdoor use
R123	1	55.2	55.6	56.6	1.4	No outdoor use
R124	1	53.8	54.2	55.4	1.6	No outdoor use
<i>13th Ave to CR 54</i>						
R125	4	67.9	70.9	74.8	6.9	Yes
R126	1	60.5	62.4	66.0	5.5	Yes
R127	1	60.6	62.1	65.1	4.6	No
R128	2	63.6	66.5	71.0	7.4	Yes
R129	3	54.3	55.9	58.7	4.4	No
R130	3	46.8	48.0	50.0	3.2	No
R131	2	47.2	48.3	50.1	2.9	No
R132	1	59.0	61.1	64.7	5.7	No
R133	1	56.5	58.1	61.1	4.6	No
R134	1	55.0	56.4	59.4	4.4	Yes
R135	6	59.1	60.0	60.5	1.4	No
R136	2	58.2	59.0	59.3	1.1	No
R137	4	69.2	69.9	70.7	1.5	Yes

4.5 Noise Abatement Techniques

As stipulated by 23 CFR Part 772, the FHWA requires that noise abatement measures be evaluated if the noises level at a sensitive site approaches or exceeds the NAC. Therefore, abatement was evaluated for the 101 noise sensitive sites affected by traffic noise. Abatement measures considered include traffic system management, alignment modifications, property acquisition, land use controls and noise barriers.

4.5.1 Traffic System Management

Traffic system management measures that limit motor vehicle speeds and reduce traffic volumes can be used to abate traffic noise. However, these measures also conflict with the purpose of providing a facility that can accommodate forecasted traffic volumes. The proposed posted traffic speed along the one-way pair section of U.S. 301 and 6th Street is 35 mph. No other traffic system management techniques are considered feasible abatement measures.

4.5.2 Alignment Modifications

Alignment modification generally involves orientating and/or siting the roadway at sufficient distances from noise sensitive areas so as to minimize traffic noise. Since this project involves lane additions to existing roadways, the existing profiles and alignment dictate the proposed horizontal and vertical alignment. Project costs and detrimental effects on land use are minimized by staying within the existing corridor. An alignment modification that could provide a substantial noise reduction is, therefore, not a feasible or reasonable measure.

4.5.3 Property Acquisition

Property acquisition programs to provide noise buffer zones or space for noise barrier construction are not feasible due to the limited availability of vacant land along the project corridor and the costs to acquire the necessary right of way.

4.5.4 Land Use Controls

Land use controls can be used to minimize placing noise sensitive sites in locations that may be affected by traffic noise. Within the study area, properties are nearly all developed. Local planning officials can use information provided in this report as a guide to minimize development or redevelopment of noise sensitive land uses in proximity to U.S. 301 and 6th Street.

4.5.5 Noise Barriers

Noise barriers reduce noise levels by blocking the sound path between a roadway and noise sensitive site. To be effective in reducing traffic noise, a noise barrier must be relatively long, continuous (with no intermittent openings) and sufficiently high enough to provide the necessary reduction in noise levels. On roadways such as U.S. 301 and 6th Street, the ability of a noise barrier to reduce noise levels can be limited by the need to accommodate numerous access drives and cross streets. Therefore, noise barriers are not considered to be a reasonable or feasible abatement measure.

4.6 Conclusions

For the Build Alternative and year 2025 traffic conditions, 101 noise sensitive sites are predicted to experience noise levels that approach or exceed the NAC. Based on the noise analysis performed to date, there are no solutions available to mitigate noise at these sites.

5.0 CONSTRUCTION NOISE AND VIBRATION

During the construction phase of the proposed project, short-term noise may occur as a result of both stationary and mobile construction equipment. The construction noise will be temporary at any one location.

Construction noise will be controlled by adherence to the controls listed in the most recent edition of the FDOT Standard Specifications for Road and Bridge Construction (2000).

The Construction Engineer in cooperation with the appropriate FDOT District Environmental Specialist will address specific noise problems that may arise during construction of the project.

Using the FDOT's partial listing of vibration sensitive sites, the following have been identified as potentially affected by construction vibration: residences, Whitfield Funeral Home, Midtown Medical Clinic, Zephyr Motel, Best Western, Siesta Motel, Twilight Motel, First Baptist Church, and Shepard Park. During final design, potential vibration impacts caused by construction will be evaluated, any local noise/vibration ordinances will be identified and provisions will be added to the project's construction specifications as needed.

6.0 PUBLIC INVOLVEMENT

An ongoing public involvement process is being carried out during this PD&E Study. Coordination with the local agencies and officials is also ongoing. Once finalized, a copy of this report will be provided to appropriate local planning authorities.

7.0 REFERENCES

Title 23 CFR, Part 772, Federal Highway Administration, U.S. Department of Transportation, Procedures for Abatement of Highway Traffic Noise and Construction Noise, April 1998 edition.

Florida Department of Transportation, Florida Project Development and Environment Manual, Part 2, Chapter 17, September 2000.

Federal Highway Administration, Highway Traffic Noise Analysis and Abatement, Policy and Guidance, June 1995.

Federal Highway Administration, Measurement of Highway Related Noise, May 1996.

Florida Department of Transportation, Standard Specifications for Road and Bridge Construction, 2000.