NOISE STUDY REPORT

U.S. 301 (S.R. 41)
I-4 to Fowler Avenue
Hillsborough County, Florida

FP Number: 25536212101
Federal Aid Project Number: XU-311-1(33)

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EXECUTIVE SUMMARY

This Noise Study Report evaluates noise level increases and presents possible noise abatement considerations for the proposed improvements to U.S. 301 between Interstate 4 (I-4) and Fowler Avenue in Hillsborough County, Florida.

Noise isopleths for the Build Alternative indicate that the 65 decibel (dBA) isopleth extends between 40.8 meters (m) (134 feet [ft]) and 58.2 m (191 ft) along U.S. 301 between I-4 and Fowler Avenue. Based on this data, a total of 40 noise sensitive receivers were identified within the 65 dBA isopleth warranting abatement consideration.

One noise barrier was found to be feasible and economically reasonable for the Lynch Trailer Park at the south end of the project. The noise barrier was modeled at the right of way (ROW) line and a length of 63.1 m (207 ft) and 3.0 m (10 ft) high is predicted to provide a 5 dBA insertion loss for four mobile homes. The estimated total cost of the barrier is $41,400 or $10,350 per benefitted receiver. Since most of the other residential areas have direct driveway access onto U.S. 301 the ability to model continuous noise barriers was limited.

1.0 INTRODUCTION

The Florida Department of Transportation (FDOT) is conducting a Project Development and Environment (PD&E) study which evaluates improvement options for a 7.4 kilometers (km) (4.6 miles [mi]) section of U.S. 301 (S.R. 41) between I-4 (S.R. 400) and Fowler Avenue in Hillsborough County, Florida. See Project Location Map, (Figure 1).

The objective of the PD&E study is to provide documented information and analyses that will help the FDOT and the Federal Highway Administration (FHWA) reach a decision on the type, design, and location of the necessary improvements along this segment of U.S. 301. The proposed improvements are necessary in order to accommodate future transportation needs in a safe and efficient manner.

The purpose of this Noise Study Report is to predict and evaluate the noise level increases related to the proposed improvements. The Noise Study Report was prepared using the methodology established in Title 23 CFR, Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise, and the FDOT PD&E Manual, Part 2, Chapter 17, December, 1997 version.

1.1 Existing Facility

The U.S. 301 corridor is a north/south primary arterial facility that has an interchange connection to I-4. Throughout the project limits, U.S. 301 is currently a 2-lane rural roadway with 3.6 m (12 ft) wide lanes, grass shoulders, and drainage ditches. The existing typical section is shown in Figure 2. The Hillsborough County Metropolitan Planning Organization (MPO) has the responsibility of developing a long range transportation plan for the county to serve the needs of the metropolitan area over the next 20 to 25 years. The adopted 2015 *Long Range Transportation Plan (LRTP)*, updated in 1995 has identified the section of U.S. 301 from I-4 to Harney Road to be improved from 2-lanes to a 4-lane divided roadway.

This PD&E Study's limits, from I-4 to Fowler Avenue, extend past the MPO's terminus at Harney Road, for two reasons. One reason is that Fowler Avenue is a more logical terminus, having an interchange with I-75. The other reason is that the projected 2020 traffic volume will require 4-lanes for the entire project, including the section from Harney Road to Fowler Avenue, which is documented in the Traffic Memorandum.

1.2 Proposed Improvements

The FDOT proposes to improve U.S. 301 to a 4-lane divided highway from I-4 to Fowler Avenue. Bicycle and pedestrian facilities are to be included in this project. Because of the increasing development along this corridor, the design of the 4-lane suburban section should allow for widening to a 6-lane urban section in the future. See proposed suburban Typical Section, (Figure 3).

PROJECT LOCATION MAP

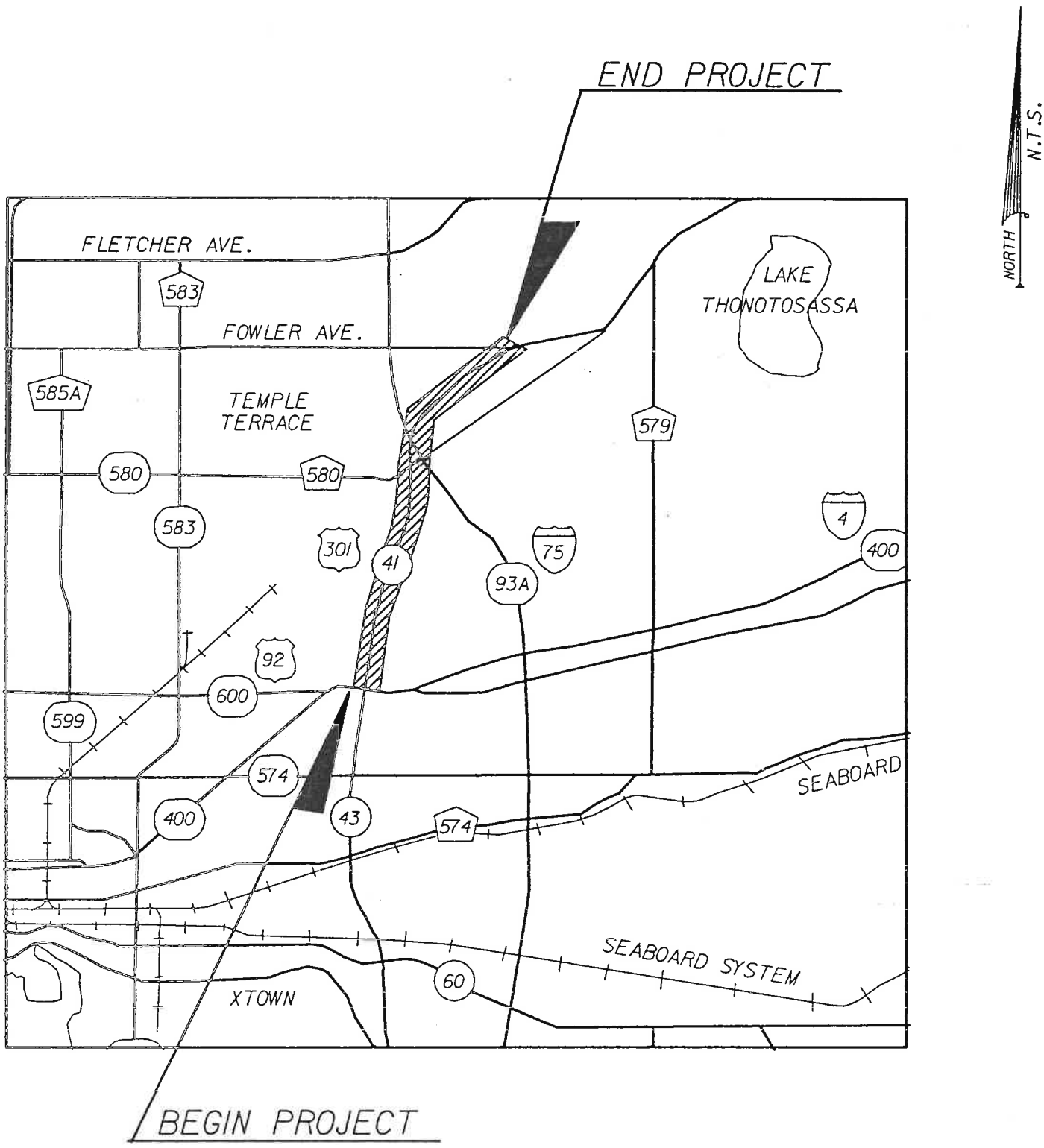
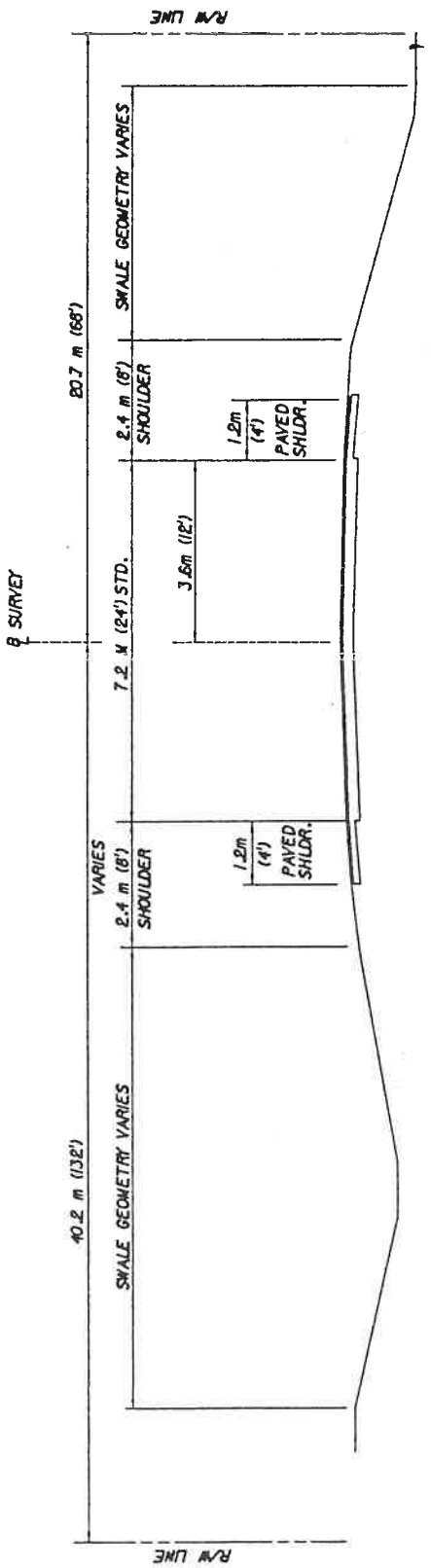


Figure 1



EXISTING TYPICAL SECTION

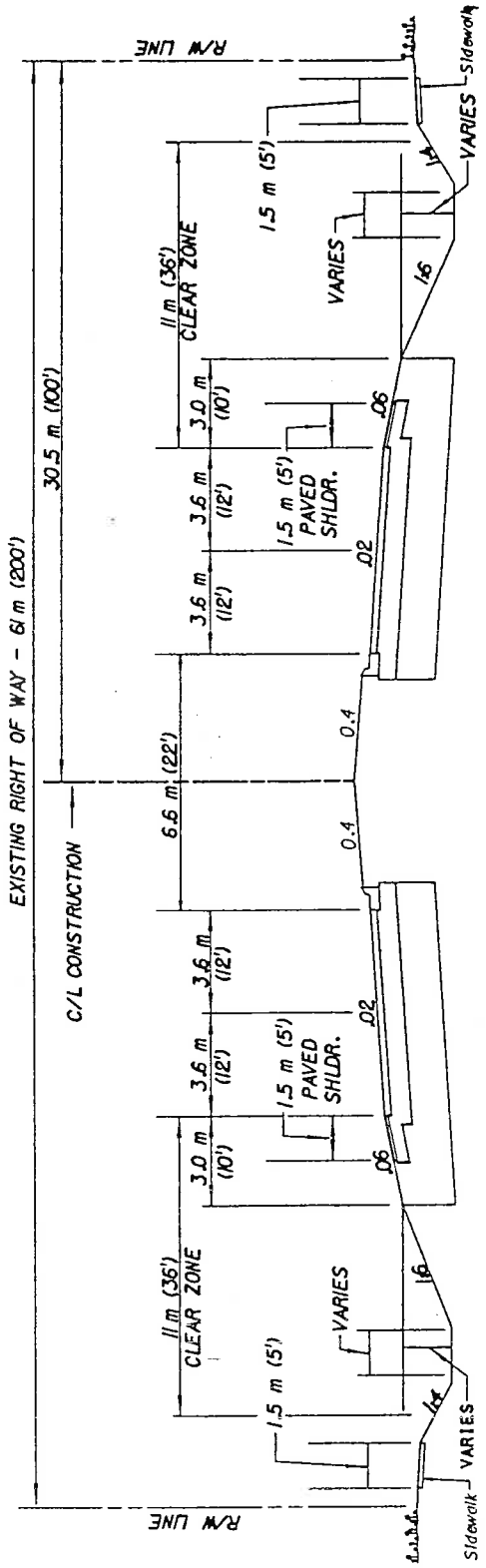
I-4 TO FOWLER AVE.

STATE OF FLORIDA

DEPT. OF TRANSPORTATION

US 301
FROM I-4 TO FOWLER AVE.
EXISTING TYPICAL SECTION

Figure 2



U.S. 301 I-4 TO FOWLER AVE.

PROPOSED TYPICAL SECTION

DESIGN SPEED - 80 km/h (50 mph)

STATE OF FLORIDA

DEPT. OF TRANSPORTATION

US 301

FROM I-4 TO FOWLER AVE.

PROPOSED TYPICAL SECTION

ALTERNATIVE "D"

Figure 3

1.3 Need for Improvement

U.S. 301 between I-4 and Fowler Avenue is a 2-lane roadway which has operated since its construction without any major improvements. The section south of this project is a 4-lane divided roadway, which transitions to 2-lanes just north of I-4. Growth in this area has placed increasingly heavy demands on this highway.

Traffic volumes for 1994 along U.S. 301 range from 10,100 vehicles per day (vpd) at Fowler Avenue to 27,500 vpd at I-4. The projected traffic volumes for the year 2020 range from 17,000 vpd at Fowler Avenue to 38,000 vpd at I-4.

To accommodate the expected continued growth in traffic, this section of U.S. 301 will require four travel lanes, two in each direction. For a more detailed explanation of traffic volumes and the traffic analyses, see the Traffic Technical Memorandum, April 1997, for this project.

2.0 METHODOLOGY

All noise levels generated for this study were produced using the FHWA STAMINA 2.0 (Florida Version, 2.1) traffic noise prediction model. All noise levels, measured and predicted, are expressed in decibels (dB) on the "A"-scale. This scale most closely approximates the response characteristics of the human ear for low level sound. All noise levels are reported as LAeq1h values which theoretically contain the same amount of acoustic energy as the actual time-varying, A-weighted sound level over a period of one hour.

The traffic volumes utilized for input into the traffic noise prediction computer models were obtained from Florida's Level of Service Standards and Guidelines Manual for Planning (1995), published by the FDOT Planning Department and/or the projected traffic volumes (demand). LOS C or demand, whichever was less, was used in the analyses. The posted speed average was used for existing predictions because the posted speeds varied throughout this segment between northbound and southbound. Anticipated posted speeds were used for future predictions. The traffic volumes and applicable side roads are shown on Table 1 with the corresponding volumes and speeds. The volumes used for the analysis are shown in bold.

The peak hour factor (K), the design hour truck factor (T) and the directional factor (D) used for the noise analysis are shown on Table 2. This information was used to determine hourly traffic volumes from Annual Average Daily Traffic (AADT) figures.

TABLE 1
TRAFFIC DATA

Segment	Existing 1994 AADT	KM/H (MPH)	No-Build 2020 AADT	KM/H (MPH)	Build 2020 AADT	KM/H (MPH)
I-4 to Sligh Avenue	**15,200 LOS C** 24,500 Demand	70 (45)	**15,200 LOS C** 38,000 Demand	70 (45)	**33,300 LOS C** 38,000 Demand	70 (45)
Sligh Avenue to Harney Road	15,200 LOS C **13,000 Demand**	90 (55)	**15,200 LOS C** 28,000 Demand	90 (55)	33,300 LOS C **28,000 Demand**	90 (55)
Harney Road to Fowler Avenue	15,200 LOS C **9,600 Demand**	90 (55)	**15,200 LOS C** 17,000 Demand	90 (55)	33,300 LOS C **17,000 Demand**	90 (55)
Southbound U.S. 301 to westbound Fowler Avenue turning ramp	**8,300 LOS C** 9,300 Demand	70 (45)	**8,300 LOS C** 15,600 Demand	70 (45)	**8,300 LOS C** 15,600 Demand	70 (45)

TABLE 2
% TRAFFIC DATA

Segment	Year	K%	D%	T%
I-4 to Fowler Avenue	1994 Existing 2020 No-Build 2020 Build	10.1 10.1 10.1	59.2 59.2 59.2	5 5 5
Southbound U.S. 301 to westbound Fowler Avenue turning ramp	1994 Existing 2020 No-Build 2020 Build	10.1 10.1 10.1	100 100 100	5 5 5

3.0 TRAFFIC NOISE ANALYSIS

3.1 Noise Sensitive Sites

Noise sensitive sites are those sites where high noise exposure could affect the activities which normally occur at the location. The FHWA has established noise levels at which noise abatement must be considered, or Noise Abatement Criteria (NAC). As shown in Table 3, these criteria vary according to a property's land use category. When future predicted traffic noise levels "approach" or exceed the NAC the FHWA requires that noise abatement measures be considered. The FDOT considers the term "approach" to mean within 2 dBA of the FHWA criteria.

TABLE 3
FEDERAL HIGHWAY ADMINISTRATION
NOISE ABATEMENT CRITERIA

Land Use Category	Design Noise Level LAeq1h	Description of Land Use 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, FHWA, U.S. Department of Transportation, as amended.

The existing land use along U.S. 301 is mixed, with predominantly commercial and industrial use and some residences. The future land use in Hillsborough County Local Government Comprehensive Plan (LGCP) is to remain mixed. Future uses are expected to become increasingly commercial along U.S. 301. The noise sensitive areas identified as residential along U.S. 301 are classified as FHWA Land Use Category B. The churches that were identified are classified as FHWA Land Use Category E.

The residential receiver points within the noise sensitive areas were set up in accordance with the PD&E Manual, Part 2, Chapter 17. The receiver points were placed at the edge of the dwelling unit closest to the major traffic noise source.

3.2 Measured Noise Levels

Field measurements are taken in accordance with the FHWA Sound Procedures for Measuring Highway Noise: Final Report. Each field measurement is obtained using a Metrosonic 308-dBA Dosimeter. The Dosimeter is calibrated before and after each monitoring period using a Metrosonics Sound Level Calibrator. Speeds are recorded with a K-15 Radar Gun.

Field measurements were taken in order to validate the STAMINA computer model. Site selection for the field measurements were based on a location where a representative sampling of free-flow traffic could be obtained. Vehicle counts, vehicle classifications and speeds were also recorded. Table 4 presents the field measurements and the validation results using the STAMINA noise

prediction computer model. The computer model is approved for use if measured and predicted noise levels are within the FDOT tolerance standard of 3 dBA. As shown in Table 4, the ability of the STAMINA computer model to accurately predict noise levels for this project was confirmed as the levels are within the FDOT validation standard.

TABLE 4
VALIDATION*

Location	Time/ Date	Field Measure	Computer Validation	Decibel Difference
Lynch Trailer Park	9:55 A.M. 11/6/96	71.3 dBA	72.3 dBA	1 dBA
Sunset Memory Gardens	10:40 A.M. 11/6/96	68.5 dBA	70.9 dBA	2.4 dBA

* Input forms and computer runs are included in the Technical Appendix.

3.3 Predicted Noise Levels

Noise level isopleths associated with the existing and future No-build and Build Alternatives were determined using the STAMINA computer program. Isopleths, or points of equal noise level, are identified for two specific noise levels. The 65 dBA isopleth distance is included in order to identify those receptors for which noise abatement considerations are warranted. The 67 dBA isopleth distance is included for use by local officials in planning highway noise compatible future land uses adjacent to the proposed facility. The isopleth distances are indicated in Table 5.

TABLE 5
DISTANCE TO NOISE LEVEL ISOPLETHS*

65 dBA Isopleths

Segment	Existing 1994	No-build 2020	Build 2020
I-4 to Sligh Avenue	34.4 m (113 ft)	34.4 m (113 ft)	56.7 m (186 ft)
Sligh Avenue to Harney Road	40.5 m (133 ft)	43.5 m (143 ft)	58.2 m (191 ft)
Harney Road to Fowler Avenue	32.9 m (108 ft)	43.5 m (143 ft)	40.8 m (134 ft)
I-4 to Sligh Avenue	25.9 m (85 ft)	25.9 m (85 ft)	42.9 m (141 ft)
Sligh Avenue to Harney Road	29.8 m (98 ft)	32.3 m (106 ft)	42.9 m (141 ft)
Harney Road to Fowler Avenue	24.3 m (80 ft)	32.3 m (106 ft)	30.7 m (101 ft)

* All distances are measured from the center of the near travel lane. Computer runs are included in the Technical Appendix.

Based on the isopleth distance data shown in Table 5, a total of 40 noise sensitive receivers were identified within the 65 dBA isopleth for the Build Alternative. There were 13 noise sensitive receivers within the existing 65 dBA isopleth and 23 noise sensitive receivers within the 65 dBA isopleth for the No-Build Alternative. The isopleth distance and the noise sensitive sites for the Build Alternative is illustrated in Figure 4.

The project limits were divided into the following six areas for the noise analysis and are shown in Figure 4:

Area 1 - The beginning of the project to Harney Canal
Area 2 - Harney Canal to Langston's Used Auto Parts
Area 3 - Langston's Used Auto Parts to Harney Road
Area 4 - Harney Road to The Tampa Bypass Canal
Area 5 - Tampa Bypass Canal to Fowler Avenue
Area 6 - Fowler Avenue to the end of the project

3.4 Noise Impact Analysis

A total of 106 noise sensitive sites were modeled along U.S. 301. Table 6 presents the predicted noise levels for each site for the existing facility in 1994; the existing facility in 2020 under the No Build Alternative and; the proposed facility in 2020 under the Build Alternative.

STATE PROJ. NO.	SHEET NO.
10260-1509	2

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FLORIDA DEPARTMENT OF TRANSPORTATION

U.S. 301 - I-4 TO FOWLER AVE.

FIGURE 4

#####$SYTIME$#####

#####$DGNSPECIFICATION$#####

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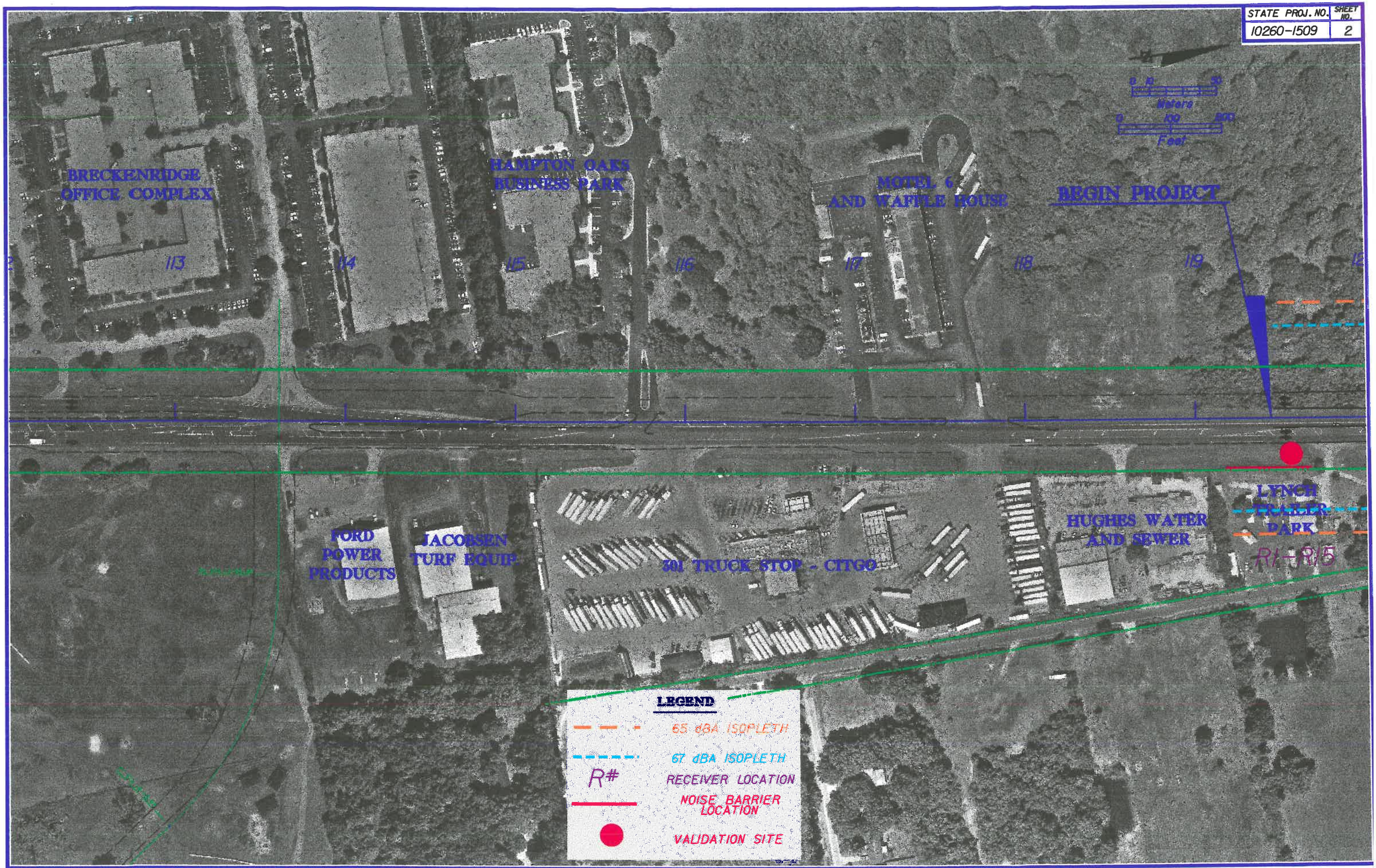

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FLORIDA DEPARTMENT OF TRANSPORTATION

U.S. 301 - I-4 TO FOWLER AVE.

FIGURE 4

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########DGNSPECIFICATION########

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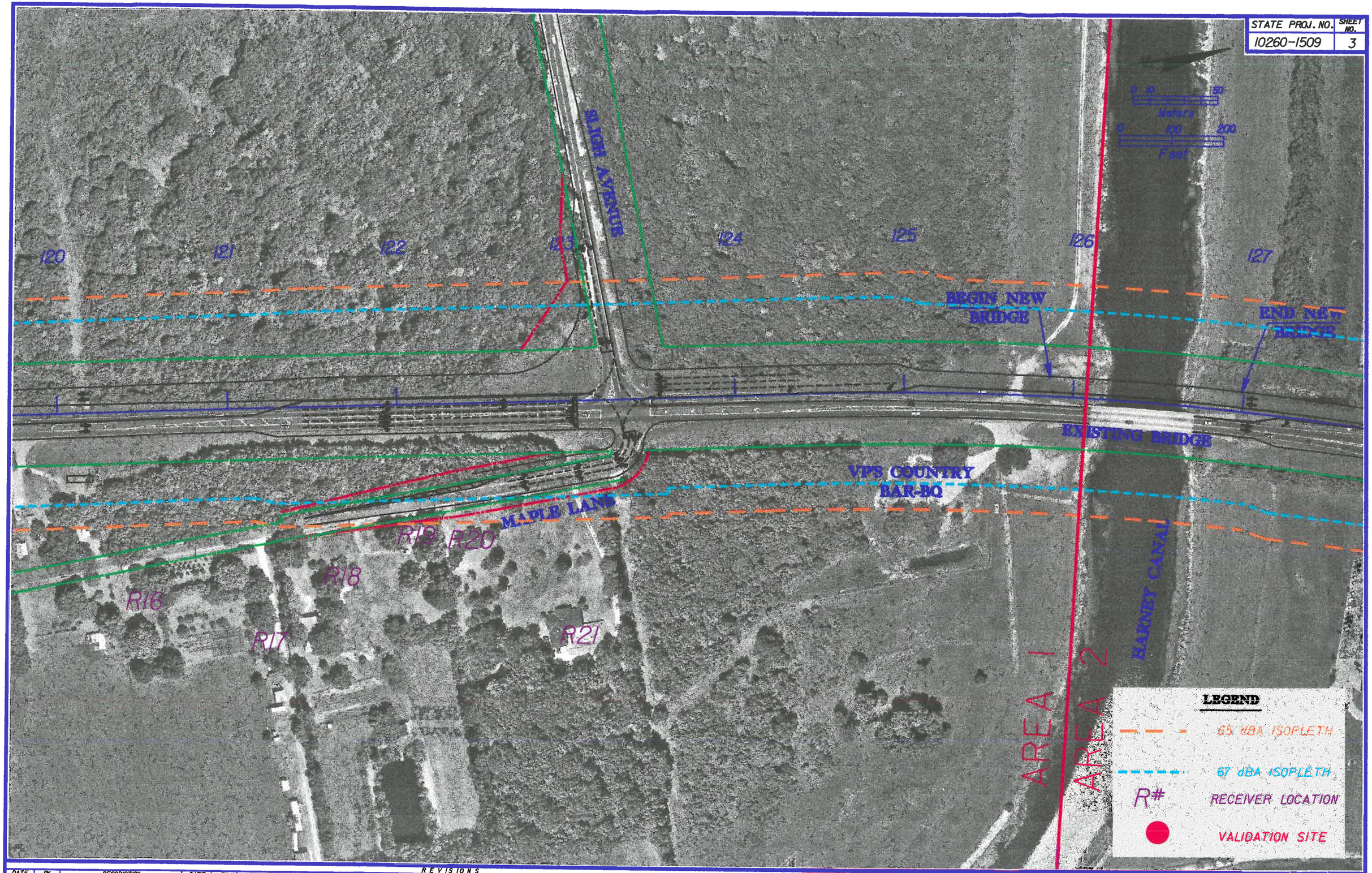

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FLORIDA DEPARTMENT OF TRANSPORTATION

U.S. 301 - I-4 TO FOWLER AVE.

FIGURE 4

STATE PROJ. NO.	SHEET NO.
10260-1509	4

0 50 100
Meters
0 100 200
Feet

VOLVO DEALER

GATOR FORD

128 129 130 131 132 133 134 135

WEST CENTRAL SIGN INC

GULF COAST THERMO KING

FLORIDA UTILITY TRAILERS

BARNS IND.

SOUTH WEST FLORIDA WATER MANAGEMENT DISTRICT

LEGEND

- 65 dBA ISOPLETH
- 67 dBA ISOPLETH
- R# RECEIVER LOCATION
- VALIDATION SITE

AREA 2

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

FLORIDA DEPARTMENT OF TRANSPORTATION

U.S. 301 - I-4 TO FOWLER AVE.

FIGURE 4

!SYTIME.....
########DGNSPECIFICATION########

STATE PROJ. NO.	SHEET NO.
10260-1509	5

AREA 2

AREA 3

YELLOW TRUCKING

135

CARPENTER'S TECH TRAINING CENTER

136

MORGAN CORP.

137

138

139

DALLAS BULL LOUNGE

140

IUEC LOCAL 74

141

142

DUMOOPF SYSTEM

LANGSTON'S USED AUTO PARTS

VACANT BLDG. TRX 207

CHOICE EQUIP.

0 50 100
Meters

0 200 400
Feet

LEGEND

- 65 dBA ISOPLETH
- 67 dBA ISOPLETH
- R# RECEIVER LOCATION
- VALIDATION SITE

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

FLORIDA DEPARTMENT OF TRANSPORTATION

U.S. 301 - I-4 TO FOWLER AVE.

FIGURE 4

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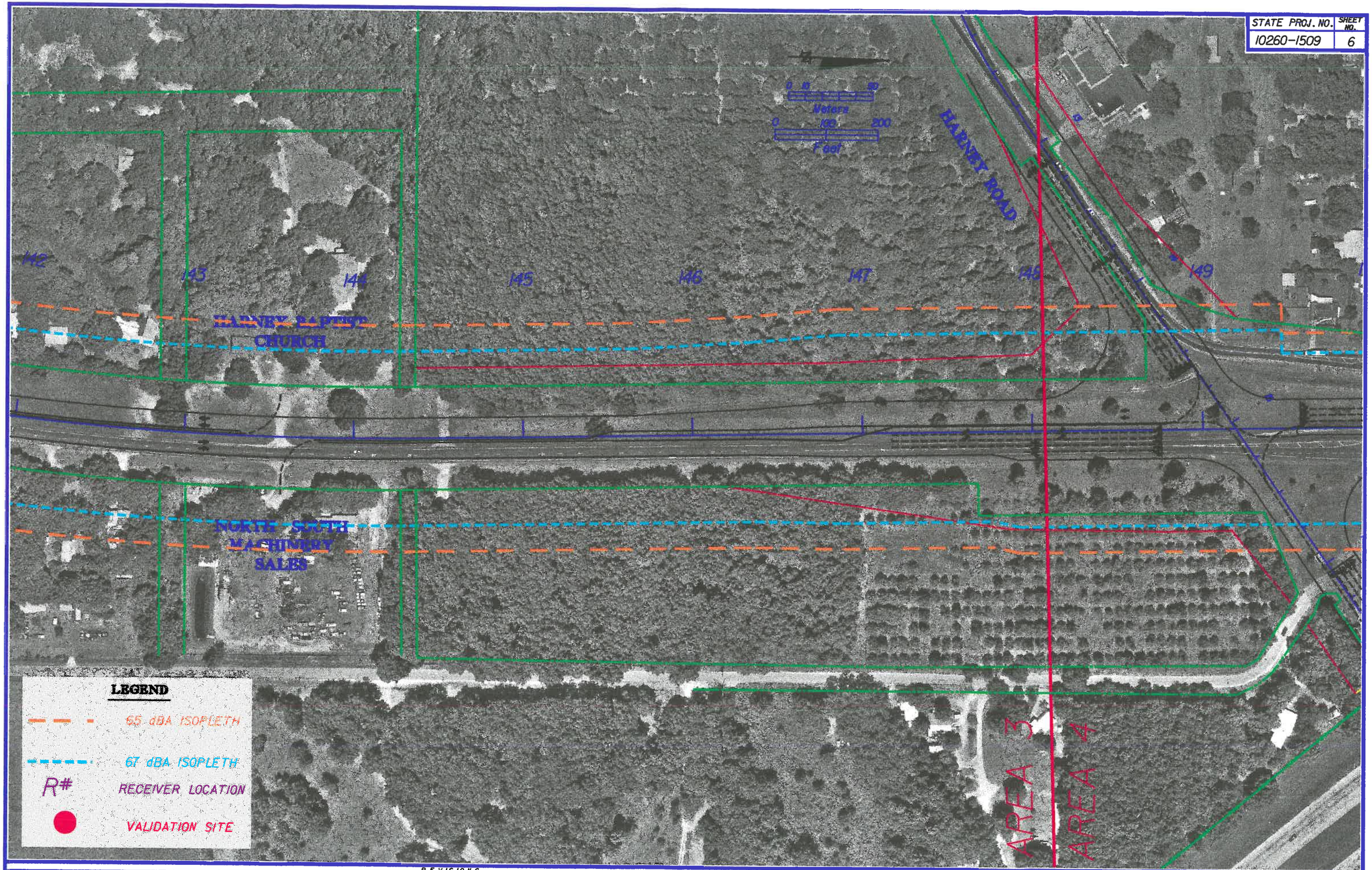

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FLORIDA DEPARTMENT OF TRANSPORTATION

U.S. 301 - I-4 TO FOWLER AVE.

FIGURE 4

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STATE PROJ. NO.	SHEET NO.
10260-1509	7

AREA 4

0 50 Meters

0 100 200 Feet

150 151 152 153 154 155 156 157

BEVERAGE CASTLE

JOSES AUTO SERVICE

MULTI-MILE TIRES

MITCHELLS AUTO BODY

TERRACE AUTO REPAIR

SUNSHINE STATE WRECKER SALES

SOUTHERN WRECKER SALES

WEEKS HYDRAULICS

APPLIANC. COMIC BOOKS

COSMIC BOOK CENTER

BAY AREA CHAIN SAW

R15 R16 R17 R18 R19

HAMPTON ROAD

INTERSTATE 75

LEGEND

65 dBA ISOPLETH

67 dBA ISOPLETH

R# RECEIVER LOCATION

VALIDATION SITE

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

FLORIDA DEPARTMENT OF TRANSPORTATION

U.S. 301 - I-4 TO FOWLER AVE.

FIGURE 4

$$$$$$$$$TIME$$$$$$$$$
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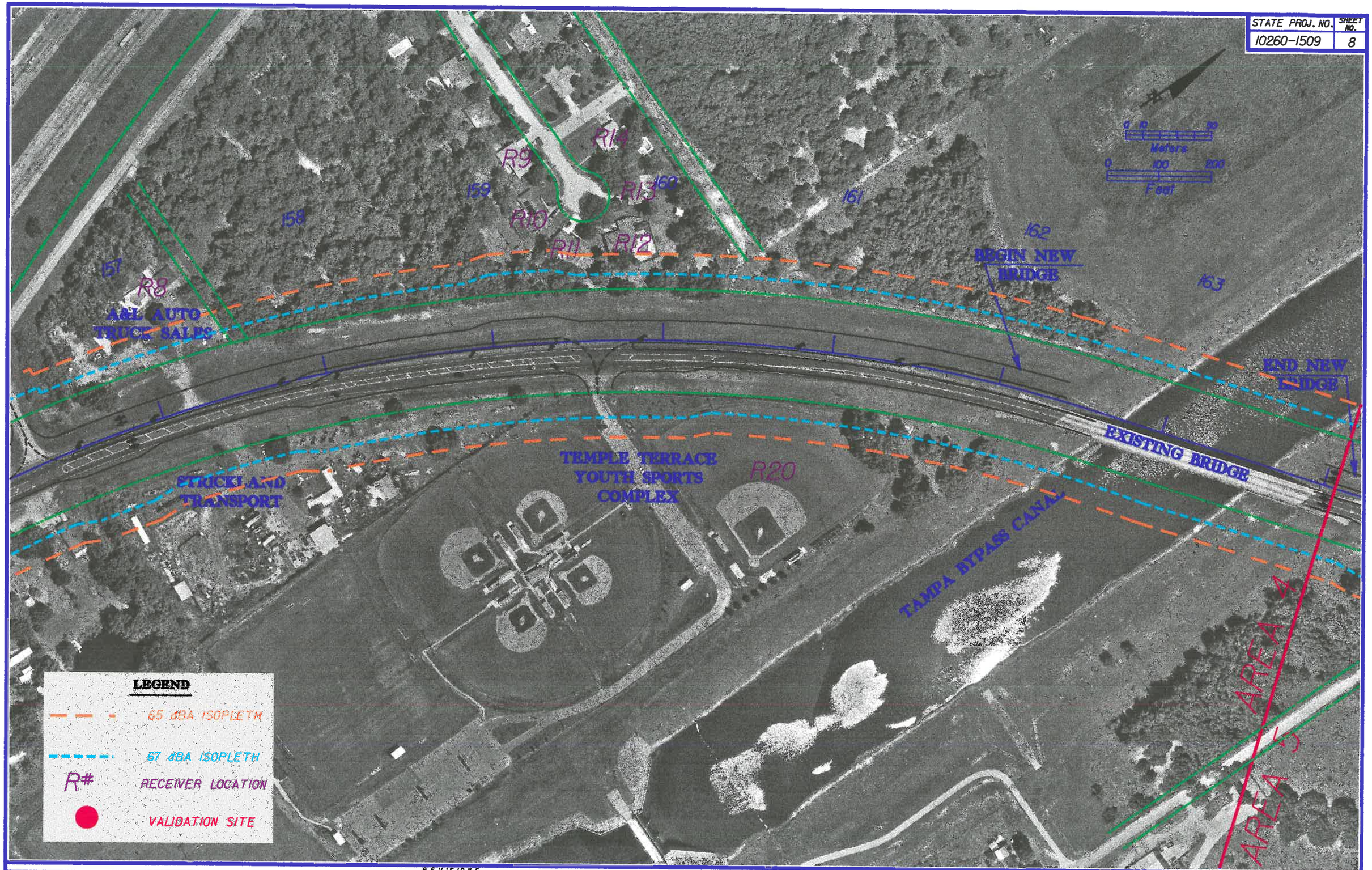

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FLORIDA DEPARTMENT OF TRANSPORTATION

U.S. 301 - I-4 TO FOWLER AVE.
FIGURE 4

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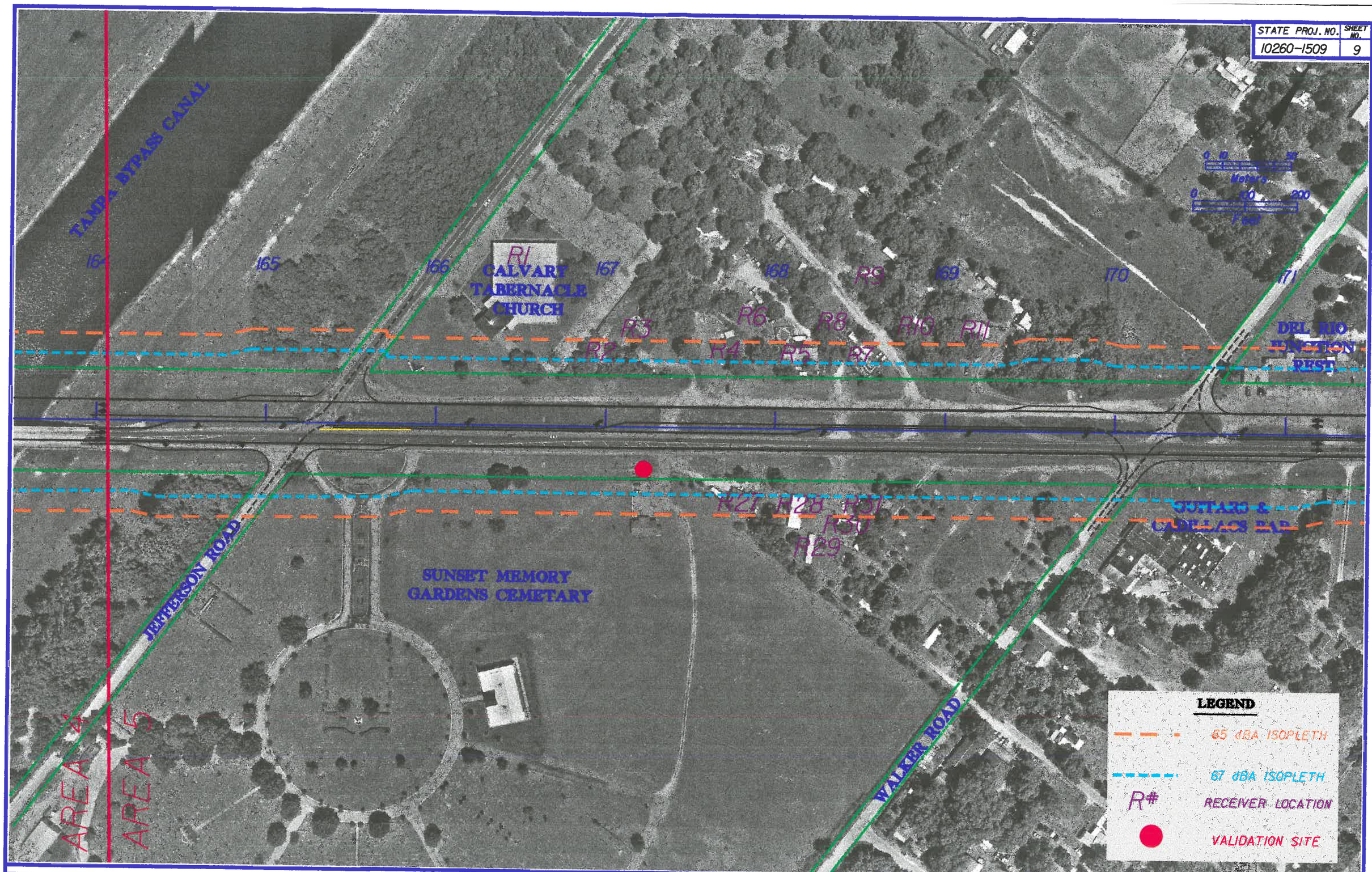

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FLORIDA DEPARTMENT OF TRANSPORTATION

U.S. 301 - I-4 TO FOWLER AVE.

FIGURE 4

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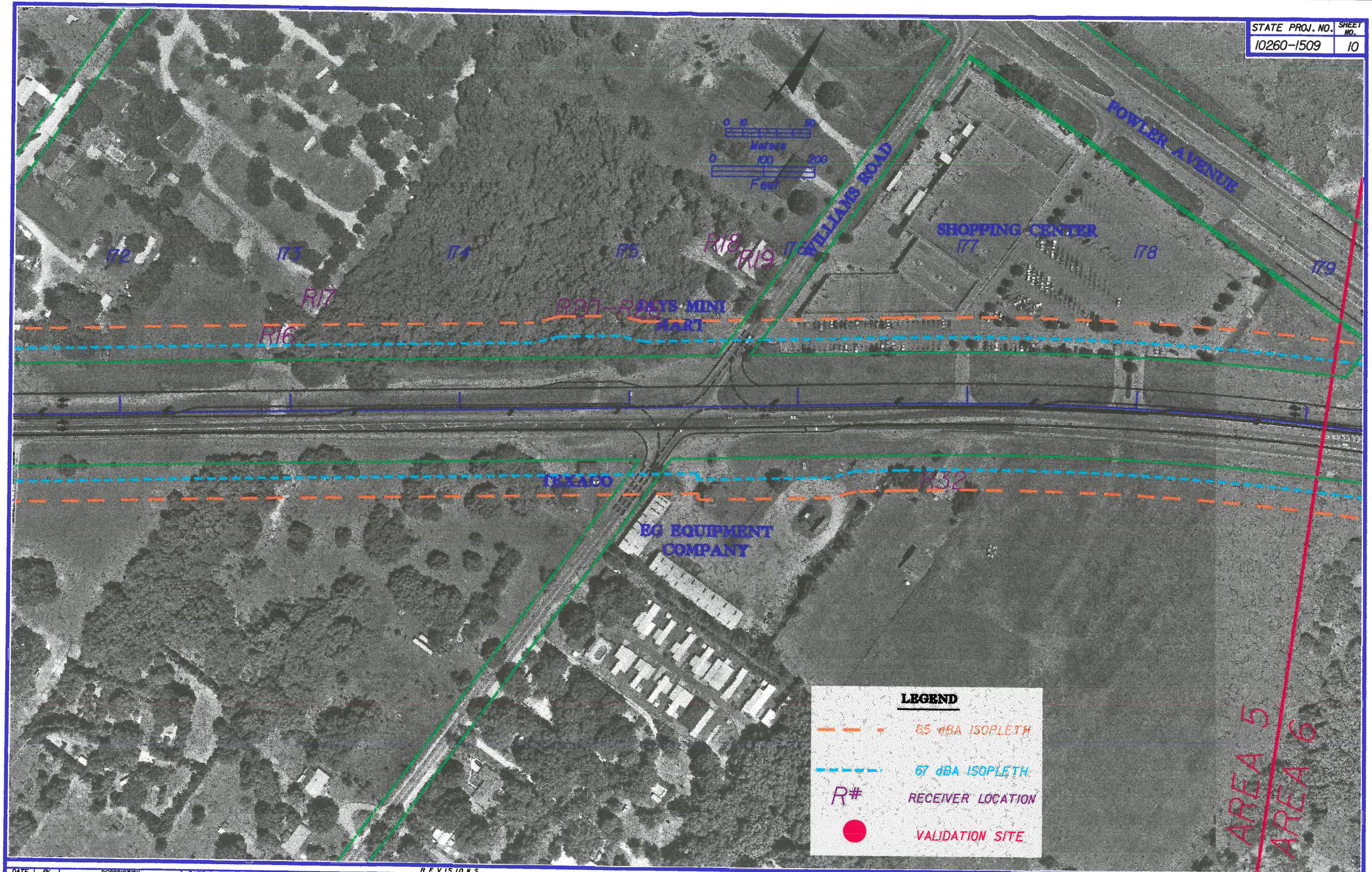

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FLORIDA DEPARTMENT OF TRANSPORTATION

U.S. 301 - I-4 TO FOWLER AVE.

FIGURE 4

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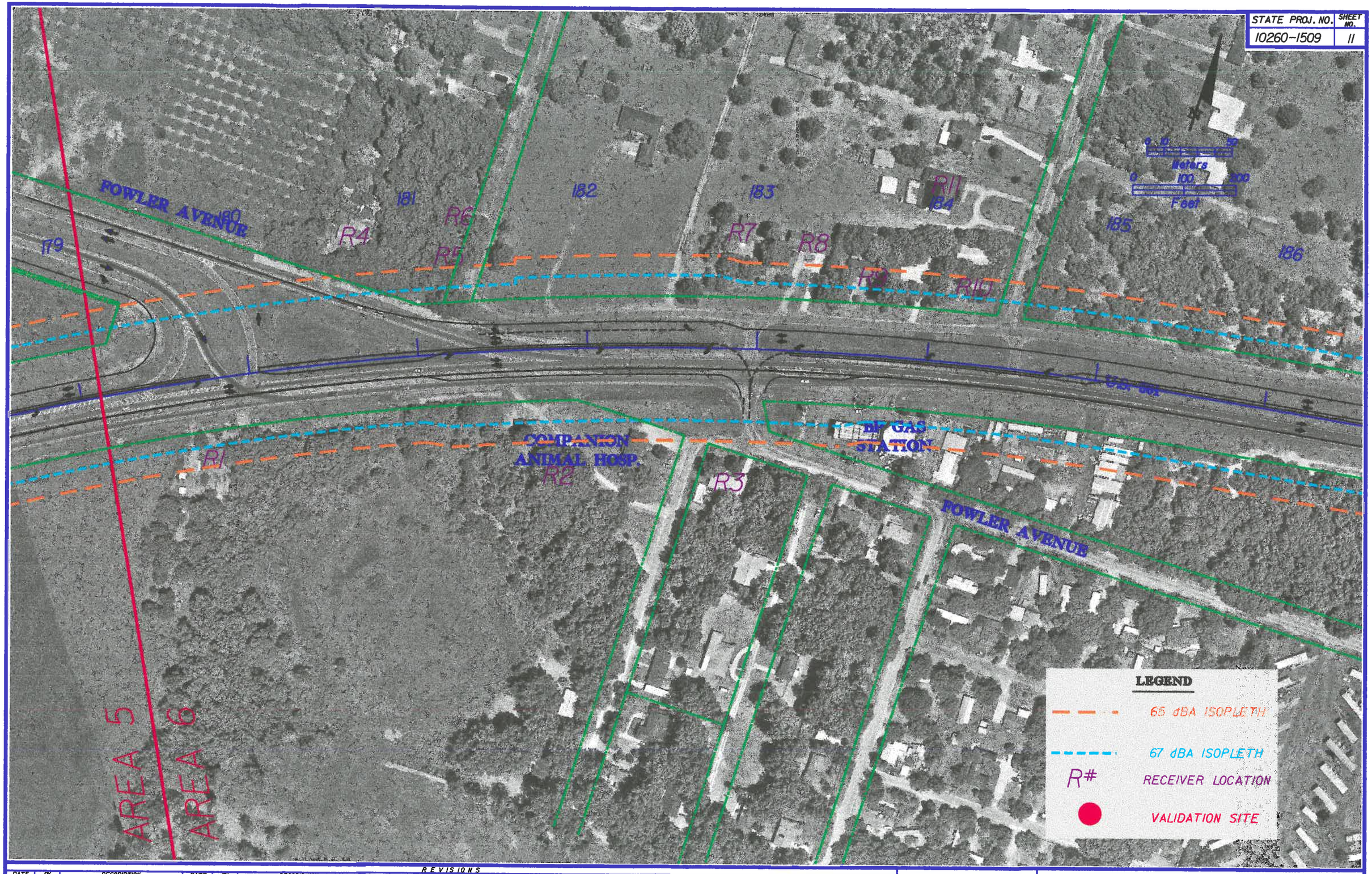

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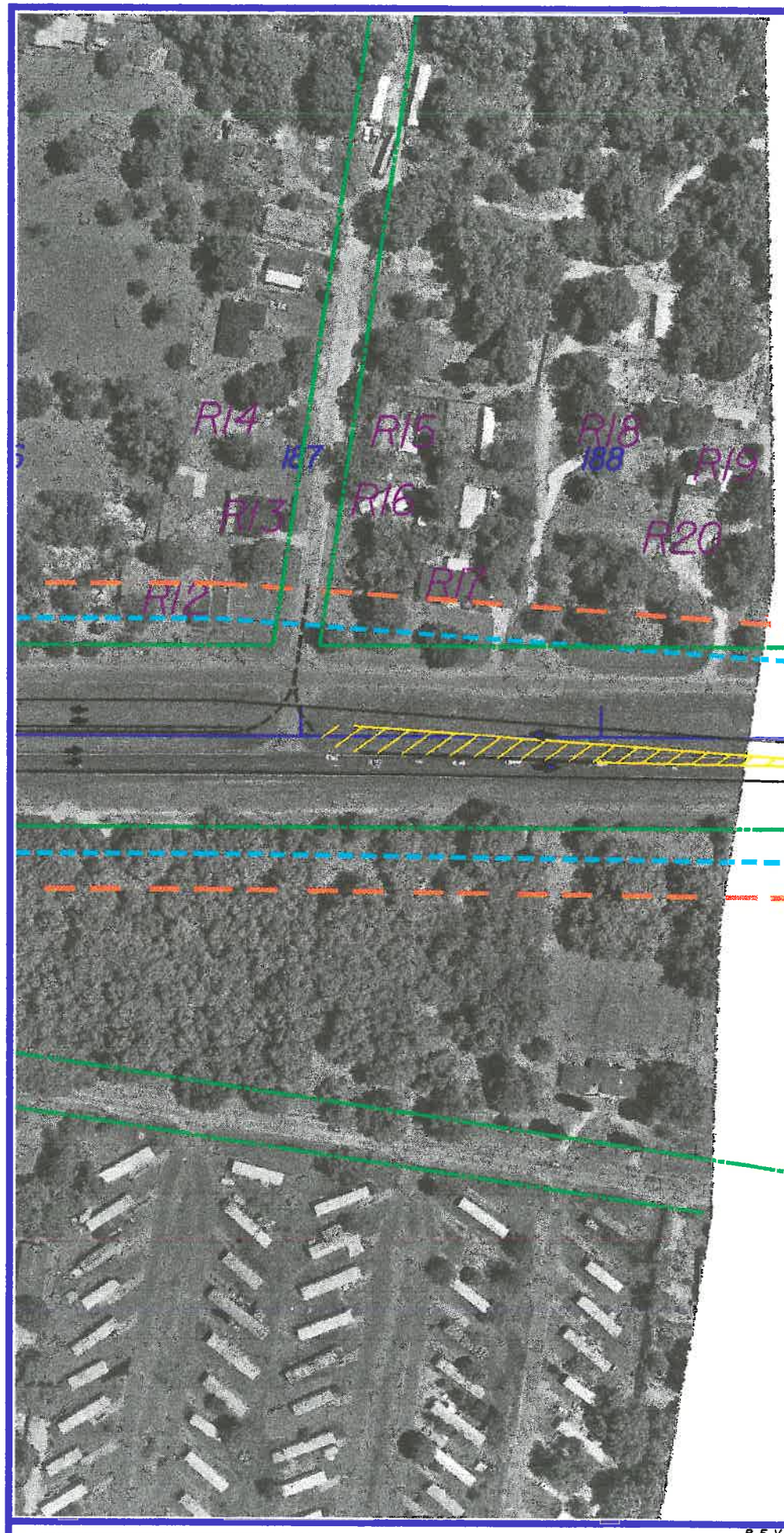
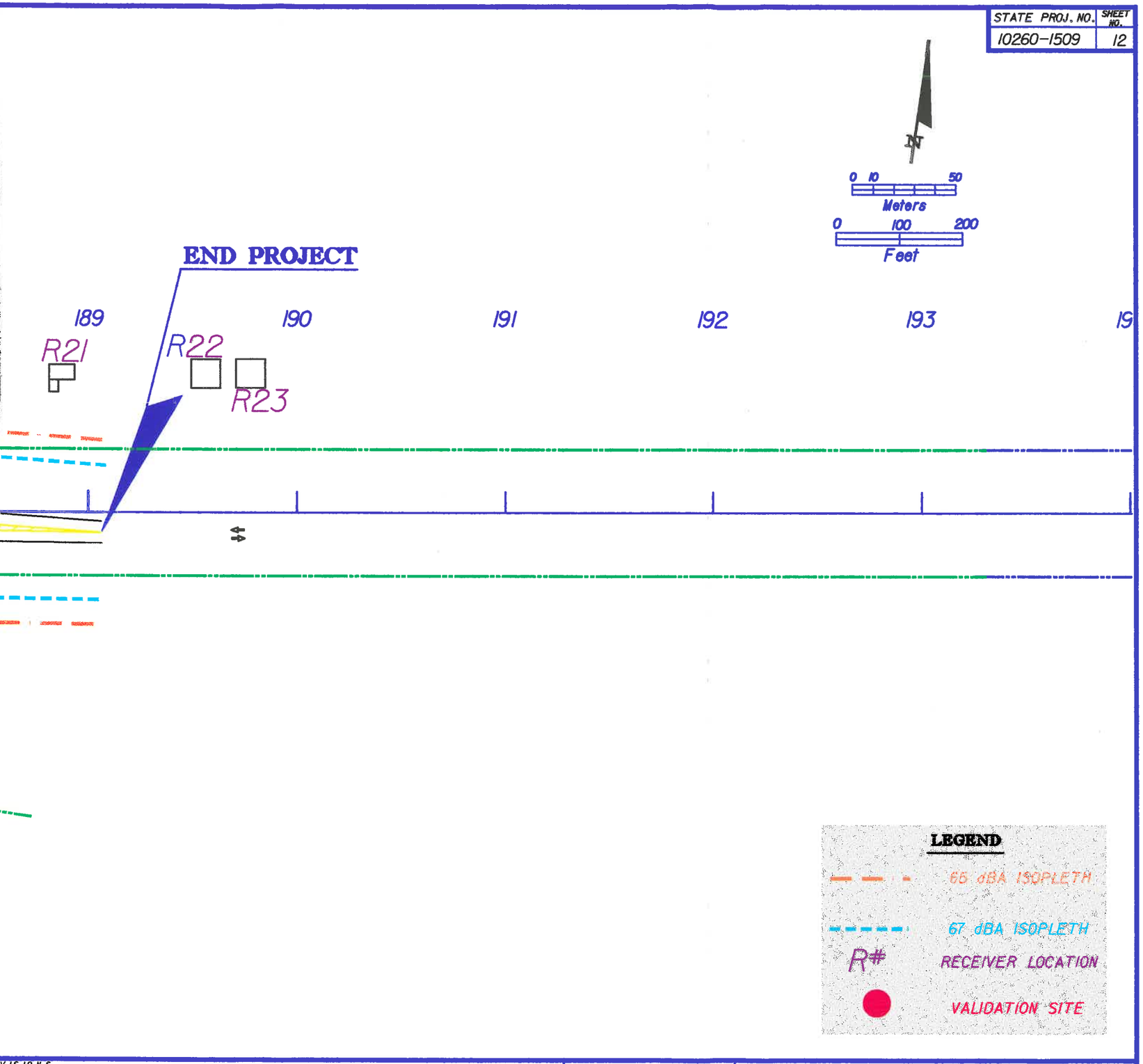
FLORIDA DEPARTMENT OF TRANSPORTATION

U.S. 301 - I-4 TO FOWLER AVE.

FIGURE 4

STATE PROJ. NO.	SHEET NO.
10260-1509	12





LEGEND

- 65 dBA ISOPLETH
- 67 dBA ISOPLETH
- R# RECEIVER LOCATION
- VALIDATION SITE

REVISIONS

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

FLORIDA DEPARTMENT OF TRANSPORTATION

U.S. 301 - I-4 TO FOWLER AVE.

FIGURE 4

\\\\\\\\TIMES\\\\\\\\
########DGNSPECIFICATION########

TABLE 6
PREDICTED EXISTING AND FUTURE NOISE LEVELS
IN DECIBELS

Location	Receiver #	1994 Existing	2020 No-Build	2020 Build	Difference Between No-Build and Build
Area 1- Beginning of project to Harney Canal - eastside receivers	1	65.9	65.9	69.3	3.4
	2	64.8	64.8	68.3	3.5
	3	64.6	64.6	68.1	3.5
	4	65.0	65.0	68.2	3.2
	5	65.4	65.4	68.2	2.8
	6	63.7	63.7	66.6	2.9
	7	62.0	62.0	65.3	3.3
	8	60.3	60.3	63.9	3.6
	9	60.7	60.7	63.6	2.9
	10	60.3	60.4	63.6	3.2
	11	60.8	60.8	64.0	3.2
	12	60.9	60.9	64.1	3.2
	13	60.8	60.9	64.2	3.3
	14	64.0	64.1	67.6	3.5
	15	65.7	65.7	68.6	2.9
	16	58.3	58.3	61.6	3.3
	17	56.7	56.8	60.6	3.8
	18	59.8	59.8	63.4	3.6
	19	61.1	61.1	64.4	3.3
	20	61.0	61.0	64.6	3.6
	21	57.5	57.6	62.0	4.4
Area 2 - Harney Canal to Langston's Used Auto Parts - No Noise Sensitive sites					

Location	Receiver #	1994 Existing	2020 No-Build	2020 Build	Difference Between No-Build and Build
Area 3 - Langson's Used Auto Parts to Harney Road - eastside receivers	1	61.9	62.6	66.0	3.4
	2	62.0	62.7	66.8	4.1
	3	59.6	60.2	62.8	2.6
	4	59.9	60.6	63.5	2.9
	5	60.2	60.8	64.0	3.2
	6	62.7	63.4	65.9	2.5
	7	65.6	66.3	68.4	2.1
	8	65.8	66.4	69.2	2.8
Area 3 - Langston's Used Auto Parts to Harney Road - westside receivers	9*	35.6	36.2	40.4	4.2
	10	63.5	64.2	68.8	4.6
	11	63.8	64.5	69.3	4.8
	12	63.3	64.0	68.8	4.8
Area 4 - Harney Road to the Tampa Bypass Canal - northwest side receivers	1	60.0	61.9	64.0	2.1
	2	59.1	61.1	62.7	1.6
	3	56.8	58.8	60.5	1.7
	4	57.0	58.9	60.7	1.8
	5	57.6	59.5	61.1	1.6
	6	57.1	59.1	60.9	1.8
	7	56.8	58.8	60.3	1.5
	8	59.3	61.3	62.6	1.3
	9	56.5	58.5	60.3	1.8
	10	58.5	60.4	62.1	1.7
	11	61.4	63.3	65.1	1.8
	12	61.0	62.9	64.4	1.5
	13	58.2	60.2	61.5	1.3
	14	56.1	58.0	59.2	1.2

Location	Receiver #	1994 Existing	2020 No-Build	2020 Build	Difference Between No-Build and Build
Area 4 - Harney Road to the Tampa Bypass Canal - southside receivers	15	62.9	64.8	65.0	.2
	16	61.3	63.3	63.7	.4
	17	56.9	58.8	59.3	.5
	18	60.6	62.5	63.1	.6
	19	59.5	61.5	61.9	.4
	20	61.8	63.8	63.9	.1
Area 5 - Tampa Bypass Canal to Fowler Avenue - northside receivers	1*	34.9	36.9	39.2	2.3
	2	62.0	63.9	67.6	3.7
	3	62.6	64.6	66.9	2.3
	4	62.3	64.2	66.9	2.7
	5	62.9	64.9	67.3	2.4
	6	60.3	62.3	64.1	1.8
	7	61.9	63.9	66.1	2.2
	8	60.0	62.0	64.2	2.2
	9	58.1	60.1	61.5	1.4
	10	60.7	62.7	65.2	2.5
	11	60.9	62.9	64.8	1.9
	12	63.0	64.9	67.2	2.3
	13	63.0	64.9	67.9	3.0
	14	62.1	64.0	66.4	2.4
	15	61.1	63.0	65.0	2.0
	16	63.0	65.0	67.8	2.8
	17	60.7	62.6	64.5	1.9
	18	58.2	60.1	61.4	1.3

Location	Receiver #	1994 Existing	2020 No-Build	2020 Build	Difference Between No-Build and Build
Area 5 - Tampa Bypass Canal to Fowler Avenue - northside receivers (continued)	19	59.0	60.9	62.7	1.8
	20	62.2	64.1	67.1	3.0
	21	61.3	63.2	65.5	2.3
	22	61.0	62.9	64.3	1.4
	23	59.7	61.7	63.4	1.7
	24	59.2	61.2	62.5	1.3
	25	58.5	60.4	61.8	1.4
	26	57.9	59.9	61.4	1.5
Area 5 - Tampa Bypass Canal to Fowler Avenue southside receivers	27	67.2	69.2	68.5	-.7
	28	67.2	69.2	67.5	-1.7
	29	62.5	64.5	64.2	-.3
	30	63.8	65.8	65.4	-.4
	31	66.1	68.0	67.3	-.7
	32	67.1	69.0	67.5	-1.5
Area 6 - Fowler Avenue north to end of project - southside receivers	1	69.7	71.6	65.6	-6.0
	2	64.4	66.4	65.0	-1.4
	3	62.5	64.4	63.1	-1.3
Area 6 - Fowler Avenue north to end of project - northside receivers	4	64.3	64.9	65.1	.2
	5	62.6	63.6	63.9	.3
	6	60.7	61.8	61.8	0
	7	60.0	61.6	63.8	2.2
	8	60.4	62.2	64.3	2.1
	9	61.5	63.3	65.6	2.3
	10	62.0	63.8	65.3	1.5

Location	Receiver #	1994 Existing	2020 No-Build	2020 Build	Difference Between No-Build and Build
Area 6 - Fowler Avenue north to end of project - northside receivers (continued)	11	58.3	60.0	61.2	1.2
	12*	37.5	39.4	41.3	1.9
	13	59.7	61.5	63.2	1.7
	14	57.3	59.2	60.3	1.1
	15	57.6	59.4	60.6	1.2
	16	59.4	61.2	62.3	1.1
	17	62.3	64.2	65.3	1.1
	18	58.0	59.8	60.9	1.1
	19	57.1	59.0	59.8	.8
	20*	35.4	37.3	38.2	.9
	21	60.8	62.7	63.8	1.1
	22	60.4	62.3	63.7	1.4
	23	58.9	60.7	63.5	2.8

* Interior Nosie Level; Land Use Category E applicable.

3.5 Noise Abatement Techniques

The FHWA requires that when the noise levels of a proposed federally-aided roadway project approach or exceed NAC, noise abatement measures must be evaluated. Because noise levels associated with the U.S. 301 improvements were determined to approach, and in some cases, exceed the NAC of 67 dBA, the feasibility of noise abatement measures was addressed. As outlined in 23 CFR Part 772, these measures include traffic system management measures, alignment modifications, property acquisition, land use controls and noise barriers.

Traffic System Management Measures

Traffic system management measures which limit motor vehicle speeds and reduce traffic volumes can be effective noise mitigation measures. However, these measures also negate a project's ability to accommodate forecasted traffic volumes. For example, if speeds on U.S. 301 were reduced, the capacity of the roadway to handle motor vehicle traffic would also be reduced. Therefore, reducing traffic speeds and/or volumes is inconsistent with the goal of improving the capacity of the roadway.

Measures which prohibit truck traffic on roadways can also be effective noise mitigation measures. However, U.S. 301 presently provides a necessary connection to I-4. Therefore, prohibiting trucks on the roadway would put an unreasonable hardship on commerce which requires truck transport.

Alignment Modifications

Alignment modification generally involves orientating and/or siting the roadway at sufficient distances from noise sensitive areas so as to minimize the noise impacts. Alignment modifications were limited since proposed improvements are planned to be constructed within the existing FDOT ROW.

Property Acquisition

Property acquisition programs to provide noise buffer zones or space for noise barrier construction are not recommended for this project due to the high cost and limited availability of land near noise sensitive sites.

Land Use Controls

Another noise abatement measure is the use of proper land use controls to minimize future impacts. Local governmental and planning agencies with land use control authority will be notified of the noise level changes along the study corridor so proper planning will be undertaken to minimize highway noise level increases to residents.

Noise Barriers

Noise barriers reduce noise levels by blocking the sound path between a roadway and noise sensitive sites. To be effective in reducing traffic induced noise impacts, a noise barrier must be relatively long, continuous (with no intermittent openings) and sufficiently high enough to provide the necessary reduction in noise levels. Barriers are most often used on high speed, limited access facilities where noise levels are high and there is adequate space for continuously long and sufficiently high barriers.

In order for a barrier to be considered feasible and economically reasonable it must meet the following minimum conditions:

1. Provide a minimum insertion loss (IL) (noise reduction) of at least 5 dBA with a design goal of 8 to 12 dBA being desirable.

2. Cost must not exceed $30,000 per benefitted receiver unless a higher level of expenditure can be justified by other circumstances.

3.6 Noise Barrier Analysis

In order to analyze the effectiveness of noise abatement barriers, the STAMINA companion computer program, OPTIMA, was utilized. The following presents the modeling results for each noise sensitive area which warranted abatement consideration. All noise barriers modeled were modeled at the proposed ROW.

Area 1

Lynch Trailer Park (R1-15) is located on the east side at the beginning of the project limits. There are scattered single family residences (R16-21) on the east side south of Sligh Avenue. The nine receivers that approached or exceeded the NAC were located within the trailer park. A noise barrier was modeled at the trailer park and a 63 m (207 ft) barrier 3 m (10 ft) high is predicted to provide a 5.2 dBA average insertion loss for four receivers. The estimated total cost of the wall is at $41,400 or $10,350 per benefitted receiver. Table 7 presents the evaluation of each of the 21 noise abatement considerations for a noise barrier at this location.

Area 2

There are no noise sensitive sites within this area.

Area 3

Area 3 has single family residences and the Harney Baptist Church (R1-12) interspersed with commercial businesses. The noise sensitive sites have direct access onto U.S. 301. In order for a noise barrier to be effective, it cannot have intermittent driveway openings. Therefore, due to the numerous driveway openings, noise barriers are not considered feasible for these sites.

Area 4

Area 4 has single family residences (R1-8 and R15-19) interspersed with commercial businesses. Out of the sites modeled in this area, one single family residence (R15) approached the NAC. There is only a predicted .2 dBA increase between the No-Build and Build alternative. A difference less than 3 dBA is considered inaudible. The residence is also surrounded by commercial businesses therefore a noise barrier is not considered feasible.

The single family residences located on Navajo Drive are represented by R9-14. Only one home (R11) approached the NAC. This home is predicted to have a 1.8 dBA increase between the No-Build and Build Alternative. Since this residential community does not have access onto U.S. 301, a noise barrier was modeled. A noise barrier which would provide a minimum 5 dBA insertion loss exceeds the cost criteria and is not considered economically reasonable.

The Temple Terrace Youth Sports Complex (R20) consists of baseball and soccer fields. A representative receiver was placed in the outfield closest to U.S. 301. The predicted noise level did not approach the NAC.

Area 5

Receivers R1-32 represent the single family residences and the Calvary Tabernacle Church. Driveway openings onto U.S. 301 in this area prevent providing an effective noise barrier where noise levels are predicted to approach or exceed the NAC. Therefore, noise barriers are not considered feasible for these sites.

Area 6

Receivers R1-24 represent single family residences and the Macedonia MB Church and the Faith Temple Church. Only five of the 24 receivers modeled approached the NAC. The numerous driveway openings onto U.S. 301 prevent providing an effective noise barrier. Therefore, noise barriers are not considered feasible for these sites.

TABLE 7
TRAFFIC NOISE ABATEMENT CONSIDERATIONS
FOR A NOISE WALL LOCATED AT THE ROW FOR LYNCH TRAILER PARK

Evaluation Criteria	Explanation
1. Relationship of future levels to the abatement	Eight receivers approached or exceeded the NAC.
2. Insertion Loss	See page 27.
3. Safety	Preliminary sight distance and clear recovery were considered.
4. Community desires	Comments have not been solicited yet.
5. Accessibility	The wall does not affect accessibility.
6. Land use stability	Land use is expected to become increasingly commercial along U.S. 301.
7. Local controls	Residential wall heights are limited to 1.8 m (6 ft) high in Hillsborough County.
8. Views of local officials with jurisdiction	The NSR will be distributed to local agencies .
9. Relative noise level increases resulting from project	2.8 - 3.5 dBA increase from existing.
10. The difference in noise levels between build and no-build alternatives	2.8 - 3.5 dBA increase from No-Build.
11. Antiquity	U.S. 301 predates the trailer park.
12. Constructability	Preliminary review indicates no constructability constraints.
13. Maintainability	Perpetual maintenance easement of 1.5 m (5 ft) will have to be obtained if barrier is built on ROW line.
14. Aesthetics	Careful consideration should be given to the wall's style, color, etc. in order to be compatible with the diverse land uses.
15. ROW needs including access rights, easements for construction and/or maintenance, and additional land	Perpetual maintenance easement 1.5 m (5 ft) will be necessary.
16. Cost	See page 27.
17. Utilities	Preliminary review indicates no utilities in the vicinity of the proposed wall.
18. Drainage	Preliminary review indicates no physical constraints.
19. Land use considerations	Adjacent current land use is heavy commercial and heavy/light industrial. Future land use is urban mixed use.
19. Other environmental impacts	Preliminary review indicates no physical constraints.
20. Additional considerations	None

4.0 NOISE ABATEMENT RECOMMENDATIONS

To be prepared after the Public Hearing.

5.0 CONSTRUCTION NOISE

During the construction phase of the proposed project, short term noise impacts may occur as a result of both stationary and mobile construction equipment. These impacts will be temporary at any one location. Construction noise will be controlled by adherence to the controls listed in the most recent available edition of the FDOT's Standard Specifications for Road and Bridge Construction.

6.0 COORDINATION WITH LOCAL OFFICIALS

In accordance with 23 CFR 772, the FDOT will take measures that are prudent and feasible to assure the location and design of highways are compatible with existing and planned land uses. Local agencies and officials can play an important role ensuring that future residential development does not occur in projected noise impact areas once U.S. 301 is improved.

This Report delineates a noise level contour line which parallels the roadway. In the area between the roadway and the contour line, 67 dB noise levels are projected to occur with the project. Local agencies and officials have an opportunity to prevent future land development from being incompatible with U.S. 301's anticipated highway noise levels by deterring residential development from being located within the 67dBA contour line.

Coordination with local agencies and officials will be conducted during the development of this study and a copy of this Report will be provided to the appropriate local governmental authorities in order to assist in them in developing compatible future land use criteria.

7.0 REFERENCES

Project Development and Environment Manual, Part 2, Chapter 17, Florida Department of Transportation, December 1997.

Standard Specifications for Road and Bridge Construction, Florida Department of Transportation, 1991.

Measurement of Highway - Related Noise: Final Report, Report Number FHWA-PD-96-046, U.S. Department of Transportation, Federal Highway Administration, May 1996.