Appendix E

I-73 South Noise Report

NOISE IMPACT ASSESSMENT

I-73 South Section:
From I-95 in Dillon County, SC
to SC 22 in Horry County, SC

PIN No.: 36358 RD01

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EXECUTIVE SUMMARY

In compliance with Title 23 of the Code of Federal Regulations, Part 772 (23 CFR Part 772), the following noise assessment has been prepared and will be provided by South Carolina Department of Transportation (SCDOT) to local officials in an attempt to prevent future impacts from traffic noise.

The proposed project is located on new alignment from I-95 in Dillon County to SC 22 in Horry County, South Carolina. The proposed improvement would create a new 4-lane interstate highway (2-12' lanes with inside and outside shoulders and a grass median). This is the southern section of a two-part analysis with a northern section that is proposed to run from I-95 at the south section interchange, then traverse north to I-74 in Richmond County in North Carolina. The total south section project road length is just over 40 miles (approximately).

The TNM2.5 Noise Model was used to analyze the existing condition and the 2040 design year No-build and Build Alternative based on traffic data and preliminary design provided by CDM Smith and SCDOT. Much of the project area is rural/undeveloped and has no appreciable roadway traffic. In these areas, field measurements were performed to establish a sound level baseline for which to compare possible sound level increases as a result of the proposed action.

The modeling results indicated that 71 receivers (all residential) would approach or exceed the noise abatement criteria (NAC) and/or meet or exceed the substantial increase criteria for the 2040 design year Build Alternative. Noise abatement was therefore considered for the proposed project. As a result of the mitigation analysis, there were no feasible and reasonable solutions to mitigate for the noise according to the SCDOT noise policy. The primary reason for the lack of mitigation to be forwarded to the construction phase is the sparsity of development throughout the entire rural project corridor. Essentially, there were not enough potentially benefited homes to meet the SCDOT noise reduction design goal and/or the SCDOT criteria for cost reasonableness.

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I. INTRODUCTION AND PROJECT DESCRIPTION

In compliance with Title 23 of the Code of Federal Regulations, Part 772 (23 CFR Part 772), the following noise assessment has been prepared and will be provided by South Carolina Department of Transportation (SCDOT) to local officials in an attempt to prevent future impacts from traffic noise.

The current SCDOT Traffic Noise Abatement Policy (Policy) was followed to analyze the potential noise impacts and mitigation as necessary. It has been consolidated, where appropriate and/or applicable, to reduce the number of pages.

A. Proposed Project Description, Existing Facility and Purposes and Need

The proposed project is located on new alignment from I-95 in Dillon County to SC 22 in Horry County, South Carolina. The proposed improvement would create a new 4-lane interstate highway (2-12' lanes with inside and outside shoulders and a grass median as shown in Figure 1). This is the southern section of a two-part analysis with a northern section that is proposed to run from I-95 at the south section interchange, then traverse north to I-74 in Richmond County in North Carolina. The total north section project road length is just over 40 miles (approximately), with approximately 5 miles of I-73 constructed in North Carolina as shown in Figure 2. Please note that the alignment shown is based on 100% construction plans.

The posted speed limit is expected to be 70 miles per hour (mph). The estimated average annual daily traffic (AADT) volume is expected to range from approximately 19,000 to 30,000 vehicles per day (vpd) for the Build Alternative. As a new alignment highway, there are no existing and design year no-build volumes.

B. Existing Land Uses

Land use adjacent to the highway is predominantly comprised of rural open land, farmland and industrial use. There is a scattering of residential units located throughout the project area. There are no places of worship, schools or parks in the project area. There are a few NAC Category F land uses in the project area (industrial/commercial-retail). These land uses were not analyzed since they do not have a sound level impact criteria.

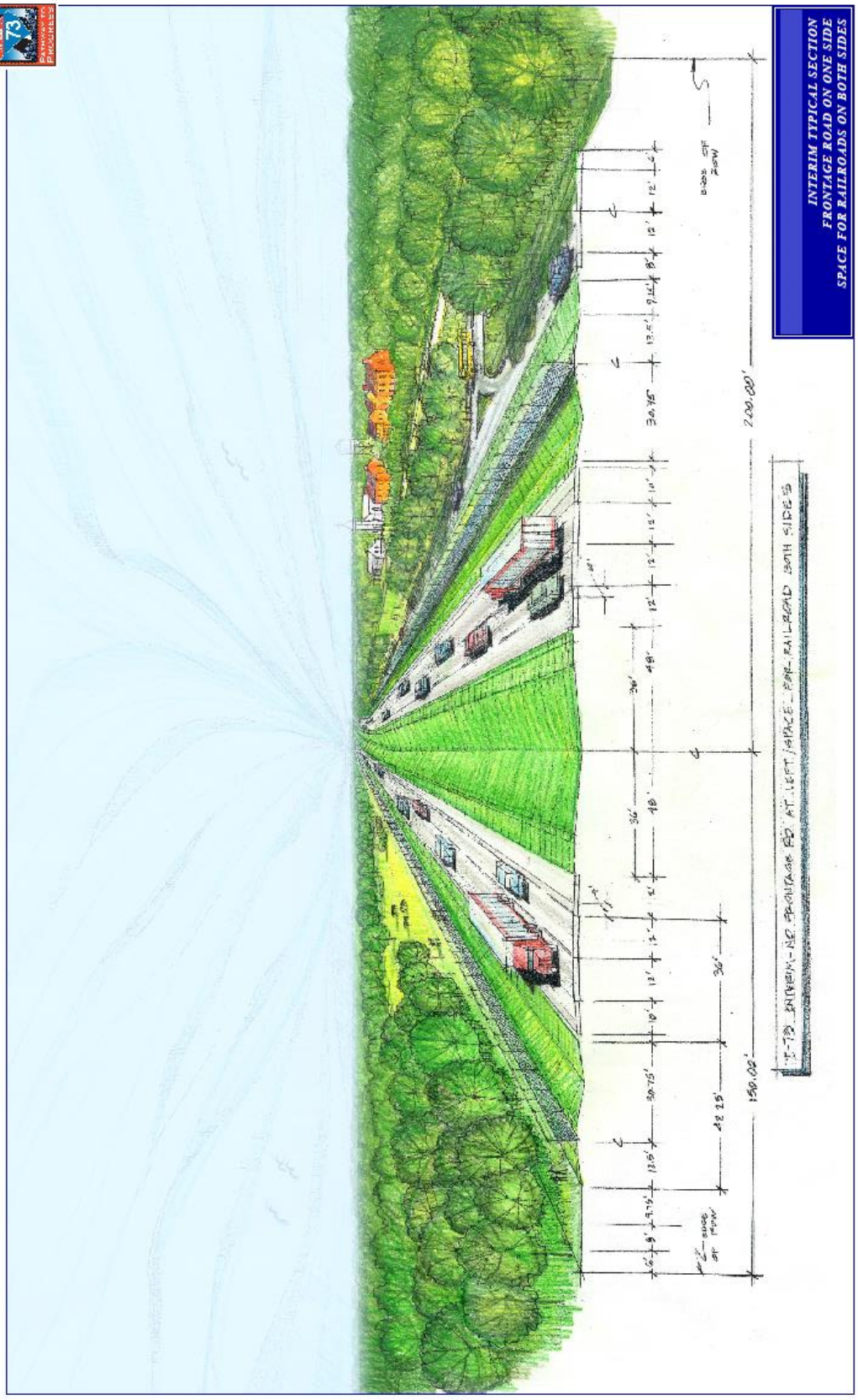


Figure 1 - I-73: I-95 to SC 22 – Proposed Cross Section

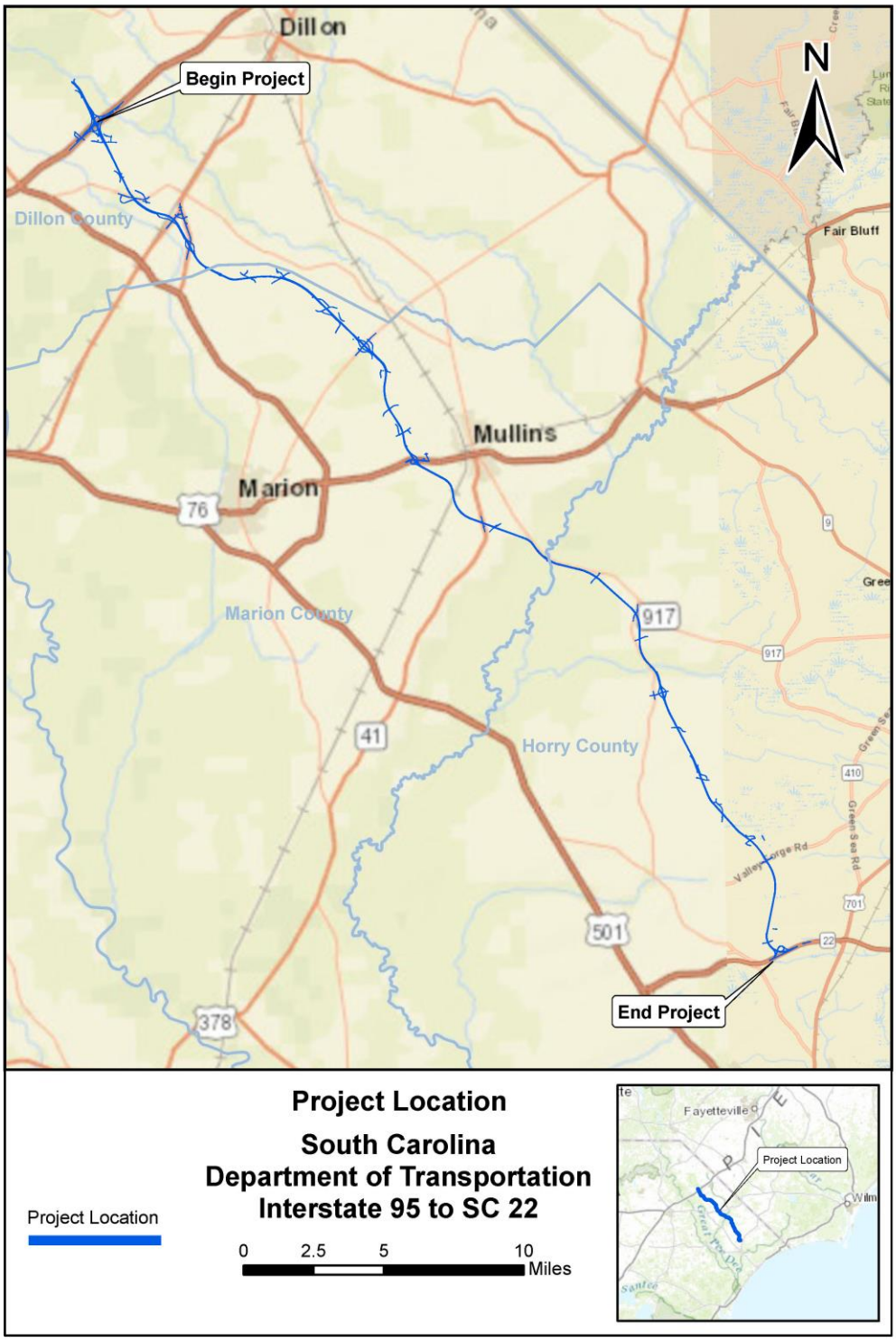


Figure 2 - I-73: I-95 to SC 22 - Project Location

II. ANALYSIS METHODOLOGY

A. Model Used and Assumptions

The Federal Highway Administration (FHWA) Traffic Noise Model (TNM 2.5) was used to derive existing and future noise levels. The environmental traffic data used was developed, updated and approved by SCDOT. Applicable model features, such as building structure inputs, the multi-use trail and concrete traffic barriers (jersey barriers) were added to the analysis to provide accurate sound level reduction results.

B. Traffic Data

The traffic data (and design files) for the proposed project were provided by CDM Smith on behalf of SCDOT, including the estimated AADT, Design Hourly Volume (DHV) and fleet mix percentages for the existing year and the design year 2040 (shown in Appendix A). Ten percent of the AADT was used to approximate the DHV. For the Build Alternative and depending on the specific I-73 link, 73-85 percent of the DHV was automobiles, pickup trucks and SUV's. The percent of medium duty trucks of the DHV was assumed to be 6-10 and the percent of heavy duty trucks was assumed to range from 9-17. Appendix A identifies the fleet mix for each specific link. A speed limit of 70 miles per hour (mph) was used for I-73, I-74 and I-95. Cross-street and ramps speeds were modeled at 45 mph. In addition, an assumption of a 50/50 directional split was used for all scenarios, and 12-foot wide travel lane widths were used, plus inside and outside shoulders.

C. Receiver Locations

Sensitive receivers and/or land use types were first identified using aerial photography and street level views from http://maps.google.com, then field verified. Exterior usage receiver categories that are potentially impacted by the proposed project include residential, which fall under the FHWA-developed Noise Abatement Criteria (NAC) category B. NAC F land uses do not have a sound level criteria and are not studied for noise impacts. These uses include agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, commercial retail establishments, shipyards, utilities (water resources, water treatment, electrical), and warehouses.

D. Field Measurements

Ambient noise field measurements were taken at 29 different locations in the project corridor near the proposed I-73 alignment. These were performed in accordance with the FHWA publication "Measurement of Highway-related Noise." Noise measurements were taken during the weekday period between 9/26 and 9/29/2016, and also between 10/25 and 10/26/2016 during the AM and/or PM peak traffic periods, though some rural sites with no regular traffic were measured outside of these periods to establish baseline. Vehicles were counted and the type of vehicle was noted during the field measurements. Please note that many of the noise sensitive receivers are located in areas where there is little or no highway traffic as the proposed alignment location was developed to avoid developed areas. In addition, the meteorological conditions, local features (trees, nearby buildings, etc,) were noted for each site. Table 1 summarizes the information for the ambient noise field measurements. Figure 3 (shown later in the report) shows the measurement sites and Appendix B contains the field measurement data sheets.

Table 1 - Ambient Noise Field Measurements

Site*	Time Period	Hourly Traffic Based on Concurrent Traffic Counts						Measured Leq
		North (or West) bound Lane			*South (or East) bound Lane*			
		Autos	MT	HT	Autos	MT	HT	
S1	8:17-8:32 AM	0	0	0	2	0	0	52.5
S2	7:44-7:59 AM	2	0	0	3	0	0	54.2
S3	9:02-9:17 AM	17	0	2	16	0	1	54.0
S4 (S5)	9:36-9:51 AM	0	0	0	0	0	0	47.1
S5 (S6)	10:04-10:19 AM	0	0	0	0	0	0	48.2
S6 (S7)	10:32-10:47 AM	0	0	0	0	0	0	45.3
S7 (S8)	11:08-11:23 AM	2	0	0	0	0	0	48.3
S8 (S9)	2:12-2:29 PM	0	0	0	0	0	0	45.5
S9 (S10)	2:41-2:56 PM	0	0	0	1	0	0	42.3
S10 (S11)	7:25-7:40 AM	4	0	0	2	0	0	48.0
S11 (S13)	4:11-4:26 PM	0	0	0	16	1	0	47.9
S12 (S14)	4:35-4:50 PM	0	0	0	11	0	0	46.9
S13 (S15)	6:50-7:05 AM	0	0	0	0	0	0	48.1
S14 (S16)	5:21-5:36 PM	0	0	0	1	0	0	48.6
S15 (S17)	5:50-6:05 PM	0	0	0	0	0	0	45.5
S16 (S18)	6:13-6:28 PM	24	0	0	21	0	0	52.5
S17 (S22)	8:06-8:21 AM	22	0	1	20	0	1	57.0
S18 (S24)	8:32-8:47 AM	27	1	3	15	1	0	56.1
S19 (S26)	10:58-11:13 AM	7	1	0	3	0	1	55.2
S20 (S28)	2:55-3:14 PM	7	0	0	7	0	0	51.1
S21 (S30)	3:32-3:47 PM	0	0	0	0	0	0	38.3
S22 (S31)	9:55-10:10 AM	0	0	0	1	0	0	46.8
S23 (S33)	4:10-4:25 PM	1	0	0	0	1	0	39.8
S24 (S35)	10:39-10:54 AM	0	0	0	1	0	0	44.7
S25 (S37)	4:40-4:55 PM	3	1	1	4	2	0	45.8
S26 (S39)	5:06-5:24 PM	3	0	0	2	0	0	47.5
S27 (S41)	5:37-5:53 PM	10	0	0	8	0	0	50.1
S28 (S42)	6:04-6:26 PM	0	0	0	0	0	0	45.9
S29 (S43)	6:36-6:56 PM	13	0	0	7	0	0	57.2

SOURCE: Michael Baker International, September and October, 2016.
*Measurement sites were renumbered as a result of property owner refusal of entry and/or property site field views that were discovered to be industrial or maintenance land uses with no residence. Original site numbers are in parenthesis to match the field sheets and figures.

NOTES:
MT = Medium Trucks
HT = Heavy Trucks
Meteorological conditions: dry, 70-80s temperatures, light or zero-wind conditions.

E. Model Validation

Using the ambient noise field measurements shown in Table 1, the TNM2.5 model was validated per the requirements in 23 CFR §772.11(d)(2). Table 2 compares the measured Leq versus modeled Leq for the sites during the measurement period. Based on SCDOT Policy, if the measured and modeled Leq are within 3 dBA, the model is validated. Table 2 shows that the difference between the modeled and measured Leq, where applicable, was ≤3.0 dBA at the sites; therefore, the model is validated.

Table 2 - Comparison of Measured Leq to Modeled Leq for TNM2.5 Model Validation

Site*	Time Period	Measured Leq	Modeled Leq	Difference[a]
S1	8:17-8:32 AM	52.5	N/A	N/A
S2	7:44-7:59 AM	54.2	N/A	N/A
S3	9:02-9:17 AM	54.0	53.6	1.6
S4 (S5)	9:36-9:51 AM	47.1	N/A	N/A
S5 (S6)	10:04-10:19 AM	48.2	N/A	N/A
S6 (S7)	10:32-10:47 AM	45.3	N/A	N/A
S7 (S8)	11:08-11:23 AM	48.3	N/A	N/A
S8 (S9)	2:12-2:29 PM	45.5	N/A	N/A
S9 (S10)	2:41-2:56 PM	42.3	N/A	N/A
S10 (S11)	7:25-7:40 AM	48.0	45.6	2.4
S11 (S13)	4:11-4:26 PM	47.9	45.2	2.7
S12 (S14)	4:35-4:50 PM	46.9	45.2	1.7
S13 (S15)	6:50-7:05 AM	48.1	N/A	N/A
S14 (S16)	5:21-5:36 PM	48.6	N/A	N/A
S15 (S17)	5:50-6:05 PM	45.5	N/A	N/A
S16 (S18)	6:13-6:28 PM	52.5	50.7	1.8
S17 (S22)	8:06-8:21 AM	57.0	54.9	2.1
S18 (S24)	8:32-8:47 AM	56.1	54.1	2.0
S19 (S26)	10:58-11:13 AM	55.2	53.7	2.5
S20 (S28)	2:55-3:14 PM	51.1	48.3	2.8
S21 (S30)	3:32-3:47 PM	38.3	N/A	N/A
S22 (S31)	9:55-10:10 AM	46.8	N/A	N/A
S23 (S33)	4:10-4:25 PM	39.8	42.4	2.6
S24 (S35)	10:39-10:54 AM	44.7	N/A	N/A
S25 (S37)	4:40-4:55 PM	45.8	N/A	N/A
S26 (S39)	5:06-5:24 PM	47.5	N/A	N/A
S27 (S41)	5:37-5:53 PM	50.1	49.6	0.5
S28 (S42)	6:04-6:26 PM	45.9	N/A	N/A
S29 (S43)	6:36-6:56 PM	57.2	54.2	3.0

SOURCE: Michael Baker International, September and October, 2016.
*Measurement sites were renumbered as noted in Table 1. Original site numbers are in parenthesis to match the field sheets and figures.
[a]Difference = Measured Leq minus Modeled Leq
Note: Many receiver sites near the proposed I-73 highway are located in rural areas where there is little traffic volume.

III. TRAFFIC NOISE IMPACTS

The FHWA has developed noise abatement criteria and procedures in 23 CFR Part 772, as shown in Table 3, that states that traffic noise impacts occur when either:

1) the predicted traffic noise levels approach or exceed the FHWA Noise Abatement Criteria (NAC) for the applicable activity category shown below; or,
2) the predicted traffic noise levels substantially exceed the existing noise levels by ≥15 dBA.

Table 3 - 23 CFR 772 (Table 1) Noise Abatement Criteria (NAC)

Activity Category	L_{eq} (h)\1,2\	L_{10} (h) \1,2\	Evaluation Location	Description of Activity Category
A	57	60	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\3\	67	70	Exterior	Residential.
C\3\	67	70	Exterior	Active sport 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, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	55	Interior	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.
E\3\	72	75	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F.
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.

SOURCE: 23 CFR Part 772

\1\ Either Leq(h) or L10(h) (but not both) may be used on a project.
\2\ The Leq(h) and L10(h) Activity Criteria values are for impact determination only, and are not design standards for noise abatement measures.
\3\ Includes undeveloped lands permitted for this activity category.

The modeled and/or measured results for the existing condition, and the 2040 design year No-build and Build Alternatives can be found in Table 4 and shown in Figure 3. A total of 71 receivers would have an NAC impact and/or substantial increase impact for the 2040 Build Alternative. A CD with the TNM input and output files (as indicated in Appendix C) has been submitted to SCDOT for their review and records. Table 4 shows the predicted sound levels/impacts and Figure 3 (shown after Table 4) identifies the receiver locations.

Many of the receivers in the project corridor are located in areas where there is little or zero traffic. In order to establish an existing baseline for determining potential substantial increase criteria, the greater of the sound levels either measured or modeled (if there were any available traffic volumes) was used as the existing condition sound level.

A. Modeled and/or Measured Existing Year Noise Levels

In the existing condition, there are zero (0) receivers that would have noise levels that approach or exceed the NAC criteria for its respective land use.

B. Modeled Design Year (Future 2040) No-Build Alternative Noise Levels

The sound levels are predicted to increase by 0.1 dBA, on average, over the existing condition as a result of the predicted traffic growth in the project area between 2010 and 2040. There are zero (0) receivers that would have noise levels that approach or exceed the NAC criteria for its respective land use.

C. Modeled Design Year (Future 2040) Build Alternative Noise Levels

The noise levels for the 2040 Build Alternative are predicted to increase by 11 dBA on average over the existing condition, and by 10.9 dBA on average over the 2040 No-build Alternative. With the 2040 Build Alternative, the noise levels are predicted to approach or exceed the NAC criteria and/or meet or exceed the substantial increase criteria for 71 receivers. These receivers are all residential land uses.

Table 4 - I-73 New Alignment Reevaluation – Existing and Design Year Sound Levels

RECEPTOR NUMBER	EXISTING	2040 NO-BUILD	2040 BUILD	INCREASE OVER EXISTING	NAC IMPACT?	SUBSTANTIAL INCREASE IMPACT?	NAC	LAND USE
1	52.5	52.5	55.7	3.2	N	N	66	Residential
2	52.5	52.5	56.9	4.4	N	N	66	Residential
3	52.5	52.5	58.1	5.6	N	N	66	Residential
4	52.5	52.5	58.6	6.1	N	N	66	Residential
5	52.5	52.5	63.8	11.3	N	N	66	Residential
6	52.5	52.5	57.4	4.9	N	N	66	Residential
7	52.5	52.5	57.1	4.6	N	N	66	Residential
8	52.5	52.5	54.4	1.9	N	N	66	Residential
9	54.2	54.2	60.2	6.0	N	N	66	Residential
9A	54.2	54.2	67.5	13.3	Y	N	66	Residential
11	54.2	54.2	57.4	3.2	N	N	66	Residential
12	54.2	54.2	60.5	6.3	N	N	66	Residential
13	54.2	54.2	61.6	7.4	N	N	66	Residential
14	54.2	54.2	57.4	3.2	N	N	66	Residential
15	54.2	54.2	60.0	5.8	N	N	66	Residential
16	54.0	54.0	55.0	1.0	N	N	66	Residential
19	54.0	54.0	63.3	9.3	N	N	66	Residential
20	54.0	54.0	61.9	7.9	N	N	66	Residential
21	54.0	54.0	59.8	5.8	N	N	66	Residential
22	54.0	54.0	59.2	5.2	N	N	66	Residential
23	54.0	54.0	59.4	5.4	N	N	66	Residential
24	54.0	54.0	61.1	7.1	N	N	66	Residential
25	54.0	54.0	59.1	5.1	N	N	66	Residential
26	47.1	47.1	66.1	19.0	Y	Y	66	Residential
27	47.1	47.1	66.4	19.3	Y	Y	66	Residential
28	47.1	47.1	56.0	8.9	N	N	66	Residential
30	47.1	47.1	58.3	11.2	N	N	66	Residential
31	47.1	47.1	57.1	10.0	N	N	66	Residential
32	47.1	47.1	55.8	8.7	N	N	66	Residential
33	47.1	47.1	55.5	8.4	N	N	66	Residential
34	47.1	47.1	64.9	17.8	N	Y	66	Residential
35	47.1	47.1	61.0	13.9	N	N	66	Residential
36	47.1	47.1	58.9	11.8	N	N	66	Residential
37	47.1	47.1	55.2	8.1	N	N	66	Residential
38	47.1	47.1	66.6	19.5	Y	Y	66	Residential
39	47.1	47.1	61.3	14.2	N	N	66	Residential
40	47.1	47.1	61.8	14.7	N	N	66	Residential
41	47.1	47.1	59.6	12.5	N	N	66	Residential
42	47.1	47.1	58.5	11.4	N	N	66	Residential
43	47.1	47.1	58.9	11.8	N	N	66	Residential
44	47.1	47.1	57.4	10.3	N	N	66	Residential
45	47.1	47.1	56.9	9.8	N	N	66	Residential
46	47.1	47.1	56.8	9.7	N	N	66	Residential
47	47.1	47.1	62.3	15.2	N	Y	66	Residential
48	47.1	47.1	60.7	13.6	N	N	66	Residential
49	47.1	47.1	60.8	13.7	N	N	66	Residential
50	47.1	47.1	61.7	14.6	N	N	66	Residential

Table 4 - I-73 New Alignment Reevaluation – Existing and Design Year Sound Levels

RECEPTOR NUMBER	EXISTING	2040 NO-BUILD	2040 BUILD	INCREASE OVER EXISTING	NAC IMPACT?	SUBSTANTIAL INCREASE IMPACT?	NAC	LAND USE
51	47.1	47.1	61.1	14.0	N	N	66	Residential
52	47.1	47.1	64.5	17.4	N	Y	66	Residential
53	47.1	47.1	63.7	16.6	N	Y	66	Residential
54	48.2	48.2	65.1	16.9	N	Y	66	Residential
55	48.2	48.2	57.4	9.2	N	N	66	Residential
56	48.2	48.2	58.9	10.7	N	N	66	Residential
57	48.2	48.2	60.0	11.8	N	N	66	Residential
58	48.2	48.2	62.1	13.9	N	N	66	Residential
59	48.2	48.2	60.9	12.7	N	N	66	Residential
60	48.2	48.2	59.6	11.4	N	N	66	Residential
61	48.2	48.2	57.5	9.3	N	N	66	Residential
62	48.2	48.2	57.4	9.2	N	N	66	Residential
63	48.2	48.2	56.3	8.1	N	N	66	Residential
64	48.2	48.2	55.1	6.9	N	N	66	Residential
65	48.2	48.2	51.6	3.4	N	N	66	Residential
66	53.5	56.9	53.8	0.3	N	N	66	Residential
67	45.3	47.5	52.2	6.9	N	N	66	Residential
68	45.3	45.3	55.7	10.4	N	N	66	Residential
69	48.3	48.3	50.5	2.2	N	N	66	Residential
70	48.3	48.3	58.5	10.2	N	N	66	Residential
71	48.3	48.3	56.2	7.9	N	N	66	Residential
73	48.3	48.3	61.9	13.6	N	N	66	Residential
74	48.3	48.3	56.7	8.4	N	N	66	Residential
75	48.3	48.3	54.3	6.0	N	N	66	Residential
76	48.3	48.3	64.1	15.8	N	Y	66	Residential
77	48.3	48.3	56.9	8.6	N	N	66	Residential
78	45.5	45.5	59.0	13.5	N	N	66	Residential
79	45.5	45.5	62.0	16.5	N	Y	66	Residential
80	45.5	45.5	60.8	15.3	N	Y	66	Residential
81	42.3	42.3	59.4	17.1	N	Y	66	Residential
82	42.3	42.3	57.0	14.7	N	N	66	Residential
83	42.3	42.3	59.4	17.1	N	Y	66	Residential
84	48.0	48.0	55.6	7.6	N	N	66	Residential
85	48.0	48.0	65.4	17.4	N	Y	66	Residential
86	48.0	48.0	69.7	21.7	Y	Y	66	Residential
87	48.0	48.0	58.1	10.1	N	N	66	Residential
88	48.0	48.0	69.9	21.9	Y	Y	66	Residential
89	48.0	48.0	67.0	19.0	Y	Y	66	Residential
90	48.0	48.0	64.2	16.2	N	Y	66	Residential
91	48.0	48.0	64.3	16.3	N	Y	66	Residential
92	48.0	48.0	63.6	15.6	N	Y	66	Residential
94	48.0	48.0	58.4	10.4	N	N	66	Residential
95	47.9	47.9	50.7	2.8	N	N	66	Residential
96	47.9	47.9	54.3	6.4	N	N	66	Residential
97	47.9	47.9	67.8	19.9	Y	Y	66	Residential
98	47.9	47.9	56.0	8.1	N	N	66	Residential
99	50.9	50.9	52.3	1.4	N	N	66	Residential
100	47.9	47.9	51.8	3.9	N	N	66	Residential

Table 4 - I-73 New Alignment Reevaluation – Existing and Design Year Sound Levels

RECEPTOR NUMBER	EXISTING	2040 NO-BUILD	2040 BUILD	INCREASE OVER EXISTING	NAC IMPACT?	SUBSTANTIAL INCREASE IMPACT?	NAC	LAND USE
102	50.3	50.4	55.1	4.8	N	N	66	Residential
106	47.9	47.9	53.8	5.9	N	N	66	Residential
107	48.5	48.5	54.5	6.0	N	N	66	Residential
108	47.9	47.9	53.6	5.7	N	N	66	Residential
109	47.9	47.9	55.4	7.5	N	N	66	Residential
110	47.9	47.9	63.6	15.7	N	Y	66	Residential
111	47.9	47.9	58.9	11.0	N	N	66	Residential
112	47.9	47.9	55.8	7.9	N	N	66	Residential
113	47.9	47.9	55.5	7.6	N	N	66	Residential
114	47.9	47.9	57.0	9.1	N	N	66	Residential
116	47.9	47.9	65.6	17.7	N	Y	66	Residential
117	47.9	47.9	56.6	8.7	N	N	66	Residential
118	47.9	47.9	65.4	17.5	N	Y	66	Residential
119	46.9	46.9	58.2	11.3	N	N	66	Residential
120	46.9	46.9	58.7	11.8	N	N	66	Residential
121	46.9	46.9	63.2	16.3	N	Y	66	Residential
122	46.9	46.9	60.8	13.9	N	N	66	Residential
123	46.9	46.9	58.1	11.2	N	N	66	Residential
125	46.9	46.9	58.4	11.5	N	N	66	Residential
128	48.6	48.6	53.5	4.9	N	N	66	Residential
129	48.6	48.6	55.6	7.0	N	N	66	Residential
131	48.6	48.6	52.6	4.0	N	N	66	Residential
132	48.6	48.6	67.6	19.0	Y	Y	66	Residential
133	48.6	48.6	67.0	18.4	Y	Y	66	Residential
136	48.6	48.6	66.3	17.7	Y	Y	66	Residential
137	48.6	48.6	65.5	16.9	N	Y	66	Residential
138	48.6	48.6	66.9	18.3	Y	Y	66	Residential
139	48.6	48.6	64.8	16.2	N	Y	66	Residential
140	48.6	48.6	64.0	15.4	N	Y	66	Residential
141	48.6	48.6	66.1	17.5	Y	Y	66	Residential
142	48.6	48.6	64.1	15.5	N	Y	66	Residential
143	48.6	48.6	63.3	14.7	N	N	66	Residential
144	48.6	48.6	63.1	14.5	N	N	66	Residential
145	48.6	48.6	62.2	13.6	N	N	66	Residential
146	48.6	48.6	61.0	12.4	N	N	66	Residential
147	48.6	48.6	60.6	12.0	N	N	66	Residential
148	48.6	48.6	60.2	11.6	N	N	66	Residential
149	48.6	48.6	59.3	10.7	N	N	66	Residential
150	48.6	48.6	59.7	11.1	N	N	66	Residential

Table 4 - I-73 New Alignment Reevaluation – Existing and Design Year Sound Levels

RECEPTOR NUMBER	EXISTING	2040 NO-BUILD	2040 BUILD	INCREASE OVER EXISTING	NAC IMPACT?	SUBSTANTIAL INCREASE IMPACT?	NAC	LAND USE
151	48.6	48.6	60.2	11.6	N	N	66	Residential
152	48.6	48.6	59.2	10.6	N	N	66	Residential
153	48.6	48.6	60.6	12.0	N	N	66	Residential
154	48.6	48.6	59.1	10.5	N	N	66	Residential
155	48.6	48.6	59.4	10.8	N	N	66	Residential
156	48.6	48.6	60.6	12.0	N	N	66	Residential
157	48.6	48.6	57.1	8.5	N	N	66	Residential
158	48.6	48.6	59.2	10.6	N	N	66	Residential
159	52.5	52.5	60.3	7.8	N	N	66	Residential
160	52.5	52.5	60.8	8.3	N	N	66	Residential
161	48.6	48.6	57.6	9.0	N	N	66	Residential
162	48.6	48.6	56.7	8.1	N	N	66	Residential
163	48.6	48.6	56.5	7.9	N	N	66	Residential
164	48.6	48.6	56.9	8.3	N	N	66	Residential
165	52.5	52.5	58.7	6.2	N	N	66	Residential
166	52.5	52.5	59.2	6.7	N	N	66	Residential
167	52.5	52.5	57.5	5.0	N	N	66	Residential
168	52.5	52.5	58.1	5.6	N	N	66	Residential
169	52.5	52.5	58.6	6.1	N	N	66	Residential
170	45.5	45.5	57.9	12.4	N	N	66	Residential
172	46.7	46.7	**66.8**	**20.1**	**Y**	**Y**	66	Residential
174	46.7	46.7	64.1	**17.4**	N	**Y**	66	Residential
175	46.7	46.7	61.2	14.5	N	N	66	Residential
176	46.7	46.7	59.6	12.9	N	N	66	Residential
177	45.5	45.5	57.3	11.8	N	N	66	Residential
178	45.5	45.5	58.8	13.3	N	N	66	Residential
179	45.5	45.5	59.8	14.3	N	N	66	Residential
180	45.5	45.5	58.1	12.6	N	N	66	Residential
181	45.5	45.5	55.5	10.0	N	N	66	Residential
182	45.5	45.5	56.9	11.4	N	N	66	Residential
183	45.5	45.5	56.2	10.7	N	N	66	Residential
184	45.5	45.5	55.3	9.8	N	N	66	Residential
185	48.6	48.6	55.3	6.7	N	N	66	Residential
186	48.6	48.6	56.5	7.9	N	N	66	Residential
187	48.6	48.6	54.8	6.2	N	N	66	Residential
188	48.6	48.6	55.1	6.5	N	N	66	Residential
190	48.6	48.6	63.0	14.4	N	N	66	Residential
191	48.6	48.6	55.8	7.2	N	N	66	Residential
192	48.6	48.6	64.7	**16.1**	N	**Y**	66	Residential
193	48.6	48.6	59.9	11.3	N	N	66	Residential
194	48.6	48.6	64.5	**15.9**	N	**Y**	66	Residential
195	48.6	48.6	56.5	7.9	N	N	66	Residential
196	48.6	48.6	57.2	8.6	N	N	66	Residential
197	48.6	48.6	59.3	10.7	N	N	66	Residential
198	48.6	48.6	57.4	8.8	N	N	66	Residential
199	57.0	57.0	**67.2**	10.2	**Y**	N	66	Residential
200	57.0	57.0	64.6	7.6	N	N	66	Residential

Table 4 - I-73 New Alignment Reevaluation – Existing and Design Year Sound Levels

RECEPTOR NUMBER	EXISTING	2040 NO-BUILD	2040 BUILD	INCREASE OVER EXISTING	NAC IMPACT?	SUBSTANTIAL INCREASE IMPACT?	NAC	LAND USE
201	57.0	57.0	62.5	5.5	N	N	66	Residential
202	57.0	57.0	58.6	1.6	N	N	66	Residential
204	57.0	57.0	60.3	3.3	N	N	66	Residential
205	57.0	57.0	61.2	4.2	N	N	66	Residential
206	57.0	57.0	62.3	5.3	N	N	66	Residential
207	57.0	57.0	62.8	5.8	N	N	66	Residential
208	57.0	57.0	64.3	7.3	N	N	66	Residential
209	57.0	57.0	65.3	8.3	N	N	66	Residential
210	57.0	57.0	60.1	3.1	N	N	66	Residential
211	57.0	57.0	64.2	7.2	N	N	66	Residential
212	57.0	57.0	**66.4**	9.4	**Y**	N	66	Residential
213	57.0	57.0	63.3	6.3	N	N	66	Residential
214	57.0	57.0	64.7	7.7	N	N	66	Residential
215	57.0	57.0	62.3	5.3	N	N	66	Residential
216	57.0	57.0	**67.0**	10.0	**Y**	N	66	Residential
217	57.0	57.0	**67.8**	10.8	**Y**	N	66	Residential
218	57.0	57.0	**70.5**	13.5	**Y**	N	66	Residential
219	56.1	56.1	64.6	8.5	N	N	66	Residential
223	56.1	56.1	64.6	8.5	N	N	66	Residential
224	56.1	56.1	60.6	4.5	N	N	66	Residential
225	56.1	56.1	61.1	5.0	N	N	66	Residential
226	55.2	55.2	60.2	5.0	N	N	66	Residential
227	55.2	55.2	64.9	9.7	N	N	66	Residential
228	55.2	55.2	63.8	8.6	N	N	66	Residential
231	55.2	55.2	65.8	10.6	N	N	66	Residential
232	55.2	55.2	59.5	4.3	N	N	66	Residential
233	55.2	55.2	58.6	3.4	N	N	66	Residential
234	55.2	55.2	57.8	2.6	N	N	66	Residential
235	51.1	51.1	57.0	5.9	N	N	66	Residential
236	51.1	51.1	58.5	7.4	N	N	66	Residential
237	51.1	51.1	59.9	8.8	N	N	66	Residential
238	51.1	51.1	61.3	10.2	N	N	66	Residential
239	51.1	51.1	**71.4**	**20.3**	**Y**	**Y**	66	Residential
240	51.1	51.1	56.4	5.3	N	N	66	Residential
241	51.1	51.1	57.0	5.9	N	N	66	Residential
245	51.1	51.1	59.9	8.8	N	N	66	Residential
246	51.1	51.1	60.8	9.7	N	N	66	Residential
248	51.1	51.1	64.0	12.9	N	N	66	Residential
249	51.1	51.1	63.0	11.9	N	N	66	Residential
250	51.1	51.1	57.8	6.7	N	N	66	Residential

Table 4 - I-73 New Alignment Reevaluation – Existing and Design Year Sound Levels

RECEPTOR NUMBER	EXISTING	2040 NO-BUILD	2040 BUILD	INCREASE OVER EXISTING	NAC IMPACT?	SUBSTANTIAL INCREASE IMPACT?	NAC	LAND USE
251	51.1	51.1	66.6	15.5	Y	Y	66	Residential
253	51.1	51.1	58.6	7.5	N	N	66	Residential
254	51.1	51.1	58.2	7.1	N	N	66	Residential
255	51.1	51.1	57.7	6.6	N	N	66	Residential
256	51.1	51.1	56.6	5.5	N	N	66	Residential
258	51.1	51.1	56.9	5.8	N	N	66	Residential
259	46.8	46.8	59.9	13.1	N	N	66	Residential
260	46.8	46.8	61.0	14.2	N	N	66	Residential
261	46.8	46.8	60.1	13.3	N	N	66	Residential
262	46.8	46.8	54.9	8.1	N	N	66	Residential
263	46.8	46.8	57.8	11.0	N	N	66	Residential
264	46.8	46.8	63.3	16.5	N	Y	66	Residential
265	46.8	46.8	62.6	15.8	N	Y	66	Residential
266	46.8	46.8	56.8	10.0	N	N	66	Residential
267	46.8	46.8	60.1	13.3	N	N	66	Residential
268	46.8	46.8	59.5	12.7	N	N	66	Residential
269	46.8	46.8	57.8	11.0	N	N	66	Residential
270	46.8	46.8	60.9	14.1	N	N	66	Residential
271	46.8	46.8	58.8	12.0	N	N	66	Residential
272	46.8	46.8	61.4	14.6	N	N	66	Residential
274	46.8	46.8	68.1	21.3	Y	Y	66	Residential
276	46.8	46.8	51.8	5.0	N	N	66	Residential
277	46.8	46.8	54.1	7.3	N	N	66	Residential
278	46.8	46.8	67.5	20.7	Y	Y	66	Residential
279	46.8	46.8	55.5	8.7	N	N	66	Residential
280	46.8	46.8	55.4	8.6	N	N	66	Residential
281	44.7	44.7	58.7	14.0	N	N	66	Residential
283	44.7	44.7	63.2	18.5	N	Y	66	Residential
286	44.7	44.7	58.2	13.5	N	N	66	Residential
287	44.7	44.7	59.7	15.0	N	Y	66	Residential
288	44.7	44.7	63.7	19.0	N	Y	66	Residential
289	44.7	44.7	58.3	13.6	N	N	66	Residential
290	44.7	44.7	57.3	12.6	N	N	66	Residential
291	44.7	44.7	56.6	11.9	N	N	66	Residential
292	44.7	44.7	56.0	11.3	N	N	66	Residential
293	44.7	44.7	58.9	14.2	N	N	66	Residential
294	44.7	44.7	58.2	13.5	N	N	66	Residential
295	44.7	44.7	55.4	10.7	N	N	66	Residential
296	44.7	44.7	59.5	14.8	N	N	66	Residential
297	44.7	44.7	54.7	10.0	N	N	66	Residential
298	44.7	44.7	54.4	9.7	N	N	66	Residential
299	44.7	44.7	57.2	12.5	N	N	66	Residential
300	44.7	44.7	58.8	14.1	N	N	66	Residential
301	44.7	44.7	55.3	10.6	N	N	66	Residential
302	44.7	44.7	55.3	10.6	N	N	66	Residential
303	44.7	44.7	57.4	12.7	N	N	66	Residential
305	44.7	44.7	61.4	16.7	N	Y	66	Residential

Table 4 - I-73 New Alignment Reevaluation – Existing and Design Year Sound Levels

RECEPTOR NUMBER	EXISTING	2040 NO-BUILD	2040 BUILD	INCREASE OVER EXISTING	NAC IMPACT?	SUBSTANTIAL INCREASE IMPACT?	NAC	LAND USE
306	44.7	44.7	65.6	**20.9**	N	**Y**	66	Residential
307	44.7	44.7	64.4	**19.7**	N	**Y**	66	Residential
308	44.7	44.7	59.5	14.8	N	N	66	Residential
310	44.7	44.7	63.3	**18.6**	N	**Y**	66	Residential
312	44.7	44.7	60.6	**15.9**	N	**Y**	66	Residential
313	44.7	44.7	61.9	**17.2**	N	**Y**	66	Residential
314	44.7	44.7	**69.4**	**24.7**	**Y**	**Y**	66	Residential
315	45.8	45.8	**69.0**	**23.2**	**Y**	**Y**	66	Residential
316	45.8	45.8	63.8	**18.0**	N	**Y**	66	Residential
317	45.8	45.8	62.2	**16.4**	N	**Y**	66	Residential
318	45.8	45.8	61.3	**15.5**	N	**Y**	66	Residential
319	45.8	45.8	52.4	6.6	N	N	66	Residential
320	45.8	45.8	63.4	**17.6**	N	**Y**	66	Residential
321	47.5	47.5	61.3	13.8	N	N	66	Residential
321A	47.5	47.5	65.7	**18.2**	N	**Y**	66	Residential
321B	47.5	47.5	60.9	13.4	N	N	66	Residential
321C	47.5	47.5	57.8	10.3	N	N	66	Residential
321D	47.5	47.5	56.2	8.7	N	N	66	Residential
321E	47.5	47.5	54.4	6.9	N	N	66	Residential
321F	47.5	47.5	62.6	**15.1**	N	**Y**	66	Residential
321G	47.5	47.5	58.8	11.3	N	N	66	Residential
321H	47.5	47.5	56.6	9.1	N	N	66	Residential
321I	47.5	47.5	55.4	7.9	N	N	66	Residential
322	47.5	47.5	57.1	9.6	N	N	66	Residential
324	47.5	47.5	64.5	**17.0**	N	**Y**	66	Residential
325	47.5	47.5	57.7	10.2	N	N	66	Residential
329	47.5	47.5	62.3	14.8	N	N	66	Residential
332	47.5	47.5	59.2	11.7	N	N	66	Residential
333	50.1	50.1	59.7	9.6	N	N	66	Residential
334	50.1	50.1	56.1	6.0	N	N	66	Residential
335	50.1	50.1	55.5	5.4	N	N	66	Residential
336	50.1	50.1	60.5	10.4	N	N	66	Residential
338	50.1	50.1	**68.9**	**18.8**	**Y**	**Y**	66	Residential
339	50.1	50.1	61.5	11.4	N	N	66	Residential
340	50.1	50.1	58.5	8.4	N	N	66	Residential
341	50.1	50.1	55.6	5.5	N	N	66	Residential
343	50.1	50.1	**67.8**	**17.7**	**Y**	**Y**	66	Residential
344	50.1	50.1	**67.3**	**17.2**	**Y**	**Y**	66	Residential
345	50.1	50.1	54.9	4.8	N	N	66	Residential
347	45.9	45.9	56.9	11.0	N	N	66	Residential
350	45.9	45.9	52.1	6.2	N	N	66	Residential
351	49.8	52.0	60.8	11.0	N	N	66	Residential
352	50.6	52.8	63.0	12.4	N	N	66	Residential
353	44.4	46.6	56.8	12.4	N	N	66	Residential
354	45.7	47.9	58.3	12.6	N	N	66	Residential
355	46.2	48.4	59.2	13.0	N	N	66	Residential
356	48.2	50.5	61.2	13.0	N	N	66	Residential
357	47.5	49.8	60.4	12.9	N	N	66	Residential

Source: Michael Baker International, Inc.

Bold Red-shaded values indicate sound levels that either approach, meet or exceed the NAC or meet or exceed the substantial increase over existing criteria.

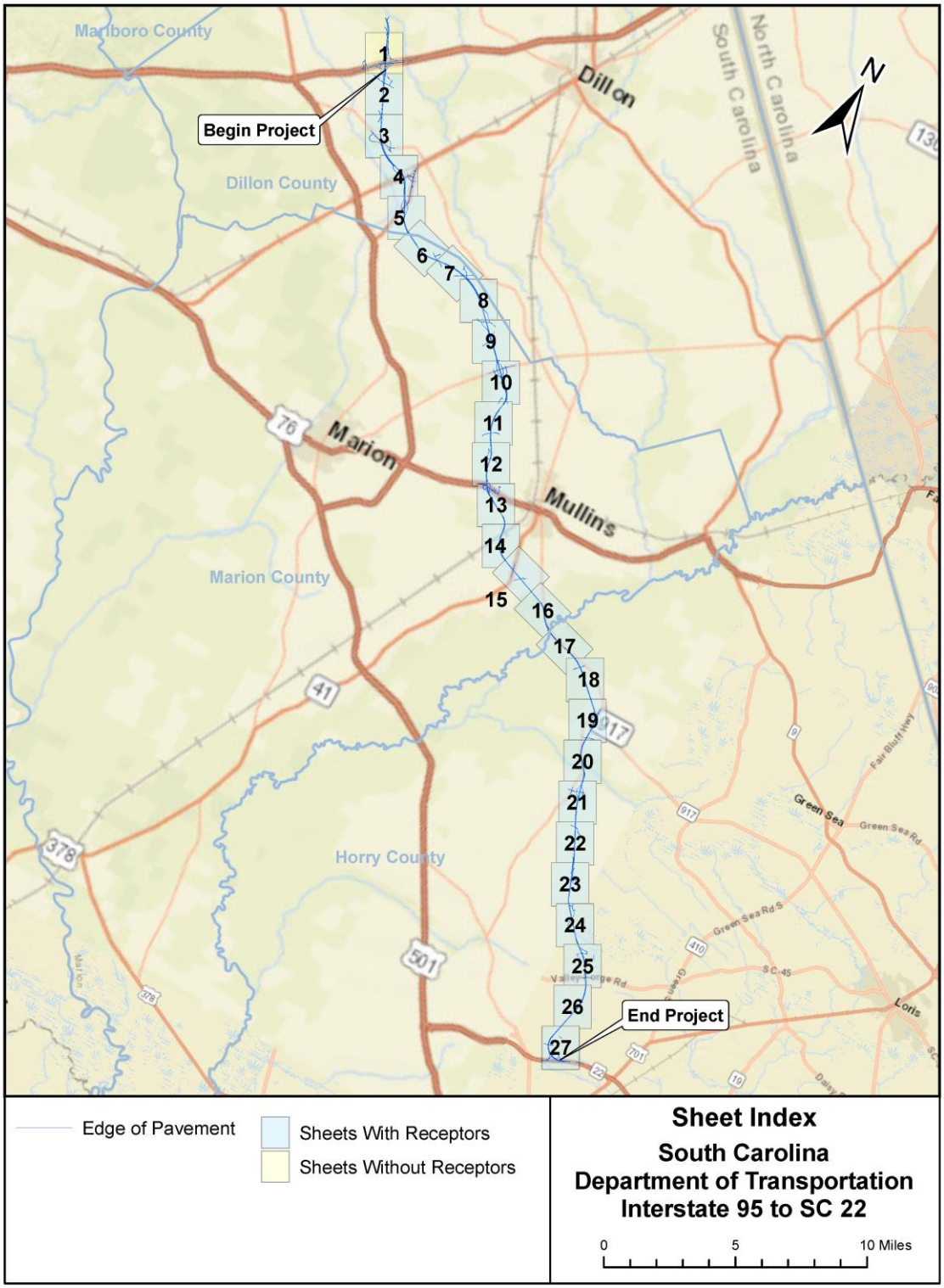


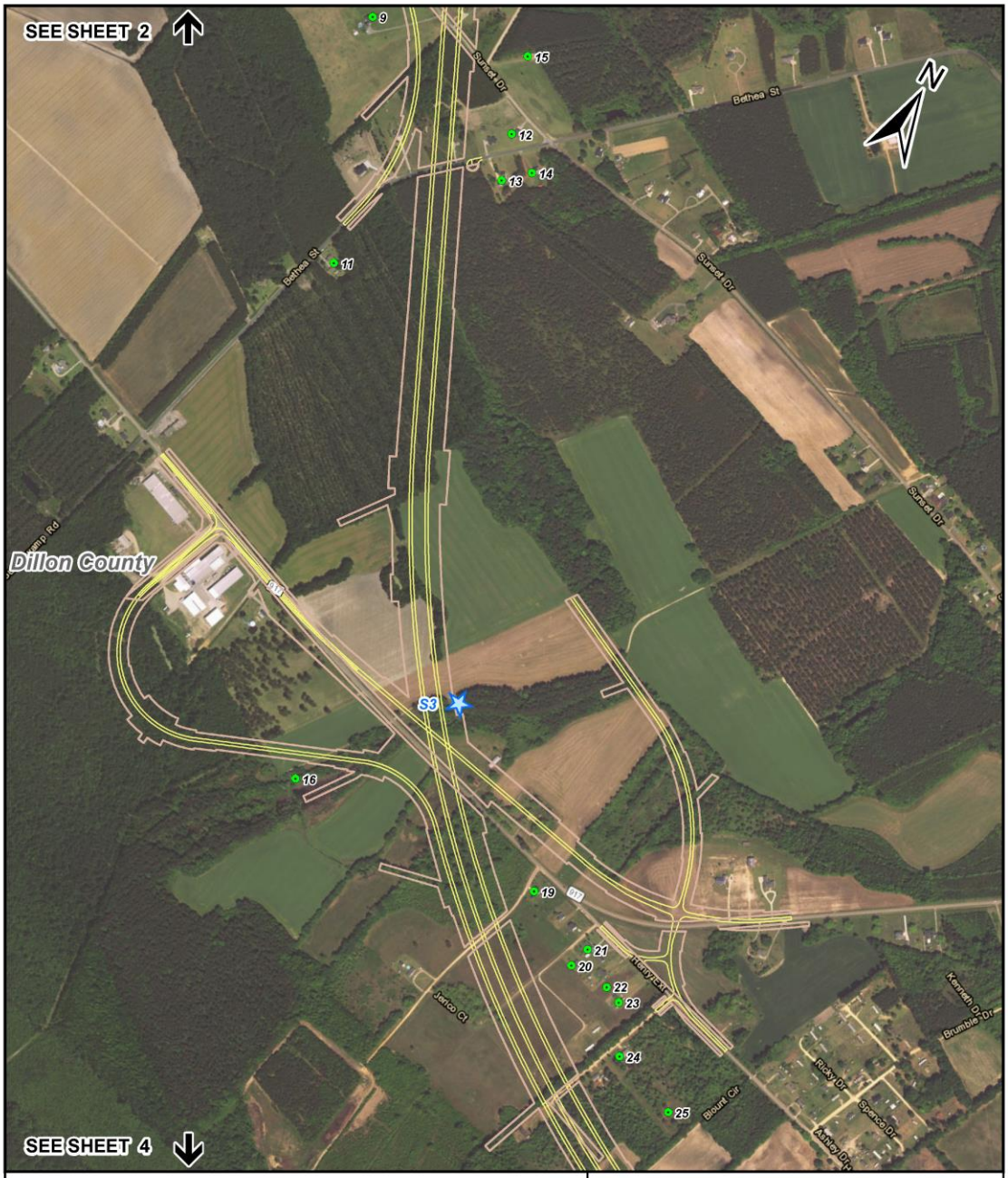
Figure 3 – I-73: I-95 to SC 22 - Impacted Noise Receiver Locations


N
Dillon County
Bay Catfish Rd
SEE SHEET 2
South Receptors
Not Impacted
Impacted
Measurement Site
Bridge
Edge of Pavement
Right of Way
Receptor Location
South Carolina
Department of Transportation
Interstate 95 to SC 22
0
500
1,000
2,000 Feet

Sheet 1


SEE SHEET 1
Catfish Church Rd
Griffin Dr
Sunset Dr
Dillon County
S1
S2
1
2
3
4
5
6
7
8
9
9A
15
N
SEE SHEET 3
South Receptors
Not Impacted
Impacted
Measurement Site
Bridge
Edge of Pavement
Right of Way
Receptor Location
South Carolina
Department of Transportation
Interstate 95 to SC 22
0
500
1,000
2,000 Feet

Sheet 2


SEE SHEET 2
SEE SHEET 4
Dillon County
S3
9
15
12
13
14
11
16
19
21
20
22
23
24
25
Bethea St
Sunset Dr
Jenco Ct
Blount Cir
Ricky Dr
Spence Dr
Ashley Dr
Kenneth Dr
Brumble Dr
N
South Receptors
Not Impacted
Impacted
Measurement Site
Bridge
Edge of Pavement
Right of Way
Receptor Location
South Carolina
Department of Transportation
Interstate 95 to SC 22
0
500
1,000
2,000 Feet

Sheet 3


SEE SHEET 3
SEE SHEET 5
Dillon County
S5
S6
CSX Transportation
Henry Ext
Henry St
Chapel St
Lynne Ct
New St
Allen St
Wade Dr
Willis St
Blossom Ct
Southpark Ct
McCutcheon Pl
Black Rock Dr
Old Ebenezer Rd
E Canal Rd
Bass Mill Rd
Summertime Pl
Victory Ln
W Signode Rd
South Receptors
Not Impacted
Impacted
Measurement Site
Bridge
Edge of Pavement
Right of Way
Receptor Location
South Carolina
Department of Transportation
Interstate 95 to SC 22
0
500
1,000
2,000 Feet

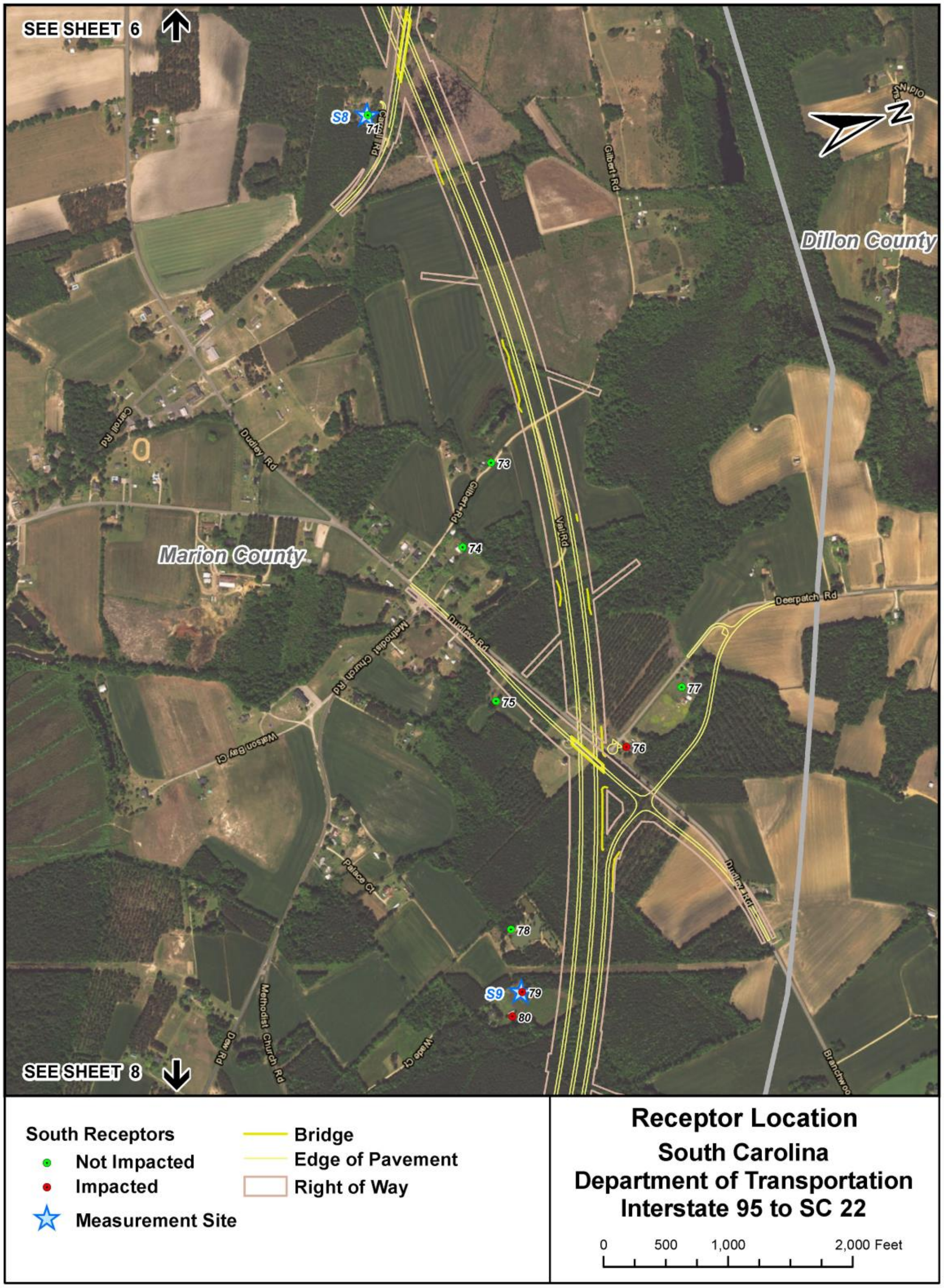
Sheet 4


SEE SHEET 4
SEE SHEET 6
N
Dillon County
Marion County
Meadowhill Pl
Old Ebenezer Rd
Skyway Ct
Beechnut Dr
Hickory Point Pl
Sandclay Dr
Copeland-Moody Rd
Shanda Ct
Woodhaven Rd
Wenwood Rd
Bird Rd
E Leitner Extended
Old Farm
Carroll Rd
66
67
68
S7
South Receptors
Not Impacted
Impacted
Measurement Site
Bridge
Edge of Pavement
Right of Way
Receptor Location
South Carolina
Department of Transportation
Interstate 95 to SC 22
0
500
1,000
2,000 Feet

Sheet 5


SEE SHEET 5
SEE SHEET 7
George Rd
Zachary Ct
Copeland Moody Rd
Dillon County
Marion County
Hattie Ln
Powers Rd
Dudley Rd
Barn Rd
69
70
Bridge
Edge of Pavement
Right of Way
South Receptors
Not Impacted
Impacted
Measurement Site
Receptor Location
South Carolina
Department of Transportation
Interstate 95 to SC 22
0
500
1,000
2,000 Feet

Sheet 6


SEE SHEET 6
SEE SHEET 8
Dillon County
Marion County
S8
71
73
74
75
76
77
78
S9
79
80
Dudley Rd
Carroll Rd
Gilbert Rd
Vail Rd
Deerpatch Rd
Methodist Church Rd
Watson Bay Ct
Palace Ct
Dew Rd
Wade Ct
South Receptors
Not Impacted
Impacted
Measurement Site
Bridge
Edge of Pavement
Right of Way
Receptor Location
South Carolina
Department of Transportation
Interstate 95 to SC 22
0
500
1,000
2,000 Feet

Sheet 7


SEE SHEET 7
SEE SHEET 9
N
78
S9
79
80
Dillon County
Methodist Church Rd
Dew Rd
Wade Ct
S10
81
Earl Berry Rd
82
Marion County
83
Rembert Rd
Ella Grace Ct
South Receptors
Not Impacted
Impacted
Measurement Site
Bridge
Edge of Pavement
Right of Way
Receptor Location
South Carolina
Department of Transportation
Interstate 95 to SC 22
0
500
1,000
2,000 Feet

Sheet 8


SEE SHEET 8
Dillon County
Marion County
SEE SHEET 10
S11
84
85
86
87
88
89
90
91
92
94
95
96
97
98
Dew Rd
Vance Ct
Scarlet Rd
Windmill Rd
Herbert Rd
Little
Sandhill Rd
Methodist Church Rd
Olin Rd
Ansel Ct
Marshall Church Rd
Elmer Rd
Doorstep Rd
Imperial Ct
Ellis Rd
Methodist Ct
South Receptors
Not Impacted
Impacted
Measurement Site
Bridge
Edge of Pavement
Right of Way
Receptor Location
South Carolina
Department of Transportation
Interstate 95 to SC 22
0
500
1,000
2,000 Feet

Sheet 9

South Receptors

- Not Impacted
- Impacted
- Measurement Site

- Bridge
- Edge of Pavement
- Right of Way

Receptor Location

South Carolina Department of Transportation
Interstate 95 to SC 22

0 500 1,000 2,000 Feet

Sheet 10

South Receptors
- Not Impacted
- Impacted

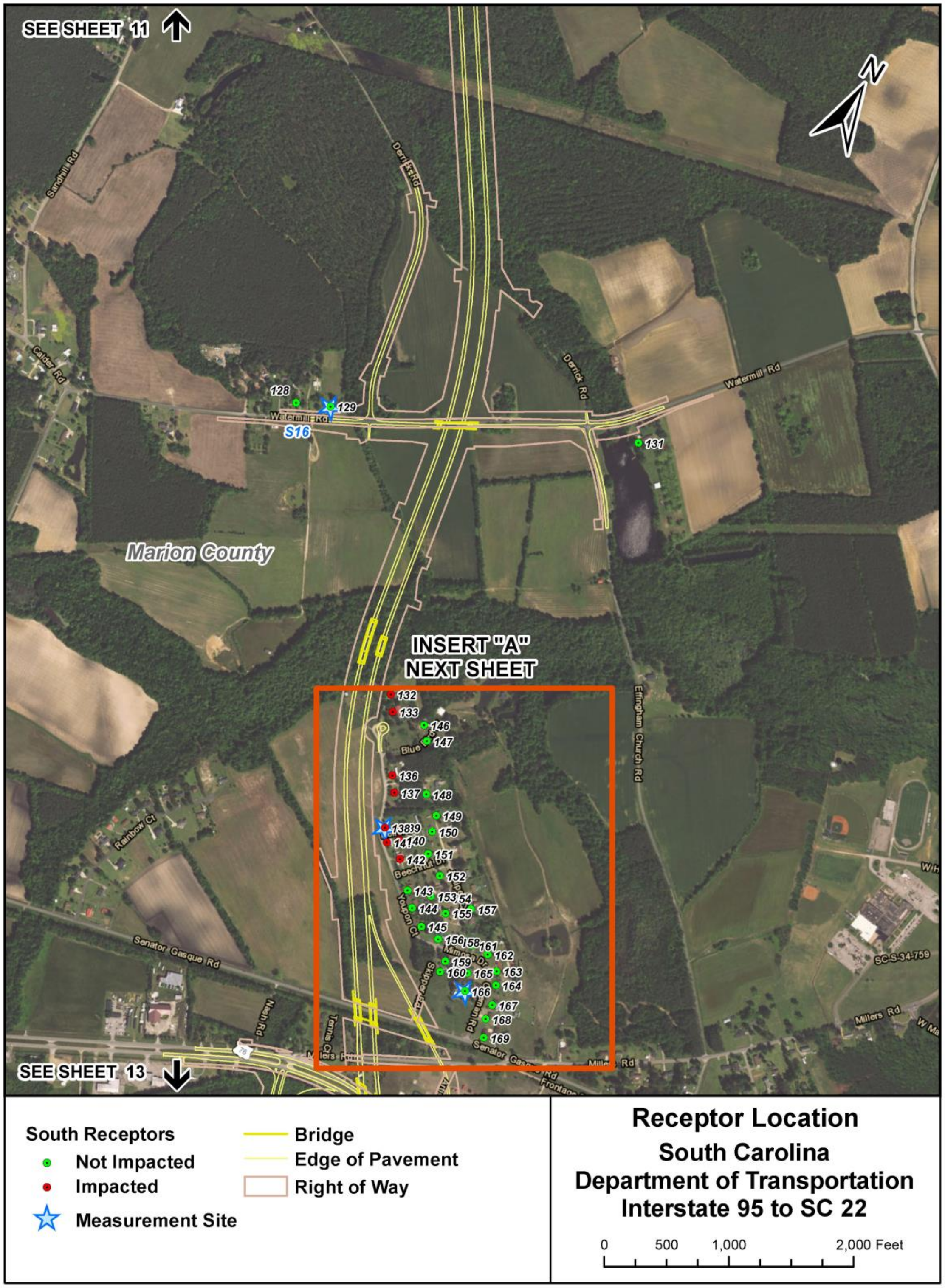
Measurement Site

Bridge
Edge of Pavement
Right of Way

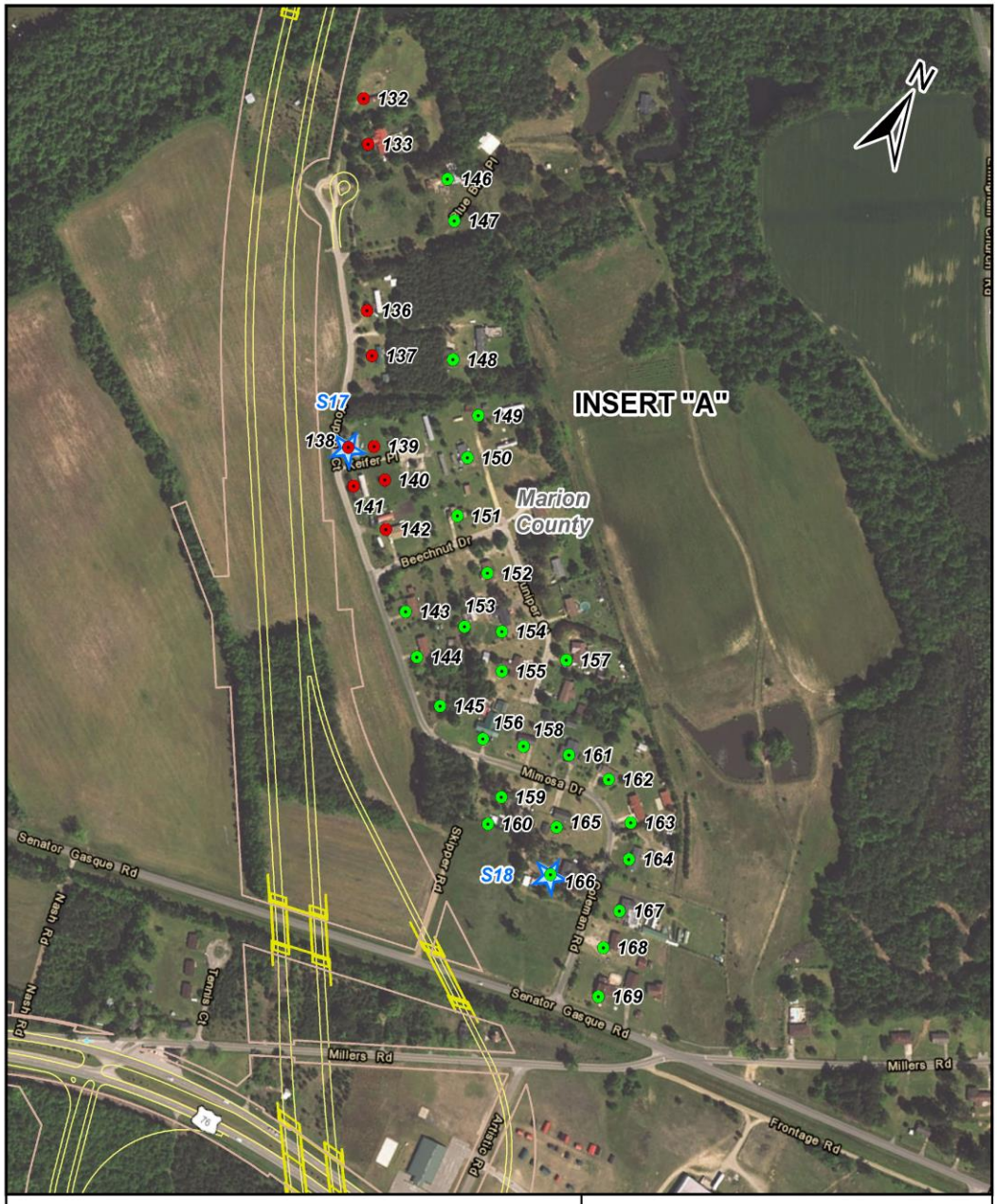
Receptor Location
South Carolina Department of Transportation
Interstate 95 to SC 22

0 500 1,000 2,000 Feet

Sheet 11


SEE SHEET 11
N
Sandhill Rd
Derrick Rd
Calder Rd
128
129
Watermill Rd
S16
131
Marion County
INSERT "A"
NEXT SHEET
Effingham Church Rd
132
133
146
147
136
137
148
149
150
151
152
157
162
163
164
166
167
168
169
Senator Gasque Rd
Millers Rd
SEE SHEET 13
South Receptors
Not Impacted
Impacted
Measurement Site
Bridge
Edge of Pavement
Right of Way
Receptor Location
South Carolina
Department of Transportation
Interstate 95 to SC 22
0
500
1,000
2,000 Feet

Sheet 12



Sheet 12 Insert "A"

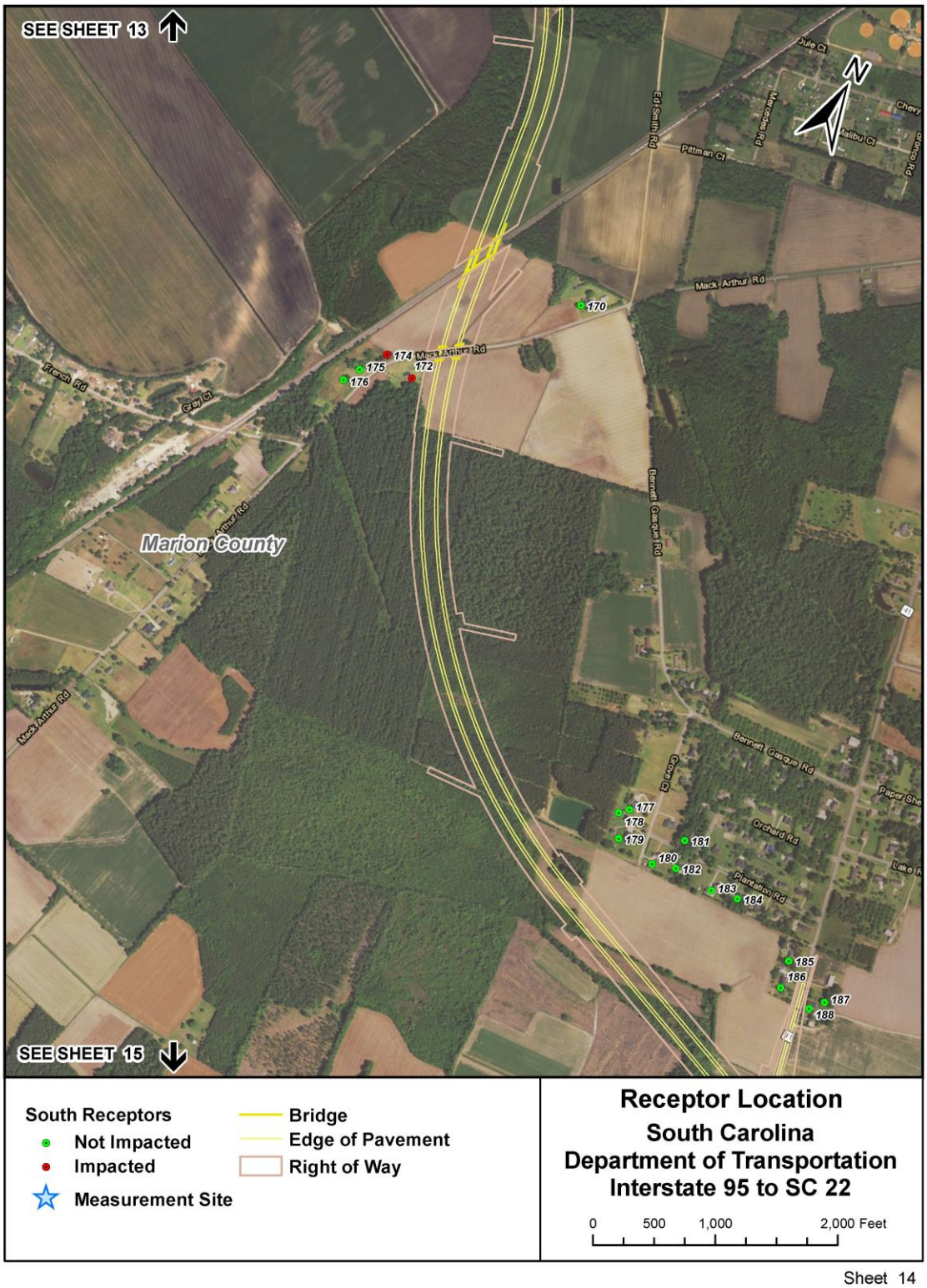
South Receptors
- Not Impacted
- Impacted
- Measurement Site

- Bridge
- Edge of Pavement
- Right of Way

Receptor Location
South Carolina
Department of Transportation
Interstate 95 to SC 22

0 500 1,000 2,000 Feet

Sheet 13


SEE SHEET 13
SEE SHEET 15
N
Marion County
Mack Arthur Rd
Bennett Gasque Rd
Ed Smith Rd
Pittman Ct
Jule Ct
Malibu Ct
Chevy
French Rd
Grey Ct
Grove Ct
Orchard Rd
Plantation Rd
170
172
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
South Receptors
Not Impacted
Impacted
Measurement Site
Bridge
Edge of Pavement
Right of Way
Receptor Location
South Carolina
Department of Transportation
Interstate 95 to SC 22
0
500
1,000
2,000 Feet
Sheet 14

South Receptors
- Not Impacted
- Impacted
- Measurement Site

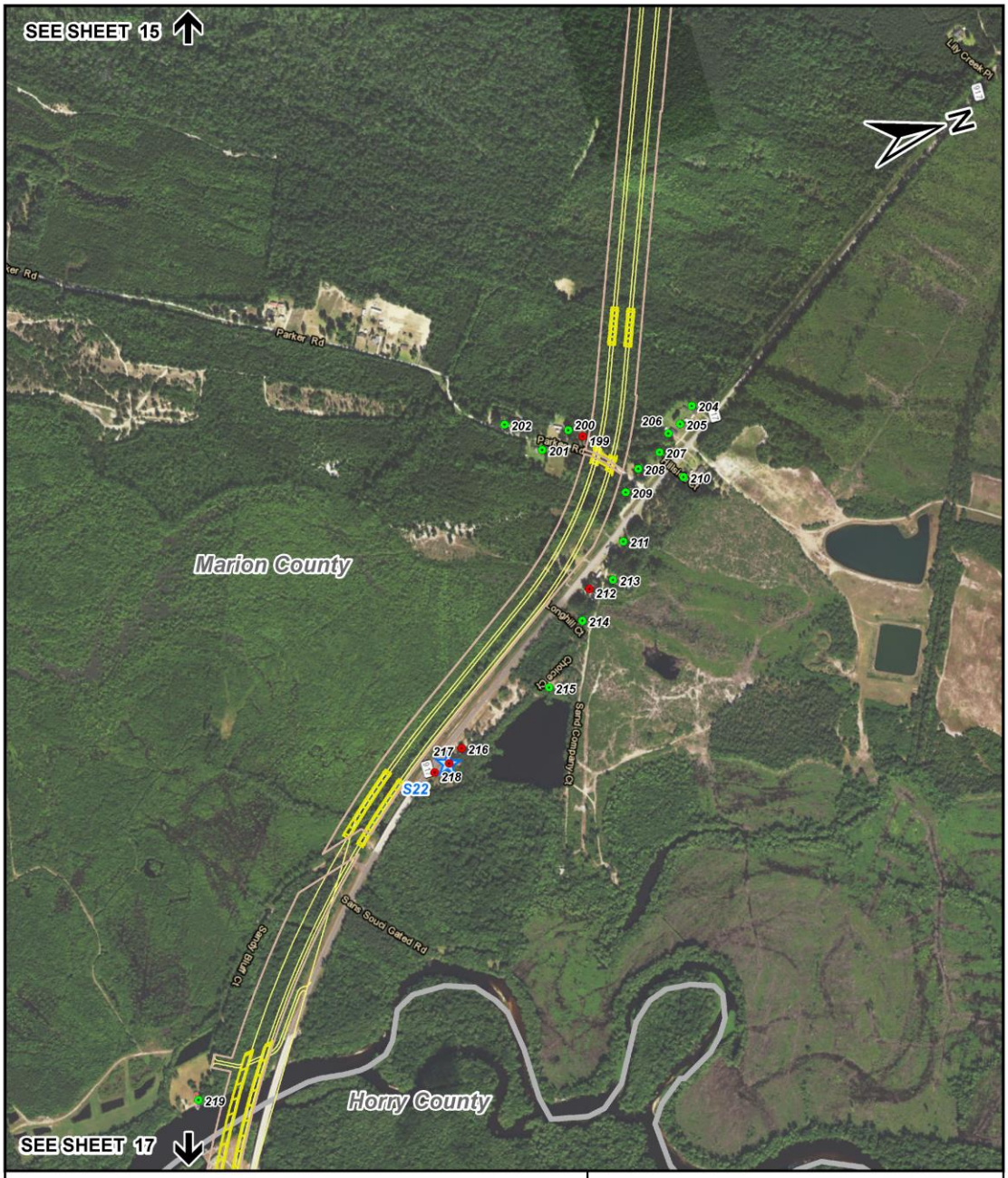
- Bridge
- Edge of Pavement
- Right of Way

Receptor Location

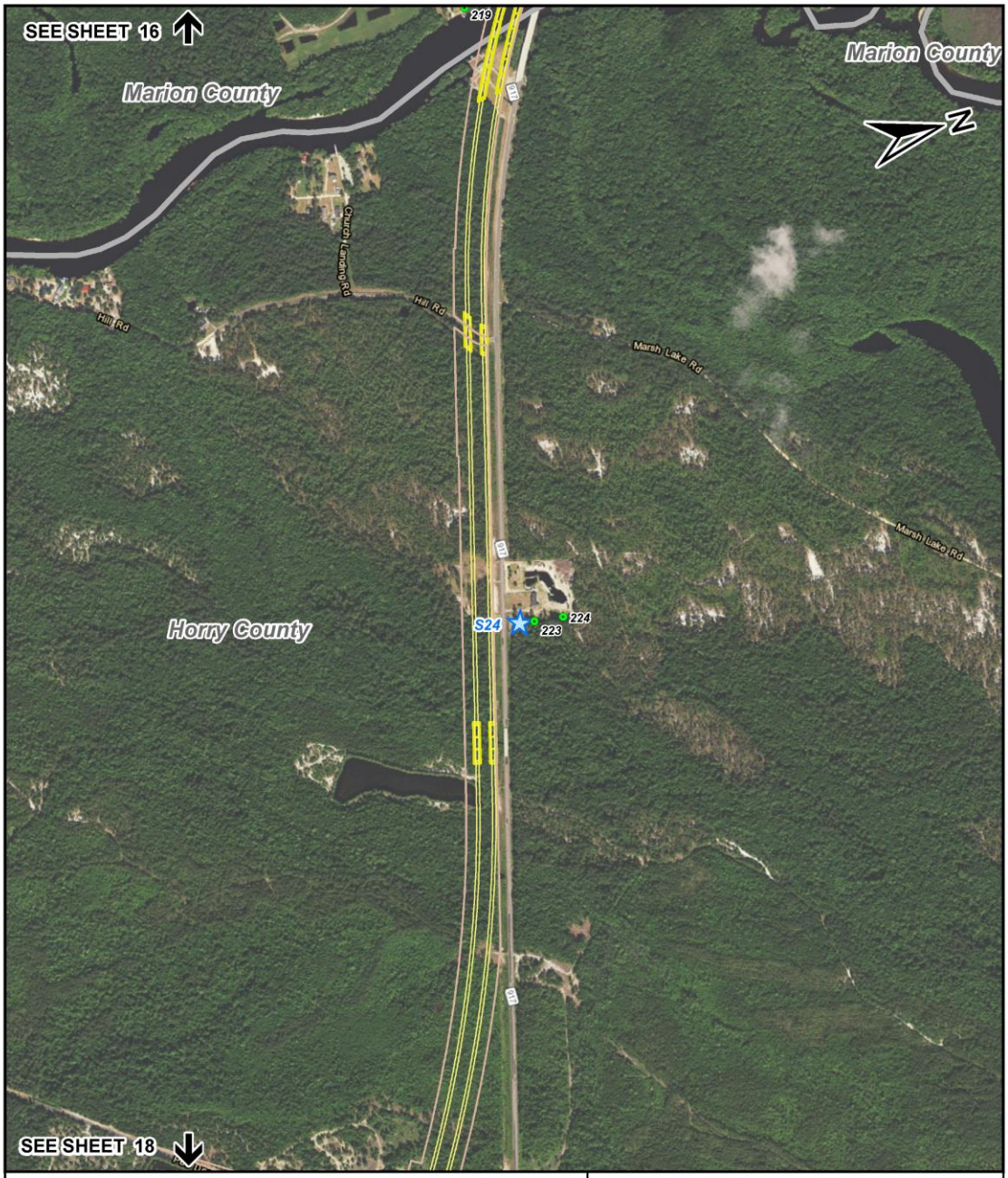
South Carolina
Department of Transportation
Interstate 95 to SC 22

0 500 1,000 2,000 Feet

Sheet 15


SEE SHEET 15
Parker Rd
Marion County
202
200
199
201
204
205
206
207
208
210
209
211
213
212
214
215
217
216
218
S22
Horry County
219
SEE SHEET 17
South Receptors
Not Impacted
Impacted
Measurement Site
Bridge
Edge of Pavement
Right of Way
Receptor Location
South Carolina
Department of Transportation
Interstate 95 to SC 22
0
500
1,000
2,000 Feet

Sheet 16


SEE SHEET 16
Marion County
Marion County
N
Church Lansing Rd
Hill Rd
Hill Rd
Marsh Lake Rd
Marsh Lake Rd
Horry County
S24
219
224
223
SEE SHEET 18
South Receptors
Not Impacted
Impacted
Measurement Site
Bridge
Edge of Pavement
Right of Way
Receptor Location
South Carolina
Department of Transportation
Interstate 95 to SC 22
0
500
1,000
2,000 Feet

Sheet 17


SEE SHEET 17
N
MM Stroud Rd
225
Pee Dee Hwy
Cattle Grove Rd
Horry County
Cattle Grove Rd
Cattle Grove Rd
Wolfpit Bay Rd
Wolfpit Bay Rd
227
226
SEE SHEET 19
South Receptors
Not Impacted
Impacted
Measurement Site
Bridge
Edge of Pavement
Right of Way
Receptor Location
South Carolina
Department of Transportation
Interstate 95 to SC 22
0
500
1,000
2,000 Feet

Sheet 18


SEE SHEET 18
N
228
S26
233
231
232
234
Horry County
Wolf Pit Bay Rd
Lock Rd
235
236
237
238
Lake Swamp Rd
Gerald Dr
S Nichols
239
240
241
Lake Swamp Rd
Phipps Rd
245
246
S28
Bee Ln
SEE SHEET 20
South Receptors
Not Impacted
Impacted
Measurement Site
Bridge
Edge of Pavement
Right of Way
Receptor Location
South Carolina
Department of Transportation
Interstate 95 to SC 22
0
500
1,000
2,000 Feet

Sheet 19


SEE SHEET 19
Bear Ln
S28
245
248
249
N
S Nichols Hwy
Horry County
250
Sarvis Rd
253
S Nichols Hwy
254
256
255
251
SEE SHEET 21
South Receptors
Not Impacted
Impacted
Measurement Site
Bridge
Edge of Pavement
Right of Way
Receptor Location
South Carolina
Department of Transportation
Interstate 95 to SC 22
0
500
1,000
2,000 Feet

Sheet 20

South Receptors
- Not Impacted
- Impacted
- Measurement Site

Bridge
Edge of Pavement
Right of Way

Receptor Location
South Carolina Department of Transportation
Interstate 95 to SC 22

0 500 1,000 2,000 Feet

Sheet 21


SEE SHEET 21
SEE SHEET 23
Barnhill Rd
Blue Ridge Rd
Horry County
Methodist Rehoboth Rd
Connon Rd
JH Martin Rd
Holyland Dr
S31
S33
270
269
271
272
274
276
277
278
279
280
281
283
286
287
N
South Receptors
Not Impacted
Impacted
Measurement Site
Bridge
Edge of Pavement
Right of Way
Receptor Location
South Carolina
Department of Transportation
Interstate 95 to SC 22
0
500
1,000
2,000 Feet

Sheet 22

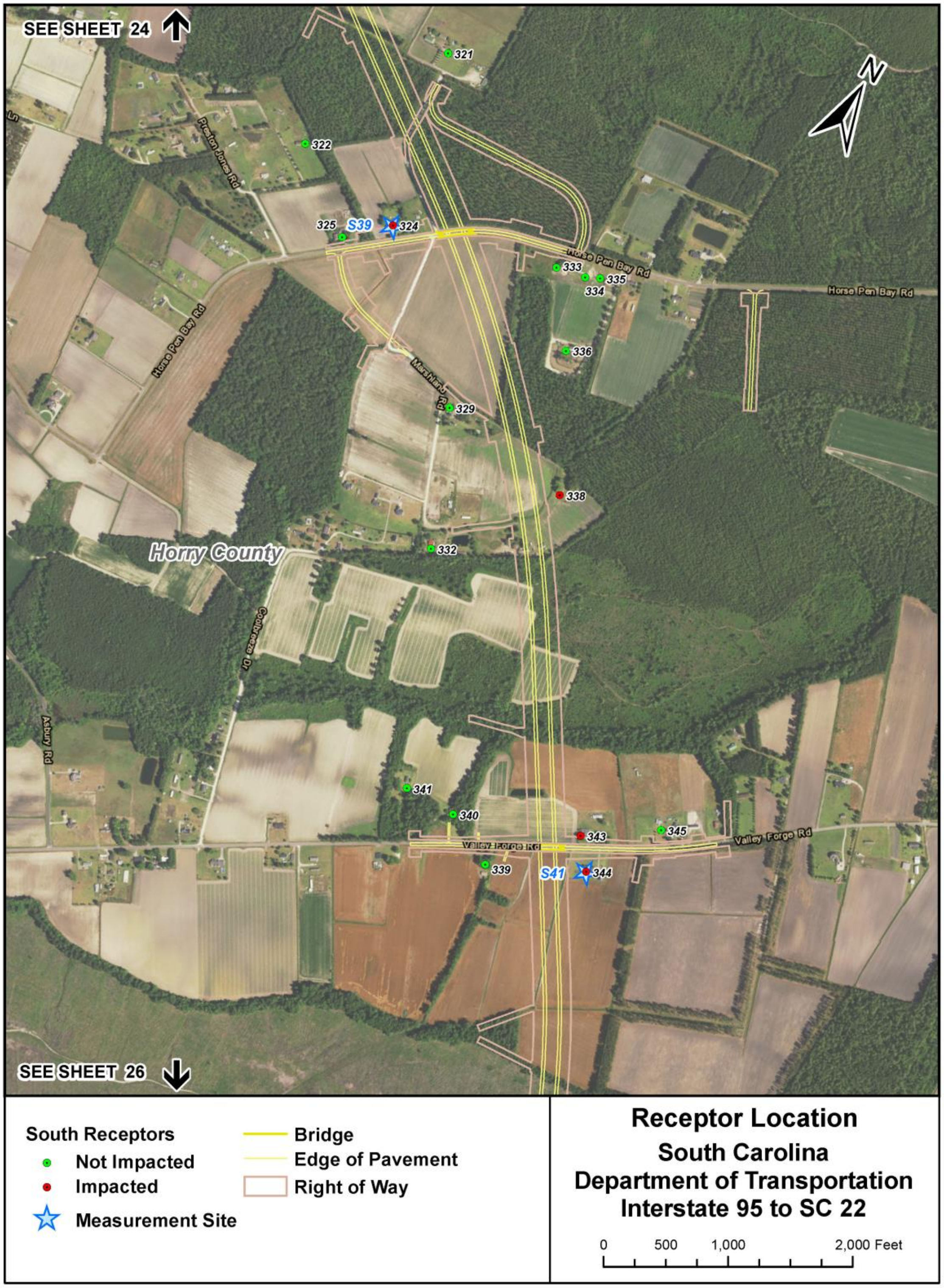
Receptor Location
South Carolina Department of Transportation Interstate 95 to SC 22

0 500 1,000 2,000 Feet

Sheet 23


SEE SHEET 23
SEE SHEET 25
Vick Rd
Bethel Rd
Furnie Rd
Good Luck Rd
Horry County
Uncle Buds
Horry Rd
S37
313
314
315
316
317
318
319
320
321
321A
321B
C
D
E
F
G
H
I
N
South Receptors
Not Impacted
Impacted
Measurement Site
Bridge
Edge of Pavement
Right of Way
Receptor Location
South Carolina
Department of Transportation
Interstate 95 to SC 22
0
500
1,000
2,000 Feet

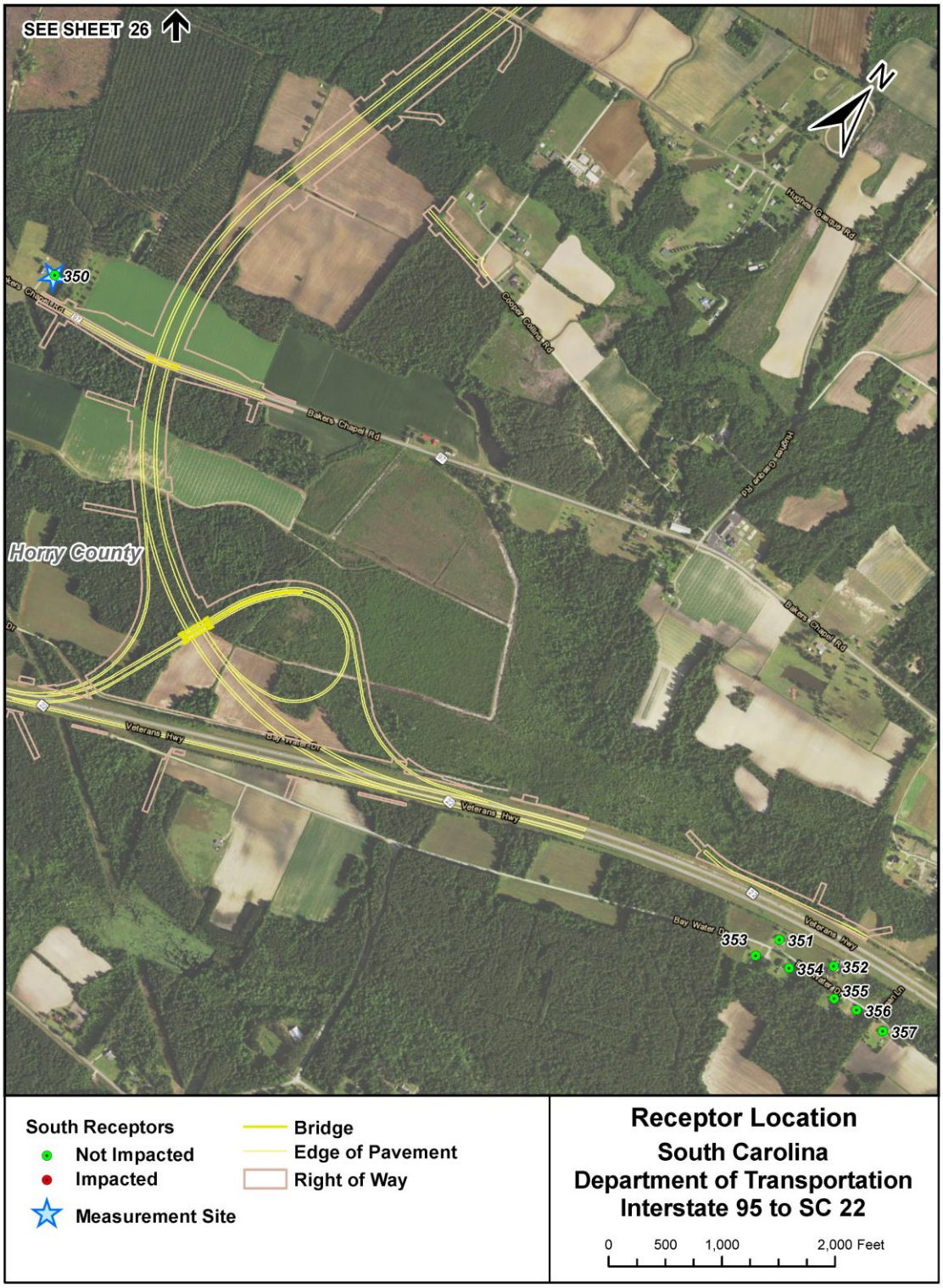
Sheet 24


SEE SHEET 24
N
321
322
325
S39
324
Horse Pen Bay Rd
333
335
334
336
329
338
332
Horry County
Asbury Rd
341
340
345
343
Valley Forge Rd
339
S41
344
SEE SHEET 26
South Receptors
Not Impacted
Impacted
Measurement Site
Bridge
Edge of Pavement
Right of Way
Receptor Location
South Carolina
Department of Transportation
Interstate 95 to SC 22
0
500
1,000
2,000 Feet

Sheet 25


SEE SHEET 25
N
Horry County
Ed Rd
347
S42
Hodges Corner Rd
SEE SHEET 27
South Receptors
Not Impacted
Impacted
Measurement Site
Bridge
Edge of Pavement
Right of Way
Receptor Location
South Carolina
Department of Transportation
Interstate 95 to SC 22
0
500
1,000
2,000 Feet

Sheet 26


SEE SHEET 26
N
350
Horry County
Baker's Chapel Rd
Veterans Hwy
Bay Water Dr
353
351
354
352
355
356
357
South Receptors
Not Impacted
Impacted
Measurement Site
Bridge
Edge of Pavement
Right of Way
Receptor Location
South Carolina
Department of Transportation
Interstate 95 to SC 22
0
500
1,000
2,000 Feet

Sheet 27

IV. FEASIBLE AND REASONABLE CONSIDERATION OF ABATEMENT

Since there are receivers that would be impacted by noise from the Design Year Build Alternative, then abatement measures were considered for the proposed project.

When considering noise abatement measures, primary consideration shall be given to exterior areas where frequent human use occurs. Since South Carolina is not part of the FHWA-approved Quiet Pavement Pilot Program, the use of quieter pavements was not considered as an abatement measure for the proposed project. In addition, the planting of vegetation or landscaping was also not considered as a potential abatement measure, since it is not an acceptable Federal-aid noise abatement measure due to the fact that only dense stands of evergreen vegetation planted 100 feet deep will reduce noise levels. In accordance with 23 CFR §772.13(c), the following measures were considered and evaluated as a means to reduce or eliminate the traffic noise impacts:

A. Acquisition of Rights-of-Way

The acquisition of rights-of-way to mitigate the noise levels at the affected site would result in disruptive relocations. Additionally, please note that at this time, receivers that were close to or on the proposed right-of-way line were left in the analysis in case they will not be acquired as part of the right of way in the future.

B. Traffic Management

Measures such as exclusive lane designations and signing for prohibition of certain vehicle type would prevent the project from serving its intended purpose, such as moving people, goods and services.

C. Alteration of Horizontal and Vertical Alignments

Alignment modifications as a means of noise abatement would result in disruptive relocations for this project and would not be cost effective.

D. Acquisition of real property or interests therein (predominantly unimproved property) to serve as a buffer zone to preempt development

Adequate property is not available to create an effective buffer zone between the proposed roadway and the impacted receivers.

E. Noise insulation of public use or nonprofit institutional structures

No public use or nonprofit institutional structures would be impacted by the proposed project.

F. Noise Barriers

Among the most common noise barriers are earthen berms and freestanding walls. The optimum situation for the use of free-standing noise barriers is when a dense concentration of impacted receivers lies directly adjacent to and parallel with the highway right-of-way. In these instances, one barrier can protect many people at a relatively low cost per impacted site. For this study, an earthen berm was ruled out since there is not enough room for proper sloping. Drainage and safety line-of-sight may also be an issue.

Based on the need for a barrier to be continuous and to protect a dense concentration of receivers, it is typically not considered reasonable to provide abatement for single impacted receivers or on non-controlled access facilities where access and safety

requirements would impact the barrier placement. The proposed I-73 highway is a controlled facility.

When considering abatement, the SCDOT Noise Policy Guidelines state that noise abatement measures must be both feasible and reasonable. The feasibility and reasonableness of a noise barrier is determined by the following factors for Feasibility and Reasonableness.

1. Feasibility:

There are two mandatory feasibility factors that must be met for a noise abatement measure to be considered reasonable. The two mandatory factors must collectively be achieved in order for a noise abatement measure to be deemed reasonable. Failure to achieve any one of the factors will result in the noise abatement measure being deemed not feasible. Completion of a "Feasibility and Reasonableness Worksheet" is required for inclusion in the noise analysis report.

a. Acoustic Feasibility - It is SCDOT's policy that a noise reduction of at least 5 dBA must be achieved for at least 75 percent of impacted receivers for the noise abatement measure to be acoustically feasible. If this goal is not met, then abatement is determined not to be feasible and no further analysis is required.

b. Engineering Feasibility - Feasibility also includes engineering considerations. The ability to achieve noise reduction may be limited by engineering considerations such as the topographical features of the area, safety, drainage, utilities, maintenance and access. In addition, due to constructability constraints, the height of the noise abatement measure cannot exceed 25 feet.

2. Reasonableness:

There are three mandatory reasonable factors that must be met for a noise abatement measure to be considered reasonable. The three mandatory reasonable factors must collectively be achieved in order for a noise abatement measure to be deemed reasonable. Failure to achieve any one of the reasonable factors will result in the noise abatement measure being deemed not reasonable. Completion of a "Feasibility and Reasonableness Worksheet" is required for inclusion in the noise analysis report.

a. ***Noise Reduction Design Goal*** - It is SCDOT's policy that a noise reduction of at least 8 dBA must be achieved for 80% of those receivers determined to be in the first two building rows and considered benefited. Please note that the first two building rows will only be applicable if they are within 500 feet from the edge of pavement noise source. If the design goal is not met, then abatement is determined not to be reasonable and no further analysis is required.

b. Cost Effectiveness - The allowable cost of the abatement will be based on $35.00 per square foot. This allowable cost is based on actual construction costs on recent SCDOT projects. This construction cost will be divided by the number of benefited receivers. If the cost per benefited receiver is less than $30,000 then the barrier is determined to be cost effective. This allowable cost will be reanalyzed every 5 years.

During the detailed noise abatement evaluation, a more project-specific construction cost should be applied at a cost per square foot basis. The estimation will take into consideration the cost of the actual noise barrier, required hydrology, additional right-of-way, and other aspects associated with the noise barrier construction. If the design goal is met and subsequently, the cost effectiveness criteria is not met, then abatement is determined not to be reasonable and no further analysis is required.

c. Viewpoints of the Property Owners and Residents of the Benefited Receivers – SCDOT shall solicit the viewpoints of all of the benefited receivers and document a decision on either desiring or not desiring the noise abatement measure. The viewpoints will be solicited as part of the public involvement process through a voting procedure if a barrier is proposed. The method of obtaining the votes shall be determined on a project-by-project basis, but may include flyers, door-to-door surveys, a public meeting, or a mailing. The voting ballot will explain that the noise abatement shall be constructed unless a majority (greater than 50% of the benefited receivers) of votes not desiring noise abatement is received.

For non-owner occupied benefited receivers, both the property owner and the renter may vote on whether the noise abatement is desired. One owner ballot and one resident ballot shall be solicited for each benefited receiver.

Home owner associations or local governments cannot be given authority over the desirability for abatement. The viewpoints of the abatement must be solicited from the property owners and tenants. For this I-73 noise analysis, the mitigation analysis determined that all the barriers either did not meet the design goal or the cost effectiveness criteria. Therefore, the voting process of the benefited property owners is not applicable.

Note: Barriers numbered 6 (R54), 7 (R76), 8 (R79/80), 9 (R81), 10 (R83), 11 (R85), 12 (R86), 14 (R110), 16 (R97), 17 (R121), 22 (212), 26 (R239), 28 (R251), 30 (274), 31 (R278), 32 (R283), 34 (R287), 35 (R288), 37 (310/312), 38 (R313/314), 39 (R315), 41 (R320), 42 (R324), and 45 (R338) are not included in the mitigation analysis since the receivers impacted in those locations included isolated receivers with either one or two receivers which were globally addressed (Barrier 1 or Barrier 3 analysis discussion, as applicable) and analyzed to reduce the report size by deleting the repetitive analysis and conclusions for isolated one and two receiver sites. The barrier numbers were not renumbered to maintain continuity with the already completed SCDOT Feasible and Reasonable Worksheets.

Barrier 1 – R9A (Sunset Drive): this is a single isolated impacted receiver. Typically, a single isolated receiver will likely meet the feasibility requirement and/or the noise reduction design goal, but not the cost reasonableness requirement. In order to avoid numerous single isolated receiver analyses, this barrier was modeled as an example run for other isolated receivers as identified in the Conclusion paragraph of this barrier analysis.

Feasibility:

Acoustic Feasibility: SCDOT noise policy states that a noise reduction of at least 5 dBA must be achieved for 75 percent of the impacted receivers. This was achieved for 1 of the 1 impacted receivers (100%). This meets the SCDOT allowable percentage (75%) per impacted receiver.

Engineering Feasibility: No known issues at this time.

Reasonableness:
Noise Reduction Design Goal: SCDOT noise policy states that at least 8 dBA must be achieved for 80 percent of the benefited receivers. There was 1 of the 1 benefited receivers that achieved the 8 dBA reduction (100%). This met the SCDOT allowable percentage (80%) of the benefitted receivers.

Cost Effectiveness: The analyzed feature was deemed not to be reasonable as the estimated cost per benefited receiver exceeded the SCDOT allowable cost ($30,000) per benefitted receiver. (~$829,147 / 1 benefited receiver = $829,147).

Conclusion: Based on the above results, this abatement feature is feasible but not reasonable.

Barrier 3 – R26, 27 (W. Signode Road - proposed extension): there are 2 impacted isolated receivers in this group. Typically, a few isolated receivers (two, in this case) meet the feasibility requirement and/or the noise reduction design goal, but not the cost reasonableness requirement. In order to avoid numerous analyses where there are only two receivers, this barrier was modeled as an example run for other similar conditions as identified in the Conclusion paragraph of this barrier analysis.

Feasibility:
Acoustic Feasibility: SCDOT noise policy states that a noise reduction of at least 5 dBA must be achieved for 75 percent of the impacted receivers. This was achieved for 2 of the 2 impacted receivers (100%). This meets the SCDOT allowable percentage (75%) per impacted receiver.

Engineering Feasibility: No known issues at this time.

Reasonableness:
Noise Reduction Design Goal: SCDOT noise policy states that at least 8 dBA must be achieved for 80 percent of the benefited receivers. There were 2 of the 2 benefited receivers that achieved the 8 dBA reduction (100%). This meets the SCDOT allowable percentage (80%) of the benefitted receivers.

Cost Effectiveness: The analyzed feature was deemed not to be reasonable as the estimated cost per benefited receiver exceeded the SCDOT allowable cost ($30,000) per benefitted receiver. (~$922,723 / 2 benefited receivers = $461,362).

Conclusion: Based on the above results, this abatement feature is feasible but not reasonable.

Barrier 4 – R34, 38 (W. Signode Road, Kenrick Circle):

Feasibility:
Acoustic Feasibility: SCDOT noise policy states that a noise reduction of at least 5 dBA must be achieved for 75 percent of the impacted receivers. This was achieved for 2 of the 2 impacted receivers (100%). This meets the SCDOT allowable percentage (100%) per impacted receiver.

Engineering Feasibility: No known issues at this time.

Reasonableness:
Noise Reduction Design Goal: SCDOT noise policy states that at least 8 dBA must be achieved for 80 percent of the benefited receivers. There were 4 of the 5 benefited receivers in the first two rows that achieved the 8 dBA reduction (80%). This met the SCDOT allowable percentage (80%) of the benefitted receivers.

Cost Effectiveness: The analyzed feature was deemed not to be reasonable as the estimated cost per benefited receiver exceeded the SCDOT allowable cost ($30,000) per benefitted receiver. (~$1,388,263 / 12 benefited receivers = $115,689).

Conclusion: Based on the above results, this abatement feature is feasible but not reasonable.

Barrier 5 – R47, 52, 53 (W. Signode Road - proposed extension):

Feasibility:
Acoustic Feasibility: SCDOT noise policy states that a noise reduction of at least 5 dBA must be achieved for 75 percent of the impacted receivers. This was achieved for 3 of the 3 impacted receivers (100%). This meets the SCDOT allowable percentage (75%) per impacted receiver.

Engineering Feasibility: No known issues at this time.
Reasonableness:
Noise Reduction Design Goal: SCDOT noise policy states that at least 8 dBA must be achieved for 80 percent of the benefited receivers. There were 3 of the 6 benefited receivers in the first two rows that achieved the 8 dBA reduction (50%). This did not meet the SCDOT allowable percentage (80%) of the benefitted receivers, even at the maximum 25 foot SCDOT barrier height.

Cost Effectiveness: The cost effectiveness analysis is not applicable since the noise reduction design goal was not met.

Conclusion: Based on the above results, this abatement feature is feasible but not reasonable.

Barrier 13 – R88-92 (Scarlet Road, SC S-34-22):

Feasibility:
Acoustic Feasibility: SCDOT noise policy states that a noise reduction of at least 5 dBA must be achieved for 75 percent of the impacted receivers. This was achieved for 5 of the 5 impacted receivers (100%). This meets the SCDOT allowable percentage (75%) per impacted receiver.

Engineering Feasibility: No known issues at this time.

Reasonableness:
Noise Reduction Design Goal: SCDOT noise policy states that at least 8 dBA must be achieved for 80 percent of the benefited receivers. There were 4 of the 5 benefited receivers in the first two rows that achieved the 8 dBA reduction (80%). This meets the SCDOT allowable percentage (80%) of the benefitted receivers.

Cost Effectiveness: The analyzed feature was deemed not to be reasonable as the estimated cost per benefited receiver exceeded the SCDOT allowable cost ($30,000) per benefitted receiver. (~$1,210,306 / 5 benefited receivers = $242,061).

Conclusion: Based on the above results, this abatement feature is feasible but not reasonable.

Barrier 15 – R116, 118 (Zion Road, Wynemia Way Road):

Feasibility:
Acoustic Feasibility: SCDOT noise policy states that a noise reduction of at least 5 dBA must be achieved for 75 percent of the impacted receivers. This was achieved for 2 of the 2 impacted receivers (100%). This meets the SCDOT allowable percentage (75%) per impacted receiver.

Engineering Feasibility: There may be a potential drainage easement issue in this mitigation area that would need to be addressed if this barrier were to be carried forward. Otherwise, no other known issues at this time.

Reasonableness:
Noise Reduction Design Goal: SCDOT noise policy states that at least 8 dBA must be achieved for 80 percent of the benefited receivers. There were 3 of the 4 benefited receivers in the first two rows that achieved the 8 dBA reduction (75%). This did not meet the SCDOT allowable percentage (80%) of the benefitted receivers, even at the maximum 25 foot SCDOT barrier height.

Cost Effectiveness: The cost effectiveness analysis is not applicable since the noise reduction design goal was not met.

Conclusion: Based on the above results, this abatement feature is feasible but not reasonable.

Barrier 18 – R132, 133, 136-142 (Senator Gasque Road):

Feasibility:
Acoustic Feasibility: SCDOT noise policy states that a noise reduction of at least 5 dBA must be achieved for 75 percent of the impacted receivers. This was achieved for 9 of the 9 impacted receivers (100%). This meets the SCDOT allowable percentage (75%) per impacted receiver.

Engineering Feasibility: No known issues at this time.

Reasonableness:
Noise Reduction Design Goal: SCDOT noise policy states that at least 8 dBA must be achieved for 80 percent of the benefited receivers. There were 11 of the 14 benefited receivers in the first two rows that achieved the 8 dBA reduction (79%). This does not meet the SCDOT allowable percentage (80%) of the benefitted receivers.

Cost Effectiveness: The cost effectiveness analysis is not applicable since the noise reduction design goal was not met.

Conclusion: Based on the above results, this abatement feature is feasible but not reasonable.

Barrier 19 – R172, 174 (Mack Arthur Road):

Feasibility:
Acoustic Feasibility: SCDOT noise policy states that a noise reduction of at least 5 dBA must be achieved for 75 percent of the impacted receivers. This was achieved for 2 of the 2 impacted receivers (100%). This meets the SCDOT allowable percentage (75%) per impacted receiver.

Engineering Feasibility: No known issues at this time.

Reasonableness:
Noise Reduction Design Goal: SCDOT noise policy states that at least 8 dBA must be achieved for 80 percent of the benefited receivers. There were 0 of the 2 benefited receivers in the first two rows that achieved the 8 dBA reduction (0%). This does not meet the SCDOT allowable percentage (80%) of the benefitted receivers, even at the maximum 25 foot SCDOT barrier height.

Cost Effectiveness: The cost effectiveness analysis is not applicable since the noise reduction design goal was not met.

Conclusion: Based on the above results, this abatement feature is feasible but not reasonable.

Barrier 20 – R192, 194 (Old Stage Road):

Feasibility:
Acoustic Feasibility: SCDOT noise policy states that a noise reduction of at least 5 dBA must be achieved for 75 percent of the impacted receivers. This was achieved for 2 of the 2 impacted receivers (100%). This meets the SCDOT allowable percentage (75%) per impacted receiver.

Engineering Feasibility: This barrier was modeled traversing under the Old Stage Road Overpass separating R192 from R194. If this barrier were to be carried forward, then it could possibly be constructed into the overpass's retaining wall and/or conceivably be considered as two separate barriers that would likely not be cost effective. No other known issues at this time.

Reasonableness:
Noise Reduction Design Goal: SCDOT noise policy states that at least 8 dBA must be achieved for 80 percent of the benefited receivers. There were 2 of the 4 benefited receivers in the first two rows that achieved the 8 dBA reduction (50%). This does not meet the SCDOT allowable percentage (80%) of the benefitted receivers.

Cost Effectiveness: The cost effectiveness analysis is not applicable since the noise reduction design goal was not met.

Conclusion: Based on the above results, this abatement feature is feasible but not and reasonable.

Barrier 21 – R199 (Parker Road):

Feasibility:
Acoustic Feasibility: SCDOT noise policy states that a noise reduction of at least 5 dBA must be achieved for 75 percent of the impacted receivers. This was achieved for 1 of the 1 impacted receivers (100%). This meets the SCDOT allowable percentage (75%) per impacted receiver.

Engineering Feasibility: No known issues at this time.

Reasonableness:
Noise Reduction Design Goal: SCDOT noise policy states that at least 8 dBA must be achieved for 80 percent of the benefited receivers. There were 0 of the 1 benefited receivers in the first two rows that achieved the 8 dBA reduction (0%). This does not meet the SCDOT allowable percentage (80%) of the benefitted receivers, even at the maximum 25 foot SCDOT barrier height.

Cost Effectiveness: The cost effectiveness analysis is not applicable since the noise reduction design goal was not met.

Conclusion: Based on the above results, this abatement feature is feasible but not reasonable.

Barrier 23 – R216-218 (SC 917):

Feasibility:
Acoustic Feasibility: SCDOT noise policy states that a noise reduction of at least 5 dBA must be achieved for 75 percent of the impacted receivers. This was achieved for 3 of the 3 impacted receivers (100%). This meets the SCDOT allowable percentage (75%) per impacted receiver.

Engineering Feasibility: No known issues at this time.

Reasonableness:
Noise Reduction Design Goal: SCDOT noise policy states that at least 8 dBA must be achieved for 80 percent of the benefited receivers. There were 2 of the 3 benefited receivers in the first two rows that achieved the 8 dBA reduction (67%). This does not meet the SCDOT allowable percentage (80%) of the benefitted receivers, even at the maximum 25 foot SCDOT barrier height.

Cost Effectiveness: The cost effectiveness analysis is not applicable since the noise reduction design goal was not met.

Conclusion: Based on the above results, this abatement feature is feasible but not reasonable.

Barrier 29 – R264, 265 (Hardwick Loop):

Feasibility:
Acoustic Feasibility: SCDOT noise policy states that a noise reduction of at least 5 dBA must be achieved for 75 percent of the impacted receivers. This was achieved for 2 of the 2 impacted receivers (100%). This meets the SCDOT allowable percentage (75%) per impacted receiver.

Engineering Feasibility: No known issues at this time.

Reasonableness:
Noise Reduction Design Goal: SCDOT noise policy states that at least 8 dBA must be achieved for 80 percent of the benefited receivers. There were 0 of the 4 benefited receivers in the first two rows that achieved the 8 dBA reduction (0%). This does not meet the SCDOT allowable percentage (80%) of the benefitted receivers.

Cost Effectiveness: The cost effectiveness analysis is not applicable since the noise reduction design goal was not met.

Conclusion: Based on the above results, this abatement feature is feasible but not reasonable.

Barrier 36 – R305-307 (Goff Road):

Feasibility:
Acoustic Feasibility: SCDOT noise policy states that a noise reduction of at least 5 dBA must be achieved for 75 percent of the impacted receivers. This was achieved for 2 of the 3 impacted receivers (67%). This does not meet the SCDOT allowable percentage (75%) per impacted receiver, even at the maximum 25 foot SCDOT barrier height.

Engineering Feasibility: No known issues at this time.

Reasonableness:
Noise Reduction Design Goal: The reasonableness analysis is not applicable since the feasibility criteria was not met.

Cost Effectiveness: The cost effectiveness analysis is not applicable since the noise reduction design goal is not met.

Conclusion: Based on the above results, this abatement feature is feasible but not reasonable.

Barrier 40 – R316-318 (Good Luck Road):

Feasibility:
Acoustic Feasibility: SCDOT noise policy states that a noise reduction of at least 5 dBA must be achieved for 75 percent of the impacted receivers. This was achieved for 3 of the 3 impacted receivers (100%). This meets the SCDOT allowable percentage (75%) per impacted receiver.

Engineering Feasibility: No known issues at this time.

Reasonableness:
Noise Reduction Design Goal: SCDOT noise policy states that at least 8 dBA must be achieved for 80 percent of the benefited receivers. There were 0 of the 3 benefited receivers in the first two rows that achieved the 8 dBA reduction (0%). This does not meet the SCDOT allowable percentage (80%) of the benefitted receivers, even at the maximum 25 foot SCDOT barrier height.

Cost Effectiveness: The cost effectiveness analysis is not applicable since the noise reduction design goal was not met.

Conclusion: Based on the above results, this abatement feature is feasible but not reasonable.

Barrier 46 – R343-344 (Valley Forge Road):

Feasibility:
Acoustic Feasibility: SCDOT noise policy states that a noise reduction of at least 5 dBA must be achieved for 75 percent of the impacted receivers. This was achieved for 2 of the 2 impacted receivers (100%). This meets the SCDOT allowable percentage (75%) per impacted receiver.

Engineering Feasibility: This barrier was modeled traversing under the Valley Forge Road Overpass separating R343 from R344. If this barrier were to be carried forward, then it could possibly be constructed into the overpass's retaining wall and/or conceivably be considered as two separate barriers that would likely not be cost effective. No other known issues at this time.

Reasonableness:
Noise Reduction Design Goal: SCDOT noise policy states that at least 8 dBA must be achieved for 80 percent of the benefited receivers. There were 3 of the 3 benefited receivers in the first two rows that achieved the 8 dBA reduction (100%). This meets the SCDOT allowable percentage (80%) of the benefitted receivers.

Cost Effectiveness: The analyzed feature was deemed not to be reasonable as the estimated cost per benefited receiver exceeded the SCDOT allowable cost ($30,000) per benefitted receiver. (~$748,447 / 3 benefited receivers = $249,482).

Conclusion: Based on the above results, this abatement feature is feasible but not reasonable.

Barrier 47 – R321A, 321F (Henry Road):

Feasibility:
Acoustic Feasibility: SCDOT noise policy states that a noise reduction of at least 5 dBA must be achieved for 75 percent of the impacted receivers. This was achieved for 2 of the 2 impacted receivers (100%). This meets the SCDOT allowable percentage (75%) per impacted receiver.

Engineering Feasibility: No known issues at this time.

Reasonableness:

Noise Reduction Design Goal: SCDOT noise policy states that at least 8 dBA must be achieved for 80 percent of the benefited receivers. There were 1 of the 4 benefited receivers in the first two rows that achieved the 8 dBA reduction (25%). This did not meet the SCDOT allowable percentage (80%) of the benefitted receivers.

Cost Effectiveness: The cost effectiveness analysis is not applicable since the noise reduction design goal was not met.

Conclusion: Based on the above results, this abatement feature is feasible but not reasonable.

Overall, as a result of the mitigation analysis, there were no feasible and reasonable solutions to mitigate for the predicted noise impacts according to the SCDOT noise policy. Therefore, there are no noise barriers proposed to be carried forward to the construction phase. The primary reason for the lack of mitigation to be forwarded to the construction phase is the sparsity of development throughout the entire rural project corridor. Essentially, there were not enough potentially benefited homes to meet the SCDOT noise reduction design goal and/or the SCDOT criteria for cost reasonableness.

Consequently, there are no figures included to show proposed noise barriers to be carried forward and there are no tables showing insertion losses for impacted receivers. Appendix D shows the Feasibility and Reasonableness Worksheets. The TNM models (submitted to SCDOT on CD) include the barrier analyses that were used to determine feasibility and reasonableness.

V. FINDINGS AND RECOMMENDATIONS

Overall, there were 71 receivers impacted in the project study area for the 2040 Design Year Build Alternative condition. As a result, mitigation analysis was warranted according to the SCDOT *Traffic Noise Abatement Policy*. None of the barrier analysis results met both of the feasible and reasonable criteria as per the SCDOT Noise Policy. Feasibility and Reasonableness Worksheets are included in Appendix D.

Subsequent project design changes and/or revised data may require a reevaluation of the assessment or parts thereof. If this condition were to occur, the modified Build Alternative would be analyzed for noise impacts and mitigation as reasonable, i.e, if the proposed action were to be significantly modified in such a way as to change the predicted sound level environment and/or clearly indicate a possibility for reasonable and feasible mitigation.

VI. CONSTRUCTION NOISE

If the Build Alternative is chosen, temporary increases in noise levels would occur during the time period that construction takes place. Noise levels due to construction, although temporary, can impact areas adjacent to the project. The major noise sources from construction would be the heavy equipment operated at the site. However, other construction site noise sources would include hand tools and trucks supplying and removing materials.

SCDOT's "2007 Standard Specifications for Highway Construction" includes various references to construction noise, including Sections 107.6-paragraph 3, 606.3.1.6.3-paragraph 1, 607.3.1.6.3-paragraph 1, 607.3.2.6.3-paragraph 1, and 702.4.15-paragraph 3.

Typical noise levels generated by different types of construction equipment are presented in Table 5. Construction operations are typically broken down into several phases including clearing and grubbing, earthwork, erection, paving and finishing. Although these phases can overlap, each has their own noise characteristics and objective.

SCDOT's "2007 Standard Specifications for Highway Construction" includes various references to construction noise, including Sections 107.6-paragraph 3, 606.3.1.6.3-paragraph 1, 607.3.1.6.3-paragraph 1, 607.3.2.6.3-paragraph 1, and 702.4.15-paragraph 3. The SCDOT specifications cited above are generalized for nuisance noise avoidance. Detailed specifications suggested for consideration for inclusion in the proposed project's construction documents may consist of the following:

- Construction equipment powered by an internal combustion engine shall be equipped with a properly maintained muffler.
- Air compressors shall meet current USEPA noise emission exhaust standards.
- Air powered equipment shall be fitted with pneumatic exhaust silencers.
- Stationary equipment powered by an internal combustion engine shall not be operated within 150 feet of noise sensitive areas without portable noise barriers placed between the equipment and noise sensitive sites. Noise sensitive sites include residential buildings, motels, hotels, schools, churches, hospitals, nursing homes, libraries and public recreation areas.
- Portable noise barriers shall be constructed of plywood or tongue and groove boards with a noise absorbent treatment on the interior surface (facing the equipment).

- Powered construction equipment shall not be operated during the traditional evening and/or sleeping hours within 150 feet of a noise sensitive site, to be decided either by local ordinances and/or agreement with the SCDOT.

Table 5 - Leq Noise Level (dBA) at 50 Feet for Construction Equipment

Equipment	dBA Leq @ 50 feet
Earth Moving:	
Front Loader	79
Back Hoe	85
Dozer	80
Tractor	80
Scraper	88
Grader	85
Truck	91
Paver	89
Materials Handling:	
Concrete Mixer	85
Concrete Pump	82
Crane	83
Derrick	88
Stationary:	
Pump	76
Generator	78
Compressor	81
Impact:	
Pile Driver	100
Jackhammer	88
Rock Drill	98
Other:	
Saw	78
Vibrator	76
SOURCE: Grant, Charles A. and Reagan, Jerry, A., *Highway Construction Noise: Measurement, Prediction and Mitigation.*	

VII. COORDINATION WITH LOCAL OFFICIALS

SCDOT has no authority over local land use planning and development. SCDOT can only encourage local officials and developers to consider highway traffic noise in the planning, zoning and development of property near existing and proposed highway corridors. The lack of consideration of highway traffic noise in land use planning at the local level has added to the highway traffic noise problem which will continue to grow as development continues adjacent to major highway long after these highways were proposed and/or constructed.

In order to help local officials and developers consider highway traffic noise in the vicinity of proposed Type I project, SCDOT will inform them of the predicted future noise levels and the required distance from such projects needed to ensure that noise levels remain below the NAC for each type of land use per 23 CFR §772.17. The contour distances to the 66 and 71 dBA sound levels are shown below. Please note that the values in the table do not represent predicted levels at every location at a particular distance back from the roadway. Sound levels will vary with changes in terrain and will be affected by the shielding of objects such as buildings.

Table 6 - Contour Distances (dBA) for I-73

NAC Land Use	Impact Contour	Worst-Case Approximate Distances from Nearest Travel Lane Centerline
Category B & C (Residential, outdoor recreation facilities, churches, schools, hospitals, etc.)	66 dBA	275 feet
Category E (Hotels, motels, offices, restaurants/bars, and other developments/activities not included in the other NAC's.)	71 dBA	160 feet
SOURCE: Michael Baker International, November, 2016.		

APPENDIX A

Traffic Data

TNM Traffic Data – I-73						
DESIGN YEAR BUILD 2040						
	I-95 to US 501 (beginning)		**US 501 to SC 41**		**SC 41 to SC 35-540**	
AADT	18,960		19,162		22,034	
DHV factor	10%		10%		10%	
PEAK	1,896		1,916		2,203	
Speed	70 mph		70 mph		70 mph	
Lane Width	4 lanes @ 12 feet		4 lanes @ 12 feet		4 lanes @ 12 feet	
Directional Split	50/50		50/50		50/50	
	Northbound (per lane)	Southbound (per lane)	Northbound (per lane)	Southbound (per lane)	Northbound (per lane)	Southbound (per lane)
Autos	347	347	352	352	424	424
Medium Trucks	45	45	45	45	45	45
Heavy Trucks	82	82	82	82	82	82

	SC 35-540 to SC 308		**SC 308 to SC 22 (end)**	
AADT	28,391		30,000	
DHV factor	10%		10%	
PEAK	2,839		3,000	
Speed	70 mph		70 mph	
Lane Width	4 lanes @ 12 feet		4 lanes @ 12 feet	
Directional Split	50/50		50/50	
	Northbound (per lane)	Southbound (per lane)	Northbound (per lane)	Southbound (per lane)
Autos	571	571	613	613
Medium Trucks	47	47	45	45
Heavy Trucks	92	92	92	92

Note1: I-73 is a new alignment highway. As a result, there are no existing and design year no-build volumes.
Note2: Cross-streets and ramp volumes, as applicable, are provided in the TNM computer model files submitted to SCDOT.

APPENDIX B

Field Measurement Data Sheets

NOISE SURVEY SHEET

EQUIPMENT: METER Norsonics 132 CALIBRATOR EXTECH 407744

CALIBRATION: START 94.3 dB END 94.3 dB

RESPONSE: FAST _____ SLOW X A-WEIGHTING X BATTERY CHECK X

WEATHER DATA: Sunny 71° 1 mph

TRAFFIC DATA		
ROAD	NE	SW
AUTOS	0	2
MED TRKS	0	0
HVY TRKS	0	0
DURATION	15'	15'

DATE: 9/28/2016

SITE #: S1

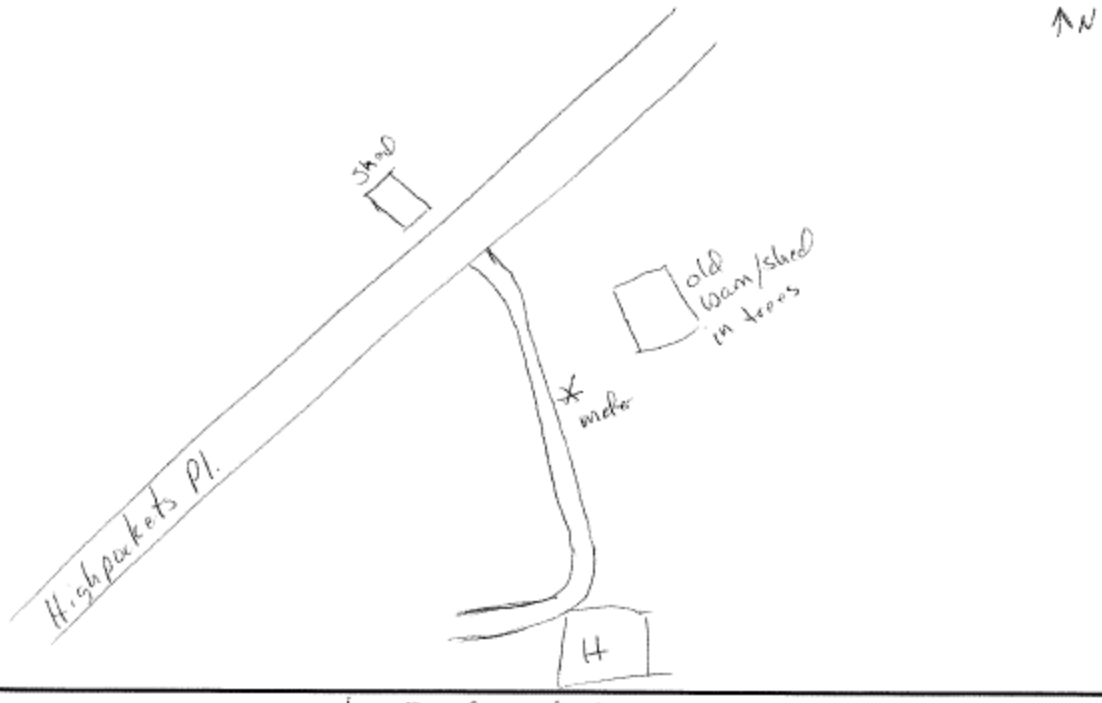
START: 8:17

END: 8:32

LEQ: 52.5

SPEED: 55

SITE SKETCH



BACKGROUND NOISE Insects; Birds; Vehicles on I-95

MAJOR SOURCES Vehicles on roadway

UNUSUAL EVENTS _____

OTHER NOTES _____

NOISE SURVEY SHEET

EQUIPMENT: METER Norsonics 132 CALIBRATOR EXTECH 407744

CALIBRATION: START 94.3 dB END 94.3 dB

RESPONSE: FAST ____ SLOW X A-WEIGHTING X BATTERY CHECK X

WEATHER DATA: Sunny 740 3

TRAFFIC DATA		
ROAD	All	
AUTOS	33	
MED TRKS	0	
HVY TRKS	3	
DURATION	15'	

DATE: 9/28/2016

SITE #: 53

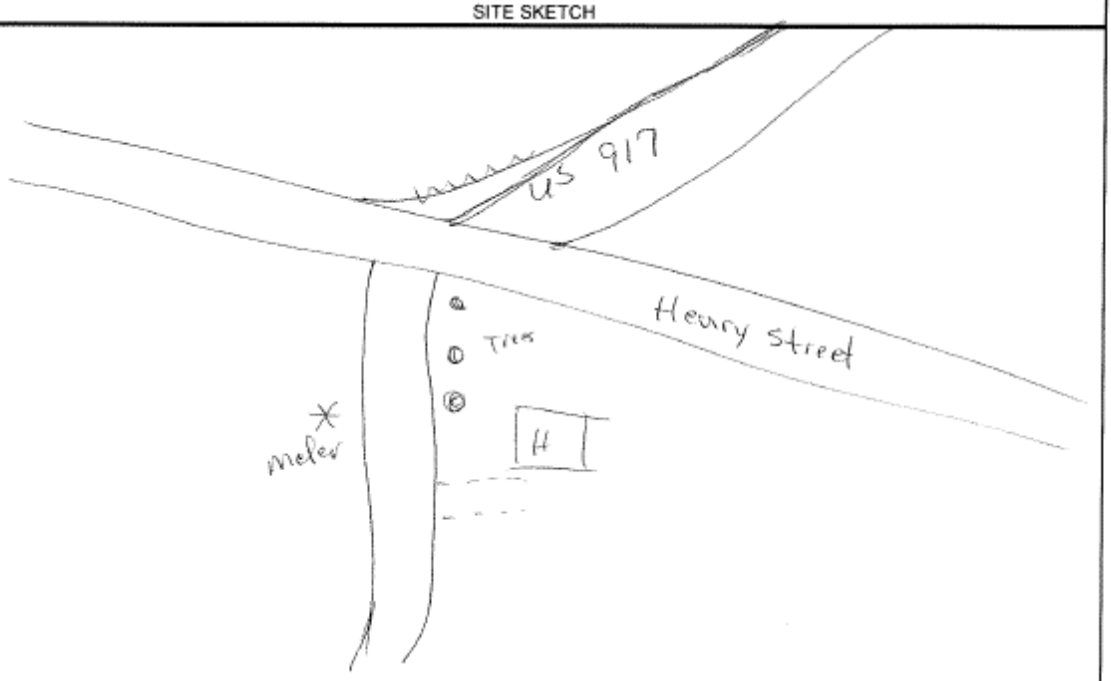
START: 9:02 AM

END: 9:17 AM

LEQ: 55.2

SPEED: 55?

SITE SKETCH



BACKGROUND NOISE Birds; insects

MAJOR SOURCES Vehicles on roadway

UNUSUAL EVENTS 7:14 Bluejay 11:30 helicopter

OTHER NOTES ____

Michael Baker Jr., Inc. 2005

NOISE SURVEY SHEET

EQUIPMENT: METER Norsonics 132 CALIBRATOR EXTECH 407744

CALIBRATION: START 94.3 dB END 94.3 dB

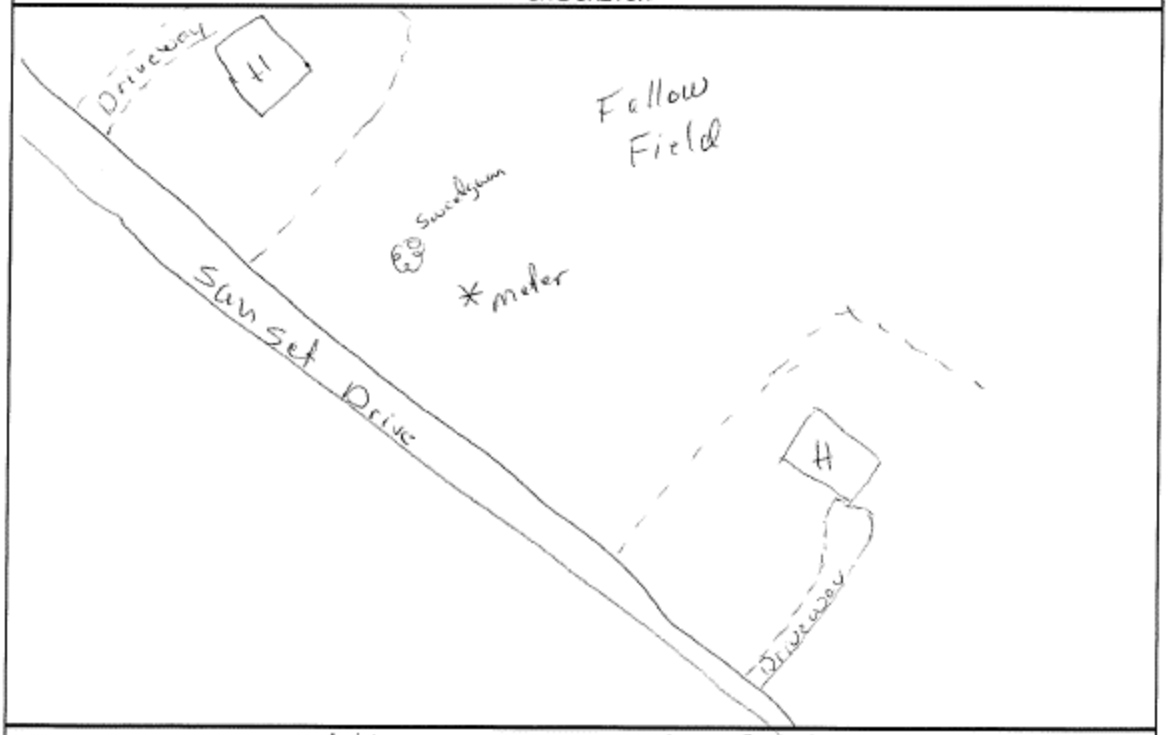
RESPONSE: FAST ____ SLOW X A-WEIGHTING X BATTERY CHECK X

WEATHER DATA: Sunny 69° 1mph

TRAFFIC DATA		
ROAD	NB	SB
AUTOS	2	3
MED TRKS	0	0
HVY TRKS	0	0
DURATION	15'	15'

DATE: 9/28/2016
SITE #: 52
START: 7:44 AM
END: 7:59 AM
LEQ: 55.0
SPEED: 55

SITE SKETCH



BACKGROUND NOISE Vehicles on I-95, insects, Birds

MAJOR SOURCES Vehicles on roadway

UNUSUAL EVENTS ____

OTHER NOTES ____

NOISE SURVEY SHEET

EQUIPMENT: METER Norsonics 132 CALIBRATOR EXTECH 407744

CALIBRATION: START 94.3 dB END 94.3 dB

RESPONSE: FAST _____ SLOW X A-WEIGHTING X BATTERY CHECK X

WEATHER DATA: Partly Cloudy 78° 6mph

TRAFFIC DATA		
ROAD		
AUTOS		
MED TRKS		
HVY TRKS		
DURATION		

No Counts Road not visable

DATE: 9/28/2016

SITE #: 56

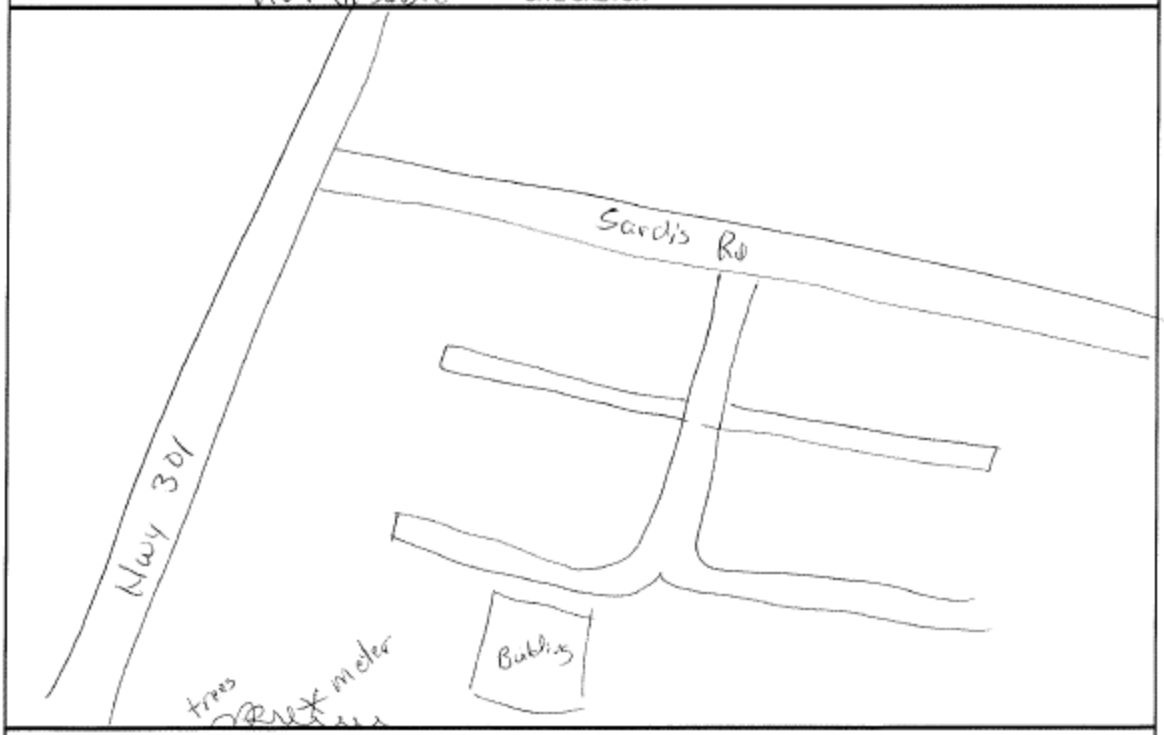
START: 10:04 Am

END: 10:19 Am

LEQ: 48.2

SPEED: _____

SITE SKETCH



BACKGROUND NOISE: Birds; insects; air conditioner; Vehicles on other roadway

MAJOR SOURCES: Cars in parking lot; Vehicles on main roadway (Hwy 301) people talking dog Barking

UNUSUAL EVENTS: 7:45 Blue jay 13:18 Bird 13:35 Truck on 301

OTHER NOTES: _____

Michael Baker Jr., Inc. 2005

54 skipped point not accessable

NOISE SURVEY SHEET

EQUIPMENT: METER Norsonics 132 CALIBRATOR EXTECH 407744

CALIBRATION: START 94.3 dB END 94.3 dB

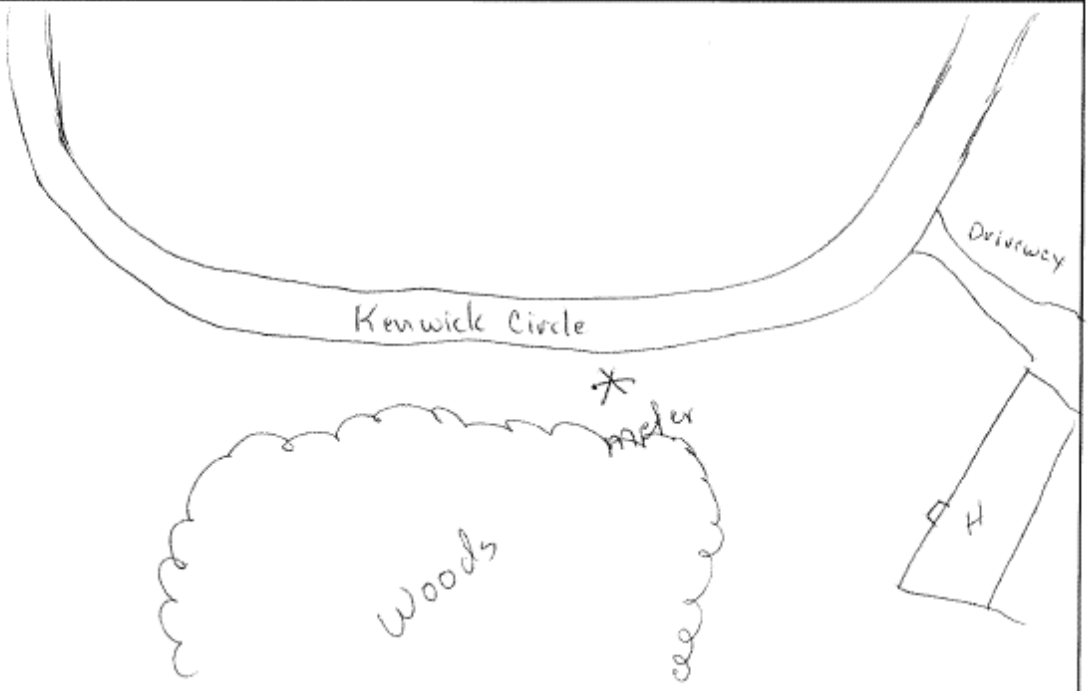
RESPONSE: FAST ____ SLOW X A-WEIGHTING X BATTERY CHECK X

WEATHER DATA: Sunny 75° 6 mph

TRAFFIC DATA		
ROAD	WB	EB
AUTOS	0	0
MED TRKS	0	0
HVY TRKS	0	0
DURATION	15'	15'

DATE: 9/28/2016
SITE #: 55
START: 9:36 AM
END: 9:51 AM
LEQ: 55.2
SPEED: 7.45

SITE SKETCH



BACKGROUND NOISE People talking; Machinery; Hammering; Birds; Insects
MAJOR SOURCES Vehicles on roadway
UNUSUAL EVENTS 4:50 Bluejay 11:00 Train 11:17 Train Horn 12:17 Train Horn
OTHER NOTES ____

Michael Baker Jr., Inc. 2005

NOISE SURVEY SHEET

EQUIPMENT: METER Norsonics 132 CALIBRATOR EXTECH 407744

CALIBRATION: START 94.3 dB END 94.3 dB

RESPONSE: FAST _____ SLOW X A-WEIGHTING X BATTERY CHECK X

WEATHER DATA: _____

TRAFFIC DATA		
ROAD		
AUTOS		
MED TRKS		
HVY TRKS		
DURATION		

No Counts; main road not visible

DATE: 9/28/2016

SITE #: 57

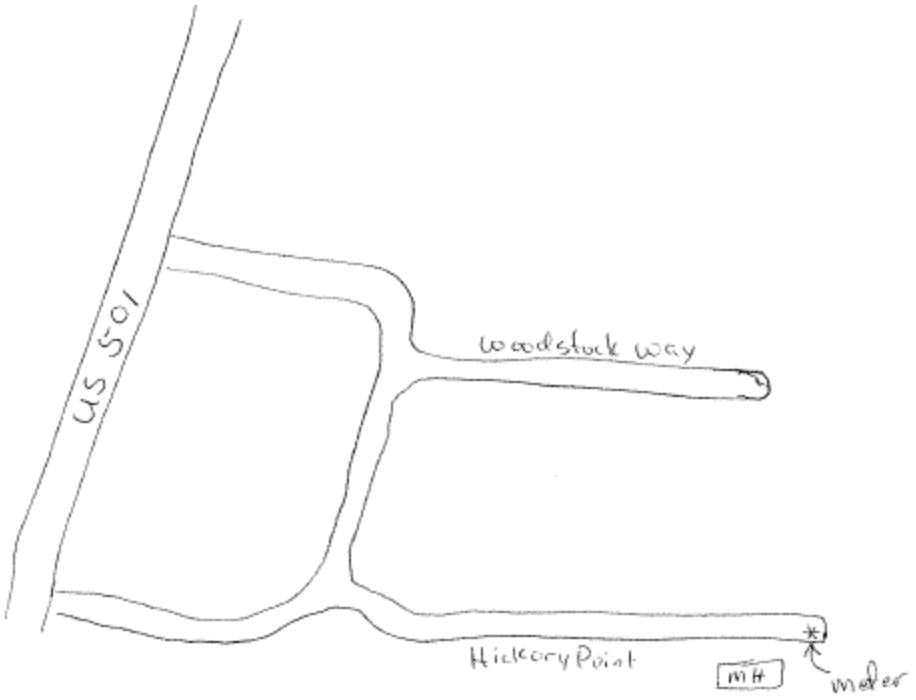
START: 10:32 Am

END: 10:47 Am

LEQ: 45.3

SPEED: 25 mph?

SITE SKETCH



BACKGROUND NOISE Birds, insects, vehicles on 501, wind

MAJOR SOURCES Birds (Crows)

UNUSUAL EVENTS _____

OTHER NOTES _____

Michael Baker Jr., Inc. 2005

NOISE SURVEY SHEET

EQUIPMENT: METER Norsonics 132 CALIBRATOR EXTECH 407744

CALIBRATION: START 94.3 dB END 94.3 dB

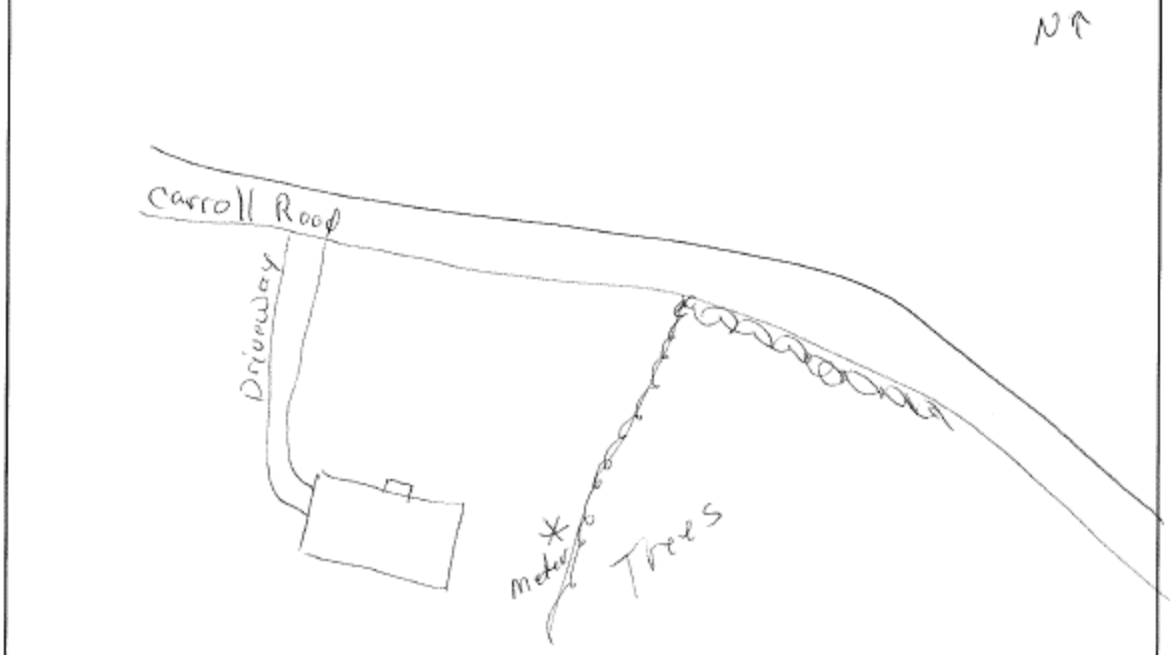
RESPONSE: FAST _____ SLOW X A-WEIGHTING X BATTERY CHECK X

WEATHER DATA: Sunny 82° 6mph

TRAFFIC DATA		
ROAD	NB	SB
AUTOS	2	0
MED TRKS	0	0
HVY TRKS	0	0
DURATION	15'	15'

DATE: 9/28/2016
SITE #: 58
START: 11:08
END: 11:23
LEQ: 48.3
SPEED: 55 mph

SITE SKETCH



BACKGROUND NOISE Birds, insects, wind
MAJOR SOURCES Vehicles on roadway
UNUSUAL EVENTS 6:50 Bird 9:50 Bird
OTHER NOTES _____

NOISE SURVEY SHEET

EQUIPMENT: METER Norsonics 132 CALIBRATOR EXTECH 407744

CALIBRATION: START 94.3 dB END 94.3 dB

RESPONSE: FAST _____ SLOW X A-WEIGHTING X BATTERY CHECK X

WEATHER DATA: Mostly Cloudy 87° 9 mph

TRAFFIC DATA		
ROAD		
AUTOS		
MED TRKS		
HVY TRKS		
DURATION		

No counts; Roadway not visible

DATE: 9/28/2016

SITE #: 59

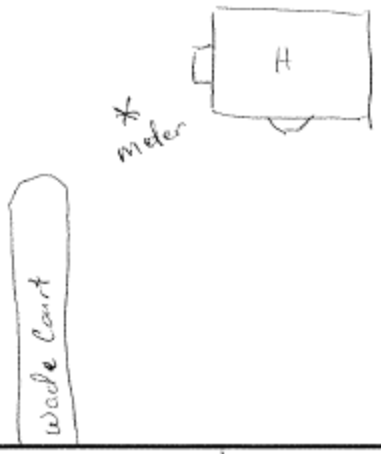
START: 2:12

END: 2:29

LEQ: 45.5

SPEED: n/a

SITE SKETCH



BACKGROUND NOISE Birds; Insects; wind; cars on other roadway; People talking; Dog Barking

MAJOR SOURCES _____

UNUSUAL EVENTS 9:50 Airplane overhead

OTHER NOTES _____

NOISE SURVEY SHEET

EQUIPMENT: METER Norsonics 132 CALIBRATOR EXTECH 407744

CALIBRATION: START 94.3 dB END 94.3 dB

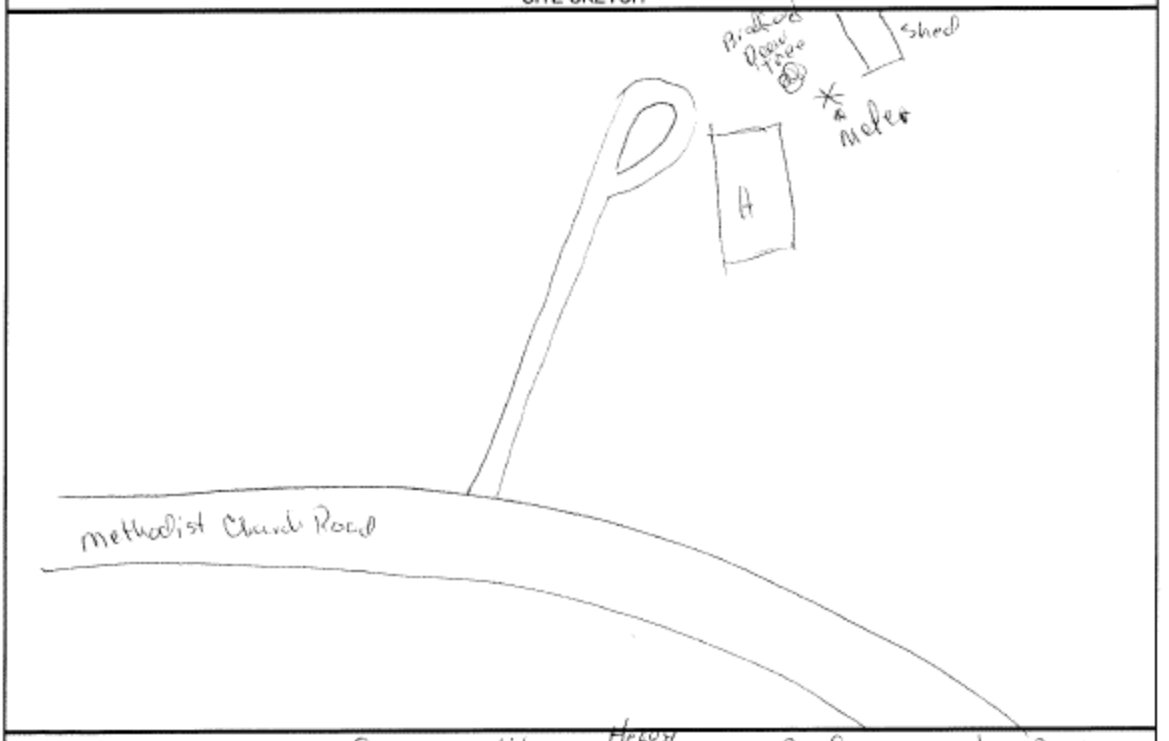
RESPONSE: FAST ____ SLOW X A-WEIGHTING X BATTERY CHECK X

WEATHER DATA: Mostly Cloudy; 86°; 9 mph

TRAFFIC DATA		
ROAD	WB	EB
AUTOS	0	1
MED TRKS	0	0
HVY TRKS	0	0
DURATION	15'	15'

DATE: 9/28/2016
SITE #: S10
START: 2:41 PM
END: 2:56 PM
LEQ: 42.3
SPEED: 55 mph

SITE SKETCH



BACKGROUND NOISE Wind; Tin rattling; Heavy machinery; Birds; Insects; Airplane overhead
MAJOR SOURCES ____
UNUSUAL EVENTS 8:30 paper rattling
OTHER NOTES increasing clouds and wind @ ~ 12:00

Michael Baker Jr., Inc. 2005

S11 & S12
machine sheds

NOISE SURVEY SHEET

EQUIPMENT: METER Norsonics 132 CALIBRATOR EXTECH 407744

CALIBRATION: START 94.3 dB END 94.3 dB

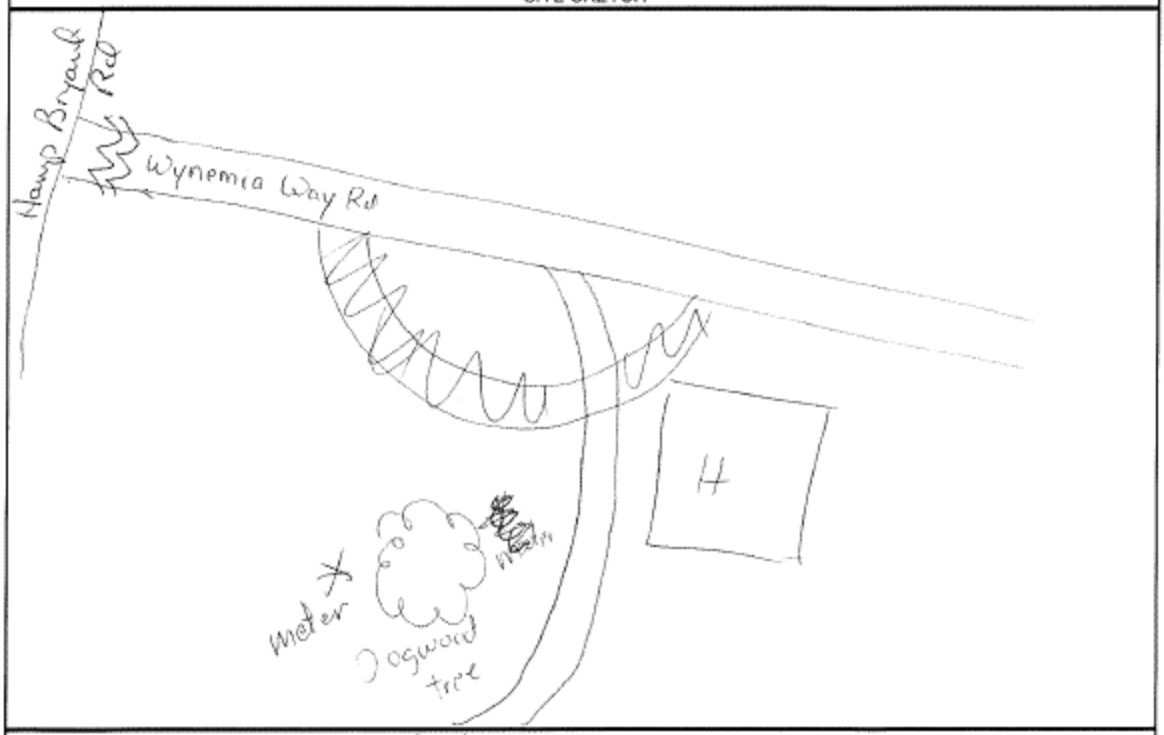
RESPONSE: FAST ____ SLOW X A-WEIGHTING X BATTERY CHECK X

WEATHER DATA: Partly Cloudy 84° 10 mph

TRAFFIC DATA		
ROAD	Wynemia Wy	Hamp Bryant
AUTOS	0	16
MED TRKS	0	1
HVY TRKS	0	0
DURATION	15'	15'

DATE: 9/28/2016
SITE #: S13
START: 4:11 PM
END: 4:26 PM
LEQ: 51.3
SPEED: 55?

SITE SKETCH



BACKGROUND NOISE Birds, dog barking
MAJOR SOURCES Vehicles on other road, Wind
UNUSUAL EVENTS 13:20 Pecan on tin roof
OTHER NOTES Wind gusts

NOISE SURVEY SHEET

EQUIPMENT: METER Norsonics 132 CALIBRATOR EXTECH 407744

CALIBRATION: START 94.3 dB END 94.3 dB

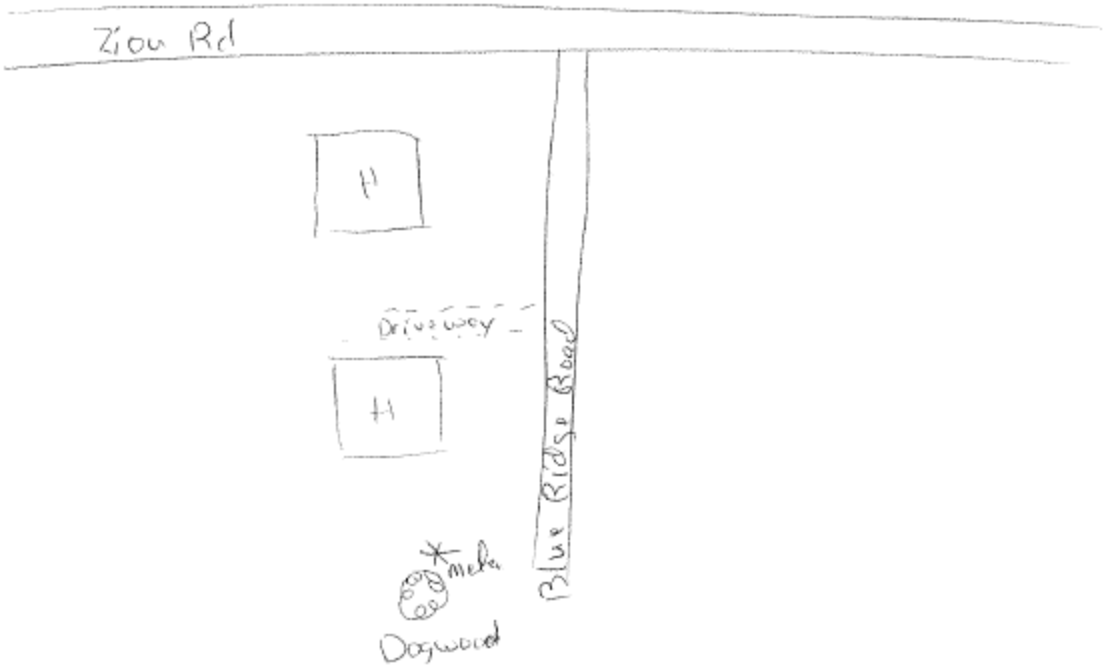
RESPONSE: FAST ____ SLOW X A-WEIGHTING X BATTERY CHECK X

WEATHER DATA: Partly cloudy 84° Calm

TRAFFIC DATA		
ROAD	Blue Ridge	Zion Rd
AUTOS	0	11
MED TRKS	0	0
HVY TRKS	0	0
DURATION	15'	15'

DATE: 9/28/2016
SITE #: S 14
START: 4:35 PM
END: 4:50 PM
LEQ: 53.8
SPEED: 55

SITE SKETCH



BACKGROUND NOISE People talking; wind; birds; lawn mower

MAJOR SOURCES Vehicles on roadway

UNUSUAL EVENTS 3:43 water on house

OTHER NOTES

Michael Baker Jr., Inc. 2005

S15 house
Machine sheds removed

NOISE SURVEY SHEET

EQUIPMENT: METER Norsonics 132 CALIBRATOR EXTECH 407744

CALIBRATION: START 94.3 dB END 94.3 dB

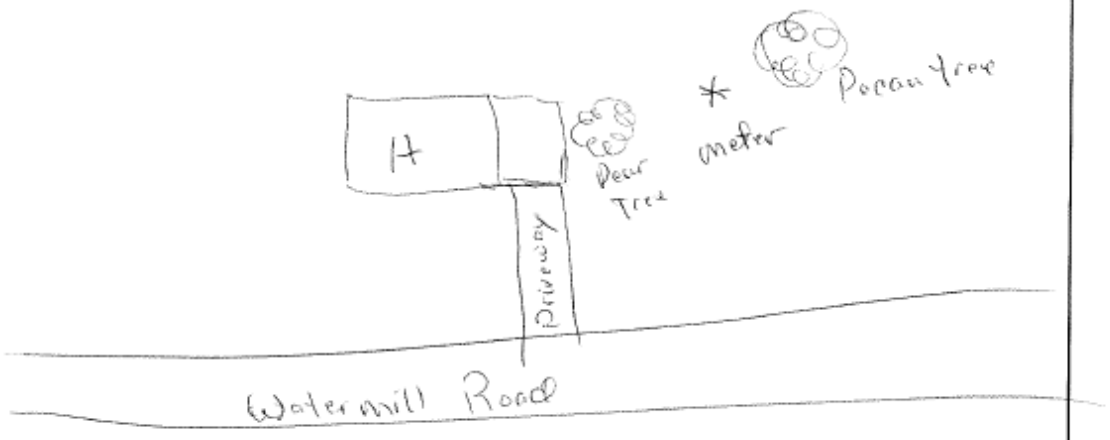
RESPONSE: FAST ____ SLOW X A-WEIGHTING X BATTERY CHECK X

WEATHER DATA: Partly Cloudy 84° Calm

TRAFFIC DATA		
ROAD	WB	EB
AUTOS	0	1
MED TRKS	0	0
HVY TRKS	0	0
DURATION	15'	15'

DATE: 9/28/2016
SITE #: S16
START: 5:21 PM
END: 5:36 PM
LEQ: 54.0
SPEED: 55

SITE SKETCH



BACKGROUND NOISE Birds; Wind; lawn mower; dog barking train whistle
MAJOR SOURCES Vehicles on roadway
UNUSUAL EVENTS ____
OTHER NOTES ____

NOISE SURVEY SHEET

EQUIPMENT: METER Norsonics 132 CALIBRATOR EXTECH 407744

CALIBRATION: START 94.3 dB END 94.3 dB

RESPONSE: FAST ____ SLOW X A-WEIGHTING X BATTERY CHECK X

WEATHER DATA: Fair ; 82° ; 10 mph

TRAFFIC DATA		
ROAD	NB	SB
AUTOS	0	0
MED TRKS	0	0
HVY TRKS	0	0
DURATION	15'	15'

DATE: 9/28/2016

SITE #: 517

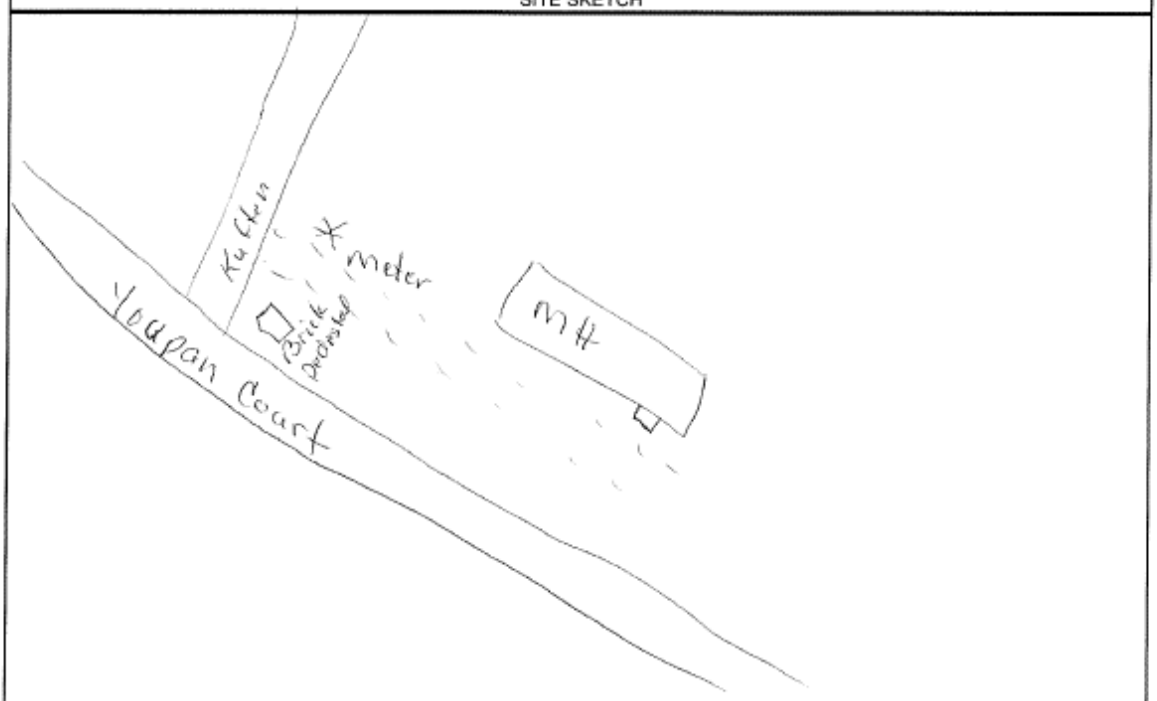
START: 5:50 PM

END: 6:05 PM

LEQ: 60.2

SPEED: 15 mph

SITE SKETCH



BACKGROUND NOISE Dog barking; People talking; vehicles on other roadway; Birds

MAJOR SOURCES Vehicles on Roadway train whistle

UNUSUAL EVENTS 11:10 Airplane overhead

OTHER NOTES ____

Michael Baker Jr., Inc. 2005

NOISE SURVEY SHEET

EQUIPMENT: METER Norsonics 132 CALIBRATOR EXTECH 407744

CALIBRATION: START 94.0 dB END 94.0 dB

RESPONSE: FAST ____ SLOW X A-WEIGHTING X BATTERY CHECK X

WEATHER DATA: Cloudy 74° 5 mph

TRAFFIC DATA		
ROAD	SB	NB
AUTOS	22	20
MED TRKS	0	0
HVY TRKS	1	1
DURATION	15'	15'

DATE: 9/29/2016

SITE #: 522

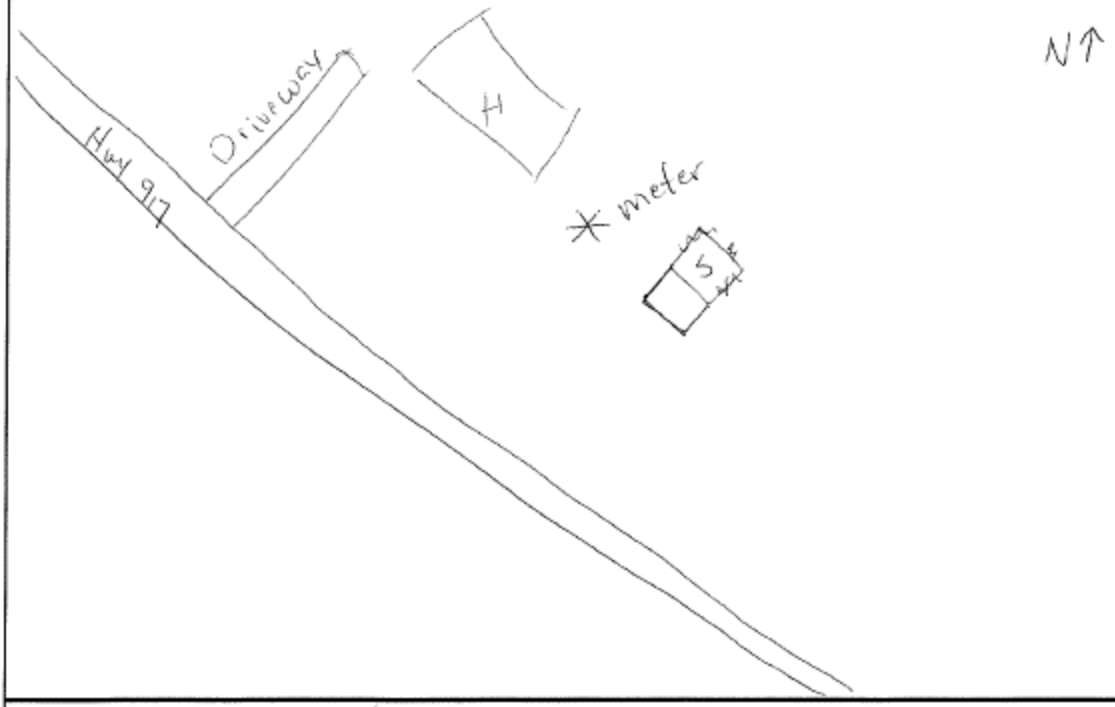
START: 8:06 AM

END: ____

LEQ: 57.0

SPEED: 55 mph

SITE SKETCH



BACKGROUND NOISE Insects, Birds

MAJOR SOURCES Vehicles on roadway

UNUSUAL EVENTS 14:00 coughing

OTHER NOTES ____

NOISE SURVEY SHEET

EQUIPMENT: METER Norsonics 132 CALIBRATOR EXTECH 407744

CALIBRATION: START 94.3 dB END 94.3 dB

RESPONSE: FAST _____ SLOW X A-WEIGHTING X BATTERY CHECK X

WEATHER DATA: Fair 82° 10 mph

TRAFFIC DATA		
ROAD	EB	WB
AUTOS	24	21
MED TRKS	0	0
HVY TRKS	0	0
DURATION	15'	15'

DATE: 9/28/2016

SITE #: S18

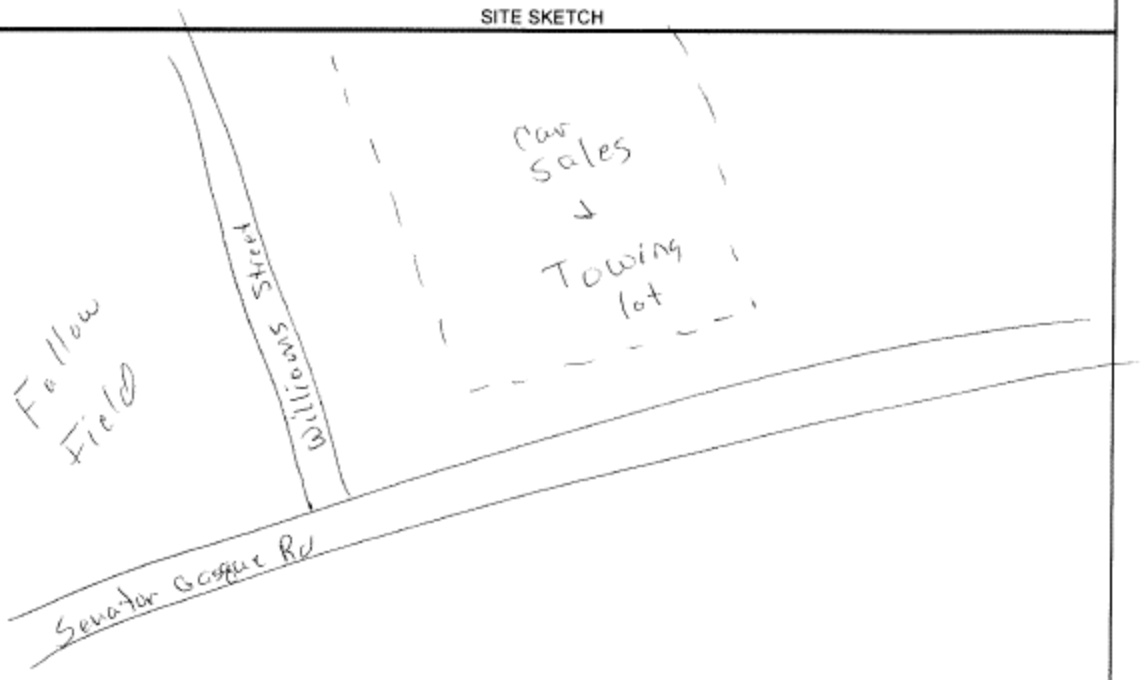
START: 6:13 PM

END: 6:28 PM

LEQ: 52.5

SPEED: 55?

SITE SKETCH



BACKGROUND NOISE Vehicles on US 76, Dog barking; Insects; Wind; Birds

MAJOR SOURCES Vehicles on SG Rd

UNUSUAL EVENTS _____

OTHER NOTES _____

Michael Baker Jr., Inc. 2005

526 Dog Pens +
House unoccupied

NOISE SURVEY SHEET

EQUIPMENT: METER Norsonics 132 CALIBRATOR EXTECH 407744

CALIBRATION: START 94.0 dB END 94.0 dB

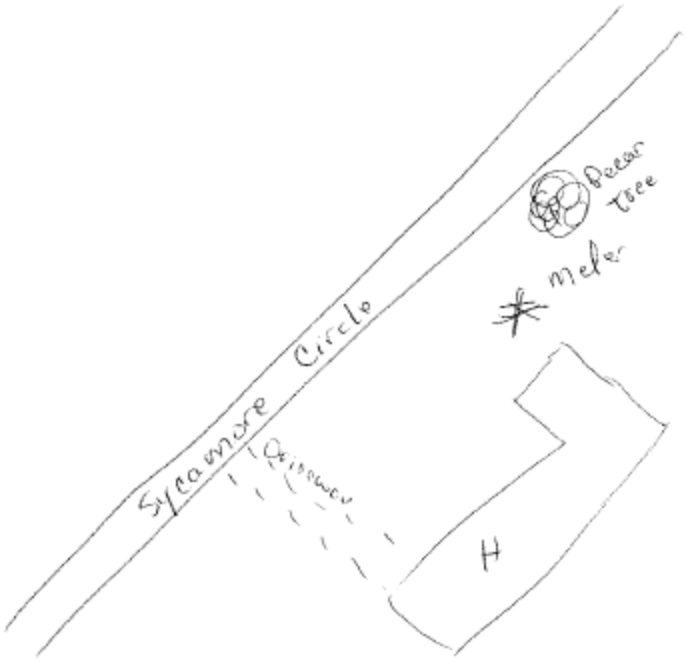
RESPONSE: FAST ____ SLOW X A-WEIGHTING X BATTERY CHECK X

WEATHER DATA: Cloudy 72° 9 mph

TRAFFIC DATA		
ROAD	SB	NB
AUTOS	1	0
MED TRKS	0	0
HVY TRKS	0	0
DURATION	15'	15'

DATE: 9/29/2016
SITE #: S31
START: 9:55
END: 10:10
LEQ: 46.8
SPEED: 55?

SITE SKETCH



BACKGROUND NOISE Birds; dog barking; Wind; rooster crowing
MAJOR SOURCES Vehicles on roadway
UNUSUAL EVENTS ____
OTHER NOTES ____

NOISE SURVEY SHEET

EQUIPMENT: METER Norsonics 132 CALIBRATOR EXTECH 407744

CALIBRATION: START 94.0 dB END 94.0 dB

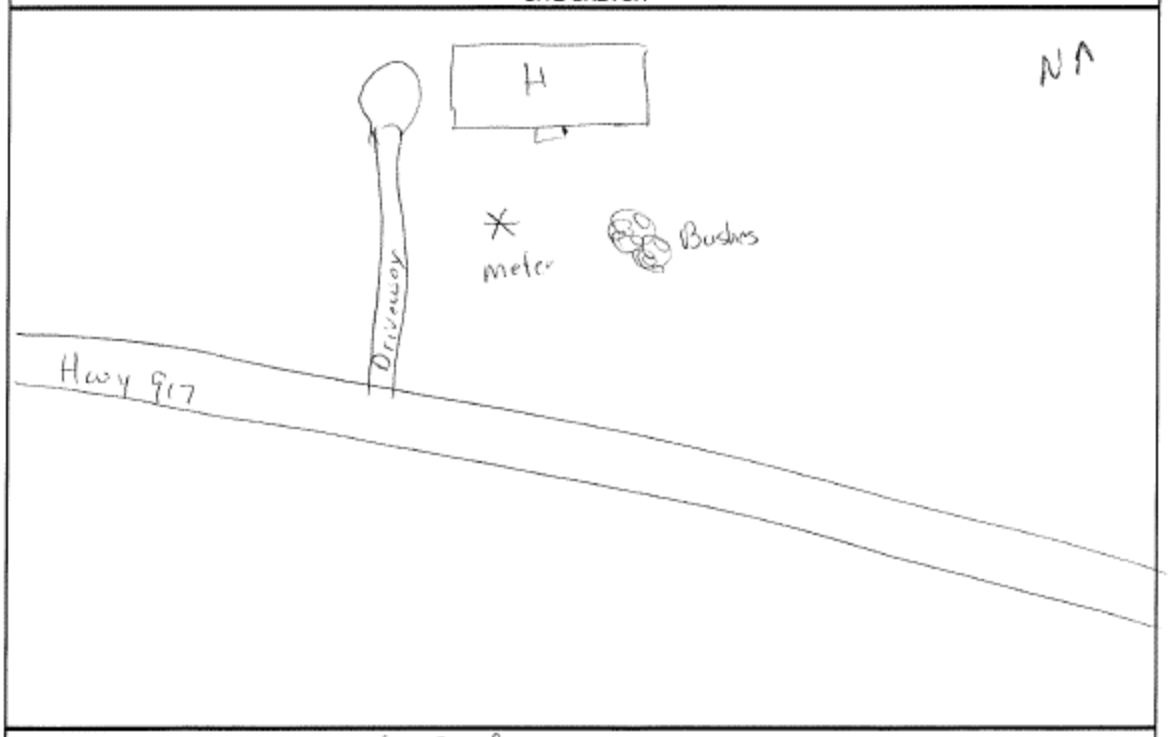
RESPONSE: FAST ____ SLOW X A-WEIGHTING X BATTERY CHECK X

WEATHER DATA: Cloudy 75° calm

TRAFFIC DATA		
ROAD	SB	NB
AUTOS	15	27
MED TRKS	1	1
HVY TRKS	0	3
DURATION	15'	15'

DATE: 9/29/2016
SITE #: S24
START: 8:32 AM
END: 8:47 AM
LEQ: 56.1
SPEED: 55

SITE SKETCH



BACKGROUND NOISE Insects; Birds;
MAJOR SOURCES Vehicles on roadway
UNUSUAL EVENTS ____
OTHER NOTES ____

Michael Baker Jr., Inc. 2005

NOISE SURVEY SHEET

EQUIPMENT: METER Norsonics 132 CALIBRATOR EXTECH 407744

CALIBRATION: START 94.0 dB END 94.0 dB

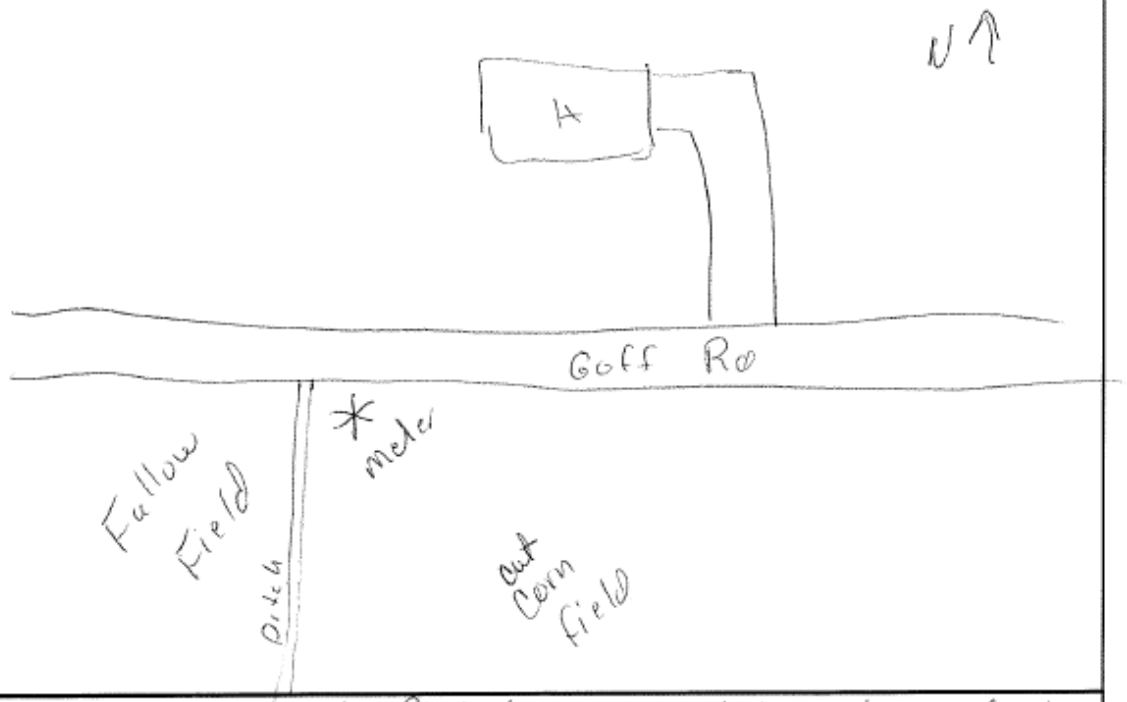
RESPONSE: FAST _____ SLOW X A-WEIGHTING X BATTERY CHECK X

WEATHER DATA: Cloudy 73° 9 mph
overcast

TRAFFIC DATA		
ROAD	WB	EB
AUTOS	0	1
MED TRKS	0	0
HVY TRKS	0	0
DURATION	15	15

DATE: 9/29/2016
SITE #: 535
START: 10:39 AM
END: 10:54 AM
LEQ: 44.7
SPEED: 55 mph?

SITE SKETCH



BACKGROUND NOISE Insects; Birds; lawn mower; vehicles on other road; air conditioner
MAJOR SOURCES Vehicles on roadway
UNUSUAL EVENTS 7:30 Birds
OTHER NOTES No one home so moved across road to field

Michael Baker Jr., Inc. 2005

NOISE SURVEY SHEET

EQUIPMENT: METER Norsonics 132 CALIBRATOR EXTECH 407744

CALIBRATION: START 93.4 dB END 93.4 dB

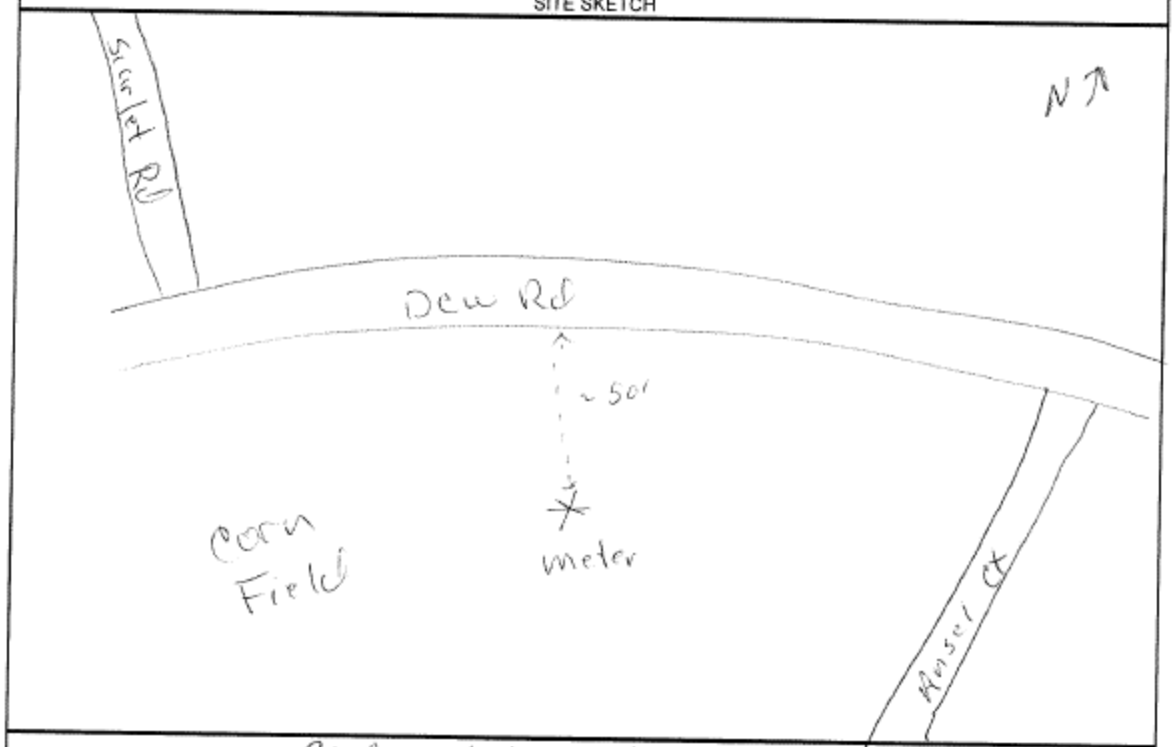
RESPONSE: FAST ____ SLOW X A-WEIGHTING X BATTERY CHECK X

WEATHER DATA: 41° Clear 1 mph

TRAFFIC DATA		
ROAD	WB	EB
AUTOS	4	3
MED TRKS	0	0
HVY TRKS	0	0
DURATION	15"	15"

DATE: 10/26/16
SITE #: S11
START: 7:25 AM
END: 7:40 AM
LEQ: 52.3
SPEED: 55

SITE SKETCH



BACKGROUND NOISE Birds; Vehicles on other roadway; train; rooster
MAJOR SOURCES Vehicles on roadway
UNUSUAL EVENTS Train horn @ 4:12 & @ 6:30 & @ 9:40 & @ 11:40s @ 12:54
OTHER NOTES Site moved due to lack of access

Michael Baker Jr., Inc. 2005

NOISE SURVEY SHEET

EQUIPMENT: METER Norsonics 132 CALIBRATOR EXTECH 407744

CALIBRATION: START 93.4 dB END 93.4 dB

RESPONSE: FAST _____ SLOW X A-WEIGHTING X BATTERY CHECK X

WEATHER DATA: 64° Sunny 7 mph

TRAFFIC DATA		
ROAD	SWB	NEB
AUTOS	7	3
MED TRKS	1	0
HVY TRKS	0	1
DURATION	15	15

DATE: 10/26/16

SITE #: S26

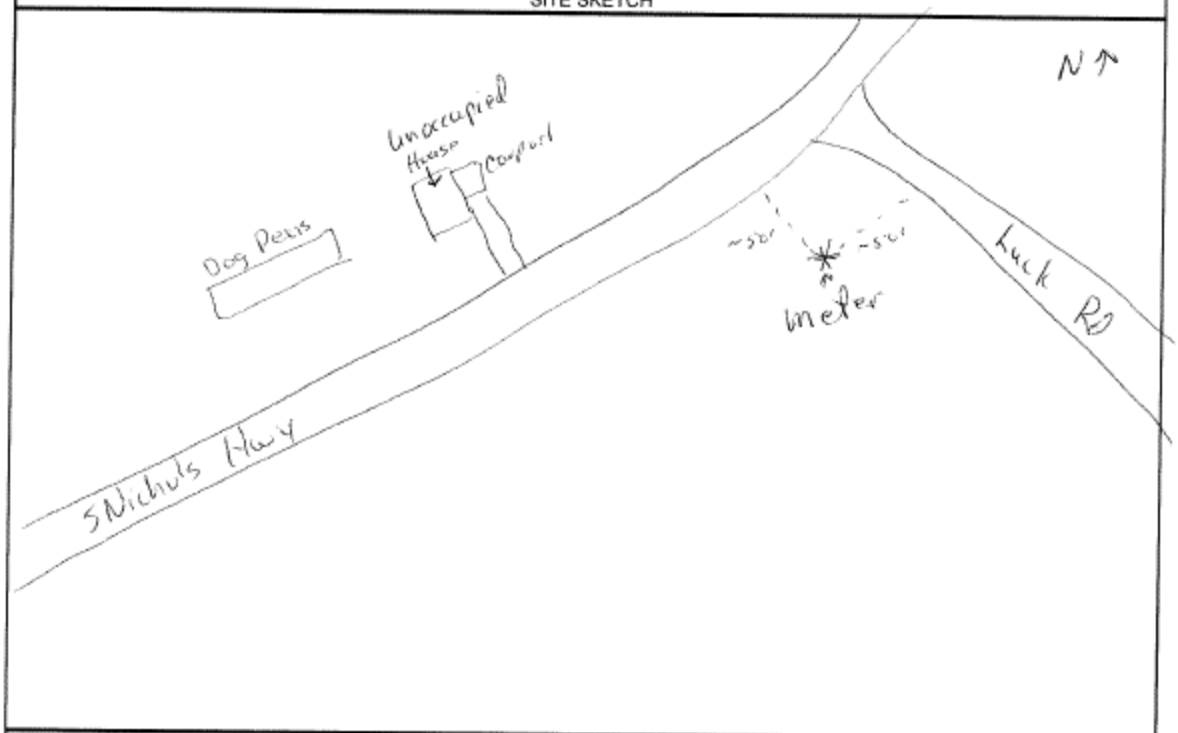
START: 10:58 AM

END: 11:13

LEQ: 55.2

SPEED: 55

SITE SKETCH



BACKGROUND NOISE Birds, Insects, Wind, Cars on other road

MAJOR SOURCES Vehicles on roadway

UNUSUAL EVENTS Truck @ 6:30

OTHER NOTES Site moved due to lack of access

NOISE SURVEY SHEET

EQUIPMENT: METER Norsonics 132 CALIBRATOR EXTECH 407744

CALIBRATION: START 93.4 dB END 93.4 dB

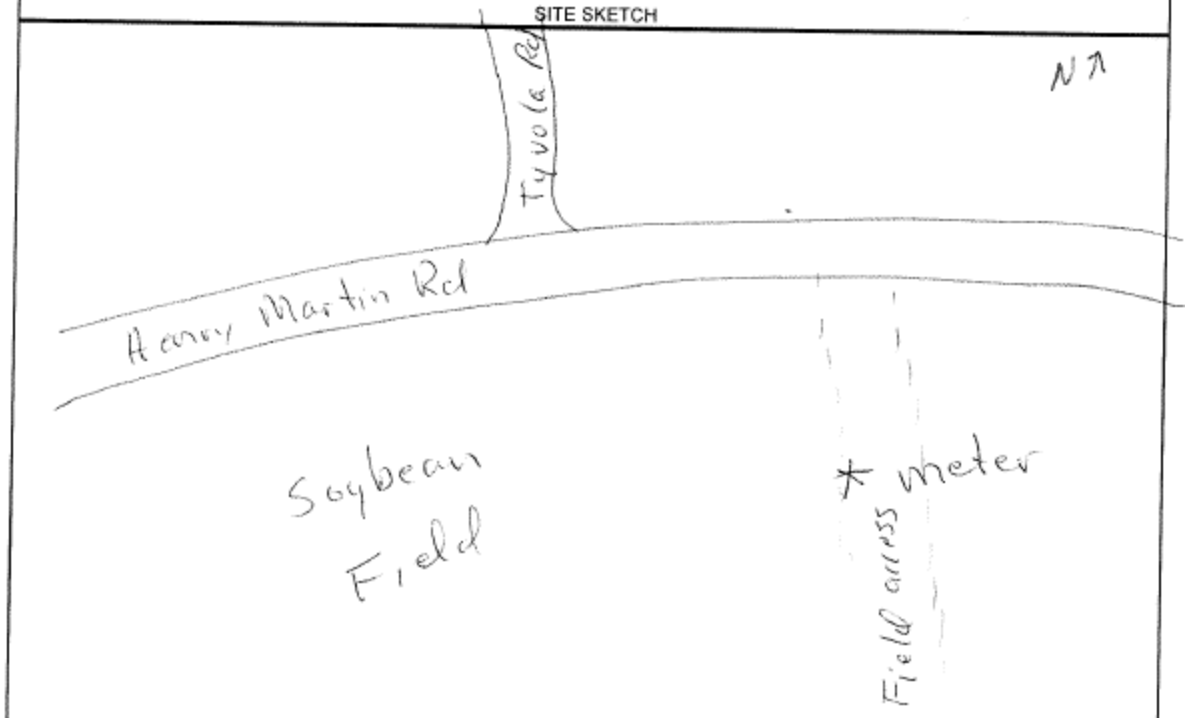
RESPONSE: FAST ____ SLOW X A-WEIGHTING X BATTERY CHECK X

WEATHER DATA: 41° clear 0 mph

TRAFFIC DATA		
ROAD	WB	EB
AUTOS	0	0
MED TRKS	0	0
HVY TRKS	0	0
DURATION	15	15

DATE: 10/26/16
SITE #: S15
START: 6:50 AM
END: 7:05 AM
LEQ: 54.1
SPEED: 45?

SITE SKETCH



BACKGROUND NOISE Vehicles on other road; insects; Birds
MAJOR SOURCES Vehicles on roadway
UNUSUAL EVENTS Train Whistle @ 11:50
OTHER NOTES One School bus & one car before start

Michael Baker Jr., Inc. 2005

Site moved due to lack of access

NOISE SURVEY SHEET

EQUIPMENT: METER Norsonics 132 CALIBRATOR EXTECH 407744

CALIBRATION: START 94.2 dB END 94.4 dB

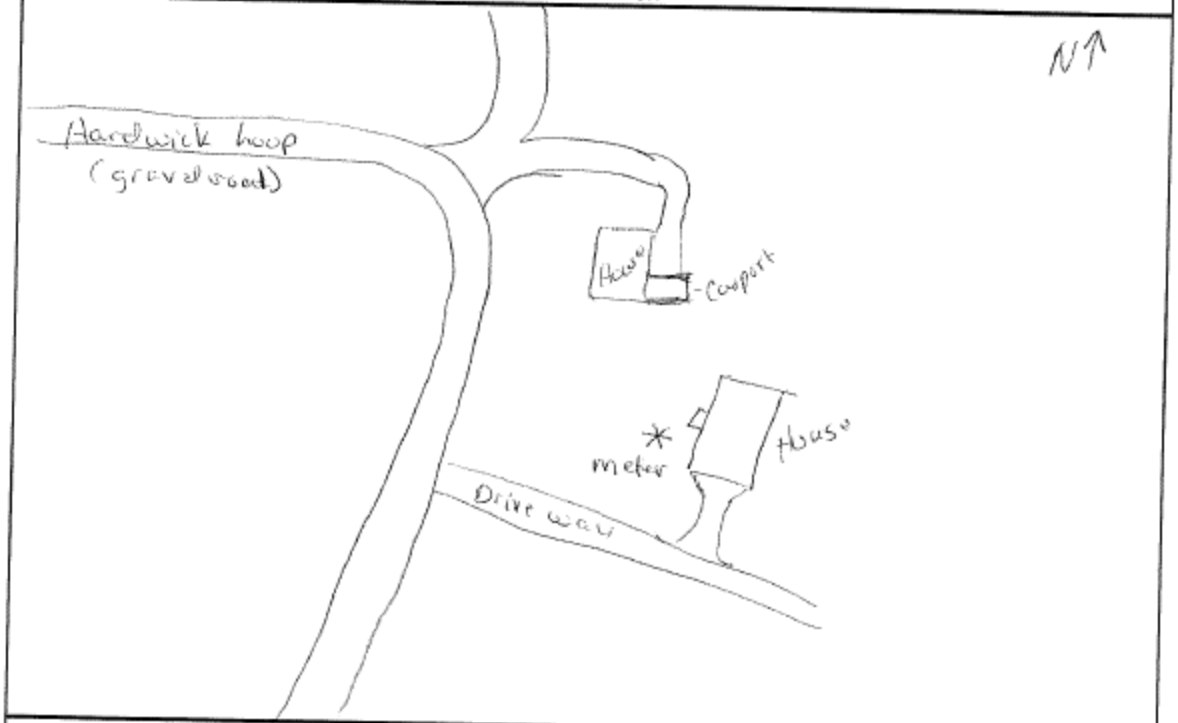
RESPONSE: FAST ____ SLOW X A-WEIGHTING X BATTERY CHECK X

WEATHER DATA: 72° Fair 4 mph

TRAFFIC DATA		
ROAD	SB	NB
AUTOS	0	0
MED TRKS	0	0
HVY TRKS	0	0
DURATION	15	15

DATE: 6/26/16
SITE #: S30
START: 3:32 PM
END: 3:47 PM
LEQ: 38.3
SPEED: 25

SITE SKETCH



BACKGROUND NOISE: wind; hammering; birds; vehicles on other road; tractor
MAJOR SOURCES: Vehicles on roadway Siren
UNUSUAL EVENTS: Siren @ 6:40 to 7:35
OTHER NOTES: Site moved due to lack of access

Michael Baker Jr., Inc. 2005

NOISE SURVEY SHEET

EQUIPMENT: METER Norsonics 132 CALIBRATOR EXTECH 407744

CALIBRATION: START 94.2 dB END 94.4 dB

RESPONSE: FAST ____ SLOW X A-WEIGHTING X BATTERY CHECK X

WEATHER DATA: 71° Fair 3mph

TRAFFIC DATA		
ROAD	SEB	NWB
AUTOS	8	7
MED TRKS	0	0
HVY TRKS	0	0
DURATION	15'	15'

DATE: 10/26/16
SITE #: 528
START: 2:55 PM
END: 3:14 PM
LEQ: 56.1
SPEED: 55?

SITE SKETCH

BACKGROUND NOISE Birds, cat, insects, saw, Vehicles on other road
MAJOR SOURCES Vehicles on roadway
UNUSUAL EVENTS Property owner @ 1:30
OTHER NOTES Paused @ 1:30

Michael Baker Jr., Inc. 2005

NOISE SURVEY SHEET

EQUIPMENT: METER Norsonics 132 CALIBRATOR EXTECH 407744

CALIBRATION: START 94.2 dB END 94.4 dB

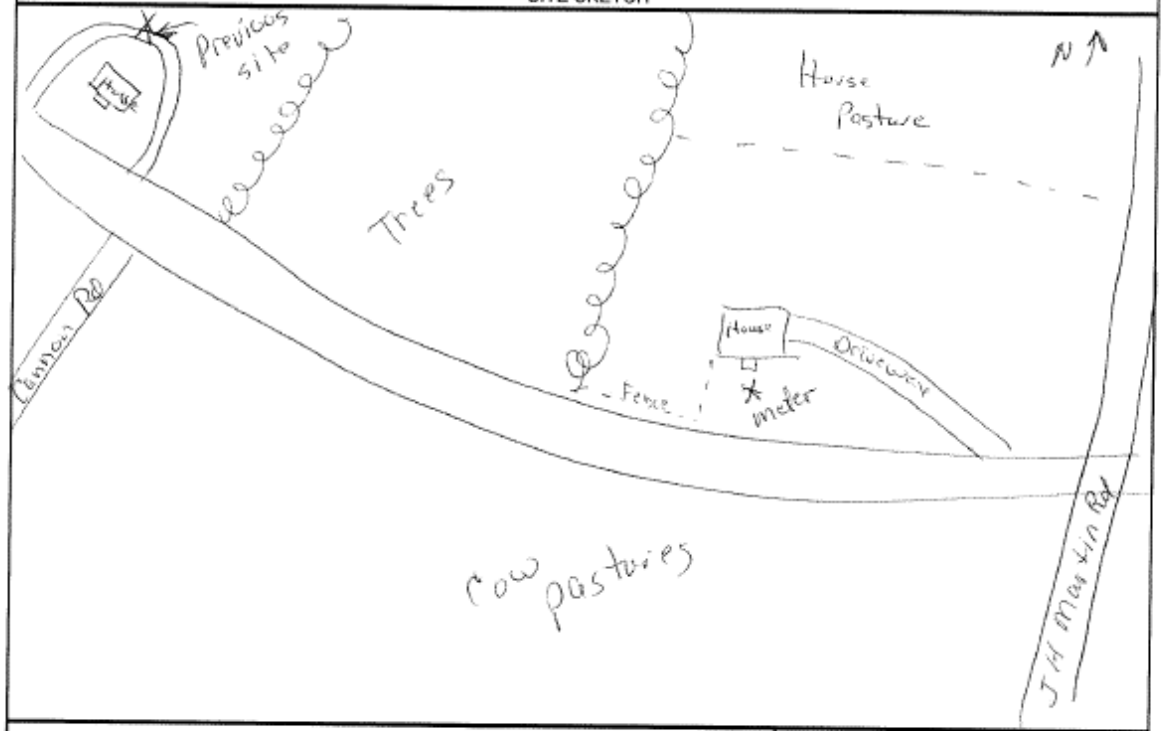
RESPONSE: FAST ____ SLOW X A-WEIGHTING X BATTERY CHECK X

WEATHER DATA: 71° Sunny 3 mph

TRAFFIC DATA		
ROAD	EB	WB
AUTOS	1	0
MED TRKS	0	1
HVY TRKS	0	0
DURATION	15	15

DATE: 10/26/16
SITE #: S33
START: 4:10 PM
END: 4:25 PM
LEQ: 39.8
SPEED: 25 mph

SITE SKETCH



BACKGROUND NOISE Cows; vehicles on other road; dogs barking; Insects
MAJOR SOURCES Vehicles on roadway
UNUSUAL EVENTS ____
OTHER NOTES Site moved to other side of alignment

Michael Baker Jr., Inc. 2005

NOISE SURVEY SHEET

EQUIPMENT: METER Norsonics 132 CALIBRATOR EXTECH 407744

CALIBRATION: START 94.2 dB END 94.4 dB

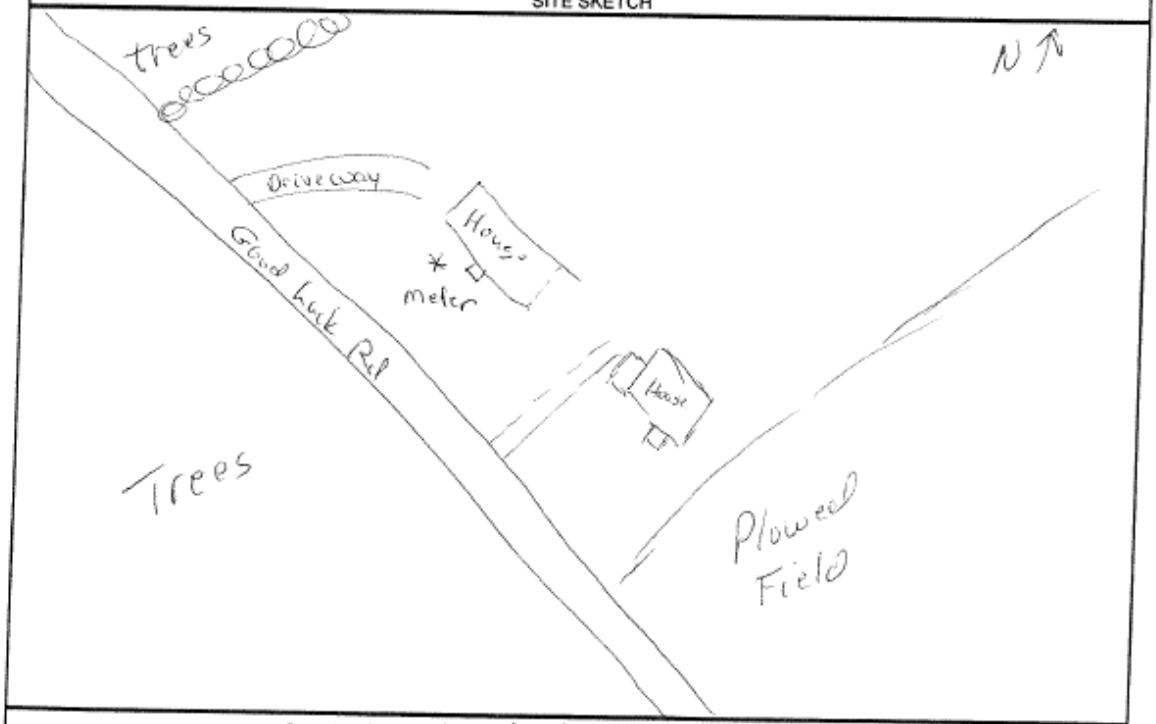
RESPONSE: FAST ____ SLOW X A-WEIGHTING X BATTERY CHECK X

WEATHER DATA: 71° Sunny to PC 6 mph

TRAFFIC DATA		
ROAD	SB	NB
AUTOS	3	4
MED TRKS	1	2
HVY TRKS	1	0
DURATION	15 min	15 min

DATE: 10/26/16
SITE #: S37
START: 4:40 PM
END: 4:55 PM
LEQ: 59.7
SPEED: 55

SITE SKETCH



BACKGROUND NOISE Birds, insects, dog barking, people talking, cars on other roadways
MAJOR SOURCES Vehicles on roadway
UNUSUAL EVENTS Dog howling at 9:00 to 10:10 & 11:05-11:28
OTHER NOTES

Michael Baker Jr., Inc. 2005

NOISE SURVEY SHEET

EQUIPMENT: METER Norsonics 132 CALIBRATOR EXTECH 407744

CALIBRATION: START 94.2 dB END 94.4 dB

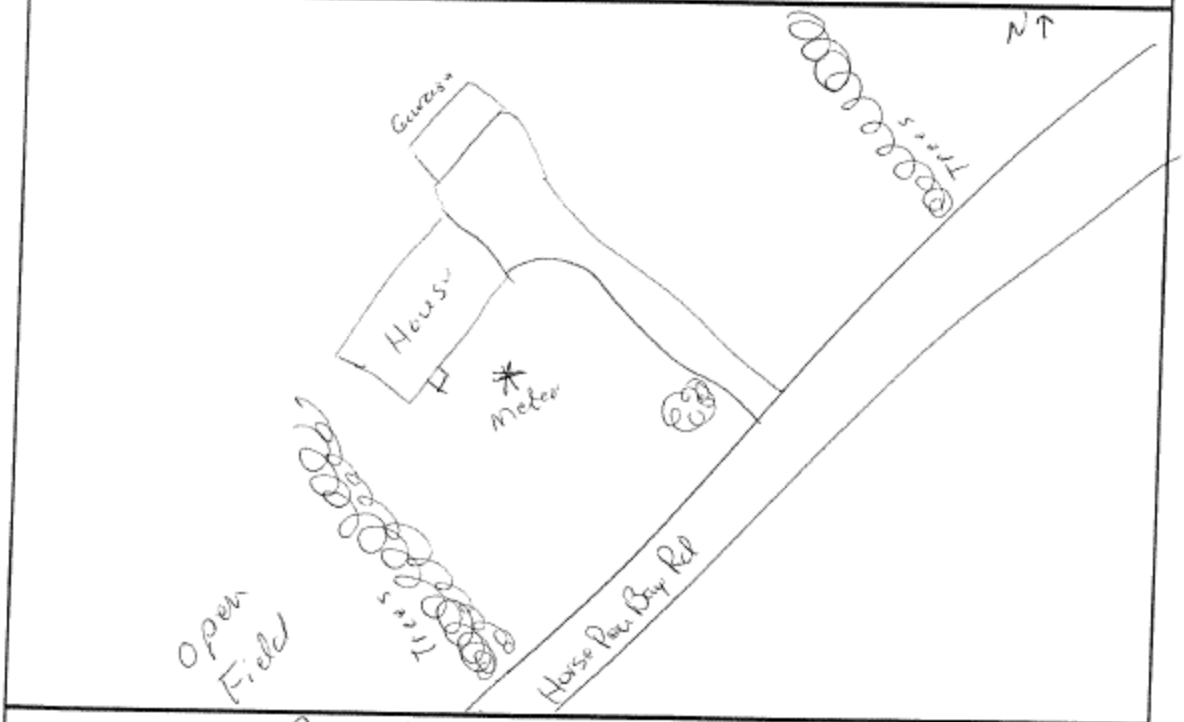
RESPONSE: FAST ____ SLOW X A-WEIGHTING X BATTERY CHECK X

WEATHER DATA: 70° Sunny 5 mph

TRAFFIC DATA		
ROAD	NE	SW
AUTOS	3	2
MED TRKS	0	0
HVY TRKS	0	0
DURATION	15	15

DATE: 10/26/16
SITE #: S39
START: 5:06 PM
END: 5:24 PM
LEQ: 51.1
SPEED: 45?

SITE SKETCH



BACKGROUND NOISE Birds, tractor, vehicles on other roadway, horse neighing
MAJOR SOURCES Vehicles on roadway
UNUSUAL EVENTS Property owner @ 0:23; motorcycle @ 7:35
OTHER NOTES Pause @ 0:23 for property owner RPD

NOISE SURVEY SHEET

EQUIPMENT: METER Norsonics 132 CALIBRATOR EXTECH 407744

CALIBRATION: START 94.2 dB END 94.4 dB

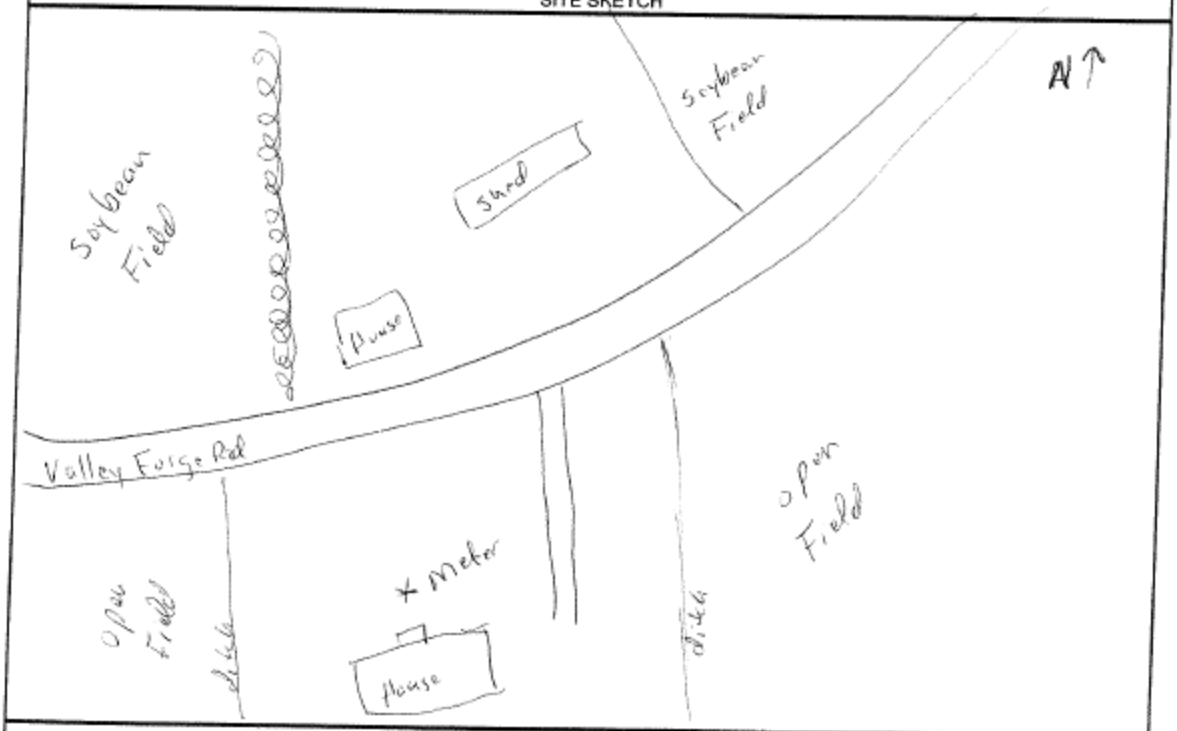
RESPONSE: FAST ____ SLOW X A-WEIGHTING X BATTERY CHECK X

WEATHER DATA: 69° Sunny 4 mph

TRAFFIC DATA		
ROAD	SW	NE
AUTOS	10	8
MED TRKS	0	0
HVY TRKS	0	0
DURATION	15	15

DATE: 10/26/16
SITE #: 541
START: 5:37 PM
END: 5:53 PM
LEQ: 50.1
SPEED: 55 mph

SITE SKETCH



BACKGROUND NOISE Birds, dog barking, people talking
MAJOR SOURCES Vehicles on roadway
UNUSUAL EVENTS Cell phone @ 0:50, car horn @ 5:25
OTHER NOTES

NOISE SURVEY SHEET

EQUIPMENT: METER Norsonics 132 CALIBRATOR EXTECH 407744

CALIBRATION: START 94.2 dB END 94.4 dB

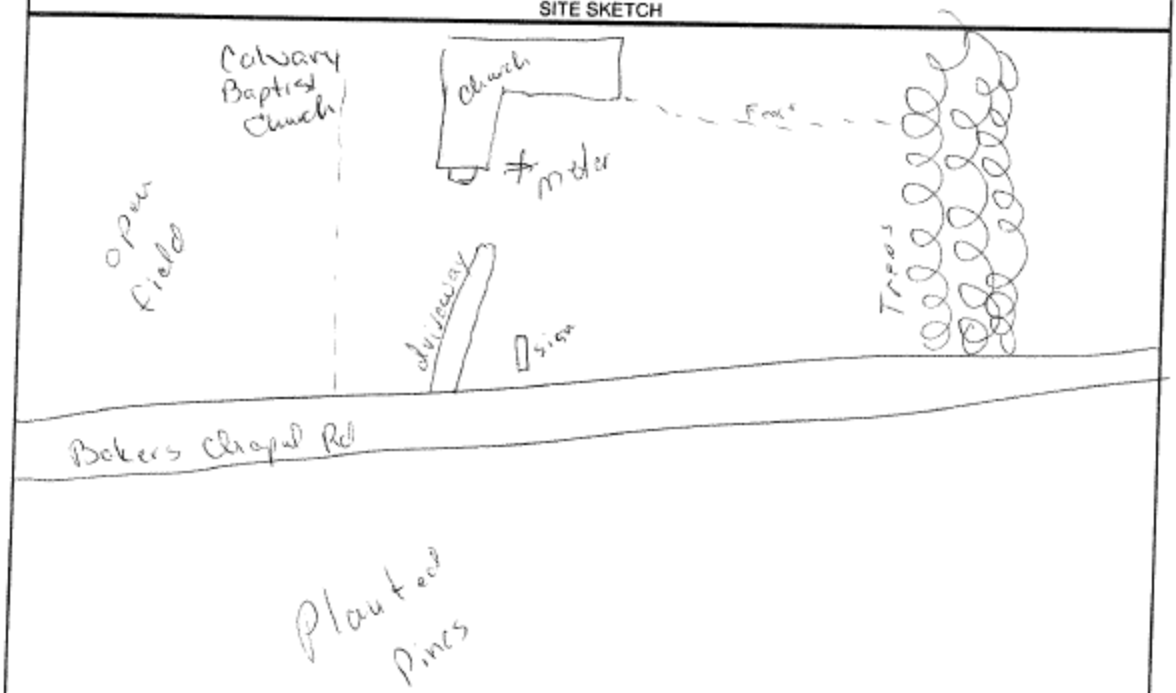
RESPONSE: FAST ____ SLOW X A-WEIGHTING X BATTERY CHECK X

WEATHER DATA: 66° Clear 2mph

TRAFFIC DATA		
ROAD	EB	WB
AUTOS	13	7
MED TRKS	0	0
HVY TRKS	0	0
DURATION	15	15

DATE: 10/26/16
SITE #: S43
START: 6:36 PM
END: 6:56 PM
LEQ: 57.2
SPEED: 55?

SITE SKETCH



BACKGROUND NOISE Insects Vehicles on other roadway

MAJOR SOURCES Vehicles on roadway

UNUSUAL EVENTS

OTHER NOTES

NOISE SURVEY SHEET

EQUIPMENT: METER Norsonics 132 CALIBRATOR EXTECH 407744

CALIBRATION: START 94.2 dB END 94.4 dB

RESPONSE: FAST ____ SLOW X A-WEIGHTING X BATTERY CHECK X

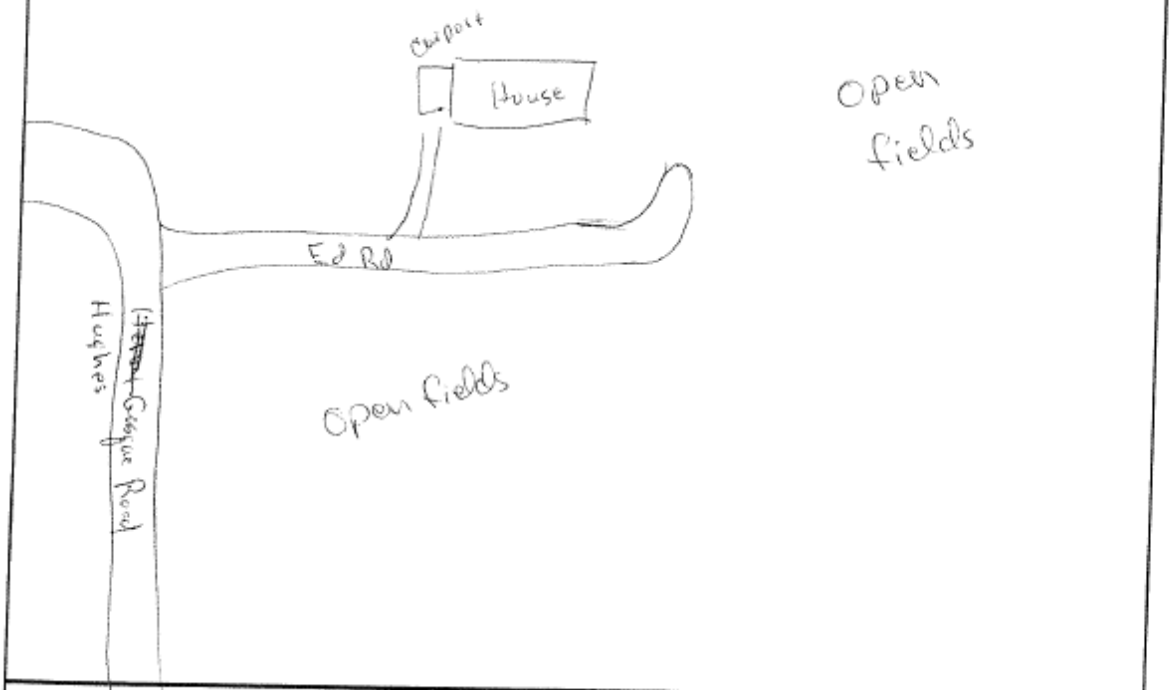
WEATHER DATA: 67° Sunny 3mph

TRAFFIC DATA		
ROAD		
AUTOS		
MED TRKS		
HVY TRKS		
DURATION		

No counts; no visible road.

DATE: 10/20/16
SITE #: 542
START: 6:04 PM
END: 6:26 PM
LEQ: 58.8
SPEED: —

SITE SKETCH



BACKGROUND NOISE People talking, Vehicles on other road, wind
MAJOR SOURCES Dogs barking
UNUSUAL EVENTS Dog bark @ 2:30 & 2:40 & 6:15; ol overhead @ 8:35
OTHER NOTES gun shot @ 13:40

Michael Baker Jr., Inc. 2005

paused twice for property owner

APPENDIX C

TNM Data Files

(Provided on CD to SCDOT)

APPENDIX D

Feasible and Reasonable Worksheets

SCDOT Feasibility and Reasonableness Worksheet

Date: November 11, 2016

Project Name I-73: I-95 in Dillon County to SC 22 in Horry County

Highway Traffic Noise Abatement Measure Barrier 1 - R9A

Feasibility

Number of Impacted Receivers: 1

Number of Benefited Receivers: 1

Percentage of Impacted Receivers that would achieve a 5 dBA reduction from the proposed noise abatement measure: 100

Is the proposed noise abatement measure acoustically feasible?
NOTE:SCDOT Policy indicates that 75% of the impacted receivers must achieve at least a 5 dBA reduction for it to be acoustically feasible.

☒ Yes ☐ No

Would any of the following issues limit the ability of the abatement measure to achieve the noise reduction goal?

Topography	☐ Yes	☒ No
Safety	☐ Yes	☒ No
Drainage	☐ Yes	☒ No
Utilities	☐ Yes	☒ No
Maintenance	☐ Yes	☒ No
Access	☐ Yes	☒ No
Exposed Height of Wall	☐ Yes	☒ No

If "Yes" was marked for any of the questions above, please explain below.

Detailed Description:

Reasonableness

According to 23 CFR 772.13(d)(2)(iv) the abatement measure must collectively achieve each of these criteria to be reasonable. Therefore if any of the three mandatory reasonable factors are not achieved, then the abatement measure is determined NOT to be reasonable. When completing the form it is not necessary to detail each of the criteria if one was determined not to be reasonable.

#1: Noise Reduction Design Goal

Number of Benefited Receivers	1	Number of Benefited Receivers that achieve at least an 8 dBA reduction	1

Percentage of Benefited Receivers that would achieve at least a 8 dBA reduction from the proposed noise abatement measure. NOTE: SCDOT Policy indicates that 80% of the benefited receivers must achieve at least a 8 dBA reduction for it to be reasonable. 100

Does the proposed noise abatement measure meet the noise reduction design goal? ☒ Yes ☐ No

If "Yes" is marked, continue to #2. If "No" is marked, then abatement is determined NOT to be reasonable.

#2: Cost Effectiveness

Estimated cost per square foot for noise abatement measure	$35	Estimated construction cost for noise abatement measure	$829,147
Estimated cost per Benefited Receiver	$829,147		

Based on the SCDOT policy of $30,000 per Benefited Receiver, would the abatement measure be reasonable? NOTE: SCDOT Policy states that the preliminary noise analysis is based on $35.00 per square foot and a more project-specific construction cost should be applied at a cost per square foot basis during the detailed noise abatement evaluation. ☐ Yes ☒ No

If "Yes" is marked, continue to #3. If "No" is marked, then abatement is determined NOT to be reasonable.

#3: Viewpoints of the property owners and residents of the benefitted receivers

Number of Benefited Receivers (same as above)			
Number of Benefited Receivers in **support** of noise abatement measure		Percentage of Benefited Receivers in **support** of noise abatement measure	
Number of Benefited Receivers **opposed** to noise abatement measure		Percentage of Benefited Receivers **opposed** to noise abatement measure	
Number of Benefited Receivers **that did not respond** to solicitation on noise abatement measure		Percentage of Benefited Receivers **that did not respond** to solicitation on noise abatement measure	

Based on the viewpoints of the property owners and residents of the Benefited Receivers, would the abatement measure be reasonable? NOTE: SCDOT Policy indicates that the noise abatement shall be constructed unless greater than 50% of the benefited receptors are opposed to noise abatement. ☐ Yes ☒ No

Final Determination for Noise Abatement Measure

Based on the above results, this abatement feature is feasible but not reasonable. Additionally, this calculation was used as the sample mitigation model run for other similar conditions. These results also apply to similar isolated receptor conditions for receptors R54, R81, R85, R86, R97, R239, R278, R288, R315 and R320.

SCDOT Feasibility and Reasonableness Worksheet

Date: November 11, 2016

Project Name I-73: I-95 in Dillon County to SC 22 in Horry County

Highway Traffic Noise Abatement Measure Barrier 3 - R26, 27

Feasibility

Number of Impacted Receivers: 2

Number of Benefited Receivers: 2

Percentage of Impacted Receivers that would achieve a 5 dBA reduction from the proposed noise abatement measure: 100

Is the proposed noise abatement measure acoustically feasible?
NOTE:SCDOT Policy indicates that 75% of the impacted receivers must achieve at least a 5 dBA reduction for it to be acoustically feasible. ☒ Yes ☐ No

Would any of the following issues limit the ability of the abatement measure to achieve the noise reduction goal?

Topography	☐ Yes	☒ No
Safety	☐ Yes	☒ No
Drainage	☐ Yes	☒ No
Utilities	☐ Yes	☒ No
Maintenance	☐ Yes	☒ No
Access	☐ Yes	☒ No
Exposed Height of Wall	☐ Yes	☒ No

If "Yes" was marked for any of the questions above, please explain below.

Detailed Description

Reasonableness

According to 23 CFR 772.13(d)(2)(iv) the abatement measure must collectively achieve each of these criteria to be reasonable. Therefore if any of the three mandatory reasonable factors are not achieved, then the abatement measure is determined NOT to be reasonable. When completing the form it is not necessary to detail each of the criteria if one was determined not to be reasonable.

#1: Noise Reduction Design Goal

Number of Benefited Receivers	1	Number of Benefited Receivers that achieve at least an 8 dBA reduction	1
Percentage of Benefited Receivers that would achieve at least a 8 dBA reduction from the proposed noise abatement measure. NOTE: SCDOT Policy indicates that 80% of the benefited receivers must achieve at least a 8 dBA reduction for it to be reasonable.	100		

Does the proposed noise abatement measure meet the noise reduction design goal? ☒ Yes ☐ No

If "Yes" is marked, continue to #2. If "No" is marked, then abatement is determined NOT to be reasonable.

#2: Cost Effectiveness

Estimated cost per square foot for noise abatement measure	$35	Estimated construction cost for noise abatement measure	$922,723
Estimated cost per Benefited Receiver	$461,362		

Based on the SCDOT policy of $30,000 per Benefited Receiver, would the abatement measure be reasonable? NOTE: SCDOT Policy states that the preliminary noise analysis is based on $35.00 per square foot and a more project-specific construction cost should be applied at a cost per square foot basis during the detailed noise abatement evaluation. ☐ Yes ☒ No

If "Yes" is marked, continue to #3. If "No" is marked, then abatement is determined NOT to be reasonable.

#3: Viewpoints of the property owners and residents of the benefitted receivers

Number of Benefited Receivers (same as above)			
Number of Benefited Receivers **in support** of noise abatement measure		Percentage of Benefited Receivers **in support** of noise abatement measure	
Number of Benefited Receivers **opposed** to noise abatement measure		Percentage of Benefited Receivers **opposed** to noise abatement measure	
Number of Benefited Receivers **that did not respond** to solicitation on noise abatement measure		Percentage of Benefited Receivers **that did not respond** to solicitation on noise abatement measure	

Based on the viewpoints of the property owners and residents of the Benefited Receivers, would the abatement measure be reasonable? NOTE: SCDOT Policy indicates that the noise abatement shall be constructed unless greater than 50% of the benefited receptors are opposed to noise abatement. ☐ Yes ☒ No

Final Determination for Noise Abatement Measure

Based on the above results, this abatement feature is feasible but not reasonable. Additionally, this calculation was used as the sample mitigation model run for other similar conditions. These results also apply to similar isolated receptor conditions (with one or two impacts) near impacted receptor groups R76, R79/R80, R83, R110, R121 and R313/R314.

SCDOT Feasibility and Reasonableness Worksheet

Date: November 11, 2016

Project Name I-73: I-95 in Dillon County to SC 22 in Horry County

Highway Traffic Noise Abatement Measure Barrier 4 - R29, 34, 38

Feasibility

Number of Impacted Receivers	3	Number of Benefited Receivers	18
Percentage of Impacted Receivers that would achieve a 5 dBA reduction from the proposed noise abatement measure			100

Is the proposed noise abatement measure acoustically feasible? ☒ Yes ☐ No

NOTE:SCDOT Policy indicates that 75% of the impacted receivers must achieve at least a 5 dBA reduction for it to be acoustically feasible.

Would any of the following issues limit the ability of the abatement measure to achieve the noise reduction goal?

Topography	☐ Yes	☒ No
Safety	☐ Yes	☒ No
Drainage	☐ Yes	☒ No
Utilities	☐ Yes	☒ No
Maintenance	☐ Yes	☒ No
Access	☐ Yes	☒ No
Exposed Height of Wall	☐ Yes	☒ No

If "Yes" was marked for any of the questions above, please explain below.

Detailed Description

Reasonableness

According to 23 CFR 772.13(d)(2)(iv) the abatement measure must collectively achieve each of these criteria to be reasonable. Therefore if any of the three mandatory reasonable factors are not achieved, then the abatement measure is determined NOT to be reasonable. When completing the form it is not necessary to detail each of the criteria if one was determined not to be reasonable.

#1: Noise Reduction Design Goal

Number of Benefited Receivers	7	Number of Benefited Receivers that achieve at least an 8 dBA reduction	3

Percentage of Benefited Receivers that would achieve at least a 8 dBA reduction from the proposed noise abatement measure. NOTE: SCDOT Policy indicates that 80% of the benefited receivers must achieve at least a 8 dBA reduction for it to be reasonable. 100

Does the proposed noise abatement measure meet the noise reduction design goal? ☒ Yes ☐ No

If "Yes" is marked, continue to #2. If "No" is marked, then abatement is determined NOT to be reasonable.

#2: Cost Effectiveness

Estimated cost per square foot for noise abatement measure		Estimated construction cost for noise abatement measure	
Estimated cost per Benefited Receiver			

Based on the SCDOT policy of $30,000 per Benefited Receiver, would the abatement measure be reasonable? NOTE: SCDOT Policy states that the preliminary noise analysis is based on $35.00 per square foot and a more project-specific construction cost should be applied at a cost per square foot basis during the detailed noise abatement evaluation. ☐ Yes ☐ No

If "Yes" is marked, continue to #3. If "No" is marked, then abatement is determined NOT to be reasonable.

#3: Viewpoints of the property owners and residents of the benefitted receivers

Number of Benefited Receivers (same as above)			
Number of Benefited Receivers **in support** of noise abatement measure		Percentage of Benefited Receivers **in support** of noise abatement measure	
Number of Benefited Receivers **opposed** to noise abatement measure		Percentage of Benefited Receivers **opposed** to noise abatement measure	
Number of Benefited Receivers **that did not respond** to solicitation on noise abatement measure		Percentage of Benefited Receivers **that did not respond** to solicitation on noise abatement measure	

Based on the viewpoints of the property owners and residents of the Benefited Receivers, would the abatement measure be reasonable? NOTE: SCDOT Policy indicates that the noise abatement shall be constructed unless greater than 50% of the benefited receptors are opposed to noise abatement. ☐ Yes ☒ No

Final Determination for Noise Abatement Measure

Based on the above results, this abatement feature is feasible but not reasonable.

SCDOT Feasibility and Reasonableness Worksheet

Date: November 11, 2016

Project Name I-73: I-95 in Dillon County to SC 22 in Horry County

Highway Traffic Noise Abatement Measure Barrier 5 - R47, 52, 53

Feasibility

Number of Impacted Receivers	3	Number of Benefited Receivers	7
Percentage of Impacted Receivers that would achieve a 5 dBA reduction from the proposed noise abatement measure	100		

Is the proposed noise abatement measure acoustically feasible?
NOTE:SCDOT Policy indicates that 75% of the impacted receivers must achieve at least a 5 dBA reduction for it to be acoustically feasible. ☒ Yes ☐ No

Would any of the following issues limit the ability of the abatement measure to achieve the noise reduction goal?

Topography	☐ Yes	☒ No
Safety	☐ Yes	☒ No
Drainage	☐ Yes	☒ No
Utilities	☐ Yes	☒ No
Maintenance	☐ Yes	☒ No
Access	☐ Yes	☒ No
Exposed Height of Wall	☐ Yes	☒ No

If "Yes" was marked for any of the questions above, please explain below.

Detailed Description

Reasonableness

According to 23 CFR 772.13(d)(2)(iv) the abatement measure must collectively achieve each of these criteria to be reasonable. Therefore if any of the three mandatory reasonable factors are not achieved, then the abatement measure is determined NOT to be reasonable. When completing the form it is not necessary to detail each of the criteria if one was determined not to be reasonable.

#1: Noise Reduction Design Goal

Number of Benefited Receivers	6	Number of Benefited Receivers that achieve at least an 8 dBA reduction	3

Percentage of Benefited Receivers that would achieve at least a 8 dBA reduction from the proposed noise abatement measure. NOTE: SCDOT Policy indicates that 80% of the benefited receivers must achieve at least a 8 dBA reduction for it to be reasonable. 50

Does the proposed noise abatement measure meet the noise reduction design goal? ☐ Yes ☒ No

If "Yes" is marked, continue to #2. If "No" is marked, then abatement is determined NOT to be reasonable.

#2: Cost Effectiveness

Estimated cost per square foot for noise abatement measure	$35	Estimated construction cost for noise abatement measure	
Estimated cost per Benefited Receiver			

Based on the SCDOT policy of $30,000 per Benefited Receiver, would the abatement measure be reasonable? NOTE: SCDOT Policy states that the preliminary noise analysis is based on $35.00 per square foot and a more project-specific construction cost should be applied at a cost per square foot basis during the detailed noise abatement evaluation. ☐ Yes ☒ No

If "Yes" is marked, continue to #3. If "No" is marked, then abatement is determined NOT to be reasonable.

#3: Viewpoints of the property owners and residents of the benefitted receivers

Number of Benefited Receivers (same as above)			
Number of Benefited Receivers **in support** of noise abatement measure		Percentage of Benefited Receivers **in support** of noise abatement measure	
Number of Benefited Receivers **opposed** to noise abatement measure		Percentage of Benefited Receivers **opposed** to noise abatement measure	
Number of Benefited Receivers **that did not respond** to solicitation on noise abatement measure		Percentage of Benefited Receivers **that did not respond** to solicitation on noise abatement measure	

Based on the viewpoints of the property owners and residents of the Benefited Receivers, would the abatement measure be reasonable? NOTE: SCDOT Policy indicates that the noise abatement shall be constructed unless greater than 50% of the benefited receptors are opposed to noise abatement. ☐ Yes ☒ No

Final Determination for Noise Abatement Measure

Based on the above results, this abatement feature is not both feasible and reasonable.

SCDOT Feasibility and Reasonableness Worksheet

Date: November 11, 2016

Project Name I-73: I-95 in Dillon County to SC 22 in Horry County

Highway Traffic Noise Abatement Measure Barrier 13 - R88-92

Feasibility

Number of Impacted Receivers: 5

Number of Benefited Receivers: 5

Percentage of Impacted Receivers that would achieve a 5 dBA reduction from the proposed noise abatement measure: 100

Is the proposed noise abatement measure acoustically feasible?
NOTE:SCDOT Policy indicates that 75% of the impacted receivers must achieve at least a 5 dBA reduction for it to be acoustically feasible.

☒ Yes ☐ No

Would any of the following issues limit the ability of the abatement measure to achieve the noise reduction goal?

Topography	☐ Yes	☒ No
Safety	☐ Yes	☒ No
Drainage	☐ Yes	☒ No
Utilities	☐ Yes	☒ No
Maintenance	☐ Yes	☒ No
Access	☐ Yes	☒ No
Exposed Height of Wall	☐ Yes	☒ No

If "Yes" was marked for any of the questions above, please explain below.

Detailed Description

Reasonableness

According to 23 CFR 772.13(d)(2)(iv) the abatement measure must collectively achieve each of these criteria to be reasonable. Therefore if any of the three mandatory reasonable factors are not achieved, then the abatement measure is determined NOT to be reasonable. When completing the form it is not necessary to detail each of the criteria if one was determined not to be reasonable.

#1: Noise Reduction Design Goal

Number of Benefited Receivers	5	Number of Benefited Receivers that achieve at least an 8 dBA reduction	4

Percentage of Benefited Receivers that would achieve at least a 8 dBA reduction from the proposed noise abatement measure. NOTE: SCDOT Policy indicates that 80% of the benefited receivers must achieve at least a 8 dBA reduction for it to be reasonable. 80

Does the proposed noise abatement measure meet the noise reduction design goal? ☒ Yes ☐ No

If "Yes" is marked, continue to #2. If "No" is marked, then abatement is determined NOT to be reasonable.

#2: Cost Effectiveness

Estimated cost per square foot for noise abatement measure	$35	Estimated construction cost for noise abatement measure	$1,210,306
Estimated cost per Benefited Receiver	$242,061		

Based on the SCDOT policy of $30,000 per Benefited Receiver, would the abatement measure be reasonable? NOTE: SCDOT Policy states that the preliminary noise analysis is based on $35.00 per square foot and a more project-specific construction cost should be applied at a cost per square foot basis during the detailed noise abatement evaluation. ☐ Yes ☒ No

If "Yes" is marked, continue to #3. If "No" is marked, then abatement is determined NOT to be reasonable.

#3: Viewpoints of the property owners and residents of the benefitted receivers

Number of Benefited Receivers (same as above)			
Number of Benefited Receivers **in support** of noise abatement measure		Percentage of Benefited Receivers **in support** of noise abatement measure	
Number of Benefited Receivers **opposed** to noise abatement measure		Percentage of Benefited Receivers **opposed** to noise abatement measure	
Number of Benefited Receivers **that did not respond** to solicitation on noise abatement measure		Percentage of Benefited Receivers **that did not respond** to solicitation on noise abatement measure	

Based on the viewpoints of the property owners and residents of the Benefited Receivers, would the abatement measure be reasonable? NOTE: SCDOT Policy indicates that the noise abatement shall be constructed unless greater than 50% of the benefited receptors are opposed to noise abatement. ☐ Yes ☒ No

Final Determination for Noise Abatement Measure

Based on the above results, this abatement feature is not both feasible and reasonable.

SCDOT Feasibility and Reasonableness Worksheet

Date: November 11, 2016

Project Name I-73: I-95 in Dillon County to SC 22 in Horry County

Highway Traffic Noise Abatement Measure Barrier 15 - R116, 118

Feasibility

Number of Impacted Receivers: 2

Number of Benefited Receivers: 2

Percentage of Impacted Receivers that would achieve a 5 dBA reduction from the proposed noise abatement measure: 100

Is the proposed noise abatement measure acoustically feasible?
NOTE:SCDOT Policy indicates that 75% of the impacted receivers must achieve at least a 5 dBA reduction for it to be acoustically feasible.

☒ Yes ☐ No

Would any of the following issues limit the ability of the abatement measure to achieve the noise reduction goal?

Topography	☐ Yes	☒ No
Safety	☐ Yes	☒ No
Drainage	☐ Yes	☒ No
Utilities	☐ Yes	☒ No
Maintenance	☐ Yes	☒ No
Access	☐ Yes	☒ No
Exposed Height of Wall	☐ Yes	☒ No

If "Yes" was marked for any of the questions above, please explain below.

Detailed Description

Reasonableness

According to 23 CFR 772.13(d)(2)(iv) the abatement measure must collectively achieve each of these criteria to be reasonable. Therefore if any of the three mandatory reasonable factors are not achieved, then the abatement measure is determined NOT to be reasonable. When completing the form it is not necessary to detail each of the criteria if one was determined not to be reasonable.

#1: Noise Reduction Design Goal

Number of Benefited Receivers	4	Number of Benefited Receivers that achieve at least an 8 dBA reduction	3

Percentage of Benefited Receivers that would achieve at least a 8 dBA reduction from the proposed noise abatement measure. NOTE: SCDOT Policy indicates that 80% of the benefited receivers must achieve at least a 8 dBA reduction for it to be reasonable. 75

Does the proposed noise abatement measure meet the noise reduction design goal? ☐ Yes ☒ No

If "Yes" is marked, continue to #2. If "No" is marked, then abatement is determined NOT to be reasonable.

#2: Cost Effectiveness

Estimated cost per square foot for noise abatement measure	$35	Estimated construction cost for noise abatement measure	
Estimated cost per Benefited Receiver			

Based on the SCDOT policy of $30,000 per Benefited Receiver, would the abatement measure be reasonable? NOTE: SCDOT Policy states that the preliminary noise analysis is based on $35.00 per square foot and a more project-specific construction cost should be applied at a cost per square foot basis during the detailed noise abatement evaluation. ☐ Yes ☒ No

If "Yes" is marked, continue to #3. If "No" is marked, then abatement is determined NOT to be reasonable.

#3: Viewpoints of the property owners and residents of the benefitted receivers

Number of Benefited Receivers (same as above)			
Number of Benefited Receivers **in support** of noise abatement measure		Percentage of Benefited Receivers **in support** of noise abatement measure	
Number of Benefited Receivers **opposed** to noise abatement measure		Percentage of Benefited Receivers **opposed** to noise abatement measure	
Number of Benefited Receivers **that did not respond** to solicitation on noise abatement measure		Percentage of Benefited Receivers **that did not respond** to solicitation on noise abatement measure	

Based on the viewpoints of the property owners and residents of the Benefited Receivers, would the abatement measure be reasonable? NOTE: SCDOT Policy indicates that the noise abatement shall be constructed unless greater than 50% of the benefited receptors are opposed to noise abatement. ☐ Yes ☒ No

Final Determination for Noise Abatement Measure

Based on the above results, this abatement feature is not both feasible and reasonable.

SCDOT Feasibility and Reasonableness Worksheet

Date: November 11, 2016

Project Name I-73: I-95 in Dillon County to SC 22 in Horry County

Highway Traffic Noise Abatement Measure Barrier 18 - R132-142

Feasibility

Number of Impacted Receivers: 11

Number of Benefited Receivers: 18

Percentage of Impacted Receivers that would achieve a 5 dBA reduction from the proposed noise abatement measure: 100

Is the proposed noise abatement measure acoustically feasible?
NOTE:SCDOT Policy indicates that 75% of the impacted receivers must achieve at least a 5 dBA reduction for it to be acoustically feasible. ☒ Yes ☐ No

Would any of the following issues limit the ability of the abatement measure to achieve the noise reduction goal?

Topography	☐ Yes	☒ No
Safety	☐ Yes	☒ No
Drainage	☐ Yes	☒ No
Utilities	☐ Yes	☒ No
Maintenance	☐ Yes	☒ No
Access	☐ Yes	☒ No
Exposed Height of Wall	☐ Yes	☒ No

If "Yes" was marked for any of the questions above, please explain below.

Detailed Description

Reasonableness

According to 23 CFR 772.13(d)(2)(iv) the abatement measure must collectively achieve each of these criteria to be reasonable. Therefore if any of the three mandatory reasonable factors are not achieved, then the abatement measure is determined NOT to be reasonable. When completing the form it is not necessary to detail each of the criteria if one was determined not to be reasonable.

#1: Noise Reduction Design Goal

Number of Benefited Receivers	15	Number of Benefited Receivers that achieve at least an 8 dBA reduction	13

Percentage of Benefited Receivers that would achieve at least a 8 dBA reduction from the proposed noise abatement measure. NOTE: SCDOT Policy indicates that 80% of the benefited receivers must achieve at least a 8 dBA reduction for it to be reasonable. 80

Does the proposed noise abatement measure meet the noise reduction design goal? ☒ Yes ☐ No

If "Yes" is marked, continue to #2. If "No" is marked, then abatement is determined NOT to be reasonable.

#2: Cost Effectiveness

Estimated cost per square foot for noise abatement measure	$35	Estimated construction cost for noise abatement measure	$2,271,497
Estimated cost per Benefited Receiver	$126,194		

Based on the SCDOT policy of $30,000 per Benefited Receiver, would the abatement measure be reasonable? NOTE: SCDOT Policy states that the preliminary noise analysis is based on $35.00 per square foot and a more project-specific construction cost should be applied at a cost per square foot basis during the detailed noise abatement evaluation. ☐ Yes ☒ No

If "Yes" is marked, continue to #3. If "No" is marked, then abatement is determined NOT to be reasonable.

#3: Viewpoints of the property owners and residents of the benefitted receivers

Number of Benefited Receivers (same as above)			
Number of Benefited Receivers **in support** of noise abatement measure		Percentage of Benefited Receivers **in support** of noise abatement measure	
Number of Benefited Receivers **opposed** to noise abatement measure		Percentage of Benefited Receivers **opposed** to noise abatement measure	
Number of Benefited Receivers **that did not respond** to solicitation on noise abatement measure		Percentage of Benefited Receivers **that did not respond** to solicitation on noise abatement measure	

Based on the viewpoints of the property owners and residents of the Benefited Receivers, would the abatement measure be reasonable? NOTE: SCDOT Policy indicates that the noise abatement shall be constructed unless greater than 50% of the benefited receptors are opposed to noise abatement. ☐ Yes ☒ No

Final Determination for Noise Abatement Measure

Based on the above results, this abatement feature is not both feasible and reasonable.

SCDOT Feasibility and Reasonableness Worksheet

Date: November 11, 2016

Project Name I-73: I-95 in Dillon County to SC 22 in Horry County

Highway Traffic Noise Abatement Measure Barrier 19 - R172-174

Feasibility

Number of Impacted Receivers: 3

Number of Benefited Receivers: 3

Percentage of Impacted Receivers that would achieve a 5 dBA reduction from the proposed noise abatement measure: 100

Is the proposed noise abatement measure acoustically feasible?
NOTE:SCDOT Policy indicates that 75% of the impacted receivers must achieve at least a 5 dBA reduction for it to be acoustically feasible.

☒ Yes ☐ No

Would any of the following issues limit the ability of the abatement measure to achieve the noise reduction goal?

Topography	☐ Yes	☒ No
Safety	☐ Yes	☒ No
Drainage	☐ Yes	☒ No
Utilities	☐ Yes	☒ No
Maintenance	☐ Yes	☒ No
Access	☐ Yes	☒ No
Exposed Height of Wall	☐ Yes	☒ No

If "Yes" was marked for any of the questions above, please explain below.

Detailed Description

Reasonableness

According to 23 CFR 772.13(d)(2)(iv) the abatement measure must collectively achieve each of these criteria to be reasonable. Therefore if any of the three mandatory reasonable factors are not achieved, then the abatement measure is determined NOT to be reasonable. When completing the form it is not necessary to detail each of the criteria if one was determined not to be reasonable.

#1: Noise Reduction Design Goal

Number of Benefited Receivers	2	Number of Benefited Receivers that achieve at least an 8 dBA reduction	0

Percentage of Benefited Receivers that would achieve at least a 8 dBA reduction from the proposed noise abatement measure. NOTE: SCDOT Policy indicates that 80% of the benefited receivers must achieve at least a 8 dBA reduction for it to be reasonable. 0

Does the proposed noise abatement measure meet the noise reduction design goal? ☐ Yes ☒ No

If "Yes" is marked, continue to #2. If "No" is marked, then abatement is determined NOT to be reasonable.

#2: Cost Effectiveness

Estimated cost per square foot for noise abatement measure	$35	Estimated construction cost for noise abatement measure	
Estimated cost per Benefited Receiver			

Based on the SCDOT policy of $30,000 per Benefited Receiver, would the abatement measure be reasonable? NOTE: SCDOT Policy states that the preliminary noise analysis is based on $35.00 per square foot and a more project-specific construction cost should be applied at a cost per square foot basis during the detailed noise abatement evaluation. ☐ Yes ☒ No

If "Yes" is marked, continue to #3. If "No" is marked, then abatement is determined NOT to be reasonable.

#3: Viewpoints of the property owners and residents of the benefitted receivers

Number of Benefited Receivers (same as above)			
Number of Benefited Receivers **in support** of noise abatement measure		Percentage of Benefited Receivers **in support** of noise abatement measure	
Number of Benefited Receivers **opposed** to noise abatement measure		Percentage of Benefited Receivers **opposed** to noise abatement measure	
Number of Benefited Receivers **that did not respond** to solicitation on noise abatement measure		Percentage of Benefited Receivers **that did not respond** to solicitation on noise abatement measure	

Based on the viewpoints of the property owners and residents of the Benefited Receivers, would the abatement measure be reasonable? NOTE: SCDOT Policy indicates that the noise abatement shall be constructed unless greater than 50% of the benefited receptors are opposed to noise abatement. ☐ Yes ☒ No

Final Determination for Noise Abatement Measure

Based on the above results, this abatement feature is not both feasible and reasonable.

SCDOT Feasibility and Reasonableness Worksheet

Date: November 11, 2016

Project Name I-73: I-74 in Richmond County, NC to I-95 in Dillon County, SC

Highway Traffic Noise Abatement Measure Barrier 20 - R192, 194

Feasibility

Number of Impacted Receivers	2	Number of Benefited Receivers	2
Percentage of Impacted Receivers that would achieve a 5 dBA reduction from the proposed noise abatement measure	100		

Is the proposed noise abatement measure acoustically feasible?
NOTE:SCDOT Policy indicates that 75% of the impacted receivers must achieve at least a 5 dBA reduction for it to be acoustically feasible. ☒ Yes ☐ No

Would any of the following issues limit the ability of the abatement measure to achieve the noise reduction goal?

Topography	☒ Yes	☐ No
Safety	☒ Yes	☐ No
Drainage	☒ Yes	☐ No
Utilities	☐ Yes	☒ No
Maintenance	☒ Yes	☐ No
Access	☒ Yes	☐ No
Exposed Height of Wall	☐ Yes	☒ No

If "Yes" was marked for any of the questions above, please explain below.

Detailed Description:

This barrier was modeled traversing under the Old Stage Road Overpass separating R192 from R194. If this barrier were to be carried forward, then it could possibly be constructed into the overpass's retaining wall and/or conceivably be considered as two separate barriers that would likely not be cost effective. No other known issues at this time.

Reasonableness

According to 23 CFR 772.13(d)(2)(iv) the abatement measure must collectively achieve each of these criteria to be reasonable. Therefore if any of the three mandatory reasonable factors are not achieved, then the abatement measure is determined NOT to be reasonable. When completing the form it is not necessary to detail each of the criteria if one was determined not to be reasonable.

#1: Noise Reduction Design Goal

Number of Benefited Receivers	4	Number of Benefited Receivers that achieve at least an 8 dBA reduction	2

Percentage of Benefited Receivers that would achieve at least a 8 dBA reduction from the proposed noise abatement measure. NOTE: SCDOT Policy indicates that 80% of the benefited receivers must achieve at least a 8 dBA reduction for it to be reasonable. 50

Does the proposed noise abatement measure meet the noise reduction design goal? ☐ Yes ☒ No

If "Yes" is marked, continue to #2. If "No" is marked, then abatement is determined NOT to be reasonable.

#2: Cost Effectiveness

Estimated cost per square foot for noise abatement measure	$35	Estimated construction cost for noise abatement measure	
Estimated cost per Benefited Receiver			

Based on the SCDOT policy of $30,000 per Benefited Receiver, would the abatement measure be reasonable? NOTE: SCDOT Policy states that the preliminary noise analysis is based on $35.00 per square foot and a more project-specific construction cost should be applied at a cost per square foot basis during the detailed noise abatement evaluation. ☐ Yes ☒ No

If "Yes" is marked, continue to #3. If "No" is marked, then abatement is determined NOT to be reasonable.

#3: Viewpoints of the property owners and residents of the benefitted receivers

Number of Benefited Receivers (same as above)			
Number of Benefited Receivers **in support** of noise abatement measure		Percentage of Benefited Receivers **in support** of noise abatement measure	
Number of Benefited Receivers **opposed** to noise abatement measure		Percentage of Benefited Receivers **opposed** to noise abatement measure	
Number of Benefited Receivers **that did not respond** to solicitation on noise abatement measure		Percentage of Benefited Receivers **that did not respond** to solicitation on noise abatement measure	

Based on the viewpoints of the property owners and residents of the Benefited Receivers, would the abatement measure be reasonable? NOTE: SCDOT Policy indicates that the noise abatement shall be constructed unless greater than 50% of the benefited receptors are opposed to noise abatement. ☐ Yes ☒ No

Final Determination for Noise Abatement Measure

Based on the above results, this abatement feature is not both feasible and reasonable.

SCDOT Feasibility and Reasonableness Worksheet

Date: November 11, 2016

Project Name I-73: I-95 in Dillon County to SC 22 in Horry County

Highway Traffic Noise Abatement Measure Barrier 21 - R199

Feasibility

Number of Impacted Receivers: 1

Number of Benefited Receivers: 1

Percentage of Impacted Receivers that would achieve a 5 dBA reduction from the proposed noise abatement measure: 100

Is the proposed noise abatement measure acoustically feasible?
NOTE:SCDOT Policy indicates that 75% of the impacted receivers must achieve at least a 5 dBA reduction for it to be acoustically feasible.

☒ Yes ☐ No

Would any of the following issues limit the ability of the abatement measure to achieve the noise reduction goal?

Topography	☐ Yes	☒ No
Safety	☐ Yes	☒ No
Drainage	☐ Yes	☒ No
Utilities	☐ Yes	☒ No
Maintenance	☐ Yes	☒ No
Access	☐ Yes	☒ No
Exposed Height of Wall	☐ Yes	☒ No

If "Yes" was marked for any of the questions above, please explain below.

Detailed Description

Reasonableness

According to 23 CFR 772.13(d)(2)(iv) the abatement measure must collectively achieve each of these criteria to be reasonable. Therefore if any of the three mandatory reasonable factors are not achieved, then the abatement measure is determined NOT to be reasonable. When completing the form it is not necessary to detail each of the criteria if one was determined not to be reasonable.

#1: Noise Reduction Design Goal

Number of Benefited Receivers	1	Number of Benefited Receivers that achieve at least an 8 dBA reduction	0

Percentage of Benefited Receivers that would achieve at least a 8 dBA reduction from the proposed noise abatement measure. NOTE: SCDOT Policy indicates that 80% of the benefited receivers must achieve at least a 8 dBA reduction for it to be reasonable. 0

Does the proposed noise abatement measure meet the noise reduction design goal? ☐ Yes ☒ No

If "Yes" is marked, continue to #2. If "No" is marked, then abatement is determined NOT to be reasonable.

#2: Cost Effectiveness

Estimated cost per square foot for noise abatement measure	$35	Estimated construction cost for noise abatement measure	
Estimated cost per Benefited Receiver			

Based on the SCDOT policy of $30,000 per Benefited Receiver, would the abatement measure be reasonable? NOTE: SCDOT Policy states that the preliminary noise analysis is based on $35.00 per square foot and a more project-specific construction cost should be applied at a cost per square foot basis during the detailed noise abatement evaluation. ☐ Yes ☒ No

If "Yes" is marked, continue to #3. If "No" is marked, then abatement is determined NOT to be reasonable.

#3: Viewpoints of the property owners and residents of the benefitted receivers

Number of Benefited Receivers (same as above)			
Number of Benefited Receivers **in support** of noise abatement measure		Percentage of Benefited Receivers **in support** of noise abatement measure	
Number of Benefited Receivers **opposed** to noise abatement measure		Percentage of Benefited Receivers **opposed** to noise abatement measure	
Number of Benefited Receivers **that did not respond** to solicitation on noise abatement measure		Percentage of Benefited Receivers **that did not respond** to solicitation on noise abatement measure	

Based on the viewpoints of the property owners and residents of the Benefited Receivers, would the abatement measure be reasonable? NOTE: SCDOT Policy indicates that the noise abatement shall be constructed unless greater than 50% of the benefited receptors are opposed to noise abatement. ☐ Yes ☒ No

Final Determination for Noise Abatement Measure

Based on the above results, this abatement feature is not both feasible and reasonable.

SCDOT Feasibility and Reasonableness Worksheet

Date: November 11, 2016

Project Name I-73: I-95 in Dillon County to SC 22 in Horry County

Highway Traffic Noise Abatement Measure Barrier 22 - R203, 212

Feasibility

Number of Impacted Receivers: 2

Number of Benefited Receivers: 2

Percentage of Impacted Receivers that would achieve a 5 dBA reduction from the proposed noise abatement measure: 100

Is the proposed noise abatement measure acoustically feasible?
NOTE:SCDOT Policy indicates that 75% of the impacted receivers must achieve at least a 5 dBA reduction for it to be acoustically feasible.

☒ Yes ☐ No

Would any of the following issues limit the ability of the abatement measure to achieve the noise reduction goal?

Topography	☐ Yes	☒ No
Safety	☐ Yes	☒ No
Drainage	☐ Yes	☒ No
Utilities	☐ Yes	☒ No
Maintenance	☐ Yes	☒ No
Access	☐ Yes	☒ No
Exposed Height of Wall	☐ Yes	☒ No

If "Yes" was marked for any of the questions above, please explain below.

Detailed Description

Reasonableness

According to 23 CFR 772.13(d)(2)(iv) the abatement measure must collectively achieve each of these criteria to be reasonable. Therefore if any of the three mandatory reasonable factors are not achieved, then the abatement measure is determined NOT to be reasonable. When completing the form it is not necessary to detail each of the criteria if one was determined not to be reasonable.

#1: Noise Reduction Design Goal

Number of Benefited Receivers	7	Number of Benefited Receivers that achieve at least an 8 dBA reduction	1

Percentage of Benefited Receivers that would achieve at least a 8 dBA reduction from the proposed noise abatement measure. NOTE: SCDOT Policy indicates that 80% of the benefited receivers must achieve at least a 8 dBA reduction for it to be reasonable. 14

Does the proposed noise abatement measure meet the noise reduction design goal? ☐ Yes ☒ No

If "Yes" is marked, continue to #2. If "No" is marked, then abatement is determined NOT to be reasonable.

#2: Cost Effectiveness

Estimated cost per square foot for noise abatement measure	$35	Estimated construction cost for noise abatement measure	
Estimated cost per Benefited Receiver			

Based on the SCDOT policy of $30,000 per Benefited Receiver, would the abatement measure be reasonable? NOTE: SCDOT Policy states that the preliminary noise analysis is based on $35.00 per square foot and a more project-specific construction cost should be applied at a cost per square foot basis during the detailed noise abatement evaluation. ☐ Yes ☒ No

If "Yes" is marked, continue to #3. If "No" is marked, then abatement is determined NOT to be reasonable.

#3: Viewpoints of the property owners and residents of the benefitted receivers

Number of Benefited Receivers (same as above)			
Number of Benefited Receivers **in support** of noise abatement measure		Percentage of Benefited Receivers **in support** of noise abatement measure	
Number of Benefited Receivers **opposed** to noise abatement measure		Percentage of Benefited Receivers **opposed** to noise abatement measure	
Number of Benefited Receivers **that did not respond** to solicitation on noise abatement measure		Percentage of Benefited Receivers **that did not respond** to solicitation on noise abatement measure	

Based on the viewpoints of the property owners and residents of the Benefited Receivers, would the abatement measure be reasonable? NOTE: SCDOT Policy indicates that the noise abatement shall be constructed unless greater than 50% of the benefited receptors are opposed to noise abatement. ☐ Yes ☒ No

Final Determination for Noise Abatement Measure

Based on the above results, this abatement feature is not both feasible and reasonable.

SCDOT Feasibility and Reasonableness Worksheet

Date: November 11, 2016

Project Name I-73: I-95 in Dillon County to SC 22 in Horry County

Highway Traffic Noise Abatement Measure Barrier 23 - R216-218

Feasibility

Number of Impacted Receivers: 3

Number of Benefited Receivers: 3

Percentage of Impacted Receivers that would achieve a 5 dBA reduction from the proposed noise abatement measure: 100

Is the proposed noise abatement measure acoustically feasible?
NOTE:SCDOT Policy indicates that 75% of the impacted receivers must achieve at least a 5 dBA reduction for it to be acoustically feasible.

☒ Yes ☐ No

Would any of the following issues limit the ability of the abatement measure to achieve the noise reduction goal?

Topography	☐ Yes	☒ No
Safety	☐ Yes	☒ No
Drainage	☐ Yes	☒ No
Utilities	☐ Yes	☒ No
Maintenance	☐ Yes	☒ No
Access	☐ Yes	☒ No
Exposed Height of Wall	☐ Yes	☒ No

If "Yes" was marked for any of the questions above, please explain below.

Detailed Description

Reasonableness

According to 23 CFR 772.13(d)(2)(iv) the abatement measure must collectively achieve each of these criteria to be reasonable. Therefore if any of the three mandatory reasonable factors are not achieved, then the abatement measure is determined NOT to be reasonable. When completing the form it is not necessary to detail each of the criteria if one was determined not to be reasonable.

#1: Noise Reduction Design Goal

Number of Benefited Receivers	3	Number of Benefited Receivers that achieve at least an 8 dBA reduction	2

Percentage of Benefited Receivers that would achieve at least a 8 dBA reduction from the proposed noise abatement measure. NOTE: SCDOT Policy indicates that 80% of the benefited receivers must achieve at least a 8 dBA reduction for it to be reasonable. 67

Does the proposed noise abatement measure meet the noise reduction design goal? ☐ Yes ☒ No

If "Yes" is marked, continue to #2. If "No" is marked, then abatement is determined NOT to be reasonable.

#2: Cost Effectiveness

Estimated cost per square foot for noise abatement measure	$35	Estimated construction cost for noise abatement measure	
Estimated cost per Benefited Receiver			

Based on the SCDOT policy of $30,000 per Benefited Receiver, would the abatement measure be reasonable? NOTE: SCDOT Policy states that the preliminary noise analysis is based on $35.00 per square foot and a more project-specific construction cost should be applied at a cost per square foot basis during the detailed noise abatement evaluation. ☐ Yes ☒ No

If "Yes" is marked, continue to #3. If "No" is marked, then abatement is determined NOT to be reasonable.

#3: Viewpoints of the property owners and residents of the benefitted receivers

Number of Benefited Receivers (same as above)			
Number of Benefited Receivers **in support of** noise abatement measure		Percentage of Benefited Receivers **in support of** noise abatement measure	
Number of Benefited Receivers **opposed** to noise abatement measure		Percentage of Benefited Receivers **opposed** to noise abatement measure	
Number of Benefited Receivers **that did not respond** to solicitation on noise abatement measure		Percentage of Benefited Receivers **that did not respond** to solicitation on noise abatement measure	

Based on the viewpoints of the property owners and residents of the Benefited Receivers, would the abatement measure be reasonable? NOTE: SCDOT Policy indicates that the noise abatement shall be constructed unless greater than 50% of the benefited receptors are opposed to noise abatement. ☐ Yes ☒ No

Final Determination for Noise Abatement Measure

Based on the above results, this abatement feature is not both feasible and reasonable.

SCDOT Feasibility and Reasonableness Worksheet

Date: November 11, 2016

Project Name I-73: I-95 in Dillon County to SC 22 in Horry County

Highway Traffic Noise Abatement Measure Barrier 29 - R264-265

Feasibility

Number of Impacted Receivers: 2

Number of Benefited Receivers: 2

Percentage of Impacted Receivers that would achieve a 5 dBA reduction from the proposed noise abatement measure: 100

Is the proposed noise abatement measure acoustically feasible?
NOTE:SCDOT Policy indicates that 75% of the impacted receivers must achieve at least a 5 dBA reduction for it to be acoustically feasible. ☒ Yes ☐ No

Would any of the following issues limit the ability of the abatement measure to achieve the noise reduction goal?

Topography	☐ Yes	☒ No
Safety	☐ Yes	☒ No
Drainage	☐ Yes	☒ No
Utilities	☐ Yes	☒ No
Maintenance	☐ Yes	☒ No
Access	☐ Yes	☒ No
Exposed Height of Wall	☐ Yes	☒ No

If "Yes" was marked for any of the questions above, please explain below.

Detailed Description

Reasonableness

According to 23 CFR 772.13(d)(2)(iv) the abatement measure must collectively achieve each of these criteria to be reasonable. Therefore if any of the three mandatory reasonable factors are not achieved, then the abatement measure is determined NOT to be reasonable. When completing the form it is not necessary to detail each of the criteria if one was determined not to be reasonable.

#1: Noise Reduction Design Goal

Number of Benefited Receivers	4	Number of Benefited Receivers that achieve at least an 8 dBA reduction	0

Percentage of Benefited Receivers that would achieve at least a 8 dBA reduction from the proposed noise abatement measure. NOTE: SCDOT Policy indicates that 80% of the benefited receivers must achieve at least a 8 dBA reduction for it to be reasonable. 67

Does the proposed noise abatement measure meet the noise reduction design goal? ☐ Yes ☒ No

If "Yes" is marked, continue to #2. If "No" is marked, then abatement is determined NOT to be reasonable.

#2: Cost Effectiveness

Estimated cost per square foot for noise abatement measure	$35	Estimated construction cost for noise abatement measure	
Estimated cost per Benefited Receiver			

Based on the SCDOT policy of $30,000 per Benefited Receiver, would the abatement measure be reasonable? NOTE: SCDOT Policy states that the preliminary noise analysis is based on $35.00 per square foot and a more project-specific construction cost should be applied at a cost per square foot basis during the detailed noise abatement evaluation. ☐ Yes ☒ No

If "Yes" is marked, continue to #3. If "No" is marked, then abatement is determined NOT to be reasonable.

#3: Viewpoints of the property owners and residents of the benefitted receivers

Number of Benefited Receivers (same as above)			
Number of Benefited Receivers **in support of** noise abatement measure		Percentage of Benefited Receivers **in support of** noise abatement measure	
Number of Benefited Receivers **opposed** to noise abatement measure		Percentage of Benefited Receivers **opposed** to noise abatement measure	
Number of Benefited Receivers **that did not respond** to solicitation on noise abatement measure		Percentage of Benefited Receivers **that did not respond** to solicitation on noise abatement measure	

Based on the viewpoints of the property owners and residents of the Benefited Receivers, would the abatement measure be reasonable? NOTE: SCDOT Policy indicates that the noise abatement shall be constructed unless greater than 50% of the benefited receptors are opposed to noise abatement. ☐ Yes ☒ No

Final Determination for Noise Abatement Measure

Based on the above results, this abatement feature is not both feasible and reasonable.

SCDOT Feasibility and Reasonableness Worksheet

Date: November 11, 2016

Project Name I-73: I-95 in Dillon County to SC 22 in Horry County

Highway Traffic Noise Abatement Measure Barrier 36 - R304-307

Feasibility

Number of Impacted Receivers: 4

Number of Benefited Receivers: 3

Percentage of Impacted Receivers that would achieve a 5 dBA reduction from the proposed noise abatement measure: 75

Is the proposed noise abatement measure acoustically feasible?
NOTE:SCDOT Policy indicates that 75% of the impacted receivers must achieve at least a 5 dBA reduction for it to be acoustically feasible. ☒ Yes ☐ No

Would any of the following issues limit the ability of the abatement measure to achieve the noise reduction goal?

Topography	☐ Yes	☒ No
Safety	☐ Yes	☒ No
Drainage	☐ Yes	☒ No
Utilities	☐ Yes	☒ No
Maintenance	☐ Yes	☒ No
Access	☐ Yes	☒ No
Exposed Height of Wall	☐ Yes	☒ No

If "Yes" was marked for any of the questions above, please explain below.

Detailed Description

Reasonableness

According to 23 CFR 772.13(d)(2)(iv) the abatement measure must collectively achieve each of these criteria to be reasonable. Therefore if any of the three mandatory reasonable factors are not achieved, then the abatement measure is determined NOT to be reasonable. When completing the form it is not necessary to detail each of the criteria if one was determined not to be reasonable.

#1: Noise Reduction Design Goal

Number of Benefited Receivers	3	Number of Benefited Receivers that achieve at least an 8 dBA reduction	1

Percentage of Benefited Receivers that would achieve at least a 8 dBA reduction from the proposed noise abatement measure. NOTE: SCDOT Policy indicates that 80% of the benefited receivers must achieve at least a 8 dBA reduction for it to be reasonable. 33

Does the proposed noise abatement measure meet the noise reduction design goal? ☐ Yes ☒ No

If "Yes" is marked, continue to #2. If "No" is marked, then abatement is determined NOT to be reasonable.

#2: Cost Effectiveness

Estimated cost per square foot for noise abatement measure	$35	Estimated construction cost for noise abatement measure	
Estimated cost per Benefited Receiver			

Based on the SCDOT policy of $30,000 per Benefited Receiver, would the abatement measure be reasonable? ☐ Yes ☒ No
NOTE: SCDOT Policy states that the preliminary noise analysis is based on $35.00 per square foot and a more project-specific construction cost should be applied at a cost per square foot basis during the detailed noise abatement evaluation.

If "Yes" is marked, continue to #3. If "No" is marked, then abatement is determined NOT to be reasonable.

#3: Viewpoints of the property owners and residents of the benefitted receivers

Number of Benefited Receivers (same as above)			
Number of Benefited Receivers **in support** of noise abatement measure		Percentage of Benefited Receivers **in support** of noise abatement measure	
Number of Benefited Receivers **opposed** to noise abatement measure		Percentage of Benefited Receivers **opposed** to noise abatement measure	
Number of Benefited Receivers **that did not respond** to solicitation on noise abatement measure		Percentage of Benefited Receivers **that did not respond** to solicitation on noise abatement measure	

Based on the viewpoints of the property owners and residents of the Benefited Receivers, would the abatement measure be reasonable? NOTE: SCDOT Policy indicates that the noise abatement shall be constructed unless greater than 50% of the benefited receptors are opposed to noise abatement. ☐ Yes ☒ No

Final Determination for Noise Abatement Measure

Based on the above results, this abatement feature is not both feasible and reasonable.

SCDOT Feasibility and Reasonableness Worksheet

Date: November 11, 2016

Project Name I-73: I-74 in Richmond County, NC to I-95 in Dillon County, SC

Highway Traffic Noise Abatement Measure Barrier 40 - R316-318

Feasibility

Number of Impacted Receivers	3	Number of Benefited Receivers	3
Percentage of Impacted Receivers that would achieve a 5 dBA reduction from the proposed noise abatement measure	100		

Is the proposed noise abatement measure acoustically feasible?
NOTE:SCDOT Policy indicates that 75% of the impacted receivers must achieve at least a 5 dBA reduction for it to be acoustically feasible. ☒ Yes ☐ No

Would any of the following issues limit the ability of the abatement measure to achieve the noise reduction goal?

Topography	☒ Yes	☐ No
Safety	☒ Yes	☐ No
Drainage	☒ Yes	☐ No
Utilities	☐ Yes	☒ No
Maintenance	☒ Yes	☐ No
Access	☒ Yes	☐ No
Exposed Height of Wall	☐ Yes	☒ No

If "Yes" was marked for any of the questions above, please explain below.

Detailed Description:

Reasonableness

According to 23 CFR 772.13(d)(2)(iv) the abatement measure must collectively achieve each of these criteria to be reasonable. Therefore if any of the three mandatory reasonable factors are not achieved, then the abatement measure is determined NOT to be reasonable. When completing the form it is not necessary to detail each of the criteria if one was determined not to be reasonable.

#1: Noise Reduction Design Goal

Number of Benefited Receivers	3	Number of Benefited Receivers that achieve at least an 8 dBA reduction	0

Percentage of Benefited Receivers that would achieve at least a 8 dBA reduction from the proposed noise abatement measure. NOTE: SCDOT Policy indicates that 80% of the benefited receivers must achieve at least a 8 dBA reduction for it to be reasonable. 0

I Does the proposed noise abatement measure meet the noise reduction design goal? ☐ Yes ☒ No

If "Yes" is marked, continue to #2. If "No" is marked, then abatement is determined NOT to be reasonable.

#2: Cost Effectiveness

Estimated cost per square foot for noise abatement measure	$35	Estimated construction cost for noise abatement measure	
Estimated cost per Benefited Receiver			

Based on the SCDOT policy of $30,000 per Benefited Receiver, would the abatement measure be reasonable? NOTE: SCDOT Policy states that the preliminary noise analysis is based on $35.00 per square foot and a more project-specific construction cost should be applied at a cost per square foot basis during the detailed noise abatement evaluation. ☐ Yes ☒ No

If "Yes" is marked, continue to #3. If "No" is marked, then abatement is determined NOT to be reasonable.

#3: Viewpoints of the property owners and residents of the benefitted receivers

Number of Benefited Receivers (same as above)			
Number of Benefited Receivers in **support** of noise abatement measure		Percentage of Benefited Receivers in **support** of noise abatement measure	
Number of Benefited Receivers **opposed** to noise abatement measure		Percentage of Benefited Receivers **opposed** to noise abatement measure	
Number of Benefited Receivers **that did not respond** to solicitation on noise abatement measure		Percentage of Benefited Receivers **that did not respond** to solicitation on noise abatement measure	

Based on the viewpoints of the property owners and residents of the Benefited Receivers, would the abatement measure be reasonable? NOTE: SCDOT Policy indicates that the noise abatement shall be constructed unless greater than 50% of the benefited receptors are opposed to noise abatement. ☐ Yes ☒ No

Final Determination for Noise Abatement Measure

Based on the above results, this abatement feature is not both feasible and reasonable.

SCDOT Feasibility and Reasonableness Worksheet

Date: November 11, 2016

Project Name I-73: I-95 in Dillon County to SC 22 in Horry County

Highway Traffic Noise Abatement Measure Barrier 46 - R343-344

Feasibility

Number of Impacted Receivers: 2

Number of Benefited Receivers: 2

Percentage of Impacted Receivers that would achieve a 5 dBA reduction from the proposed noise abatement measure: 100

Is the proposed noise abatement measure acoustically feasible?
NOTE:SCDOT Policy indicates that 75% of the impacted receivers must achieve at least a 5 dBA reduction for it to be acoustically feasible.

☒ Yes ☐ No

Would any of the following issues limit the ability of the abatement measure to achieve the noise reduction goal?

Topography	☐ Yes	☒ No
Safety	☐ Yes	☒ No
Drainage	☐ Yes	☒ No
Utilities	☐ Yes	☒ No
Maintenance	☐ Yes	☒ No
Access	☐ Yes	☒ No
Exposed Height of Wall	☐ Yes	☒ No

If "Yes" was marked for any of the questions above, please explain below.

Detailed Description

Reasonableness

According to 23 CFR 772.13(d)(2)(iv) the abatement measure must collectively achieve each of these criteria to be reasonable. Therefore if any of the three mandatory reasonable factors are not achieved, then the abatement measure is determined NOT to be reasonable. When completing the form it is not necessary to detail each of the criteria if one was determined not to be reasonable.

#1: Noise Reduction Design Goal

Number of Benefited Receivers	3	Number of Benefited Receivers that achieve at least an 8 dBA reduction	3

Percentage of Benefited Receivers that would achieve at least a 8 dBA reduction from the proposed noise abatement measure. NOTE: SCDOT Policy indicates that 80% of the benefited receivers must achieve at least a 8 dBA reduction for it to be reasonable. 100

Does the proposed noise abatement measure meet the noise reduction design goal? ☒ Yes ☐ No

If "Yes" is marked, continue to #2. If "No" is marked, then abatement is determined NOT to be reasonable.

#2: Cost Effectiveness

Estimated cost per square foot for noise abatement measure	$35	Estimated construction cost for noise abatement measure	$748,447
Estimated cost per Benefited Receiver	$249,482		

Based on the SCDOT policy of $30,000 per Benefited Receiver, would the abatement measure be reasonable? NOTE: SCDOT Policy states that the preliminary noise analysis is based on $35.00 per square foot and a more project-specific construction cost should be applied at a cost per square foot basis during the detailed noise abatement evaluation. ☐ Yes ☒ No

If "Yes" is marked, continue to #3. If "No" is marked, then abatement is determined NOT to be reasonable.

#3: Viewpoints of the property owners and residents of the benefitted receivers

Number of Benefited Receivers (same as above)			
Number of Benefited Receivers **in support** of noise abatement measure		Percentage of Benefited Receivers **in support** of noise abatement measure	
Number of Benefited Receivers **opposed** to noise abatement measure		Percentage of Benefited Receivers **opposed** to noise abatement measure	
Number of Benefited Receivers **that did not respond** to solicitation on noise abatement measure		Percentage of Benefited Receivers **that did not respond** to solicitation on noise abatement measure	

Based on the viewpoints of the property owners and residents of the Benefited Receivers, would the abatement measure be reasonable? NOTE: SCDOT Policy indicates that the noise abatement shall be constructed unless greater than 50% of the benefited receptors are opposed to noise abatement. ☐ Yes ☒ No

Final Determination for Noise Abatement Measure

Based on the above results, this abatement feature is not both feasible and reasonable.

SCDOT Feasibility and Reasonableness Worksheet

Date: November 11, 2016

Project Name I-73: I-95 in Dillon County to SC 22 in Horry County

Highway Traffic Noise Abatement Measure Barrier 47 - R321A, 321F

Feasibility

Number of Impacted Receivers: 2

Number of Benefited Receivers: 2

Percentage of Impacted Receivers that would achieve a 5 dBA reduction from the proposed noise abatement measure: 100

Is the proposed noise abatement measure acoustically feasible?
NOTE:SCDOT Policy indicates that 75% of the impacted receivers must achieve at least a 5 dBA reduction for it to be acoustically feasible. ☒ Yes ☐ No

Would any of the following issues limit the ability of the abatement measure to achieve the noise reduction goal?

Topography	☐ Yes	☒ No
Safety	☐ Yes	☒ No
Drainage	☐ Yes	☒ No
Utilities	☐ Yes	☒ No
Maintenance	☐ Yes	☒ No
Access	☐ Yes	☒ No
Exposed Height of Wall	☐ Yes	☒ No

If "Yes" was marked for any of the questions above, please explain below.

Detailed Description:

Reasonableness

According to 23 CFR 772.13(d)(2)(iv) the abatement measure must collectively achieve each of these criteria to be reasonable. Therefore if any of the three mandatory reasonable factors are not achieved, then the abatement measure is determined NOT to be reasonable. When completing the form it is not necessary to detail each of the criteria if one was determined not to be reasonable.

#1: Noise Reduction Design Goal

Number of Benefited Receivers	4	Number of Benefited Receivers that achieve at least an 8 dBA reduction	1

Percentage of Benefited Receivers that would achieve at least a 8 dBA reduction from the proposed noise abatement measure. NOTE: SCDOT Policy indicates that 80% of the benefited receivers must achieve at least a 8 dBA reduction for it to be reasonable. | 25

Does the proposed noise abatement measure meet the noise reduction design goal? ☐ Yes ☒ No

If "Yes" is marked, continue to #2. If "No" is marked, then abatement is determined NOT to be reasonable.

#2: Cost Effectiveness

Estimated cost per square foot for noise abatement measure	$35	Estimated construction cost for noise abatement measure	
Estimated cost per Benefited Receiver			

Based on the SCDOT policy of $30,000 per Benefited Receiver, would the abatement measure be reasonable? NOTE: SCDOT Policy states that the preliminary noise analysis is based on $35.00 per square foot and a more project-specific construction cost should be applied at a cost per square foot basis during the detailed noise abatement evaluation. ☐ Yes ☒ No

If "Yes" is marked, continue to #3. If "No" is marked, then abatement is determined NOT to be reasonable.

#3: Viewpoints of the property owners and residents of the benefitted receivers

Number of Benefited Receivers (same as above)			
Number of Benefited Receivers **in support of** noise abatement measure		Percentage of Benefited Receivers **in support of** noise abatement measure	
Number of Benefited Receivers **opposed** to noise abatement measure		Percentage of Benefited Receivers **opposed** to noise abatement measure	
Number of Benefited Receivers **that did not respond** to solicitation on noise abatement measure		Percentage of Benefited Receivers **that did not respond** to solicitation on noise abatement measure	

Based on the viewpoints of the property owners and residents of the Benefited Receivers, would the abatement measure be reasonable? NOTE: SCDOT Policy indicates that the noise abatement shall be constructed unless greater than 50% of the benefited receptors are opposed to noise abatement. ☐ Yes ☒ No

Final Determination for Noise Abatement Measure

Based on the above results, this abatement feature is not both feasible and reasonable.