TRAFFIC NOISE ANALYSIS

Proposed Widening of I-26 from US 25 south of Hendersonville to I-40 near Asheville

STIP Project I-4400/I-4700
Henderson and Buncombe Counties

Prepared for:

North Carolina Department of Transportation
Project Development and Environmental Analysis Unit
Human Environment Section
Traffic Noise & Air Quality Group

Prepared by:

HNTB North Carolina, P.C.

March 2015

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EXECUTIVE SUMMARY

North Carolina Department of Transportation (NCDOT) State Transportation Improvement Program (STIP) Project I-4400 / I-4700 proposes improvements to a 22.2-mile segment of the Interstate 26 corridor in Henderson and Buncombe Counties. The proposed improvement project would extend from US 25 south of Hendersonville in Henderson County to I-40 near Asheville in Buncombe County. With its current traffic demand, I-26 is approaching its ultimate capacity. The purpose of the proposed improvements to I-26 is to reduce congestion, with a goal of achieving an overall level of service (LOS) D in the design year (2040), and improve the pavement structure.

A federal Environmental Impact Statement is being prepared. The Date of Public Knowledge will be the approval date of the Record of Decision. After this date, federal and state governments are no longer responsible for providing noise abatement measures for new development within the noise impact area of the proposed project. It is the responsibility of local governments and private landowners to ensure noise-compatible designs are used for development with an approved building permit after the Date of Public Knowledge.

Per FHWA *Procedures for Abatement of Highway Traffic Noise and Construction Noise* (23 CFR 772.5(2)) and NCDOT *Traffic Noise Abatement Policy* (NCDOT Policy), the proposed project is a "Type I" project. This Traffic Noise Analysis (TNA) documents the methodologies, results, and recommendations in compliance with 23 CFR 772, NCDOT Policy, and the accompanying NCDOT *Traffic Noise Analysis and Abatement Manual*.

I-26 is currently a four-lane, median-divided interstate facility with full control of access. The project area includes eleven existing grade-separated crossings and eight existing interchanges. In Henderson County, I-26 has interchanges with US 25, Upward Road (SR 1722), US 64, US 25 (Asheville Highway), and NC 280 (Airport Road). In Buncombe County, I-26 has interchanges with NC 280 (Airport Road), NC 146 (Long Shoals Road), NC 191 (Brevard Road), I-40 and I-240. The Blue Ridge Parkway has a grade-separated crossing, but no direct access. The speed limit of I-26 varies from 65 miles per hour (mph) in southern Henderson County to 60 mph in northern Henderson County up to I-40 in Buncombe County. The design speeds for these segments of the I-26 corridor are 70 and 65 miles per hour respectively, five miles per hour above the posted speeds. The design year is 2040.

There are three detailed study alternatives under consideration: 1) 6-Lane Widening, 2) 8-Lane Widening, and 3) Hybrid Widening. The 6-Lane Widening Alternative would widen I-26 within the study area from two to three lanes in each direction. Similarly, the 8-Lane Widening Alternative would widen I-26 to four lanes in each direction. The Hybrid Widening Alternative would widen I-26 to three lanes in each direction from the eastern terminus of the project study area (US 25 [Exit 54]) to the I-26/US 25/Asheville Highway interchange where it would then transition to an 8-lane facility to the western terminus at the I-26/I-40/I-240 interchange (Exit 31). All alternatives would be situated to best fit within the existing right of way limits for I-26. Best fit alignments would be evaluated and selected to improve the existing highway alignment, minimize impacts, and accommodate maintenance

of traffic during construction. The additional traffic lanes would increase capacity and reduce congestion.

Traffic noise impacts and temporary construction noise impacts can be a consequence of transportation projects, especially for noise-sensitive land uses in close proximity to high-volume and/or high-speed existing steady-state traffic noise sources. This Traffic Noise Analysis utilized computer models created with the Federal Highway Administration Traffic Noise Model® (FHWA TNM v.2.5) to determine existing and to predict future noise levels and identify impacted receptors resulting from the I-26 Widening project.

Existing land use in the vicinity of the I-26 widening project varies along the corridor. Land uses include but are not limited to single and multi-family residential dwellings, active sports areas, campgrounds, medical facilities, places of worship, recreation areas, trails, hotels, offices, restaurants, airports, industrial and manufacturing facilities and retail facilities. Some areas of the corridor include undeveloped lands that are not permitted, and there is a protected land use near the Blue Ridge Parkway grade separation. Base Year 2011 traffic noise impacts 221 receptors in the vicinity of the I-26 Widening project. For Design Year 2040 traffic volumes, the No-Build Alternative is predicted to result in 231 traffic noise impacts, the 6-Lane Widening Alternative is predicted to result in 297 traffic noise impacts, the 8-Lane Widening Alternative is predicted to result in 344 traffic noise impacts and the Hybrid Widening Alternative is predicted to result in 320 traffic noise impacts.

Consideration of noise abatement measures was given to all impacted receptors in each of the build alternatives. NCDOT Policy requires the identification of whether it is "likely" or "unlikely" that noise abatement measures will be provided for each noise study area identified. "Likely" does not mean a firm commitment. The following noise abatement measures are currently considered to be "likely" in the vicinity of the I-26 Widening project:

6-Lane Widening Alternative

NW5: Located south of Dana Road along I-26 westbound and provides abatement for residences along Willowbrook Road and Springside Drive.

NW9: Located north and south of Brookside Camp Road along I-26 westbound and provides abatement for residences along Hart Lane, Wendy Lane, Carolina Circle, Dundeve Circle and Acorn Drive.

NW12: Located along the I-26 westbound off ramp at the US 25 (Asheville Highway) interchange and provides abatement for residences along November Lane and Hickory Flats Drive.

NW14: Located north of Butler Bridge Road along I-26 westbound and provides abatement for residences along Hope Opal Lane, S. Thomas Street and Jim Mills Drive.

NW15: Located south of Fanning Bridge Road along I-26 westbound and provides abatement for residences along Wildwood Circle and South Wildwood Lane.

NW16: Located north and south of Glenn Bridge Road along I-26 westbound and provides abatement for residences in the Hunter's Trace neighborhood.

NW19: Located along the future I-26 westbound on ramp from NC 191 (Brevard Road) and provides abatement for residences along Pine Lane.

NW24: Located south of Glenn Bridge Road along I-26 eastbound and provides abatement for residences along Hidden Creek Drive, Nathan Drive and Wells Drive.

NW32: Located south of Dana Road along I-26 eastbound and provides abatement for residences along Meadowlark Lane.

8-Lane Widening Alternative

NW5: Located south of Dana Road along I-26 westbound and provides abatement for residences along Willowbrook Road and Springside Drive.

NW9: Located north and south of Brookside Camp Road along I-26 westbound and provides abatement for residences along Hart Lane, Wendy Lane, Carolina Circle, Dundeve Circle and Acorn Drive.

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NW32: Located south of Dana Road along I-26 eastbound and provides abatement for residences along Meadowlark Lane.

Hybrid Widening Alternative

NW5: Located south of Dana Road along I-26 westbound and provides abatement for residences along Willowbrook Road and Springside Drive.

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Construction noise impacts may occur due to the proximity of many noise-sensitive land uses to project construction activities. All reasonable efforts should be made to minimize exposure of noise-sensitive land uses to construction noise. Such efforts may include, but are not limited to, appropriate scheduling of construction activities, noise attenuating measures on construction equipment, and a consistent and open public involvement program.

This Traffic Noise Analysis presents a preliminary analysis of all traffic noise impacts and consideration of noise abatement measures for feasibility and reasonableness in accordance with the NCDOT *Traffic Noise Abatement Policy* (July 13, 2011). The final decision on the installation of noise abatement measures will be made upon completion of the project design, the public involvement process, concurrence with the NCDOT Policy and FHWA approval.

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Traffic Noise Analysis

I-26 Widening Project
Henderson and Buncombe Counties, STIP #I-4400/I-4700

1.0 PROJECT LOCATION AND DESCRIPTION

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Existing land use in the vicinity of the I-26 widening project varies along the corridor. Land uses include but are not limited to single and multi-family residential dwellings, active sports areas, campgrounds, medical facilities, places of worship, recreation areas, hotels, offices, restaurants, airports, industrial and manufacturing facilities and retail facilities. Some areas of

the corridor include undeveloped lands that are not permitted, and there is a protected land use near the Blue Ridge Parkway grade separation.

Ambient noise monitoring data, corresponding traffic count data, photographs, event logs, and field sketches were obtained throughout the project corridor during June 2, 2014 through June 5, 2014. Weather conditions varied between sunny and mostly cloudy and wind speeds were calm to five miles per hour. There was no precipitation. Information on the ambient noise monitoring data can be found in Appendix A.

2.0 PROCEDURE

This Traffic Noise Analysis represents the analysis of the probable traffic noise impacts and the identification of "likely" noise abatement measures for the I-26 Widening project.

This analysis is consistent with Title 23 Code of Federal Regulations, Part 772, U.S. Department of Transportation, Federal Highway Administration (FHWA), *Procedures for Abatement of Highway Traffic Noise and Construction Noise*, the NCDOT *Traffic Noise Abatement Policy*, dated July 13, 2011, and the accompanying NCDOT *Traffic Noise Analysis and Abatement Manual* dated August 22, 2011.

This Traffic Noise Analysis utilized validated computer models created with FHWA's Traffic Noise Model® (FHWA TNM v.2.5) to predict Base Year 2011, Design Year 2040 No-Build, and Design Year 2040 Build hourly equivalent traffic noise levels, $L_{eq(h)}$, to identify impacted receptors along the I-26 Widening project.

In addition to reporting, the procedure by which this Traffic Noise Analysis was conducted was as follows:

- *Initial project scoping*: Obtain project preliminary design; prepare field maps; review project mapping, GIS data, aerial photography, traffic data, and other available pertinent information.

- *Monitoring / fieldwork*: Identify all land uses, addresses, and locations of all noise sensitive receptors within the project corridor; obtain ambient noise monitoring data; obtain weather data for ambient noise monitoring sessions; create field data logs and site sketches; photograph noise monitoring locations and other relevant visual data; process ambient noise monitoring data (refer to Section 5.0).

- *Baseline TNM model*: Create a comprehensive but efficient TNM model representation of the existing condition project corridor utilizing receptors, roadways, terrain lines, ground zones, barriers (to represent structures), and tree zones; validate the baseline TNM model at all ambient noise monitoring locations for which traffic noise was dominant (refer to Section 5.0); process traffic forecast data into three TNM-designated vehicle classifications; add the project preliminary design to the baseline TNM model. Refer to

Appendix C for general descriptions of the TNM model(s), and also for a description of the TNM model validation process.

- *Impact assessment*: Input Base Year 2011 and Design Year 2040 No-Build condition traffic volumes and speeds into the validated baseline TNM model(s); calculate and document TNM-predicted traffic noise levels; evaluate loudest hourly equivalent noise levels; assess predicted traffic noise NAC and Substantial Increase impacts (refer to Section 7.0 and Appendix A).

- *Noise barrier analysis*: Identify areas in the vicinity of predicted Design Year 2040 traffic noise impacts for which abatement may be feasible; model traffic noise barriers; calculate TNM-predicted with-barrier traffic noise levels; evaluate with-barrier noise level reductions (NLRs); and optimize potential sound barriers (refer to Section 8.5, and Appendix D).

3.0 CHARACTERISTICS OF NOISE

Noise is basically defined as unwanted sound. It is emitted from many natural and man-made sources. Highway traffic noise is usually a composite of noises from engine exhaust, drive train, and tire-roadway interaction.

The magnitude of noise is usually described by a ratio of its sound pressure to a reference sound pressure, typically twenty micro-Pascals (20μPa). Since the range of sound pressure ratios varies greatly – over many orders of magnitude, a base-10 logarithmic scale is used to express sound levels in dimensionless units of decibels (dB). The commonly accepted limits of detectable human hearing sound magnitudes is between the threshold of hearing at 0 decibels and the threshold of pain at 140 decibels.

Sound frequencies are reported in units of Hertz (Hz), which correspond to the number of vibrations per second of a given tone. A cumulative 'sound level' is equivalent to ten times the base-10 logarithm of the ratio of the sum of the sound pressures of all frequencies to the reference sound pressure. To simplify the mathematical process of determining sound levels, sound frequencies are grouped into ranges, or 'bands.' Sound levels are then calculated by adding the cumulative sound pressure levels within each band – which are typically defined as one 'octave' or '1/3 octave' of the sound frequency spectrum.

The commonly accepted limitation of human hearing to detect sound frequencies is between 20 Hz and 20,000 Hz, and human hearing is most sensitive to the frequencies between 1,000 Hz – 6,000 Hz. Although people are generally not as sensitive to lower-frequency sounds as they are to higher frequencies, most people lose the ability to hear high-frequency sounds as they age. To accommodate varying receptor sensitivities, frequency sound levels are commonly adjusted, or 'filtered', before being logarithmically added and reported as a single 'sound level' magnitude of that filtering scale. The 'A-weighted' decibel filtering scale applies numerical adjustments to sound frequencies to emphasize the frequencies at which

human hearing is sensitive and to minimize the frequencies to which human hearing is not as sensitive, as shown in Table 1.

Table 1: Comparison: Flat vs. A-Weighted Frequency Scaling

Octave-Band Center Frequency (Hz)	A-Weighted Adjustment[1]	Sample Frequency Sound Levels (Flat)	Sample Frequency Sound Levels (A-Weighted)
31	-39.53	90.00	50.47
63	-26.22	80.00	53.78
125	-16.19	70.00	53.81
250	-8.68	65.00	56.32
500	-3.25	60.00	56.75
1000	0.00	60.00	60.00
2000	+1.20	60.00	61.20
4000	+0.96	55.00	55.96
8000	-1.14	50.00	48.86
16000	-6.7	45.00	38.30
	Overall Sound Levels:	**90.48 dB[2]**	**66.32 dB(A)[2]**

1. Based on the ISO 226:2003 standard for normal equal-loudness contours, the A-weighted decibel network filtering scale is defined for a frequency, f, by the equation: $20 \times \log_{10} (A(f) / A (1000))$, where $A(f) = [12{,}200^2 \times f^4] / [(f^2 + 20.6^2) \times (f^2 + 12{,}200^2) \times (f^2 + 107.7^2)^{0.5} \times (f^2 + 737.9^2)^{0.5}]$.
2. Although the energy in the flat sound source would create an *actual* sound level = 90.48 dB, it would be *perceived* as a sound level of 66.32 dB(A) by human hearing due to the decreased sensitivity of human hearing to lower sound frequencies.

The A-weighted scale is commonly used in highway traffic noise studies because the typical frequency spectrum of traffic noise is higher in magnitude at the frequencies at which human hearing is noise sensitive (1,000 Hz to 6,000 Hz).

Several examples of noise levels expressed in dB(A) are listed in Table 2. A review of Table 2 indicates that most individuals are exposed to fairly high noise levels from many sources on a regular basis. In order to perceive sounds of greatly varying pressure levels, human hearing has a non-linear sensitivity to sound pressure exposure. For example, doubling the sound pressure results in a three decibel change in the noise level; however, variations of three decibels (3 dB(A)) or less are commonly considered "barely perceptible" to normal human hearing. A five decibel (5 dB(A)) change is more readily noticeable. By definition, a ten-fold increase in the sound pressure level correlates to a 10 decibel (10 dB(A)) noise level increase; however, it is judged by most people as only a doubling of the loudness – sounding "twice as loud".

Table 2: Common Indoor and Outdoor Noise Levels

Common Outdoor Noise Levels	Noise Level (dB(A))	Common Indoor Noise Levels
	110	Rock Band
Jet Flyover at 1,000 feet	100	Inside Subway Train (NY)
Gas Lawn Mower at 3 feet		
Diesel Truck at 50 feet	90	Food Blender at 3 feet
Noisy Urban Daytime	80	Garbage Disposal at 3 feet
Gas Lawn Mower at 100 feet	70	Vacuum Cleaner at 10 feet
Commercial Area		Normal Speech at 3 feet
	60	
		Large Business Office
Quiet Urban Daytime	50	Dishwasher Next Room
Quiet Urban Nighttime	40	Small Theater, Large Conference Room (Background)
Quiet Suburban Nighttime		Library
	30	
Quiet Rural Nighttime		Bedroom at Night, Concert Hall (Background)
	20	
		Broadcast and Recording Studio
	10	
	0	Threshold of Hearing

Adapted from Guide on Evaluation and Attenuation of Traffic Noise, American Association of State Highway and Transportation Officials (AASHTO). 1974 (revised 1993).

The degree of disturbance or annoyance from exposure to unwanted sound (noise) depends upon three factors:

1. The amount, nature, and duration of the intruding noise

2. The relationship between the intruding noise and the existing (ambient) sound environment; and

3. The situation in which the disturbing noise is heard

In considering the first of these factors, it is important to note that individuals have varying sensitivity to noise. Loud noises bother some people more than other people. The time patterns and durations of noise(s) also affect perception as to whether or not it is offensive.

For example, noises that occur during nighttime (sleeping) hours are typically considered to be more offensive than the same noises occurring in the daytime.

With regard to the second factor, individuals tend to judge the annoyance of an unwanted noise in terms of its relationship to noise from other sources (background noise). A car horn blowing at night when background noise levels are low would generally be more objectionable than one blowing in the afternoon when background noise levels are typically higher. The response to noise stimulus is analogous to the response to turning on an interior light. During the daytime, an illuminated bulb simply adds to the ambient light, but when eyes are conditioned to the dark of night, a suddenly illuminated bulb can be temporarily blinding.

The third factor – situational noise – is related to the interference of noise with activities of individuals. In a 60 dB(A) environment, such as is commonly found in a large business office, normal conversation would be possible, while sleep might be difficult. Loud noises may easily interrupt activities that require a quiet setting for greater mental concentration or rest; however, the same loud noises may not interrupt activities requiring less mental focus or tranquility.

Over time, individuals tend to accept the noises that intrude into their lives on a regular basis. However, exposure to prolonged and/or extremely loud noise(s) can prevent use of exterior and interior spaces, and has been theorized to pose health risks. Appropriately, regulations exist for noise control or mitigation from many particularly offensive sources, including airplanes, factories, railroads, and highways. For all "Type I" federal, state, or federal-aid highway projects in the State of North Carolina, traffic and construction noise impact analysis and abatement assessment is dictated by the North Carolina Department of Transportation *Traffic Noise Abatement Policy* (NCDOT Policy). The definition of a Type I project can be found in the NCDOT Policy contained in Appendix F of this report. The I-26 Widening project is a Type I project because it proposes the addition of through-traffic lanes.

4.0 NOISE ABATEMENT CRITERIA

4.1 Title 23 Code of Federal Regulations, Part 772 (23 CFR 772)

The Federal Highway Administration (FHWA) has developed Noise Abatement Criteria (NAC) and procedures to be used in the planning and design of highways. The purpose of Title 23 CFR Part 772 is, "To provide procedures for noise studies and noise abatement measures to help protect the public's health, welfare and livability, to supply noise abatement criteria, and to establish requirements for information to be given to local officials for use in the planning and design of highways approved pursuant to title 23 U.S.C."

The abatement criteria and procedures are set forth in Title 23 CFR Part 772, which also states, "In abating traffic noise impacts, a highway agency shall give primary consideration to exterior areas where frequent human use occurs." A summary of the NAC for various land uses is presented in Table 3. The Leq, or equivalent sound level, is the equivalent steady-state

sound level which in a stated period of time contains the same acoustic energy as a time-varying sound level during the same period. With regard to traffic noise, fluctuating sound levels of traffic noise are represented in terms of L_{eq}, the steady, or 'equivalent', noise level with the same energy.

Table 3: Noise Abatement Criteria

Hourly Equivalent A-Weighted Sound Level (decibels (dB(A))

Activity Category	Activity Criteria[1] $L_{eq(h)}$[2]	Evaluation Location	Activity Description
A	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B [3]	67	Exterior	Residential
C [3]	67	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, daycare 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, Section4(f) sites, schools, television studios, trails, and trail crossings
D	52	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	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

1 The $L_{eq(h)}$ Activity Criteria values are for impact determination only, and are not design standards for noise abatement measures.

2 The equivalent steady-state sound level which in a stated period of time contains the same acoustic energy as the time-varying sound level during the same time period, with $L_{eq(h)}$ being the hourly value of L_{eq}.

3 Includes undeveloped lands permitted for this activity category.

4.2 North Carolina Department of Transportation Traffic Noise Abatement Policy

The NCDOT *Traffic Noise Abatement Policy*, effective July 13, 2011, establishes official policy on highway noise. This policy describes the NCDOT process that is used in determining traffic noise impacts and abatement measures and the equitable and cost-effective expenditure of public funds for traffic noise abatement. Where the FHWA has given highway agencies flexibility in implementing the Title 23 CFR 772 standards, this policy describes the NCDOT approach to implementation. This policy is included as Appendix F of this report.

4.3 Noise Abatement Criteria

The two categories of traffic noise impacts are defined as 1) those that "approach" (defined by the NCDOT Policy as reaching one decibel less than) or exceed the FHWA Noise Abatement Criteria (NAC), as shown in Table 3, and 2) those that represent a "substantial increase" over existing noise levels as defined by NCDOT. An impact that represents a "substantial increase" is based on a comparison of the existing noise level [$L_{eq(h)}$] with the predicted increase in noise levels in Design Year 2040 of between 10 and 15 dB(A) or more, as shown in Table 4.

Table 4: NCDOT "Substantial Increase" Noise Impact Criteria

Hourly Equivalent A-Weighted Sound Level (decibels (dB(A))	
Existing Noise Level[1] ($L_{eq(h)}$)	**Predicted Design Year Noise Level Increase[2] ($L_{eq(h)}$)**
50 or less	15 or more
51	14 or more
52	13 or more
53	12 or more
54	11 or more
55 or more	10 or more

[1] Loudest hourly equivalent noise level from the combination of natural and mechanical sources and human activity usually present in a particular area.

[2] Predicted hourly equivalent Design Year traffic noise level minus existing noise level.

5.0 AMBIENT NOISE LEVELS

Ambient noise is that noise which is all around us caused by natural and manmade events. It includes the wind, rain, thunder, birds chirping, insects, household appliances, commercial operations, lawn mowers, airplanes, automobiles, etc. It is all noise that is present in a particular area.

Existing traffic noise exposure is varying in the vicinity of the I-26 Widening project. I-26 is the dominant noise source for receptors in proximity to the existing roadway facility. The purpose of noise monitoring is to gather data that is used to develop a comparison between the monitored results and the output obtained from the noise prediction model. This exercise is performed to validate the model to local conditions so that it can be used with confidence to predict the future noise levels.

Ambient noise monitoring data (20-minutes) was collected at three different locations for 27 sites along the project corridor for a total of 81 noise measurement locations. Ambient noise levels ranged from 52 dB(A) to 76 dB(A). The ambient noise monitoring locations are shown in Figures 1 through 104. The noise monitoring results, concurrent traffic counts, estimated vehicle speeds, and weather information for the monitoring sites are included in Appendix A.

For this traffic noise analysis, loudest-hour existing noise levels were assessed as the TNM-predicted noise levels based on existing loudest-hour traffic estimates. Per 23 CFR 772.5, existing noise levels are defined as "the worst noise hour resulting from the combination of natural and mechanical sources and human activity usually present in a particular area." If the TNM-predicted existing loudest-hour *traffic* noise levels are lower than the hourly-equivalent noise levels obtained in the field, then existing noise levels are assessed as the latter.

To validate the accuracy of the model, TNM 2.5 was used to compare measured traffic noise levels to modeled noise levels at the field measurement locations. For each monitoring location, traffic volumes counted during the ambient noise monitoring (20-minute) periods were normalized to 1-hour volumes. These normalized volumes were assigned to the corresponding project area roadways to simulate the noise source strength at the roadways during the actual measurement period. Modeled and measured noise levels were then compared to determine the accuracy of the model. The FHWA-accepted tolerance for TNM model validation is ±3.0 dB(A). The NCDOT goal for TNM model validation is ±1.7 dB(A). Seventy-nine of the 81 measurement locations fell within the ±1.7 dB(A) tolerance specified by NCDOT. Two measurement locations (3.1 and 25.1 – see Table C-1 in Appendix C) did not validate because fluctuations in terrain near I-26 were observed to be more substantial in the field than in the digital terrain model. However, the other two locations at each of these sites did validate within 1.7 dB(A). The results of TNM model validation are included in Appendix C.

6.0 PROCEDURE FOR PREDICTING FUTURE NOISE LEVELS

Traffic noise emission is composed of several variables, including the number, types, and travel speeds of the vehicles, as well as the geometry of the roadway(s) on which the vehicles travel. Additionally, variables such as weather and intervening topography affect the transmission of traffic noise from the vehicle(s) to noise sensitive receptors.

In accordance with industry standards and accepted best-practices, detailed computer models were created using the FHWA TNM 2.5. The computer models were validated to within acceptable tolerances of field-monitored traffic noise data and were used to predict traffic

noise levels for receptor locations in the vicinity of the I-26 Widening project. Traffic noise consists of three primary parts: tire/pavement noise, engine noise, and exhaust noise. Of these sources, tire/pavement noise is typically the most offensive at unimpeded travel speeds. Sporadic traffic noises such as horns, squealing brakes, screeching tires, etc. are considered aberrant and are not included within the predictive model algorithm. Traffic noise is not constant; it varies in time depending upon the number, speed, type, and frequency of vehicles that pass by a given receptor. Furthermore, since traffic noise emissions are different for various types of vehicles, the TNM algorithm distinguishes between the source emissions from the following vehicle types: automobiles, medium trucks, heavy trucks, buses, and motorcycles, as shown in Table 5. The computer traffic noise prediction model uses the number and type of vehicles on the planned roadway, vehicle speeds, the physical characteristics of the road (curves, hills, depressions, elevations, etc.), receptor location and height, and, if applicable, barrier type, barrier ground elevation, and barrier segment top elevations. This analysis determines the traffic volumes that yield the loudest hourly noise levels as the lesser of forecasted PM peak hour traffic volumes and the maximum vehicle capacity that can maintain Level of Service "C" (LOS C) for mainline interstate roadway segments. Refer to Appendix E for the project traffic forecasts used in this study. Interior noise levels are determined for NAC Category D land uses, such as hospitals, medical facilities and places of worship, by applying building noise reduction factors based on building type and window treatment that can be found in FHWA publication *Highway Traffic Noise: Analysis and Abatement Guidance*. However, because Table 2 indicates that the common indoor background noise level for large rooms is approximately 40 dB(A), this analysis assumes that interior noise levels are not reduced below this value.

Table 5: Traffic Noise Model (TNM) Vehicle Classification Types

TNM Vehicle Type	Description
Autos	All vehicles with two axles and four tires, including passenger cars and light trucks, weighing 9,900 pounds or less
Medium Trucks	All vehicles having two axles and six tires, weighing between 9,900 and 26,400 pounds
Heavy Trucks	All vehicles having three or more axles, weighing more than 26,400 pounds
Buses	All vehicles designed to carry more than nine passengers
Motorcycles	All vehicles with two or three tires and an open-air driver / passenger compartment

Sources: FHWA Measurement of Highway-Related Noise, § 5.1.3 Vehicle Types.
FHWA Traffic Monitoring Guide, § 4.1 Classification Schemes

Preliminary plans of the I-26 Widening project were used in this traffic noise analysis. Per FHWA guidance, the predictions documented in this report are based upon the Design Year 2040 Build-condition traffic conditions resulting in the loudest predicted hourly-equivalent traffic noise levels for each receptor. Refer to Appendix B for a comprehensive list of traffic noise receptors, and Base Year 2011 and predicted Design Year 2040 No-Build and Design Year 2040 Build for the 6-Lane Widening Alternative, 8-Lane Widening Alternative and the Hybrid Widening Alternative hourly equivalent traffic noise levels.

The project was divided into six Noise Study Areas (NSAs) for modeling purposes. These NSAs are shown in Figures 1 through 104. The NSAs along I-26 are numbered from south to north starting at the beginning of the project at the US 25 interchange and terminating at the end of the project near Pond Road.

7.0 TRAFFIC NOISE IMPACTS AND NOISE CONTOURS

Traffic noise impacts occur when the predicted traffic noise levels either: [a] approach or exceed the FHWA noise abatement criteria (with "approach" defined in the NCDOT Noise Policy as reaching one decibel less than the NAC values listed in Table 3), or [b] substantially exceed the existing noise levels (refer to Table 4). FHWA and NCDOT require that feasible and reasonable measures be considered to abate traffic noise at all predicted traffic noise impacts. Measures to be considered include alteration of horizontal and vertical alignments, traffic management measures, establishment of buffer zones, construction of noise barriers, and noise insulation (of Activity Category D land uses).

As shown in Table 6, traffic noise currently impacts 221 receptors along the I-26 corridor. Traffic noise is predicted to result in 231 traffic noise impacts due to predicted Design Year 2040 No-Build condition noise levels. Traffic noise is predicted to result in 297 impacts in the Design Year 2040 Build condition for the 6-Lane Widening Alternative, 344 impacts for the 8-Lane Widening Alternative, and 320 impacts for the Hybrid Widening Alternative.

Table 6: Traffic Noise Impact Summary

Alternative	APPROXIMATE # OF IMPACTED RECEPTORS APPROACHING OR EXCEEDING FHWA NAC[2]							SUBST'L NOISE LEVEL INCR.[3]	IMPACTS DUE TO BOTH CRITERIA[4]	TOTAL IMPACTS PER 23 CFR 772
	A	B	C	D	E	F	G			
Existing	0	208	13	0	0	0	0	NA	NA	221[5]
No-Build	0	218	13	0	0	0	0	0	0	231[5]
6-Lane	0	279	18	0	0	0	0	0	0	297[5]
8-Lane	0	325	19	0	0	0	0	0	0	344[5]
Hybrid	0	301	19	0	0	0	0	0	0	320[5]

1. This table presents the number of build-condition traffic noise impacts as predicted for the build- condition alternatives and no-build alternative presently under consideration. Refer to Appendix B for a detailed analysis of traffic noise impacts at each noise sensitive receptor location.
2. Predicted traffic noise level impact due to approaching or exceeding NAC (refer to Table 3).
3. Predicted "substantial increase" traffic noise level impact (refer to Table 4).
4. Predicted traffic noise level impact due to exceeding NAC *and* "substantial increase" in build-condition noise levels.
5. The total number of predicted impacts is not duplicated if receptors are predicted to be impacted by more than one criterion.

Per 23 CFR 772.9(c) and the NCDOT Noise Policy, noise contour lines shall not be used for determining highway traffic noise impacts. However, the 71 dB(A) and 66 dB(A) noise level contour information should assist local authorities in exercising land use control over the remaining undeveloped lands (NAC "G"), so as to avoid development of incompatible activities adjacent to the I-26 Widening project.

Correlating to the traffic noise impact threshold for FHWA NAC "E" land uses, the 71 dB(A) noise level contour is predicted to occur between 150 and 450 feet from the centerline of I-26. The 66 dB(A) noise level contour, which correlates to the traffic noise impact threshold for FHWA NAC "B" and "C", is predicted to occur between 300 and 800 feet from the centerline of I-26. See Table 7 for more detailed noise contour estimates. To represent worst case conditions, all distances are based on the 8-Lane Widening Alternative in the westbound direction (For PM peak hour, westbound has higher traffic volumes than eastbound).

Table 7: 2040 Noise Contours		
I-26 Mainline Segment	Maximum Contour Distances (feet)	
	66 dB(A)	71 dB(A)
US 25 to Crest Road	650	350
Crest Road to Upward Road	600	400
Upward Road to Tracy Grove Road	650	350
Tracy Grove Road to Dana Road	450	300
Dana Road to US 64	800	350
US 64 to Clear Creek Road	400	300
Clear Creek Road to Brookside Camp Road	750	400
Brookside Camp Road to Naples Road	550	450
Naples Road to Asheville Highway	400	300
Asheville Highway to Butler Bridge Road	300	250
Butler Bridge Road to Fanning Bridge Road	550	350
Fanning Bridge Road to Airport Road	300	200
Airport Road to Glenn Bridge Road	700	450
Glenn Bridge Road to Long Shoals Road	600	400
Long Shoals Road to Blue Ridge Parkway	550	450
Blue Ridge Parkway to Ferry Road	550	400
Ferry Road to Brevard Road	300	150
Brevard Road to Pond Road	550	350

Given the variation in cross sections and elevations adjacent to the project, it is recommended that any future development proposed in the area of the project be modeled with accurate survey data to avoid creating incompatible land uses adjacent to the project.

8.0 POTENTIAL TRAFFIC NOISE ABATEMENT MEASURES

FHWA and NCDOT require that feasible and reasonable noise abatement measures be considered and evaluated for the benefit of all predicted build-condition traffic noise impacts. Feasibility and reasonableness are distinct and separate considerations. Feasibility is the consideration as to whether noise abatement measures *can* be implemented. Reasonableness is the consideration as to whether noise abatement measures *should* be implemented.

Acceptable noise abatement measures considered include highway alignment selection, traffic system management measures, establishment of buffer zones, building insulation of NAC category D land use facilities, and noise barriers. Consideration for noise abatement measures was given to all impacted receptors.

8.1 Highway Alignment Selection

Highway alignment selection for traffic noise abatement measures involves modifying the horizontal and /or vertical geometry of the proposed facility to minimize traffic noise to noise-sensitive receptors. For noise abatement, horizontal alignment selection is primarily a matter of locating the roadway at a sufficient distance from noise-sensitive receptors. Appreciable reductions in traffic noise transmission to sensitive receptors can be made by adjusting the vertical highway alignment and /or section geometry. For example, lowering a roadway below existing grade creates a cut section which could act similarly as an earth berm, depending upon the relative location(s) of noise sensitive receptors.

The project proposes to construct additional lanes along I-26 within the project limits from US 25 to I-40. No further changes to the horizontal or vertical alignment beyond what is proposed in the preliminary plans would be feasible or reasonable due to the constraints of the existing right of way and adjacent development, and the need to maintain traffic on existing lanes as much as possible during construction.

8.2 Traffic System Management Measures

Traffic management measures such as prohibition of truck traffic, lowering speed limits, limiting of traffic volumes, and/or limiting time of operation were considered as possible traffic noise impact abatement measures. The purpose of the I-26 Widening project is to increase the functional capacity of the highway facility. Prohibition of truck traffic, reduction of the speed limit below the existing speed limit, or screening total traffic volumes along the interstate would diminish the functional capacity of the interstate highway facility and are not considered practicable.

8.3 Buffer Zones

Buffer zones are typically not practical and/or cost effective for noise mitigation due to the substantial amount of right-of-way required, and would not be a feasible noise mitigation

measure for this project due to the proximity of existing development to the right of way. Furthermore, if the acquisition of a suitable buffer zone had been feasible, the associated costs would exceed the NCDOT Policy reasonable abatement cost threshold per benefited receptor.

8.4 Building Insulation

Certain indoor areas may be impacted by exterior traffic noise (see Table 3). If impacted, an assessment as to whether building insulation meets applicable feasibility and reasonableness criteria must be made. Traffic noise is not predicted to impact any NAC category D land uses in the vicinity of the proposed project; therefore, consideration of noise insulation as a measure of noise abatement was not warranted.

8.5 Noise Barriers

Passive noise abatement measures are effective because they absorb, reflect, and/or diffract (redirect) sound energy, and because they extend the source-to-receptor sound propagation path. Sound absorption and reflection are functions of abatement medium (e.g. earth berms absorb more sound energy than comparably tall concrete sound barriers because earth berms are substantially more massive). Sound diffraction is a function of the abatement medium and shape. The source-to-receptor path is extended by placement of an obstacle – such as a concrete wall – that blocks the propagation of sound waves except for those waves that travel from the source, over the obstacle, and to the receptor.

Highway noise barriers are primarily constructed as earth berms or solid-mass walls, between partial, de-facto, or full control of access roadways and noise-sensitive land uses. To be effective, a noise barrier must be long enough and have a sufficient vertical profile to shield the impacted receptor(s). Noise barriers are typically not economical for isolated or low density land-use areas because the area of a noise wall or volume and footprint of an earth berm would not be economical.

Due to proximity of development to I-26, area topography, and the limited right of way along the project corridor, there is insufficient space to construct earth berms as noise abatement for the project. Therefore, earth berms are no considered feasible for noise abatement for the project.

Noise Study Areas (NSAs)

For the purpose of analysis, the project area was divided into six Noise Study Areas (NSAs) based on the interchanges located along the I-26 corridor. The NSAs are defined as follows:

NSA 1: Begin Project (US 25 interchange) to Upward Road interchange
NSA 2: Upward Road interchange to US 64 interchange
NSA 3: US 64 interchange to US 25 (Asheville Highway) interchange
NSA 4: US 25 (Asheville Highway) interchange to NC 280 interchange
NSA 5: NC 280 interchange to NC 146 interchange
NSA 6: NC 146 interchange to End Project (near Pond Road)

The NSAs were then further subdivided into Areas A-AAA to organize the presentation of results from traffic noise analysis. For each area, the location and detailed land use description is outlined below, along with a discussion of impacted receptors for the future design alternatives and the noise abatement measures considered.

NSA 1 Westbound (Area A)

6-Lane Alternative (Figures 1-2)
8-Lane Alternative (Figures 53-54)
Hybrid Alternative (Figures 105-106)

Area A (No Recommended Barrier)

Area A is located along I-26 westbound between the beginning of the project near the US 25 interchange and the Upward Road interchange. The primary noise sensitive land use in this area is residential. There were seven residences modeled in this area: one on Felmet Road, four on Bennison Lane and two accessible via Crest Road.

There are five impacted receptors in each of the build alternatives. Preliminary sound barriers NW1 and NW2 were evaluated for each alternative to provide abatement for the impacted receptors but did not meet reasonableness criteria for allowable area per benefit. NW1 was intended to provide abatement for residences on Bennison Lane, and NW2 was intended to provide abatement for residences accessible via Crest Road. Detailed analysis of preliminary sound barriers can be found in Appendix D.

NSA 2 Westbound (Areas B – F)

6-Lane Alternative (Figures 2-7)
8-Lane Alternative (Figures 54-59)
Hybrid Alternative (Figures 106-111)

Area B (No Recommended Barrier)

Area B is located just north of the Upward Road interchange along I-26 westbound. There are no noise sensitive land uses with outdoor areas of frequent human use in this area.

Area C (No Recommended Barrier)

Area C is located just south of Tracy Grove Road along I-26 westbound. The primary noise sensitive land use in this area is residential. There were nine residences modeled in this area: three accessible via McMurray Road and six near Tracy Grove Road.

There are four impacted receptors in the 6-Lane and Hybrid alternatives and six impacted receptors in the 8-Lane alternative. Preliminary sound barriers NW3 and NW4 were evaluated for each alternative to provide abatement for the impacted receptors but did not meet reasonableness criteria for allowable area per benefit. NW4 also includes two receptors from

Area D. NW3 was intended to provide abatement for residences accessible via McMurray Road, and NW4 was intended to provide abatement for residences along Tracy Grove Road, Justus Acres Lane and Randolph Avenue. Detailed analysis of preliminary sound barriers can be found in Appendix D.

This area includes one site protected by Section 4(f) of the DOT Act, the McMurray House, at 823 McMurray Road that is recommended eligible for the National Register of Historic Places (NRHP). It is impacted by traffic noise in the Existing Condition, as well as the future No Build Alternative and each of the Build Alternatives. No feasible and reasonable noise wall is recommended in the vicinity of this property.

Area D (No Recommended Barrier)

Area D is located just north of Tracy Grove Road along I-26 westbound. The primary noise sensitive land use in this area is residential. There were three residences modeled in this area: one on Tracy Grove Road and two on Mid Allen Road.

There are two impacted receptors on Mid Allen Road in each of the build alternatives. Preliminary sound barrier NW4 was evaluated for each alternative to provide abatement for one impacted receptor, as well as impacted receptors in Area C, but did not meet reasonableness criteria for allowable area per benefit. Sound barrier NW5 was evaluated for each alternative to provide abatement for the other impacted receptor but did not benefit any receptors in Area D. It is discussed in further detail in the next section. Detailed analysis of preliminary sound barriers can be found in Appendix D.

Area E (Recommended Barrier – NW5)

Area E is located just south of Dana Road along I-26 westbound. The primary noise sensitive land use in this area is residential. There were 64 residences modeled in this area, mostly along Springside Drive, Willowbrook Road and Maywood Road.

There are 24 impacted receptors in the 6-Lane alternative. Sound barrier NW5 preliminarily meets feasibility and reasonableness criteria and would provide abatement for residences in this area, benefiting 50 receptors. It begins between Tracy Grove Road and Dana Road along I-26 westbound and continues approximately 3,360 feet, transitioning from the edge of shoulder to the top of a cut section, and ending at the Dana Road bridge. It is 3,360 feet long and 16 to 25 feet high with a total area of 71,400 square feet.

There are 24 impacted receptors in the 8-Lane alternative. Sound barrier NW5 preliminarily meets feasibility and reasonableness criteria and would provide abatement for residences in this area, benefiting 51 receptors. It begins between Tracy Grove Road and Dana Road along I-26 westbound and continues approximately 3,360 feet, transitioning from the edge of shoulder to the top of a cut section, and ending at the Dana Road bridge. It is 3,360 feet long and 19 to 25 feet high with a total area of 75,900 square feet.

There are 24 impacted receptors in the Hybrid alternative. Sound barrier NW5 preliminarily meets feasibility and reasonableness criteria and would provide abatement for residences in this area, benefiting 50 receptors. It begins between Tracy Grove Road and Dana Road along I-26 westbound and continues approximately 3,360 feet, transitioning from the edge of shoulder to the top of a cut section, and ending at the Dana Road bridge. It is 3,360 feet long and 16 to 25 feet high with a total area of 70,685 square feet. Detailed analysis of preliminary sound barriers can be found in Appendix D.

Area F (No Recommended Barrier)

Area F is located along I-26 westbound between Dana Road and the US 64 interchange. The primary noise sensitive land use in this area is residential. There were 28 residences modeled in this area, mostly along East Prince Road, Lakeview Estate Drive and Wakefield Drive.

There are 14 impacted receptors in each of the build alternatives. Preliminary sound barrier NW6 was evaluated for each alternative to provide abatement for the other impacted receptors in this area but did not meet reasonableness criteria for allowable area per benefit. NW6 was intended to provide abatement for residences along East Prince Road, Lakeview Estate Drive and Wakefield Drive. Detailed analysis of preliminary sound barriers can be found in Appendix D.

NSA 3 Westbound (Areas G – O)

6-Lane Alternative (Figures 7-15)
8-Lane Alternative (Figures 59-67)
Hybrid Alternative (Figures 111-119)

Area G (No Recommended Barrier)

Area G is located just north of the US 64 interchange along I-26 westbound. The primary noise sensitive land use in this area is residential. There were 13 residences modeled in this area: seven on Francis Road and six on High Country Lane.

There is one impacted receptor in each of the build alternatives. Preliminary sound barrier NW7 was evaluated for each alternative to provide abatement for the impacted receptors but did not meet reasonableness criteria for allowable area per benefit. NW7 was intended to provide abatement for residences along Francis Road. Detailed analysis of preliminary sound barriers can be found in Appendix D.

Area H (No Recommended Barrier)

Area H is located just south of Clear Creek Road along I-26 westbound. There are no noise sensitive land uses with outdoor areas of frequent human use in this area.

Area I (No Recommended Barrier)

Area I is located just north of Clear Creek Road along I-26 westbound. The primary noise sensitive land use in this area is residential. There were six residences modeled in this area along Clear Creek Road.

There are five impacted receptors in the 6-Lane and Hybrid alternatives and six impacted receptors in the 8-Lane alternative. Preliminary sound barrier NW8 was evaluated for each alternative to provide abatement for the impacted receptors but did not meet reasonableness criteria for allowable area per benefit. NW8 was intended to provide abatement for residences on Clear Creek Road. Detailed analysis of preliminary sound barriers can be found in Appendix D.

Area J (Recommended Barrier – NW9)

Area J is located along I-26 westbound between Clear Creek Road and Brookside Camp Road. The primary noise sensitive land use in this area is residential. There were 39 residences modeled in this area, mostly along Hart Lane, Kingswood Drive and Wendy Lane.

There are 27 impacted receptors in the 6-Lane alternative. Sound barrier NW9 preliminarily meets feasibility and reasonableness criteria and would provide abatement for residences in this area, as well as Areas K and L. NW9 would benefit 29 receptors in Area J and 116 receptors overall. It begins south of Hart Lane along I-26 westbound and continues nearly two miles to the northwest, with a small gap at the Brookside Camp Road bridge, before ending north of West Acorn Drive. It generally follows the edge of shoulder but has a few transitions to the top of cut sections, including one at the weigh station located near Sheneman Drive. It is 10,260 feet long and 10 to 25 feet high with a total area of 226,795 square feet.

There are 33 impacted receptors in the 8-Lane alternative. Sound barrier NW9 preliminarily meets feasibility and reasonableness criteria and would provide abatement for residences in this area, as well as Areas K and L. NW9 would benefit 31 receptors in Area J and 116 receptors overall. It begins south of Hart Lane along I-26 westbound and continues nearly two miles to the northwest, with a small gap at the Brookside Camp Road bridge, before ending north of West Acorn Drive. It generally follows the edge of shoulder but has a few transitions to the top of cut sections, including one at the weigh station located near Sheneman Drive. It is 10,248 feet long and 10 to 25 feet high with a total area of 231,945 square feet.

There are 27 impacted receptors in the Hybrid alternative. Sound barrier NW9 preliminarily meets feasibility and reasonableness criteria and would provide abatement for residences in this area, as well as Areas K and L. NW9 would benefit 29 receptors in Area J and 116 receptors overall. It begins south of Hart Lane along I-26 westbound and continues nearly two miles to the northwest, with a small gap at the Brookside Camp Road bridge, before ending north of West Acorn Drive. It generally follows the edge of shoulder but has a few transitions to the top of cut sections, including one at the weigh station located near Sheneman Drive. It is 10,260 feet long and 10 to 25 feet high with a total area of 226,795 square feet. Detailed analysis of preliminary sound barriers can be found in Appendix D.

Area K (Recommended Barrier – NW9)

Area K is located just south of Brookside Camp Road along I-26 westbound. The primary noise sensitive land use in this area is residential. There were 45 residences modeled in this area, mostly on Carolina Circle.

There are 15 impacted receptors in the 6-Lane alternative. Sound barrier NW9 preliminarily meets feasibility and reasonableness criteria and would provide abatement for residences in this area, as well as Areas J and L. NW9 would benefit 40 receptors in Area K and 116 receptors overall. For full details, see Area J.

There are 17 impacted receptors in the 8-Lane alternative. Sound barrier NW9 preliminarily meets feasibility and reasonableness criteria and would provide abatement for residences in this area, as well as Areas J and L. NW9 would benefit 38 receptors in Area K and 116 receptors overall. For full details, see Area J.

There are 15 impacted receptors in the Hybrid alternative. Sound barrier NW9 preliminarily meets feasibility and reasonableness criteria and would provide abatement for residences in this area, as well as Areas J and L. NW9 would benefit 40 receptors in Area K and 116 receptors overall. For full details, see Area J. Detailed analysis of preliminary sound barriers can also be found in Appendix D.

Area L (Recommended Barrier – NW9)

Area L is located just north of Brookside Camp Road along I-26 westbound. The primary noise sensitive land use in this area is residential. There were 52 residences modeled in this area, mostly along Dundeve Circle, Whispering Hills Drive and Acorn Drive.

There are 28 impacted receptors in the 6-Lane alternative. Sound barrier NW9 preliminarily meets feasibility and reasonableness criteria and would provide abatement for residences in this area, as well as Areas J and K. NW9 would benefit 47 receptors in Area L and 116 receptors overall. For full details, see Area J.

There are 33 impacted receptors in the 8-Lane alternative. Sound barrier NW9 preliminarily meets feasibility and reasonableness criteria and would provide abatement for residences in this area, as well as Areas J and K. NW9 would benefit 47 receptors in Area L and 116 receptors overall. For full details, see Area J.

There are 28 impacted receptors in the Hybrid alternative. Sound barrier NW9 preliminarily meets feasibility and reasonableness criteria and would provide abatement for residences in this area, as well as Areas J and K. NW9 would benefit 47 receptors in Area L and 116 receptors overall. For full details, see Area J. Detailed analysis of preliminary sound barriers can also be found in Appendix D.

Area M (No Recommended Barrier)

Area M is located along I-26 westbound between Brookside Camp Road and Naples Road. The primary noise sensitive land use in this area is the Park Ridge Health medical facility, which has an outdoor walking trail. There were five equivalent residences modeled in this area to represent the walking trail. Equivalent residence calculations for this site can be found at the end of this section. There were also nine residences modeled in this area: one on PJs Place and eight on Tulip Trail in the Fletcher Park Inn retirement complex.

There are six impacted receptors in each of the build alternatives. The residences on Tulip Trail are not impacted in any of the build alternatives. Preliminary sound barrier NW10 was evaluated for each alternative to provide abatement for the impacted receptors but did not meet reasonableness criteria for allowable area per benefit. NW10 was intended to provide abatement for the Park Ridge Health walking trail and the residence on Pjs Place. Detailed analysis of preliminary sound barriers can be found in Appendix D.

Information obtained from observations of Park Ridge Health:

About 60 visitors per day
Trail is used during daylight hours only (12 hours per day)
Trail is open all year and does not close for any reason

Equivalent # Residences = # Occupants / (# People/Residence) x Usage
Equivalent # Residences = (60/3) x (12/24) = 10

Note: Only half of the walking trail is close enough to I-26 to be included in the grid used for noise analysis.

Therefore:
Equivalent # Residences = 10 x (1/2) = 5
Number of Residences Assigned to the Grid = 5

Area N (No Recommended Barrier)

Area N is located along I-26 westbound on both sides of Naples Road. The primary noise sensitive land use in this area is residential. There were 14 residences modeled in this area: Eight on Sunset Vista Road, three on Holly Oak Drive and three on Twin Springs Road.

There are 11 impacted receptors in the each of the build alternatives. Preliminary sound barrier NW11 was evaluated for each alternative to provide abatement for the impacted receptors but did not meet reasonableness criteria for allowable area per benefit. NW11 was intended to provide abatement for residences along Sunset Vista Road, Holly Oak Drive and Twin Springs Road. Detailed analysis of preliminary sound barriers can be found in Appendix D.

Area O (Recommended Barrier – NW12)

Area O is located just south of the US 25 (Asheville Highway) interchange along I-26 westbound. The primary noise sensitive land use in this area is residential. There were 22 residences modeled in this area, mostly along Old Hendersonville Road, November Lane and Hickory Flats Drive.

There are 11 impacted receptors in the 6-Lane alternative. Sound barrier NW12 preliminarily meets feasibility and reasonableness criteria and would provide abatement for residences in this area, benefiting 19 receptors. It is located along the I-26 westbound off-ramp to US 25 (Asheville Highway) beginning near the westbound bridge over railroad tracks and continuing along the edge of shoulder approximately 1,560 feet to the northwest. The portion of this wall along the bridge over railroad tracks is on structure. It is 1,560 feet long and 10 to 19 feet high with a total area of 22,620 square feet.

There are 14 impacted receptors in the 8-Lane alternative. Sound barrier NW12 preliminarily meets feasibility and reasonableness criteria and would provide abatement for residences in this area, benefiting 19 receptors. It is located along the I-26 westbound off-ramp to US 25 (Asheville Highway) beginning near the westbound bridge over railroad tracks and continuing along the edge of shoulder approximately 1,560 feet to the northwest. The portion of this wall along the bridge over railroad tracks is on structure. It is 1,560 feet long and 13 to 19 feet high with a total area of 24,600 square feet.

There are 11 impacted receptors in the Hybrid alternative. Sound barrier NW12 preliminarily meets feasibility and reasonableness criteria and would provide abatement for residences in this area, benefiting 19 receptors. It is located along the I-26 westbound off-ramp to US 25 (Asheville Highway) beginning near the westbound bridge over railroad tracks and continuing along the edge of shoulder approximately 1,560 feet to the northwest. The portion of this wall along the bridge over railroad tracks is on structure. It is 1,560 feet long and 10 to 19 feet high with a total area of 22,620 square feet. Detailed analysis of preliminary sound barriers can be found in Appendix D.

NSA 4 Westbound (Areas P – S)

6-Lane Alternative (Figures 15-19)
8-Lane Alternative (Figures 67-71)
Hybrid Alternative (Figures 119-123)

Area P (Recommended Barrier – NW14)

Area P is located just north of the US 25 (Asheville Highway) interchange along I-26 westbound and extends north of Butler Bridge Road. The primary noise sensitive land use in this area is residential. There were 57 residences modeled in this area. Half of these are located mostly on Halliburton Road, Kennerly Drive and Dawley Drive. The other half are mostly along Hope Opal Lane, South Thomas Street and Jim Mills Drive.

Among the first group of receptors, there are five impacted in the 6-Lane alternative, nine impacted in the 8-Lane alternative and eight impacted in the Hybrid alternative. Preliminary sound barrier NW13 was evaluated for each alternative to provide abatement for the impacted receptors in this group but did not meet reasonableness criteria for allowable area per benefit. NW13 was intended to provide abatement for residences on Halliburton Road, Kennerly Drive and Dawley Drive.

Among the second group of receptors, there are 10 impacted receptors in the 6-Lane alternative. Sound barrier NW14 preliminarily meets feasibility and reasonableness criteria and would provide abatement for residences in this area, benefiting 26 receptors. It is located along I-26 westbound edge of shoulder beginning just north of the Butler Bridge Road and continuing approximately 2,280 feet to the northwest. It is 2,280 feet long and 16 to 25 feet high with a total area of 52,680 square feet.

Among the second group of receptors, there are 14 impacted receptors in the 8-Lane alternative. Sound barrier NW14 preliminarily meets feasibility and reasonableness criteria and would provide abatement for residences in this area, benefiting 24 receptors. It is located along I-26 westbound edge of shoulder beginning just north of the Butler Bridge Road and continuing approximately 2,460 feet to the northwest. It is 2,460 feet long and 16 to 25 feet high with a total area of 52,140 square feet.

Among the second group of receptors, there are 14 impacted receptors in the Hybrid alternative. Sound barrier NW14 preliminarily meets feasibility and reasonableness criteria and would provide abatement for residences in this area, benefiting 24 receptors. It is located along I-26 westbound edge of shoulder beginning just north of the Butler Bridge Road and continuing approximately 2,460 feet to the northwest. It is 2,460 feet long and 16 to 25 feet high with a total area of 52,140 square feet. Detailed analysis of preliminary sound barriers can be found in Appendix D.

Area Q (No Recommended Barrier)

Area Q is located just south of the rest area between Butler Bridge Road and Fanning Bridge Road along I-26 westbound. The primary noise sensitive land use in this area is residential. There was one residence modeled in this area on The Carriage Road.

There are no impacted receptors in any of the build alternatives. Therefore, noise abatement was not considered for this area.

This area includes one site protected by Section 4(f) of the DOT Act, Rugby Grange, at 1015 The Carriage Road that is listed in the NRHP. It is not impacted by traffic noise in any of the Build Alternatives, and no feasible and reasonable noise wall is recommended in the vicinity of this property.

Area R (Recommended Barrier – NW15)

Area R is located along I-26 westbound on both sides of Fanning Bridge Road. The primary noise sensitive land use in this area is residential. There were 51 residences modeled in this area, mostly on Wildwood Circle, Wildwood Lane and Norman Road. Boiling Springs Baptist Church was also modeled to determine indoor noise levels.

There are 11 impacted receptors in the 6-Lane alternative. Sound barrier NW15 preliminarily meets feasibility and reasonableness criteria and would provide abatement for residences in this area, benefiting 20 receptors. It is located south of Fanning Bridge Road along I-26 westbound beginning near the rest area south of Wildwood Circle and continuing approximately 1,860 feet to the northwest. It transitions from the edge of shoulder along the I-26 westbound on-ramp from the rest area to the top of a cut section. It is 1,860 feet long and 10 to 22 feet high with a total area of 35,160 square feet.

There are 14 impacted receptors in the 8-Lane alternative. Sound barrier NW15 preliminarily meets feasibility and reasonableness criteria and would provide abatement for residences in this area, benefiting 20 receptors. It is located south of Fanning Bridge Road along I-26 westbound beginning near the rest area south of Wildwood Circle and continuing approximately 1,800 feet to the northwest. It transitions from the edge of shoulder along the I-26 westbound on-ramp from the rest area to the top of a cut section. It is 1,800 feet long and 10 to 25 feet high with a total area of 35,460 square feet.

There are 14 impacted receptors in the Hybrid alternative. Sound barrier NW15 preliminarily meets feasibility and reasonableness criteria and would provide abatement for residences in this area, benefiting 21 receptors. It is located south of Fanning Bridge Road along I-26 westbound beginning near the rest area south of Wildwood Circle and continuing approximately 1,800 feet to the northwest. It transitions from the edge of shoulder along the I-26 westbound on-ramp from the rest area to the top of a cut section. It is 1,800 feet long and 10 to 25 feet high with a total area of 35,280 square feet. Detailed analysis of preliminary sound barriers can be found in Appendix D.

Area S (No Recommended Barrier)

Area S is located just south of the NC 280 interchange along I-26 westbound. The primary noise sensitive land use in this area is commercial. There were two outdoor hotel pools modeled in this area for the Knights Inn and the Econo Lodge.

There are no impacted receptors in any of the build alternatives. Therefore, noise abatement was not considered for this area.

NSA 5 Westbound (Areas T – V)

6-Lane Alternative (Figures 19-23)
8-Lane Alternative (Figures 71-75)
Hybrid Alternative (Figures 123-127)

Area T (No Recommended Barrier)

Area T is located along I-26 westbound between the NC 280 interchange and Glenn Bridge Road. The noise sensitive land uses in this area are commercial and residential. There was one outdoor hotel pool modeled in this area for the Clarion Inn. There were also four residences modeled in this area: one on Rockwood Road and three on Flycatcher Way in the Audubon Place apartment complex.

There are no impacted receptors in any of the build alternatives. Therefore, noise abatement was not considered for this area.

Area U (Recommended Barrier – NW16)

Area U is located just north of Glenn Bridge Road along I-26 westbound. The primary noise sensitive land use in this area is residential. There were 53 residences modeled in this area, mostly along Foxberry Drive, Winding Oak Drive, Wood Glen Court and New Rockwood Road.

There are 15 impacted receptors in the 6-Lane alternative. Sound barrier NW16 preliminarily meets feasibility and reasonableness criteria and would provide abatement for residences in this area, benefiting 36 receptors. It begins south of Glenn Bridge Road along I-26 westbound and continues approximately 1,620 feet to the northwest, ending between New Rockwood Road and Mahogany Road. It generally follows the top of the cut section but transitions to edge of shoulder near Glenn Bridge Road, and the portion of the wall along the I-26 westbound bridge over Glenn Bridge Road is on structure. It is 1,620 feet long and 19 to 25 feet high with a total area of 37,800 square feet.

There are 21 impacted receptors in the 8-Lane alternative. Sound barrier NW16 preliminarily meets feasibility and reasonableness criteria and would provide abatement for residences in this area, benefiting 28 receptors. It begins south of Glenn Bridge Road along I-26 westbound and continues approximately 1,620 feet to the northwest, ending between New Rockwood Road and Mahogany Road. It generally follows the top of the cut section but transitions to edge of shoulder near Glenn Bridge Road, and the portion of the wall along the I-26 westbound bridge over Glenn Bridge Road is on structure. It is 1,620 feet long and 16 to 25 feet high with a total area of 37,620 square feet.

There are 21 impacted receptors in the Hybrid alternative. Sound barrier NW16 preliminarily meets feasibility and reasonableness criteria and would provide abatement for residences in this area, benefiting 28 receptors. It begins south of Glenn Bridge Road along I-26 westbound and continues approximately 1,620 feet to the northwest, ending between New Rockwood Road and Mahogany Road. It generally follows the top of the cut section but transitions to edge of shoulder near Glenn Bridge Road, and the portion of the wall along the I-26 westbound bridge over Glenn Bridge Road is on structure. It is 1,620 feet long and 16 to 25 feet high with a total area of 37,620 square feet. Detailed analysis of preliminary sound barriers can be found in Appendix D.

Area V (No Recommended Barrier)

Area V is located just south of the NC 146 interchange along I-26 westbound. The primary noise sensitive land use in this area is the Park Ridge Health South Asheville medical facility, which was modeled to determine indoor noise levels. There was also one residence modeled in this area accessible via Long Shoals Road.

There receptor accessible via Long Shoals Road is impacted in each of the build alternatives. Preliminary sound barrier NW17 was evaluated for each alternative to provide abatement for the impacted receptor but met neither feasibility nor reasonableness criteria because a 5 dB(A) noise reduction could not be achieved for the only impacted receptor in the area. Detailed analysis of preliminary sound barriers can be found in Appendix D.

NSA 6 Westbound (Areas W – AA)

6-Lane Alternative (Figures 23-27)
8-Lane Alternative (Figures 75-79)
Hybrid Alternative (Figures 127-131)

Area W (No Recommended Barrier)

Area W is located just north of the NC 146 interchange along I-26 westbound. The primary noise sensitive land use in this area is commercial. There was one hotel outdoor restaurant seating area modeled in this area for the Hilton Asheville Biltmore Park.

There are no impacted receptors in any of the build alternatives. Therefore, noise abatement was not considered for this area.

Area X (No Recommended Barrier)

Area X is located along I-26 westbound on both sides of the Blue Ridge Parkway. The primary noise sensitive land use in this area is the Mountains-to-Sea Trail. There were three equivalent residences modeled in this area to represent the walking trail. Equivalent residence calculations for this site can be found at the end of this section.

There are two impacted receptors in the 6-Lane alternative and three impacted receptors in the 8-Lane and Hybrid alternatives. Preliminary sound barrier NW36 was evaluated for each alternative to provide abatement for the trail but met neither feasibility nor reasonableness criteria because a 5 dB(A) noise reduction could not be achieved for any of the impacted receptors in the area. Detailed analysis of preliminary sound barriers can be found in Appendix D.

Assumptions on Mountains-to-Sea Trail Usage:

Approximately 20 people use the trail per day
Trail is used during daylight hours only (12 hours per day)
Trail is used during the non-winter months only (9 months per year)

Equivalent # Residences = # Occupants / (# People/Residence) x Usage
Equivalent # Residences = (20/3) x (12/24) x (9/12) = 2.5

Therefore:
Number of Residences Assigned to the Grid = 3 (Rounded up from 2.5)

Area Y (No Recommended Barrier)

Area Y is located along I-26 westbound between the Blue Ridge Parkway and the NC 191 interchange. The primary noise sensitive land use in this area is residential. There were four residences modeled in this area on Ferry Road.

There are no impacted receptors in the 6-Lane alternative. Therefore, noise abatement was not considered for this area.

There is one impacted receptor in the 8-Lane and Hybrid alternatives. Preliminary sound barrier NW18 was evaluated for each alternative to provide abatement for the impacted receptor but did not meet reasonableness criteria for allowable area per benefit. Detailed analysis of preliminary sound barriers can be found in Appendix D.

Area Z (No Recommended Barrier)

Area Z is located just south of the NC 191 interchange along I-26 westbound. There are no noise sensitive land uses with outdoor areas of frequent human use in this area.

Area AA (Recommended Barrier – NW19)

Area AA is located along I-26 westbound between the NC 191 interchange and the end of the project near Pond Road. The primary noise sensitive land use in this area is residential. There were 21 residences modeled in this area: Fifteen on Pine Lane, two on Brevard Road, two accessible via Old Brevard Road and two on Dogwood Road.

There are four impacted receptors on Pine Lane and one on Brevard Road in the 6-Lane alternative. Sound barrier NW19 preliminarily meets feasibility and reasonableness criteria and would provide abatement for residences in this area, benefiting 10 receptors. It is located along the future I-26 westbound on-ramp from NC 191 (Brevard Road) edge of shoulder. It is 2,040 feet long and 10 to 13 feet high with a total area of 25,440 square feet.

There are six impacted receptors on Pine Lane and one on Brevard Road in the 8-Lane alternative. Sound barrier NW19 preliminarily meets feasibility and reasonableness criteria and would provide abatement for residences in this area, benefiting 10 receptors. It is located along the future I-26 westbound on-ramp from NC 191 (Brevard Road) edge of shoulder. It is 1,980 feet long and 10 to 16 feet high with a total area of 25,380 square feet.

There are six impacted receptors on Pine Lane and one on Brevard Road in the Hybrid alternative. Sound barrier NW19 preliminarily meets feasibility and reasonableness criteria and would provide abatement for residences in this area, benefiting 10 receptors. It is located along the future I-26 westbound on-ramp from NC 191 (Brevard Road) edge of shoulder. It is 1,980 feet long and 10 to 16 feet high with a total area of 25,200 square feet.

There are two impacted receptors on Dogwood Road in each of the build alternatives. Preliminary sound barrier NW20 was evaluated for each alternative to provide abatement for the impacted receptors but did not meet reasonableness criteria for allowable area per benefit. Detailed analysis of preliminary sound barriers can be found in Appendix D.

NSA 6 Eastbound (Areas BB – FF)

6-Lane Alternative (Figures 27-31)
8-Lane Alternative (Figures 79-83)
Hybrid Alternative (Figures 131-135)

Area BB (No Recommended Barrier)

Area BB is located along I-26 eastbound between the end of the project near Pond Road and the NC 191 interchange. There are no noise sensitive land uses with outdoor areas of frequent human use in this area.

Area CC (No Recommended Barrier)

Area CC is located along I-26 eastbound on both sides of the NC 191 interchange. The primary noise sensitive land use in this area is commercial. There was one hotel outdoor restaurant seating area modeled in this area for the Hampton Inn and two hotel pools modeled for the Holiday Inn Express and the Country Inn & Suites. There were also three residences modeled in this area: one on Rocky Ridge Road and two on Wedgefield Drive.

There are no impacted receptors in any of the build alternatives. Therefore, noise abatement was not considered for this area.

Area DD (No Recommended Barrier)

Area DD is located along I-26 eastbound between the NC 191 interchange and the Blue Ridge Parkway. The primary noise sensitive land use in this area is residential. There were four residences modeled in this area on Ferry Road.

There are three impacted receptors in each of the build alternatives. Preliminary sound barrier NW21 was evaluated for each alternative to provide abatement for the impacted receptors but did not meet reasonableness criteria for allowable area per benefit. Detailed analysis of preliminary sound barriers can be found in Appendix D.

Area EE (No Recommended Barrier)

Area EE is located along I-26 eastbound on both sides of the Blue Ridge Parkway. The primary noise sensitive land use in this area is the Mountains-to-Sea Trail. There were three equivalent residences modeled in this area to represent the walking trail. Equivalent residence calculations for this site can be found at the end of this section.

There are three impacted receptors in each of the build alternatives. Preliminary sound barrier NW37 was evaluated for each alternative to provide abatement for the trail but did not meet reasonableness criteria for allowable area per benefit. Detailed analysis of preliminary sound barriers can be found in Appendix D.

Assumptions on Mountains-to-Sea Trail Usage:

Approximately 20 people use the trail per day
Trail is used during daylight hours only (12 hours per day)
Trail is used during the non-winter months only (9 months per year)

Equivalent # Residences = # Occupants / (# People/Residence) x Usage
Equivalent # Residences = (20/3) x (12/24) x (9/12) = 2.5

Therefore:
Number of Residences Assigned to the Grid = 3 (Rounded up from 2.5)

Area FF (No Recommended Barrier)

Area FF is located just north of the NC 146 interchange along I-26 eastbound. There are no noise sensitive land uses with outdoor areas of frequent human use in this area.

NSA 5 Eastbound (Areas GG – JJ)

6-Lane Alternative (Figures 31-35)
8-Lane Alternative (Figures 83-87)
Hybrid Alternative (Figures 135-139)

Area GG (No Recommended Barrier)

Area GG is located just south of the NC 146 interchange along I-26 eastbound. There are no noise sensitive land uses with outdoor areas of frequent human use in this area.

Area HH (No Recommended Barrier)

Area HH is located along I-26 eastbound between the NC 146 interchange and Glenn Bridge Road. The primary noise sensitive land use in this area is residential. There were two residences modeled in this area on Bear Leah Trail accessible via Glenn Bridge Road.

There are two impacted receptors in each of the build alternatives. Preliminary sound barrier NW22 was evaluated for each alternative to provide abatement for the impacted receptors but did not meet reasonableness criteria for allowable area per benefit. Detailed analysis of preliminary sound barriers can be found in Appendix D.

Area II (Recommended Barrier – NW24)

Area II is located along I-26 eastbound on both sides of Glenn Bridge Road. The primary noise sensitive land use in this area is residential. There were 22 residences modeled in this area: two on Glenn Bridge Road, eight on Hidden Creek Drive, three on Wells Drive and nine on Nathan Drive.

There are two impacted receptors on Glenn Bridge Road in each of the build alternatives. Preliminary sound barrier NW23 was evaluated for each alternative to provide abatement for the impacted receptors but did not meet reasonableness criteria because a 7 dB(A) noise reduction could not be achieved for at least one benefited front row receptor.

Among the other receptors, 12 are impacted in the 6-Lane alternative. Sound barrier NW24 preliminarily meets feasibility and reasonableness criteria and would provide abatement for residences in this area, benefiting 20 receptors. It is located between Glenn Bridge Road and NC 280 (Airport Road) along I-26 eastbound edge of shoulder. It is 1,860 feet long and 13 to 16 feet high with a total area of 28,680 square feet.

Among the other receptors, 15 are impacted in the 8-Lane alternative. Sound barrier NW24 preliminarily meets feasibility and reasonableness criteria and would provide abatement for residences in this area, benefiting 20 receptors. It is located between Glenn Bridge Road and NC 280 (Airport Road) along I-26 eastbound edge of shoulder. It is 1,740 feet long and 16 to 19 feet high with a total area of 28,740 square feet.

Among the other receptors, 15 are impacted in the Hybrid alternative. Sound barrier NW24 preliminarily meets feasibility and reasonableness criteria and would provide abatement for residences in this area, benefiting 20 receptors. It is located between Glenn Bridge Road and NC 280 (Airport Road) along I-26 eastbound edge of shoulder. It is 1,740 feet long and 16 to 19 feet high with a total area of 28,740 square feet. Detailed analysis of preliminary sound barriers can be found in Appendix D.

Area JJ (No Recommended Barrier)

Area JJ is located just north of the NC 280 interchange along I-26 eastbound. The There are no noise sensitive land uses with outdoor areas of frequent human use in this area.

<u>NSA 4 Eastbound (Areas KK – MM)</u>

6-Lane Alternative (Figures 35-39)
8-Lane Alternative (Figures 87-91)
Hybrid Alternative (Figures 139-143)

Area KK (No Recommended Barrier)

Area KK is located along I-26 eastbound between the NC 280 interchange and the rest area between Fanning Bridge Road and Butler Bridge Road. There are no noise sensitive land uses with outdoor areas of frequent human use in this area.

Area LL (No Recommended Barrier)

Area LL is located along I-26 eastbound between Fanning Bridge Road and Butler Bridge Road. The primary noise sensitive land use in this area is the Broadmoor Golf Links golf course. There were two equivalent residences modeled in this area to represent the holes of the golf course in close proximity to I-26. Equivalent residence calculations for this site can be found at the end of this section.

There are two impacted receptors in each of the build alternatives. Preliminary sound barrier NW25 was evaluated for each alternative to provide abatement for the impacted receptors but did not meet reasonableness criteria for allowable area per benefit. Detailed analysis of preliminary sound barriers can be found in Appendix D.

Information obtained from Broadmoor:

80 rounds of golf per day
Course open during daylight hours (assumed 12 hours per day)
Course does not close

Equivalent # Residences = # Occupants / (# People/Residence) x Usage
Equivalent # Residences = (80/3) x (12/24) = 13.3 (for the entire golf course)

Note: Since only two of the 18 holes on the golf course are in close proximity to I-26, the grid used for noise analysis only encompasses these holes.

Therefore:
Equivalent # Residences = 13.3 x (2/18) = 1.5
Number of Residences Assigned to the Grid = 2 (Rounded up from 1.5)

Area MM (No Recommended Barrier)

Area MM is located along I-26 eastbound on both sides of Butler Bridge Road. The primary noise sensitive land use in this area is residential. There were 10 residences modeled in this area: two on Butler Bridge Road, three on Dry Hollow Lane, two on North Rugby Road and three on Jade Drive.

There are no impacted receptors in any of the build alternatives. Therefore, noise abatement was not considered for this area.

NSA 3 Eastbound (Areas NN – VV)

6-Lane Alternative (Figures 39-47)
8-Lane Alternative (Figures 91-99)
Hybrid Alternative (Figures 143-151)

Area NN (No Recommended Barrier)

Area NN is located along I-26 eastbound on both sides of the US 25 (Asheville Highway) interchange. The primary noise sensitive land use in this area is residential. There were seven residences modeled in this area: three on Cuerton Place and four on Alverson Lane.

There are two impacted receptors in each of the build alternatives. Preliminary sound barrier NW26 was evaluated for each alternative to provide abatement for the impacted receptors but did not meet reasonableness criteria for allowable area per benefit. Detailed analysis of preliminary sound barriers can be found in Appendix D.

Area OO (No Recommended Barrier)

Area OO is located just north of Naples Road along I-26 eastbound. The primary noise sensitive land use in this area is residential. There was one residence modeled in this area on Naples Road.

Relative to I-26, the lone receptor is located directly behind a 25 foot tall Mountain Inn & Suites building. It is impacted in each of the build alternatives due to its proximity to Naples Road, which is the primary noise source. Any sound barrier along Naples Road would require multiple breaks in continuity due to the numerous driveways and local roads present, compromising the effectiveness of the barrier. Therefore, noise abatement was not considered for this area.

Area PP (No Recommended Barrier)

Area PP is located just south of Naples Road along I-26 eastbound. The primary noise sensitive land use in this area is residential. There were 18 residences modeled in this area, mostly on Old Naples Road, Canterbury Way, Oak Meadow Lane and Sujo Trail.

There are 16 impacted receptors in the 6-Lane and Hybrid alternatives and 17 impacted receptors in the 8-Lane alternative. Preliminary sound barrier NW27 was evaluated for each alternative to provide abatement for the impacted receptors but did not meet reasonableness criteria for allowable area per benefit. Detailed analysis of preliminary sound barriers can be found in Appendix D.

Area QQ (No Recommended Barrier)

Area QQ is located along I-26 eastbound between Naples Road and Brookside Camp Road. There are no noise sensitive land uses with outdoor areas of frequent human use in this area.

Area RR (No Recommended Barrier)

Area RR is located along I-26 eastbound on both sides of Brookside Camp Road. The primary noise sensitive land use in this area is the Champions Golf Learning Center facility, which includes a driving range, batting cage, miniature golf course and a paintball area. There were five equivalent residences modeled in this area to represent the recreational facility. Equivalent residence calculations for this site can be found at the end of this section.
There are five impacted receptors in each of the build alternatives. Preliminary sound barrier NW28 was evaluated for each alternative to provide abatement for the impacted receptors but did not meet reasonableness criteria for allowable area per benefit. Detailed analysis of preliminary sound barriers can be found in Appendix D.

Information obtained from Champions Golf Learning Center:

250 visitors per week = 36 visitors per day (during the busiest time of year)
Open seven days per week 8am-8pm
Facility closed from Dec 20-Jan 2
Only open during Jan-Feb when weather permits (Assume that facility is closed 2.5 months per year but has 250 visitors per week the other 9.5 months)

Equivalent # Residences = # Occupants / (# People/Residence) x Usage
Equivalent # Residences = (36/3) x (12/24) x (9.5/12) = 4.8

Therefore:
Number of Residences Assigned to the Grid = 5 (Rounded up from 4.8)

Area SS (No Recommended Barrier)

Area SS is located along I-26 eastbound between Brookside Camp Road and Clear Creek Road. The primary noise sensitive land use in this area is residential. There were two residences modeled in this area on Hyder Farm Road.

There are no impacted receptors in any of the build alternatives. Therefore, noise abatement was not considered for this area.

This area includes one site protected by Section 4(f) of the DOT Act, the Hudson Dairy Farm, at 679 Hyder Farm Road that is recommended eligible for the NRHP. The milking parlor is modeled with this address, and the house is modeled as 672 Hyder Farm Road from the county database. Neither of the locations is impacted by traffic noise in any of the Build Alternatives, and no feasible and reasonable noise wall is recommended in the vicinity of this property.

Area TT (No Recommended Barrier)

Area TT is located along I-26 eastbound on both sides of Clear Creek Road. The primary noise sensitive land use in this area is residential. There were seven residences modeled in this area: three on Hyder Farm Road, three on Alex Cove Drive and one on Clear Creek Road.

There are four impacted receptors in each of the build alternatives. Preliminary sound barrier NW29 was evaluated for each alternative to provide abatement for the impacted receptors but did not meet reasonableness criteria for allowable area per benefit. Detailed analysis of preliminary sound barriers can be found in Appendix D.

This area includes one site protected by Section 4(f) of the DOT Act, the Sholtz-Cantrell Estate, at 37 Hyder Farm Road that was previously recommended eligible for the NRHP. The house is modeled as 825 Clear Creek Road from the county database. It is not impacted by traffic noise in any of the Build Alternatives, and no feasible and reasonable noise wall is recommended in the vicinity of this property.

Area UU (No Recommended Barrier)

Area UU is located along I-26 eastbound between Clear Creek Road and the US 64 interchange. The primary noise sensitive land use in this area is residential. There were 27 residences modeled in this area on Carolina Village Road, as well as an outdoor common area for the Carolina Village complex. The complex's medical facility was also modeled to determine indoor noise levels.

There are no impacted receptors in any of the build alternatives. Therefore, noise abatement was not considered for this area.

Area VV (No Recommended Barrier)

Area VV is located just north of the US 64 interchange along I-26 eastbound. The primary noise sensitive land use in this area is residential. There were 45 residences modeled in this area, mostly along Carolina Village Road and on Lake Club Circle.

There are five impacted receptors in each of the build alternatives. Preliminary sound barrier NW30 was evaluated for each alternative to provide abatement for the impacted receptors but did not meet reasonableness criteria for allowable area per benefit. Detailed analysis of preliminary sound barriers can be found in Appendix D.

NSA 2 Eastbound (Areas WW – ZZ)

6-Lane Alternative (Figures 47-51)
8-Lane Alternative (Figures 99-103)
Hybrid Alternative (Figures 151-155)

Area WW (Recommended Barrier – NW32)

Area WW is located just south of the US 64 interchange along I-26 eastbound and extends south of Dana Road. The primary noise sensitive land use in this area is residential. There were 54 residences modeled in this area, mostly on West Prince Road, Fairbanks Lane, Dana Road and Meadowlark Lane. Camp Pinewood was also modeled in this area but is not impacted in any of the build alternatives.

There are eight impacted receptors north of Dana Road in the 6-Lane and Hybrid alternatives and nine impacted receptors in the 8-Lane alternative. Preliminary sound barrier NW31 was evaluated for each alternative to provide abatement for the impacted receptors but did not meet reasonableness criteria for allowable area per benefit.

There are 10 impacted receptors south of Dana Road in the 6-Lane alternative. Sound barrier NW32 preliminarily meets feasibility and reasonableness criteria and would provide abatement for residences in this area, as well as Area XX. NW32 would benefit 33 receptors in Area WW and 38 receptors overall. It begins just south of the Dana Road bridge along I-26 eastbound edge of shoulder and transitions to the top of a cut section before returning to edge of shoulder. It is 3,300 feet long and 16 to 25 feet high with a total area of 75,000 square feet.

There are 11 impacted receptors south of Dana Road in the 8-Lane alternative. Sound barrier NW32 preliminarily meets feasibility and reasonableness criteria and would provide abatement for residences in this area, as well as Area XX. NW32 would benefit 32 receptors in Area WW and 37 receptors overall. It begins just south of the Dana Road bridge along I-26 eastbound edge of shoulder and transitions to the top of a cut section before returning to edge of shoulder. It is 3,300 feet long and 16 to 25 feet high with a total area of 81,240 square feet.

There are 10 impacted receptors south of Dana Road in the Hybrid alternative. Sound barrier NW32 preliminarily meets feasibility and reasonableness criteria and would provide abatement for residences in this area, as well as Area XX. NW32 would benefit 33 receptors in Area WW and 38 receptors overall. It begins just south of the Dana Road bridge along I-26 eastbound edge of shoulder and transitions to the top of a cut section before returning to edge of shoulder. It is 3,300 feet long and 16 to 25 feet high with a total area of 74,645 square feet. Detailed analysis of preliminary sound barriers can be found in Appendix D.

This area includes one site protected by Section 4(f) of the DOT Act, Camp Pinewood (formerly known as Camp Orr), at 300 Orrs Camp Road that is recommended eligible for the NRHP. Receptors were modeled in TNM at both the tennis courts and the girls' cabins. These two locations were chosen logically as the noise sensitive land uses in closest proximity to I-26. Neither of the locations is impacted by traffic noise in any of the Build Alternatives, and no feasible and reasonable noise wall is recommended in the vicinity of this property.

Area XX (No Recommended Barrier)

Area XX is located along I-26 eastbound on both sides of Tracy Grove Road. The primary noise sensitive land use in this area is residential. There were six residences modeled in this area: two on Orchard Park Road, two on Friendship Lane and two on Tracy Grove Road.

There are four impacted receptors in the 6-Lane alternative. Sound barrier NW32 preliminarily meets feasibility and reasonableness criteria and would provide abatement for residences in this area, as well as Area WW. NW32 would benefit five receptors in Area XX and 38 receptors overall. For full details, see Area WW.

There are five impacted receptors in the 8-Lane alternative. Sound barrier NW32 preliminarily meets feasibility and reasonableness criteria and would provide abatement for residences in this area, as well as Area WW. NW32 would benefit five receptors in Area XX and 38 receptors overall. For full details, see Area WW.

There are four impacted receptors in the Hybrid alternative. Sound barrier NW32 preliminarily meets feasibility and reasonableness criteria and would provide abatement for residences in this area, as well as Area WW. NW32 would benefit five receptors in Area XX and 38 receptors overall. For full details, see Area WW. Detailed analysis of preliminary sound barriers can also be found in Appendix D.

Area YY (No Recommended Barrier)

Area YY is located along I-26 eastbound between Tracy Grove Road and the Upward Rd interchange. The primary noise sensitive land use in this area is residential. There were 23 residences modeled in this area: ten on South Allen Road, six on New Hope Road, five on Carroll Oaks Drive and two on Merry Oaks Lane. The Tracy Grove Community Center was modeled on South Allen Road. The Blue Ridge Community College baseball field was also modeled in this area but is not impacted in any of the build alternatives.

There are 12 impacted receptors in each of the build alternatives. Preliminary sound barrier NW33 was evaluated for each alternative to provide abatement for the impacted receptors but did not meet reasonableness criteria for allowable area per benefit. Detailed analysis of preliminary sound barriers can be found in Appendix D.

Area ZZ (No Recommended Barrier)

Area ZZ is located just north of the Upward Road interchange along I-26 eastbound. There are no noise sensitive land uses with outdoor areas of frequent human use in this area.

NSA 1 Eastbound (Area AAA)

6-Lane Alternative (Figures 51-52)
8-Lane Alternative (Figures 103-104)
Hybrid Alternative (Figures 155-156)

Area AAA (No Recommended Barrier)

Area AAA is located along I-26 eastbound between the Upward Road interchange and the beginning of the project near the US 25 interchange. The primary noise sensitive land use in this area is residential. There were 10 residences modeled in this area: two on Crest Road, one on Victoria Springs Drive, four on Hollyhock Court and three on Oak Grove Road.

There are two impacted receptors in each of the build alternatives. Preliminary sound barriers NW34 and NW35 were evaluated for each alternative to provide abatement for the impacted receptors but did not meet reasonableness criteria for allowable area per benefit. Detailed

analysis of preliminary sound barriers can be found in Appendix D.

Barrier Evaluation Summary

Based upon the preliminary design, nine noise walls are preliminarily recommended for the 6-Lane Widening Alternative, nine noise walls are preliminarily recommended for the 8-Lane Widening Alternative, and nine noise walls are preliminarily recommended for the Hybrid Widening Alternative. Due to the preliminary status of the project design, noise wall alignment ground profiles are not sufficient for final design. It is the recommendation of this Traffic Noise Analysis that a comprehensive noise abatement design review be conducted as part of the project's final design. Table 8 provides a summary of the preliminary feasible and reasonable noise barriers for each alternative. Appendix D contains a detailed assessment of all noise barriers, including those that did not meet feasibility and reasonableness criteria.

Table 8: Preliminarily Recommended Noise Barriers

Barrier Name	Benefited Area	Approx Length (ft)	Approx Area (sq ft)	Number of Impacted Receptors	Total Number of Benefits	Quantity of Wall per Benefit (sq ft) / Allowable Quantity
6-LANE WIDENING ALTERNATIVE						
NW5	Residences along Springside Drive, Willowbrook Road and Maywood Road	3,360	71,400	25	50	1,428 / 2,605
NW9	Residences along all of the intervening local roads	10,260	226,795	70	116	1,955 / 2,570
NW12	Residences on Old Hendersonville Road, November Lane and Hickory Flats Drive	1,560	22,620	11	19	1,191 / 2,605
NW14	Residences on Hope Opal Lane, South Thomas Street and Jim Mills Drive	2,280	52,680	10	26	2,026 / 2,535

Table 8: Preliminarily Recommended Noise Barriers						
Barrier Name	**Benefited Area**	**Approx Length (ft)**	**Approx Area (sq ft)**	**Number of Impacted Receptors**	**Total Number of Benefits**	**Quantity of Wall per Benefit (sq ft) / Allowable Quantity**
NW15	Residences along Wildwood Circle and South Wildwood Lane	1,860	35,160	11	20	1,758 / 2,570
NW16	Residences in the Hunter's Trace neighborhood	1,620	37,800	15	36	1,050 / 2,640
NW19	Residences on Pine Lane	2,040	25,440	5	10	2,544 / 2,640
NW24	Residences on Hidden Creek Drive, Nathan Drive and Wells Drive	1,860	28,680	12	20	1,434 / 2,570
NW32	Residences on Meadowlark Lane, Papa Joes Way and Orchard Park Road, as well as one residence accessible via Tracy Grove Road	3,300	75,000	14	38	1,974 / 2,570
	TOTALS	***28,140***	***575,575***	***173***	***335***	**---**
8-LANE WIDENING ALTERNATIVE						
NW5	Residences along Springside Drive, Willowbrook Road and Maywood Road	3,360	75,900	25	51	1,488 / 2,640
NW9	Residences along all of the intervening local roads	10,248	231,945	83	116	2,000 / 2,605

Table 8: Preliminarily Recommended Noise Barriers						
Barrier Name	**Benefited Area**	**Approx Length (ft)**	**Approx Area (sq ft)**	**Number of Impacted Receptors**	**Total Number of Benefits**	**Quantity of Wall per Benefit (sq ft) / Allowable Quantity**
NW12	Residences on Old Hendersonville Road, November Lane and Hickory Flats Drive	1,560	24,600	14	19	1,295 / 2,640
NW14	Residences on Hope Opal Lane, South Thomas Street and Jim Mills Drive	2,460	52,140	14	24	2,173 / 2,605
NW15	Residences along Wildwood Circle and South Wildwood Lane	1,800	35,460	14	20	1,773 / 2,605
NW16	Residences in the Hunter's Trace neighborhood	1,620	37,620	21	28	1,344 / 2,675
NW19	Residences on Pine Lane	1,980	25,380	7	10	2,538 / 2,640
NW24	Residences on Hidden Creek Drive, Nathan Drive and Wells Drive	1,740	28,740	15	20	1,437 / 2,605
NW32	Residences on Meadowlark Lane, Papa Joes Way and Orchard Park Road, as well as one residence accessible via Tracy Grove Road	3,300	81,240	16	37	2,196 / 2,605
	TOTALS	***28,068***	***593,025***	***209***	***325***	**---**

Table 8: Preliminarily Recommended Noise Barriers						
Barrier Name	**Benefited Area**	**Approx Length (ft)**	**Approx Area (sq ft)**	**Number of Impacted Receptors**	**Total Number of Benefits**	**Quantity of Wall per Benefit (sq ft) / Allowable Quantity**
HYBRID WIDENING ALTERNATIVE						
NW5	Residences along Springside Drive, Willowbrook Road and Maywood Road	3,360	70,685	25	50	1,414 / 2,605
NW9	Residences along all of the intervening local roads	10,260	226,795	70	116	1,955 / 2,570
NW12	Residences on Old Hendersonville Road, November Lane and Hickory Flats Drive	1,560	22,620	11	19	1,191 / 2,605
NW14	Residences on Hope Opal Lane, South Thomas Street and Jim Mills Drive	2,460	52,140	14	24	2,173 / 2,605
NW15	Residences along Wildwood Circle and South Wildwood Lane	1,800	35,280	14	21	1,680 / 2,605
NW16	Residences in the Hunter's Trace neighborhood	1,620	37,620	21	28	1,344 / 2,675
NW19	Residences on Pine Lane	1,980	25,200	7	10	2,520 / 2,640
NW24	Residences on Hidden Creek Drive, Nathan Drive and Wells Drive	1,740	28,740	15	20	1,437 / 2,605

Table 8: Preliminarily Recommended Noise Barriers						
Barrier Name	**Benefited Area**	**Approx Length (ft)**	**Approx Area (sq ft)**	**Number of Impacted Receptors**	**Total Number of Benefits**	**Quantity of Wall per Benefit (sq ft) / Allowable Quantity**
NW32	Residences on Meadowlark Lane, Papa Joes Way and Orchard Park Road, as well as one residence accessible via Tracy Grove Road	3,300	74,645	14	38	1,964 / 2,570
	TOTALS	***28,080***	***573,725***	***191***	***326***	**---**

In accordance with the 2011 NCDOT Traffic Noise Abatement Policy, these noise barriers preliminarily meet feasibility and reasonableness requirements, based on available information. The final decision on feasibility and reasonableness and installation of the noise barriers will be made upon completion of the project design and the public involvement process. Changes may occur as more detailed information on mapping and final design becomes available. Any changes in noise abatement measures as detailed in this report must be approved by the FHWA prior to implementation. Final survey mapping and final design, which were not available for this report, may reveal issues related to feasibility or reasonableness not known at this time.

9.0 CONSTRUCTION NOISE

The predominant construction activities associated with this project are expected to be earth removal, hauling, grading, paving and pile driving for bridge construction. Temporary and localized construction noise impacts may occur as a result of these activities (refer to Table 7). During daytime hours, the predicted effects of these impacts could be temporary speech interference for passers-by and those individuals living or working near the project. During evening and nighttime hours, steady-state construction noise emissions such as from paving operations could be audible, and may cause impacts to activities such as sleep. Sporadic evening and nighttime construction equipment noise emissions such as from backup alarms, lift gate closures ("slamming" of dump truck gates), etc., will be perceived as distinctly louder than the steady-state acoustic environment, and could impact the general peace and usage of noise-sensitive areas – particularly residences, hospitals and hotels.

Extremely loud construction noise activities such as usage of pile-drivers and impact-hammers (jack hammer, hoe-ram) will provide sporadic and temporary construction noise

impacts in the near vicinity of those activities. Construction activities that will produce extremely loud noises should be scheduled during times of the day when such noises will create as minimal disturbance as possible.

Generally, low-cost and easily implemented construction noise control measures should be incorporated into the project plans and specifications to the extent possible. These measures include, but are not limited to, work-hour limits, equipment exhaust muffler requirements, haul-road locations, elimination of "tail gate banging", ambient-sensitive backup alarms, construction noise complaint mechanisms, and consistent and transparent community communication.

While discrete construction noise level prediction is difficult for a particular receptor or group of receptors, it can be assessed in a general capacity with respect to distance from known or likely project activities. For this project, earth removal, grading, hauling, and paving is anticipated to occur in the vicinity of noise-sensitive receptors. Although construction noise impact mitigation should not place an undue burden upon the financial cost of the project or the project construction schedule, pursuant to the requirements of 23 CFR 772.19, it is the recommendation of this Traffic Noise Analysis that:

- Earth removal, grading, hauling, and paving activities in the vicinity of residences should be limited to weekday daytime hours.

- If meeting the project schedule requires that earth removal, grading, hauling and / or paving must occur during evening, nighttime and / or weekend hours in the vicinity of residences, the Contractor shall notify NCDOT as soon as possible. In such instance(s), all reasonable attempts shall be made to notify and to make appropriate arrangements for the mitigation of the predicted construction noise impacts upon the affected property owners and / or residents.

- If construction noise activities must occur during context-sensitive hours in the vicinity of noise-sensitive areas, discrete construction noise abatement measures including, but not limited to portable noise barriers and / or other equipment-quieting devices should be considered.

- Some construction activities could create extremes noise impacts for nearby noise-sensitive land uses. For example, pile driving activities can pose an extreme noise impact for distances of up to one-quarter mile. It is the recommendation of this Traffic Noise Analysis that considerations be made for any nearby residences for all evening and/or nighttime periods (7:00 p.m. – 7:00 a.m.) throughout which extremely loud construction activities might occur.

For additional information on construction noise, please refer to the FHWA Construction Noise Handbook (FHWA-HEP-06-015) and the Roadway Construction Noise Model (RCNM), available online at: http://www.fhwa.dot.gov/environment/noise/cnstr_ns.htm.

10.0 CONCLUSION

Traffic noise and temporary construction noise can be a consequence of transportation projects, especially in areas in close proximity to high-volume and high-speed existing steady-state traffic noise sources. This Traffic Noise Analysis utilized computer models created with the FHWA Traffic Noise Model software (TNM 2.5), validated to field-collected traffic noise monitoring data, to predict future noise levels and define impacted receptors along the proposed highway project.

Base Year 2011 traffic noise impacts 221 receptors in the vicinity of the I-26 Widening project. For Design Year 2040 traffic volumes, the No-Build Alternative is predicted to result in 231 traffic noise impacts, the 6-Lane Widening Alternative is predicted to result in 297 traffic noise impacts, the 8-Lane Widening Alternative is predicted to result in 344 traffic noise impacts and the Hybrid Widening Alternative is predicted to result in 320 traffic noise impacts..

Furthermore, construction noise impacts may occur due to the proximity of noise-sensitive residential receptors to project construction activities. It is the recommendation of this traffic noise analysis that all reasonable efforts should be made to minimize exposure of noise-sensitive areas to construction noise impacts.

Consideration for noise abatement measures was given to all impacted receptors. For the 6-Lane Widening Alternative, traffic noise abatement measures are preliminarily recommended as feasible and reasonable in nine locations for the benefit of 335 receptors in the vicinity of the project, based on available information. For the 8-Lane Widening Alternative, traffic noise abatement measures are preliminarily recommended as feasible and reasonable in nine locations for the benefit of 325 receptors in the vicinity of the project, based on available information. For the Hybrid Widening Alternative, traffic noise abatement measures are preliminarily recommended as feasible and reasonable in nine locations for the benefit of 326 receptors in the vicinity of the project, based on available information.

In accordance with the 2011 NCDOT *Traffic Noise Abatement Policy*, the nine recommended noise barriers for each build alternative preliminarily meet feasibility and reasonableness requirements based on available information. The final decision on feasibility and reasonableness of the noise barriers will be made upon completion of the project design and the public involvement process. Changes may occur as more detailed information on mapping and final design becomes available. Any changes in noise abatement measures as detailed in this report must be approved by the FHWA prior to implementation.

11.0 REFERENCES

Federal Highway Administration. CFR 23 Part 772 – Procedures for Abatement of Highway Traffic Noise and Construction Noise. [75 FR 39820-39838, July 13, 2010].

Federal Highway Administration. *Highway Traffic Noise: Analysis and Abatement Guidance*. 2011.

North Carolina Department of Transportation. *Traffic Noise Abatement Policy*. July 2011.

North Carolina Department of Transportation. *Traffic Noise Analysis and Abatement Manual*. August 2011.

Figures

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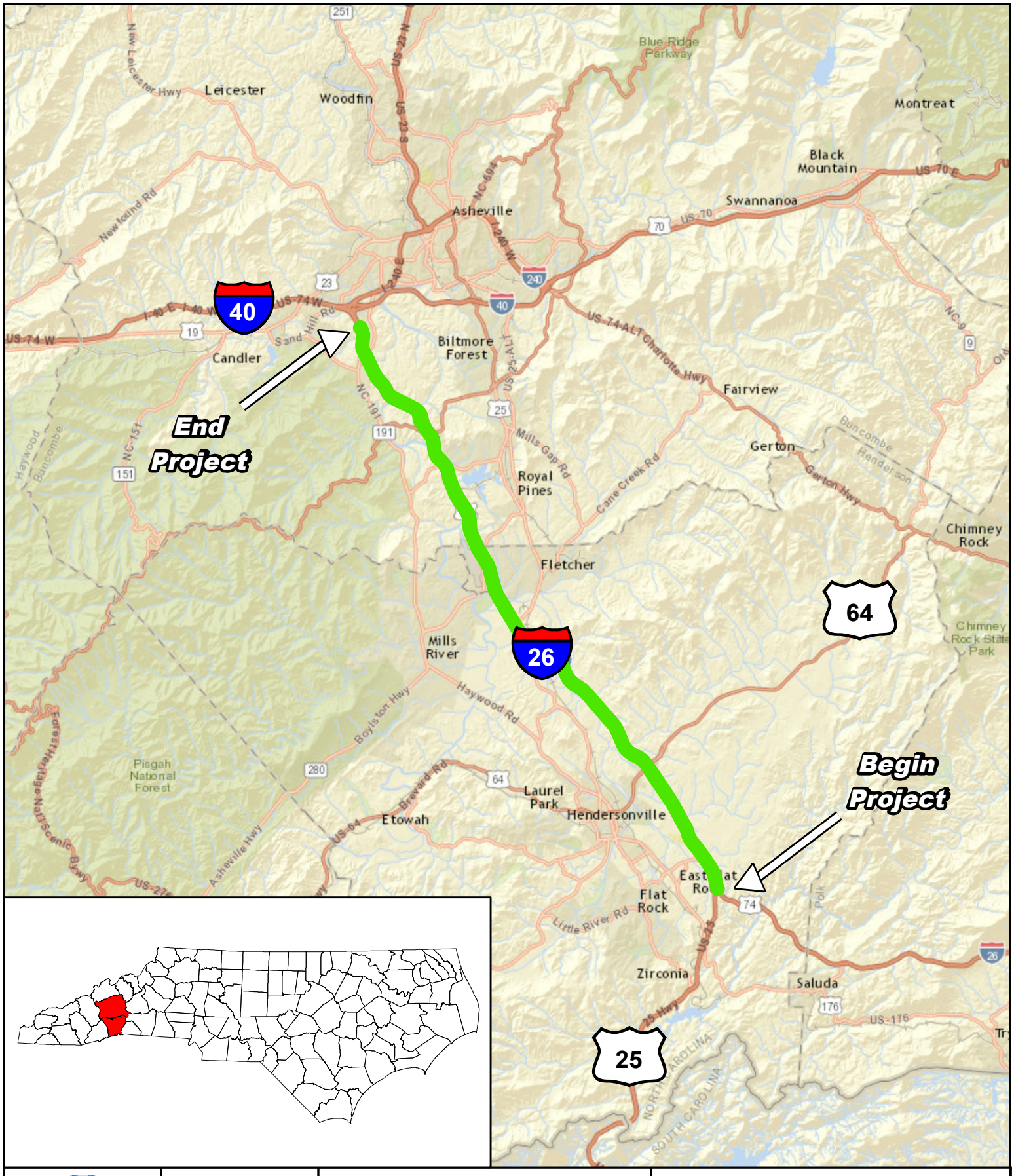
End Project
Begin Project
Leicester
Woodfin
Asheville
Montreat
Black Mountain
Swannanoa
Candler
Biltmore Forest
Fairview
Gerton
Royal Pines
Fletcher
Chimney Rock
Mills River
Laurel Park
Hendersonville
Etowah
Flat Rock
Zirconia
Saluda
Pisgah National Forest
Blue Ridge Parkway
40
26
64
25
Vicinity Map
0 2.5 5 10
Miles
1 inch = 5 mi
STIP # I-4400/I-4700
I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

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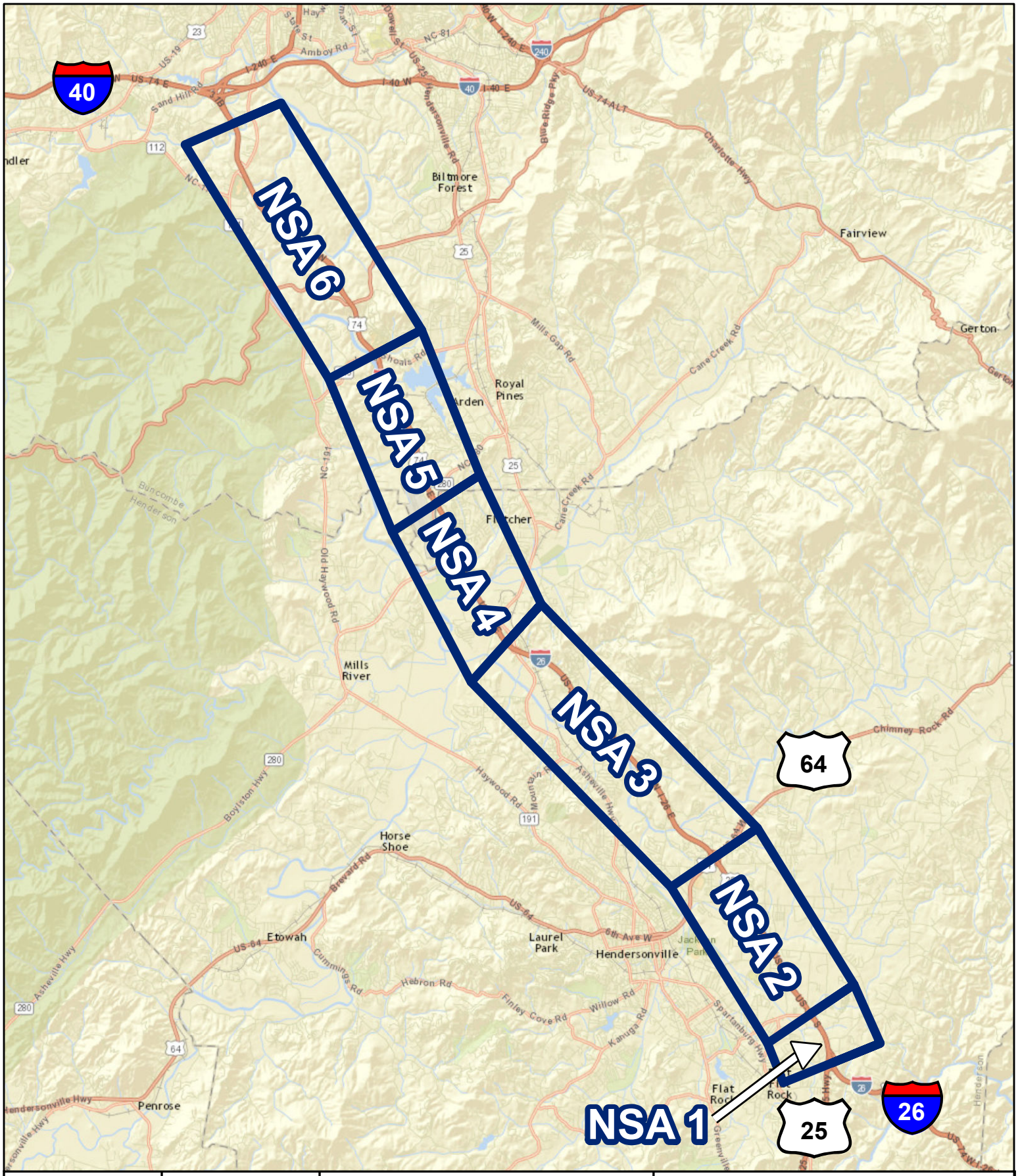

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

N
W E
S

Noise Study Area (NSA) Boundaries

0 1.5 3 6 Miles

1 inch = 3 mi

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

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6-Lane Widening Alternative
(Figures 1 through 52)

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Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 1

NSA 1 (Area A)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 2

NSA 1 (Area A)
NSA 2 (Area B)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 3

NSA 2 (Area C)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

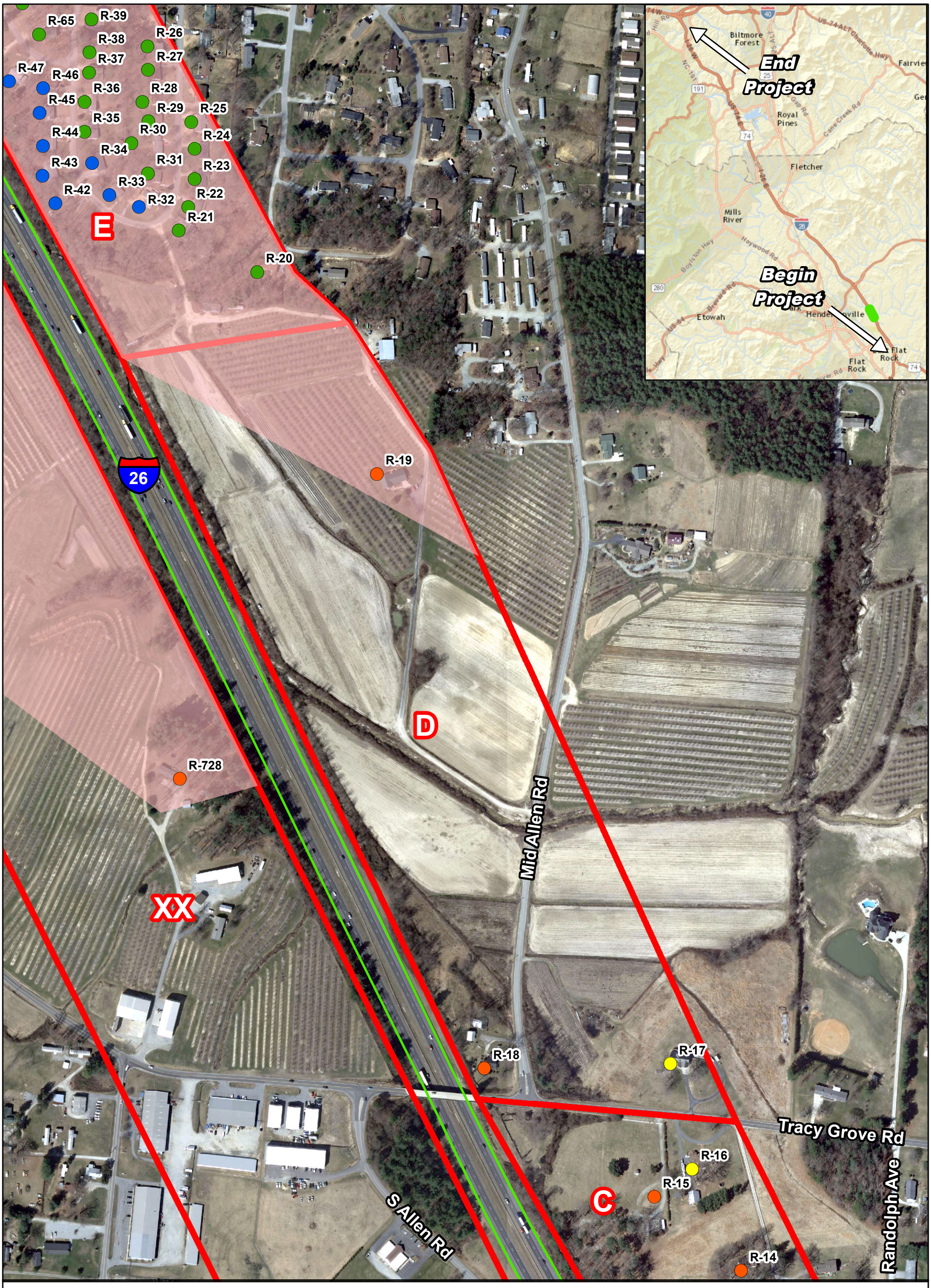
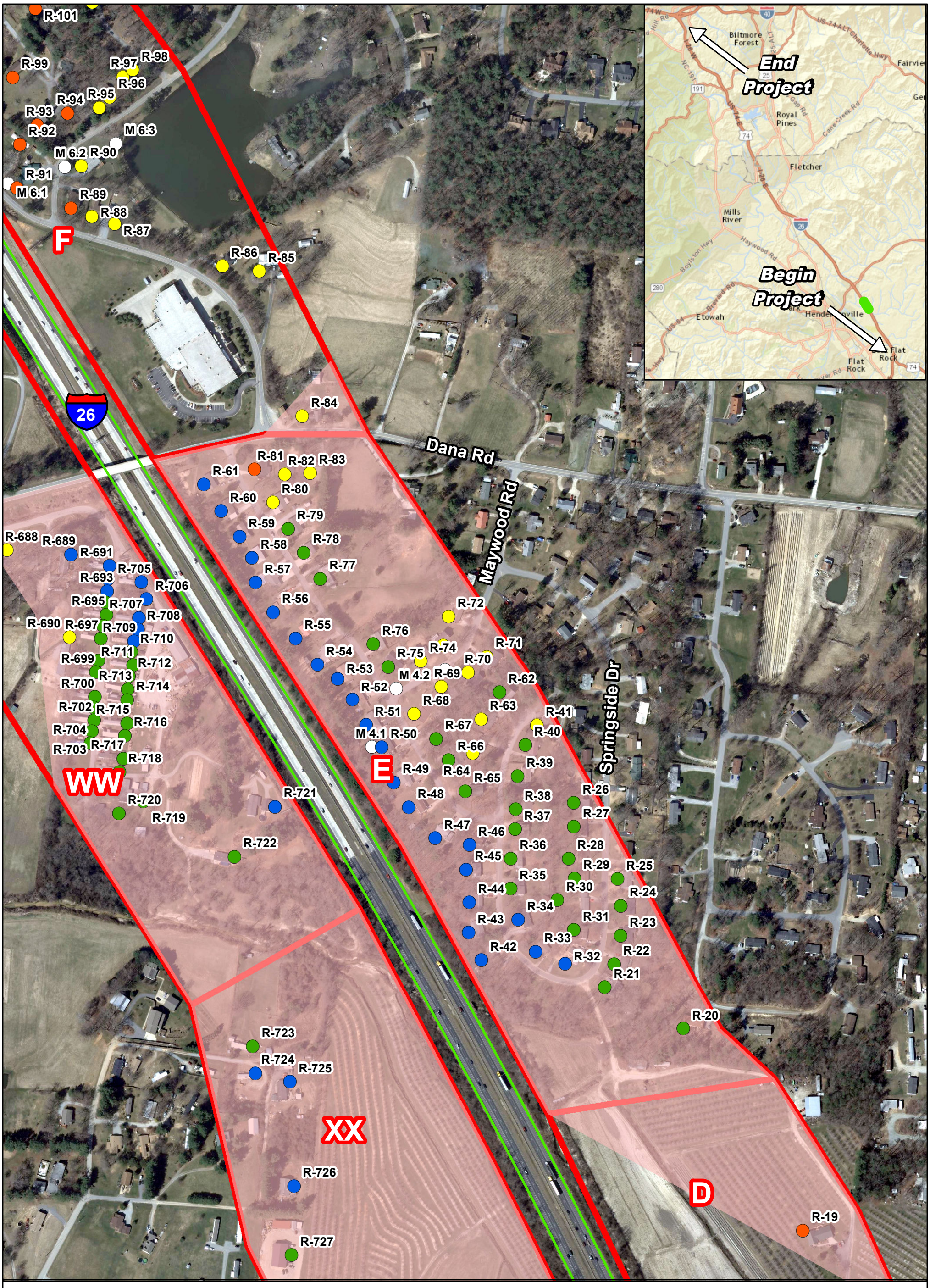


Figure 4

NSA 2 (Area D)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

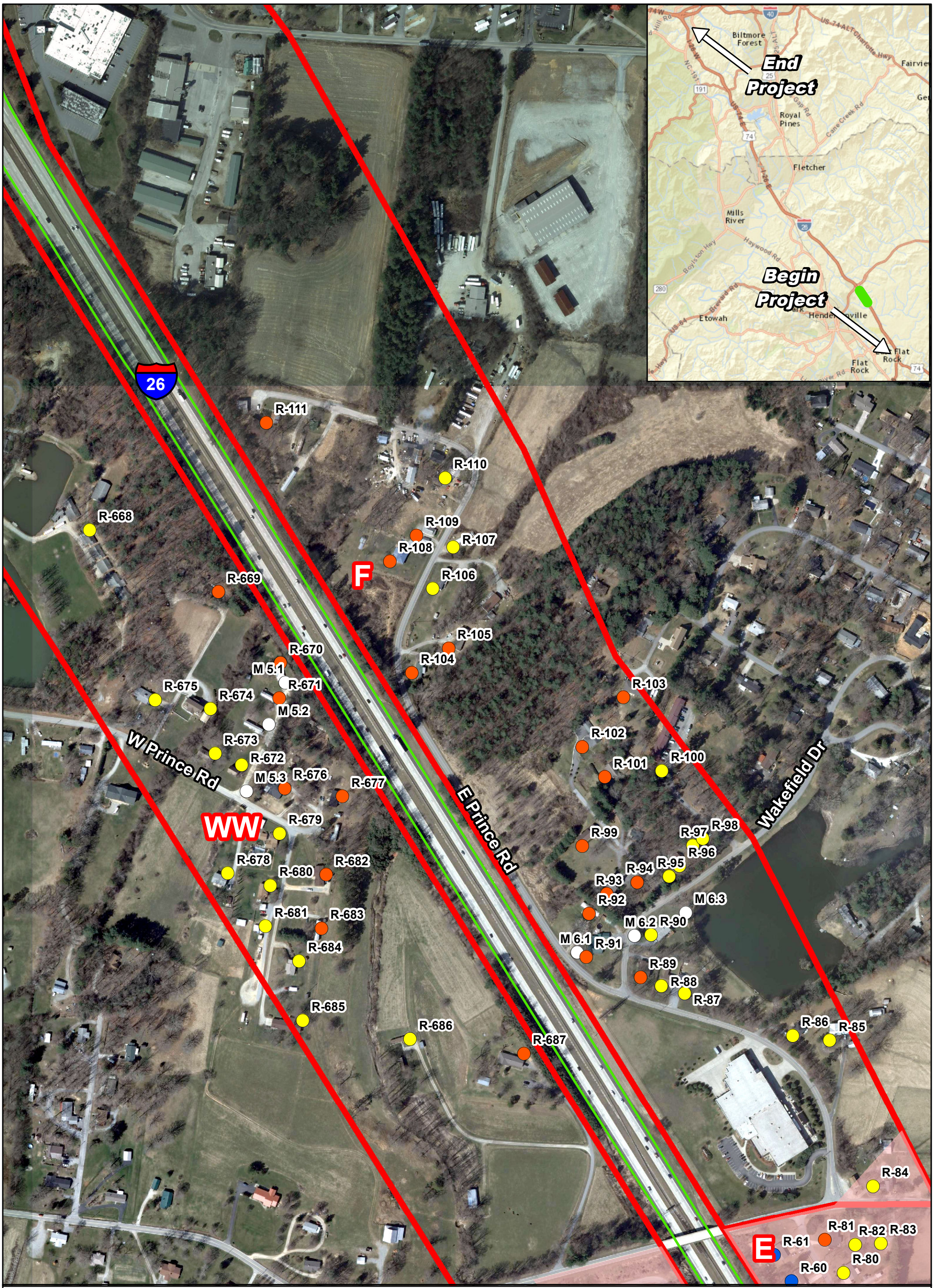
Map Prepared by: Trey Jordan Mar 2015

Figure 5

NSA 2 (Area E)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 6

NSA 2 (Area F)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 7

NSA 2 (Area F)
NSA 3 (Area G)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

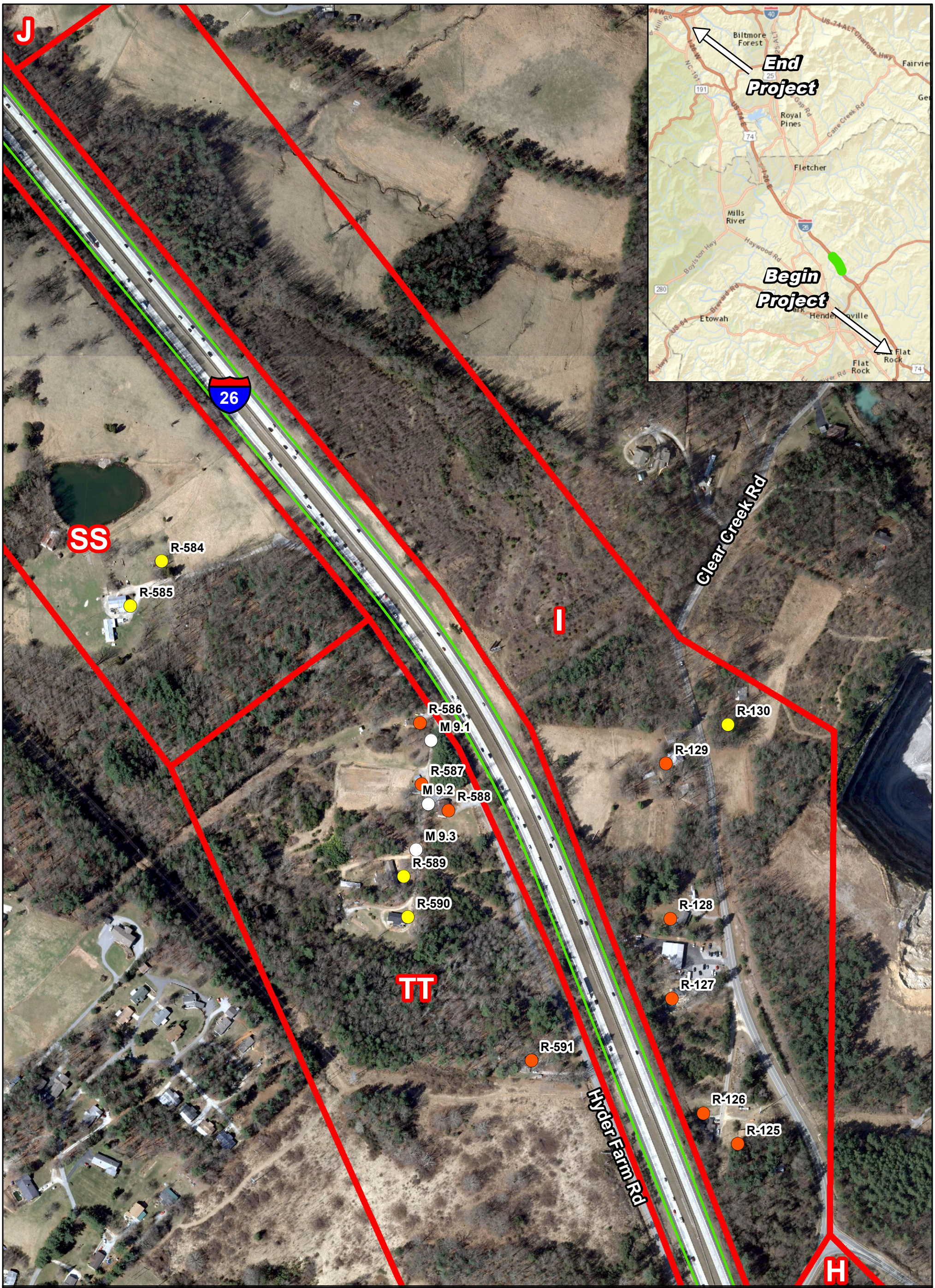
I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Figure 8

NSA 3 (Area H)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

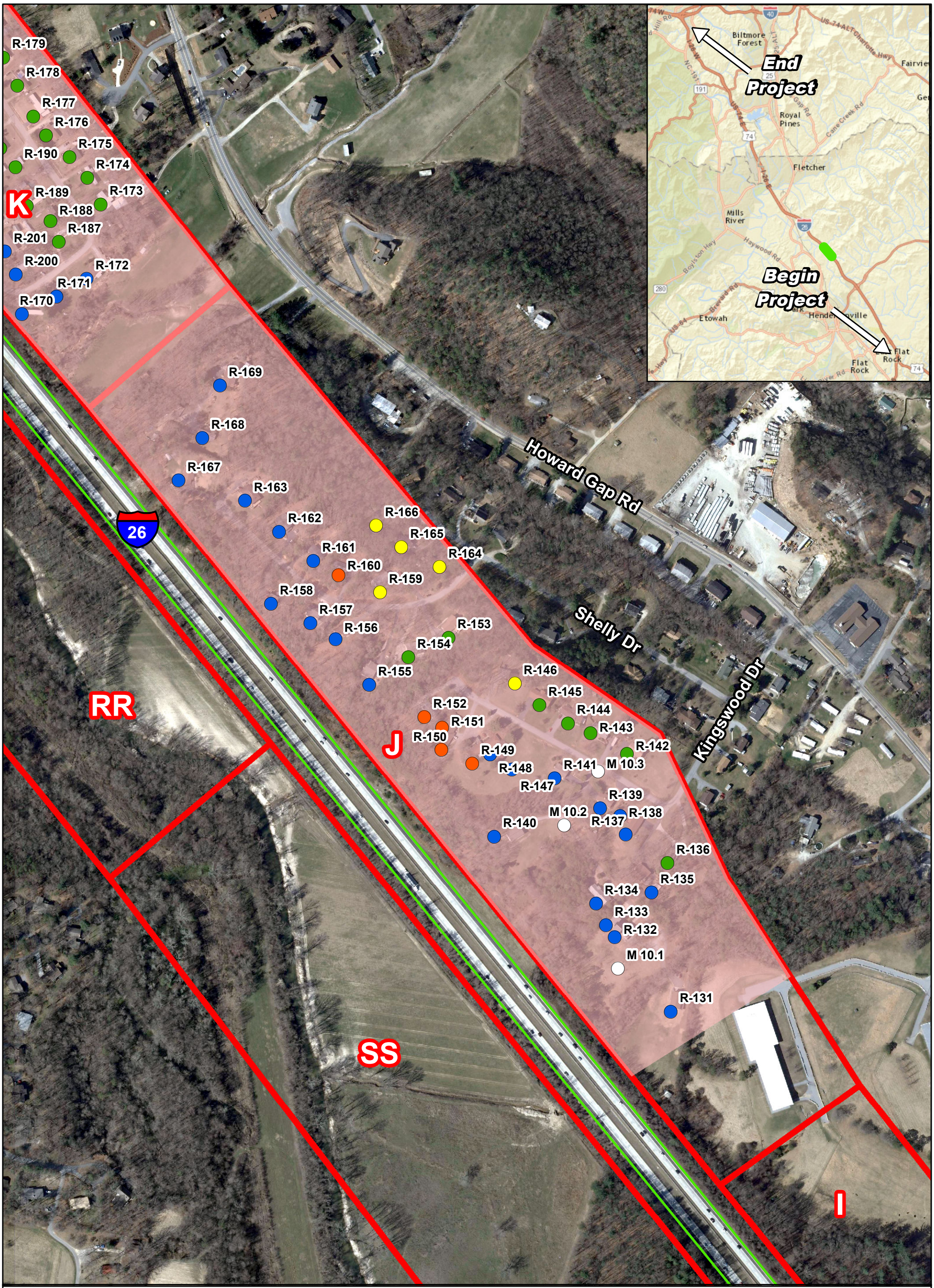
Map Prepared by: Trey Jordan Mar 2015

Figure 9

NSA 3 (Area I)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

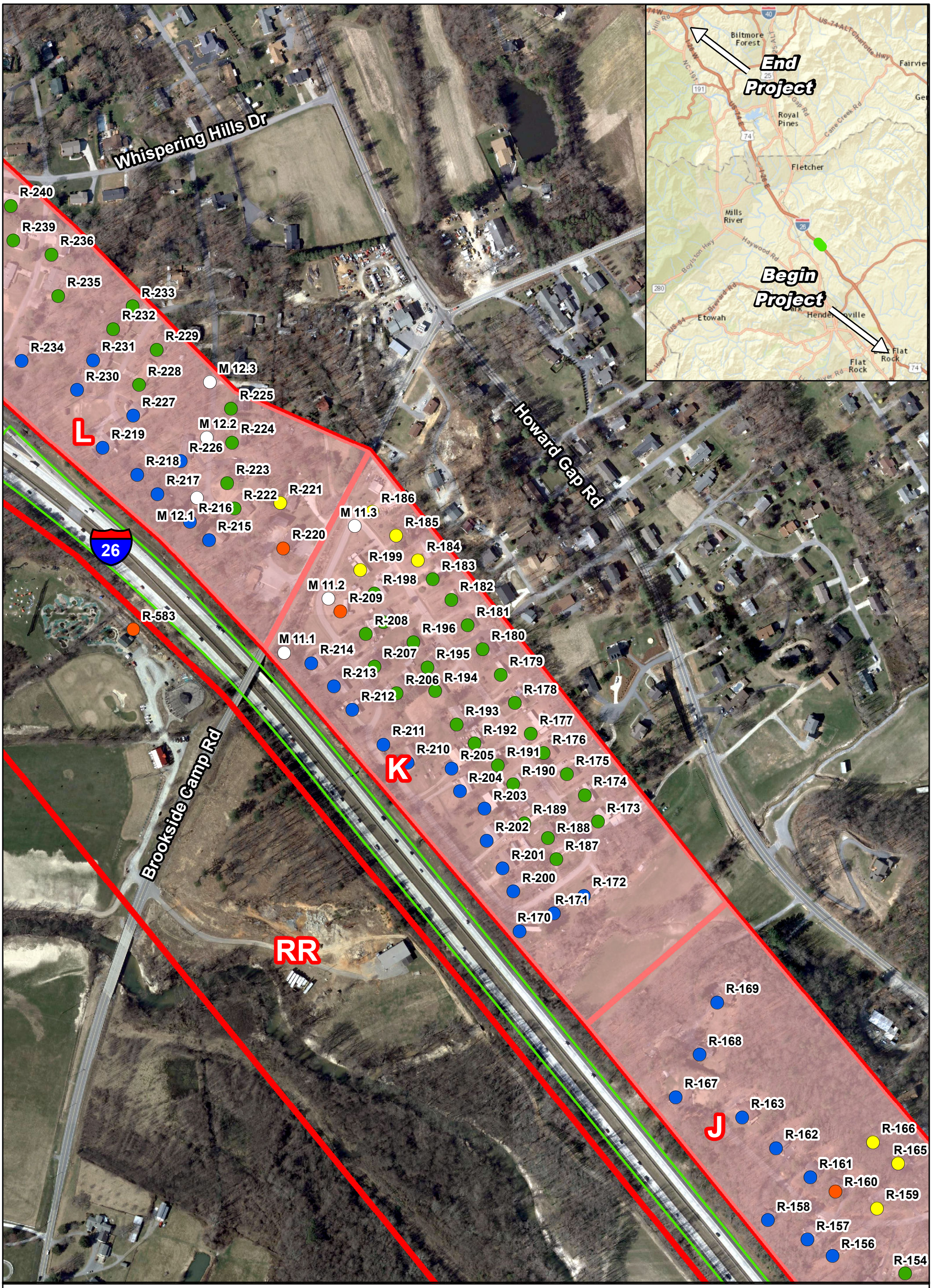
Map Prepared by: Trey Jordan Mar 2015

Figure 10

NSA 3 (Area J)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



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- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

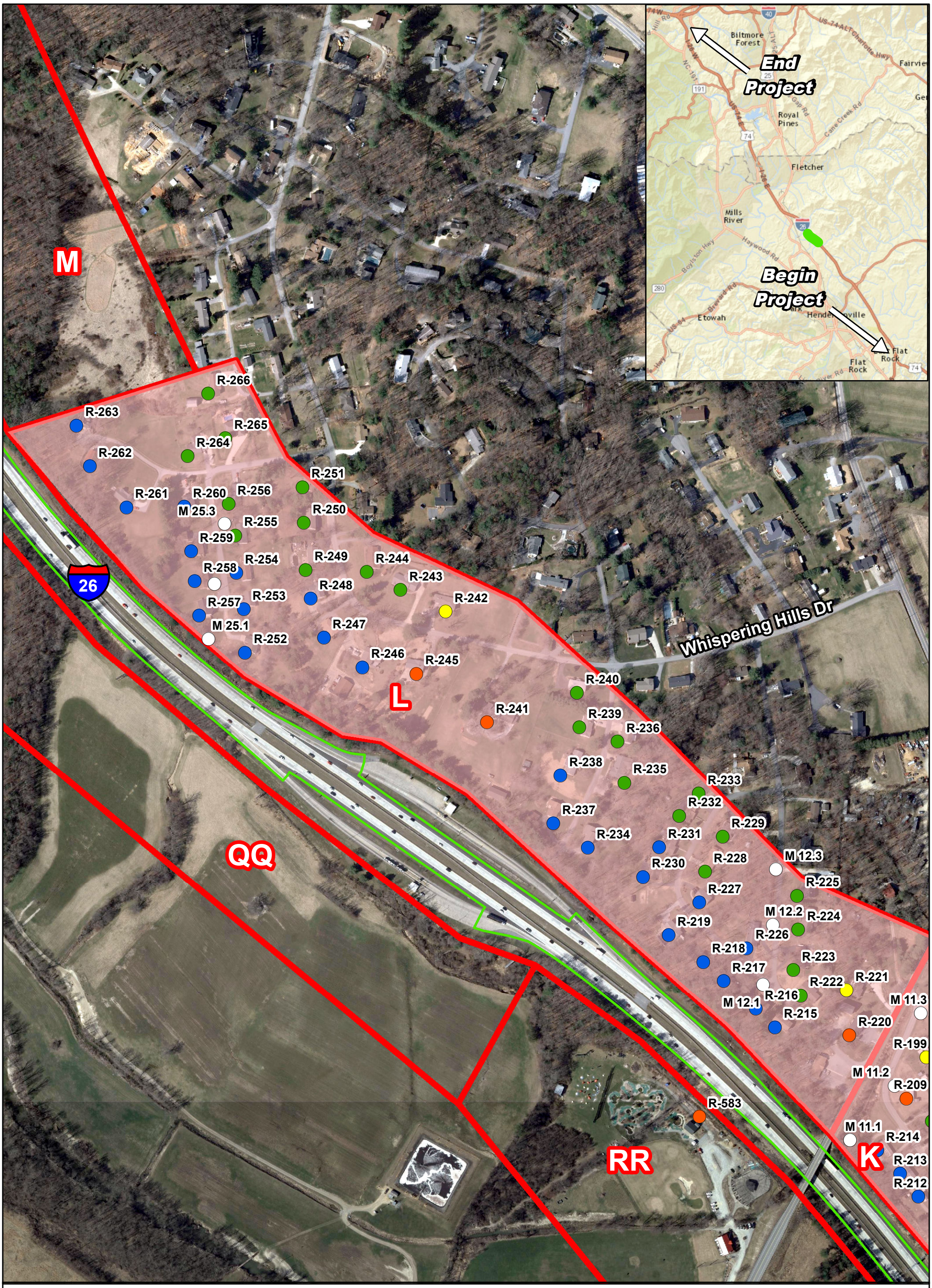
Map Prepared by: Trey Jordan Mar 2015

Figure 11

NSA 3 (Area K)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



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- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 12

NSA 3 (Area L)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

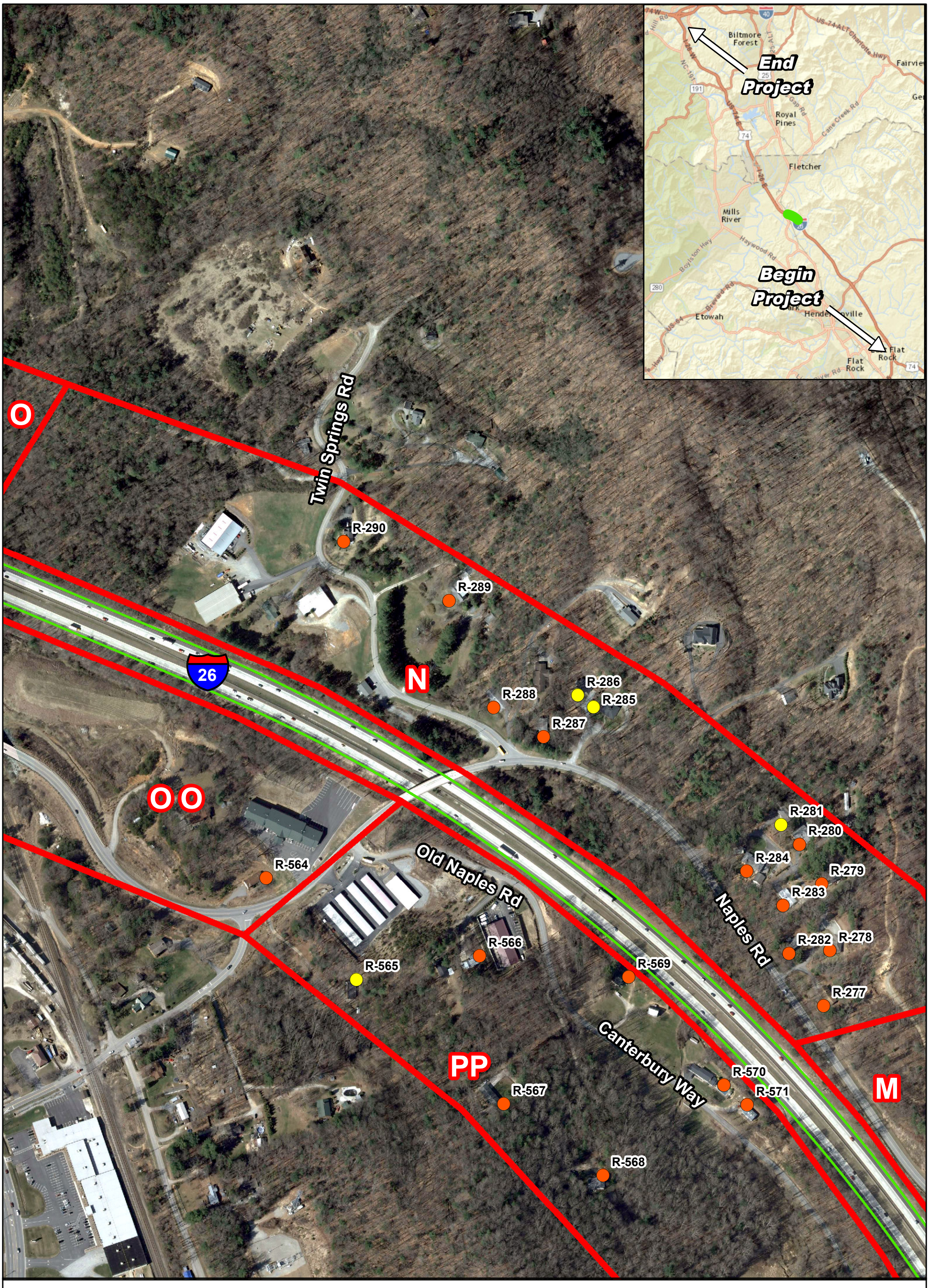
Map Prepared by: Trey Jordan Mar 2015

Figure 13

NSA 3 (Area M)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

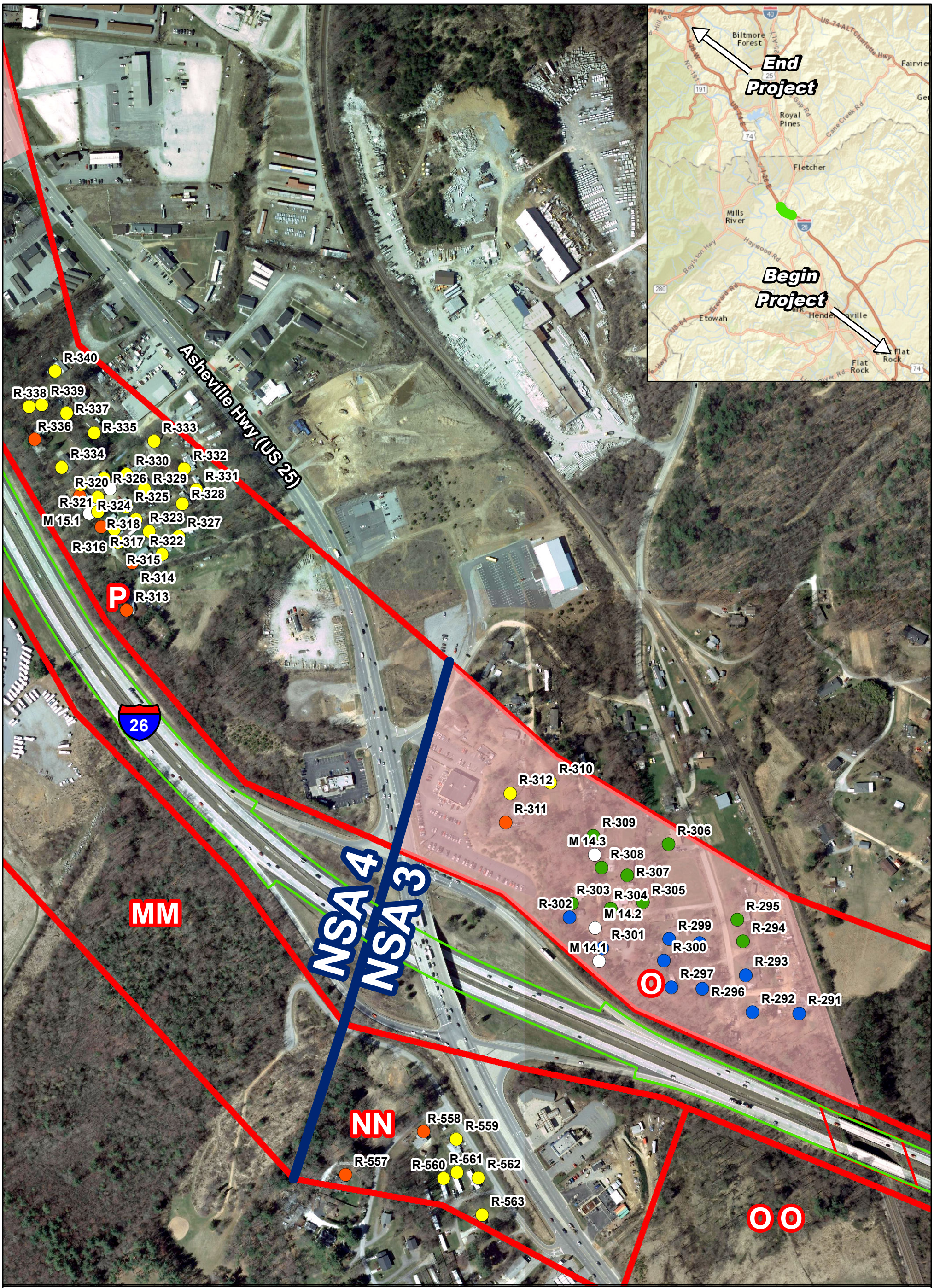
Map Prepared by: Trey Jordan Mar 2015

Figure 14

NSA 3 (Area N)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

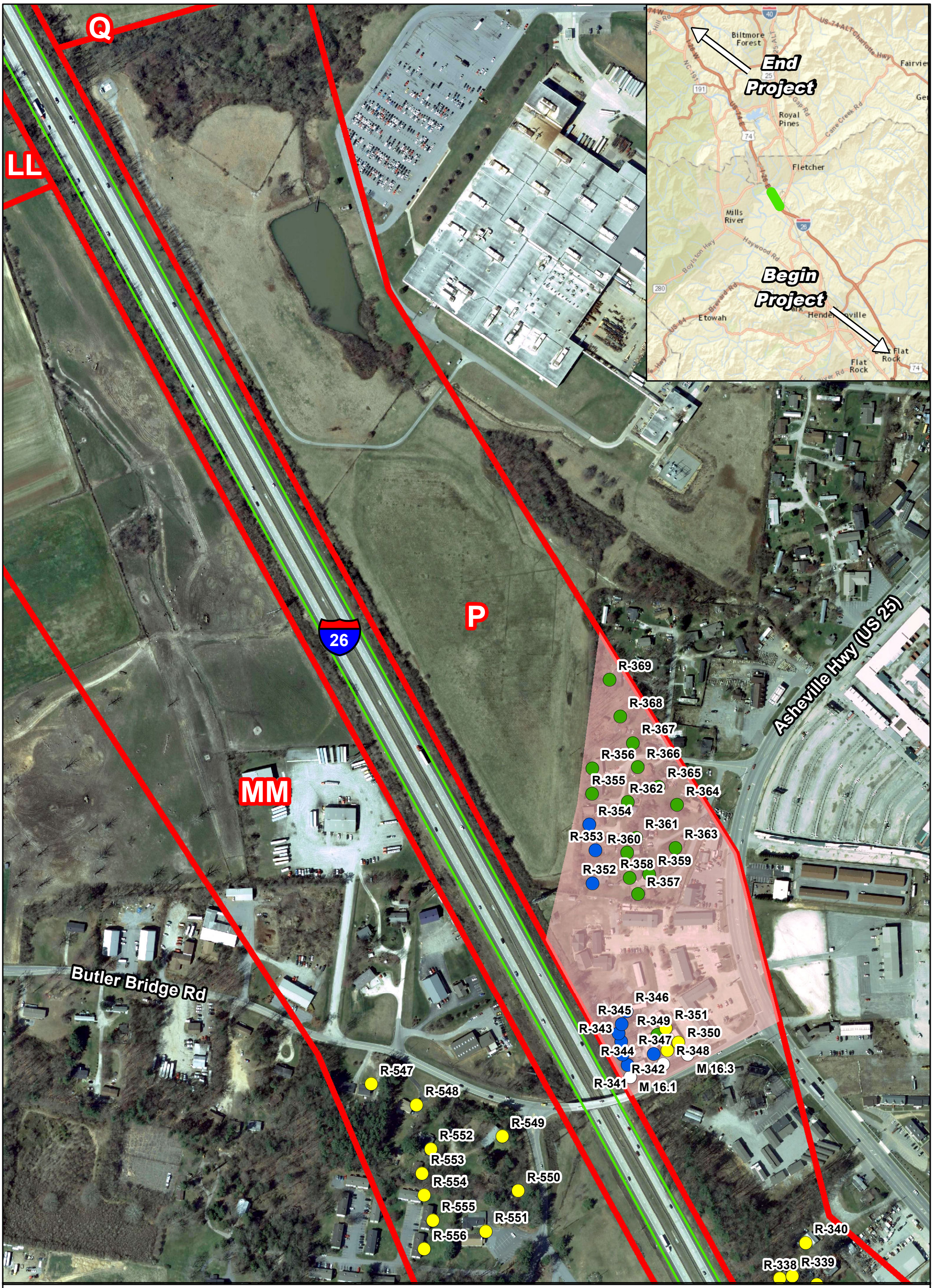
Map Prepared by: Trey Jordan Mar 2015

Figure 15

NSA 3 (Area O)
NSA 4 (Area P)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 16

NSA 4 (Area P)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

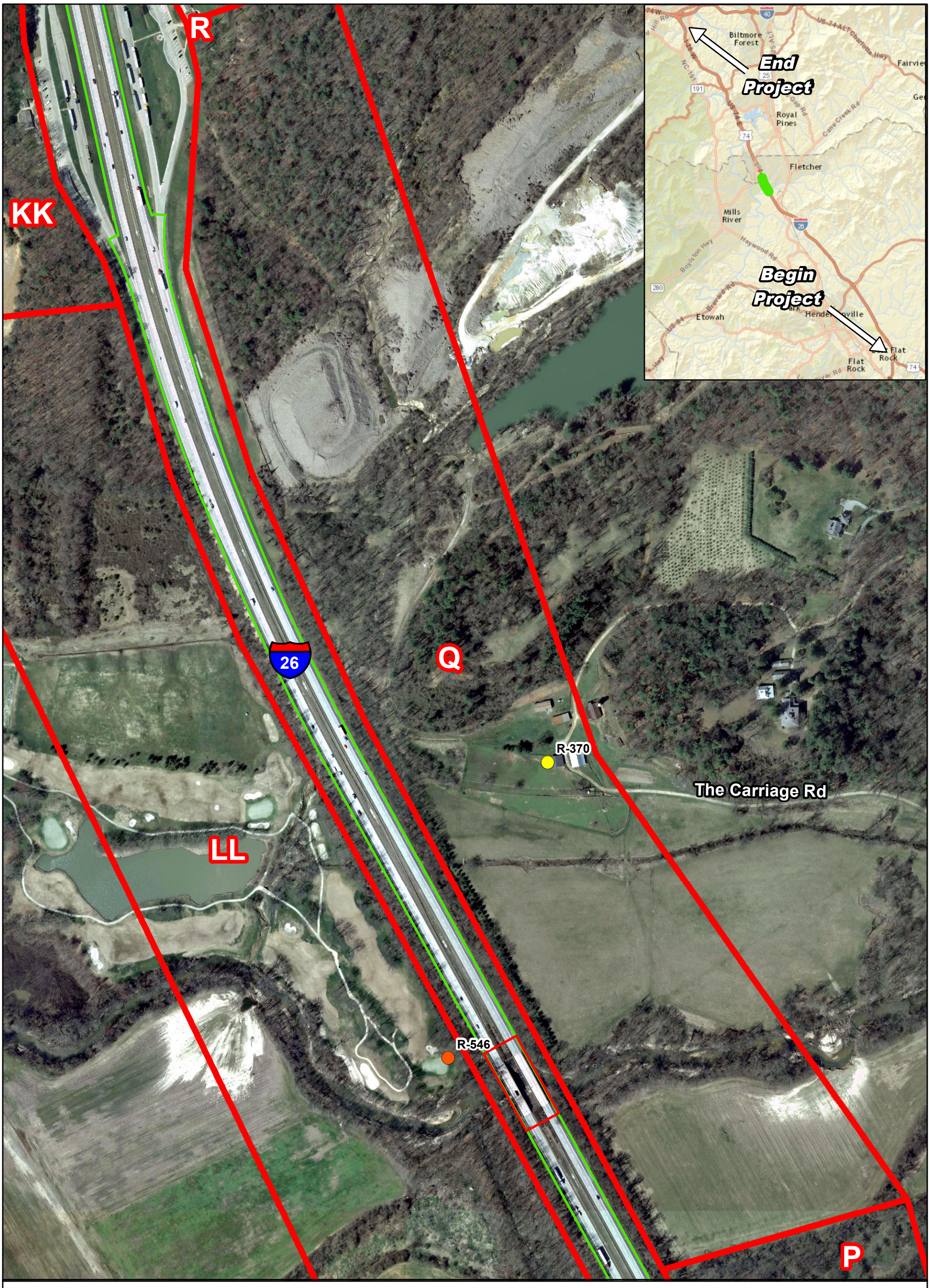


Figure 17

NSA 4 (Area Q)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

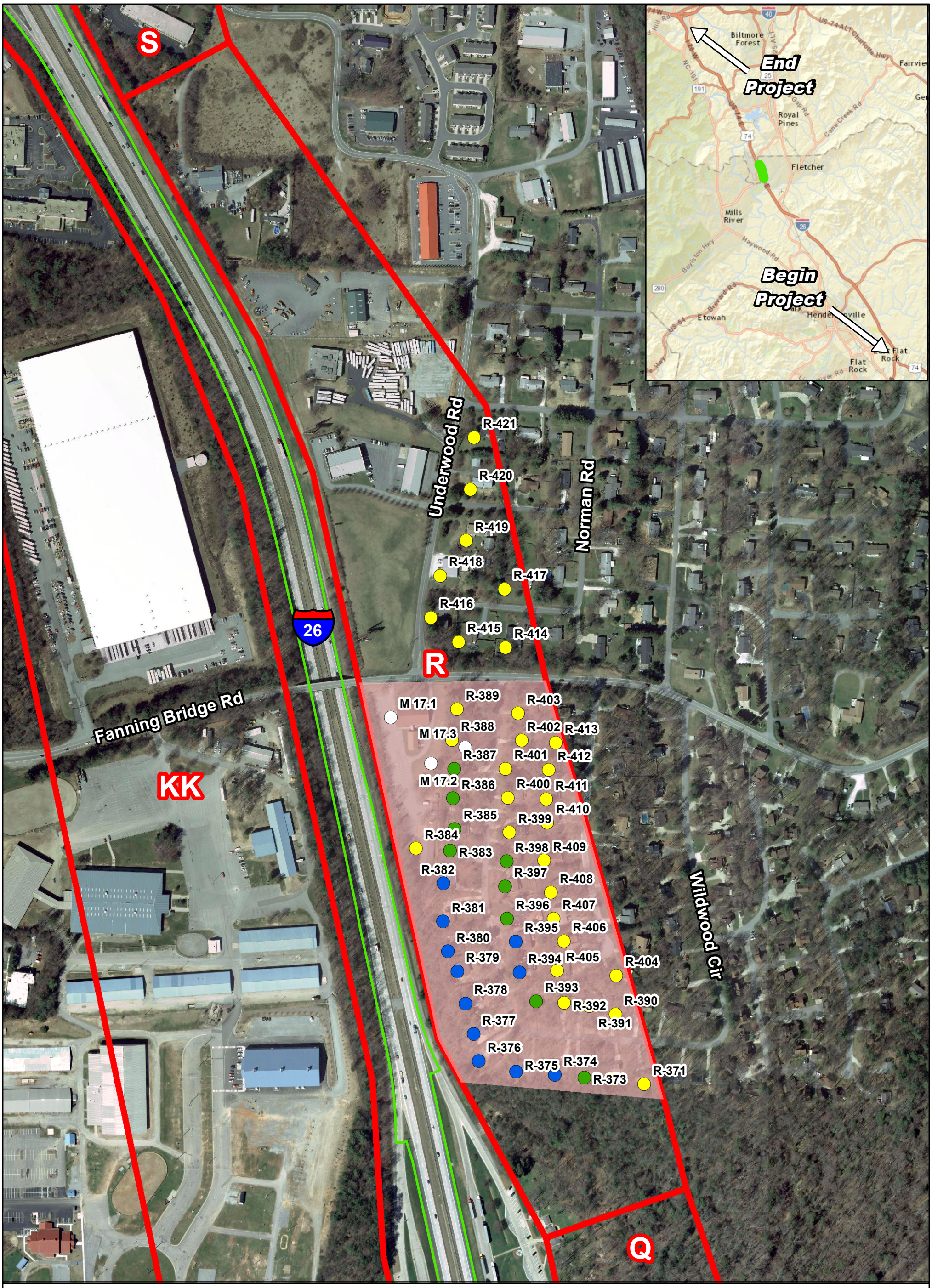
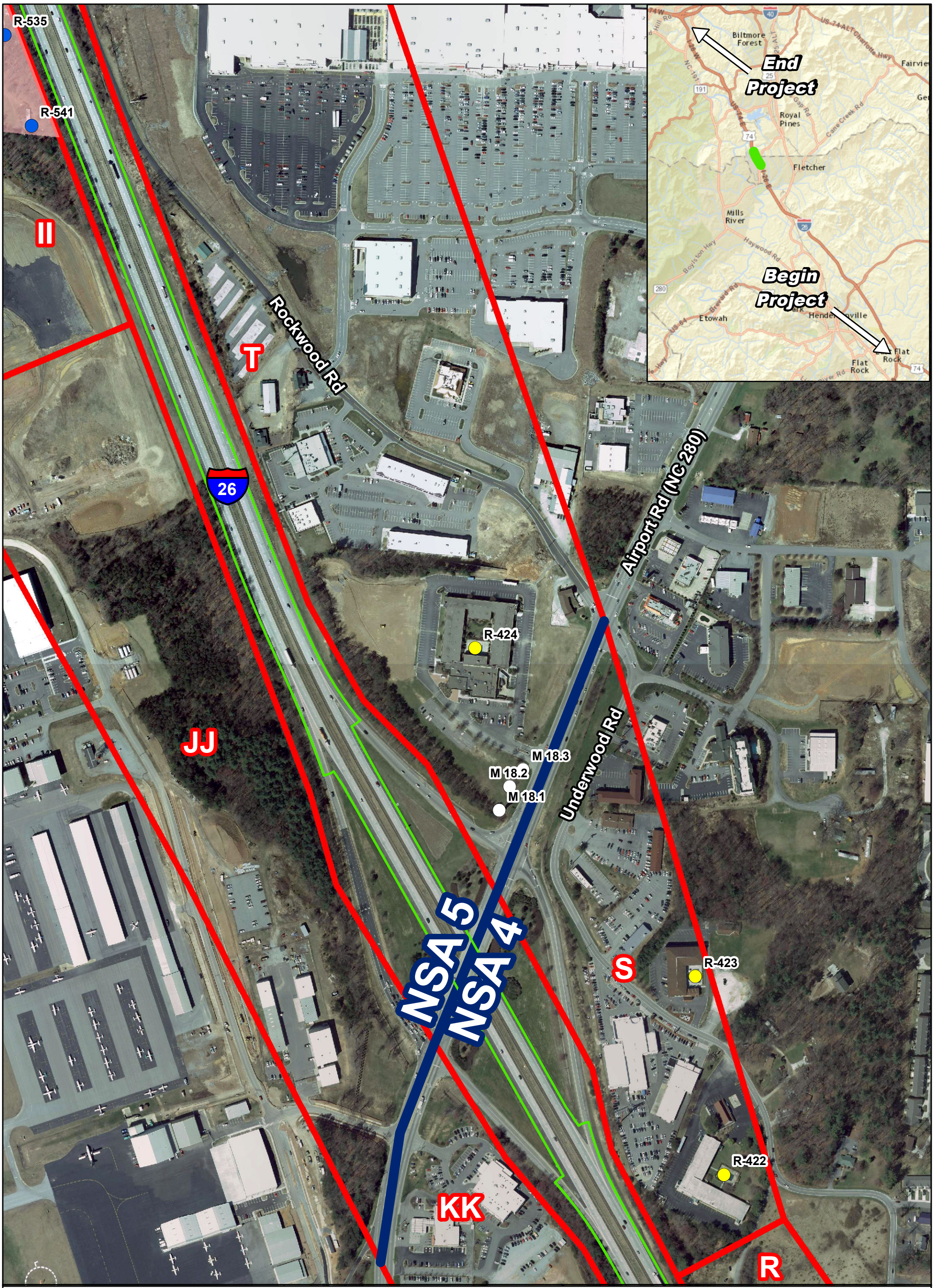


Figure 18

NSA 4 (Area R)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 19

NSA 4 (Area S)
NSA 5 (Area T)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

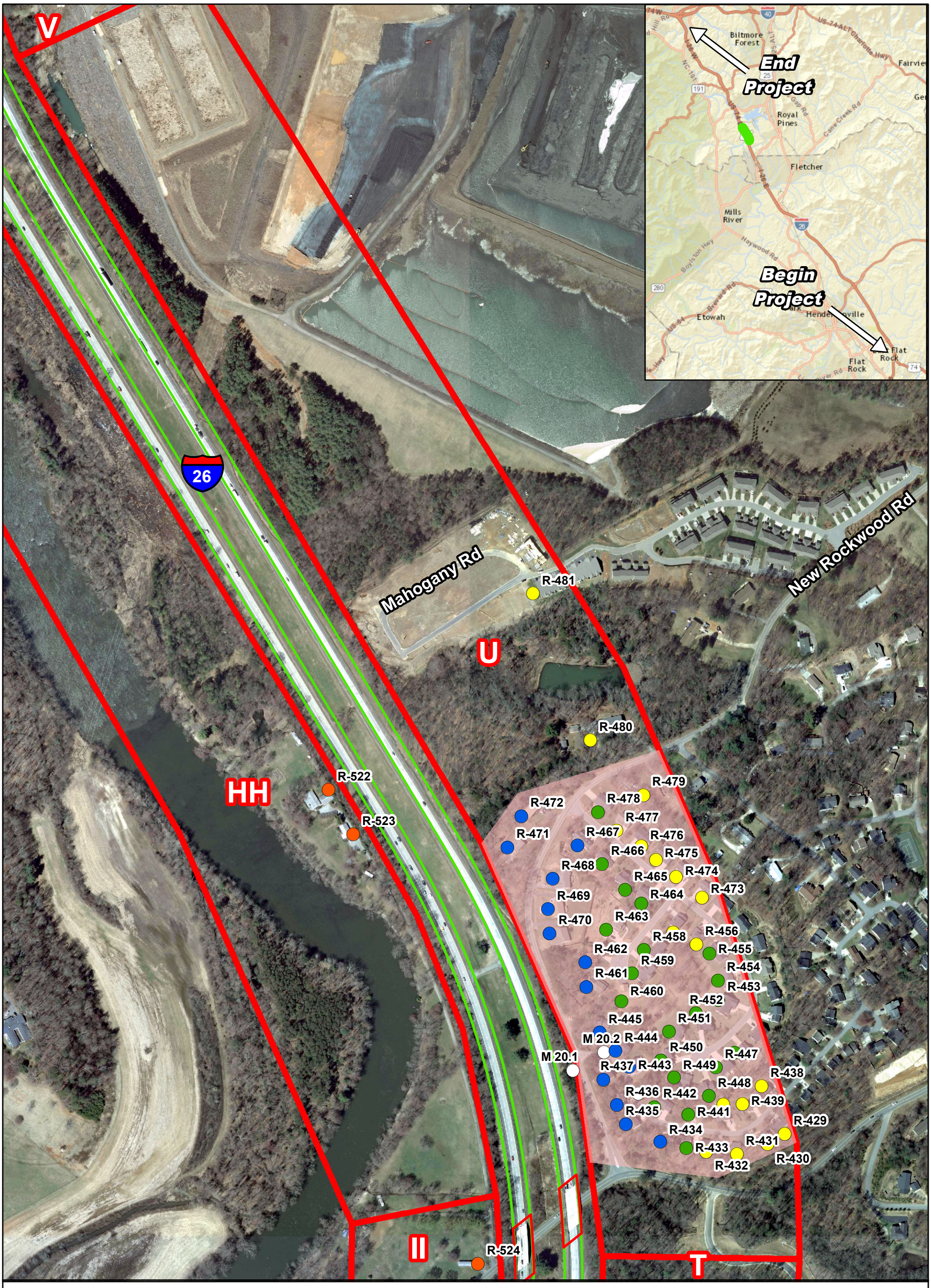
Map Prepared by: Trey Jordan Mar 2015

Figure 20

NSA 5 (Area T)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

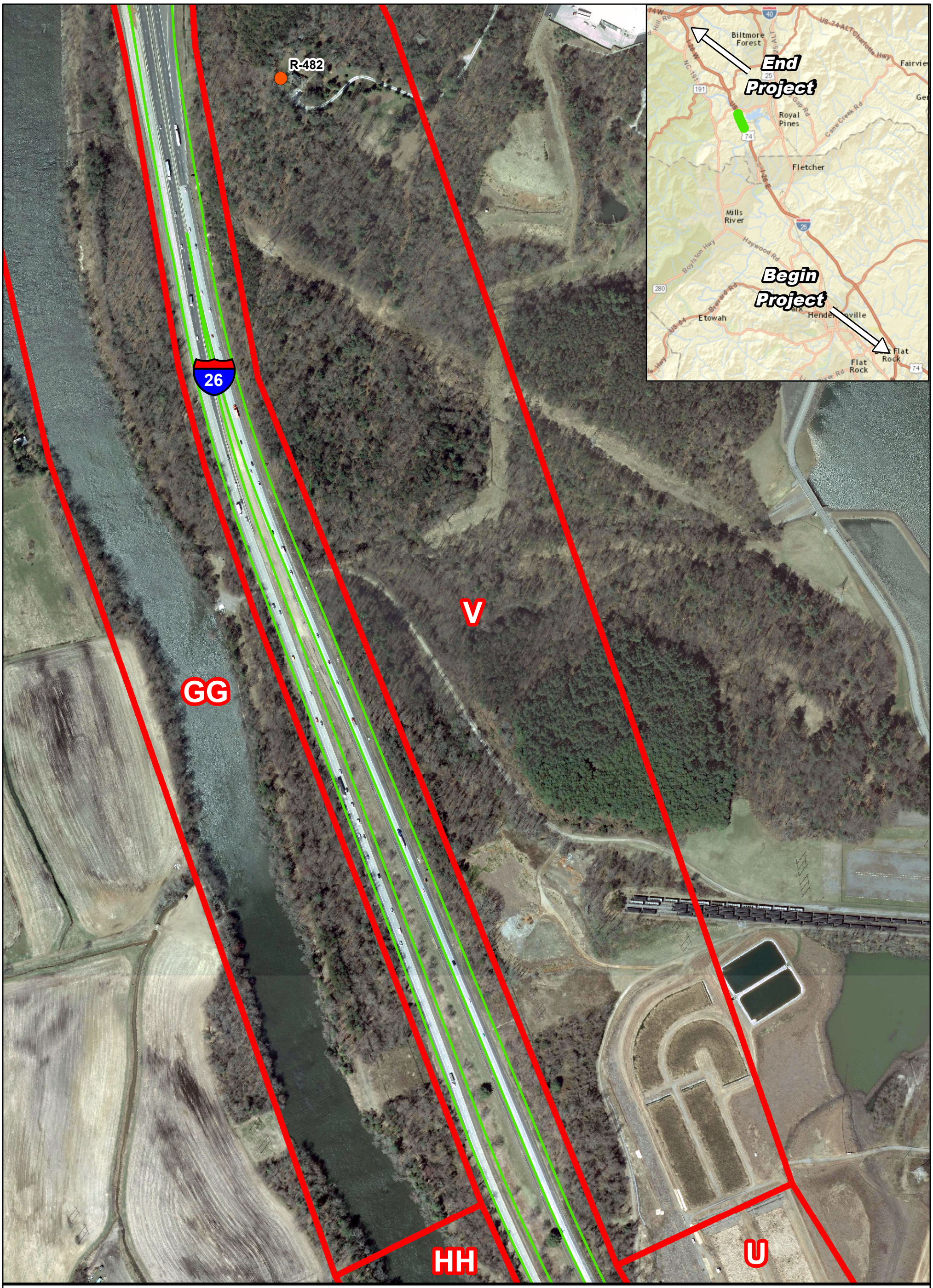
Map Prepared by: Trey Jordan Mar 2015

Figure 21

NSA 5 (Area U)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

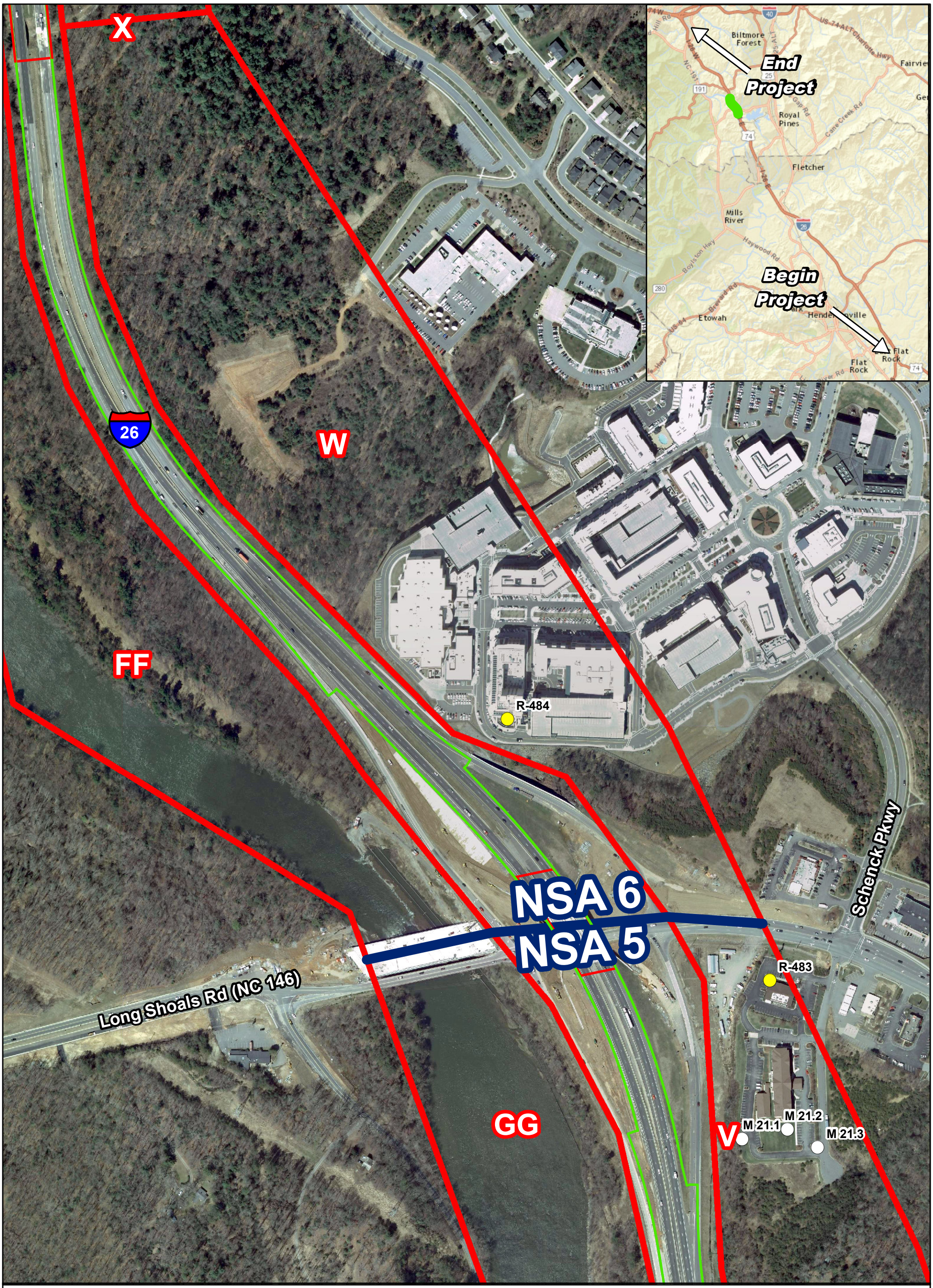
Map Prepared by: Trey Jordan Mar 2015

Figure 22

NSA 5 (Area V)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

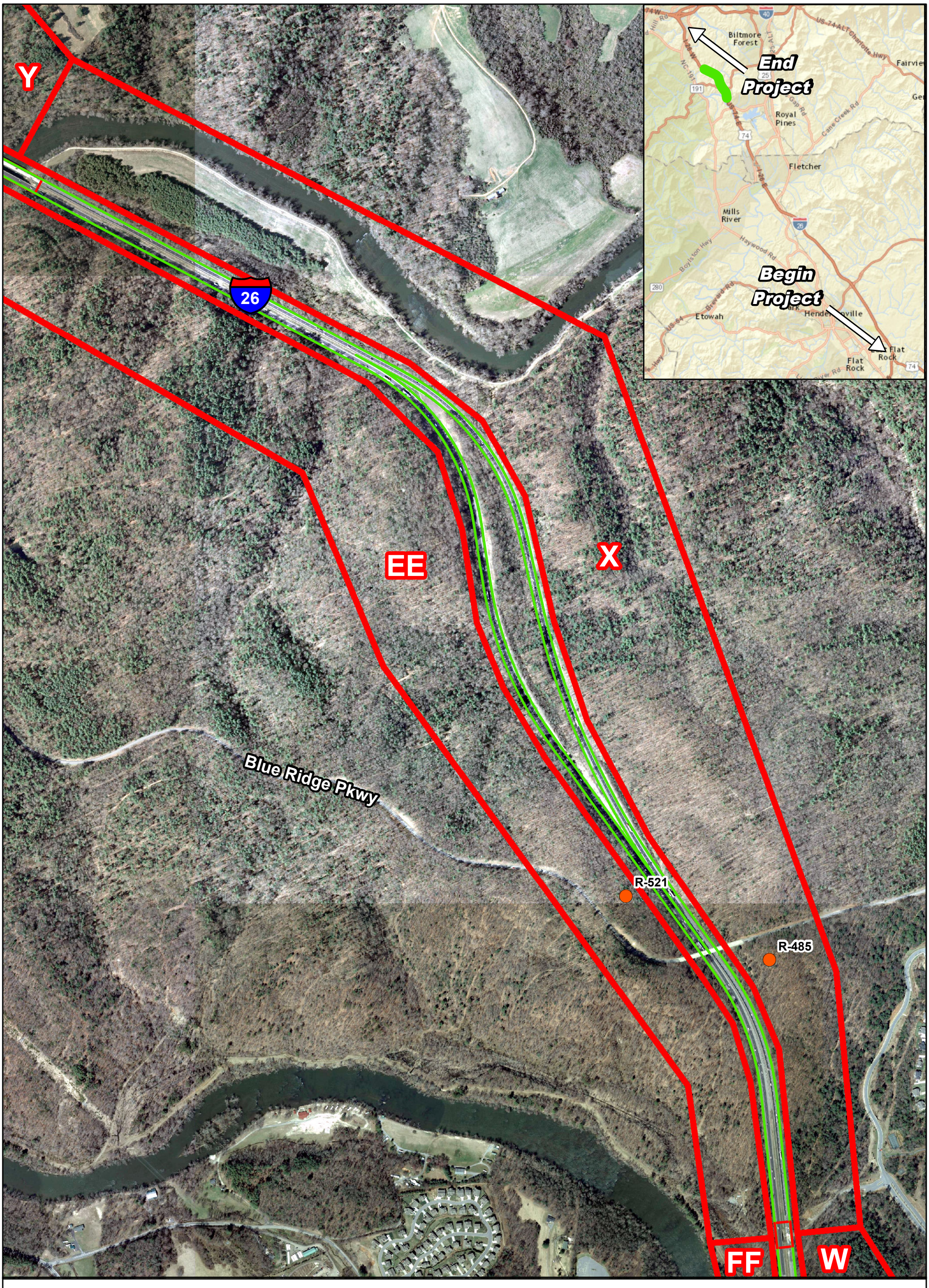
Map Prepared by: Trey Jordan Mar 2015

Figure 23

NSA 5 (Area V)
NSA 6 (Area W)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 300 600 1,200 Feet

1 inch = 700 ft

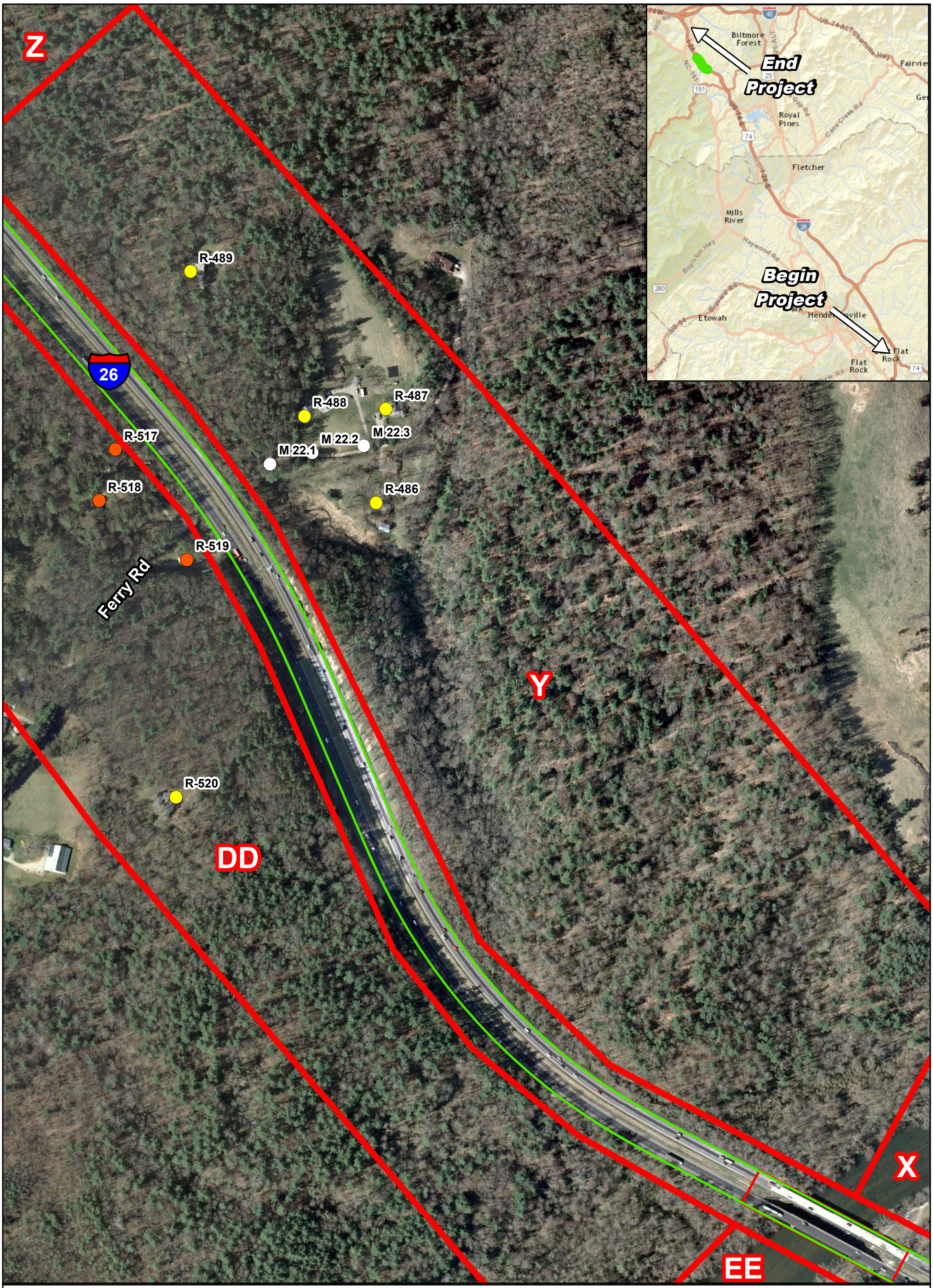
Map Prepared by: Trey Jordan Mar 2015

Figure 24

NSA 6 (Area X)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 25

NSA 6 (Area Y)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 26

NSA 6 (Area Z)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Figure 27

NSA 6 (Area AA)
NSA 6 (Area BB)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

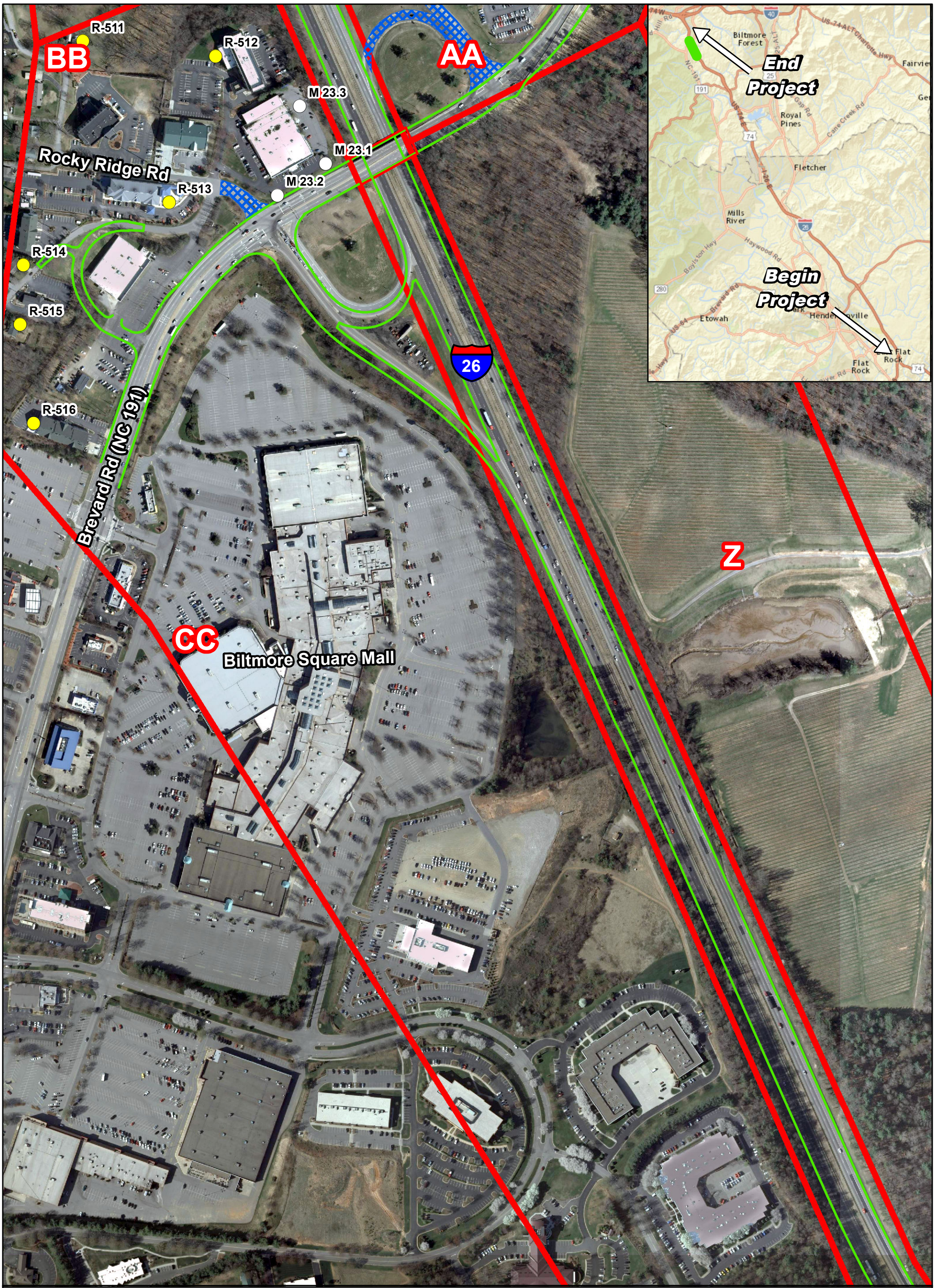
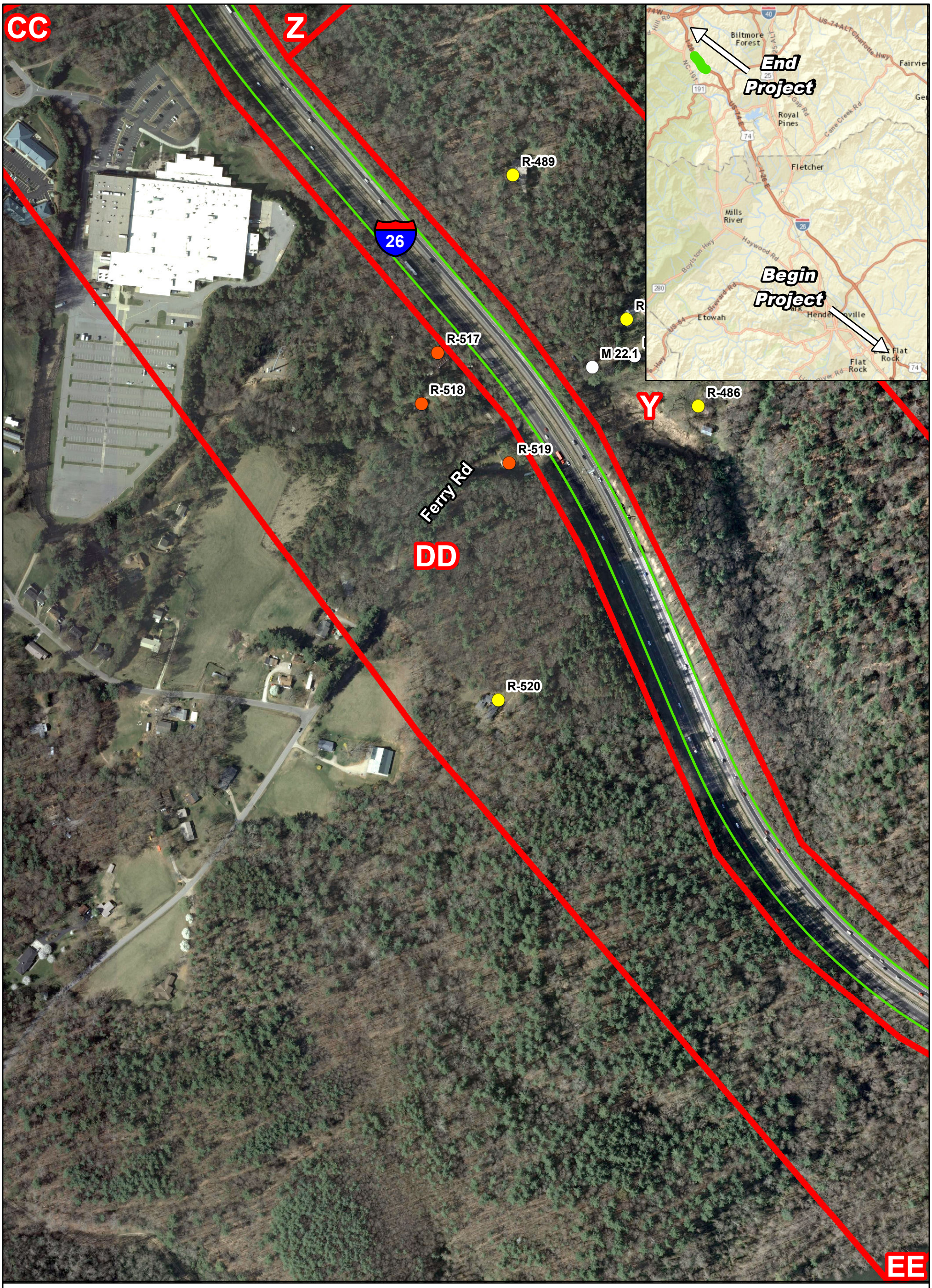


Figure 28

NSA 6 (Area CC)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

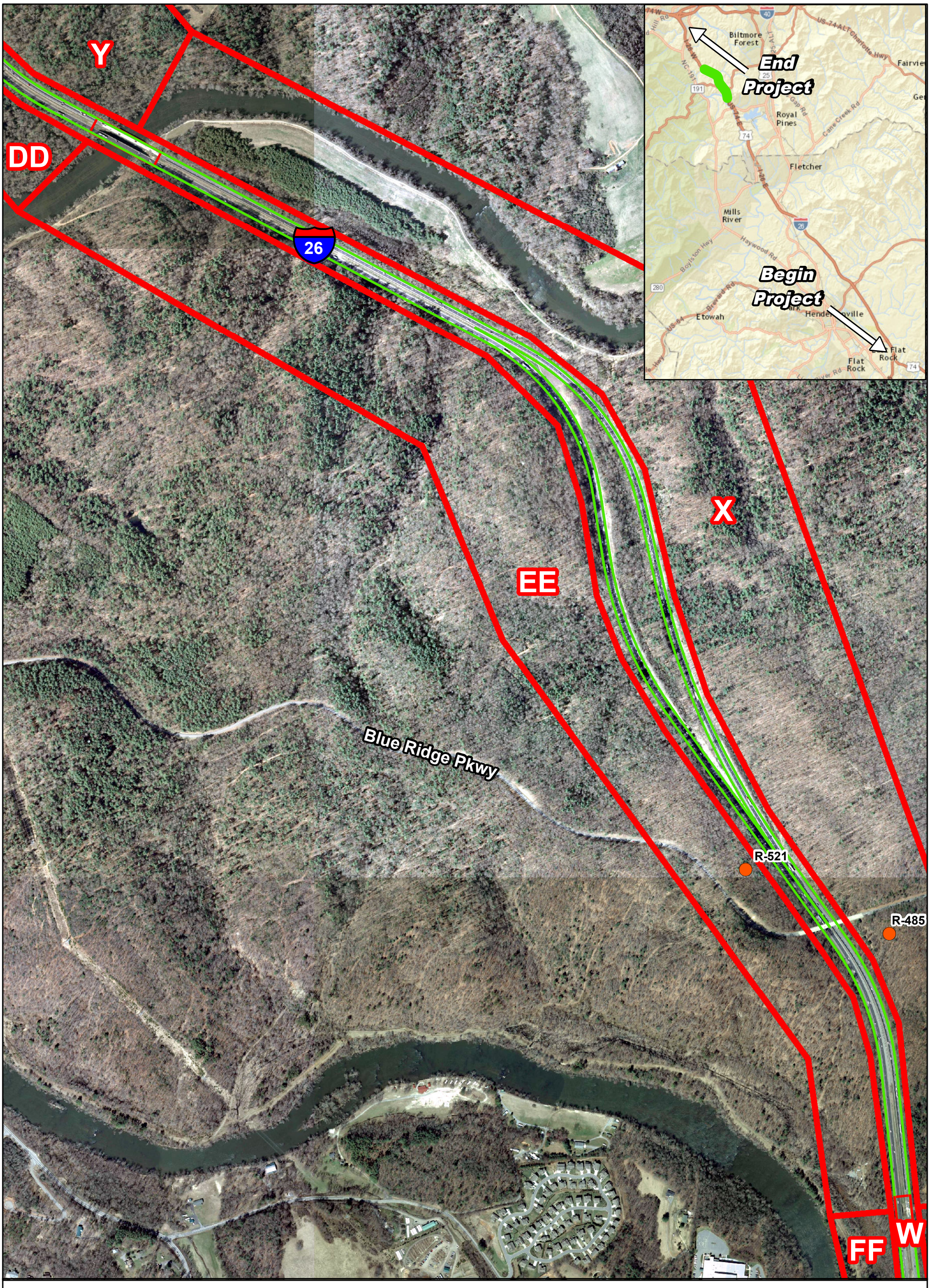
Map Prepared by: Trey Jordan Mar 2015

Figure 29

NSA 6 (Area DD)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 300 600 1,200 Feet

1 inch = 700 ft

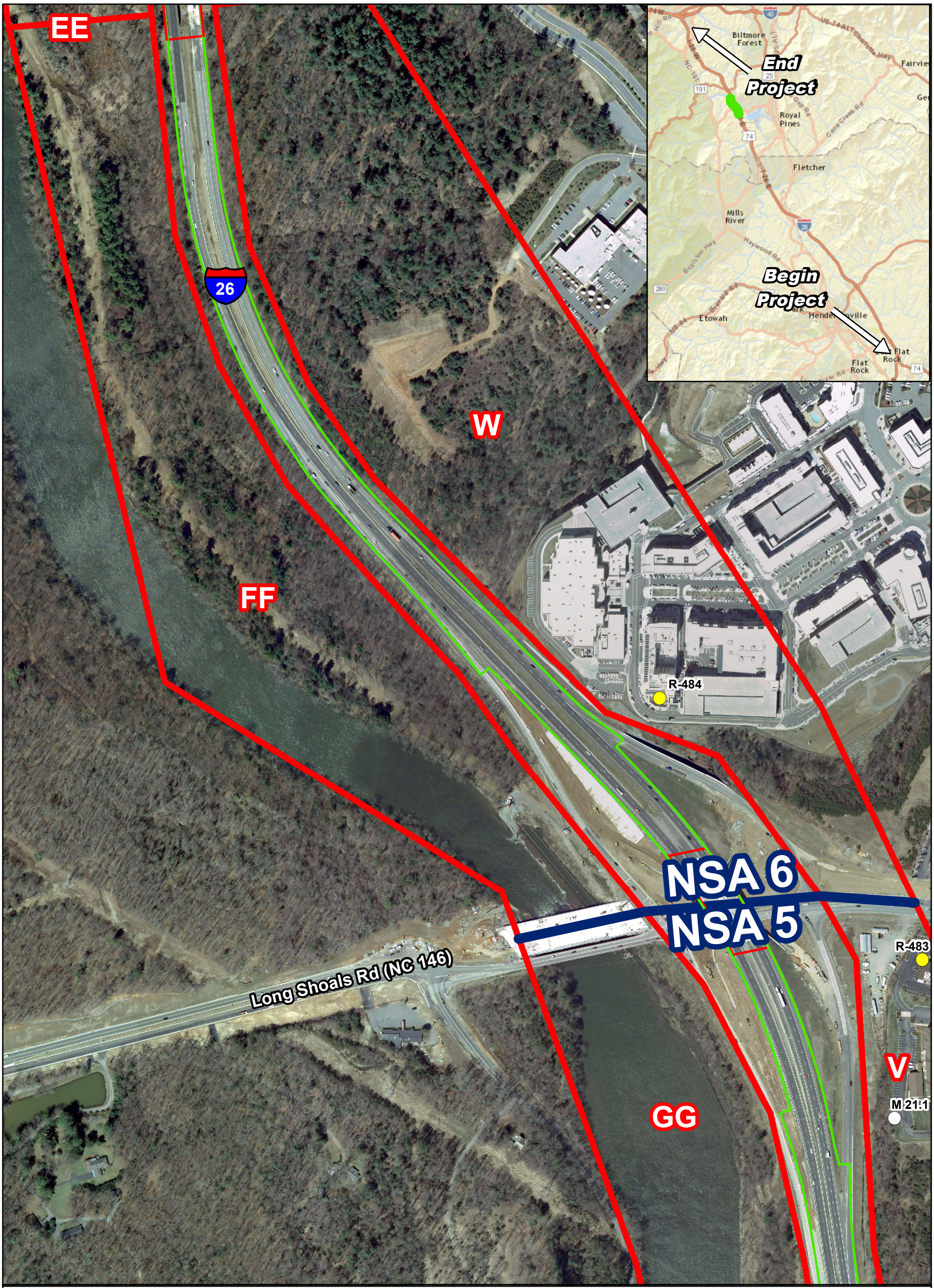
Map Prepared by: Trey Jordan Mar 2015

Figure 30

NSA 6 (Area EE)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 31

NSA 6 (Area FF)
NSA 5 (Area GG)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

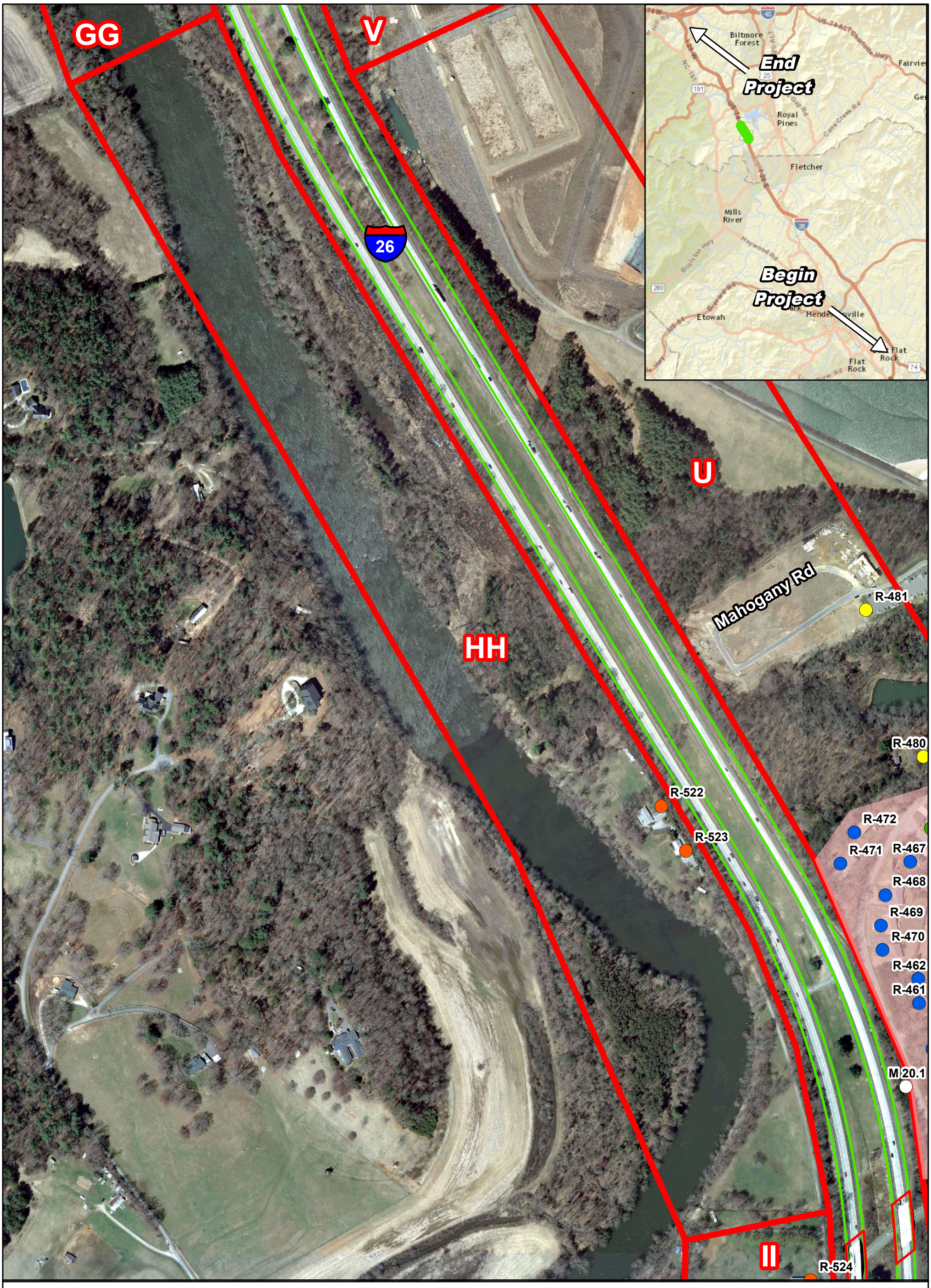
Map Prepared by: Trey Jordan Mar 2015

Figure 32

NSA 5 (Area GG)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

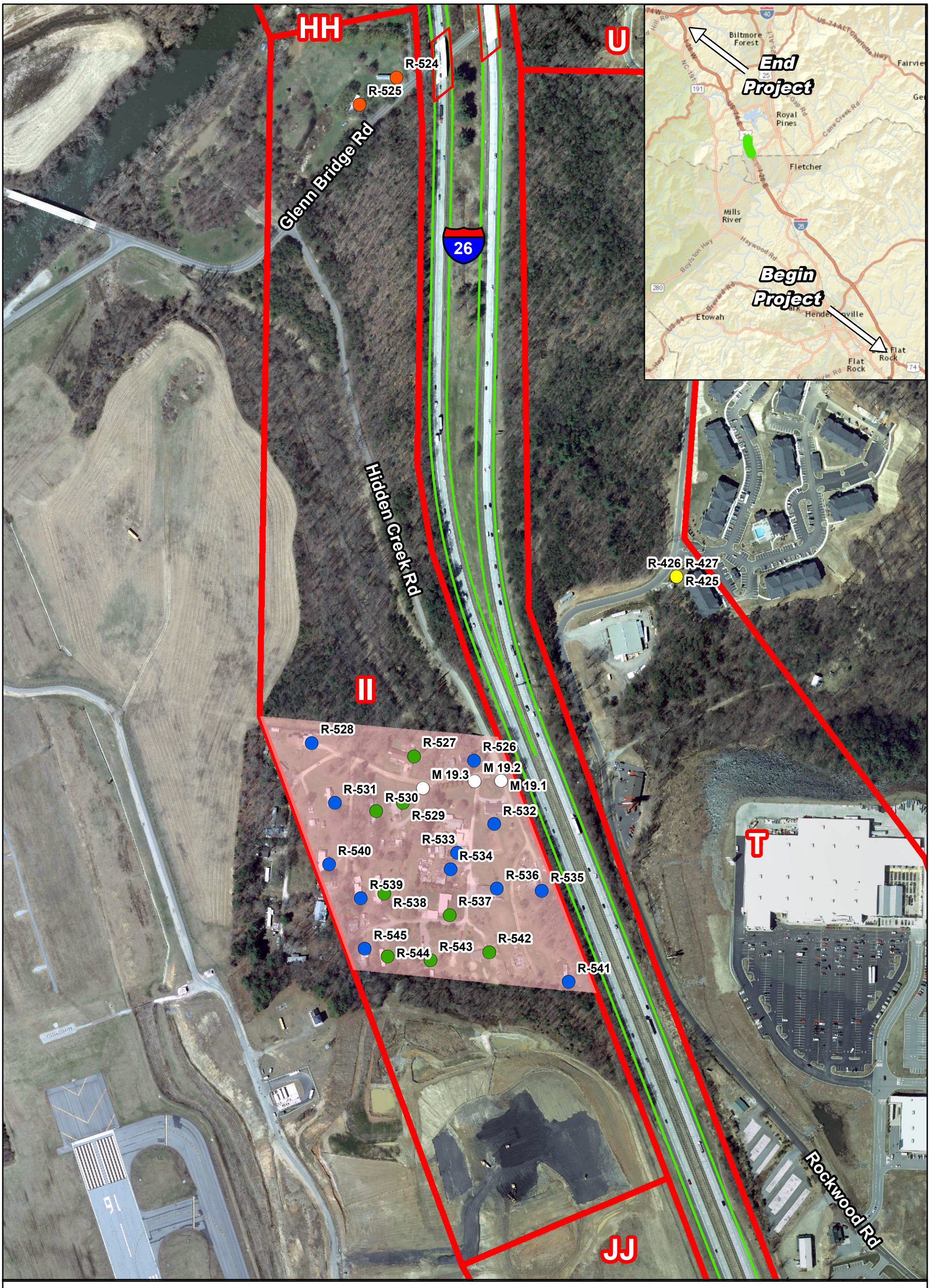
Map Prepared by: Trey Jordan Mar 2015

Figure 33

NSA 5 (Area HH)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

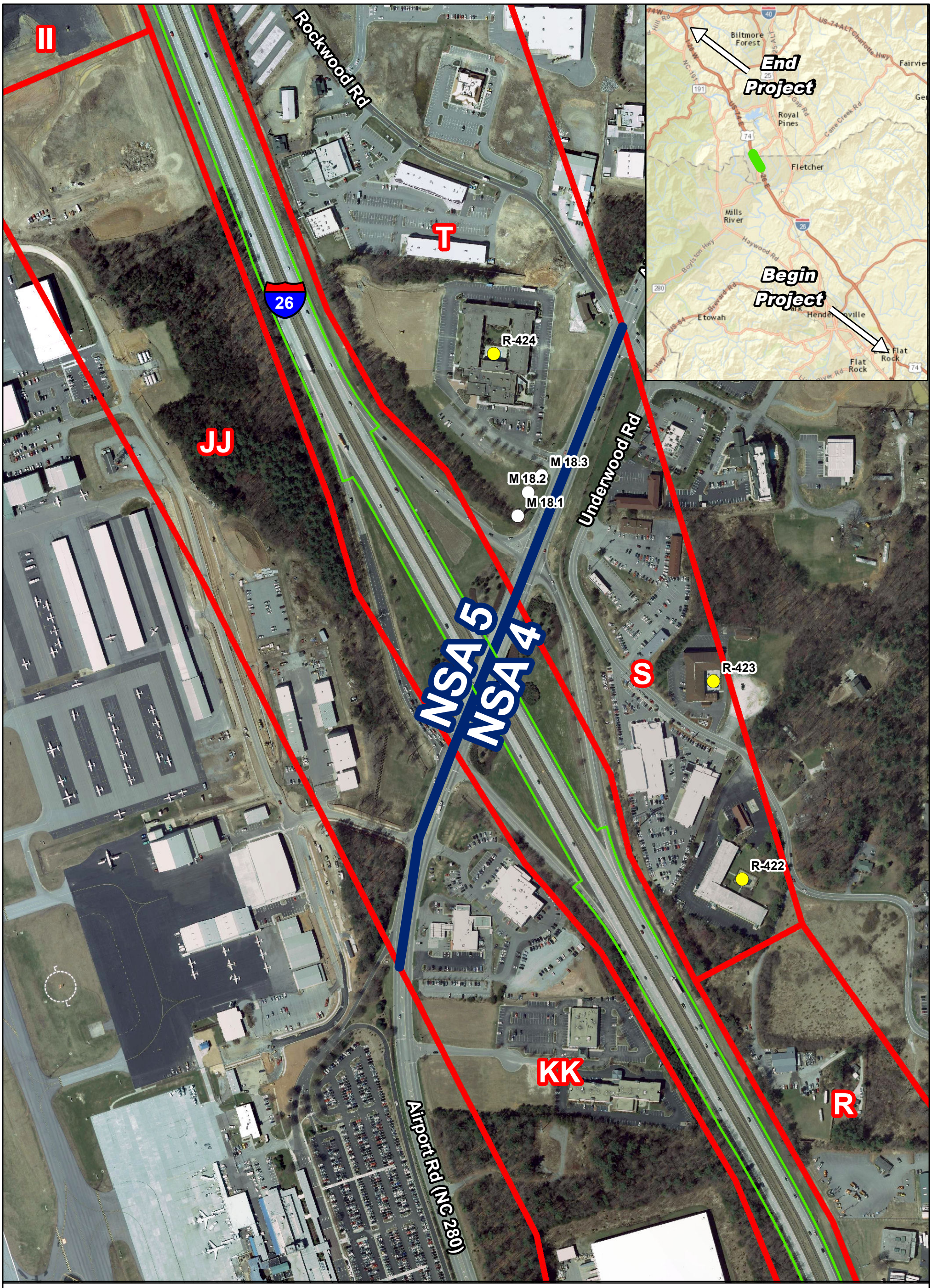
Map Prepared by: Trey Jordan Mar 2015

Figure 34

NSA 5 (Area II)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 35

NSA 5 (Area JJ)
NSA 4 (Area KK)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 36

NSA 4 (Area KK)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 37

NSA 4 (Area LL)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

LL

MM

P

26

Butler Bridge Rd

End Project

Begin Project

Biltmore Forest
Royal Pines
Fletcher
Mills River
Etowah
Flat Rock
Fairview

R-369
R-368
R-367
R-356
R-366
R-365
R-355
R-362
R-364
R-354
R-361
R-353
R-360
R-363
R-352
R-358
R-359
R-357
R-346
R-345
R-349
R-351
R-343
R-347
R-348
R-344
R-342
R-350
R-341
M 16.1
R-547
R-548
R-549
R-552
R-553
R-554
R-550
R-555
R-551
R-556

Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

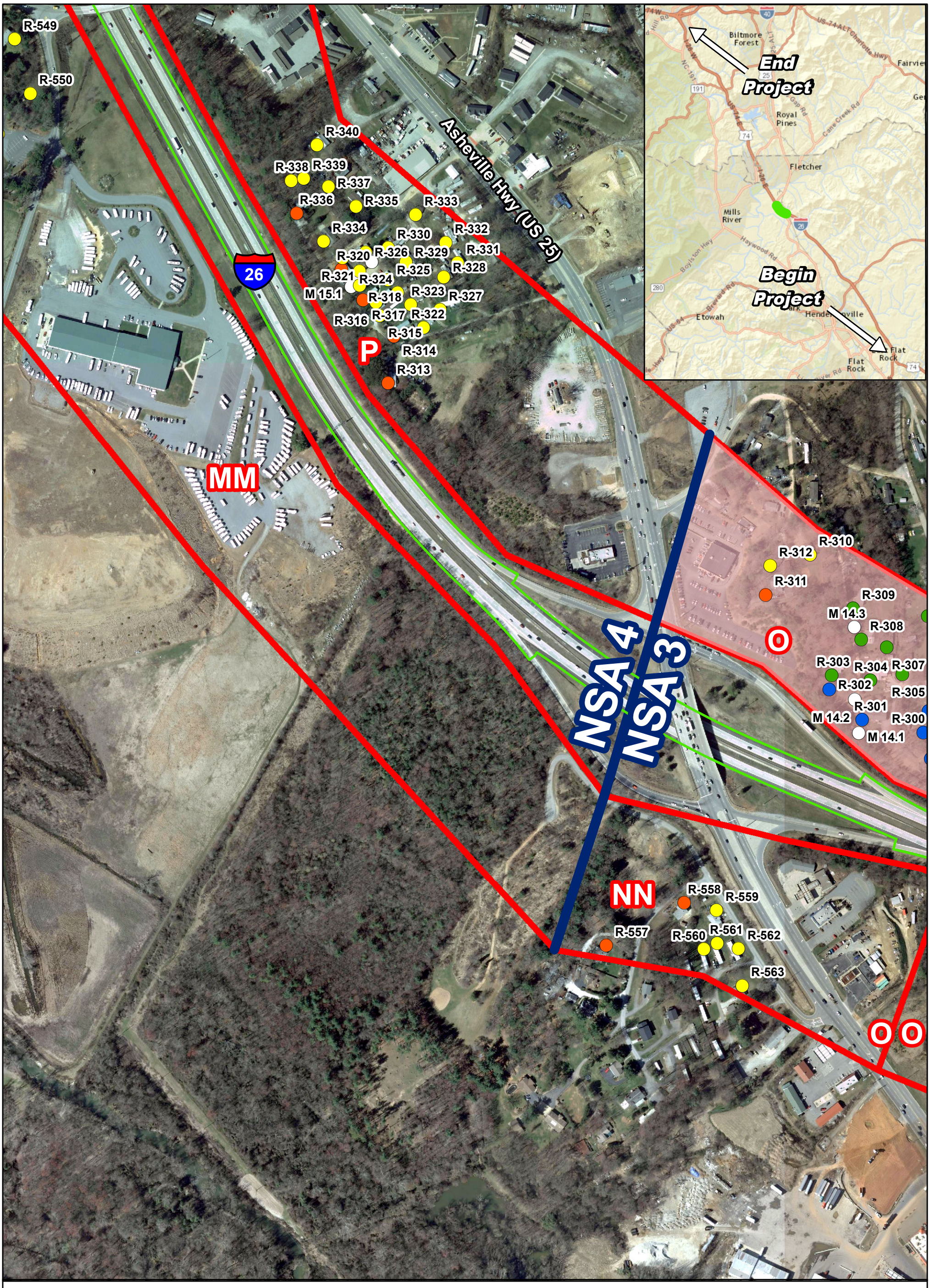
Map Prepared by: Trey Jordan Mar 2015

Figure 38

NSA 4 (Area MM)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 39

NSA 4 (Area MM)
NSA 3 (Area NN)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

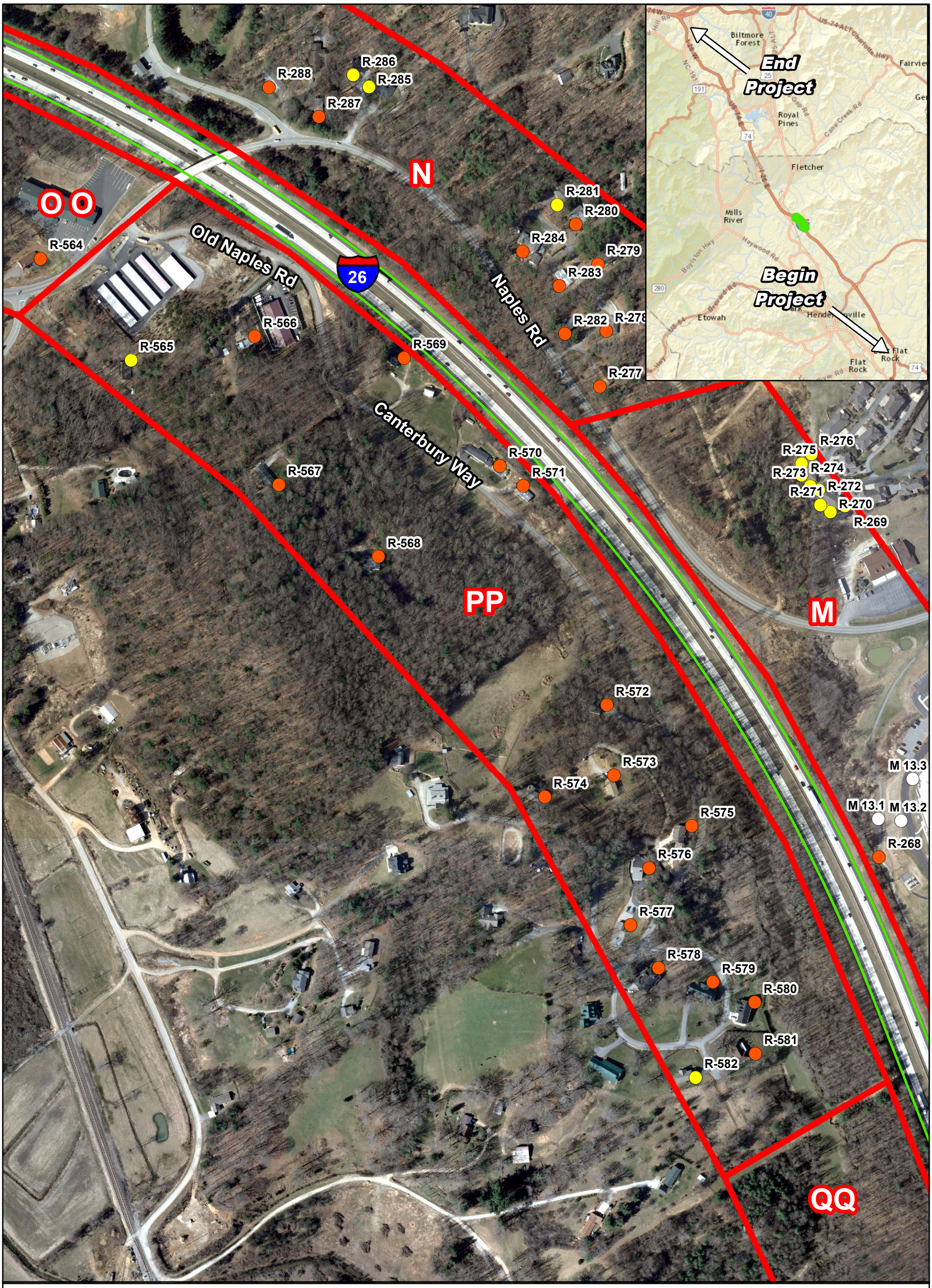
Map Prepared by: Trey Jordan Mar 2015

Figure 40

NSA 3 (Area OO)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N

W E

S

0 125 250 500 Feet

1 inch = 300 ft

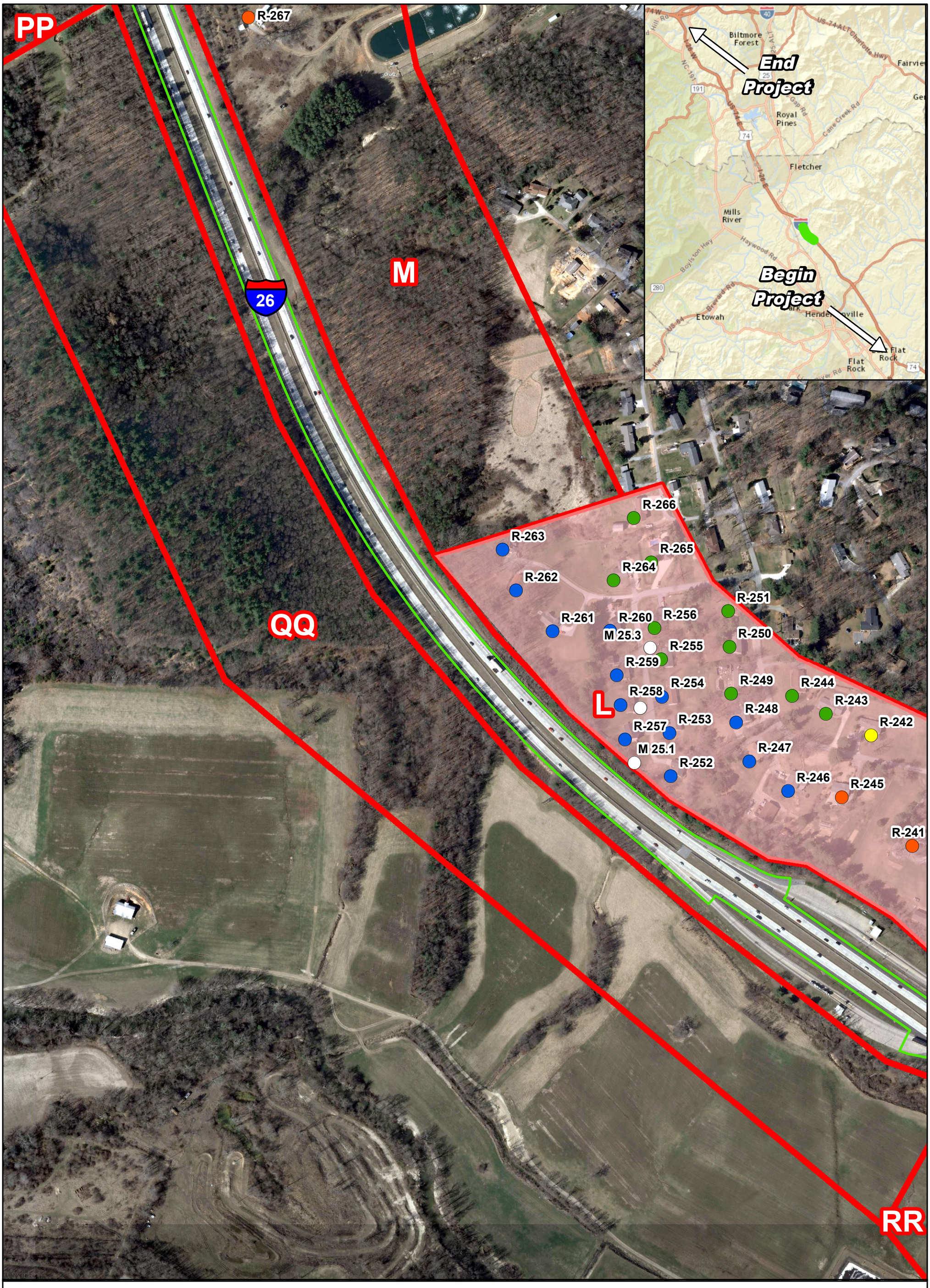
Map Prepared by: Trey Jordan Mar 2015

Figure 41

NSA 3 (Area PP)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

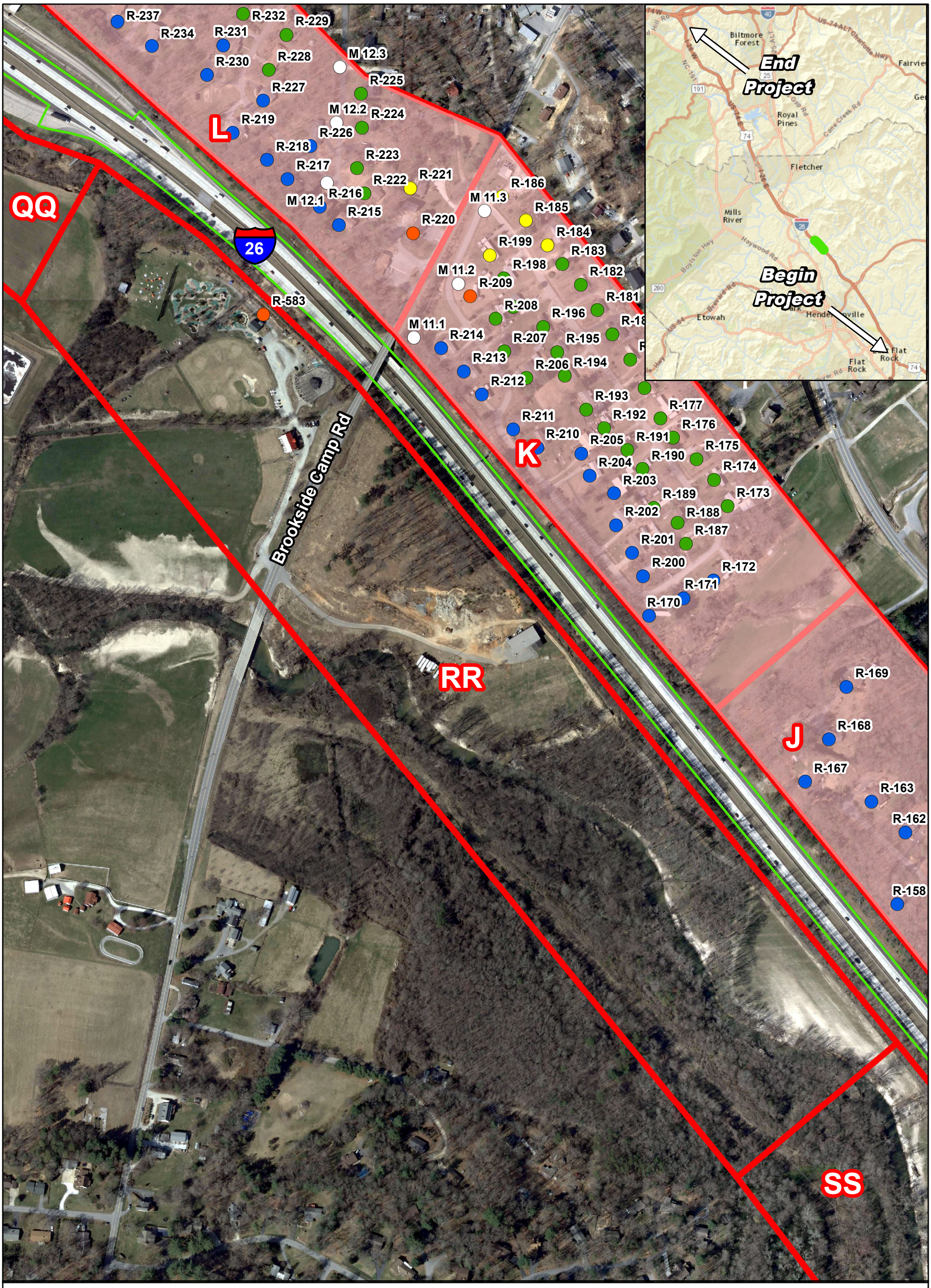
Map Prepared by: Trey Jordan Mar 2015

Figure 42

NSA 3 (Area QQ)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

0 125 250 500 Feet

1 inch = 300 ft

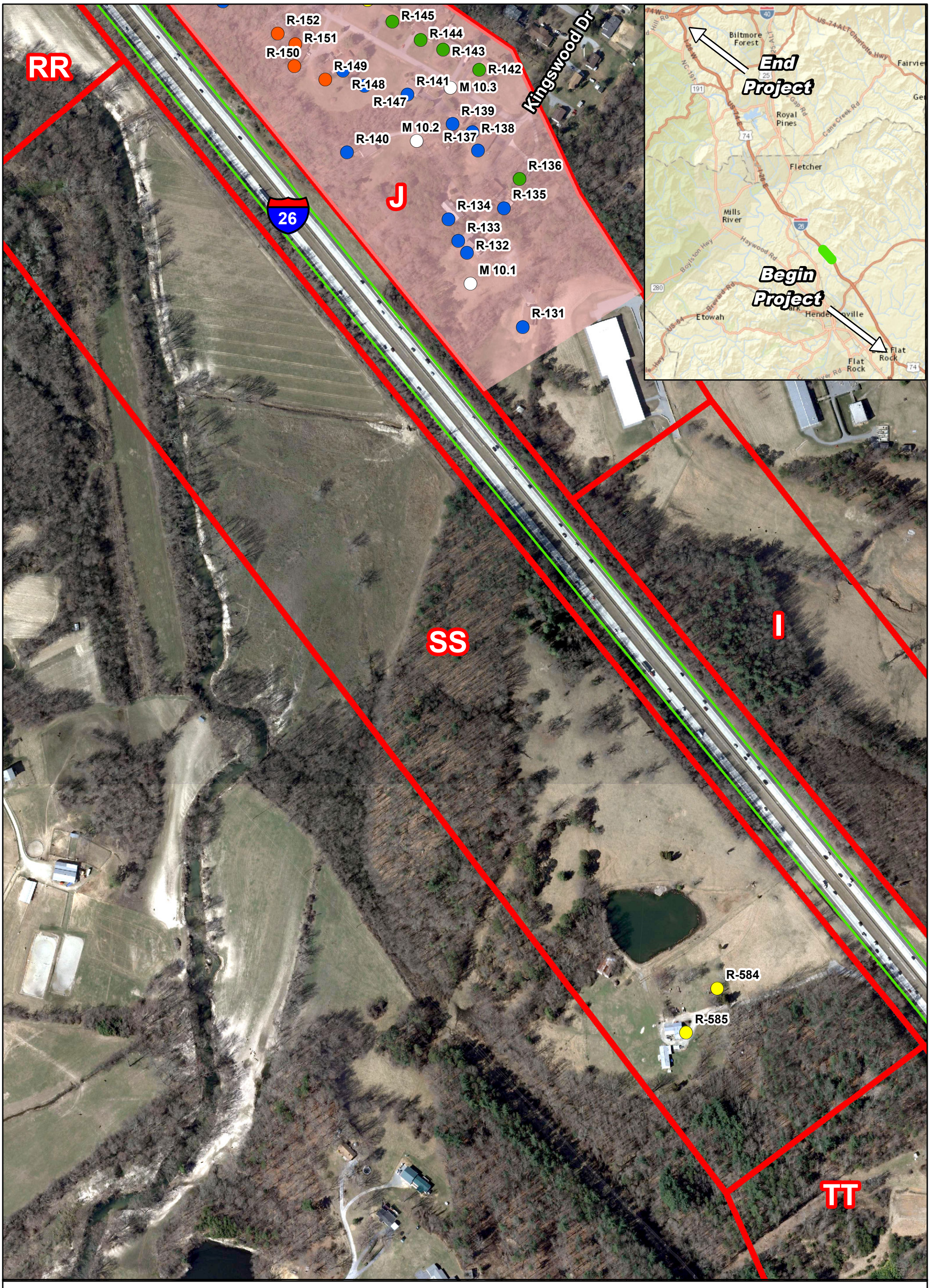
Map Prepared by: Trey Jordan Mar 2015

Figure 43

NSA 3 (Area RR)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 44

NSA 3 (Area SS)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

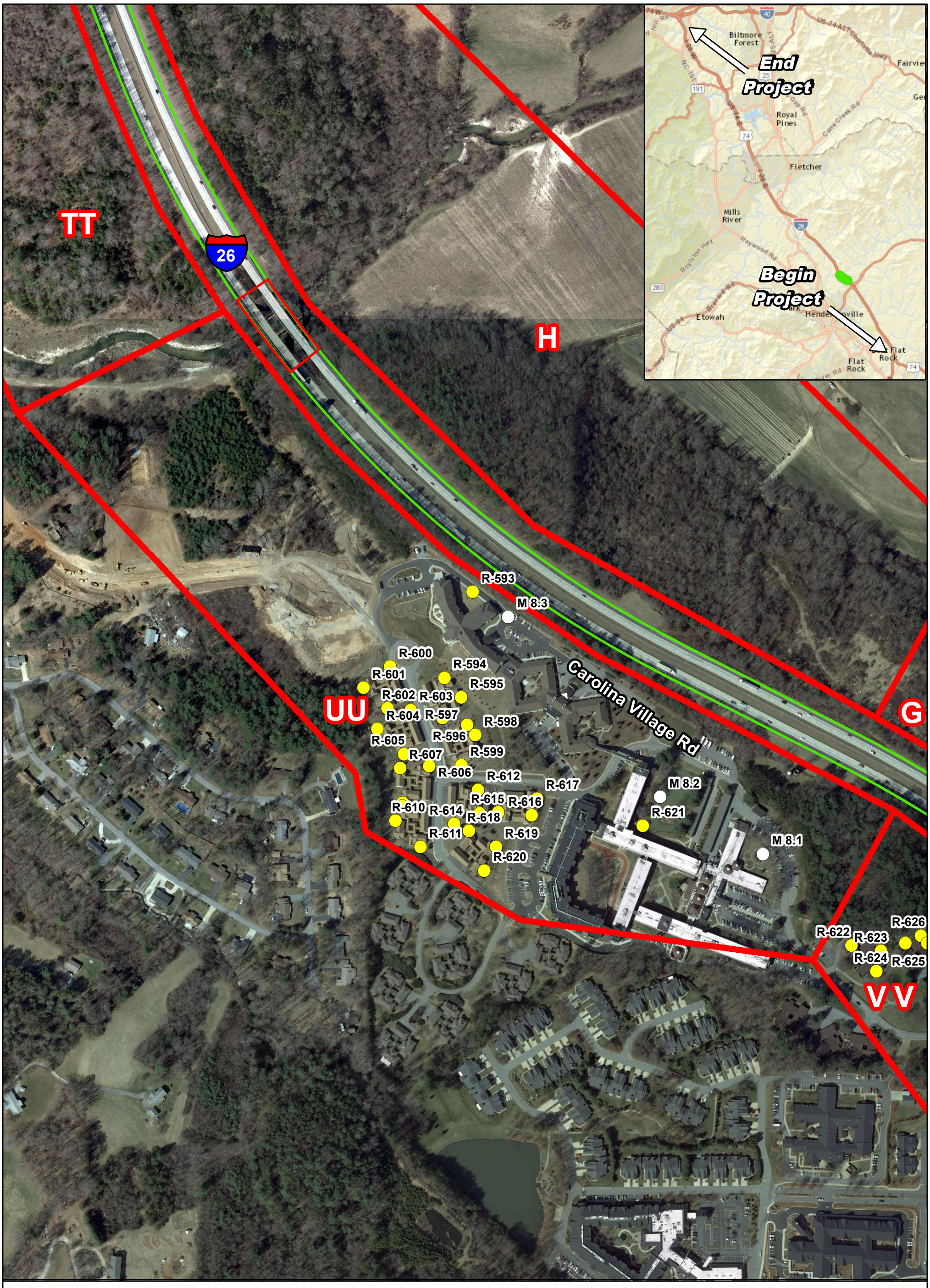
Map Prepared by: Trey Jordan Mar 2015

Figure 45

NSA 3 (Area TT)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 46

NSA 3 (Area UU)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

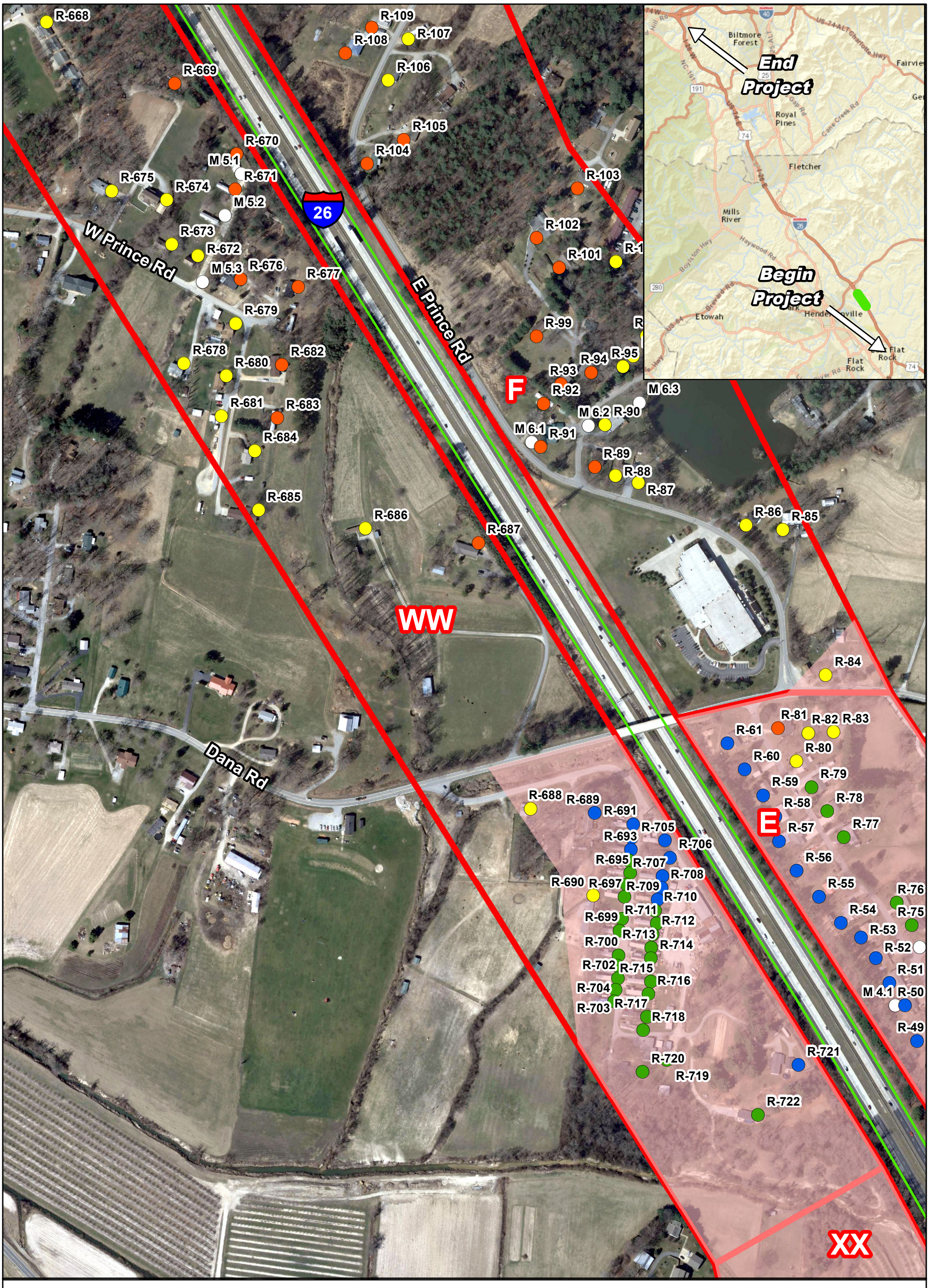
Map Prepared by: Trey Jordan Mar 2015

Figure 47

NSA 3 (Area VV)
NSA 2 (Area WW)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

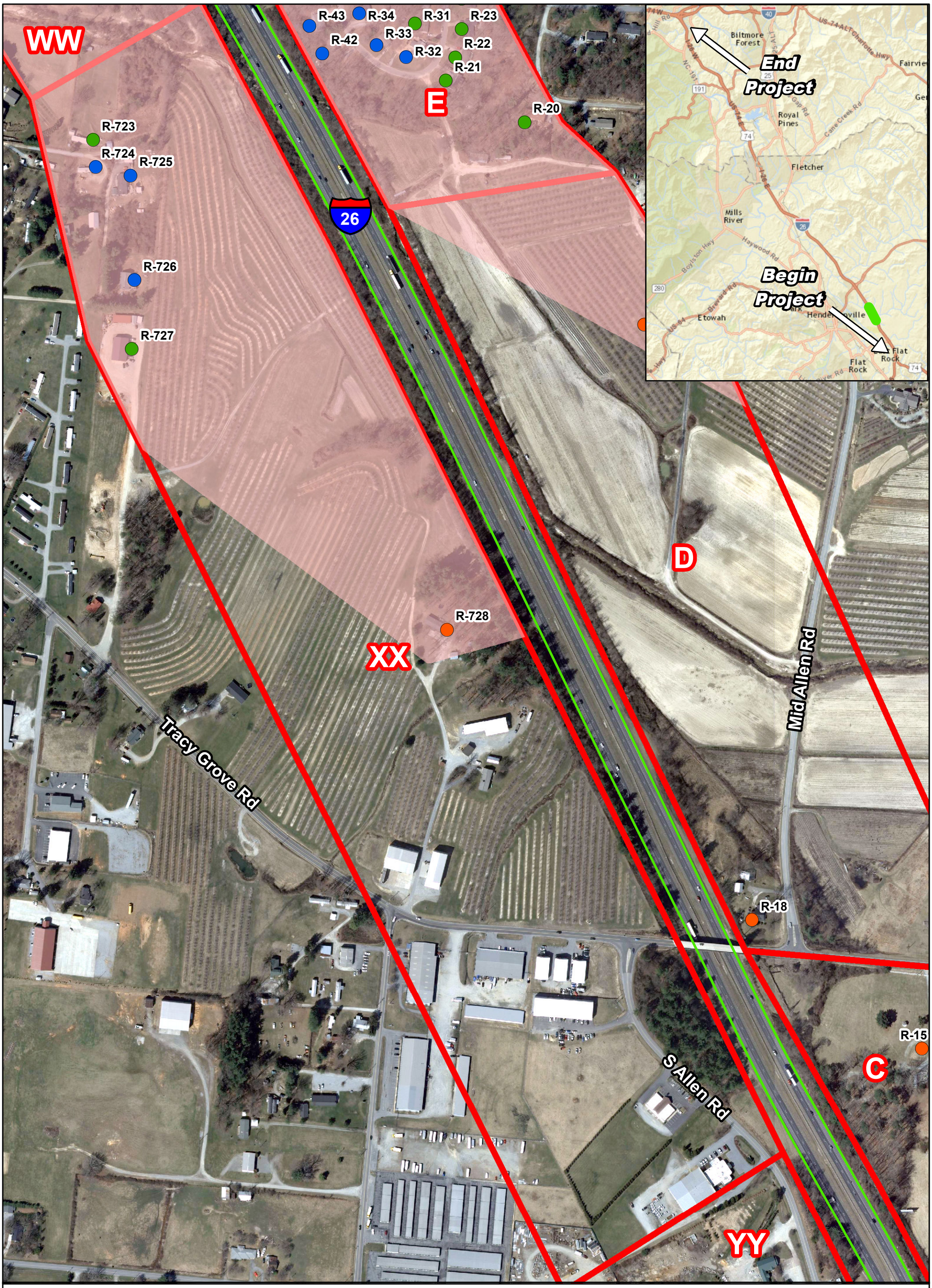
Map Prepared by: Trey Jordan Mar 2015

Figure 48

NSA 2 (Area WW)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

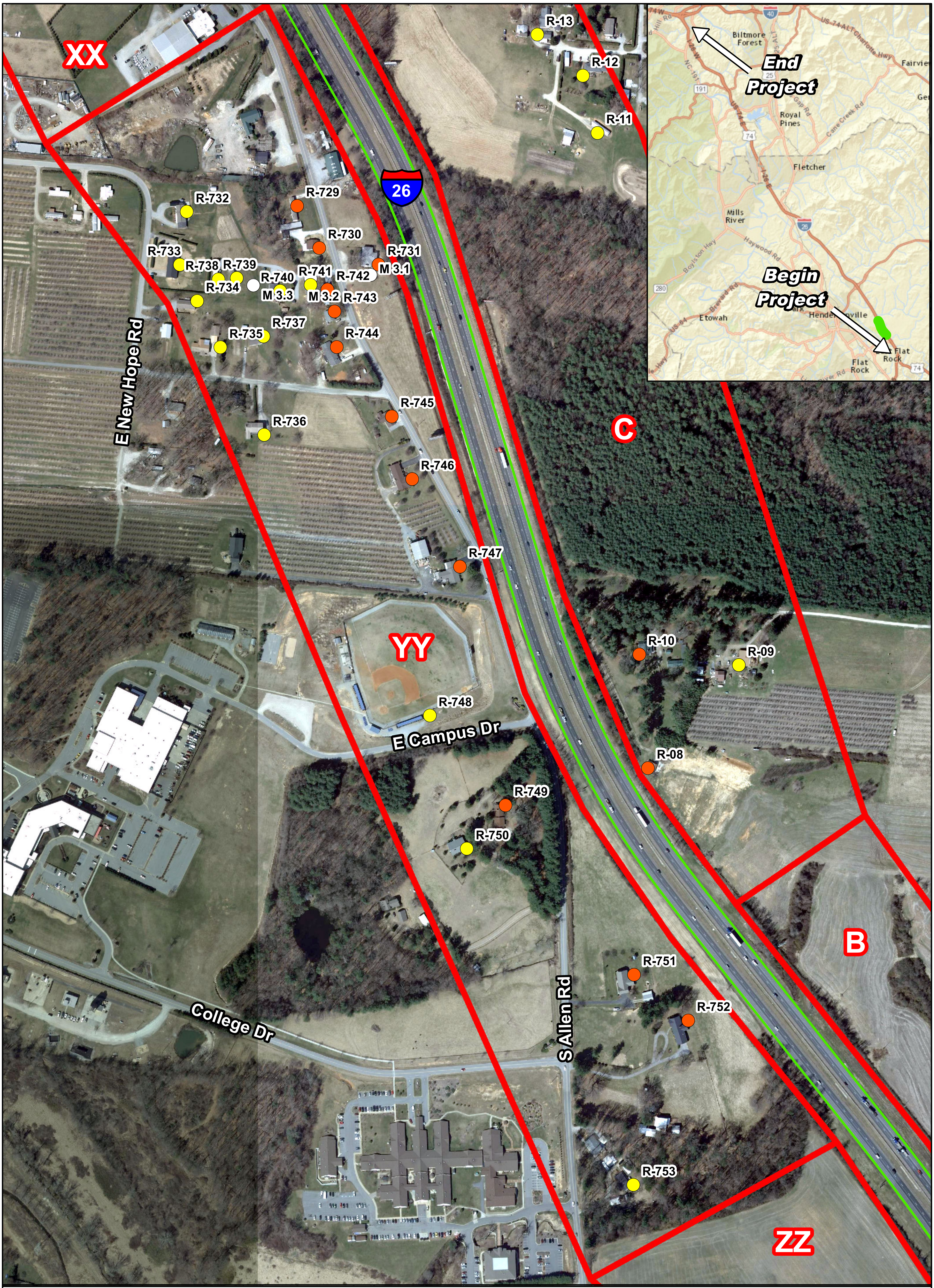
Map Prepared by: Trey Jordan Mar 2015

Figure 49

NSA 2 (Area XX)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N S E W

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 50

NSA 2 (Area YY)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 51

NSA 2 (Area ZZ)
NSA 1 (Area AAA)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 52

NSA 1 (Area AAA)
6-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

8-Lane Widening Alternative
(Figures 53 through 104)

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Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

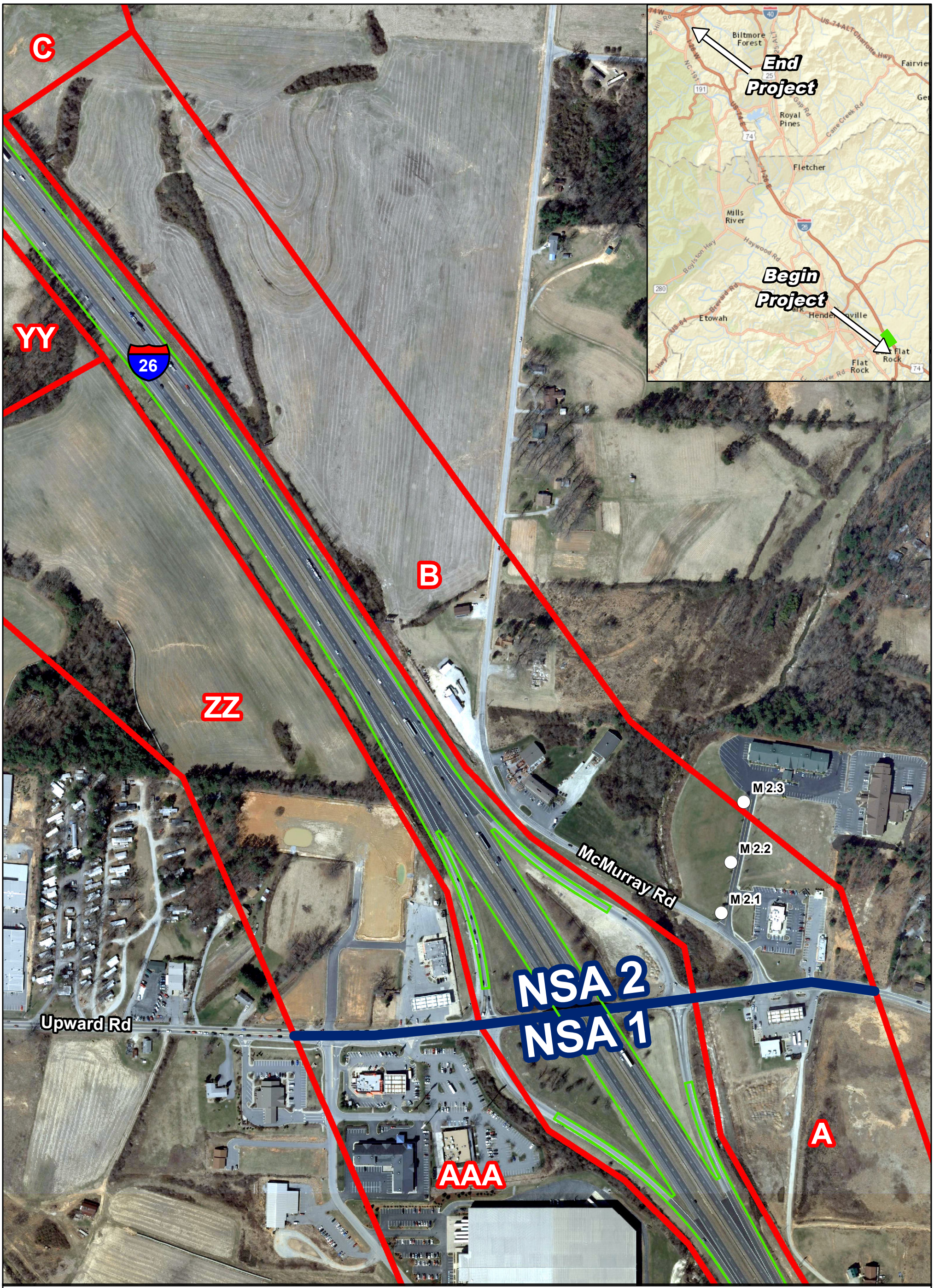
Map Prepared by: Trey Jordan Mar 2015

Figure 53

NSA 1 (Area A)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 54

NSA 1 (Area A)
NSA 2 (Area B)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

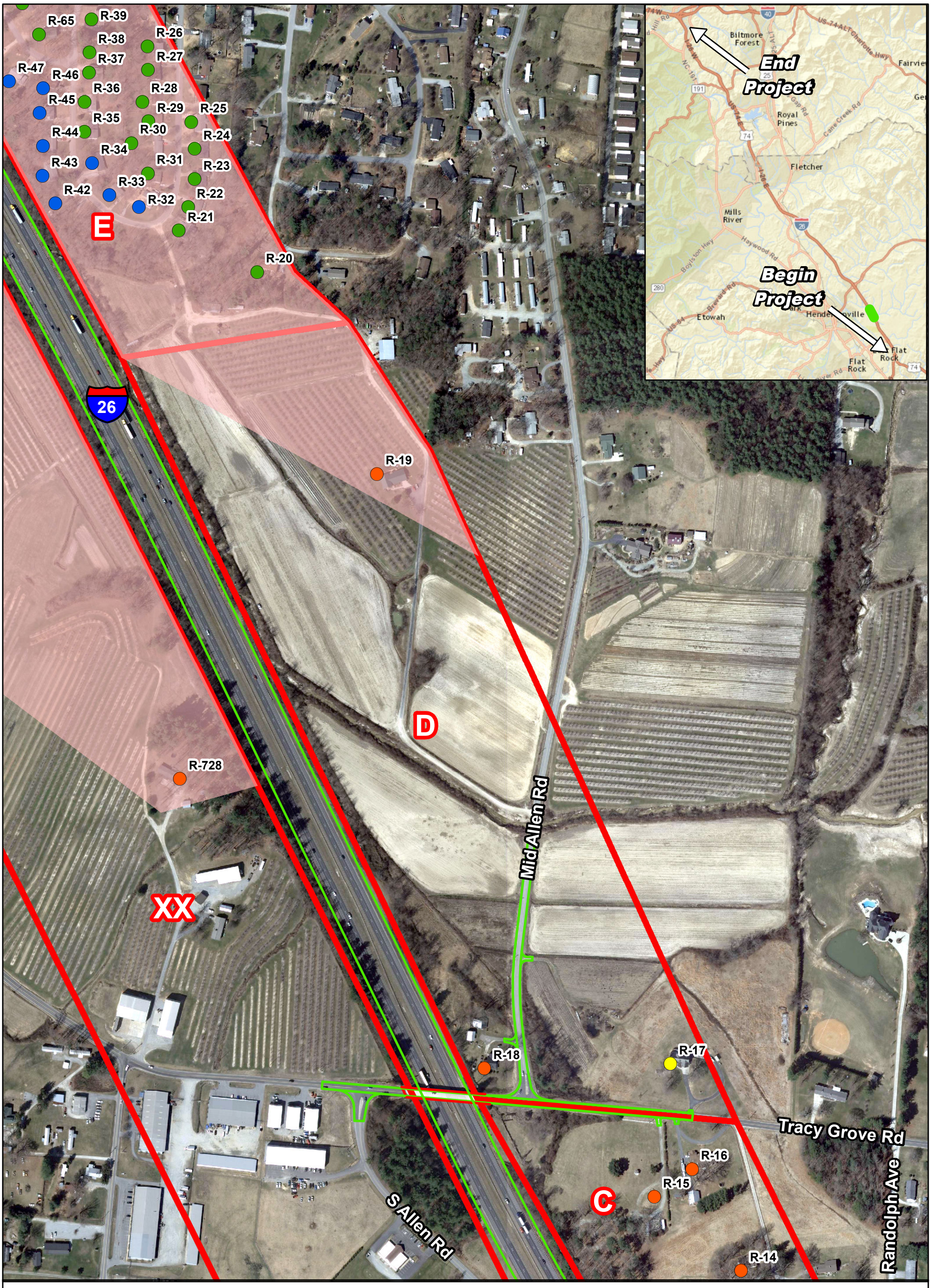
Map Prepared by: Trey Jordan Mar 2015

Figure 55

NSA 2 (Area C)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

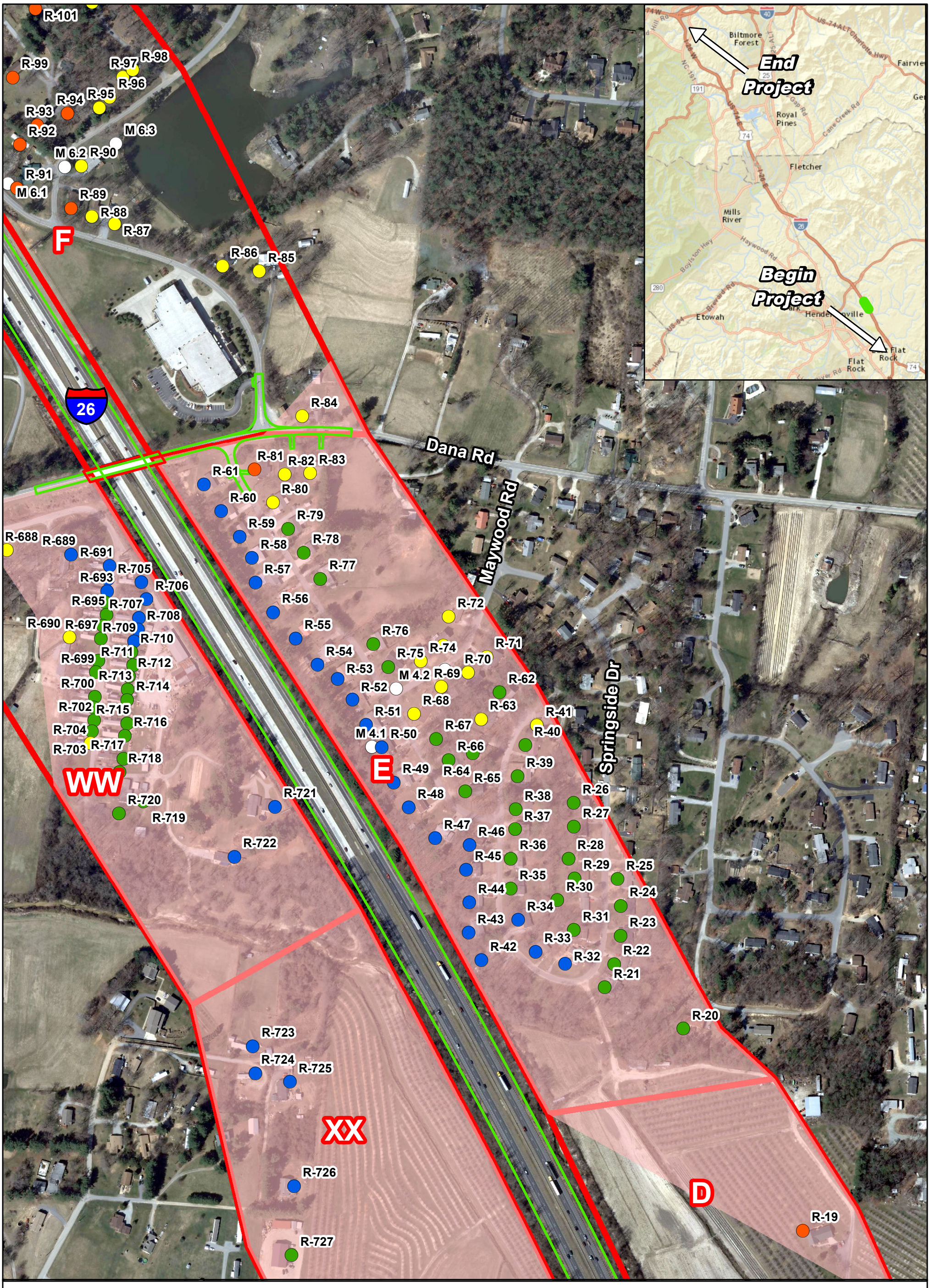
Map Prepared by: Trey Jordan Mar 2015

Figure 56

NSA 2 (Area D)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

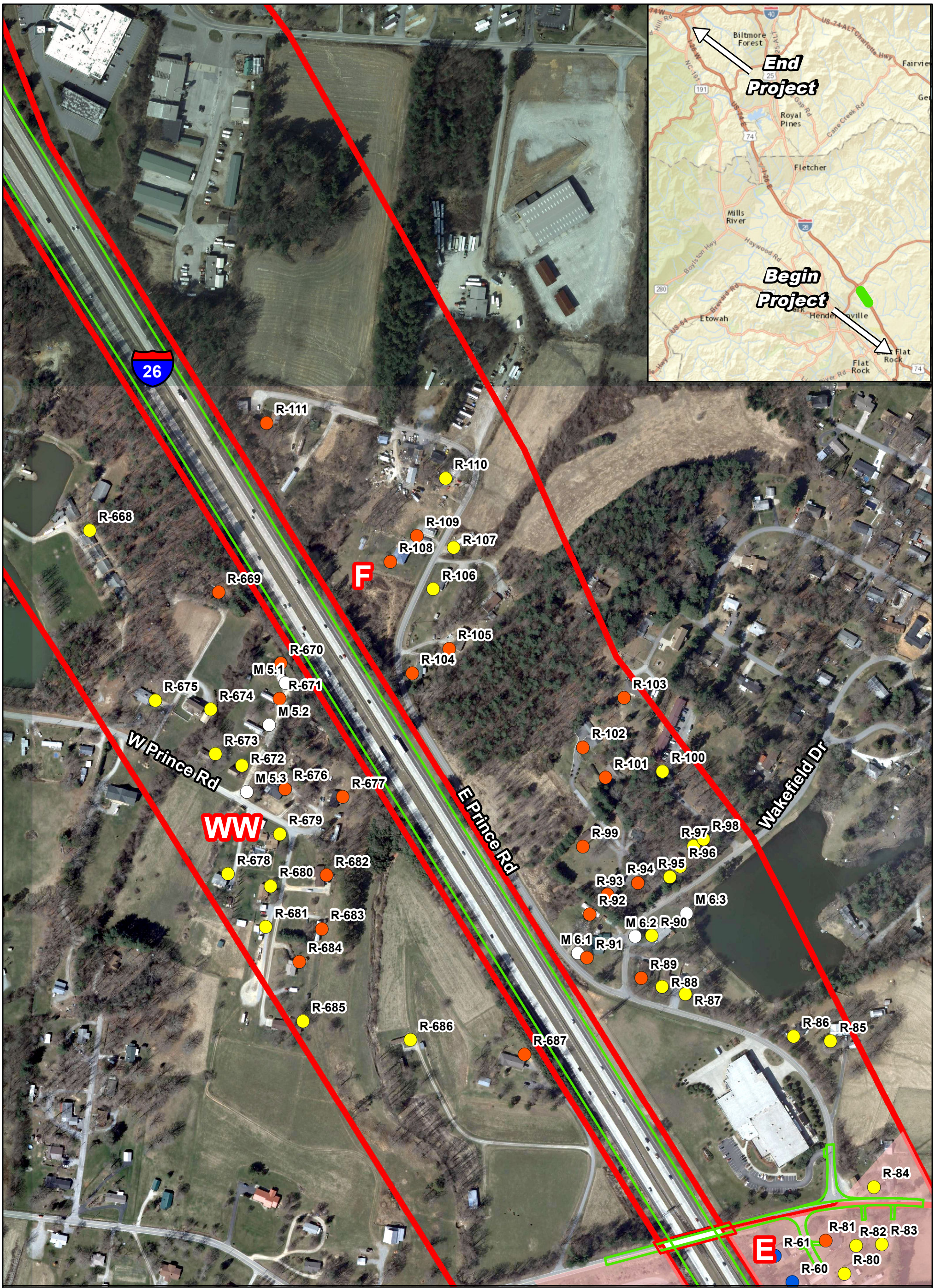
Map Prepared by: Trey Jordan Mar 2015

Figure 57

NSA 2 (Area E)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 58

NSA 2 (Area F)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 59

NSA 2 (Area F)
NSA 3 (Area G)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Nix Rd

I

26

TT

H

G

VV

UU

Carolina Village Rd

R-593

M 8.3

R-600

R-601

R-594

R-595

R-602

R-603

R-604

R-597

R-598

R-605

R-596

R-607

R-599

R-606

R-612

R-609

R-617

R-615

R-616

R-610

R-614

R-618

R-608

R-613

M 8.2

R-621

End Project

Begin Project

Biltmore Forest

Royal Pines

Fletcher

Mills River

Etowah

Flat Rock

Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

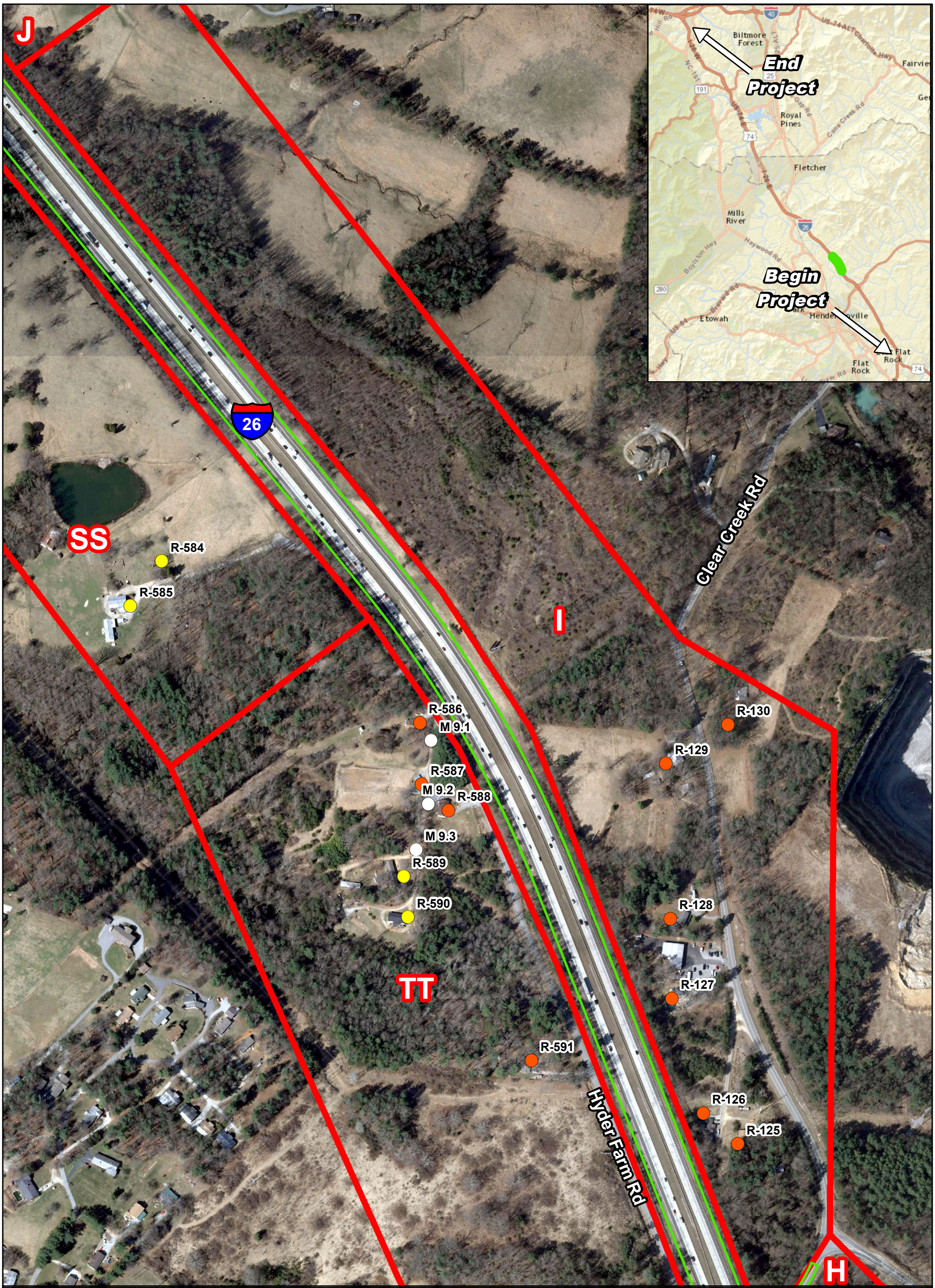
Map Prepared by: Trey Jordan Mar 2015

Figure 60

NSA 3 (Area H)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

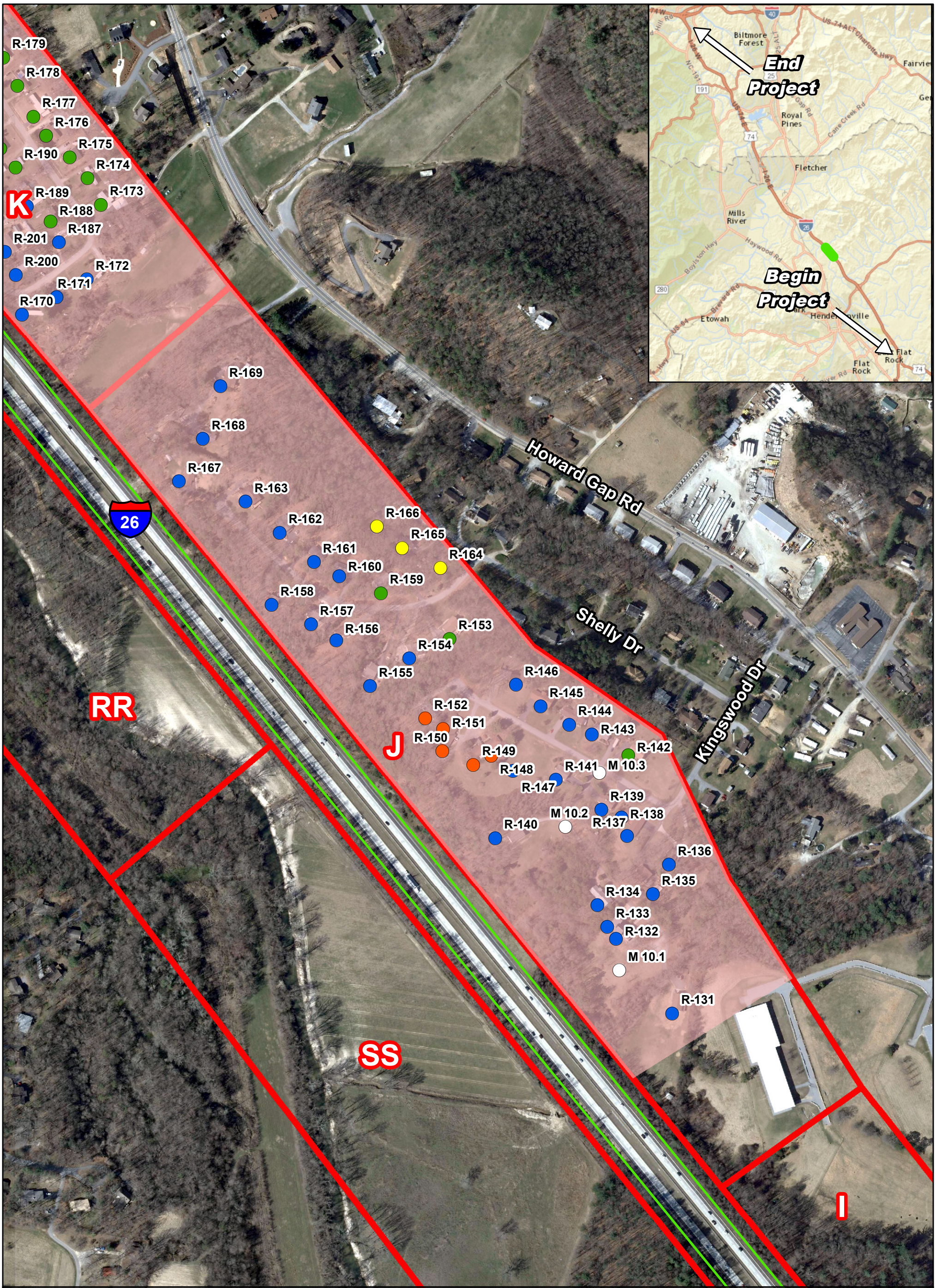
Map Prepared by: Trey Jordan Mar 2015

Figure 61

NSA 3 (Area I)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

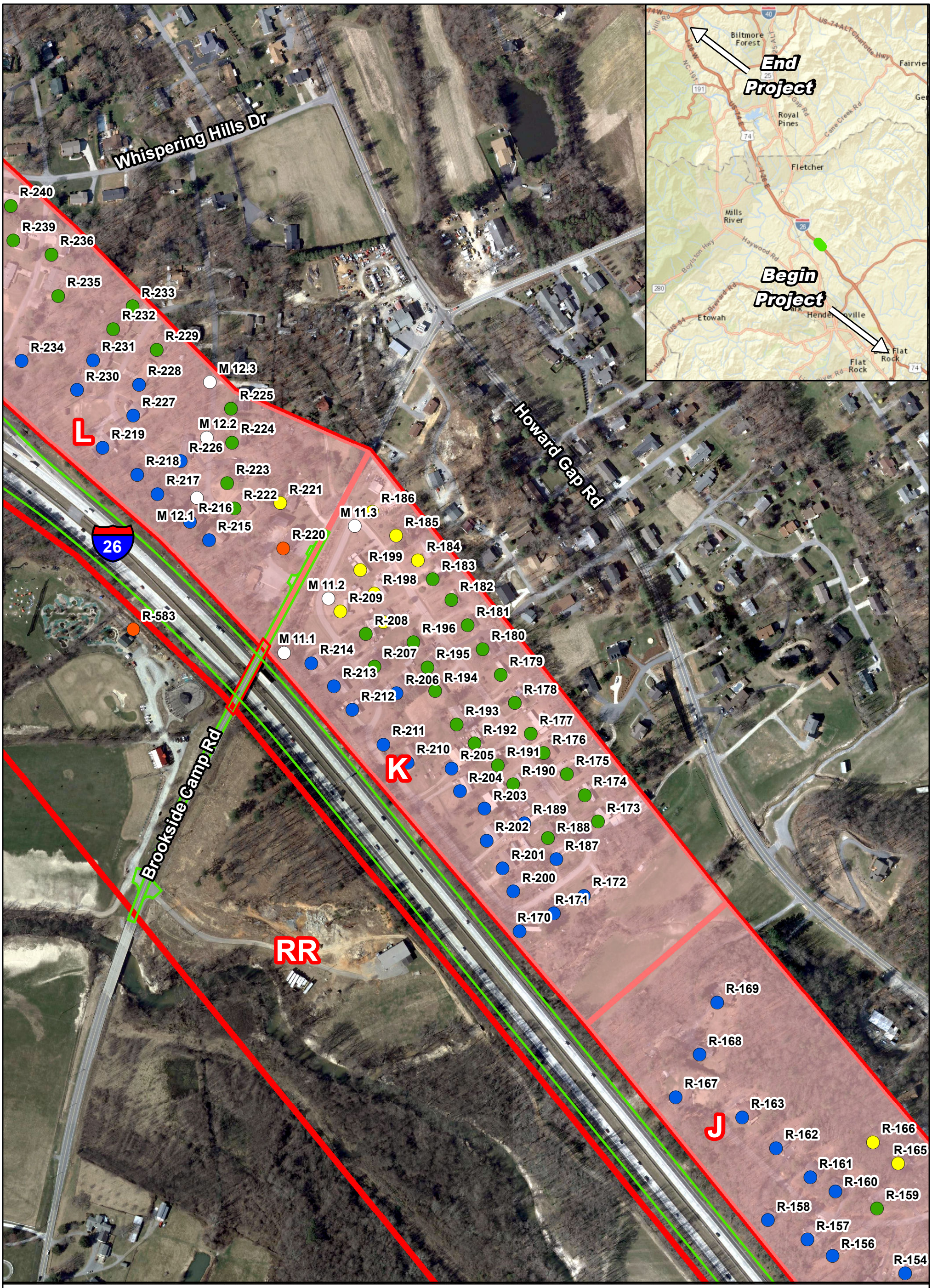
Map Prepared by: Trey Jordan Mar 2015

Figure 62

NSA 3 (Area J)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

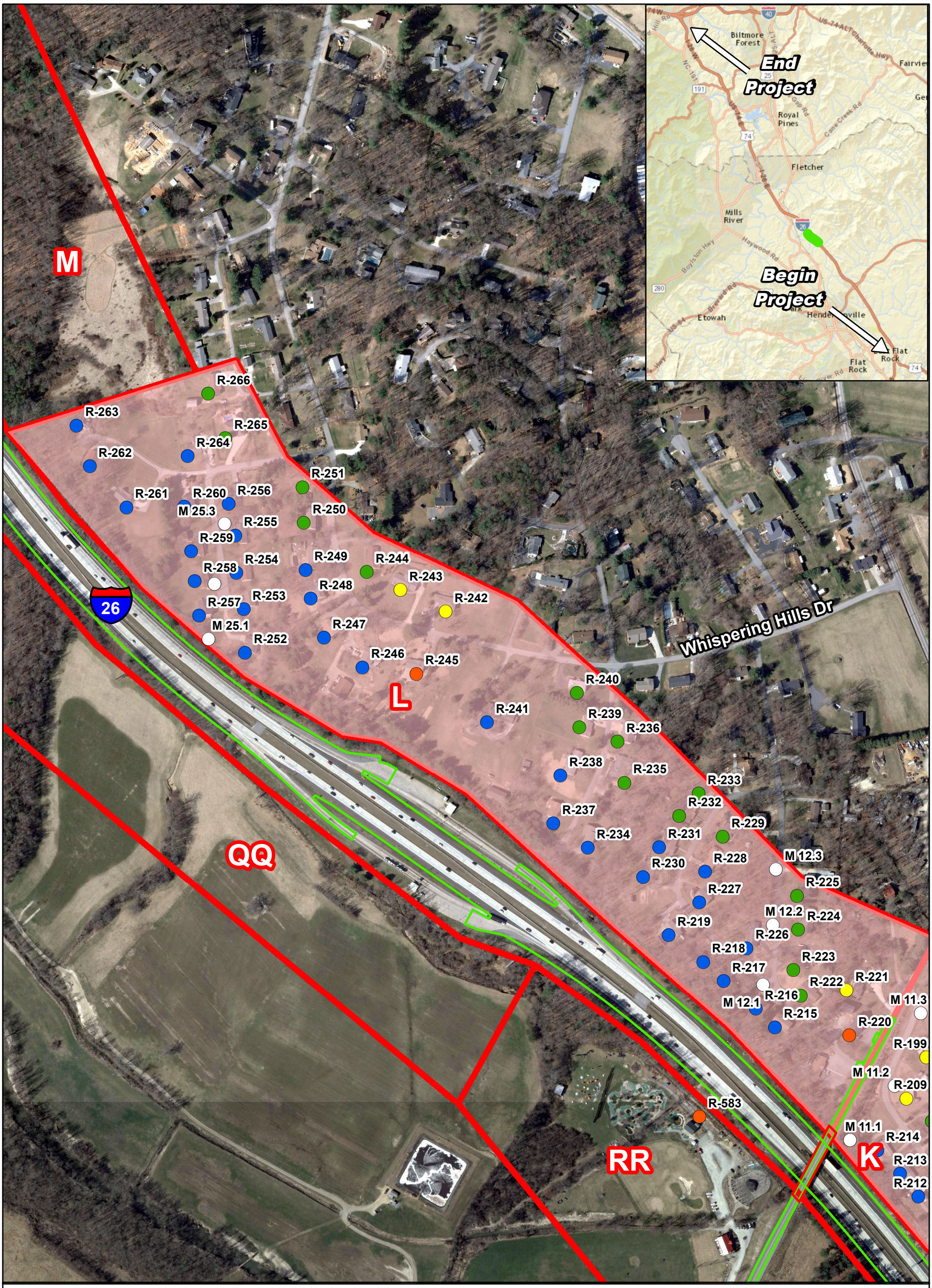
Map Prepared by: Trey Jordan Mar 2015

Figure 63

NSA 3 (Area K)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

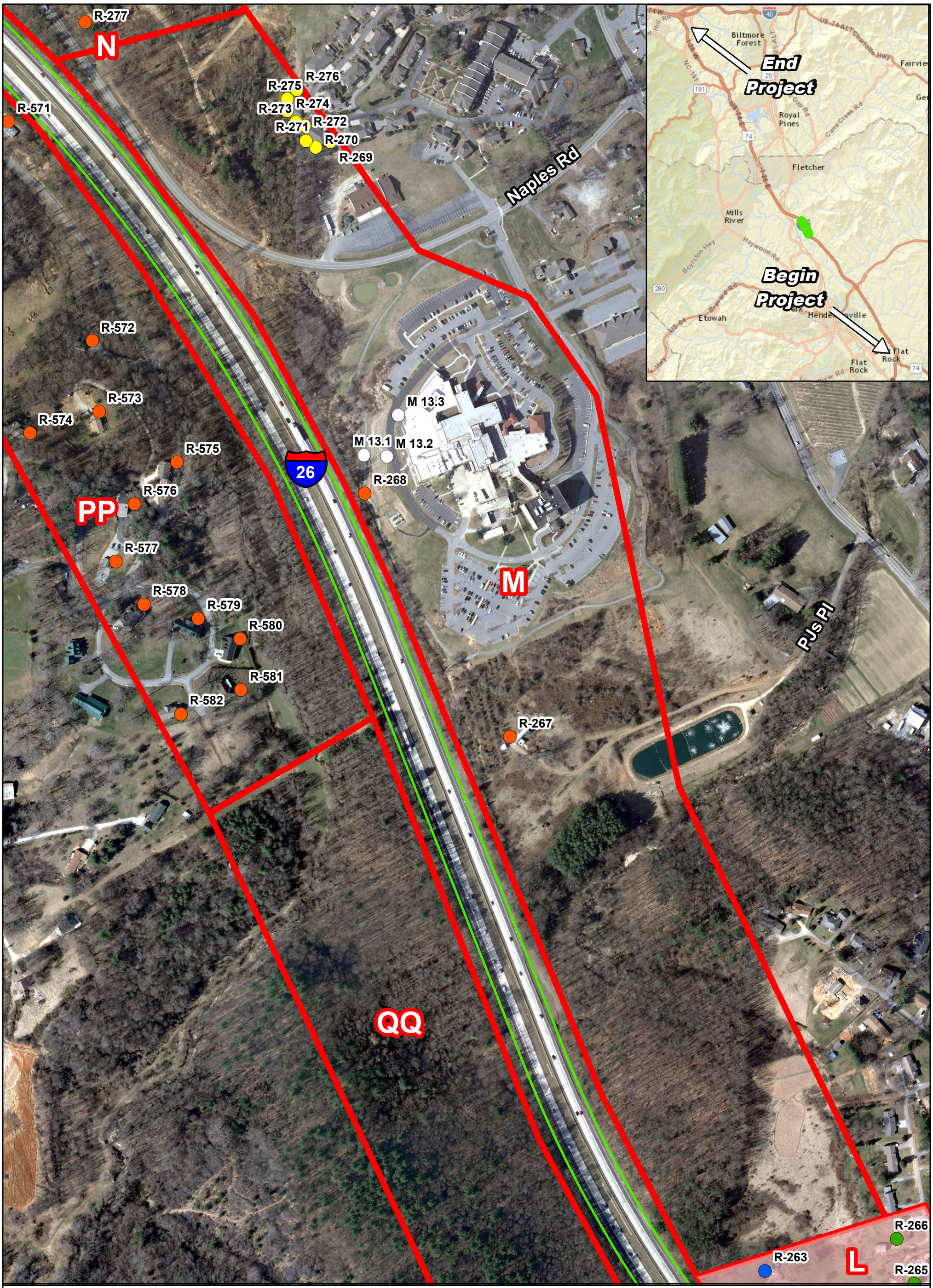
Map Prepared by: Trey Jordan Mar 2015

Figure 64

NSA 3 (Area L)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

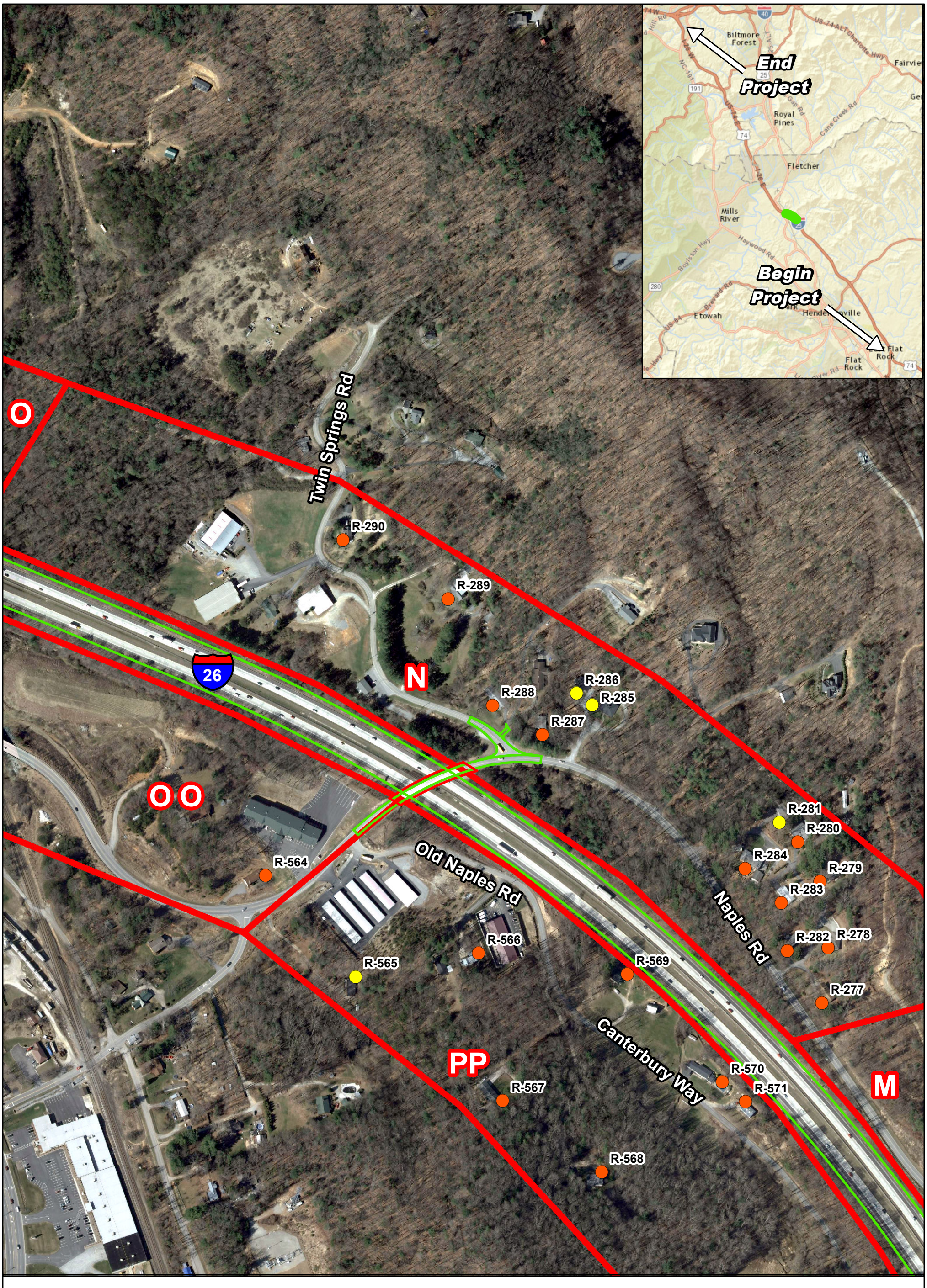
Map Prepared by: Trey Jordan Mar 2015

Figure 65

NSA 3 (Area M)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 66

NSA 3 (Area N)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

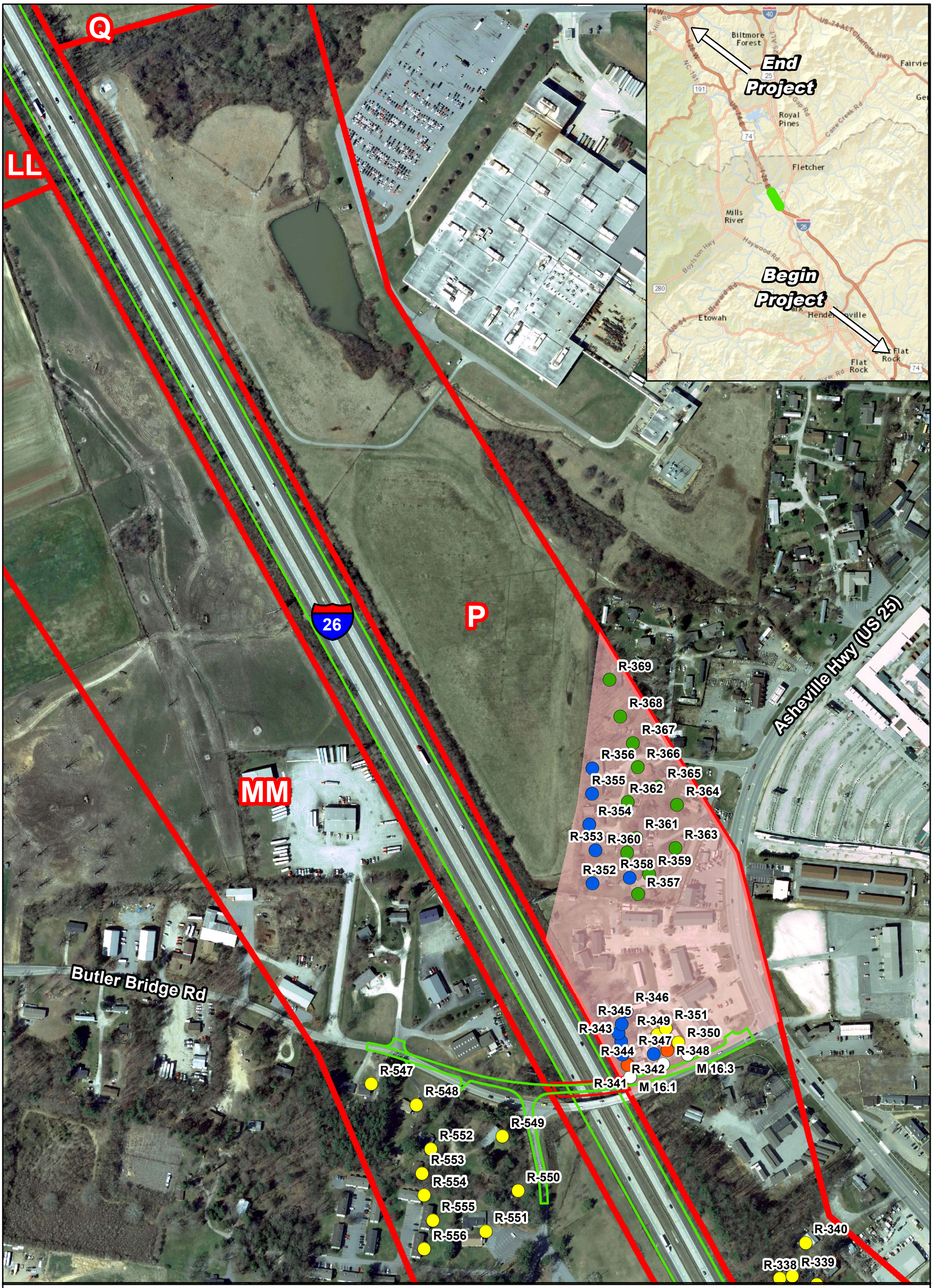
Map Prepared by: Trey Jordan Mar 2015

Figure 67

NSA 3 (Area O)
NSA 4 (Area P)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 68

NSA 4 (Area P)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 69

NSA 4 (Area Q)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

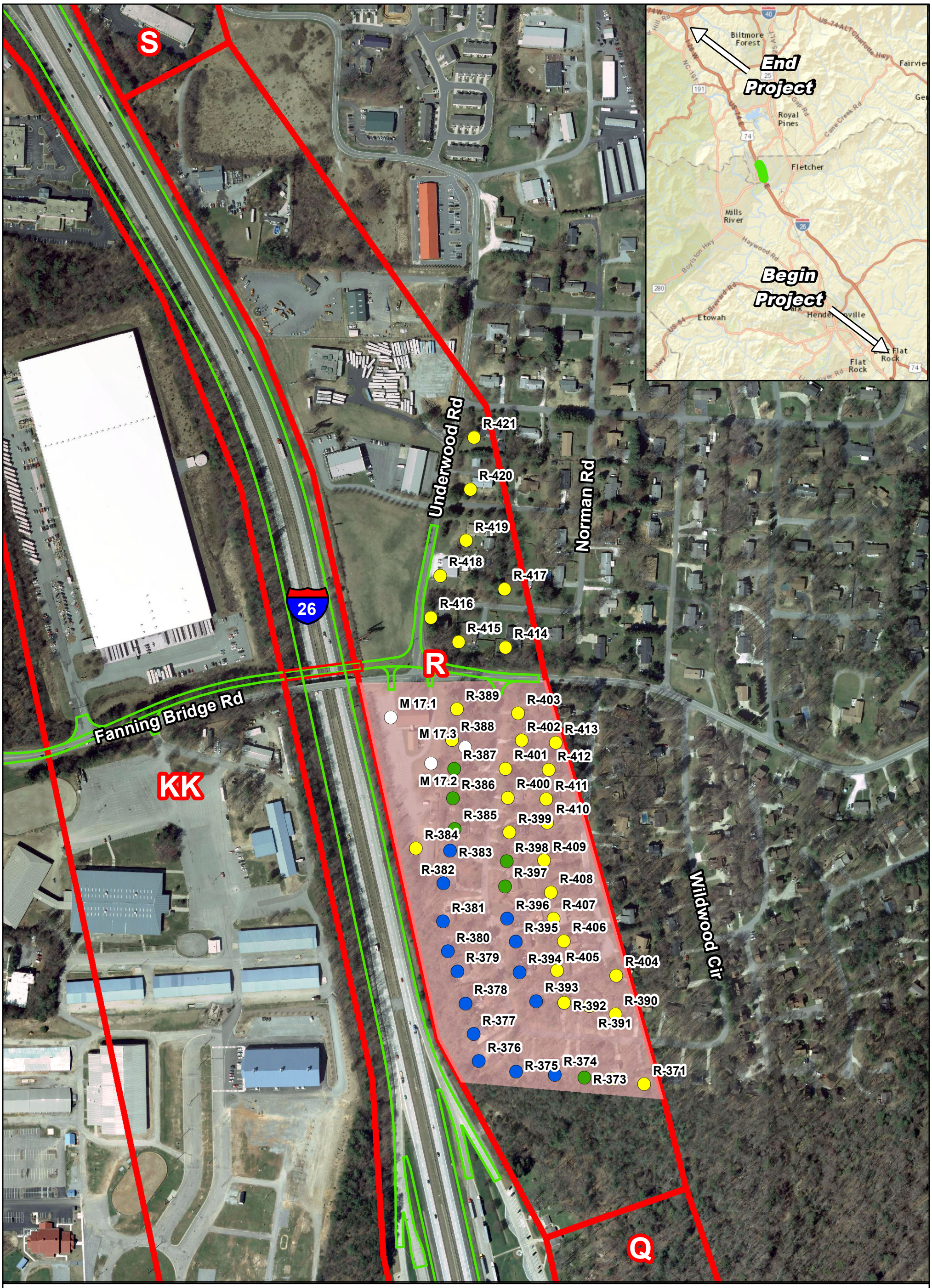
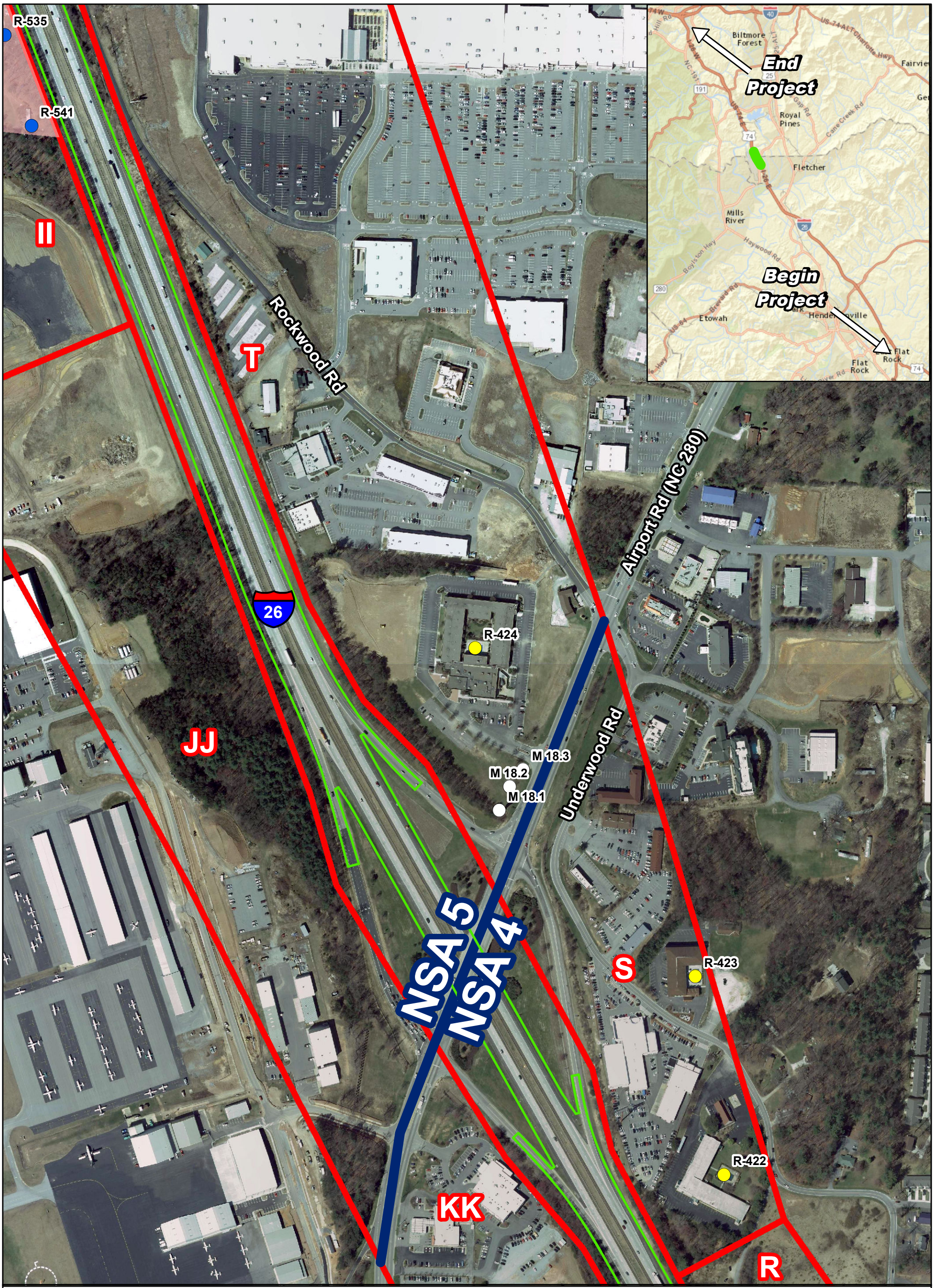


Figure 70

NSA 4 (Area R)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 71

NSA 4 (Area S)
NSA 5 (Area T)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

0 125 250 500 Feet

1 inch = 300 ft

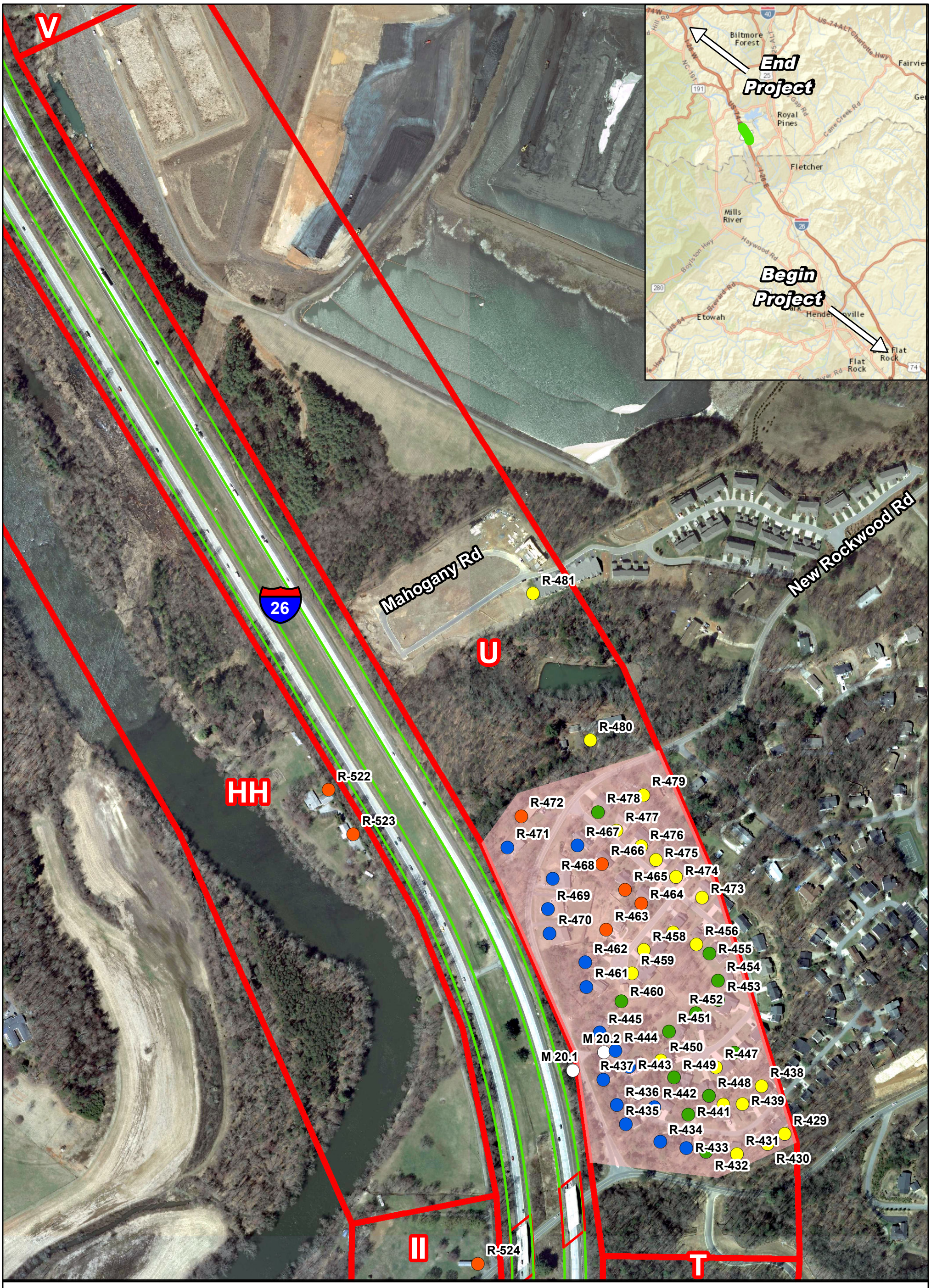
Map Prepared by: Trey Jordan Mar 2015

Figure 72

NSA 5 (Area T)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

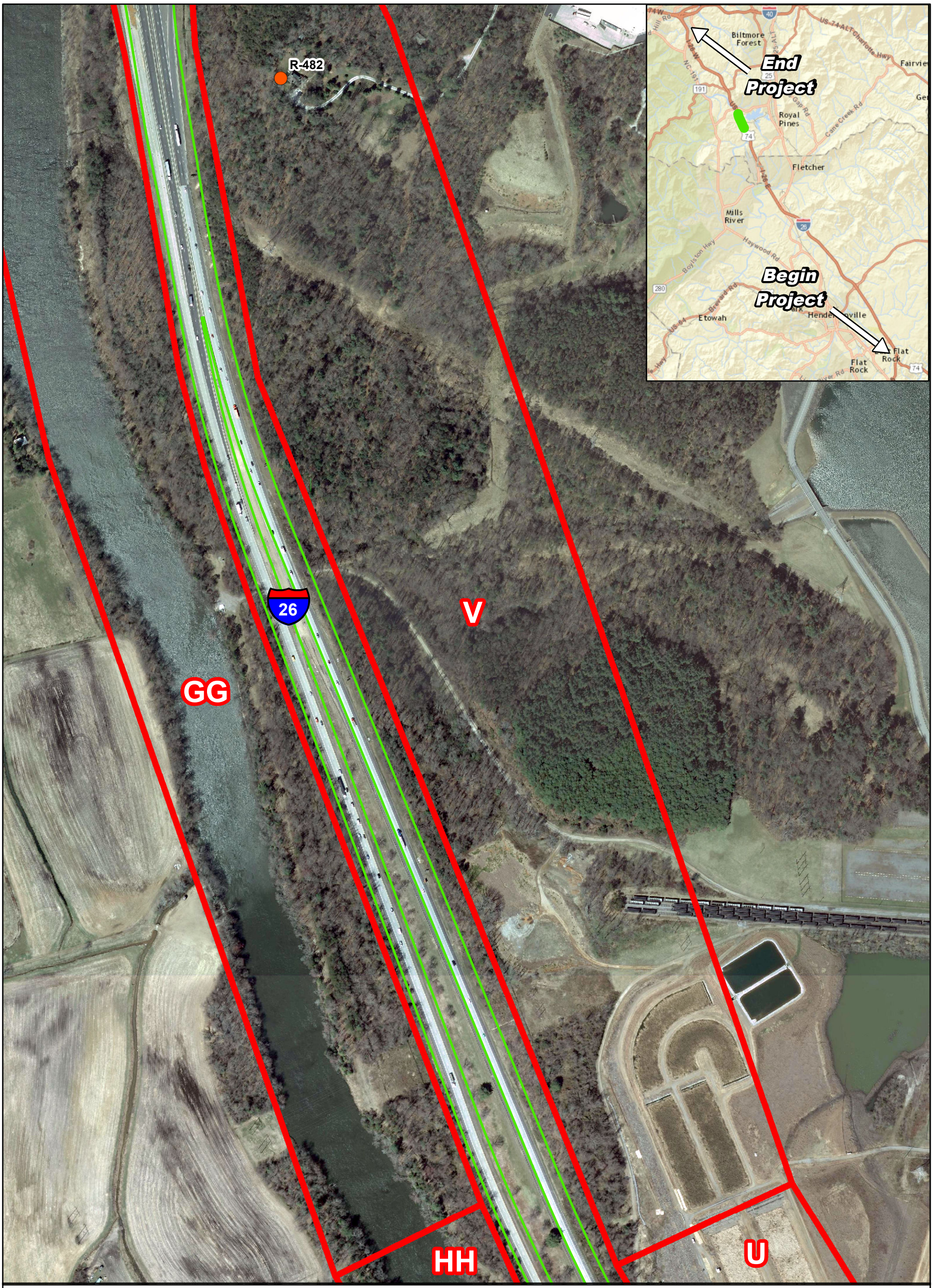
Map Prepared by: Trey Jordan Mar 2015

Figure 73

NSA 5 (Area U)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 74

NSA 5 (Area V)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

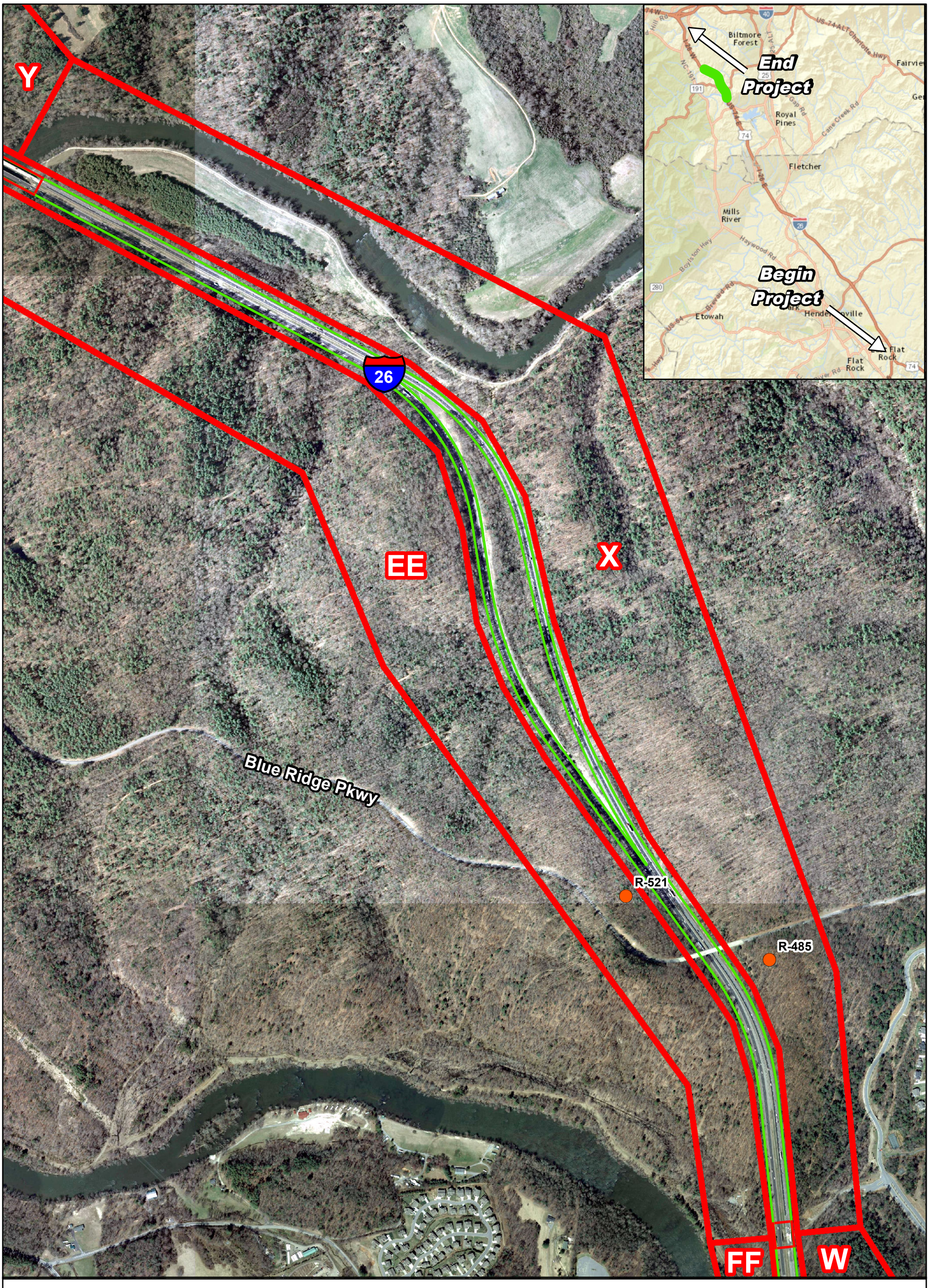
Map Prepared by: Trey Jordan Mar 2015

Figure 75

NSA 5 (Area V)
NSA 6 (Area W)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 295 590 1,180 Feet

1 inch = 700 ft

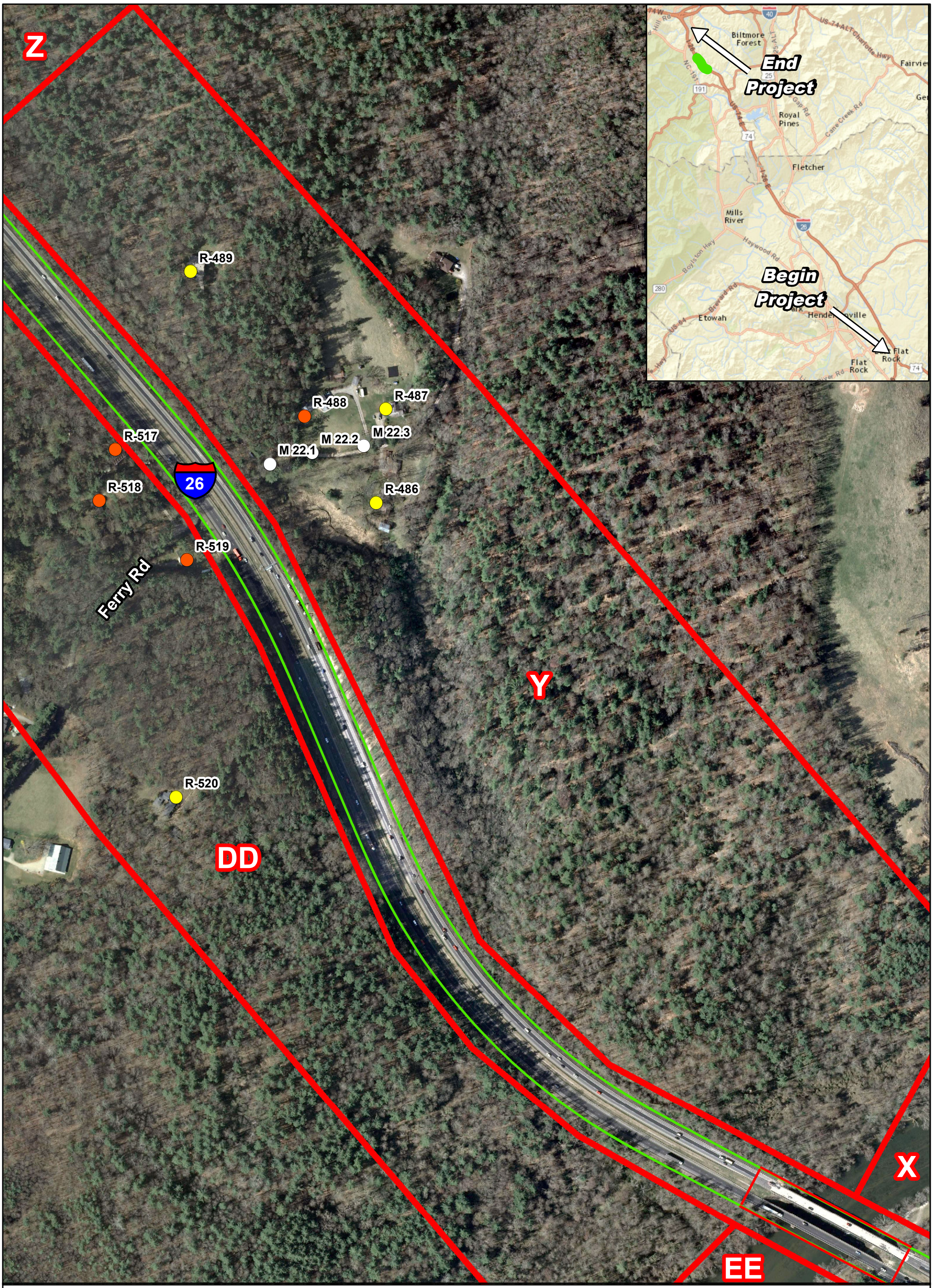
Map Prepared by: Trey Jordan Mar 2015

Figure 76

NSA 6 (Area X)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 77

NSA 6 (Area Y)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 78

NSA 6 (Area Z)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Figure 79

NSA 6 (Area AA)
NSA 6 (Area BB)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

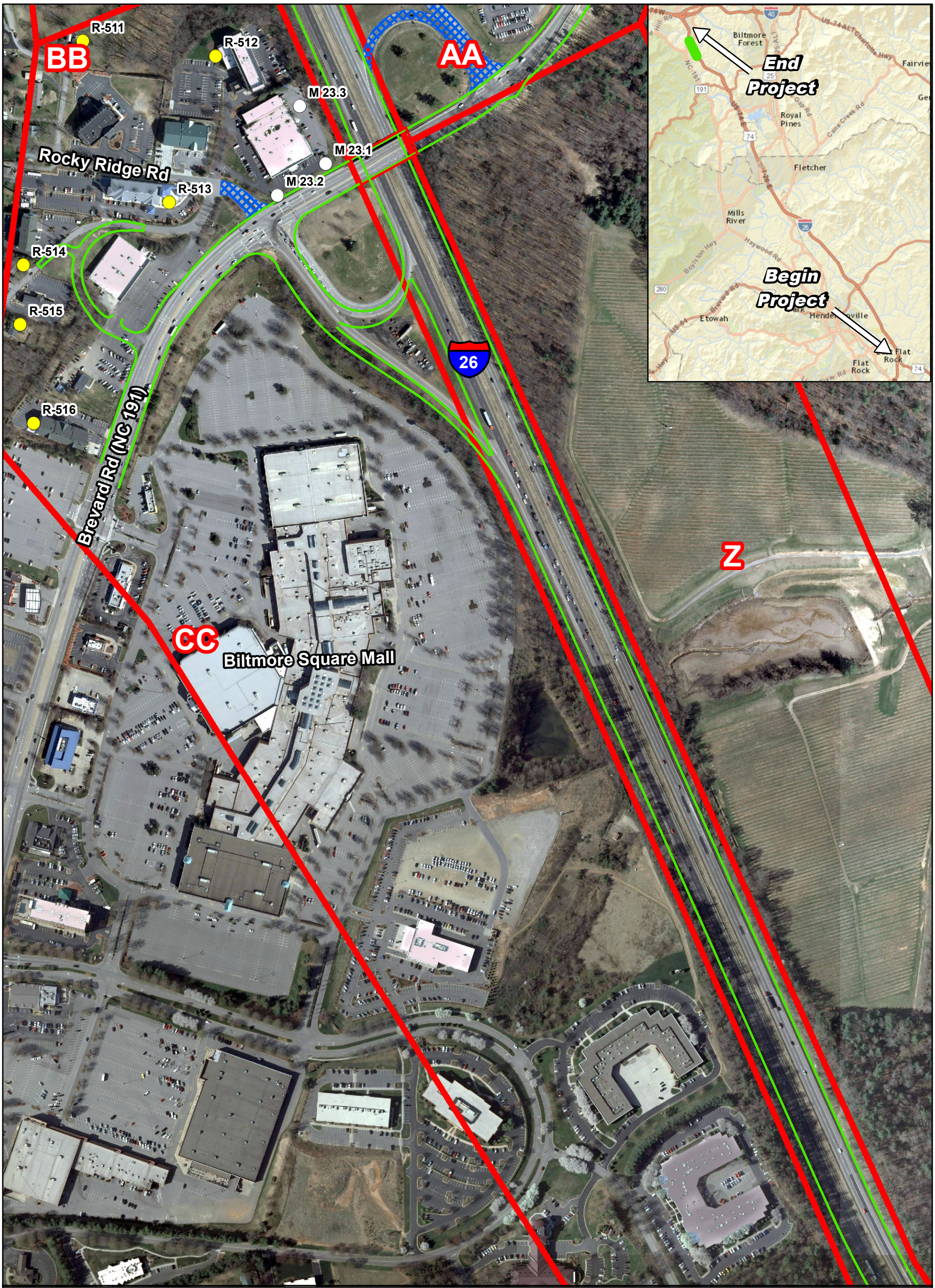
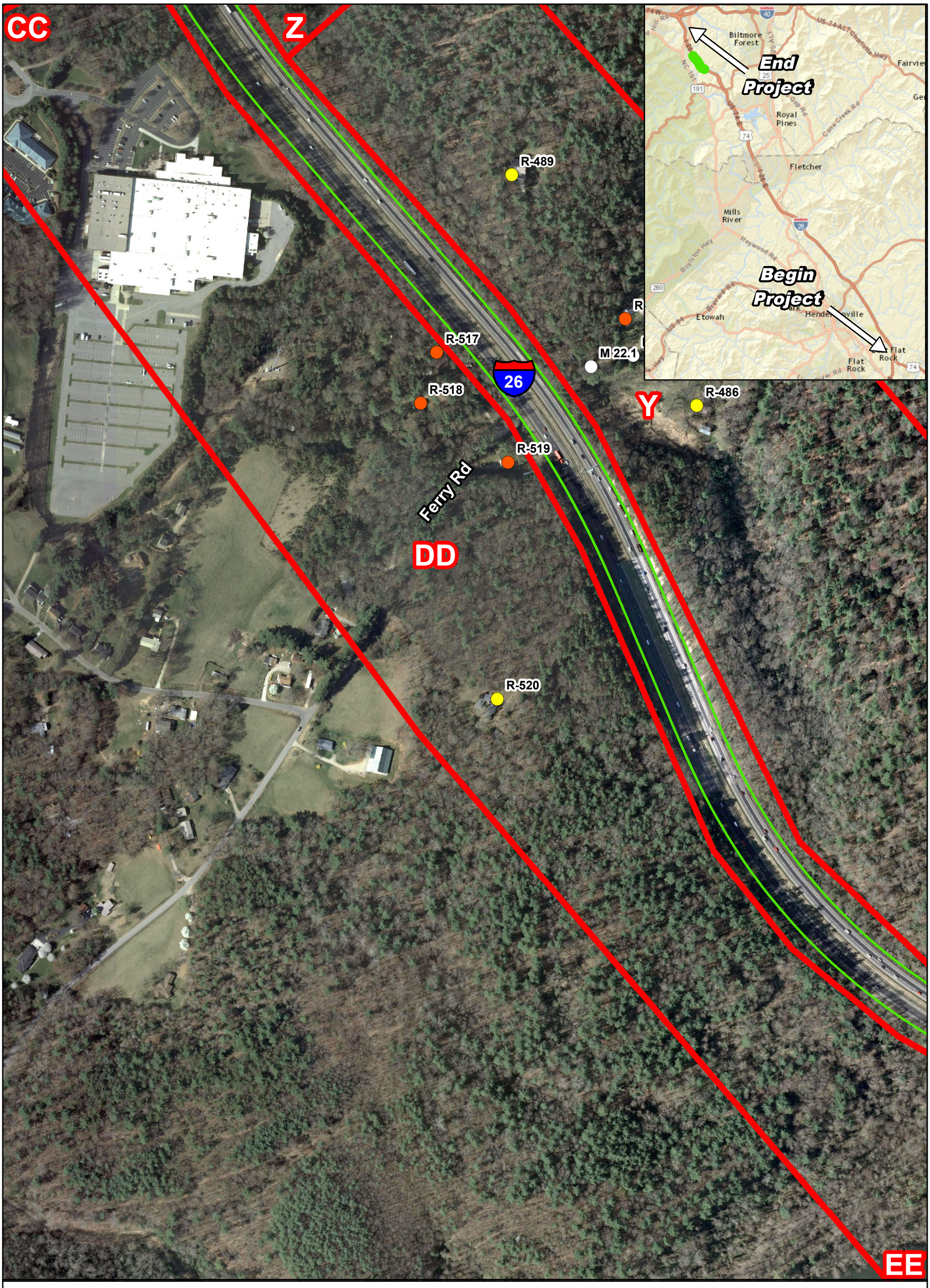


Figure 80

NSA 6 (Area CC)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

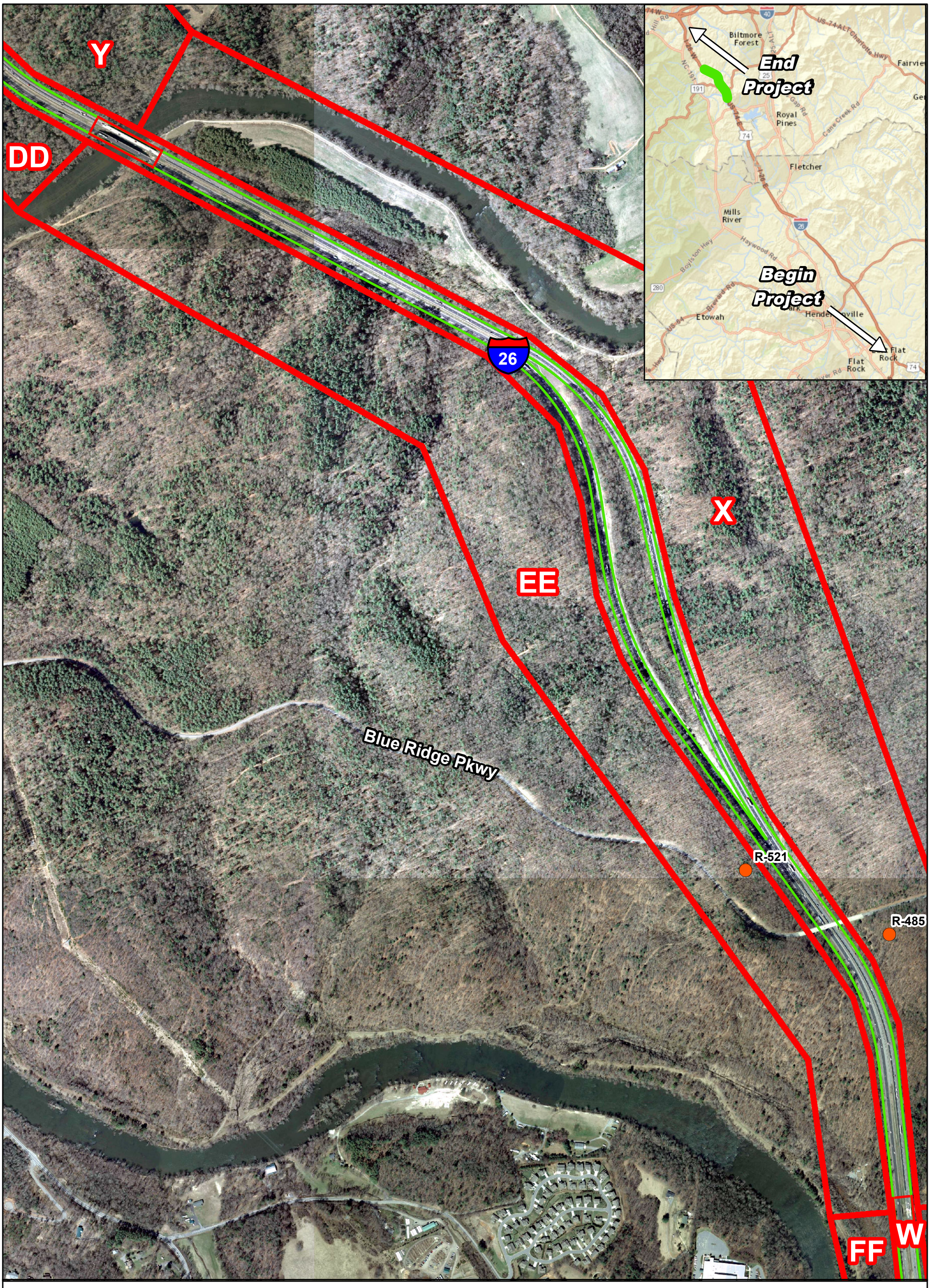
Map Prepared by: Trey Jordan Mar 2015

Figure 81

NSA 6 (Area DD)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 295 590 1,180 Feet

1 inch = 700 ft

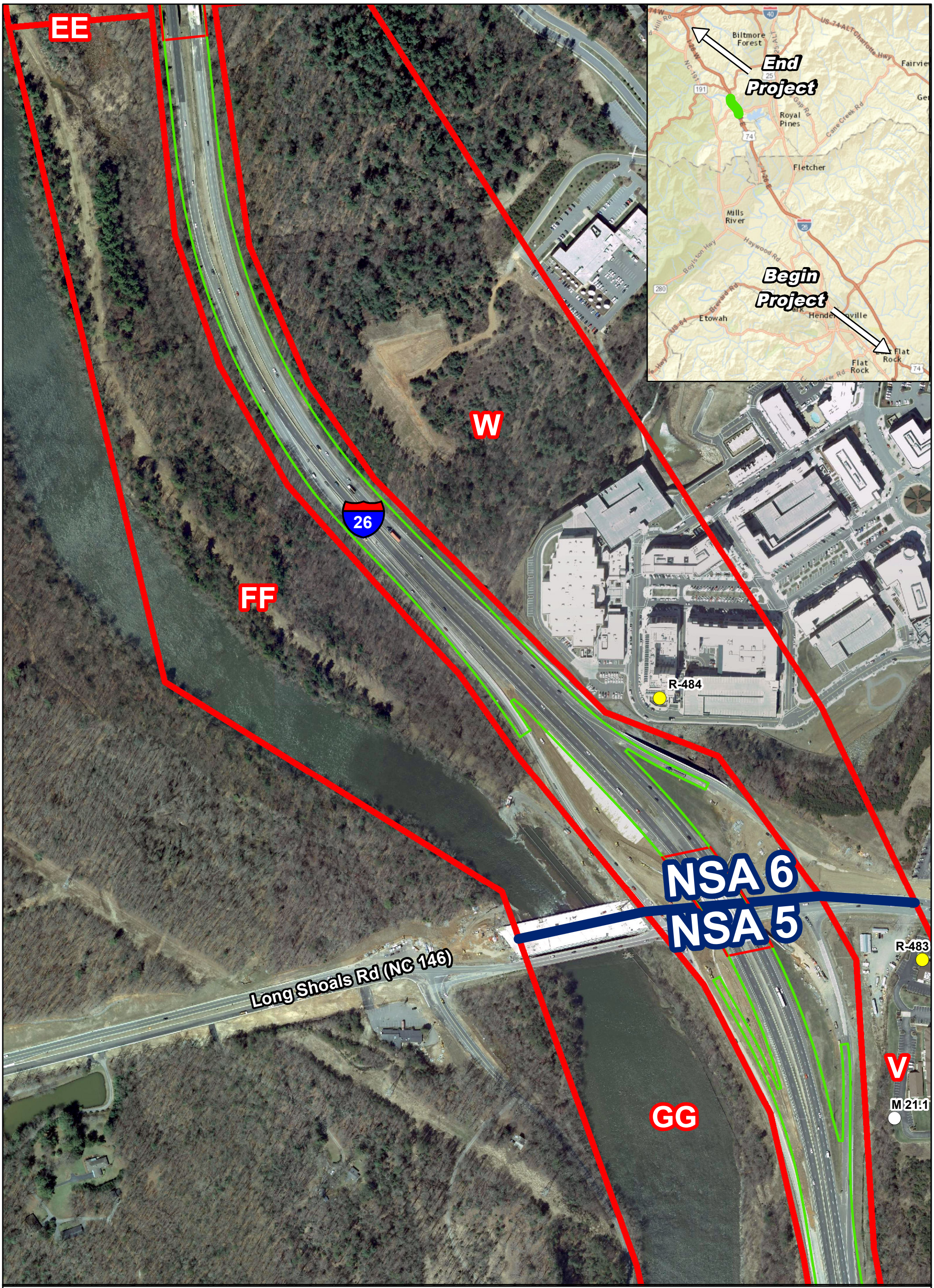
Map Prepared by: Trey Jordan Mar 2015

Figure 82

NSA 6 (Area EE)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 83

NSA 6 (Area FF)
NSA 5 (Area GG)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

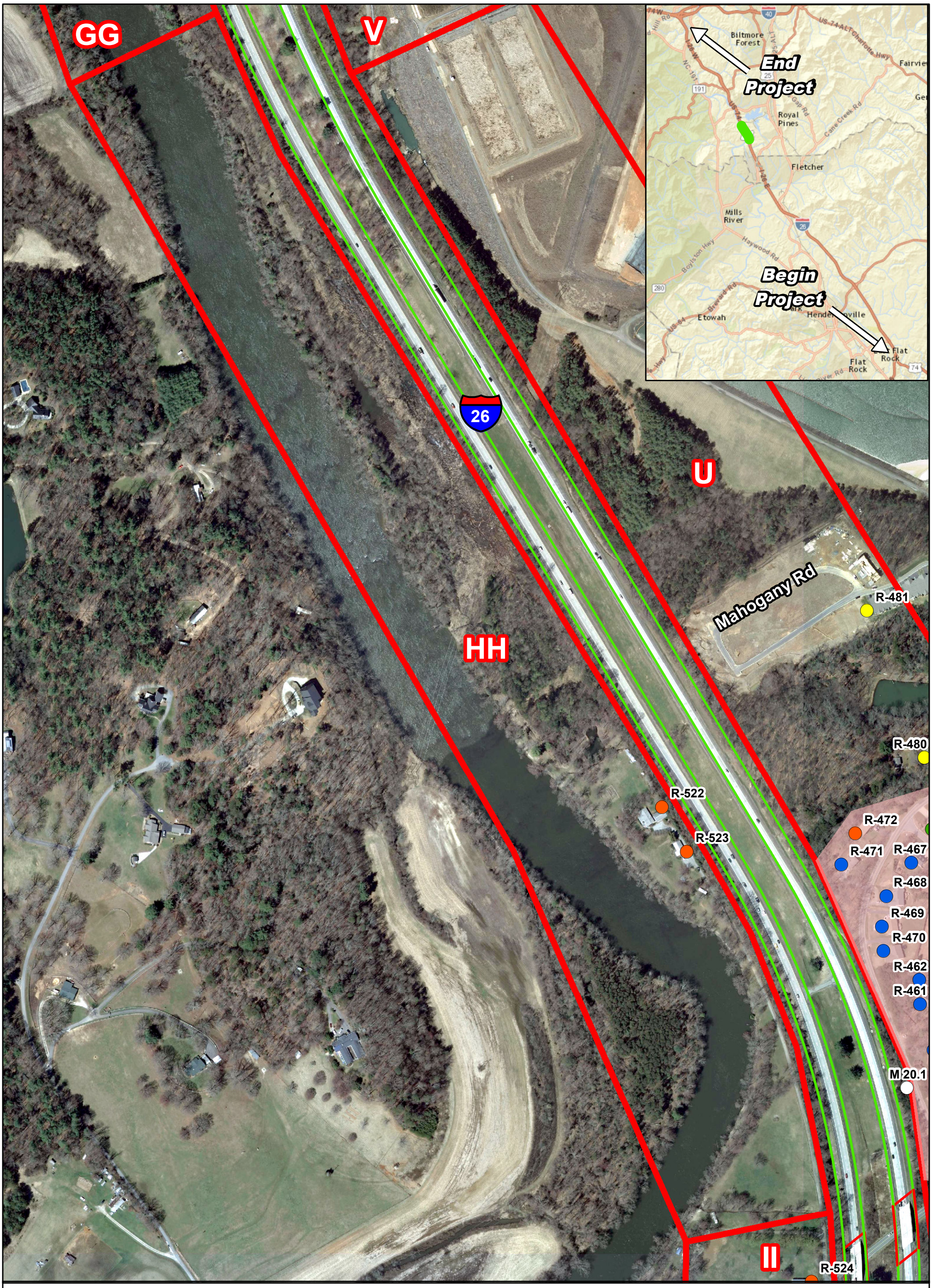
Map Prepared by: Trey Jordan Mar 2015

Figure 84

NSA 5 (Area GG)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

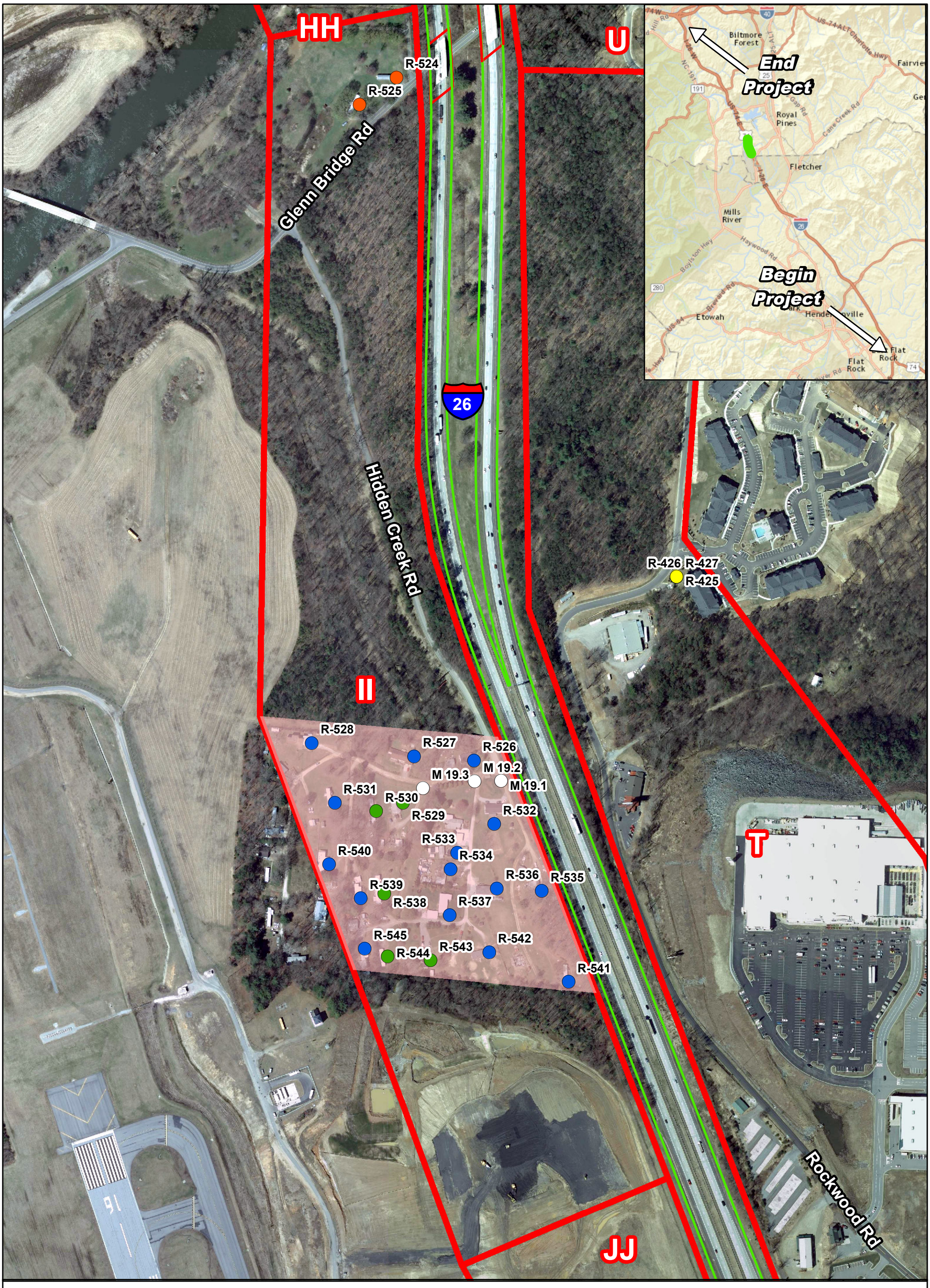
Map Prepared by: Trey Jordan Mar 2015

Figure 85

NSA 5 (Area HH)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 86

NSA 5 (Area II)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

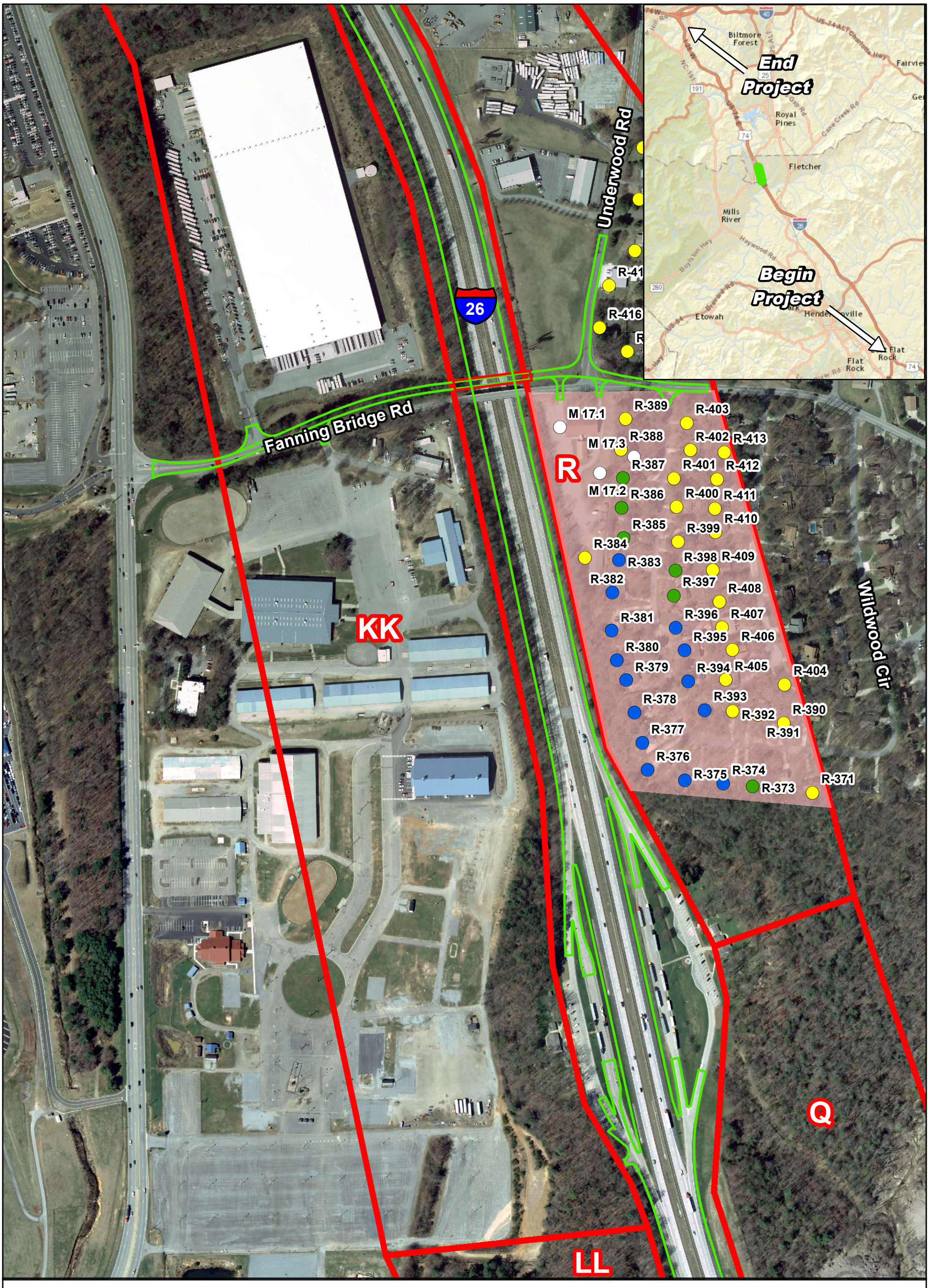
Map Prepared by: Trey Jordan Mar 2015

Figure 87

NSA 5 (Area JJ)
NSA 4 (Area KK)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

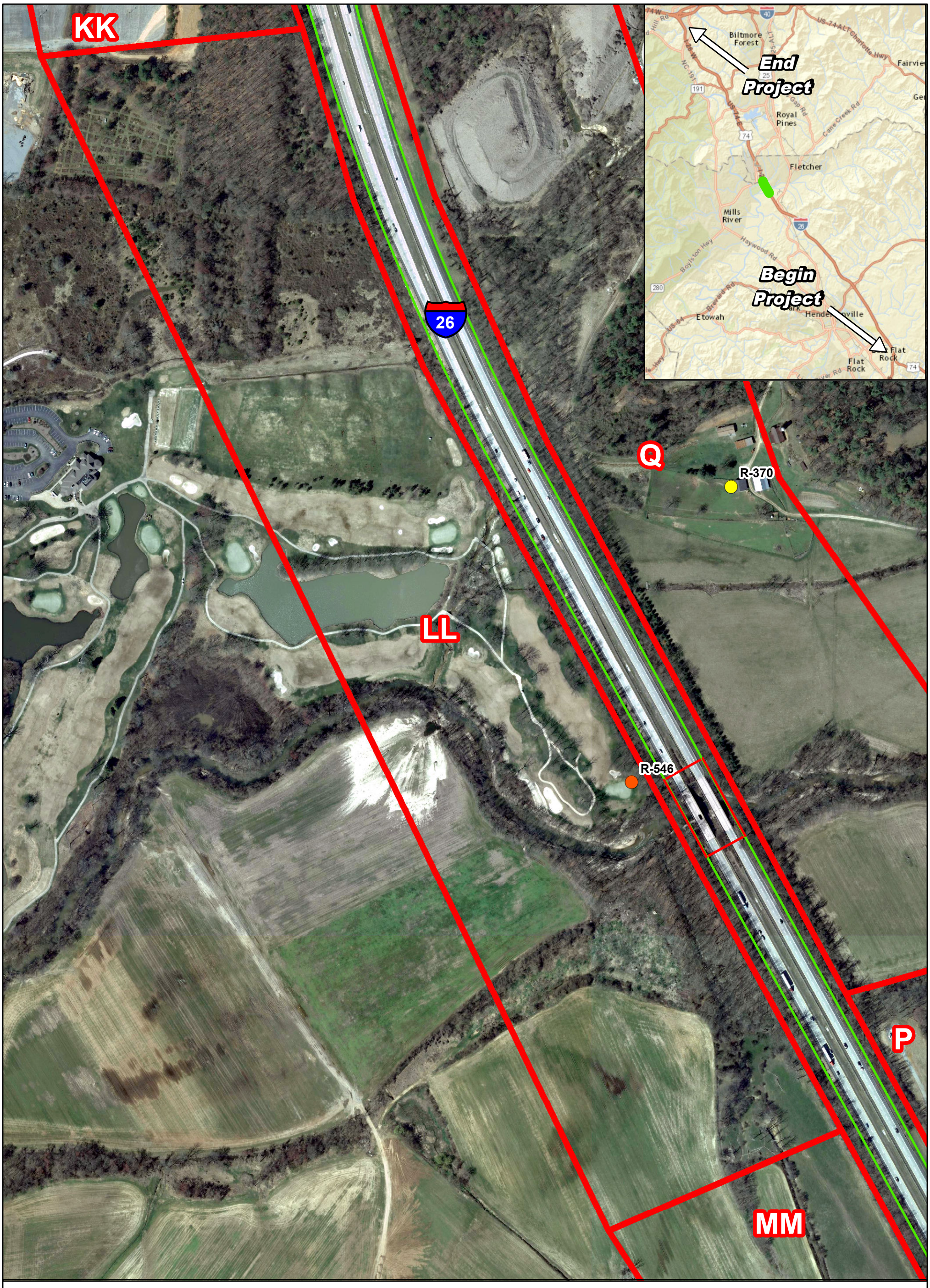
Map Prepared by: Trey Jordan Mar 2015

Figure 88

NSA 4 (Area KK)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

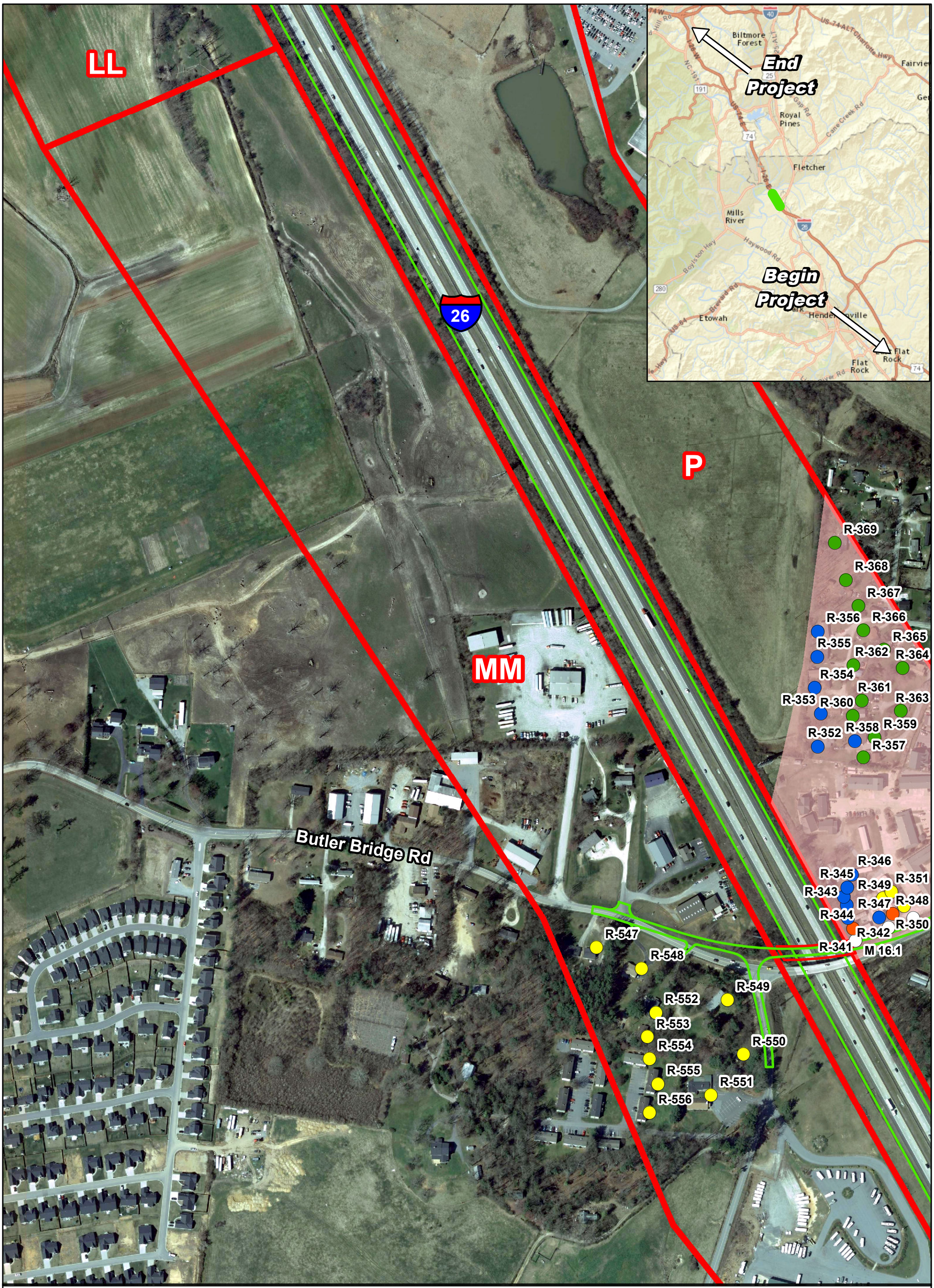
Map Prepared by: Trey Jordan Mar 2015

Figure 89

NSA 4 (Area LL)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

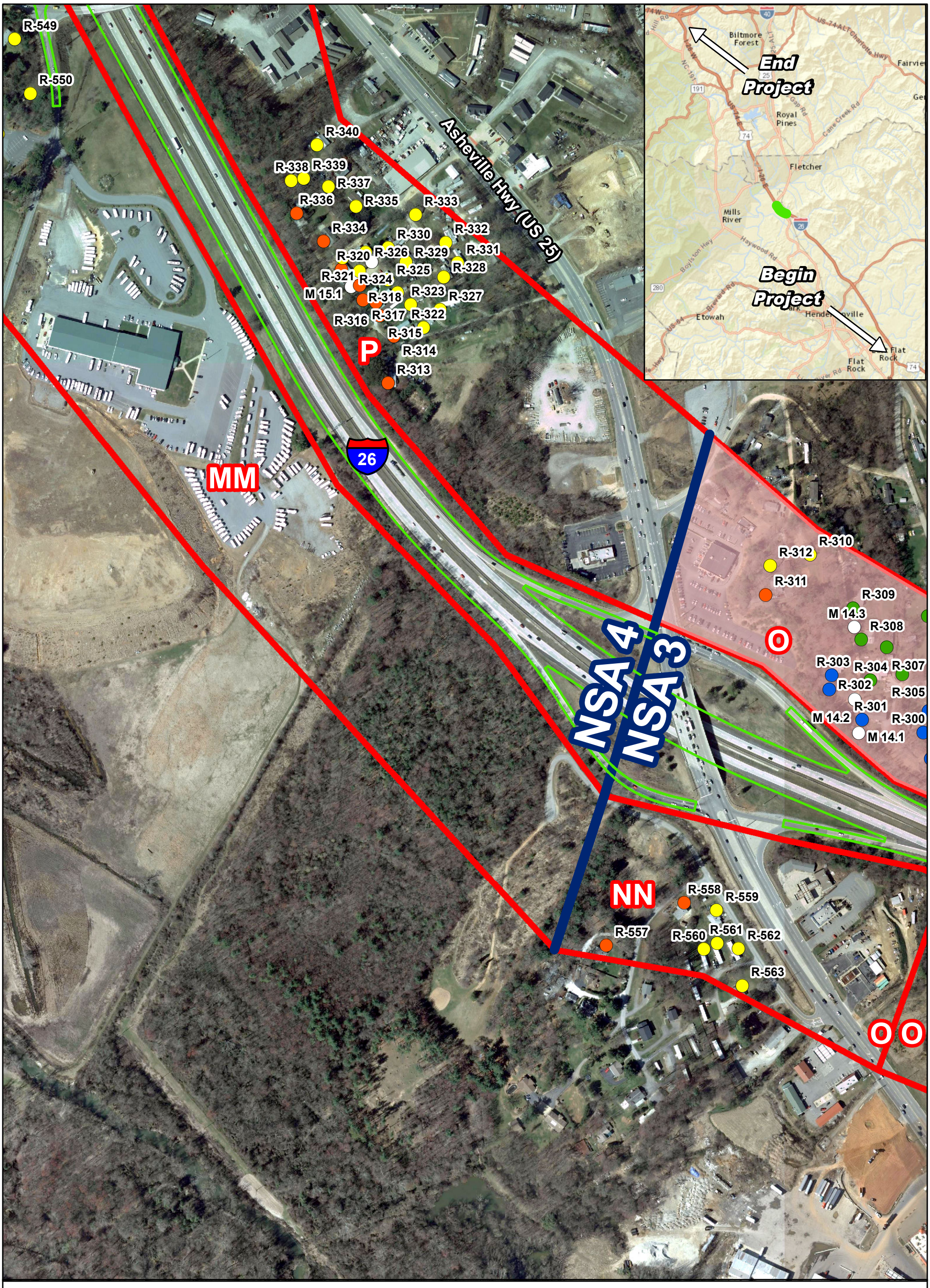
Map Prepared by: Trey Jordan Mar 2015

Figure 90

NSA 4 (Area MM)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 91

NSA 4 (Area MM)
NSA 3 (Area NN)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

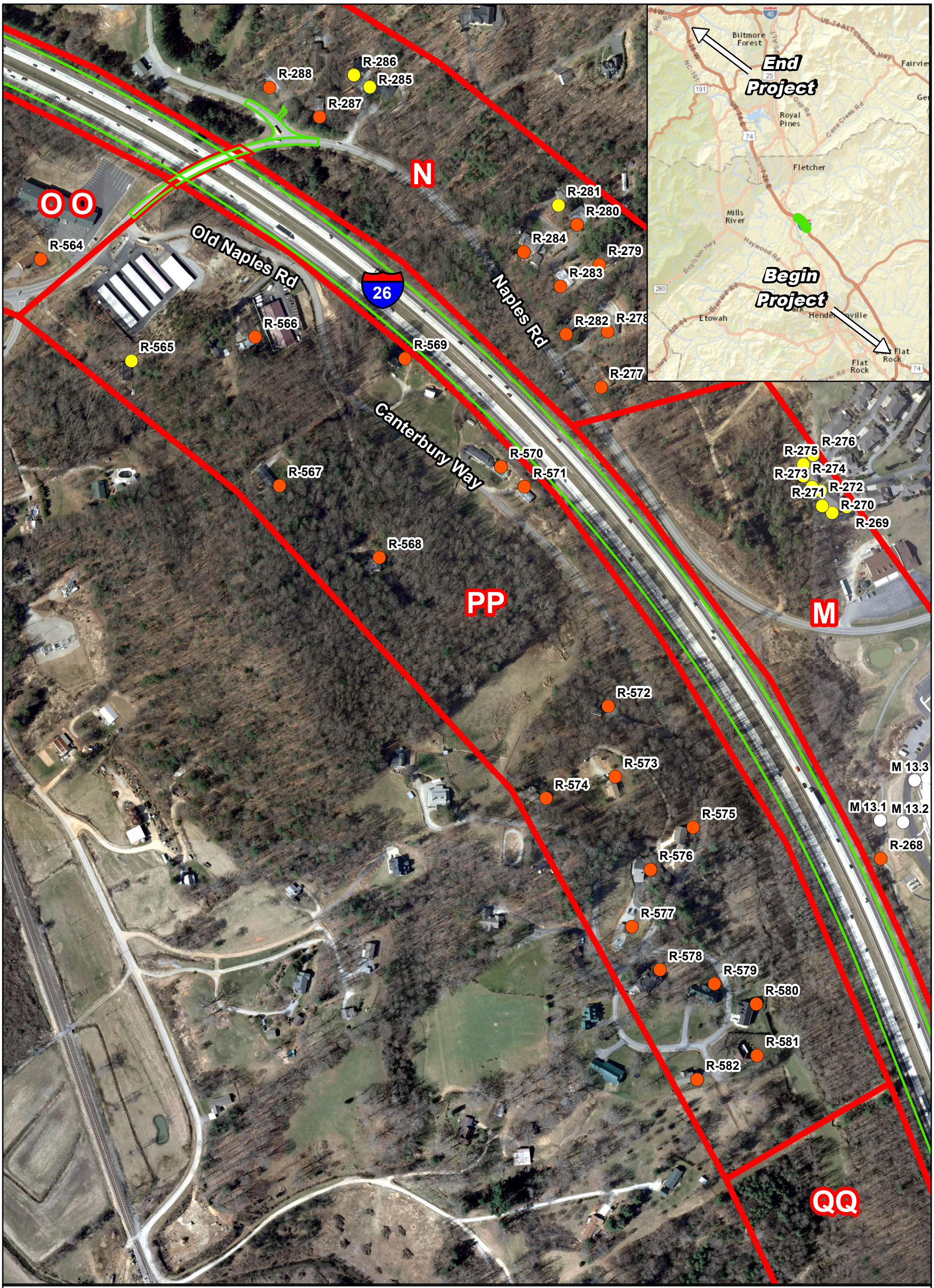
Map Prepared by: Trey Jordan Mar 2015

Figure 92

NSA 3 (Area OO)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

N

W E

S

0 125 250 500 Feet

1 inch = 300 ft

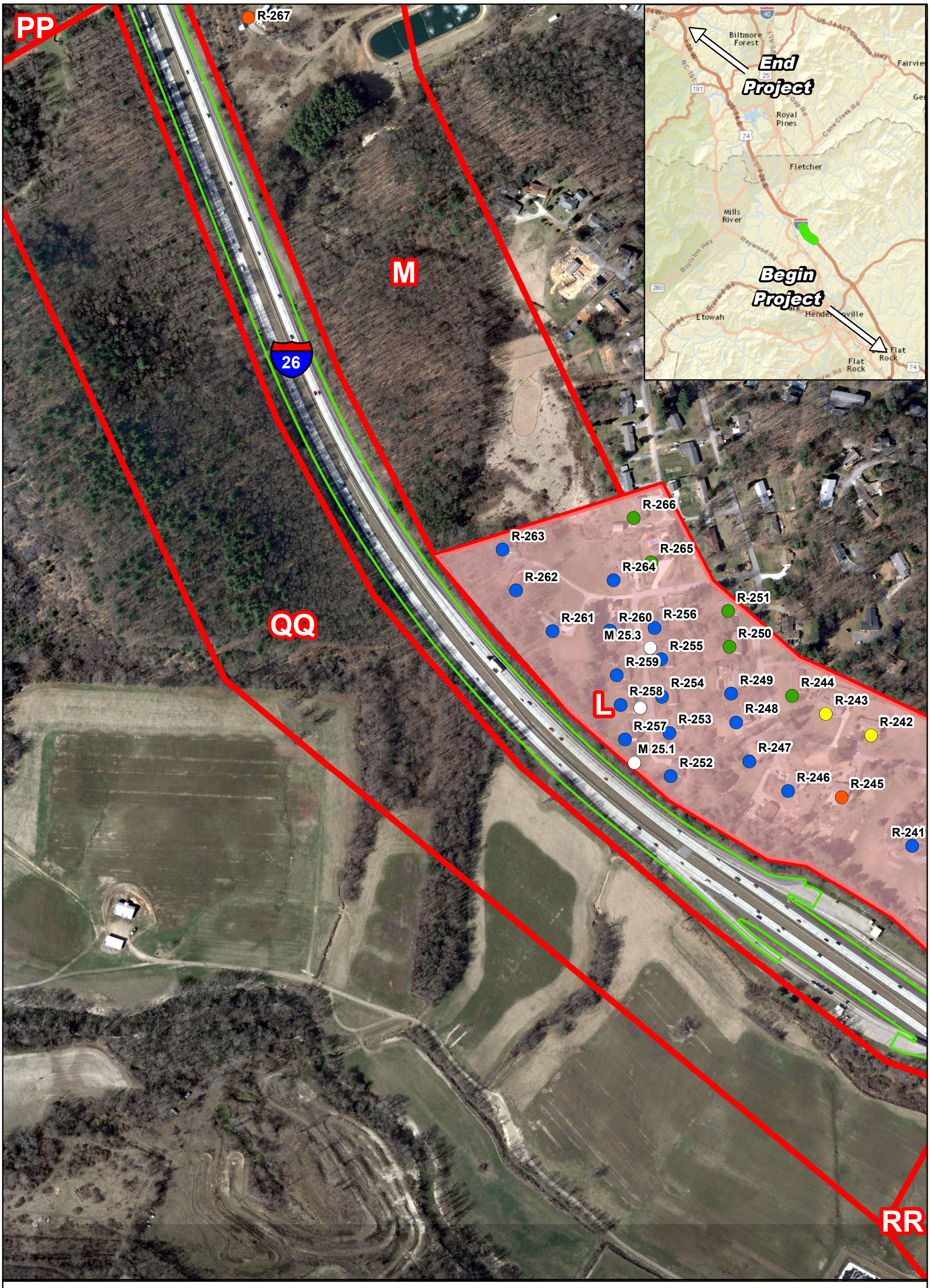
Map Prepared by: Trey Jordan Mar 2015

Figure 93

NSA 3 (Area PP)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

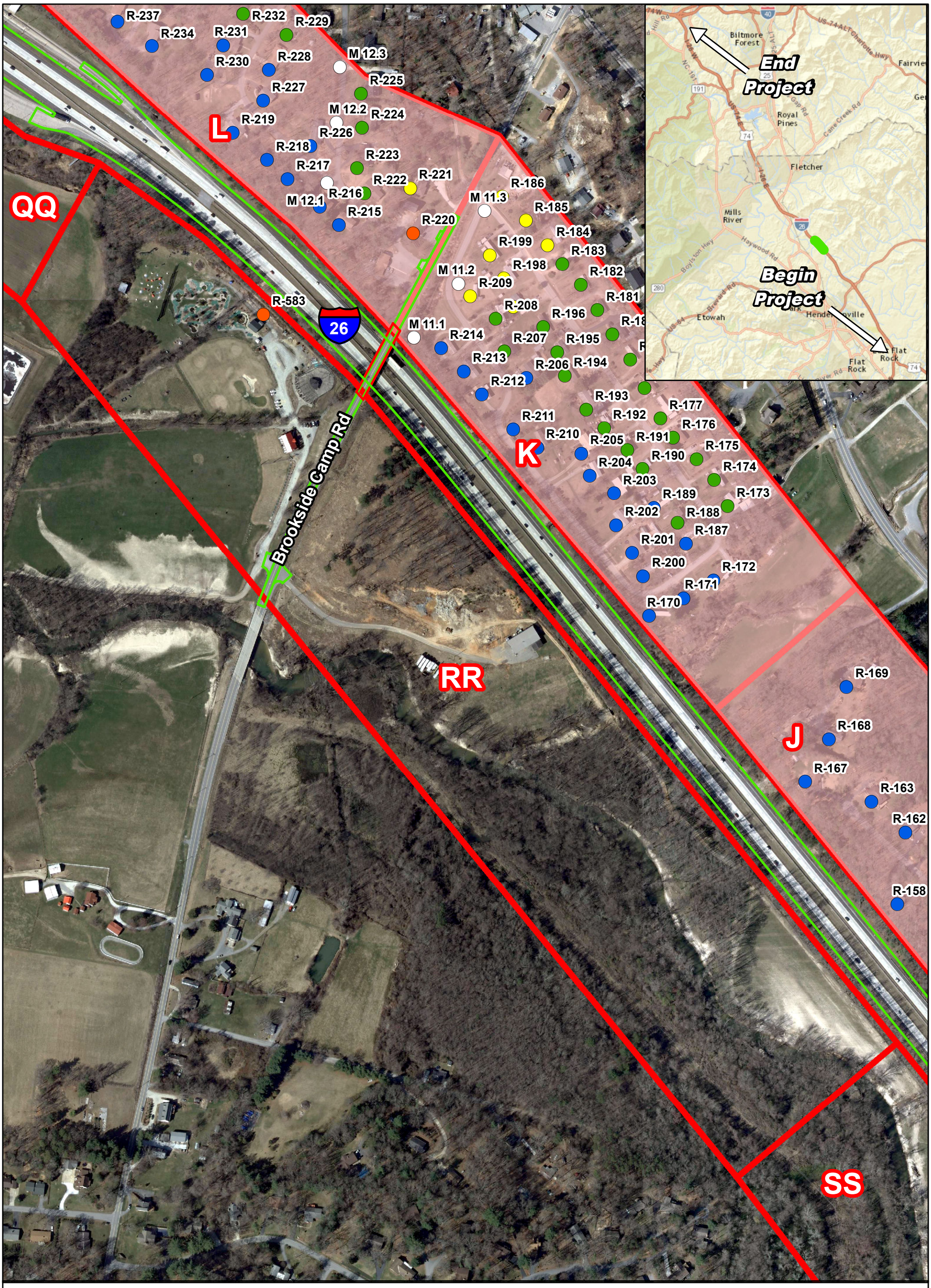
Map Prepared by: Trey Jordan Mar 2015

Figure 94

NSA 3 (Area QQ)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 95

NSA 3 (Area RR)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

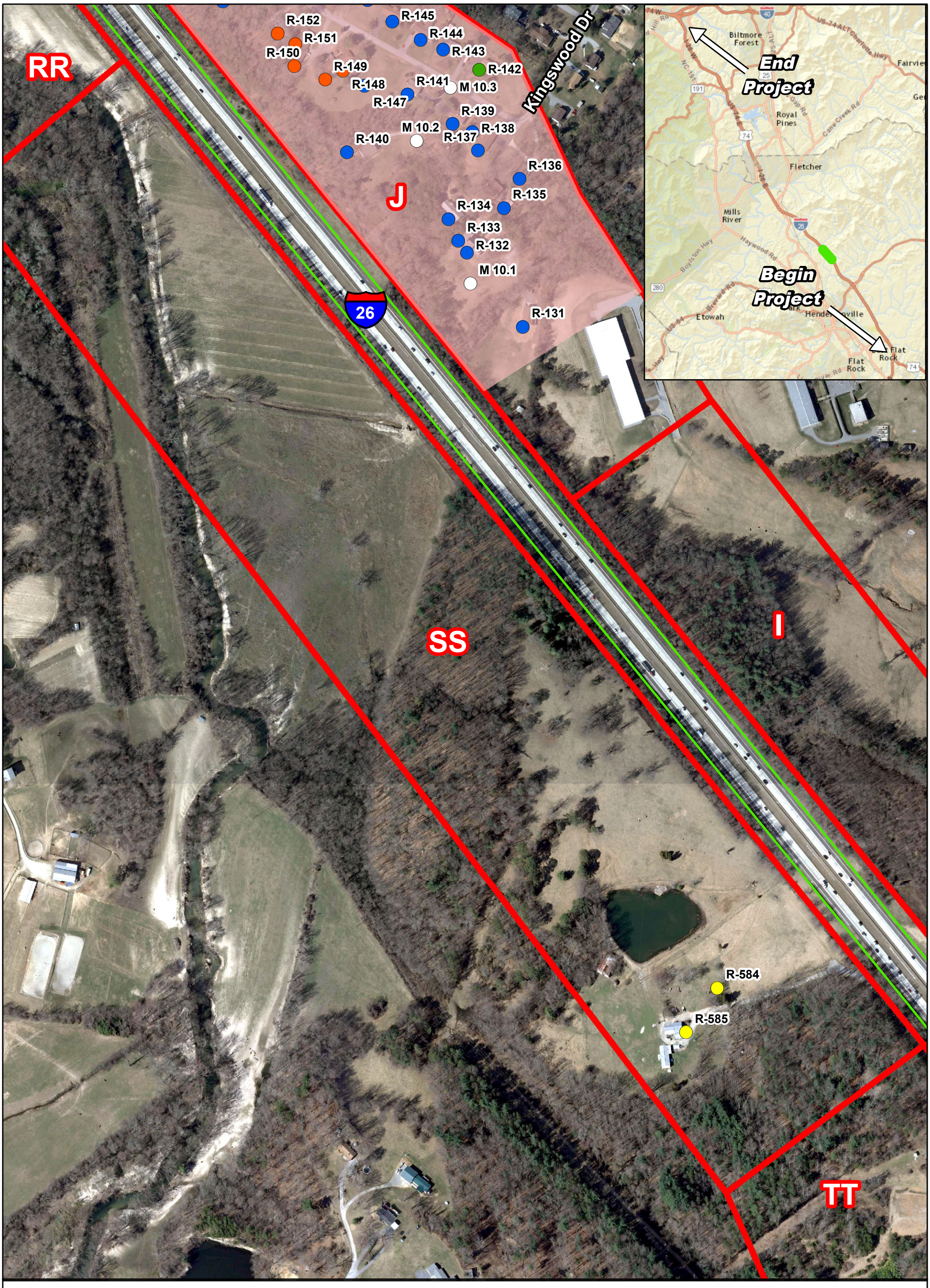
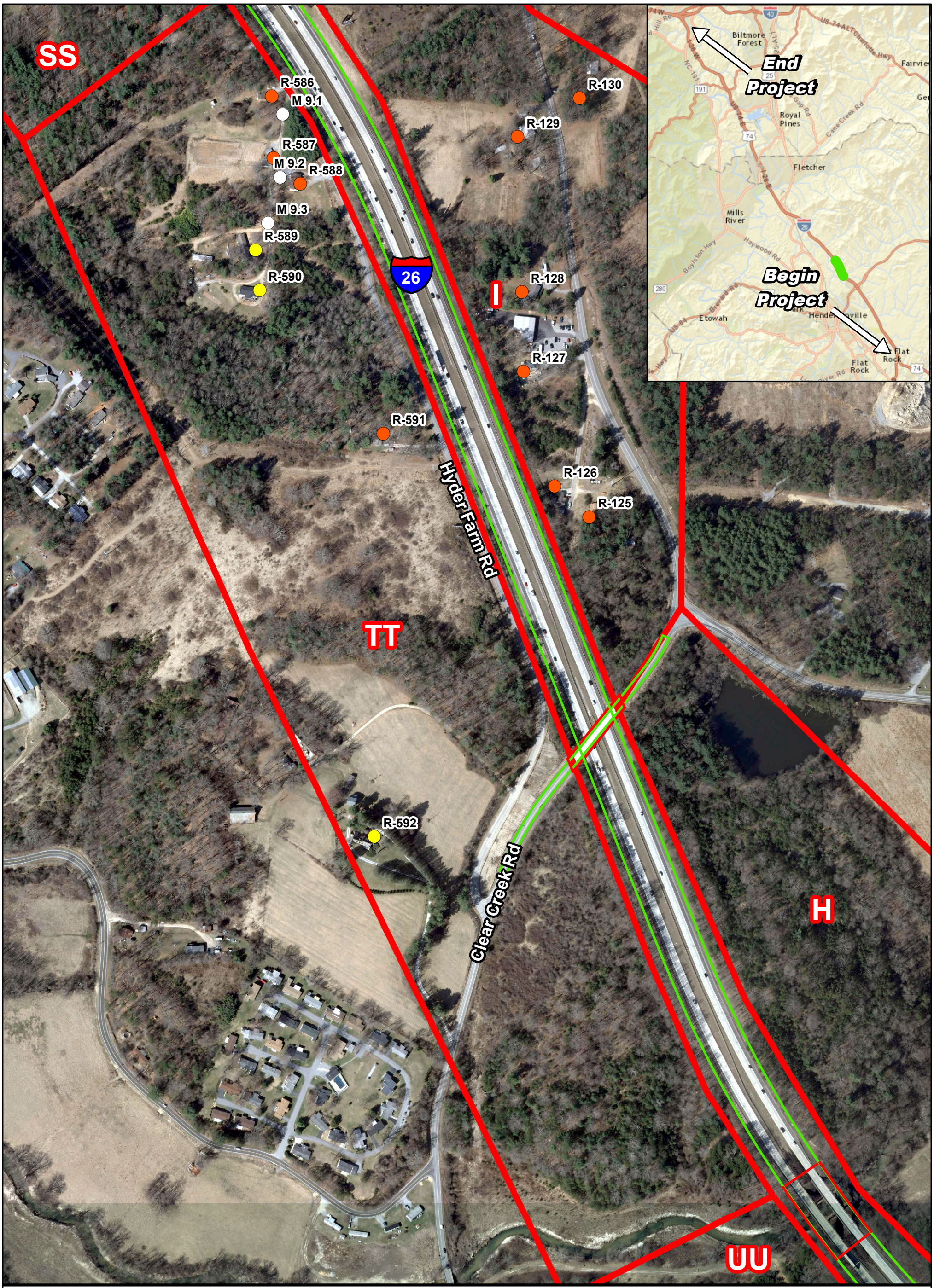


Figure 96

NSA 3 (Area SS)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

0 125 250 500 Feet

1 inch = 300 ft

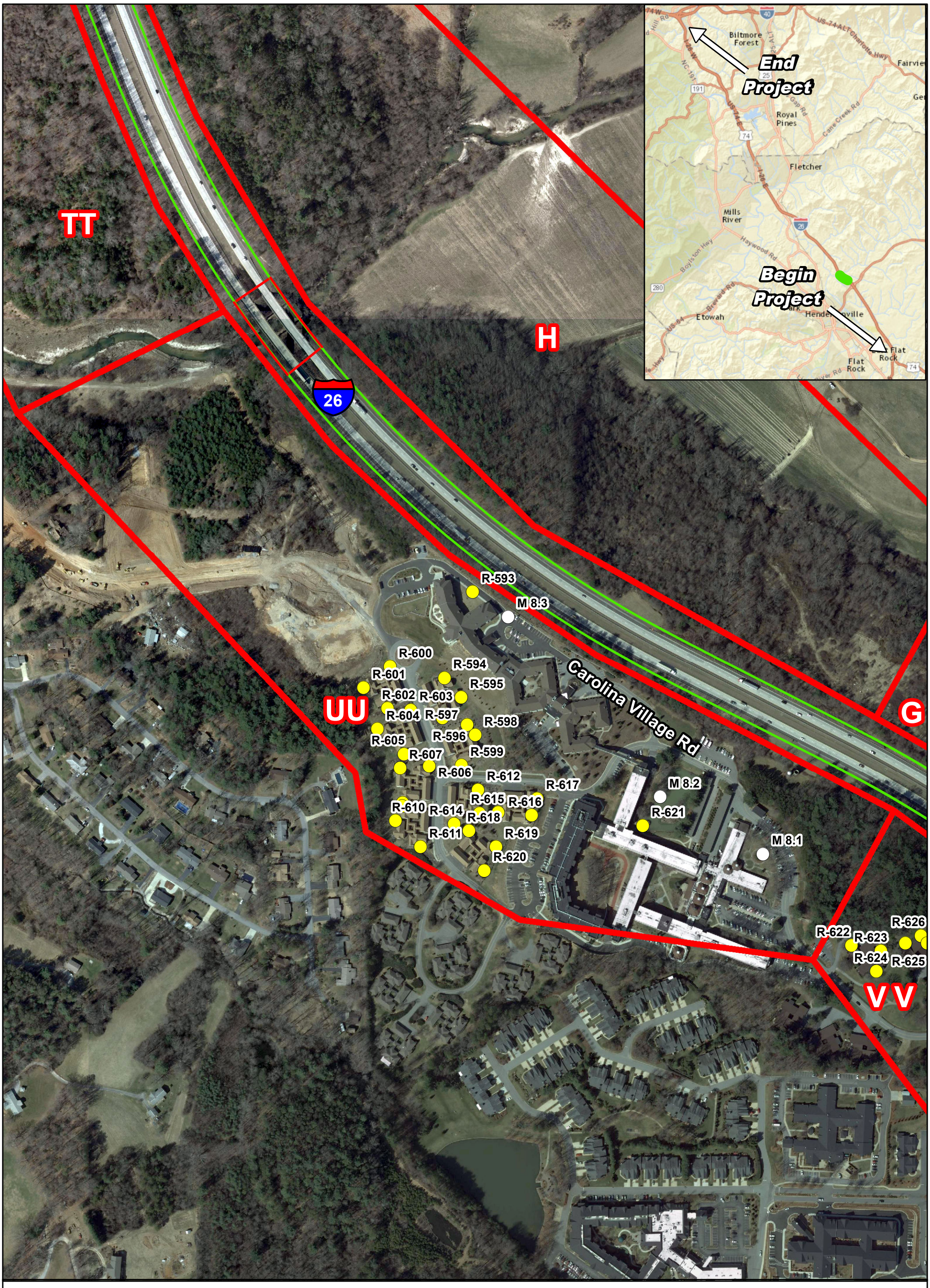
Map Prepared by: Trey Jordan Mar 2015

Figure 97

NSA 3 (Area TT)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

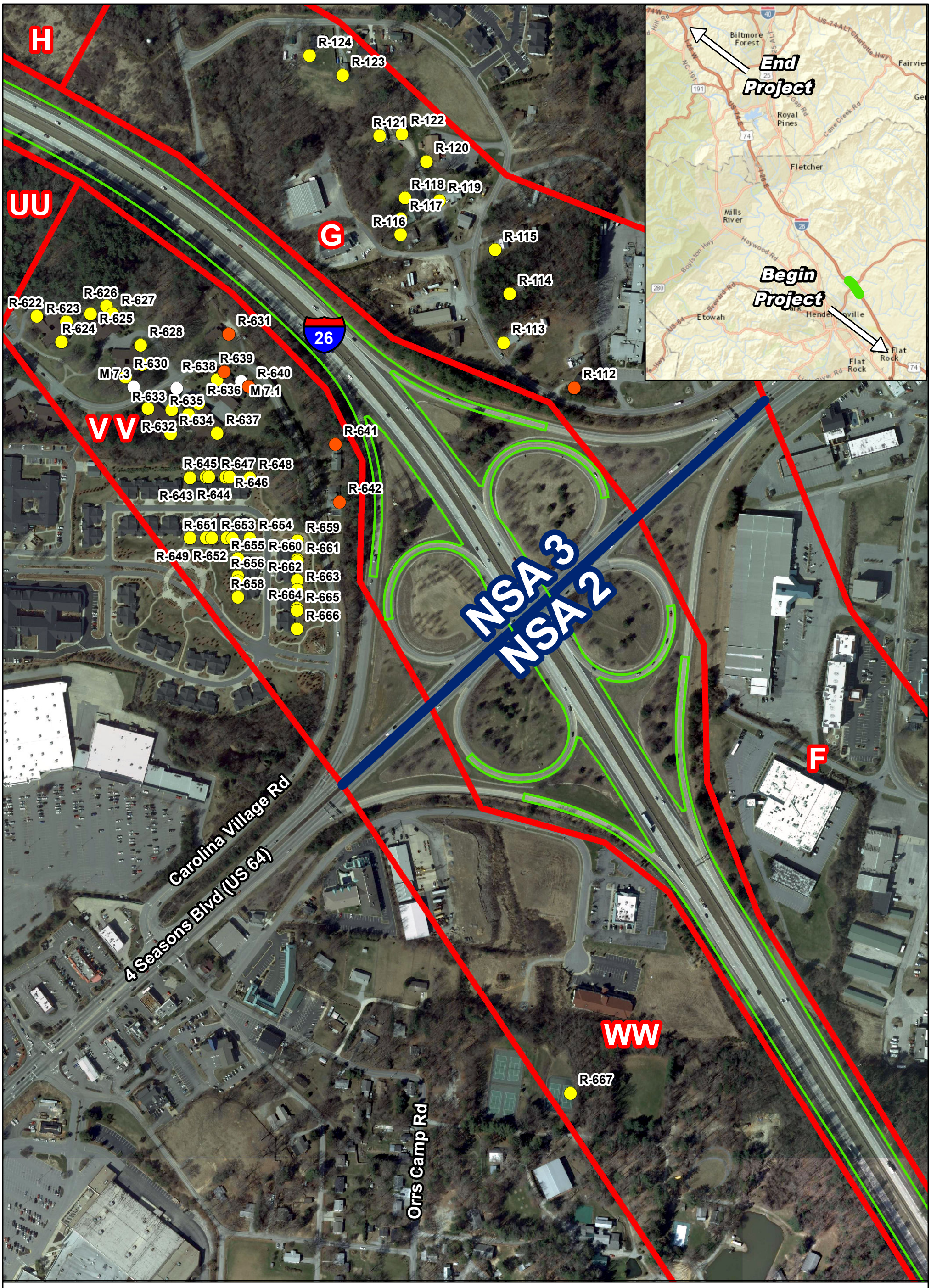
Map Prepared by: Trey Jordan Mar 2015

Figure 98

NSA 3 (Area UU)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

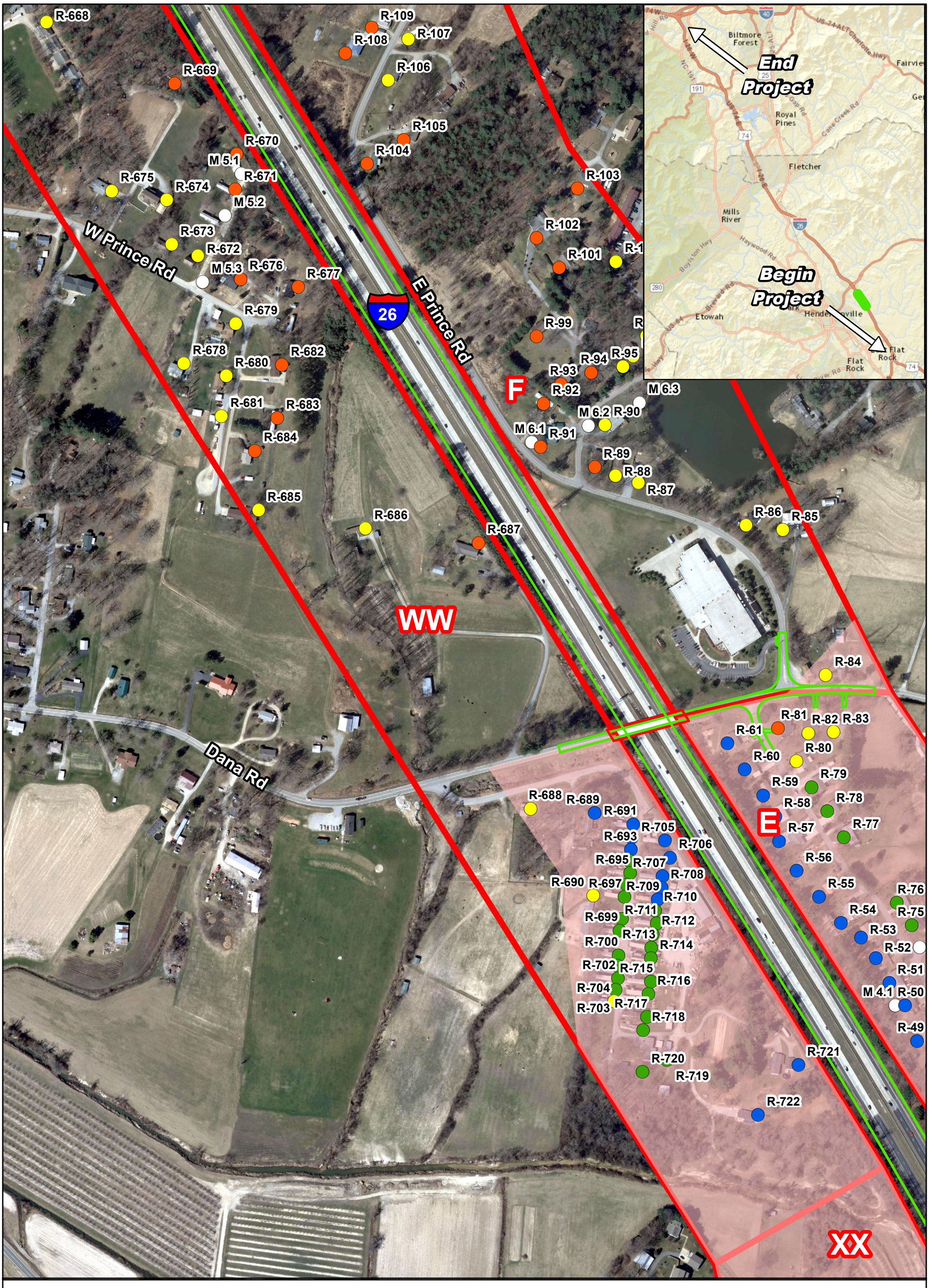
Map Prepared by: Trey Jordan Mar 2015

Figure 99

NSA 3 (Area VV)
NSA 2 (Area WW)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

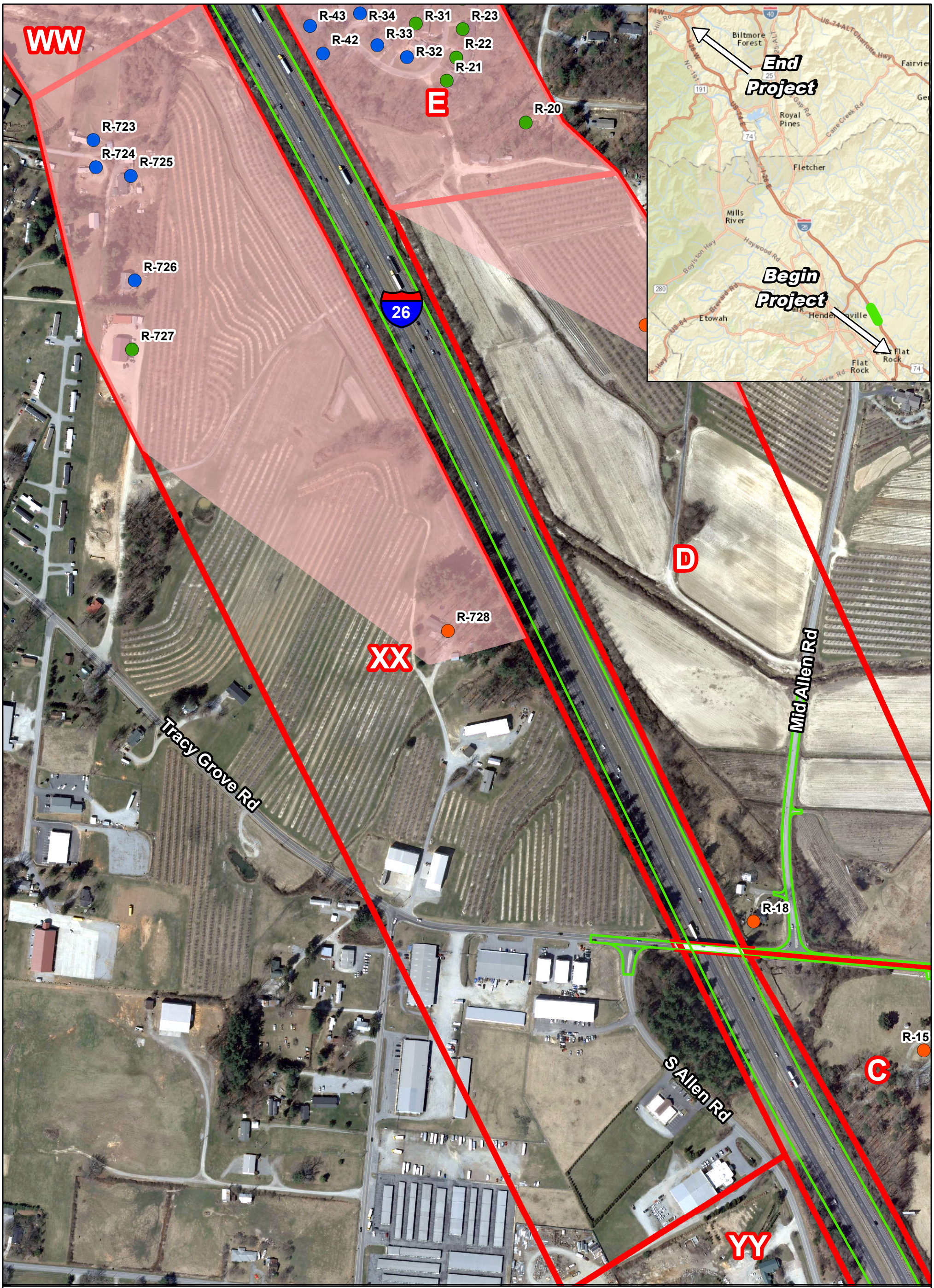
Map Prepared by: Trey Jordan Mar 2015

Figure 100

NSA 2 (Area WW)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

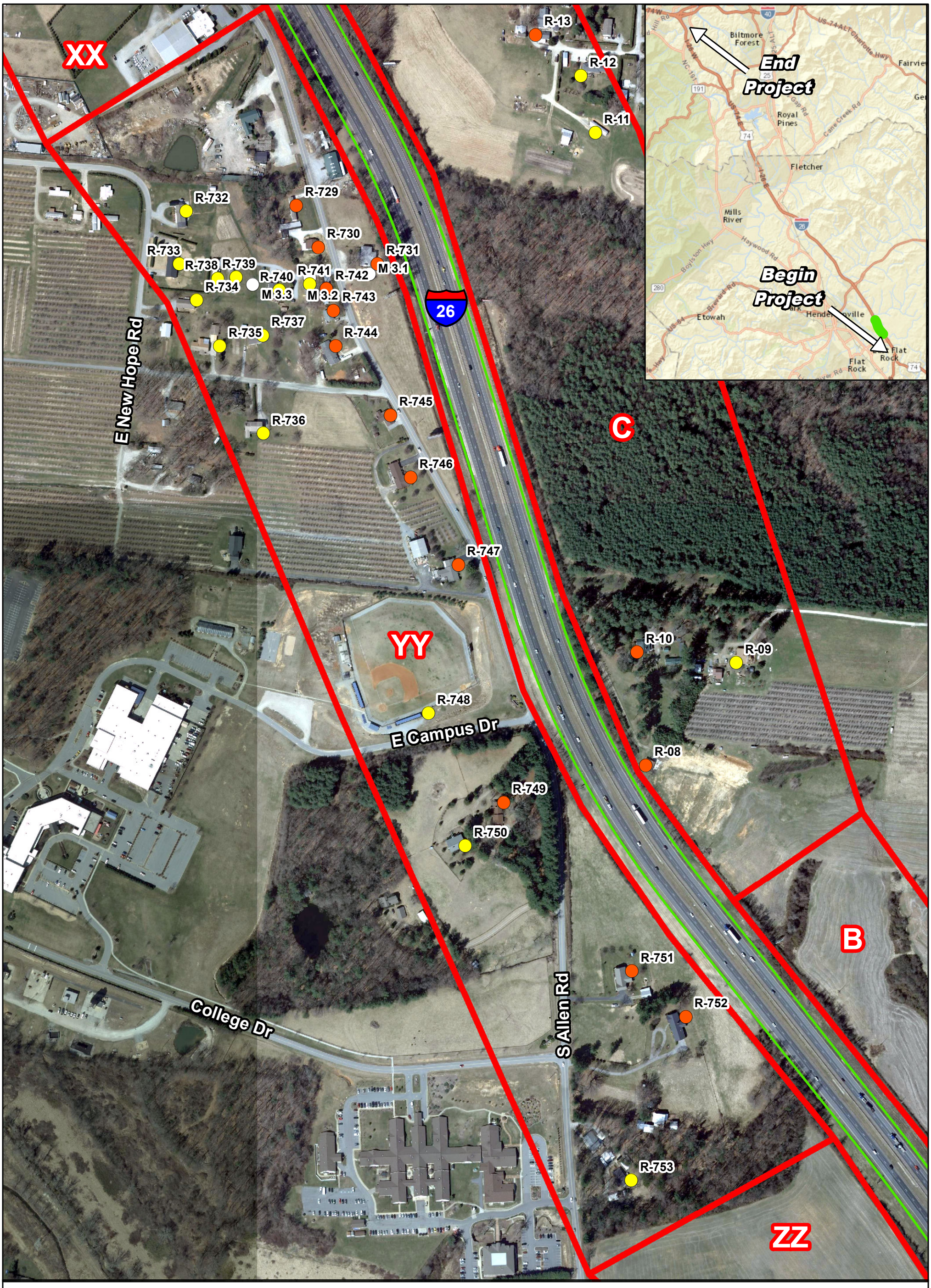
Map Prepared by: Trey Jordan Mar 2015

Figure 101

NSA 2 (Area XX)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 102

NSA 2 (Area YY)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 103

NSA 2 (Area ZZ)
NSA 1 (Area AAA)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 104

NSA 1 (Area AAA)
8-Lane
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

6/8-Lane Hybrid Widening Alternative
(Figures 105 through 156)

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Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 105

NSA 1 (Area A)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 106

NSA 1 (Area A)
NSA 2 (Area B)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

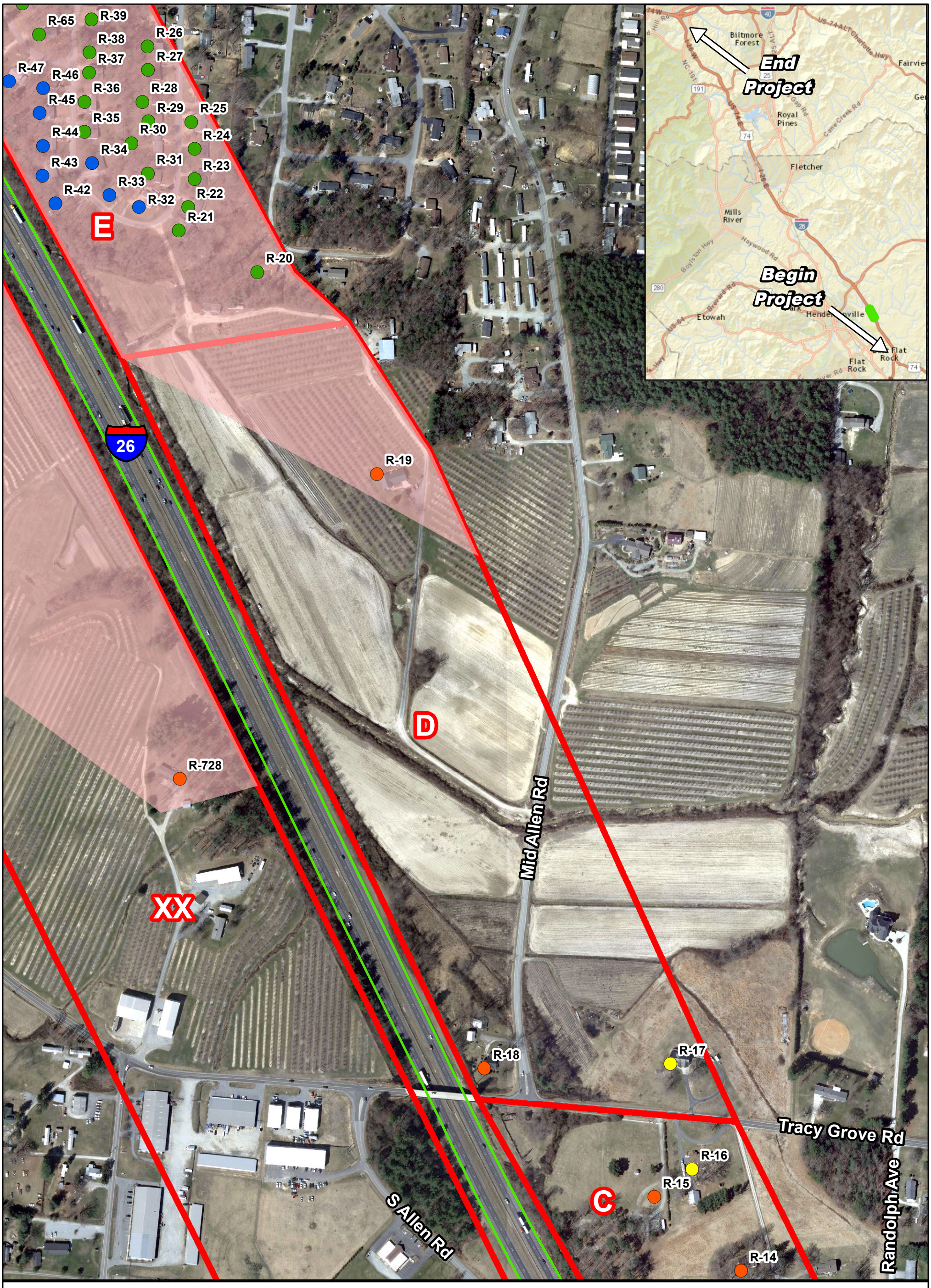
Map Prepared by: Trey Jordan Mar 2015

Figure 107

NSA 2 (Area C)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

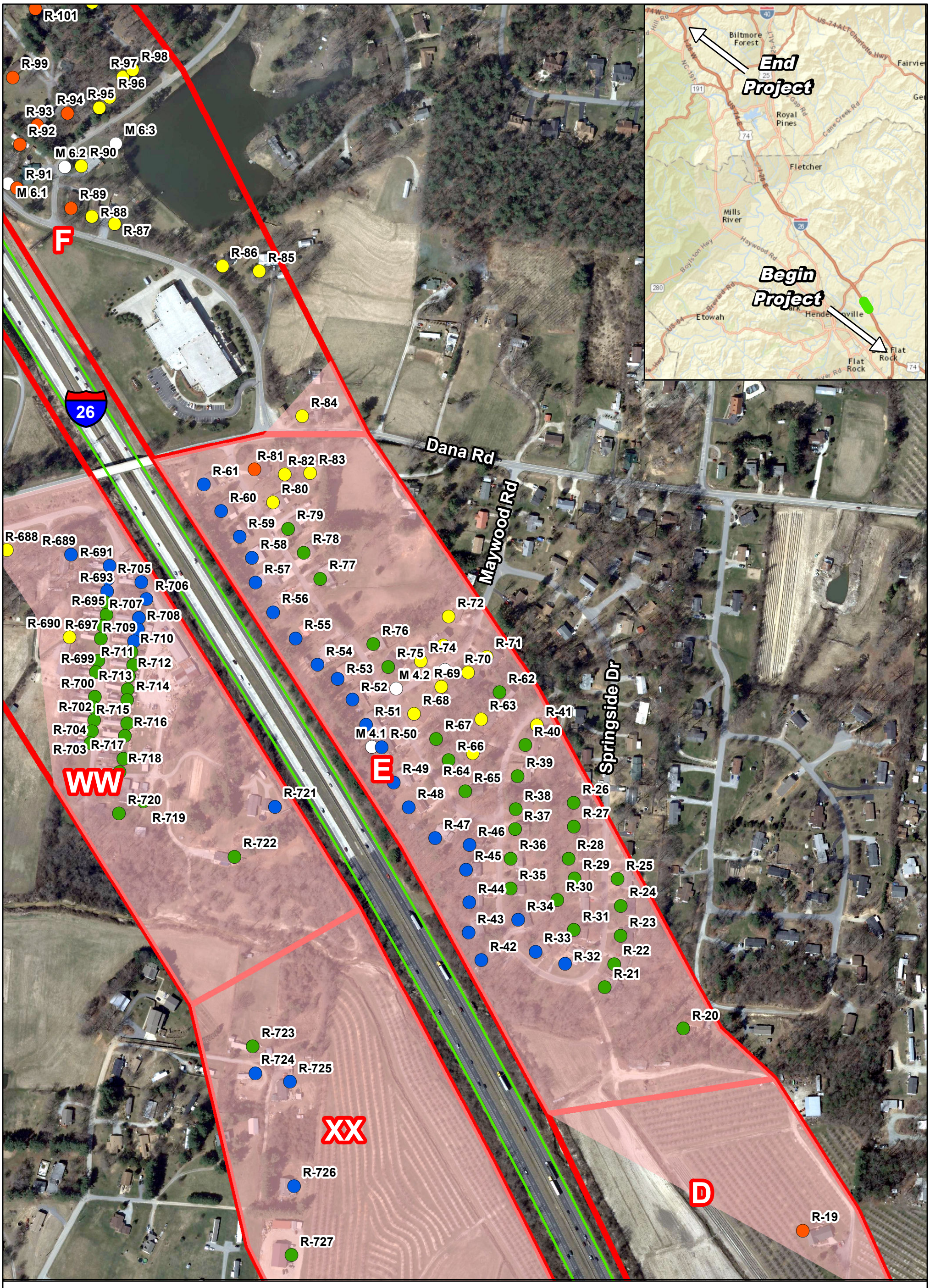
Map Prepared by: Trey Jordan Mar 2015

Figure 108

NSA 2 (Area D)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

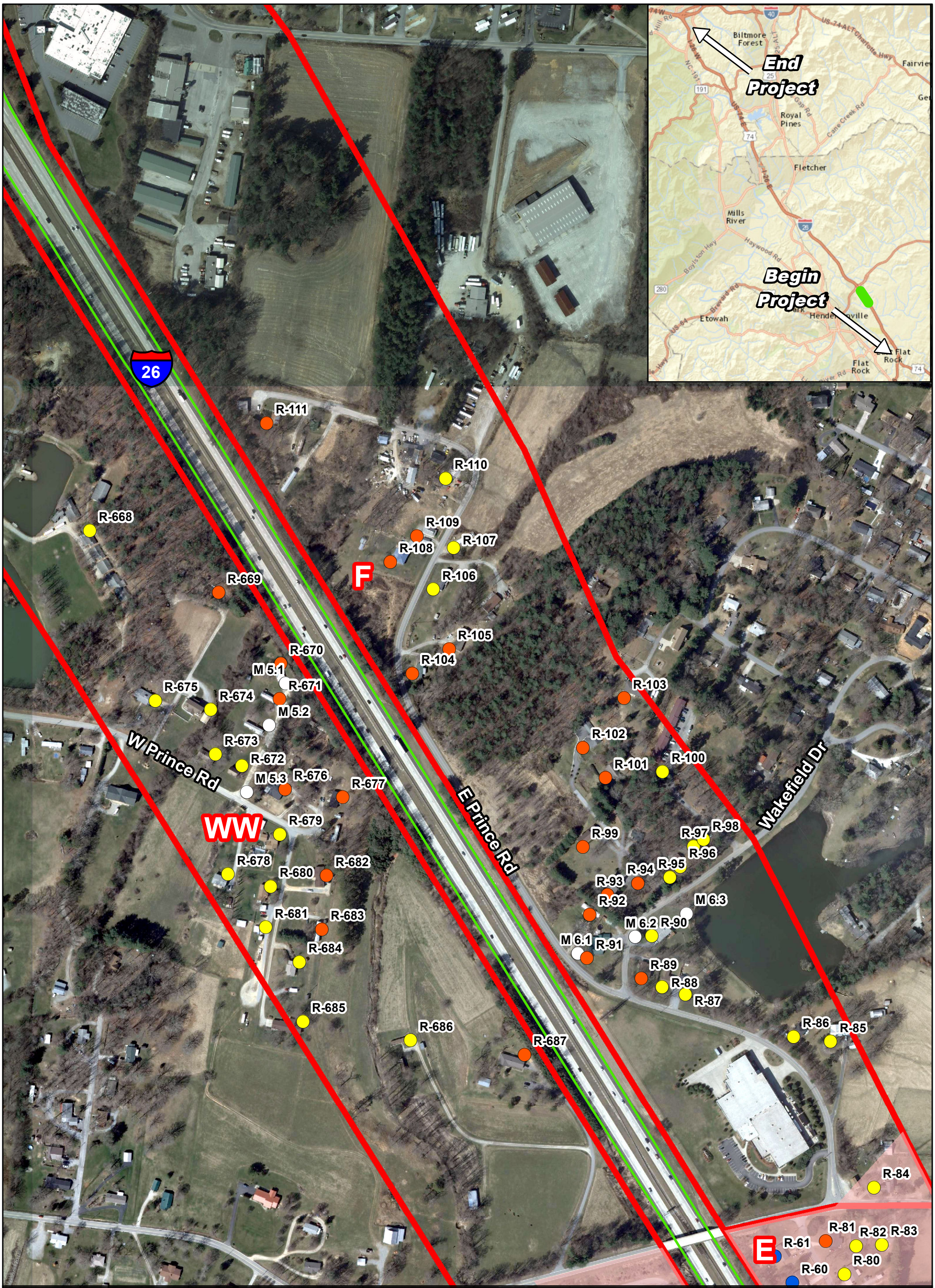
Map Prepared by: Trey Jordan Mar 2015

Figure 109

NSA 2 (Area E)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 110

NSA 2 (Area F)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 111

NSA 2 (Area F)
NSA 3 (Area G)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

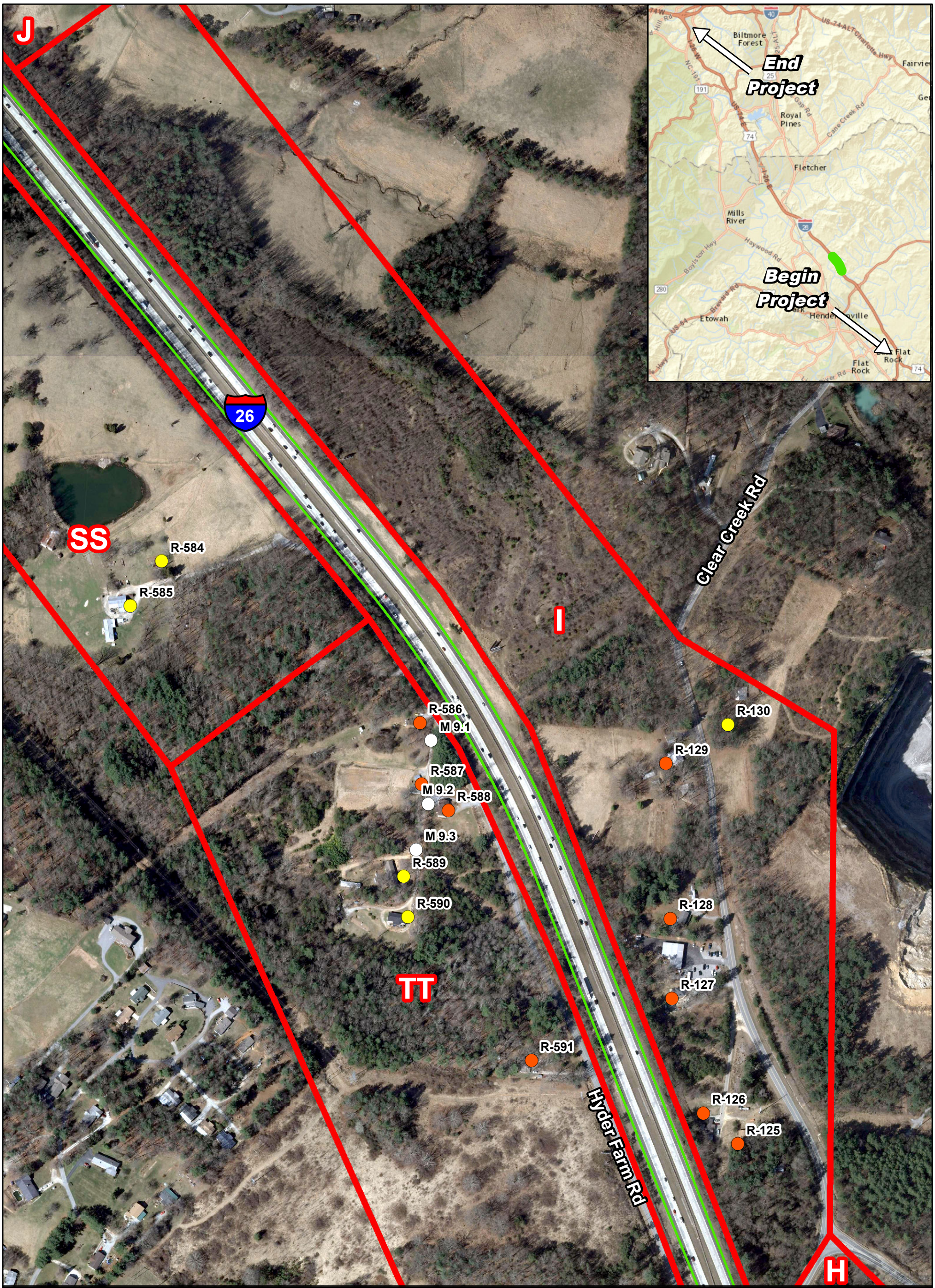
I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Figure 112

NSA 3 (Area H)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

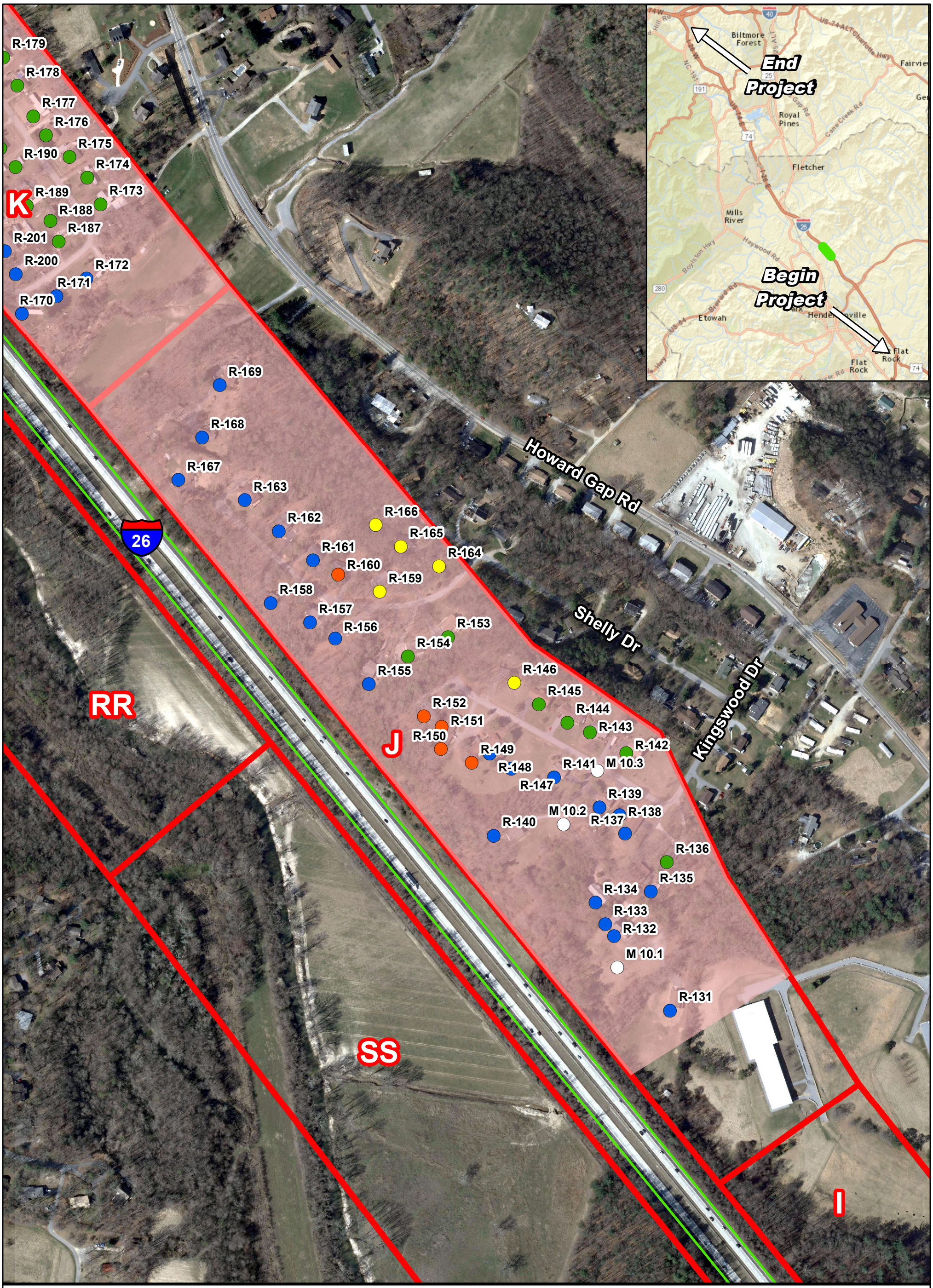
Map Prepared by: Trey Jordan Mar 2015

Figure 113

NSA 3 (Area I)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

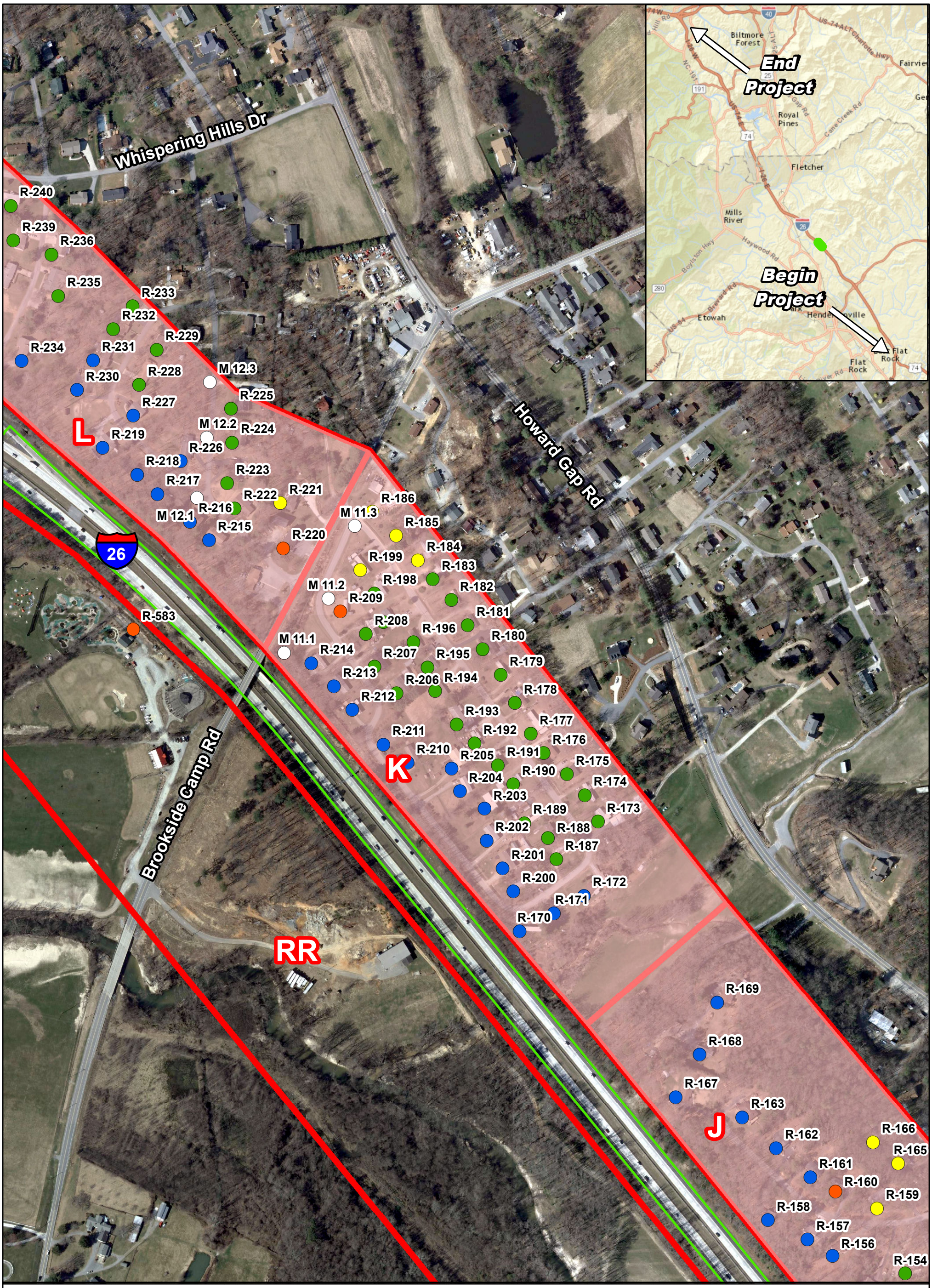
Map Prepared by: Trey Jordan Mar 2015

Figure 114

NSA 3 (Area J)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

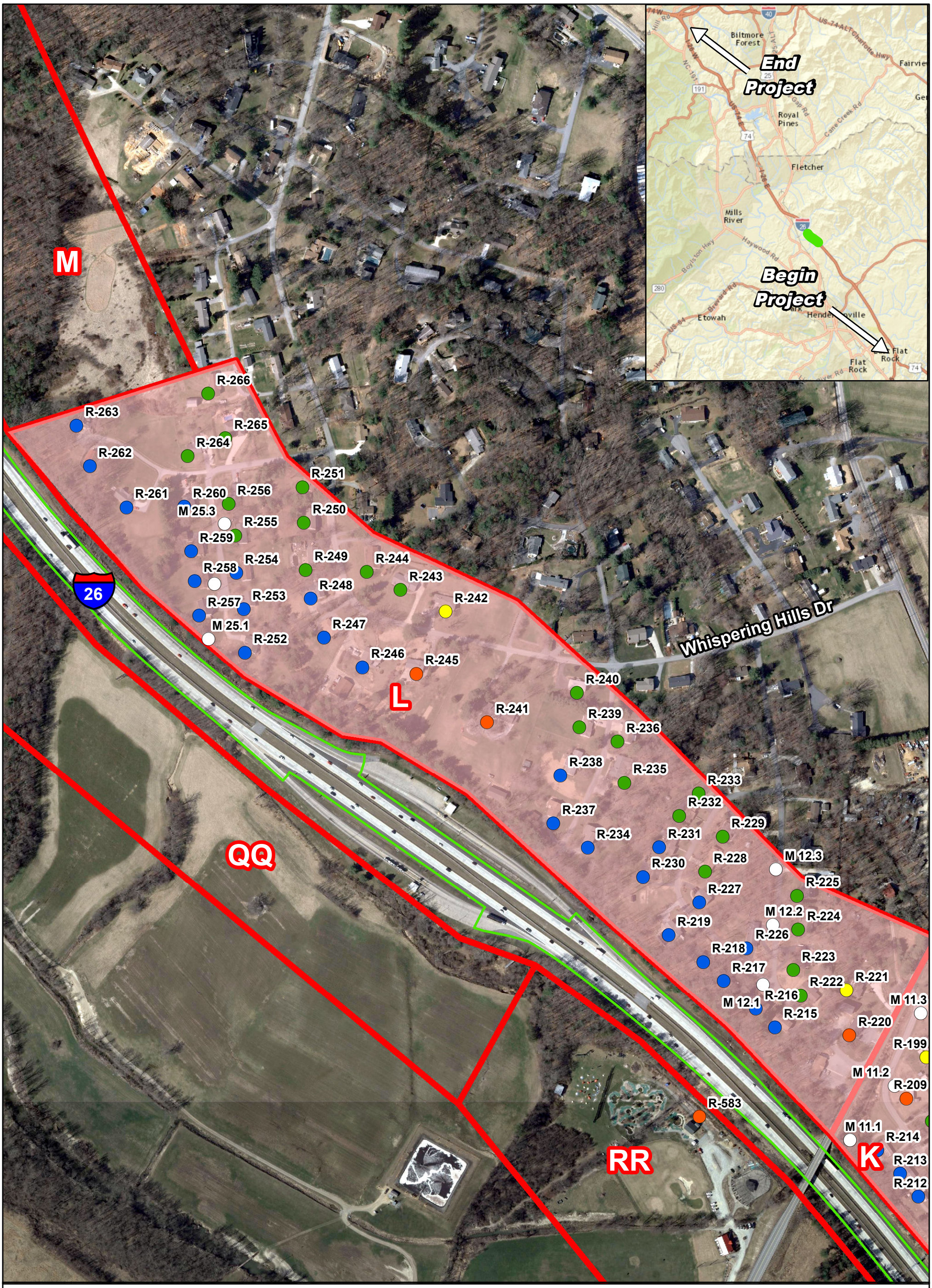
Map Prepared by: Trey Jordan Mar 2015

Figure 115

NSA 3 (Area K)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 116

NSA 3 (Area L)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

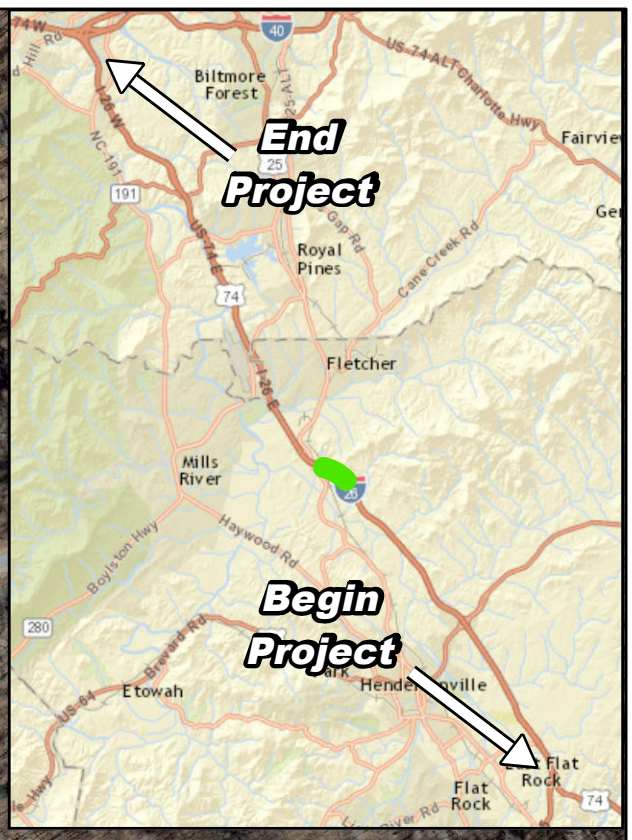
Map Prepared by: Trey Jordan Mar 2015

Figure 117

NSA 3 (Area M)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

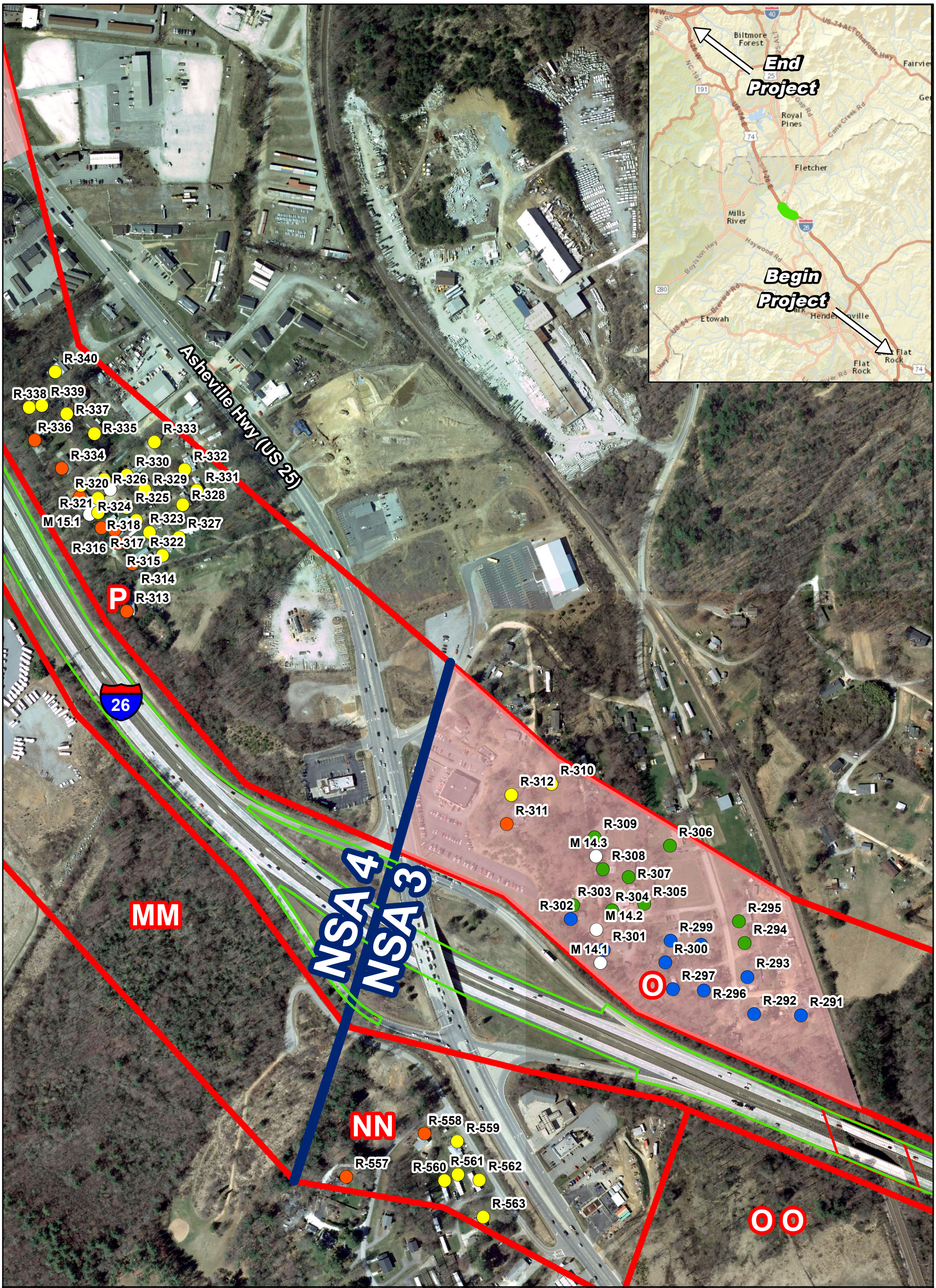
Map Prepared by: Trey Jordan Mar 2015

Figure 118

NSA 3 (Area N)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 119

NSA 3 (Area O)
NSA 4 (Area P)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 120

NSA 4 (Area P)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Figure 121

NSA 4 (Area Q)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

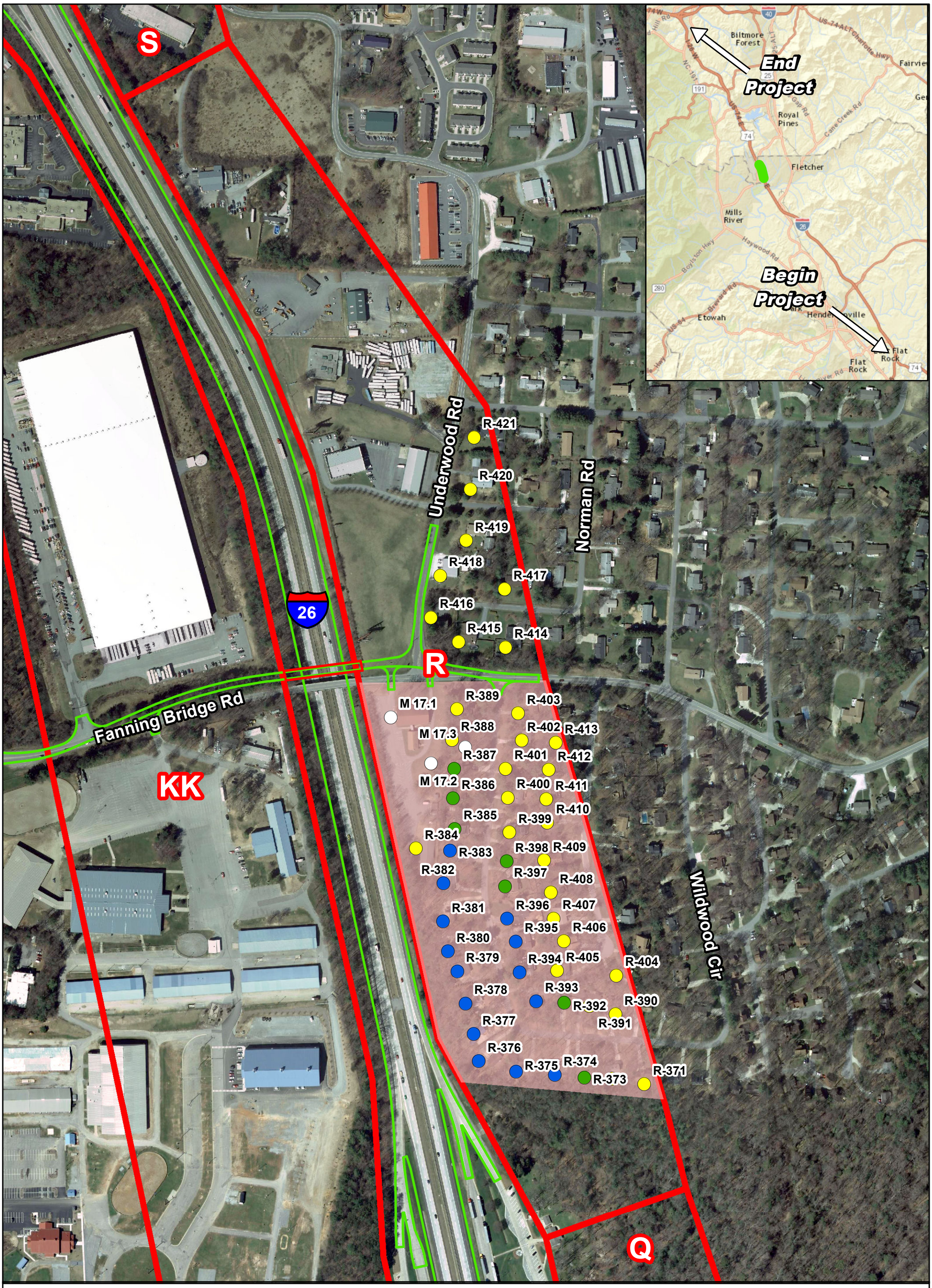
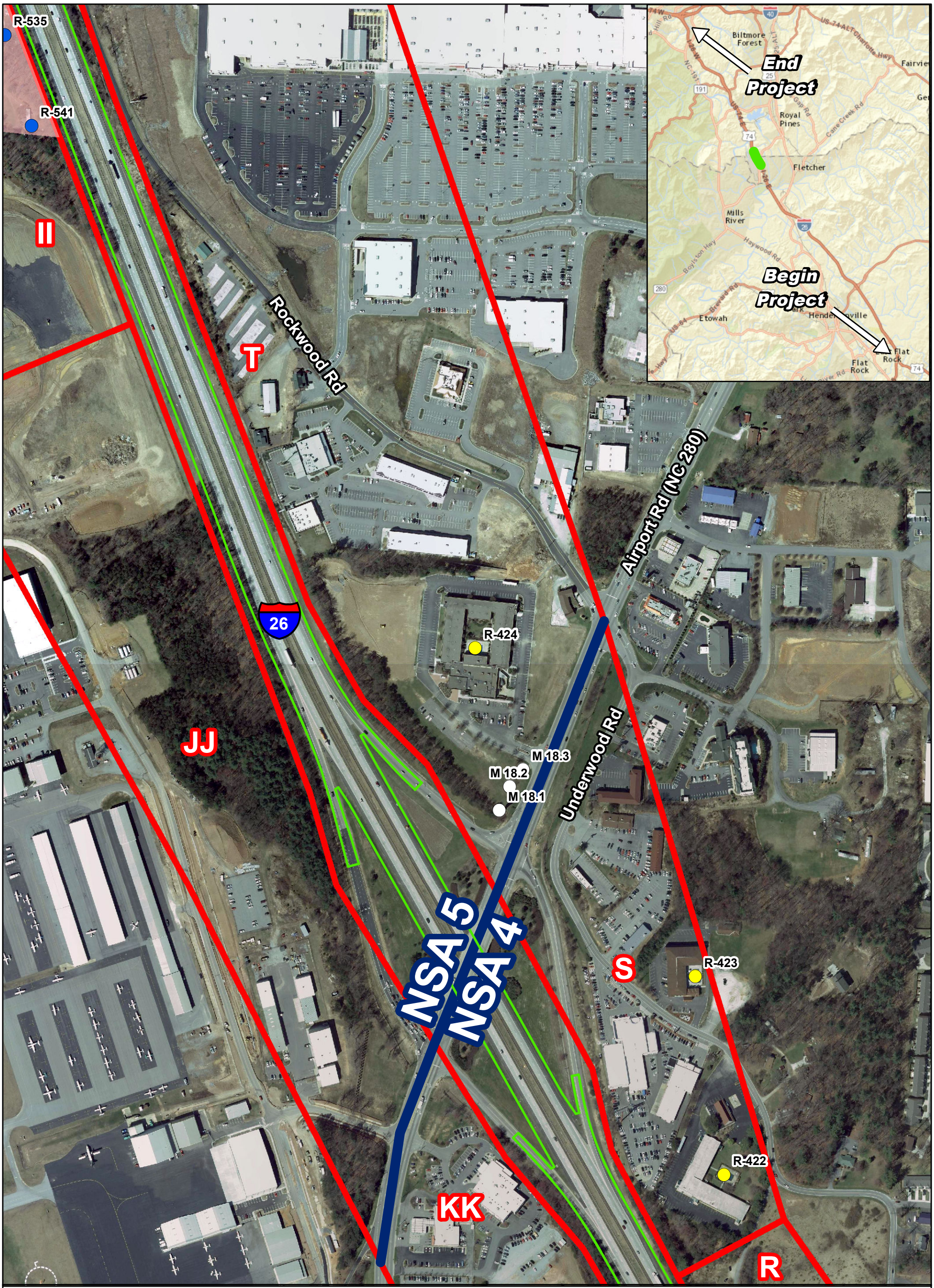


Figure 122

NSA 4 (Area R)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 123

NSA 4 (Area S)
NSA 5 (Area T)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

0 125 250 500 Feet

1 inch = 300 ft

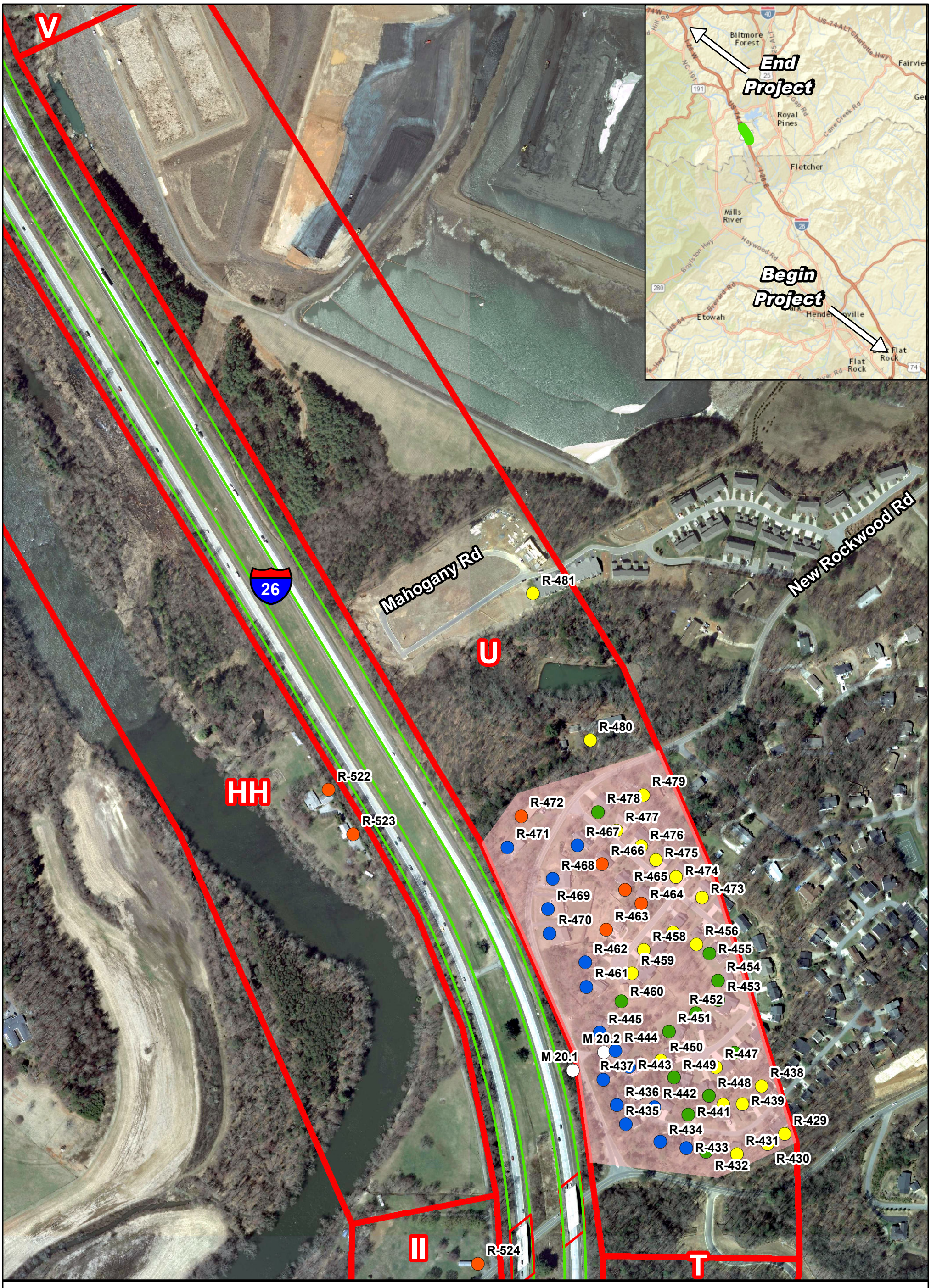
Map Prepared by: Trey Jordan Mar 2015

Figure 124

NSA 5 (Area T)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

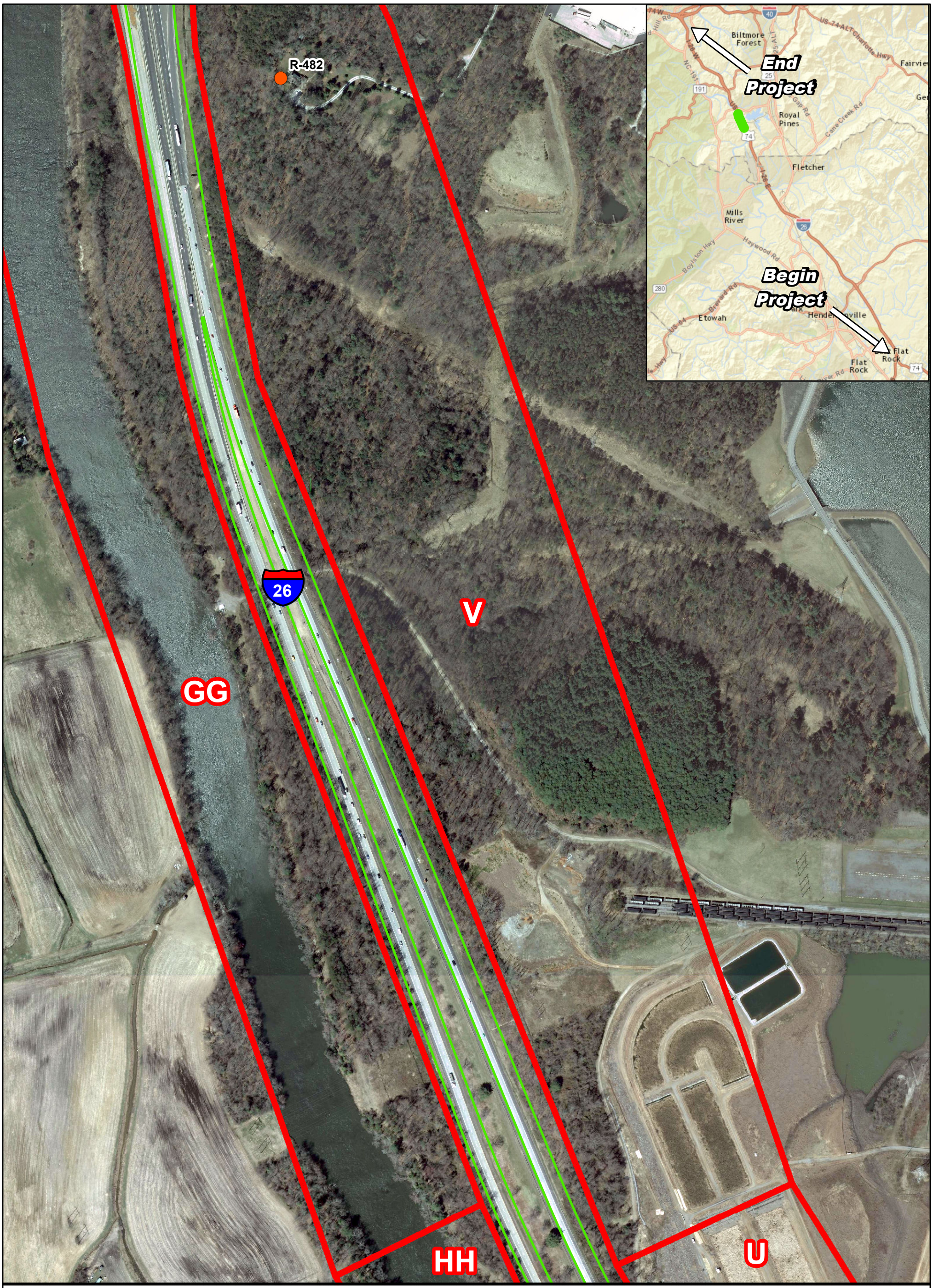
Map Prepared by: Trey Jordan Mar 2015

Figure 125

NSA 5 (Area U)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

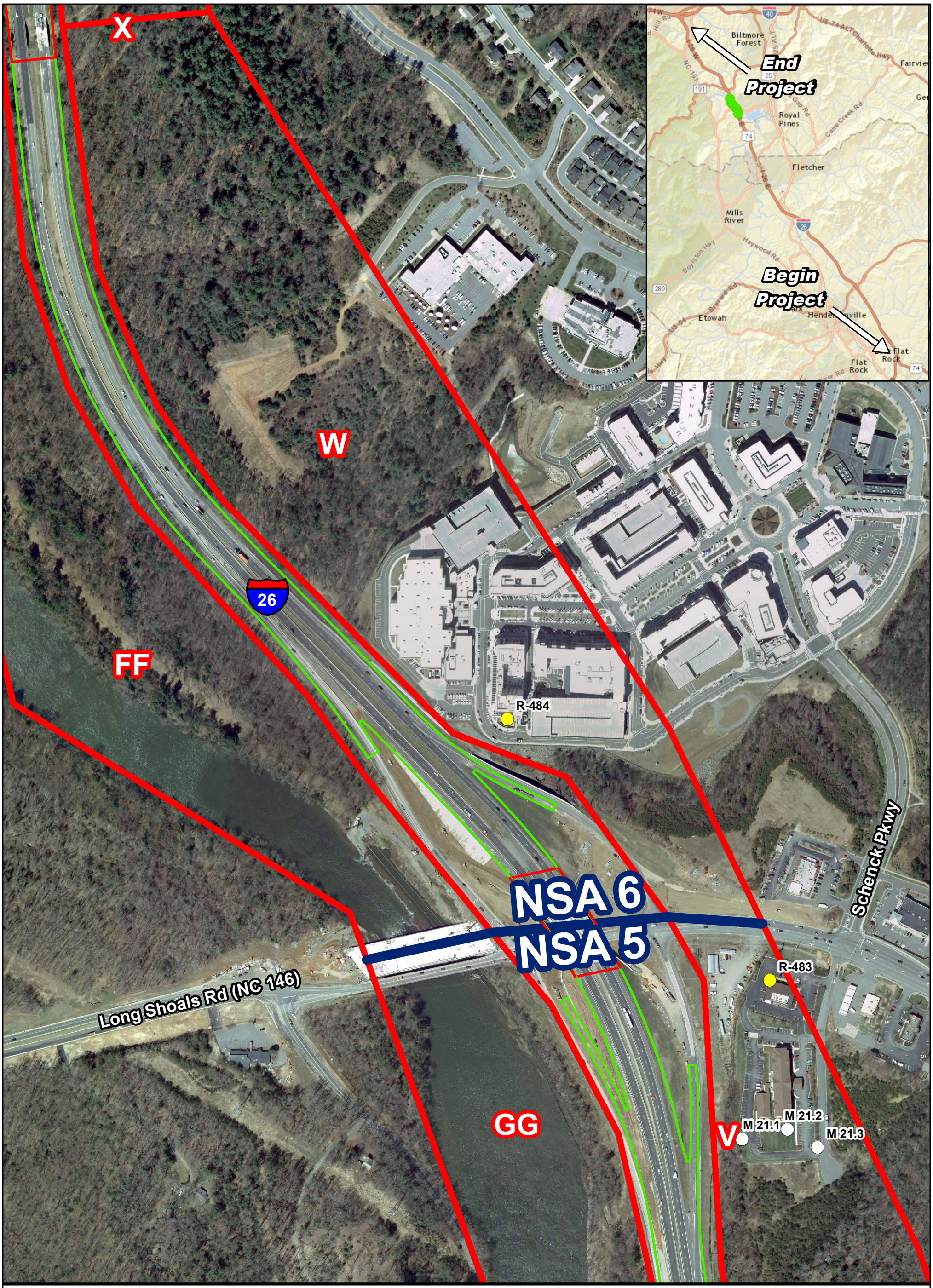
Map Prepared by: Trey Jordan Mar 2015

Figure 126

NSA 5 (Area V)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

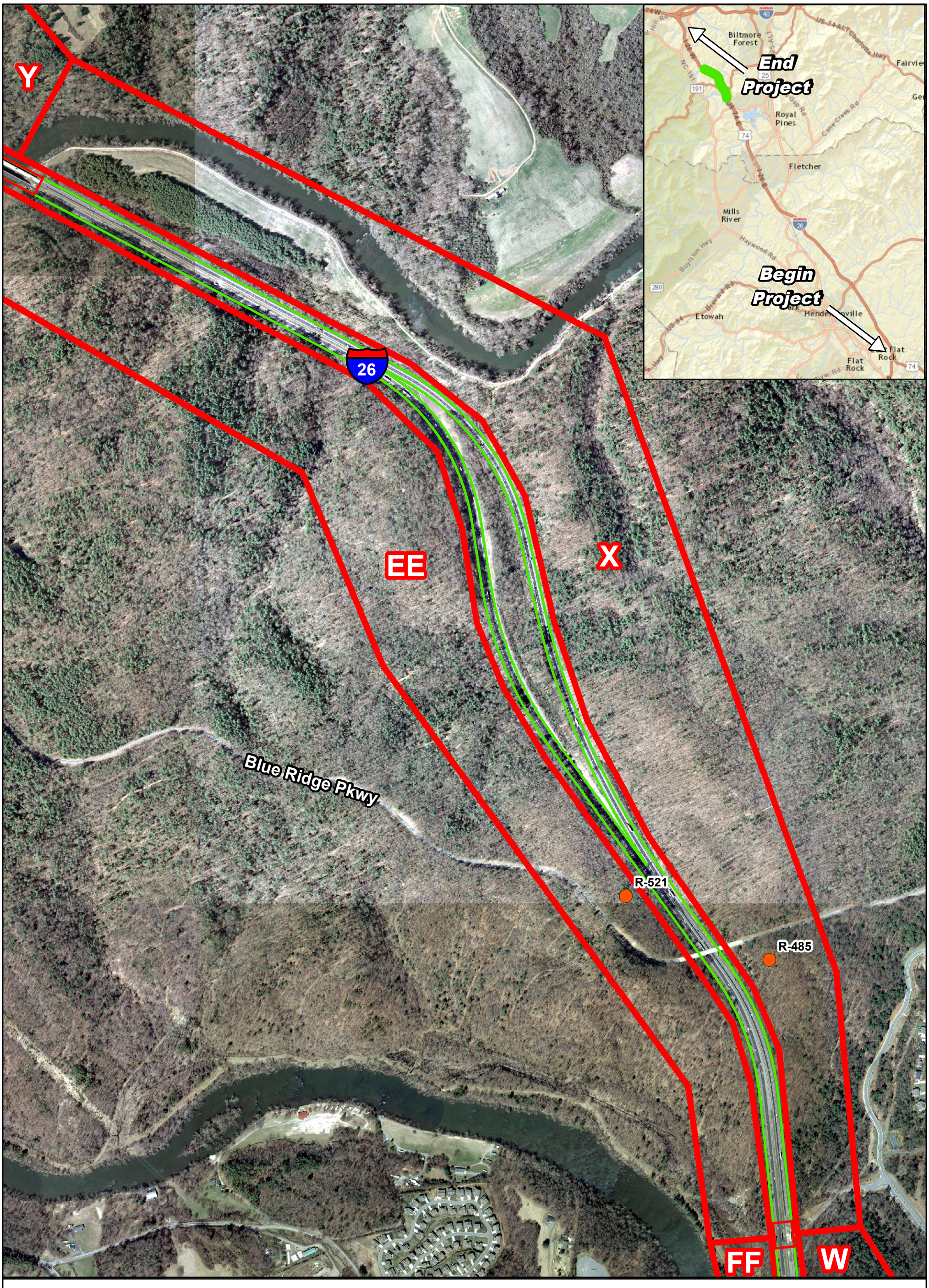
Map Prepared by: Trey Jordan Mar 2015

Figure 127

NSA 5 (Area V)
NSA 6 (Area W)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 295 590 1,180 Feet

1 inch = 700 ft

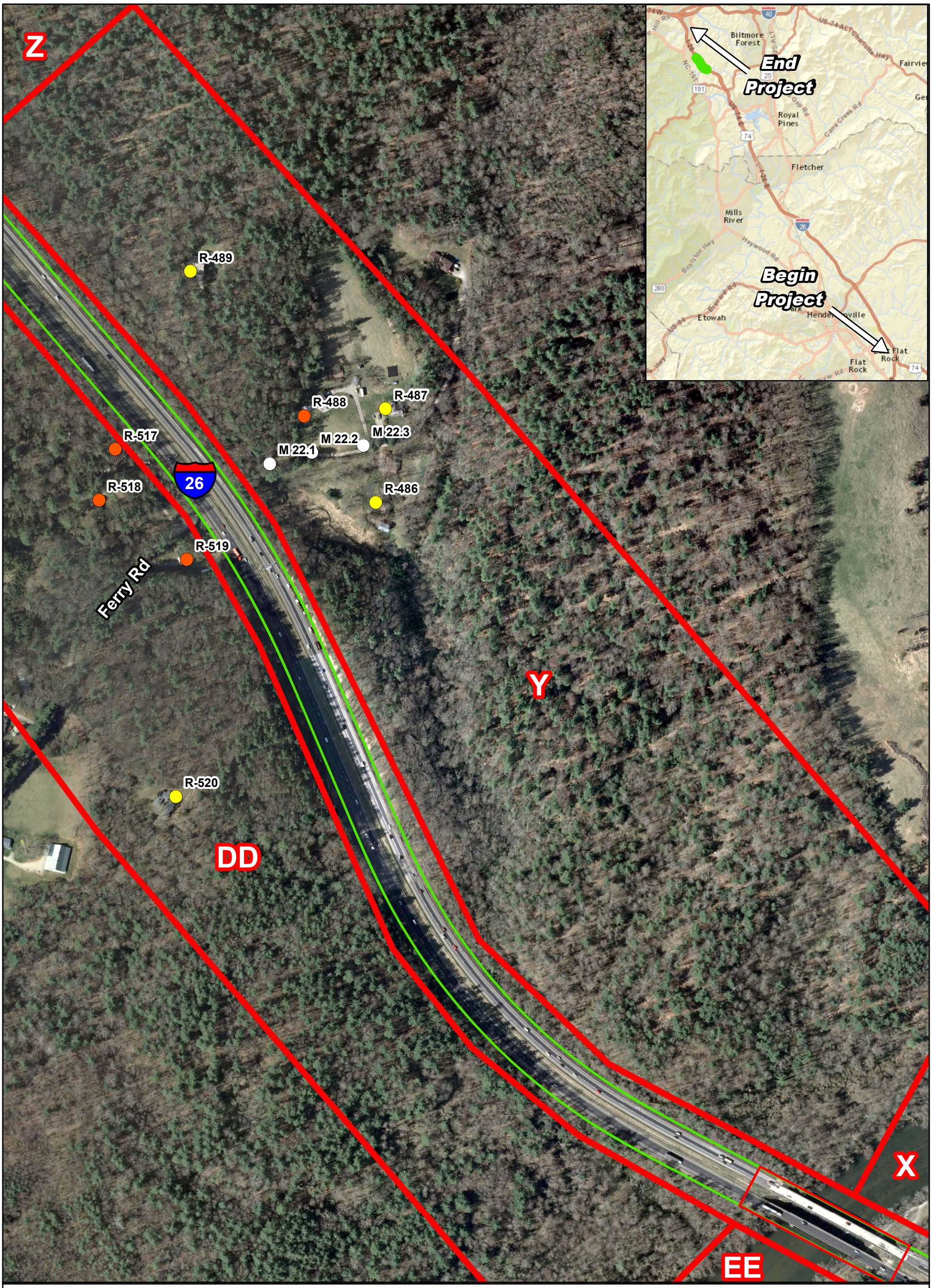
Map Prepared by: Trey Jordan Mar 2015

Figure 128

NSA 6 (Area X)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 129

NSA 6 (Area Y)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 130

NSA 6 (Area Z)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Figure 131

NSA 6 (Area AA)
NSA 6 (Area BB)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

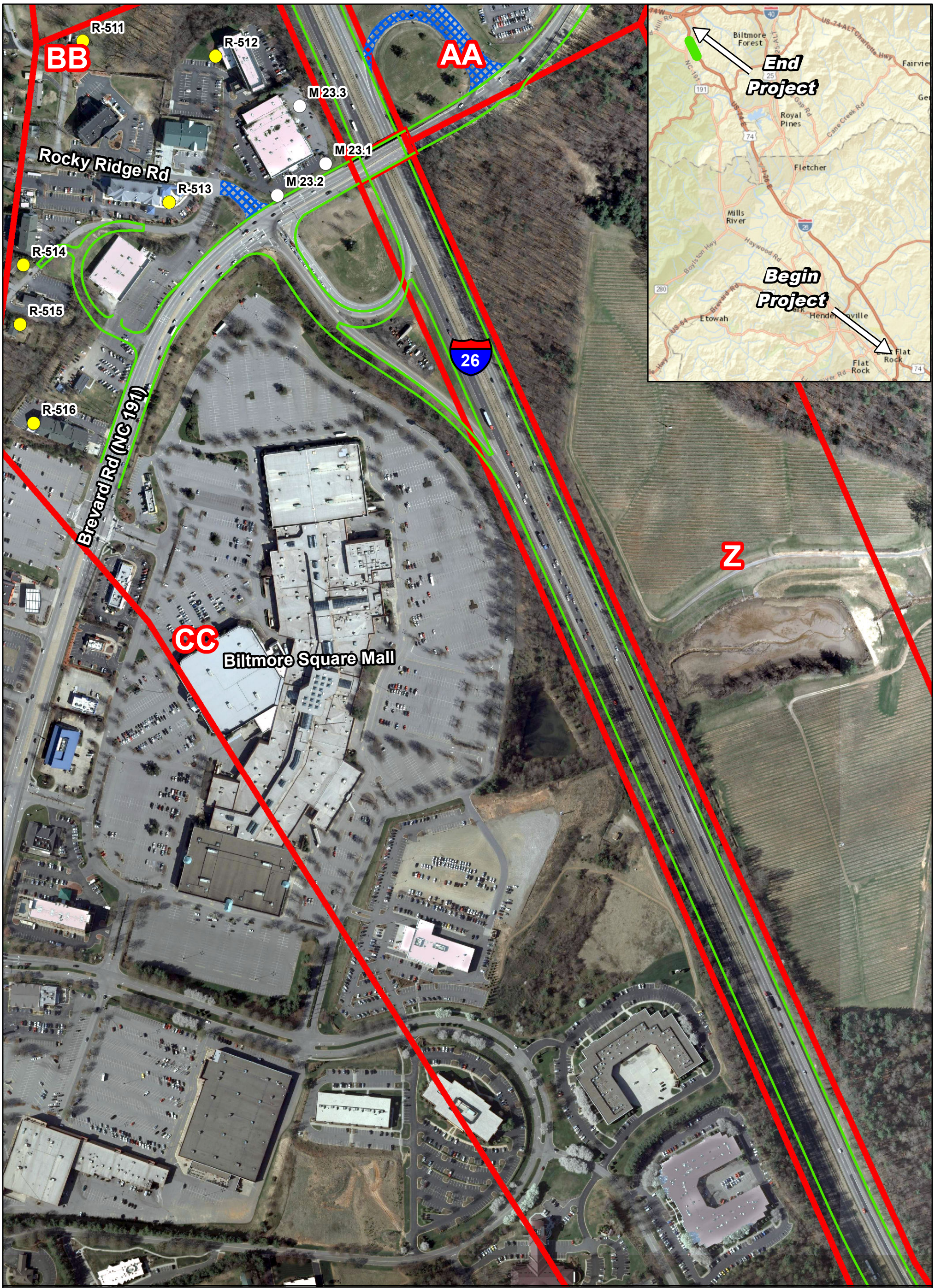
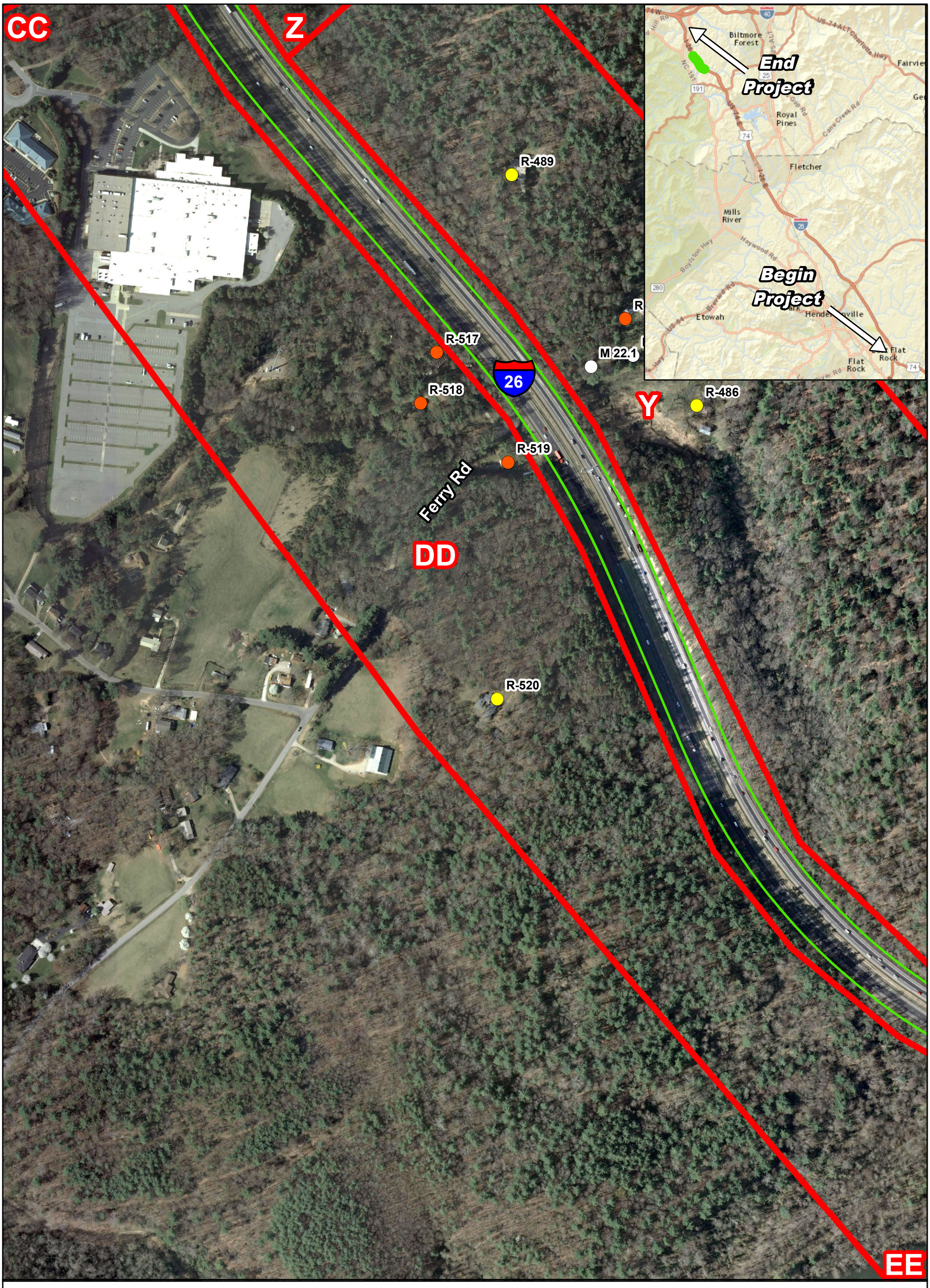


Figure 132

NSA 6 (Area CC)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

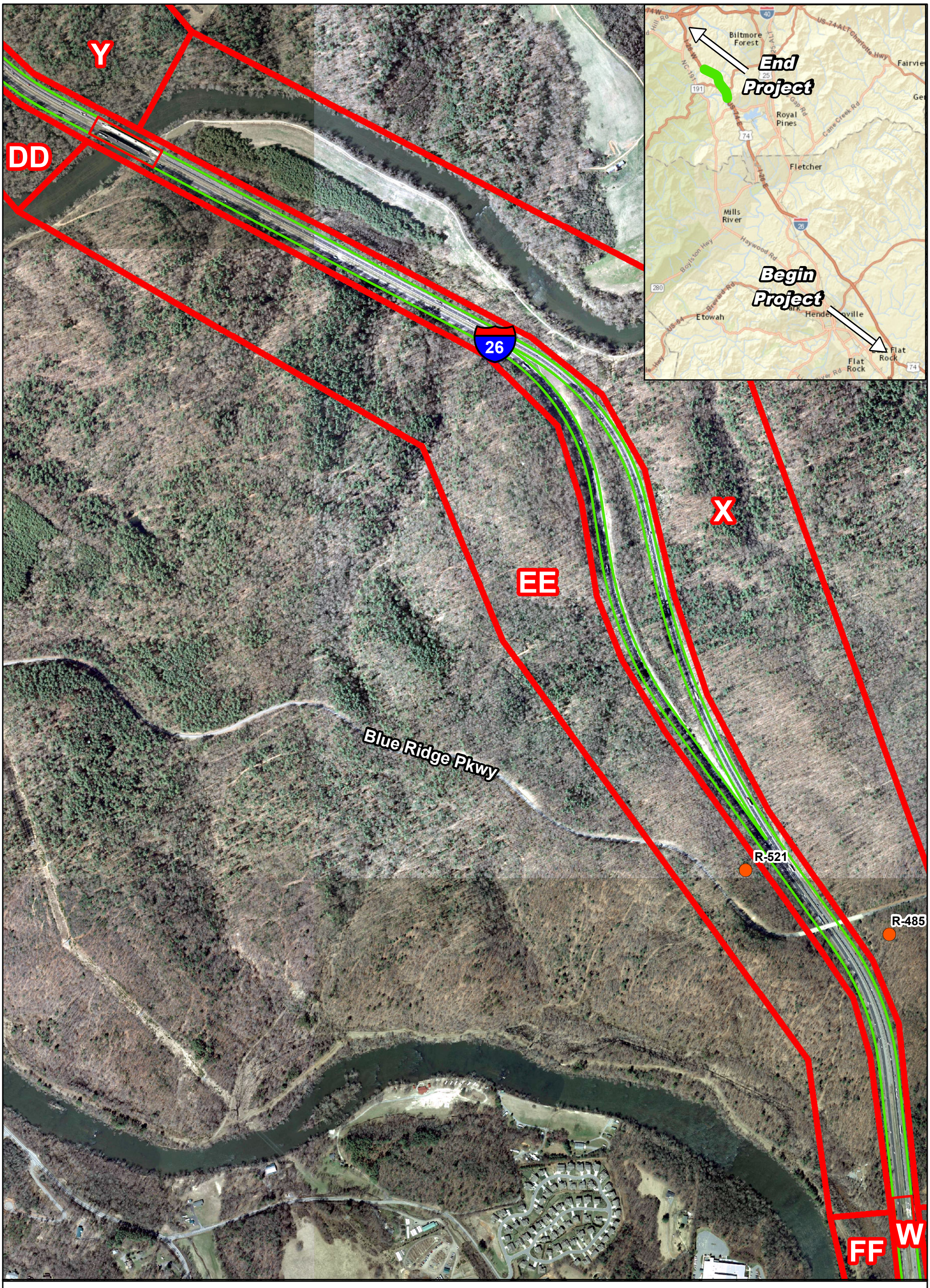
Map Prepared by: Trey Jordan Mar 2015

Figure 133

NSA 6 (Area DD)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 295 590 1,180 Feet

1 inch = 700 ft

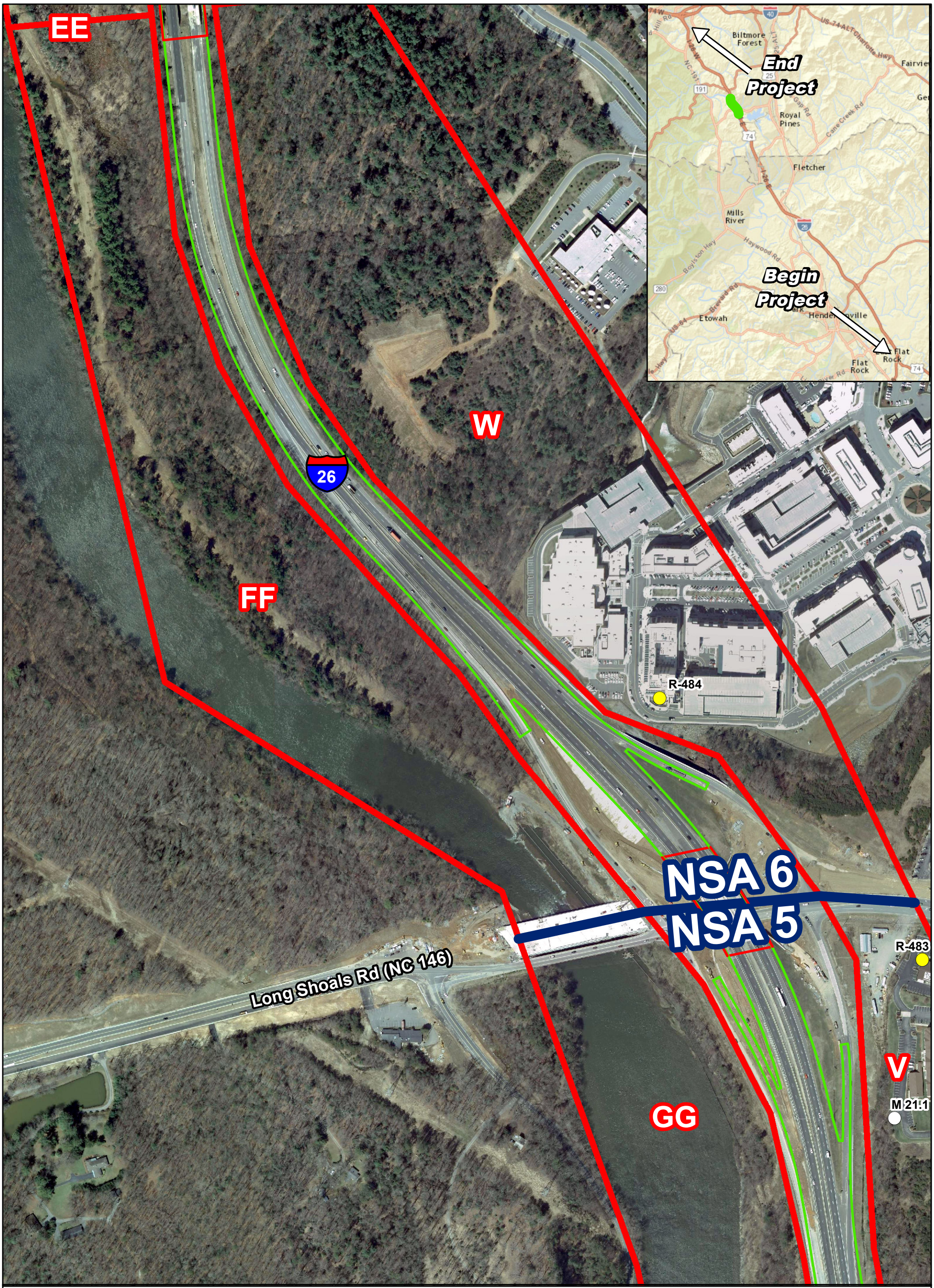
Map Prepared by: Trey Jordan Mar 2015

Figure 134

NSA 6 (Area EE)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 135

NSA 6 (Area FF)
NSA 5 (Area GG)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

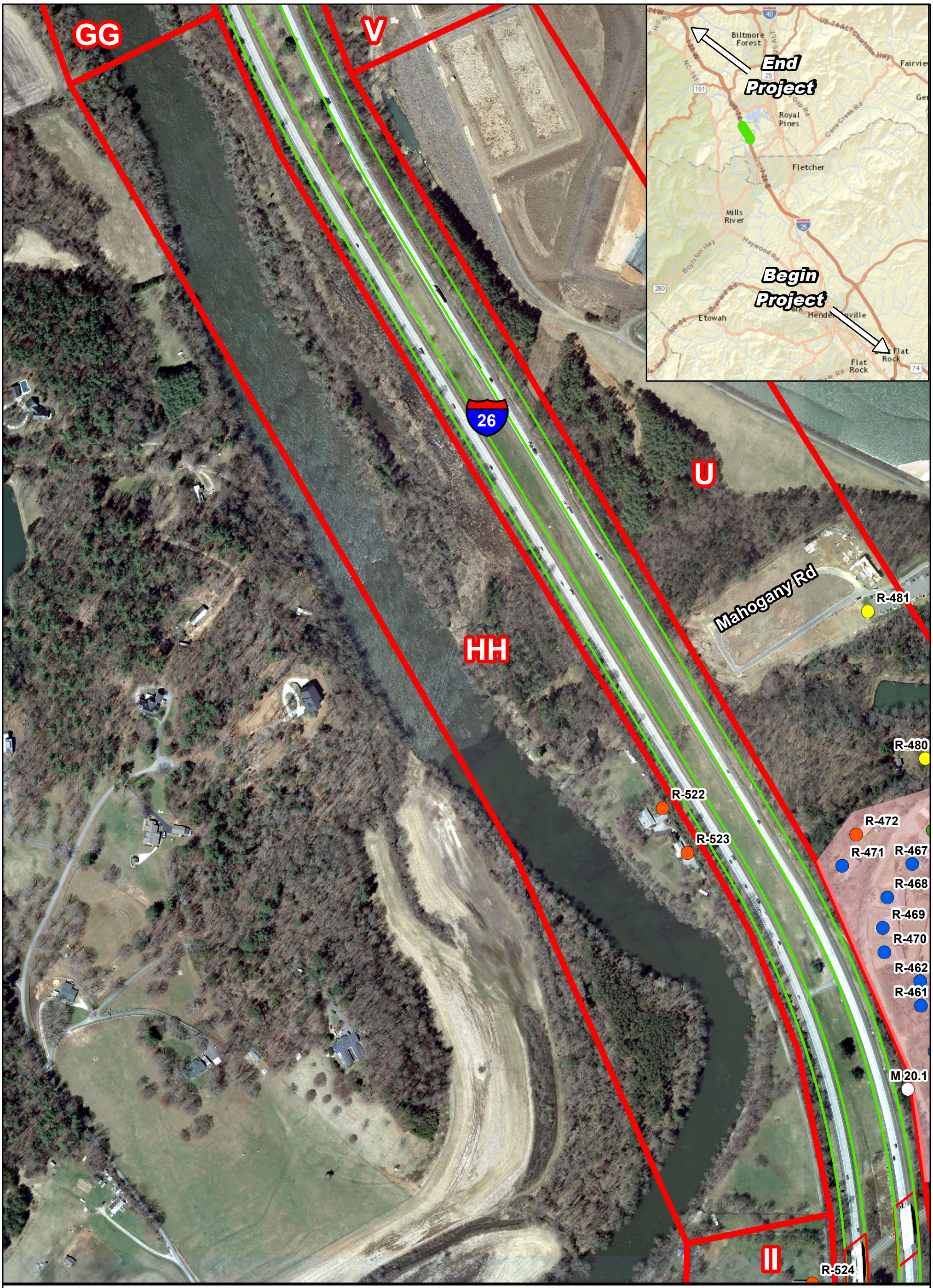
Map Prepared by: Trey Jordan Mar 2015

Figure 136

NSA 5 (Area GG)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 137

NSA 5 (Area HH)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

HH

U

II

T

JJ

Glenn Bridge Rd

Hidden Creek Rd

Rockwood Rd

26

R-524

R-525

R-426 R-427

R-425

R-528

R-527

R-526

M 19.3

M 19.2

M 19.1

R-531

R-530

R-529

R-532

R-533

R-534

R-540

R-536

R-535

R-539

R-538

R-537

R-545

R-544

R-543

R-542

R-541

Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

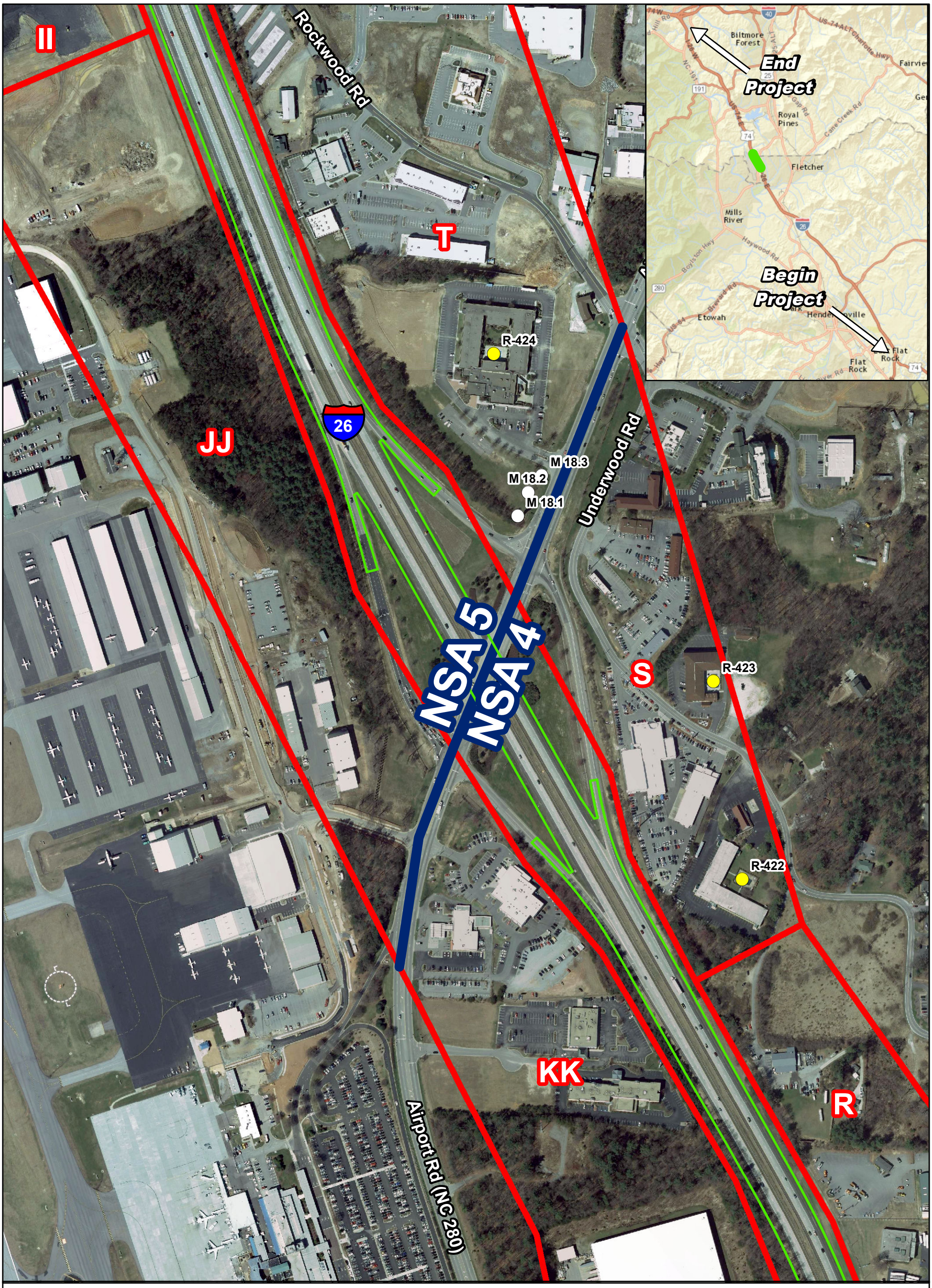
Map Prepared by: Trey Jordan Mar 2015

Figure 138

NSA 5 (Area II)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

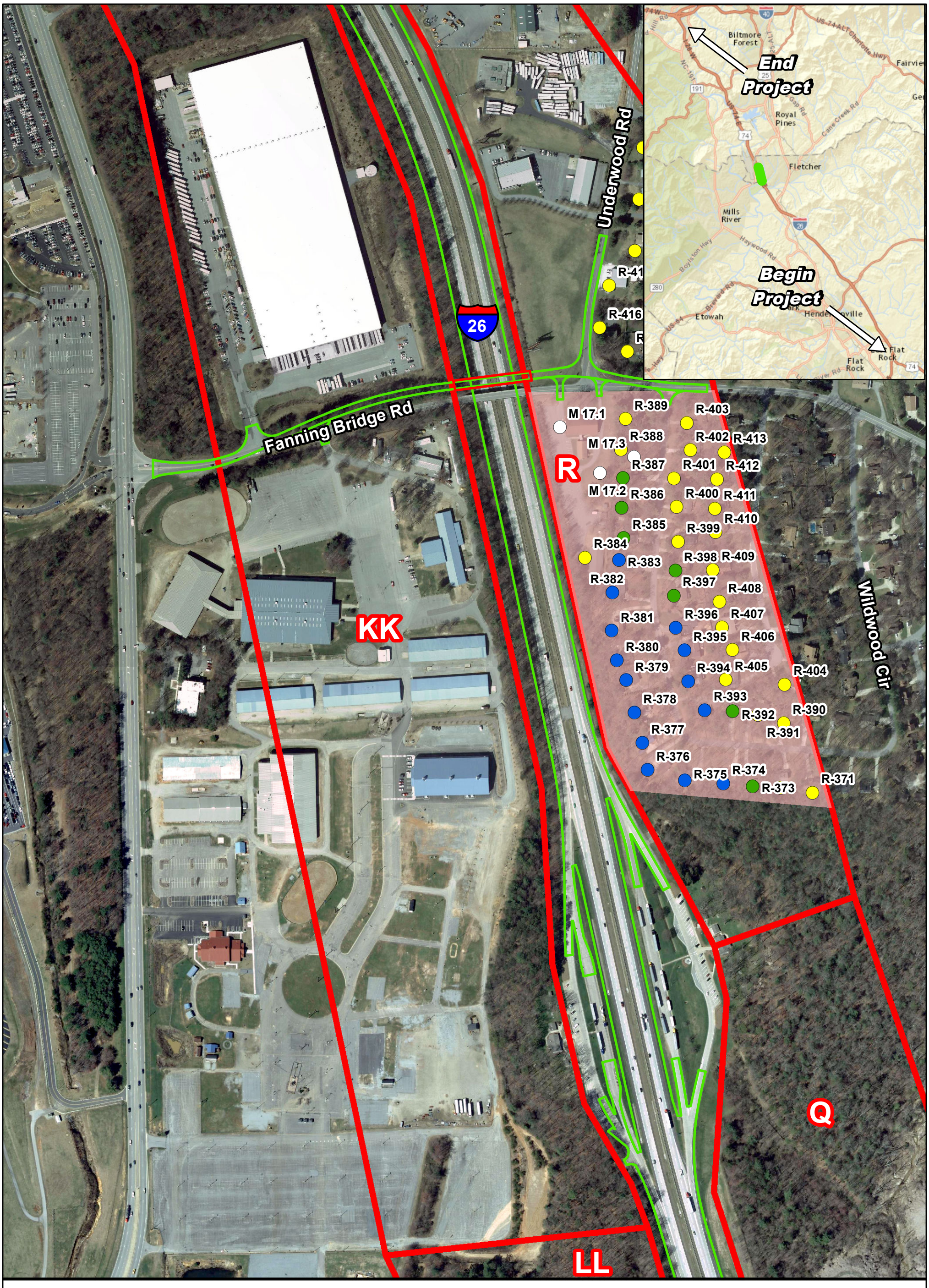
Map Prepared by: Trey Jordan Mar 2015

Figure 139

NSA 5 (Area JJ)
NSA 4 (Area KK)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

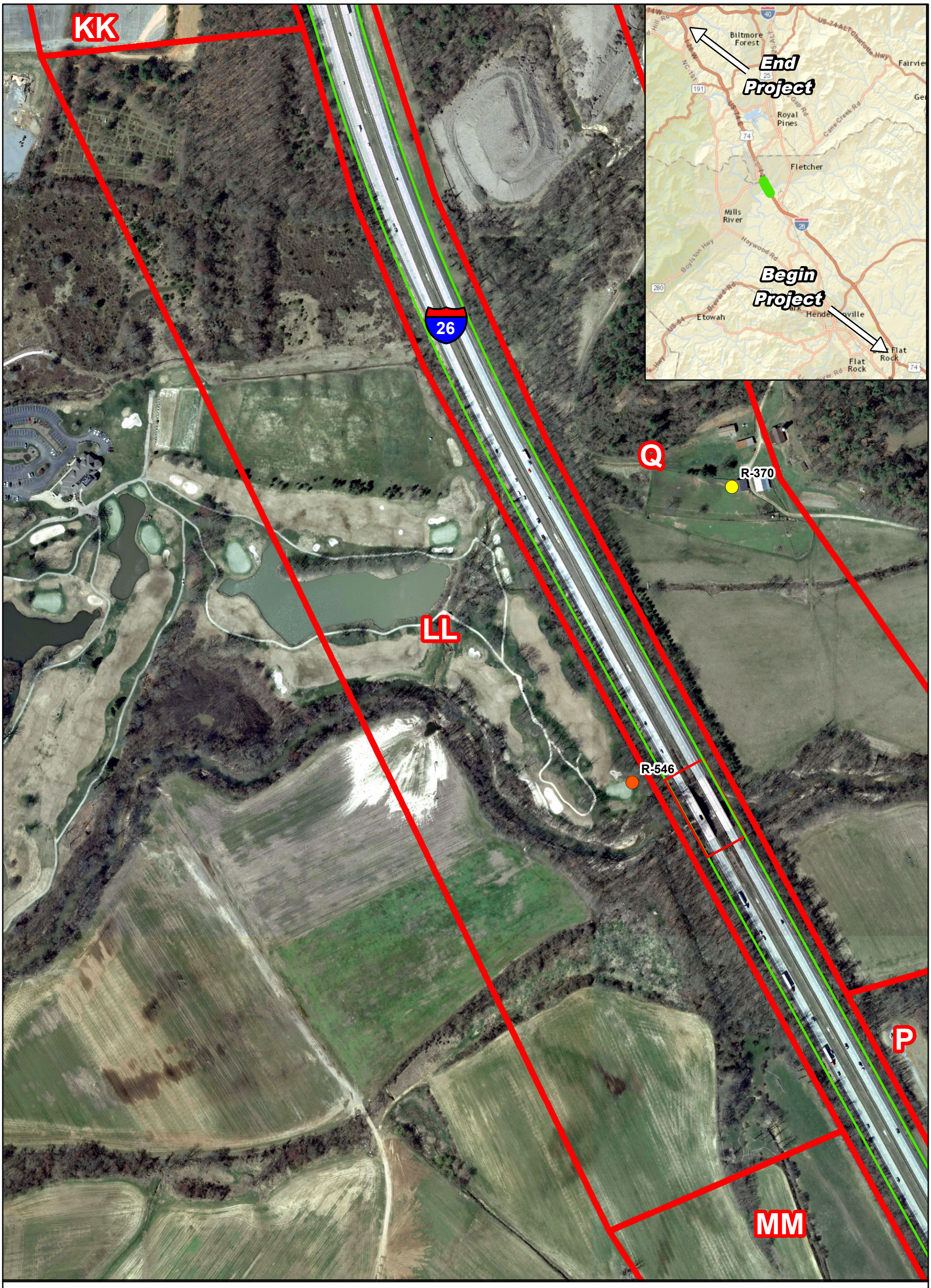
Map Prepared by: Trey Jordan Mar 2015

Figure 140

NSA 4 (Area KK)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

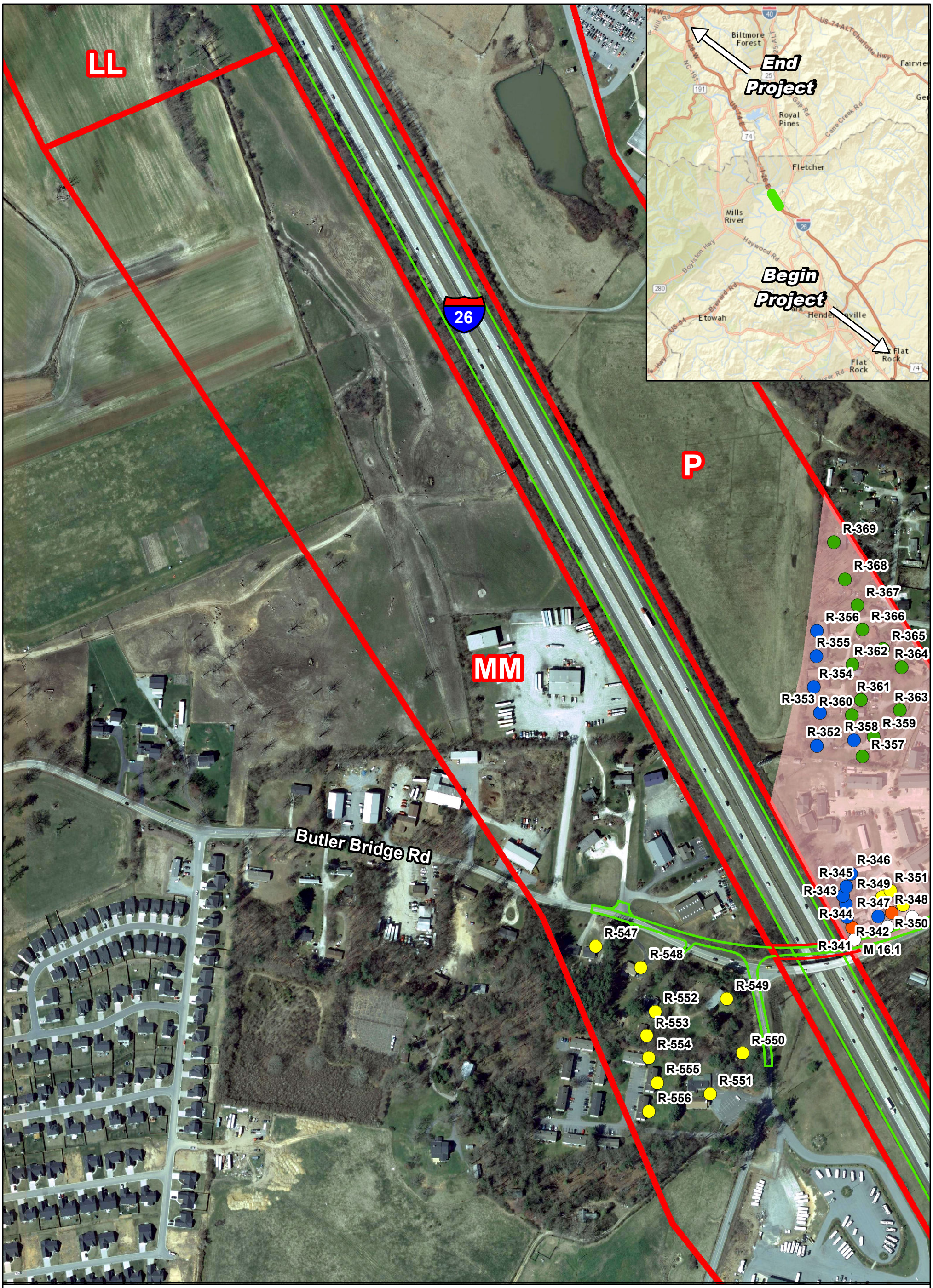
Map Prepared by: Trey Jordan Mar 2015

Figure 141

NSA 4 (Area LL)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

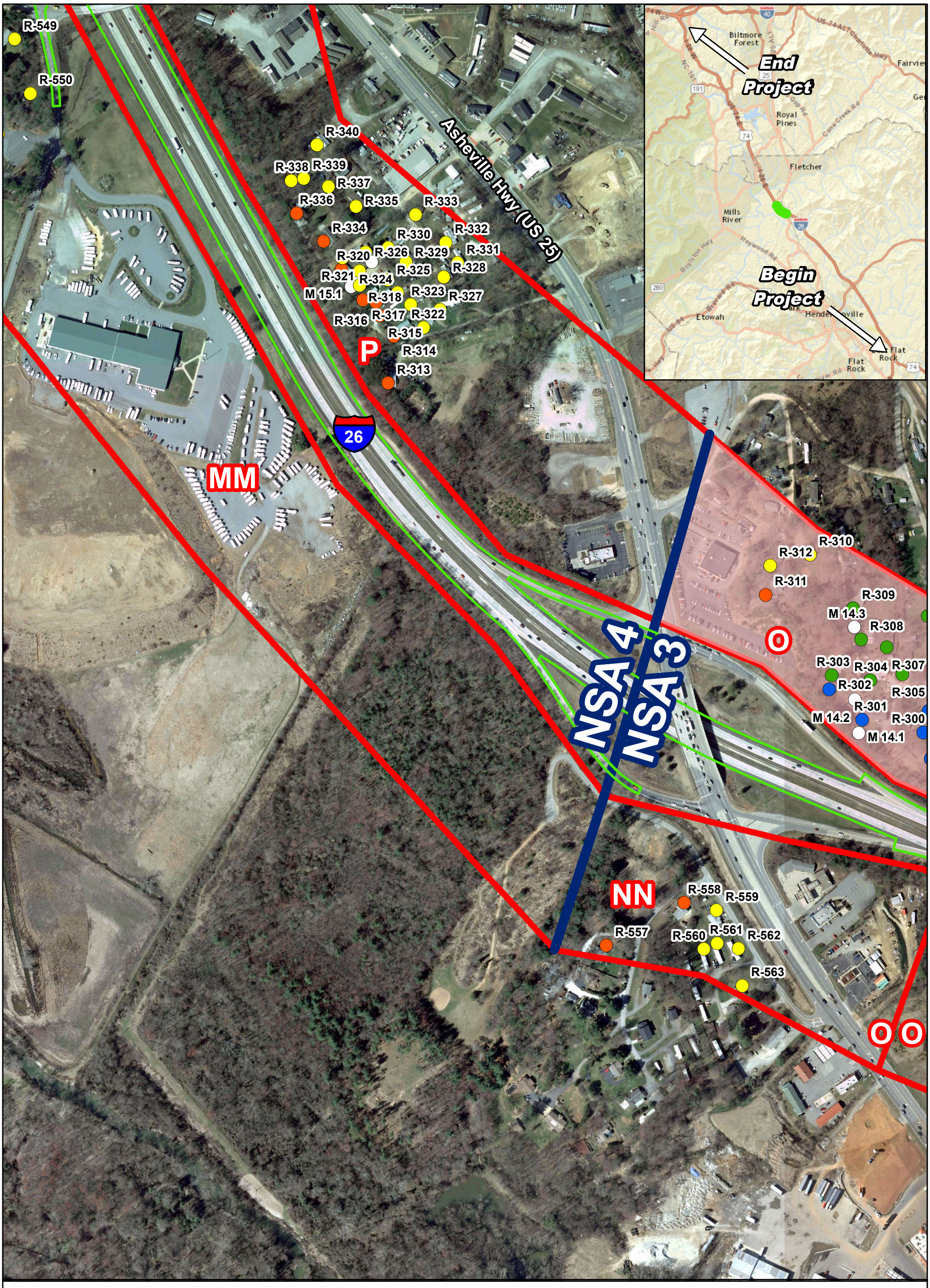
Map Prepared by: Trey Jordan Mar 2015

Figure 142

NSA 4 (Area MM)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

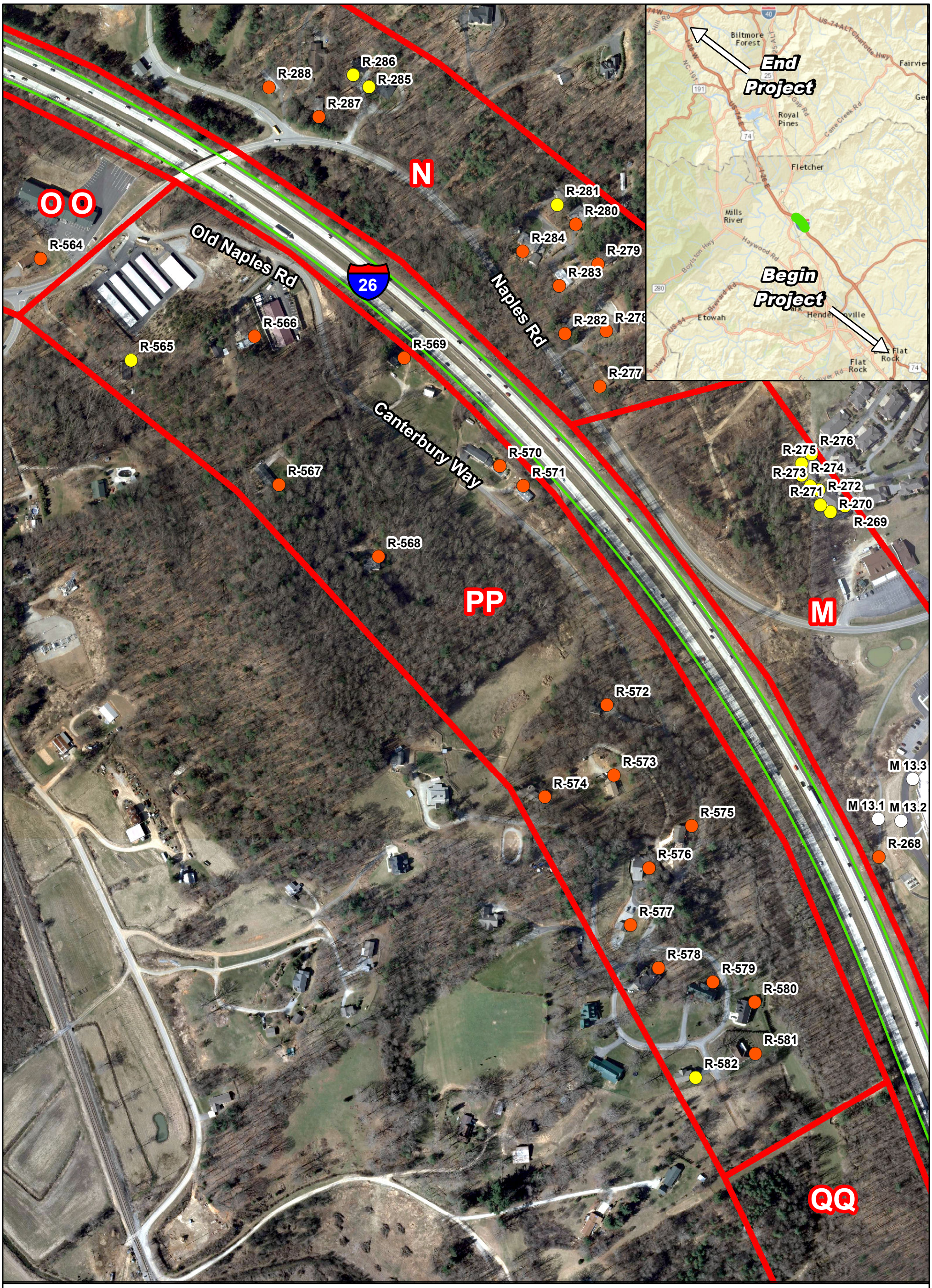
Figure 143

NSA 4 (Area MM)
NSA 3 (Area NN)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

R-310
R-312
R-311
R-309
M 14.3
R-306
R-308
R-307
R-303
R-304
R-305
R-302
M 14.2
R-295
R-299
R-294
R-301
M 14.1
R-300
R-293
R-297
R-296
R-292
R-291
O
26
NN
N
R-290
R-289
O O
Naples Rd
R-564
PP
R-565
Asheville Hwy
Twin Springs Rd
End Project
Begin Project
Biltmore Forest
Royal Pines
Fletcher
Mills River
Etowah
Flat Rock
Legend
Acquired as Right-of-way
Impacted, Benefited
Impacted, Not Benefited
Not Impacted, Benefited
Not Impacted, Not Benefited
Noise Abatement Study Area
Monitoring Sites
Removed
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
N
W
E
S
0 125 250 500 Feet
1 inch = 300 ft
Map Prepared by: Trey Jordan Mar 2015
Figure 144
NSA 3 (Area OO)
6/8-Lane Hybrid
Widening Alternative
STIP # I-4400/I-4700
I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Not Benefited
- Not Impacted, Not Benefited
- Monitoring Sites
- Impacted, Benefited
- Not Impacted, Benefited
- Noise Abatement Study Area
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

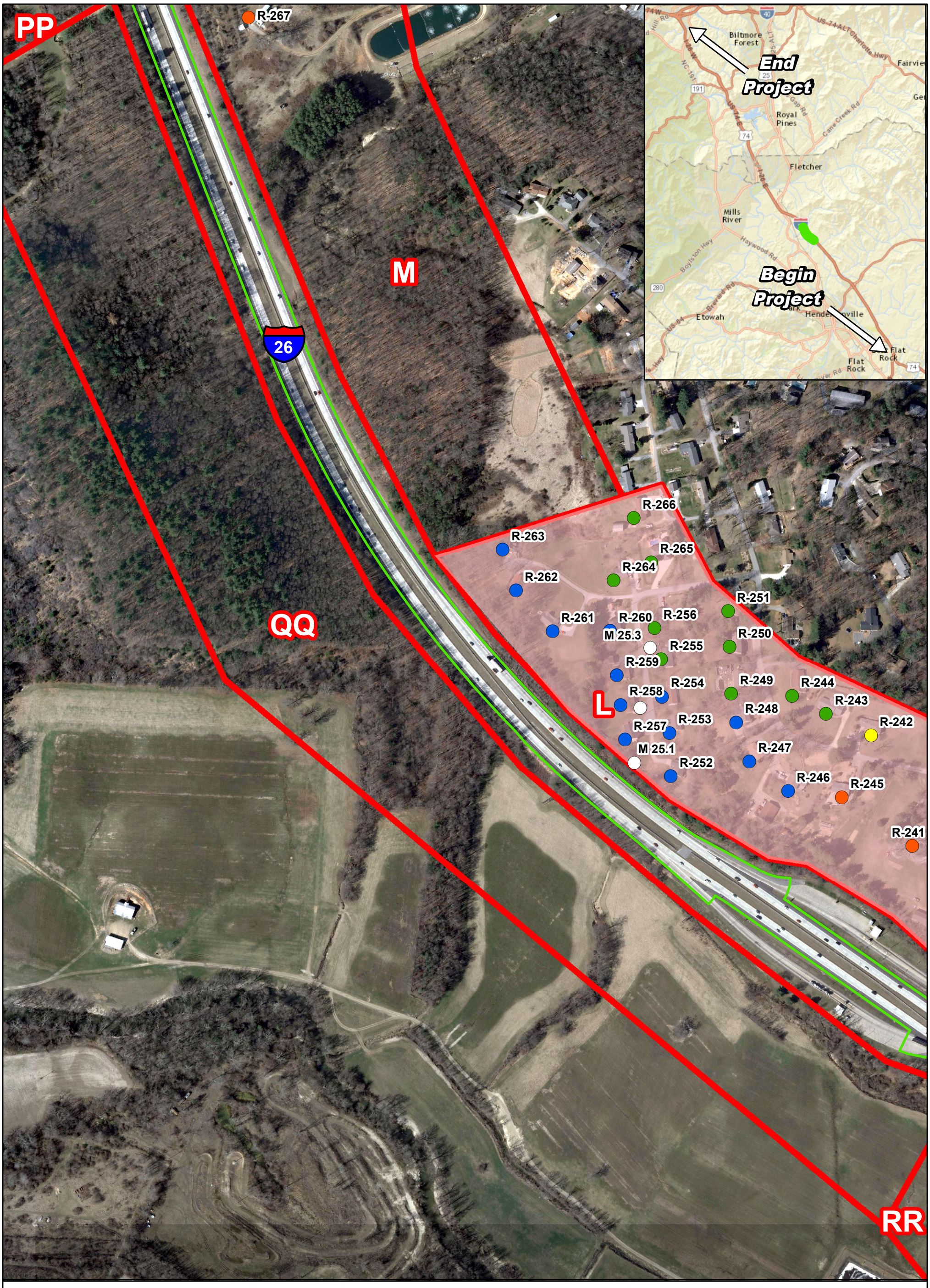
Map Prepared by: Trey Jordan Mar 2015

Figure 145

NSA 3 (Area PP)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

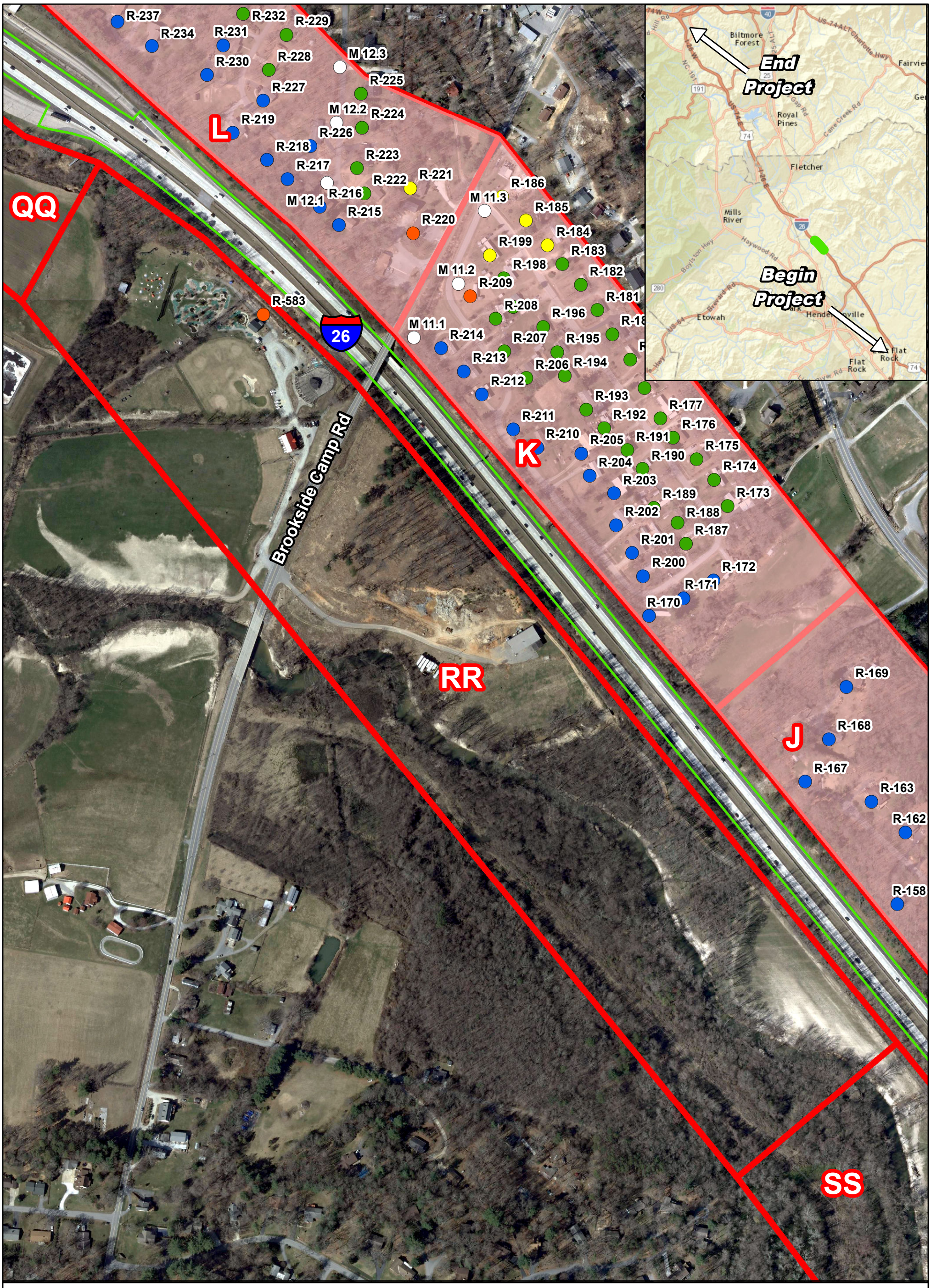
Map Prepared by: Trey Jordan Mar 2015

Figure 146

NSA 3 (Area QQ)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 147

NSA 3 (Area RR)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

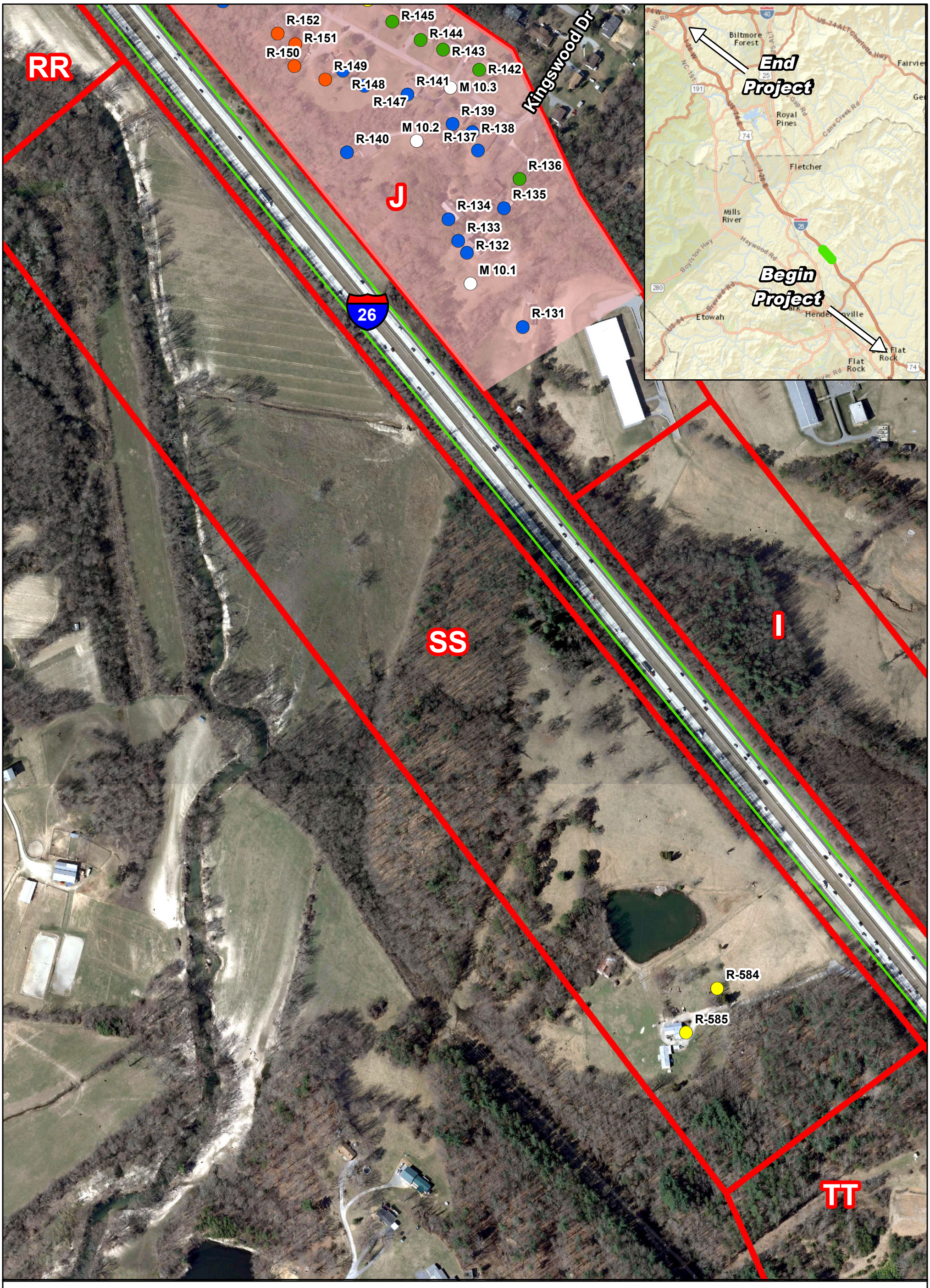


Figure 148

NSA 3 (Area SS)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

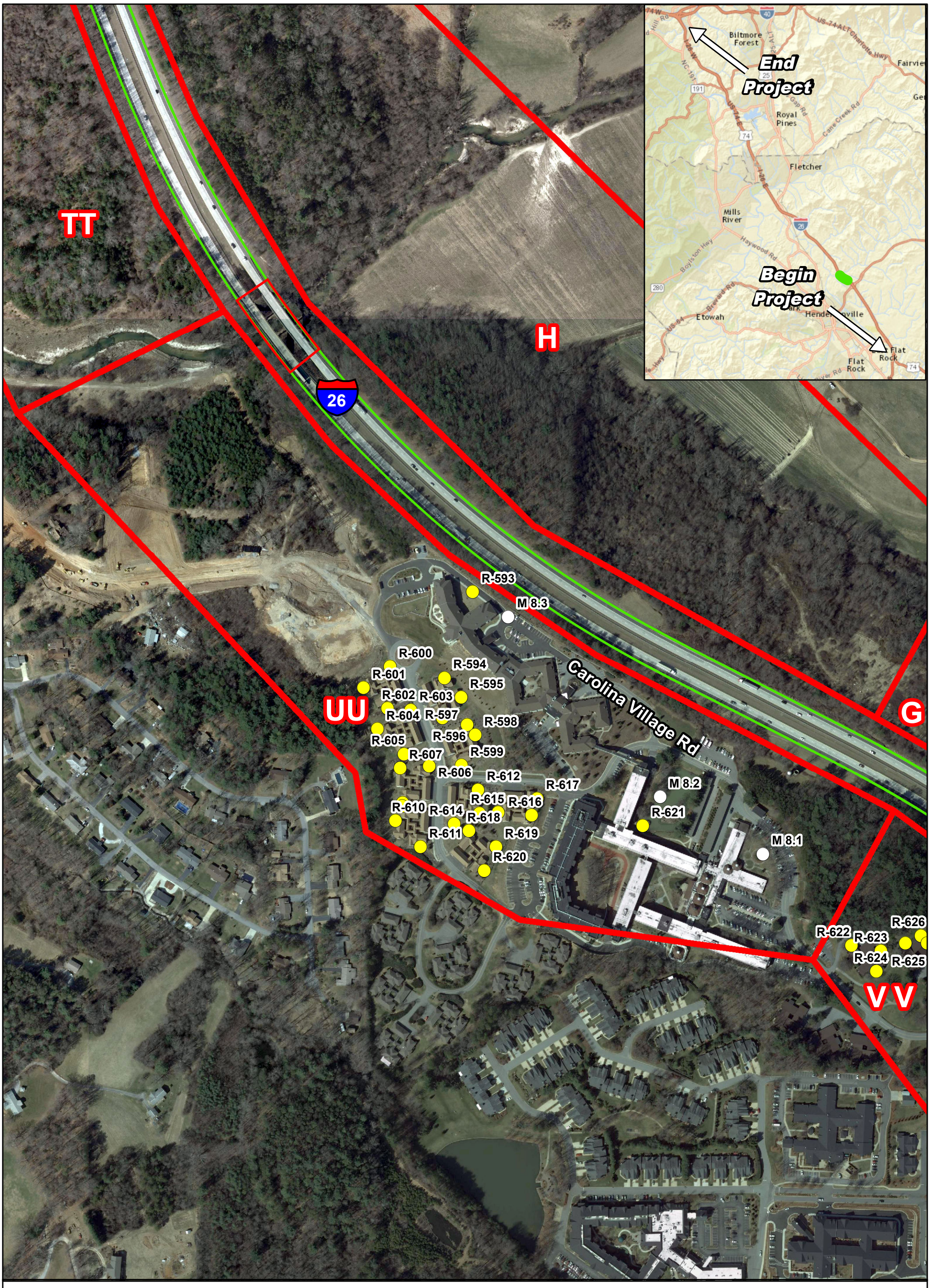
I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Figure 149

NSA 3 (Area TT)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 150

NSA 3 (Area UU)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

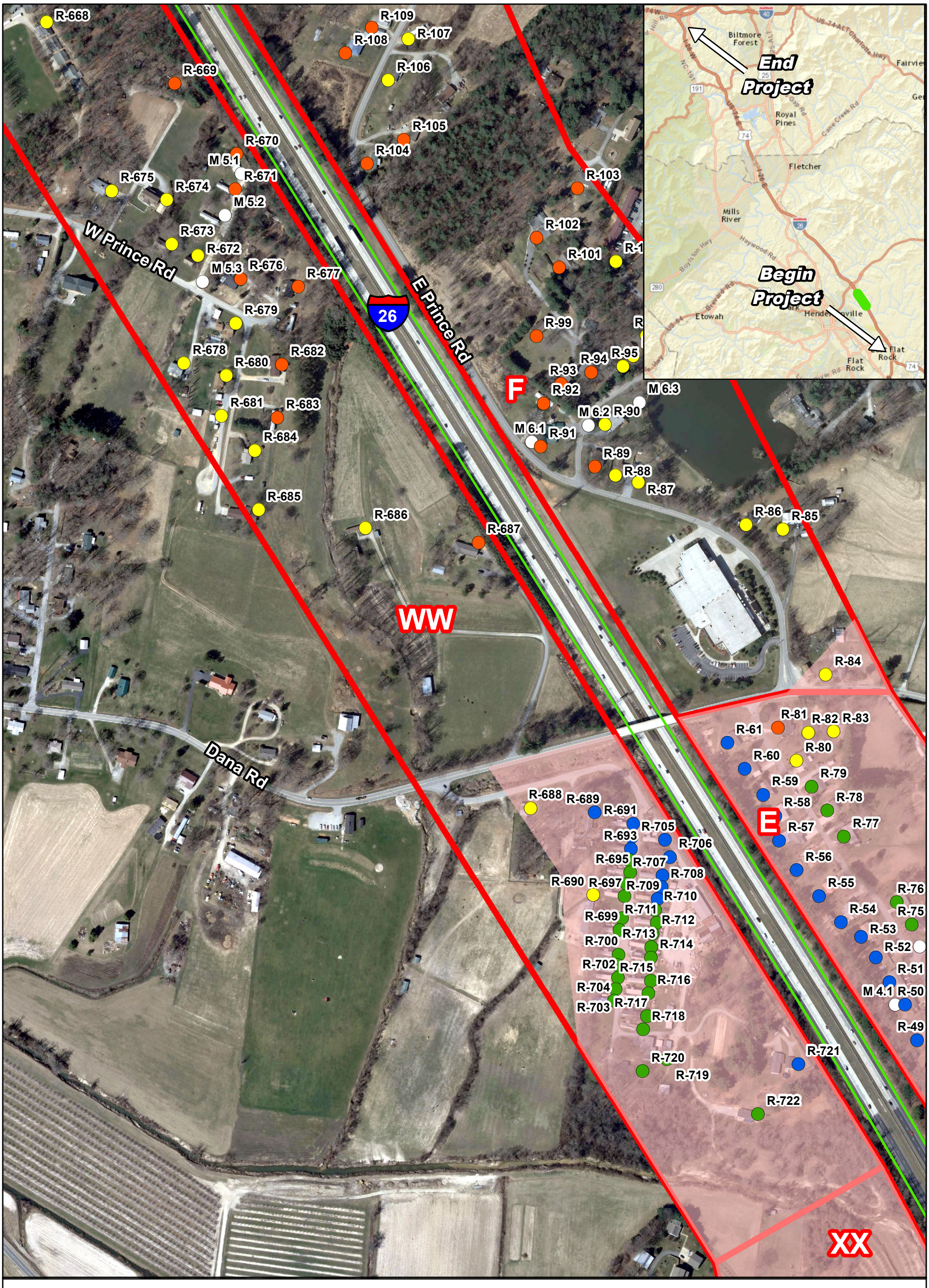
Map Prepared by: Trey Jordan Mar 2015

Figure 151

NSA 3 (Area VV)
NSA 2 (Area WW)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

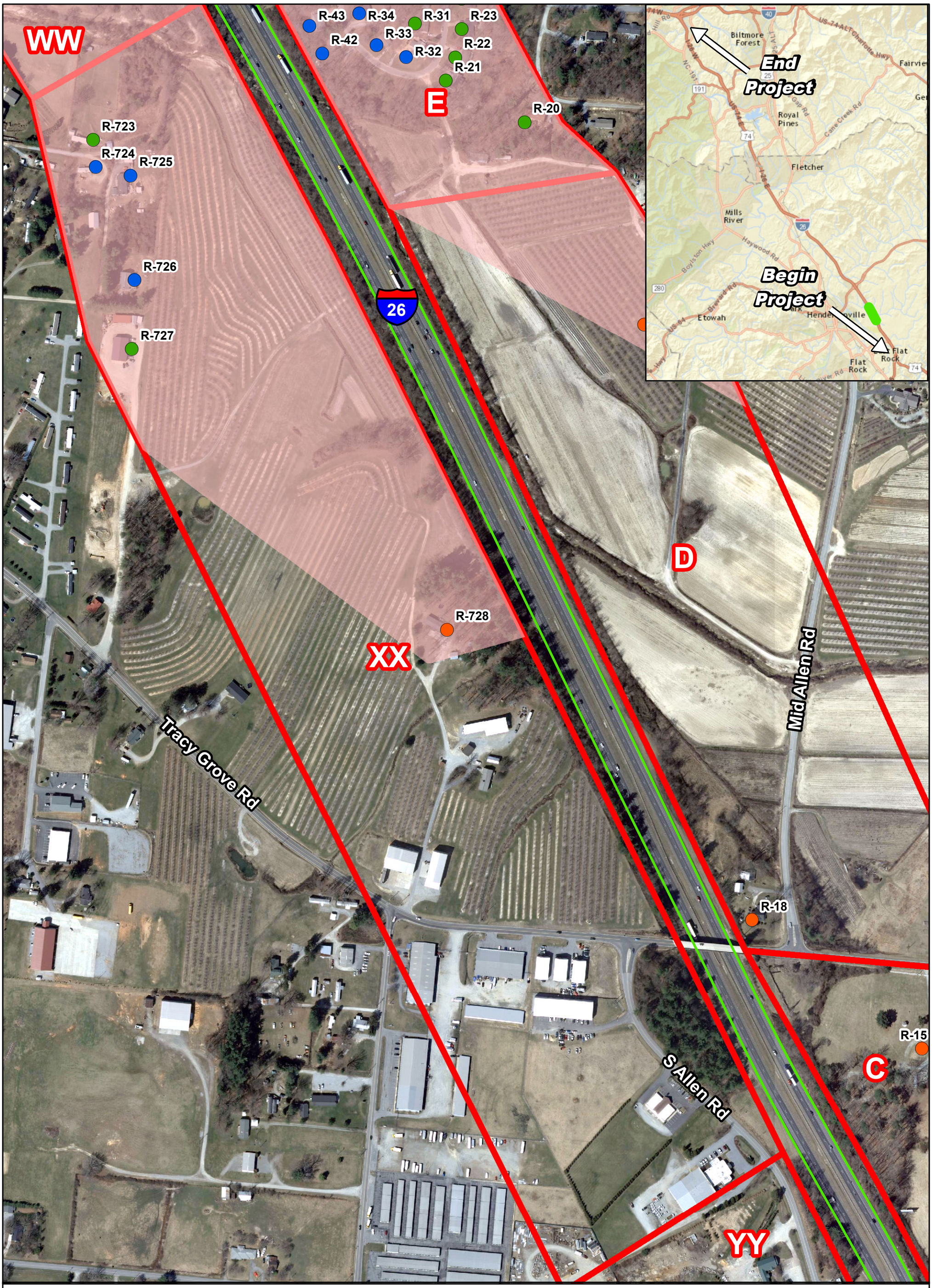
Map Prepared by: Trey Jordan Mar 2015

Figure 152

NSA 2 (Area WW)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

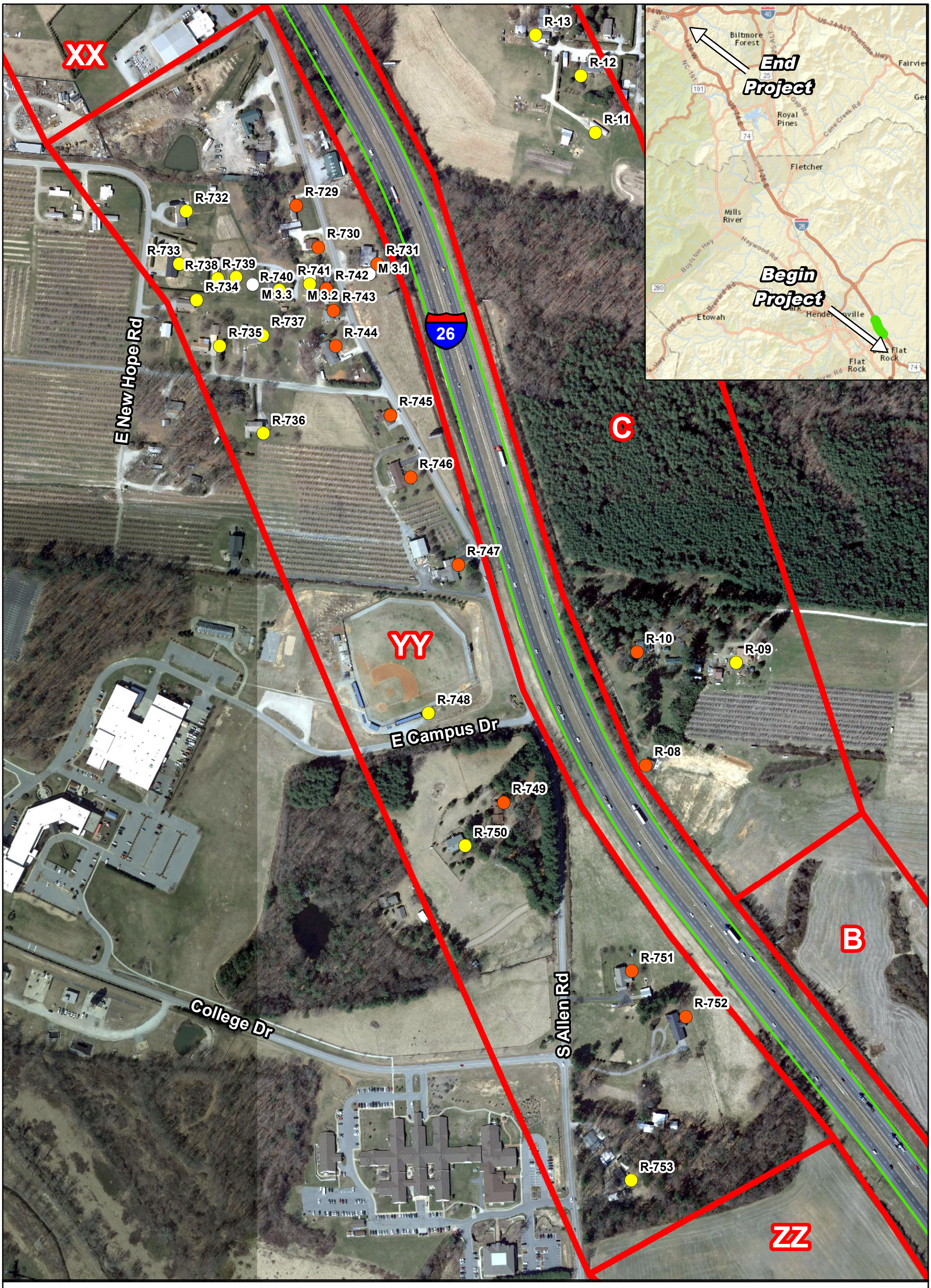
Map Prepared by: Trey Jordan Mar 2015

Figure 153

NSA 2 (Area XX)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015



Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 154

NSA 2 (Area YY)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 155

NSA 2 (Area ZZ)
NSA 1 (Area AAA)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Legend

- Acquired as Right-of-way
- Impacted, Benefited
- Impacted, Not Benefited
- Not Impacted, Benefited
- Not Impacted, Not Benefited
- Noise Abatement Study Area
- Monitoring Sites
- Removed

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

N W E S

0 125 250 500 Feet

1 inch = 300 ft

Map Prepared by: Trey Jordan Mar 2015

Figure 156

NSA 1 (Area AAA)
6/8-Lane Hybrid
Widening Alternative

STIP # I-4400/I-4700

I-26 Widening
-Henderson and Buncombe Counties-
Traffic Noise Analysis
March 2015

Appendix A

Ambient Noise Level Monitoring

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Table A-1: Project Ambient Hourly-Equivalent Sound Levels, Leq(h)[1]					
Setup	**Receptor**	**Land Use**	**Roadway Noise Source(s)[2]**	**Start/Stop Time**	**$L_{eq(h)}$ dB(A)**
0	0.1	Residential	I-26	11:45 – 12:05	63.6
	0.2	Residential	I-26		57.9
	0.3	Residential	I-26		56.2
1	1.1	Residential	I-26	10:30 – 10:50	64.6
	1.2	Residential	I-26		55.3
	1.3	Residential	I-26		53.4
2	2.1	Restaurant	I-26	9:35 – 9:55	59.7
	2.2	Retail	I-26		58.3
	2.3	Hotel	I-26		56.7
3	3.1	Com. Center	I-26	8:50 – 9:10	62.0
	3.2	Residential	I-26		56.7
	3.3	Residential	I-26		52.0
4	4.1	Residential	I-26	16:30 – 16:50	63.9
	4.2	Residential	I-26		55.1
	4.3	Residential	I-26		51.9
5	5.1	Residential	I-26	15:35 – 15:55	65.0
	5.2	Residential	I-26		60.2
	5.3	Residential	I-26		55.2
6	6.1	Residential	I-26	17:10 – 17:30	69.4
	6.2	Residential	I-26		61.6
	6.3	Residential	I-26		58.2
7	7.1	Residential	I-26	14:00 – 14:20	62.8
	7.2	Residential	I-26		56.3
	7.3	Residential	I-26		54.1
8	8.1	Residential	I-26	11:25 – 11:45	59.9
	8.2	Residential	I-26		61.1
	8.3	Residential	I-26		69.1
9	9.1	Residential	I-26	9:50 – 10:10	69.2
	9.2	Residential	I-26		62.1
	9.3	Residential	I-26		59.2
10	10.1	Residential	I-26	9:00 – 9:20	64.6
	10.2	Residential	I-26		63.1
	10.3	Residential	I-26		59.1
11	11.1	Residential	I-26	17:30 – 17:50	65.9
	11.2	Residential	I-26		59.9
	11.3	Residential	I-26		60.3
12	12.1	Residential	I-26	16:45 – 17:05	62.4
	12.2	Residential	I-26		58.5
	12.3	Residential	I-26		54.0

[1] In accordance with FHWA guidance and accepted industry standards, hourly equivalent sound levels, $L_{eq(h)}$,were extrapolated from short-term data collection monitoring sessions and are expressed in units of A-weighted decibels (dB(A)) rounded to the nearest whole number.

Table A-1: Project Ambient Hourly-Equivalent Sound Levels, Leq(h)[1]					
Setup	**Receptor**	**Land Use**	**Roadway Noise Source(s)[2]**	**Start/Stop Time**	**$L_{eq(h)}$ dB(A)**
13	13.1	Hospital	I-26	16:00 – 16:20	67.4
	13.2	Hospital	I-26		69.2
	13.3	Hospital	I-26		64.1
14	14.1	Residential	I-26	14:30 – 14:50	62.6
	14.2	Residential	I-26		60.3
	14.3	Residential	I-26		55.8
15	15.1	Residential	I-26	11:00 – 11:20	61.6
	15.2	Residential	I-26		58.1
	15.3	Residential	I-26		56.0
16	16.1	Residential	I-26	9:40 – 10:00	69.3
	16.2	Residential	I-26		63.3
	16.3	Residential	I-26		62.3
17	17.1	Church	I-26	14:35 – 14:55	68.6
	17.2	Church	I-26		61.8
	17.3	Residential	I-26		54.6
18	18.1	Hotel	I-26	13:30 – 13:50	67.9
	18.2	Hotel	I-26		65.8
	18.3	Hotel	I-26		68.0
19	19.1	Residential	I-26	15:50 – 16:10	67.5
	19.2	Residential	I-26		66.0
	19.3	Residential	I-26		62.0
20	20.1	Residential	I-26	16:55 – 17:15	76.0
	20.2	Residential	I-26		66.4
	20.3	Residential	I-26		62.3
21	21.1	Hotel	I-26	18:05 – 18:25	66.8
	21.2	Hotel	I-26		59.1
	21.3	Hotel	I-26		54.5
22	22.1	Residential	I-26	9:05 – 9:25	62.1
	22.2	Residential	I-26		59.4
	22.3	Residential	I-26		56.6
23	23.1	Retail	I-26	10:15 – 10:35	70.3
	23.2	Retail	I-26		69.0
	23.3	Retail	I-26		65.2
24	24.1	Residential	I-26	11:55 – 12:15	63.9
	24.2	Residential	I-26		64.3
	24.3	Residential	I-26		60.2
25	25.1	Residential	I-26	14:40 – 15:00	69.5
	25.2	Residential	I-26		61.9
	25.3	Residential	I-26		60.0

[1] In accordance with FHWA guidance and accepted industry standards, hourly equivalent sound levels, $L_{eq(h)}$,were extrapolated from short-term data collection monitoring sessions and are expressed in units of A-weighted decibels (dB(A)) rounded to the nearest whole number.

Table A-1: Project Ambient Hourly-Equivalent Sound Levels, Leq(h)[1]					
Setup	**Receptor**	**Land Use**	**Roadway Noise Source(s)[2]**	**Start/Stop Time**	**$L_{eq(h)}$ dB(A)**
26	26.1	Residential	I-26	16:10 – 16:30	64.0
	26.2	Residential	I-26		61.5
	26.3	Residential	I-26		56.5

[1] In accordance with FHWA guidance and accepted industry standards, hourly equivalent sound levels, $L_{eq(h)}$,were extrapolated from short-term data collection monitoring sessions and are expressed in units of A-weighted decibels (dB(A)) rounded to the nearest whole number.

Table A-2: Project Noise Monitoring Sessions Weather Data[1]							
Setup	**Temp. (°F)**	**Dew Point (°F)**	**Pressure (in)**	**Wind Dir.**	**Wind Speed (mph)**	**Relative Humidity**	**Precip. (in)**
0	77	62	29.81	SE	1	68%	0.00
1	85	63	29.81	E/NE	4	70%	0.00
2	72	63	29.82	NE	5	78%	0.00
3	72	64	29.83	E	3	81%	0.00
4	82	64	29.84	NW	1	66%	0.00
5	82	61	29.85	-	Calm	65%	0.00
6	82	63	29.83	S/SW	5	72%	0.00
7	84	60	29.91	W	1	60%	0.00
8	79	63	30.00	SE	2	69%	0.00
9	72	61	29.99	SW	1	86%	0.00
10	66	61	29.99	SW	1	97%	0.00
11	81	60	30.02	E	4	61%	0.00
12	77	60	30.04	S/SE	3	70%	0.00
13	76	62	30.10	E	4	71%	0.00
14	76	62	30.06	E	5	70%	0.00
15	70	54	30.25	-	Calm	41%	0.00
16	60	55	30.26	-	Calm	55%	0.00
17	75	55	30.21	SE	1	68%	0.00
18	73	55	30.27	-	Calm	74%	0.00
19	77	53	30.18	NE	3	37%	0.00
20	78	54	30.15	-	Calm	37%	0.00
21	76	54	30.13	-	Calm	37%	0.00
22	70	57	30.13	-	Calm	41%	0.00
23	70	57	30.12	NE	3	70%	0.00
24	72	60	30.11	SE	3	75%	0.00
25	81	63	29.83	SE	5	59%	0.00
26	76	63	29.83	S	2	74%	0.00

[1] Source: Weather Underground (http://www.wunderground.com) for the local weather station.

NOISE MEASUREMENT DATA SHEET

PROJECT: I-4400/4700 JOB #: 41470 BY: Trey Jordan

SITE: 0.1-3 DATE: 6/5/14 TIME: 11:45-12:05

CALIBRATION: 94.0 dB.

RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.

NB Ramp

TRAFFIC DATA		
ROAD (Name/Dir)		I-26
AUTOS	___EB ___WB	333 NB 250 SB
MED TRKS	___EB ___WB	21 NB 11 SB
HVY TRKS	___EB ___WB	80 NB 76 SB
BUS	___EB ___WB	0 NB 0 SB
MOTORCYCLE	___EB ___WB	0 NB 1 SB
SPEED		65

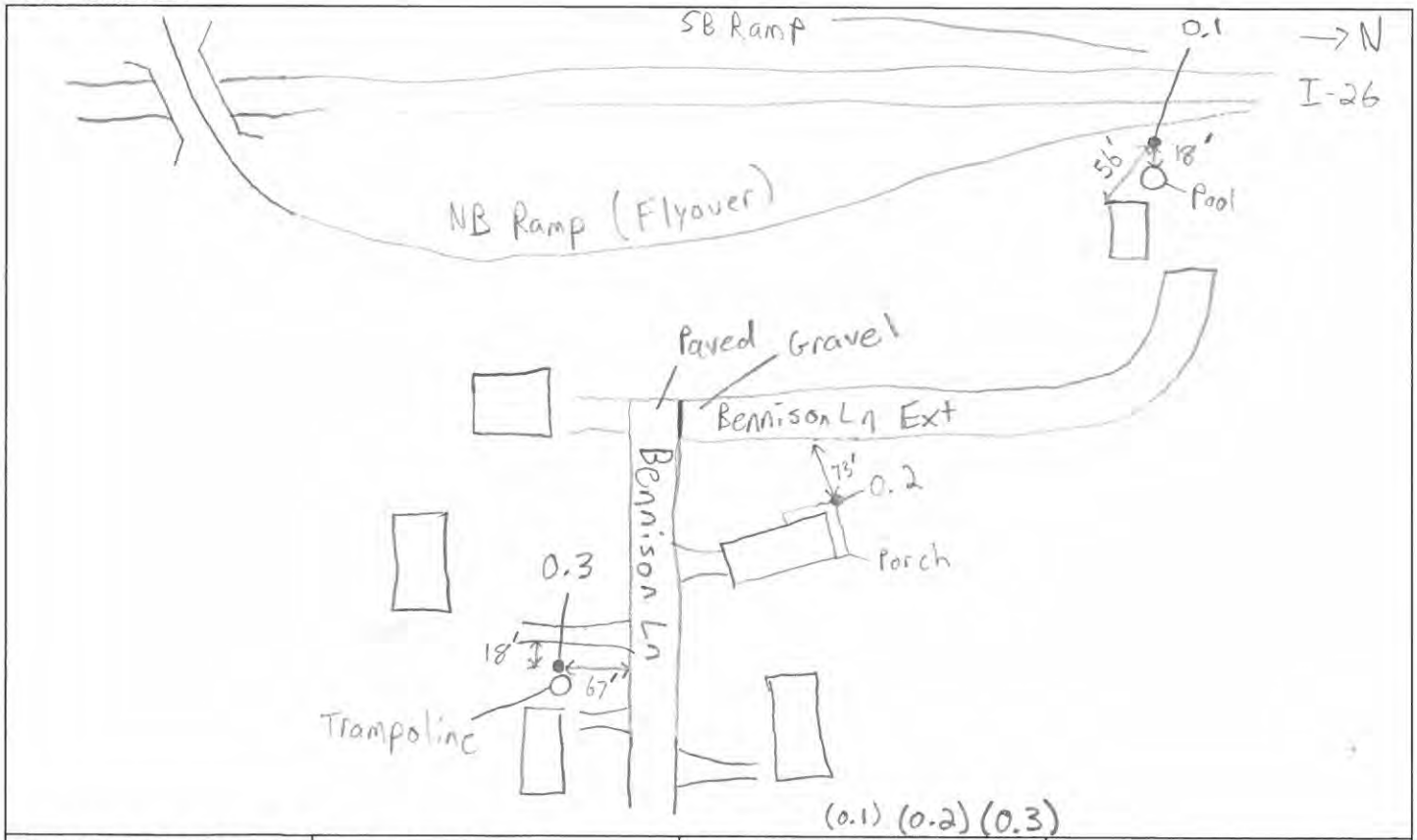
136 4 10 0 0

SB Ramp

99 4 16 0 0

EQUIPMENT	
INSTRUMENT	See "Other Notes"
SLM MANUFACTURER	
SLM MODEL	
SLM	
PREAMPLIFIER – Type 1206	
MICROPHONE – Type 1225	
CALIBRATOR – Type ~~1251~~ NC-74	34536122

SITE SKETCH



MEASUREMENT DATA	Duration 20 min	Leq (dB) 63.6, 57.9, 56.2

WEATHER DATA WIND SPEED (MPH) 1 DIR. SE TEMP. 77° HUMIDITY 68% CLOUD COVER Mostly Cloudy

BACKGROUND NOISE Dogs Barking, Birds

MAJOR SOURCES

UNUSUAL EVENTS

OTHER NOTES For all 3 noise meters used throughout project, SLM Manufacturer is Rion
↳ Model is NL-32

For each site:

Meter X.1 – SLM 01161900, Preamplifier (Type NH-21) 21933, Microphone (Type UC-53A) 311130
Meter X.2 – " 00282514 " 26713 " 313875
Meter X.3 – " 01161899 " 21932 " 311127

Noise Monitoring Site 0

Bennison Ln – Single Family Residential

Noise Meter 0.1 Looking Southwest

Noise Meter 0.2 Looking East

Noise Meter 0.3 Looking East

HNTB

NOISE MEASUREMENT DATA SHEET

PROJECT: I-4400/4700 JOB #: 41470 BY: Trey Jordan

SITE: 1.1-3 DATE: 6/5/14 TIME: 10:30-10:50

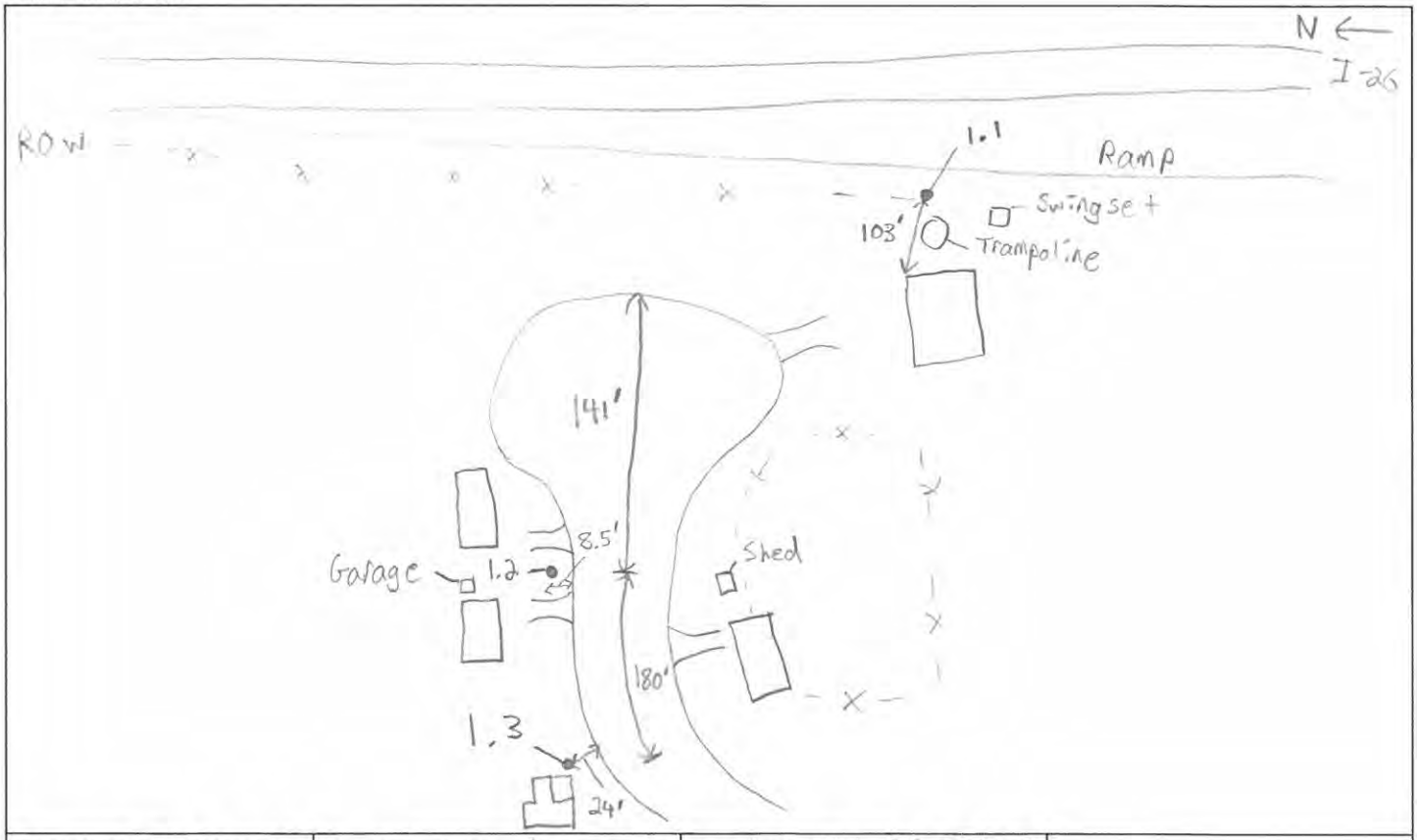
CALIBRATION: 94.0 dB.

RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.

TRAFFIC DATA			RAMP
ROAD (Name/Dir)		I-26	
AUTOS	___EB ___WB	289 NB 222 SB	86
MED TRKS	___EB ___WB	13 NB 11 SB	4
HVY TRKS	___EB ___WB	54 NB 51 SB	18
BUS	___EB ___WB	0 NB 0 SB	0
MOTORCYCLE	___EB ___WB	6 NB 0 SB	0
SPEED		65	55

EQUIPMENT	
INSTRUMENT	See Site 0.1-3
SLM MANUFACTURER	
SLM MODEL	
SLM	
PREAMPLIFIER – Type 1206	
MICROPHONE – Type 1225	
CALIBRATOR – Type 1251	

SITE SKETCH



MEASUREMENT DATA	Duration 20 min	Leq (dB) 64.6, 55.3, 53.4	

WEATHER DATA WIND SPEED (MPH) 4 DIR. E/NE TEMP. 85° HUMIDITY 70% CLOUD COVER Partly Cloudy

BACKGROUND NOISE

MAJOR SOURCES

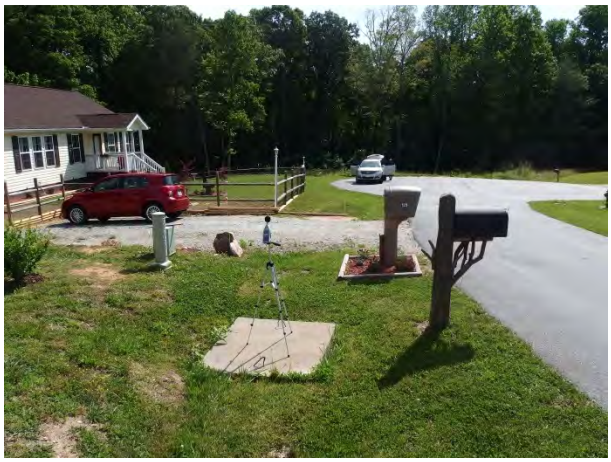
UNUSUAL EVENTS

OTHER NOTES

Noise Monitoring Site 1

Hollyhock Ct – Single Family Residential

Noise Meter 1.1 Looking Southeast



Noise Meter 1.2 Looking East

Noise Meter 1.3 Looking Northwest

NOISE MEASUREMENT DATA SHEET

PROJECT: I-4400/4700 JOB #: 41470 BY: Trey Jordan

SITE: 2.1-3 DATE: 6/5/14 TIME: 9:35-9:55

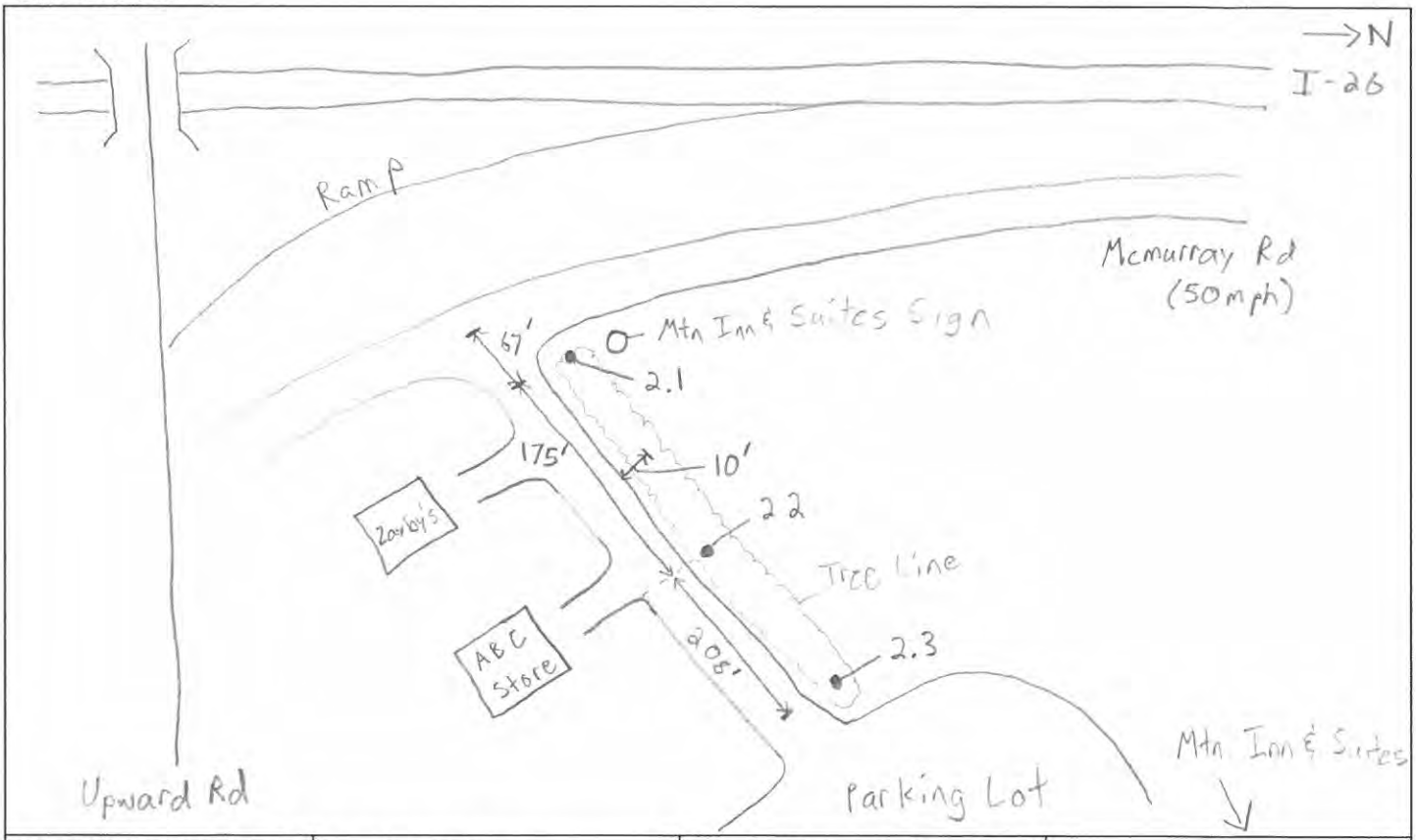
CALIBRATION: 94.0 dB.

RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.

TRAFFIC DATA		
ROAD (Name/Dir)	Upward Rd	I-26
AUTOS	90 EB 132 WB	333 NB 271 SB
MED TRKS	3 EB 2 WB	15 NB 18 SB
HVY TRKS	3 EB 2 WB	70 NB 71 SB
BUS	0 EB 0 WB	1 NB 1 SB
MOTORCYCLE	0 EB 0 WB	3 NB 2 SB
SPEED	35	65

EQUIPMENT	
INSTRUMENT	See Site 0.1-3
SLM MANUFACTURER	
SLM MODEL	
SLM	
PREAMPLIFIER – Type 1206	
MICROPHONE – Type 1225	
CALIBRATOR – Type 1251	

SITE SKETCH



MEASUREMENT DATA	Duration 20 min	Leq (dB) 59.7, 58.3, 56.7	

WEATHER DATA WIND SPEED (MPH) 5 DIR. NE TEMP. 72° HUMIDITY 78% CLOUD COVER Partly

BACKGROUND NOISE

MAJOR SOURCES

UNUSUAL EVENTS Car (4'), Heavy Truck (10-11'), Car (13'), 2 cars (19')

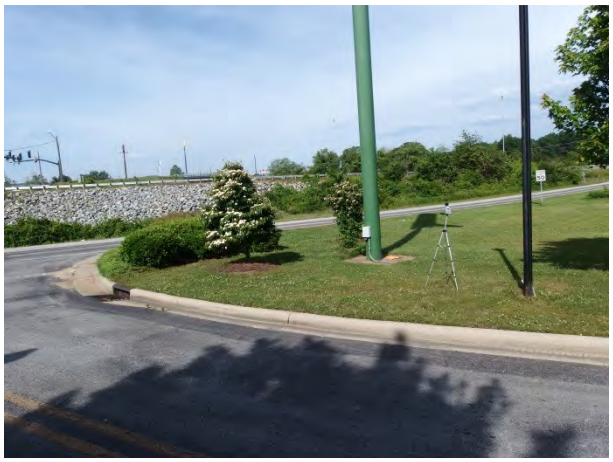
OTHER NOTES

Pictures - 2.3, 2.2, 2.1

Note - Upward WB includes turns onto ramp

Noise Monitoring Site 2

McMurray Rd – Commercial



Noise Meter 2.1 Looking West

Noise Meter 2.2 Looking East

Noise Meter 2.3 Looking Northeast

HNTB

NOISE MEASUREMENT DATA SHEET

PROJECT: I-4400/4700 JOB #: 41470 BY: Trey Jordan

SITE: 3.1 - 3.3 DATE: 6/5/14 TIME: 8:50 - 9:10

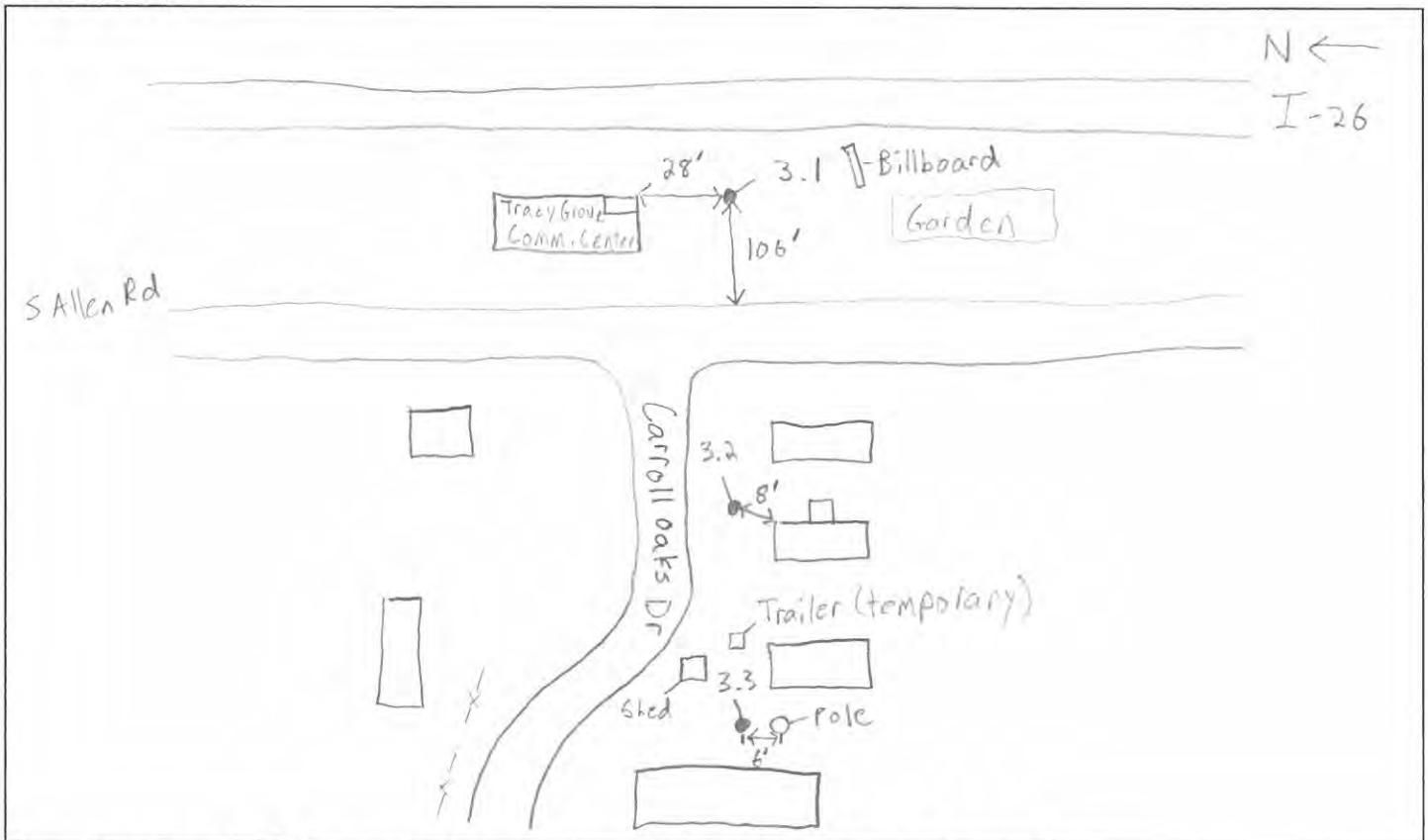
CALIBRATION: 94.0 dB.

RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.

TRAFFIC DATA		
ROAD (Name/Dir)	S Allen Rd	I-26
AUTOS	21 EB (NB) 35 WB (SB)	420 NB 346 SB
MED TRKS	0 EB 0 WB	15 NB 23 SB
HVY TRKS	2 EB 0 WB	68 NB 68 SB
BUS	0 EB 0 WB	0 NB 0 SB
MOTORCYCLE	0 EB 0 WB	1 NB 0 SB
SPEED	45	65

EQUIPMENT	
INSTRUMENT	See Site 0.1-3
SLM MANUFACTURER	
SLM MODEL	
SLM	
PREAMPLIFIER – Type 1206	
MICROPHONE – Type 1225	
CALIBRATOR – Type 1251	

SITE SKETCH



MEASUREMENT DATA	Duration 20 min	Leq (dB) 62.0, 56.7, 52.0	

WEATHER DATA WIND SPEED (MPH) 3 DIR. E TEMP. 72° HUMIDITY 81% CLOUD COVER Scattered Clouds

BACKGROUND NOISE Rooster crowing, Birds

MAJOR SOURCES

UNUSUAL EVENTS Heavy truck in garden (8') - 3.1

OTHER NOTES

Pictures: 3.1, 3.2, 3.3

Noise Monitoring Site 3

Carroll Oaks Dr – Single Family Residential

Noise Meter 3.1 Looking North

Noise Meter 3.2 Looking Southeast

Noise Meter 3.3 Looking East

HNTB

NOISE MEASUREMENT DATA SHEET

PROJECT: I-4400/4700 JOB #: 41470 BY: Trey Jordan

SITE: 4.1-3 DATE: 6/4/14 TIME: 16:30-16:50

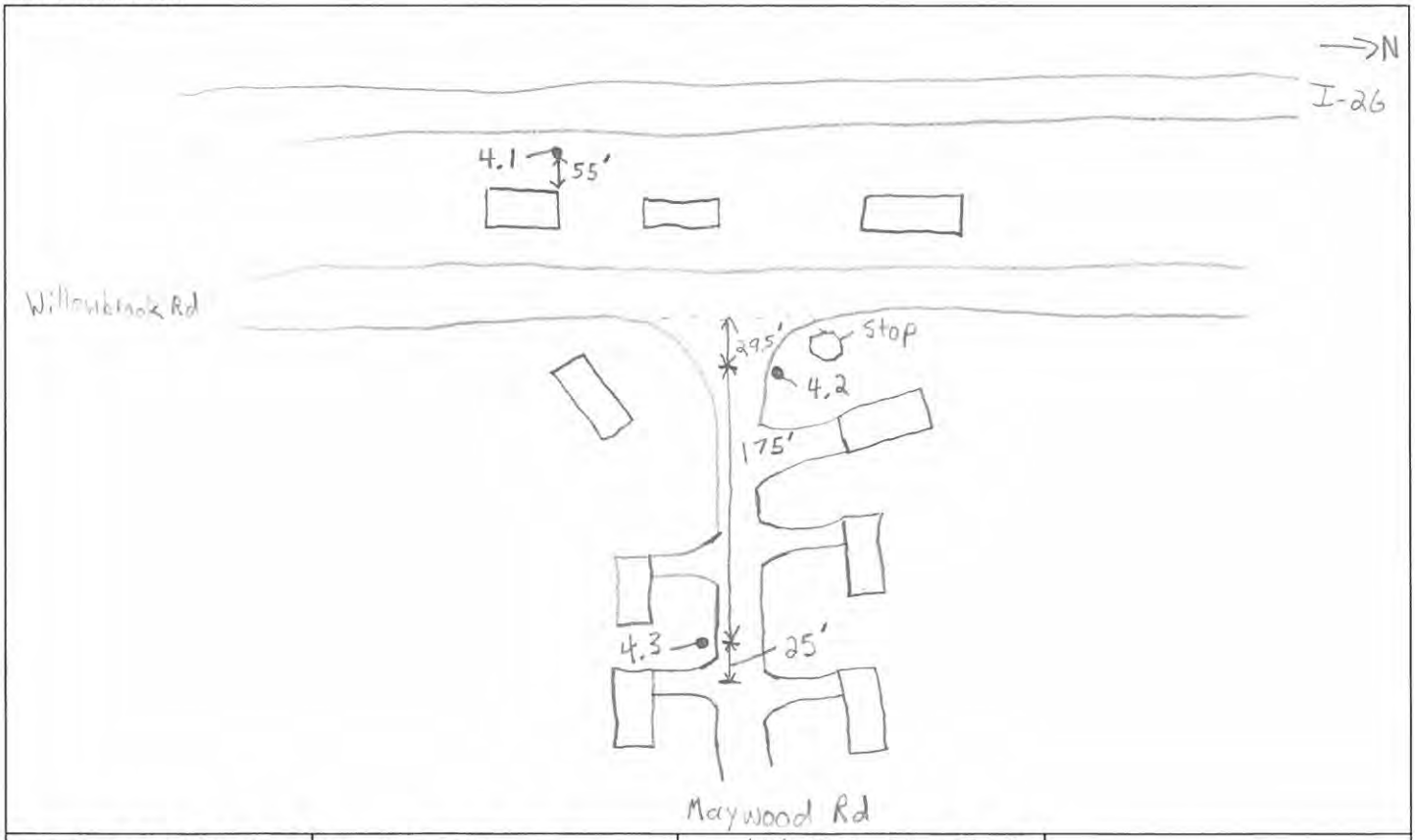
CALIBRATION: 94.0 dB.

RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.

TRAFFIC DATA		
ROAD (Name/Dir)	Willowbrook Rd	I-26
AUTOS	5 NB EB 4 SB WB	508 NB 514 SB
MED TRKS	0 EB 0 WB	6 NB 19 SB
HVY TRKS	0 EB 0 WB	71 NB 61 SB
BUS	0 EB 0 WB	0 NB 0 SB
MOTORCYCLE	0 EB 0 WB	2 NB 1 SB
SPEED	25	65

EQUIPMENT	
INSTRUMENT	See Site 0.1-3
SLM MANUFACTURER	
SLM MODEL	
SLM	
PREAMPLIFIER – Type 1206	
MICROPHONE – Type 1225	
CALIBRATOR – Type 1251	

SITE SKETCH



MEASUREMENT DATA	Duration 20 min	Leq (dB) 63.9, 55.1, 51.9	

WEATHER DATA WIND SPEED (MPH) 1 DIR. NW TEMP. 82° HUMIDITY 66% CLOUD COVER Scattered (Mid-)

BACKGROUND NOISE

MAJOR SOURCES

UNUSUAL EVENTS Car (2', 11', 13') Motorized Bicycles (12')

OTHER NOTES

Noise Monitoring Site 4

Maywood Rd – Single Family Residential

Noise Meter 4.1 Looking Southeast

Noise Meter 4.2 Looking West

Noise Meter 4.3 Looking West

HNTB

NOISE MEASUREMENT DATA SHEET

PROJECT: I-4400/4700 JOB #: 41470 BY: Trey Jordan

SITE: 5.1-3 DATE: 6/4/14 TIME: 15:35-15:55

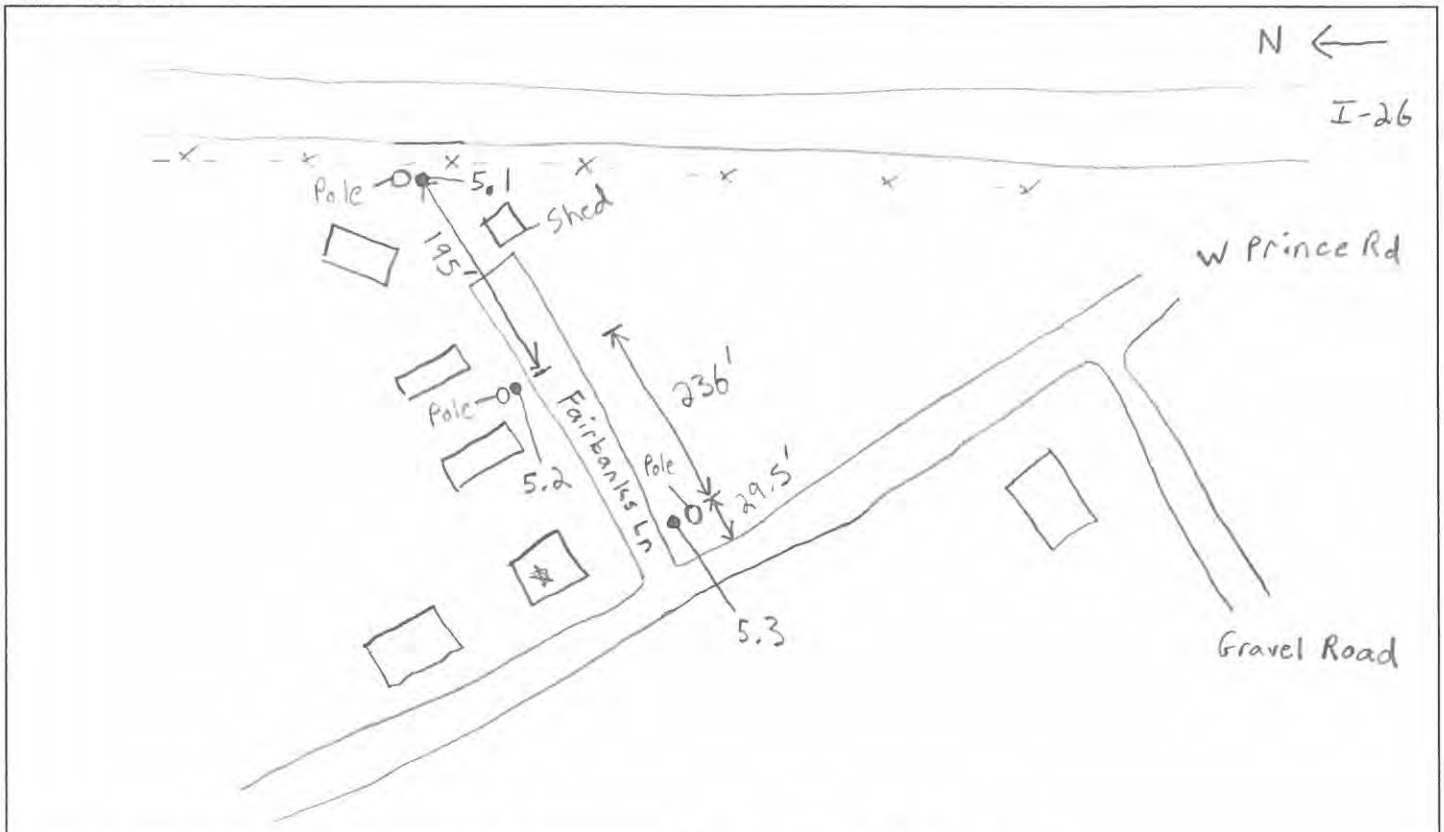
CALIBRATION: 94.0 dB.

RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.

TRAFFIC DATA		
ROAD (Name/Dir)		I-26
AUTOS	___EB ___WB	504 NB 495 SB
MED TRKS	___EB ___WB	11 NB 19 SB
HVY TRKS	___EB ___WB	74 NB 60 SB
BUS	___EB ___WB	0 NB 0 SB
MOTORCYCLE	___EB ___WB	2 NB 4 SB
SPEED		65

EQUIPMENT	
INSTRUMENT	See Site 0.1-3
SLM MANUFACTURER	
SLM MODEL	
SLM	
PREAMPLIFIER – Type 1206	
MICROPHONE – Type 1225	
CALIBRATOR – Type 1251	

SITE SKETCH



MEASUREMENT DATA	Duration 20 min	Leq (dB) 65.0, 60.2, 55.2	

WEATHER DATA WIND SPEED (MPH) Calm DIR. TEMP. 82° HUMIDITY 65% CLOUD COVER Scattered Clouds

BACKGROUND NOISE

MAJOR SOURCES

UNUSUAL EVENTS Car(4', 16', 17', 20') Dog (17') Bird (19') - 5.3 Bus (12', 13')

OTHER NOTES

Noise Monitoring Site 5

Fairbanks Ln – Single Family Residential

Noise Meter 5.1 Looking Northeast

Noise Meter 5.2 Looking West

Noise Meter 5.3 Looking Northeast

HNTB

NOISE MEASUREMENT DATA SHEET

PROJECT: I-4400/4700 JOB #: 41470 BY: Trey Jordan

SITE: 6.1-3 DATE: 6/4/14 TIME: 17:10 - 17:30

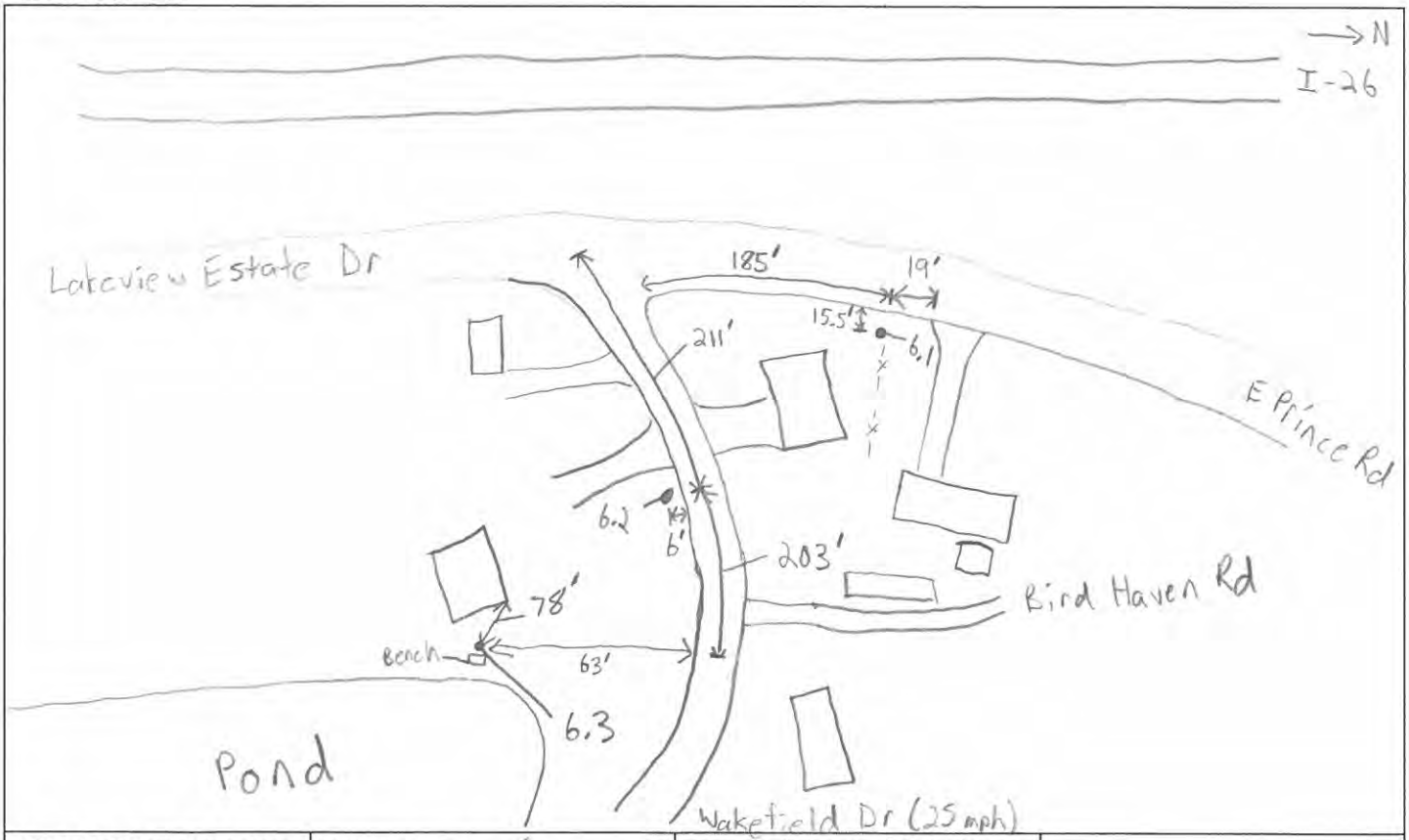
CALIBRATION: 94.0 dB.

RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.

TRAFFIC DATA			
Prince	ROAD (Name/Dir)	Lakeview Estate / Wakefield	I-26
5	AUTOS	26 EB 21 WB	507 NB 547 SB
0	MED TRKS	1 EB 1 WB	7 NB 11 SB
1	HVY TRKS	1 EB 0 WB	91 NB 61 SB
0	BUS	0 EB 6 WB	1 NB 0 SB
0	MOTORCYCLE	2 EB 2 WB	2 NB 7 SB
	SPEED	25	65

EQUIPMENT	
INSTRUMENT	See Site 0.1-3
SLM MANUFACTURER	
SLM MODEL	
SLM	
PREAMPLIFIER – Type 1206	
MICROPHONE – Type 1225	
CALIBRATOR – Type 1251	

SITE SKETCH



MEASUREMENT DATA	Duration 20 min	Leq (dB) 69.4, 61.6, 58.2	

WEATHER DATA WIND SPEED (MPH) 5 DIR. S/SW TEMP. 82° HUMIDITY 72% CLOUD COVER Scattered Clouds

BACKGROUND NOISE

MAJOR SOURCES

UNUSUAL EVENTS

OTHER NOTES

Note - Prince traffic = Lakeview Estate - Wakefield

Noise Monitoring Site 6

Wakefield Dr – Single Family Residential

Noise Meter 6.1 Looking Northeast

Noise Meter 6.2 Looking Southwest

Noise Meter 6.3 Looking East

HNTB NOISE MEASUREMENT DATA SHEET

PROJECT: I-4400/4700 JOB #: 41470 BY: Trey Jordan

SITE: 7.1-7.3 DATE: 6/4/14 TIME: 14:00-14:20

CALIBRATION: 94.0 dB.

RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.

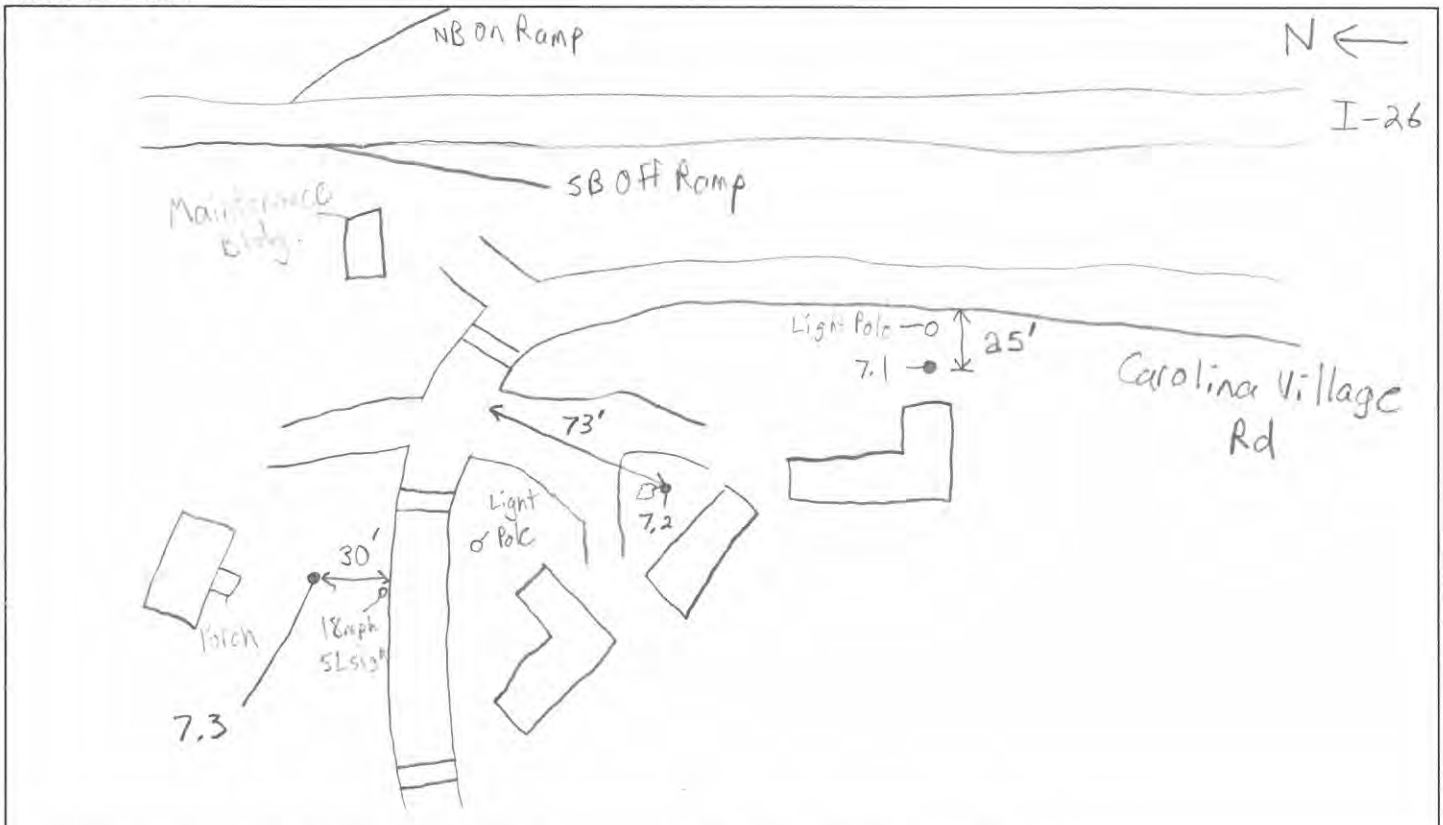
TRAFFIC DATA		
ROAD (Name/Dir)		I-25
AUTOS	29 EB 22 WB	439 NB 372 SB
MED TRKS	0 EB 0 WB	16 NB 22 SB
HVY TRKS	0 EB 0 WB	85 NB 54 SB
BUS	0 EB 0 WB	0 NB 0 SB
MOTORCYCLE	0 EB 0 WB	5 NB 0 SB
SPEED	20	65

NB RAMP: 82 2 5 3 3

SB RAMP: 64 2 0 0 0

EQUIPMENT	
INSTRUMENT	See Site 0.1-3
SLM MANUFACTURER	
SLM MODEL	
SLM	
PREAMPLIFIER – Type 1206	
MICROPHONE – Type 1225	
CALIBRATOR – Type 1251	

SITE SKETCH



MEASUREMENT DATA	Duration 20 min	Leq (dB) 62.8, 56.3, 54.1	

WEATHER DATA WIND SPEED (MPH) 1 DIR. W TEMP. 84° HUMIDITY 60% CLOUD COVER Mostly Cloudy

BACKGROUND NOISE AC Unit (7.3)

MAJOR SOURCES

UNUSUAL EVENTS Talking (18-20') - 7.3

OTHER NOTES

Noise Monitoring Site 7

Carolina Village Rd – Multi-Family Residential

Noise Meter 7.1 Looking Southwest

Noise Meter 7.2 Looking North

Noise Meter 7.3 Looking Northwest

HNTB

NOISE MEASUREMENT DATA SHEET

PROJECT: I-4400/4700 JOB #: 41470 BY: Trey Jordan

SITE: 8.1 DATE: 6/4/14 TIME: 11:25-11:45

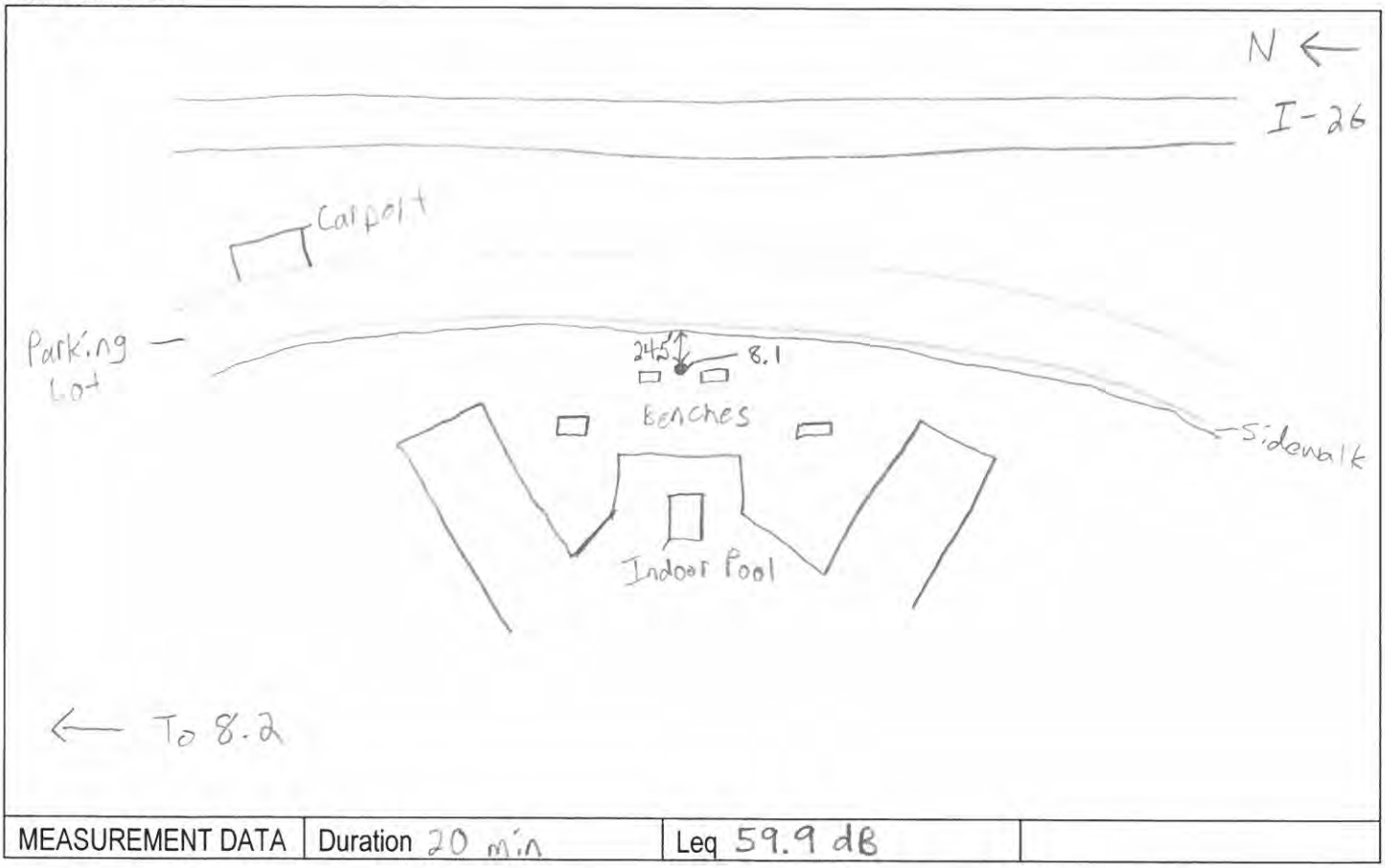
CALIBRATION: 94.0 dB.

RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.

TRAFFIC DATA		
ROAD (Name/Dir)		I-26
AUTOS	___EB ___WB	527 NB 420 SB
MED TRKS	___EB ___WB	11 NB 22 SB
HVY TRKS	___EB ___WB	133 NB 57 SB
BUS	___EB ___WB	0 NB 0 SB
MOTORCYCLE	___EB ___WB	1 NB 4 SB
SPEED		65

EQUIPMENT	
INSTRUMENT	
SLM MANUFACTURER	Rion
SLM MODEL	NL-32
SLM	01161900
PREAMPLIFIER – Type ~~1206~~ NH-21	21933
MICROPHONE – Type ~~1225~~ UC-53A	311130
CALIBRATOR – Type ~~1251~~ NC-74	34536122

SITE SKETCH



MEASUREMENT DATA	Duration 20 min	Leq 59.9 dB	

WEATHER DATA WIND SPEED (MPH) 2 DIR. SE TEMP. 79° HUMIDITY 69% CLOUD COVER Clear

BACKGROUND NOISE

MAJOR SOURCES

UNUSUAL EVENTS Loud talking (6'), Loud Car (10')

OTHER NOTES

HNTB

NOISE MEASUREMENT DATA SHEET

PROJECT: I-4400/4700 JOB #: 41470 BY: Trey Jordan

SITE: 8.2 DATE: 6/4/14 TIME: 11:25-11:45

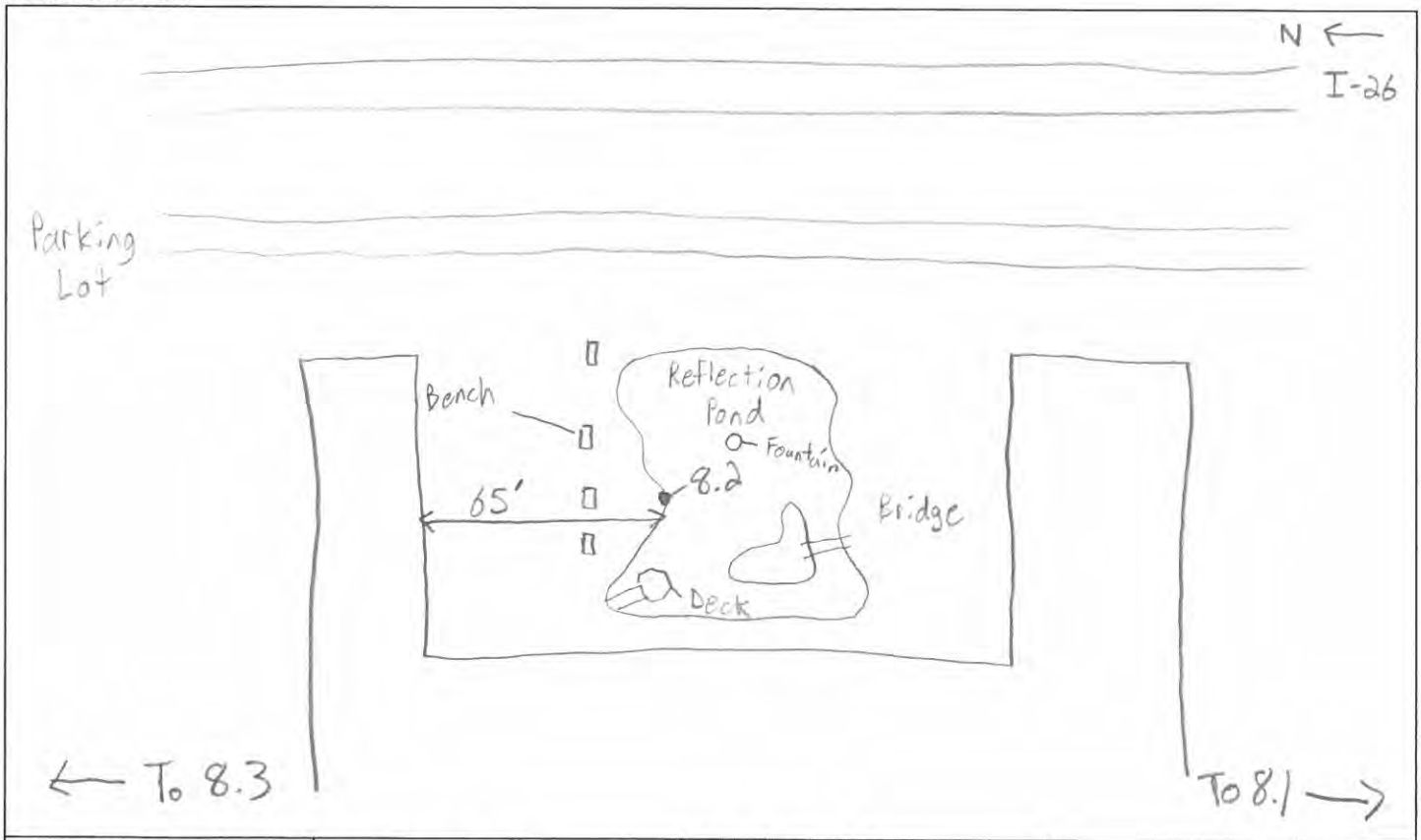
CALIBRATION: 94.0 dB.

RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.

TRAFFIC DATA		
ROAD (Name/Dir)		I-26
AUTOS	___EB ___WB	527 NB 420 SB
MED TRKS	___EB ___WB	11 NB 22 SB
HVY TRKS	___EB ___WB	133 NB 57 SB
BUS	___EB ___WB	0 NB 0 SB
MOTORCYCLE	___EB ___WB	1 NB 4 SB
SPEED		65

EQUIPMENT	
INSTRUMENT	
SLM MANUFACTURER	Rion
SLM MODEL	NL-32
SLM	00282514
PREAMPLIFIER – Type ~~1206~~ NH-21	26713
MICROPHONE – Type ~~1225~~ UC-53A	313875
CALIBRATOR – Type 1251	

SITE SKETCH



MEASUREMENT DATA	Duration 20 min	Leq 61.1 dB	

WEATHER DATA WIND SPEED (MPH) 2 DIR. SE TEMP. 79° HUMIDITY 69% CLOUD COVER Clear

BACKGROUND NOISE

MAJOR SOURCES

UNUSUAL EVENTS Fountain On and off (10')

OTHER NOTES

HNTB

NOISE MEASUREMENT DATA SHEET

PROJECT: I-4400/4700 JOB #: 41470 BY: Trey Jordan

SITE: 8.3 DATE: 6/4/14 TIME: 11:25 - 11:45

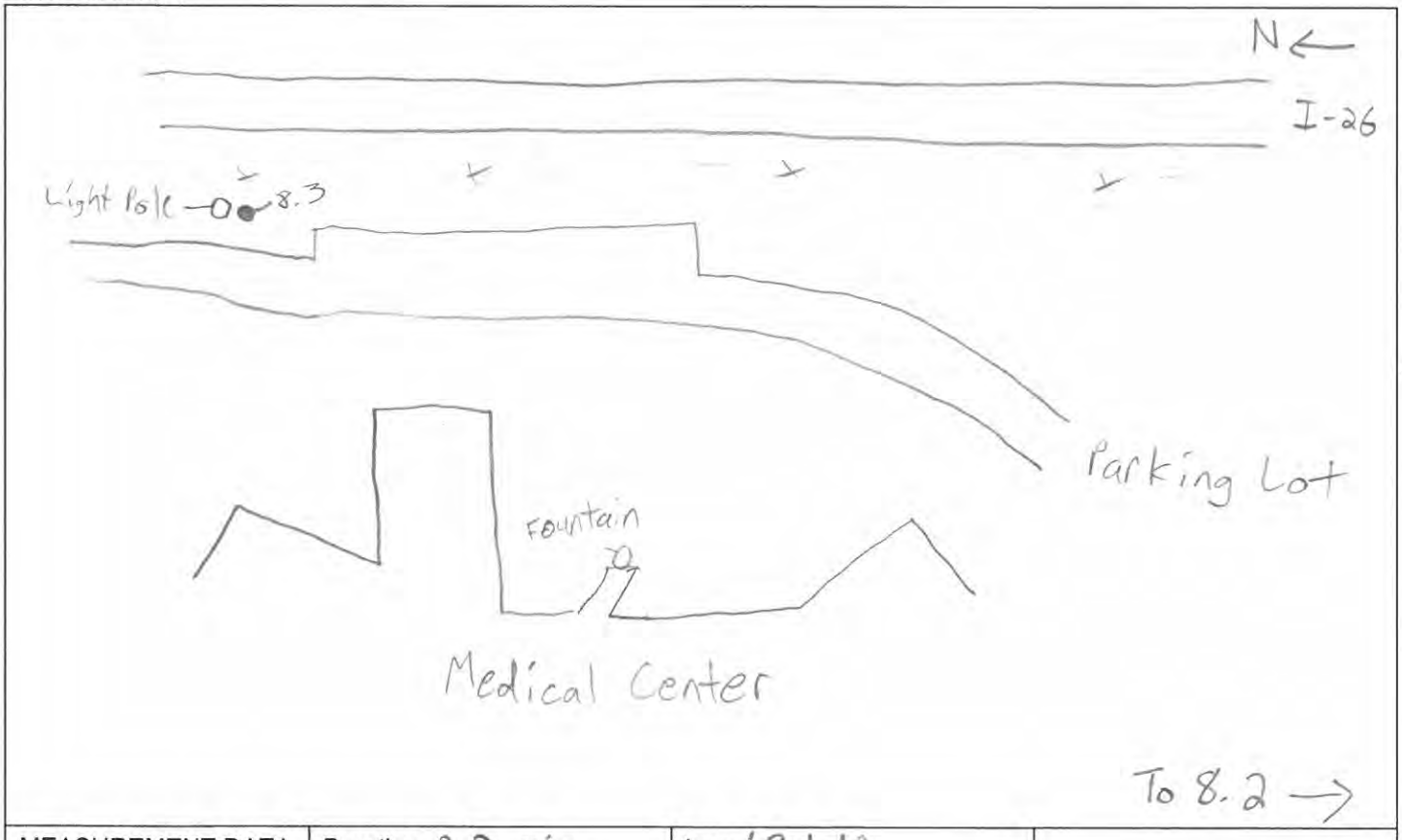
CALIBRATION: 94.0 dB.

RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.

TRAFFIC DATA		
ROAD (Name/Dir)		
AUTOS	___EB ___WB	___NB ___SB
MED TRKS	___EB ___WB	___NB ___SB
HVY TRKS	___EB ___WB	___NB ___SB
BUS	___EB ___WB	___NB ___SB
MOTORCYCLE	___EB ___WB	___NB ___SB
SPEED		

EQUIPMENT	
INSTRUMENT	
SLM MANUFACTURER	Rion
SLM MODEL	NL-32
SLM	01161899
PREAMPLIFIER – Type ~~1206~~ NH-21	21932
MICROPHONE – Type ~~1225~~ UC-53A	311127
CALIBRATOR – Type 1251	

SITE SKETCH



MEASUREMENT DATA	Duration 20 min	Leq 69.1 dB	

WEATHER DATA WIND SPEED (MPH) 2 DIR. SE TEMP. 79° HUMIDITY 69% CLOUD COVER Clear

BACKGROUND NOISE

MAJOR SOURCES

UNUSUAL EVENTS

OTHER NOTES

Noise Monitoring Site 8

Carolina Village Rd – Multi-Family Residential

Noise Meter 8.1 Looking West

Noise Meter 8.2 Looking Southwest

Noise Meter 8.3 Looking Southeast

HNTB

NOISE MEASUREMENT DATA SHEET

PROJECT: I-4400/4700 JOB #: 41470 BY: Trey Jordan

SITE: 9.1-9.3 DATE: 6/4/14 TIME: 9:50-10:10

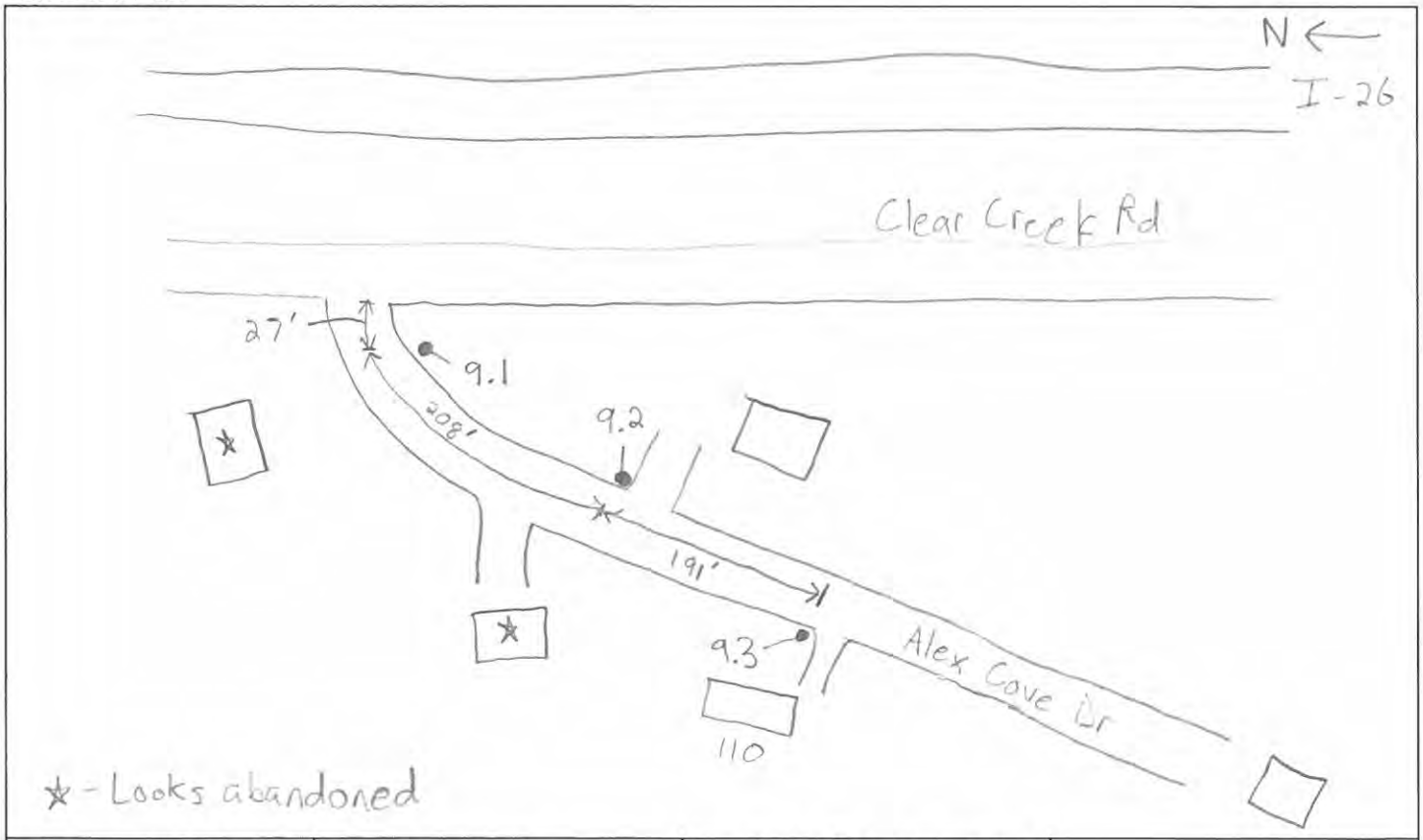
CALIBRATION: 94.0 dB.

RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.

TRAFFIC DATA		
ROAD (Name/Dir)		I-26
AUTOS	___EB ___WB	420 NB 429 SB
MED TRKS	___EB ___WB	20 NB 11 SB
HVY TRKS	___EB ___WB	70 NB 87 SB
BUS	___EB ___WB	0 NB 2 SB
MOTORCYCLE	___EB ___WB	6 NB 1 SB
SPEED		65

EQUIPMENT	
INSTRUMENT	See Site 0.1-3
SLM MANUFACTURER	
SLM MODEL	
SLM	
PREAMPLIFIER – Type 1206	
MICROPHONE – Type 1225	
CALIBRATOR – Type 1251	

SITE SKETCH



MEASUREMENT DATA	Duration 20 min	Leq (dB) 69.2, 62.1, 59.2	

WEATHER DATA WIND SPEED (MPH) 1 DIR. SW TEMP. 72° HUMIDITY 86% CLOUD COVER Clear

BACKGROUND NOISE

MAJOR SOURCES

UNUSUAL EVENTS

OTHER NOTES

Pictures: 9.1, 9.2, 9.3

Noise Monitoring Site 9

Alex Cove Dr – Single Family Residential

Noise Meter 9.1 Looking North

Noise Meter 9.2 Looking Southeast

Noise Meter 9.3 Looking Southwest

HNTB

NOISE MEASUREMENT DATA SHEET

PROJECT: I-4400/4700 JOB #: 41470 BY: Trey Jordan

SITE: 10.1-3 DATE: 6/4/14 TIME: 9:00-9:20

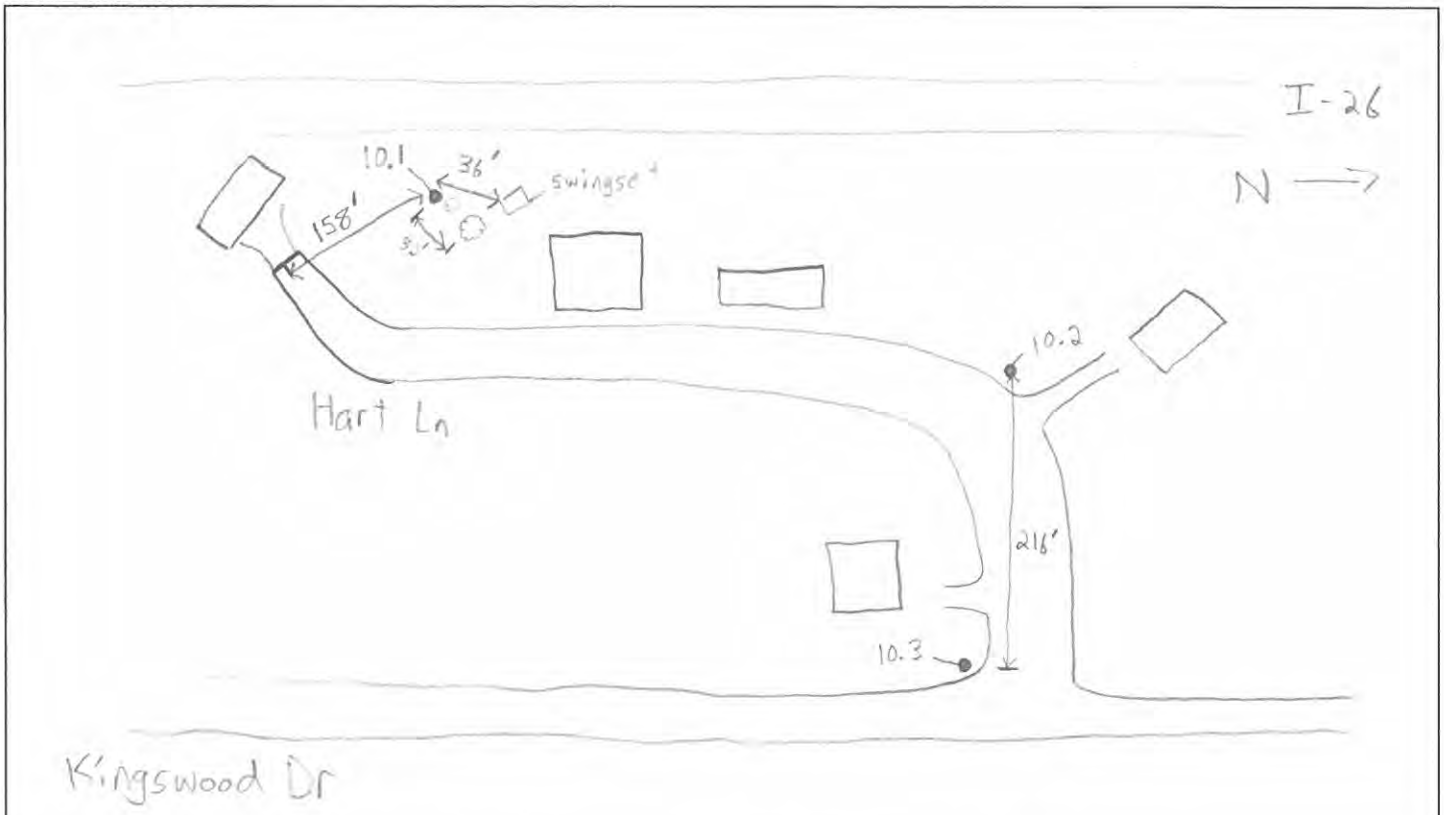
CALIBRATION: 94.0 dB.

RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.

TRAFFIC DATA		
ROAD (Name/Dir)		I-26
AUTOS	___EB ___WB	435 NB 383 SB
MED TRKS	___EB ___WB	22 NB 18 SB
HVY TRKS	___EB ___WB	72 NB 75 SB
BUS	___EB ___WB	0 NB 0 SB
MOTORCYCLE	___EB ___WB	2 NB 2 SB
SPEED		65

EQUIPMENT	
INSTRUMENT	See Site 0.1-3
SLM MANUFACTURER	
SLM MODEL	
SLM	
PREAMPLIFIER – Type 1206	
MICROPHONE – Type 1225	
CALIBRATOR – Type 1251	

SITE SKETCH



MEASUREMENT DATA	Duration 20 min	Leq (dB) 64.6, 63.1, 59.1	

WEATHER DATA WIND SPEED (MPH) 1 DIR. SW TEMP. 66° HUMIDITY 97% CLOUD COVER Clear

BACKGROUND NOISE

MAJOR SOURCES

UNUSUAL EVENTS Dog (2') - 10.3, 2 Cars (15') - 10.2 & 10.3

OTHER NOTES

Pictures: 10.3, 10.2, 10.1

Noise Monitoring Site 10

Hart Ln – Single Family Residential

Noise Meter 10.1 Looking Southwest

Noise Meter 10.2 Looking West

Noise Meter 10.3 Looking Southwest

HNTB

NOISE MEASUREMENT DATA SHEET

PROJECT: I-4400/4700 JOB #: 41470 BY: Trey Jordan

SITE: 11.1-3 DATE: 6/3/14 TIME: 17:30-17:50

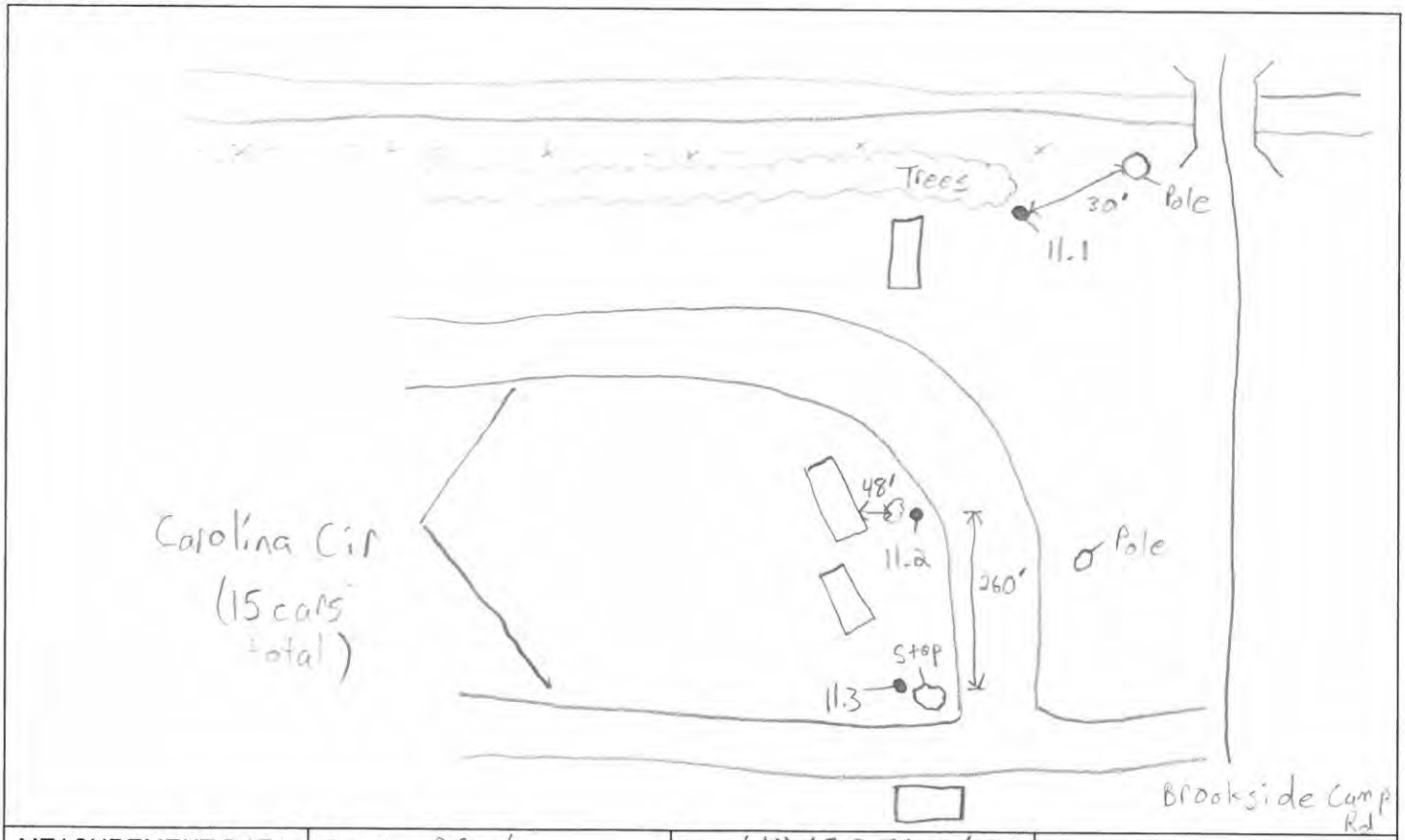
CALIBRATION: 94.0 dB.

RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.

TRAFFIC DATA		
ROAD (Name/Dir)	Brookside Camp Rd	I-26
AUTOS	55 EB 53 WB	653 NB 545 SB
MED TRKS	___ EB ___ WB	11 NB 12 SB
HVY TRKS	___ EB ___ WB	69 NB 63 SB
BUS	___ EB ___ WB	0 NB 1 SB
MOTORCYCLE	___ EB ___ WB	0 NB 5 SB
SPEED	45	65

EQUIPMENT	
INSTRUMENT	See Site 0.1-3
SLM MANUFACTURER	
SLM MODEL	
SLM	
PREAMPLIFIER – Type 1206	
MICROPHONE – Type 1225	
CALIBRATOR – Type 1251	

SITE SKETCH



MEASUREMENT DATA	Duration 20 min	Leq (dB) 65.9, 59.9, 60.3	

WEATHER DATA WIND SPEED (MPH) 4 DIR. E TEMP. 81° HUMIDITY 61% CLOUD COVER Partly Cloudy

BACKGROUND NOISE Roosters Crowing (11.3)

MAJOR SOURCES

UNUSUAL EVENTS

OTHER NOTES

Noise Monitoring Site 11

Carolina Cir – Single Family Residential

Noise Meter 11.1 Looking Northeast

Noise Meter 11.2 Looking Southwest

Noise Meter 11.3 Looking Northeast

HNTB

NOISE MEASUREMENT DATA SHEET

PROJECT: I-4400/4700 JOB #: 41470 BY: Trey Jordan

SITE: 12.1-3 DATE: 6/3/14 TIME: 16:45 - 17:05

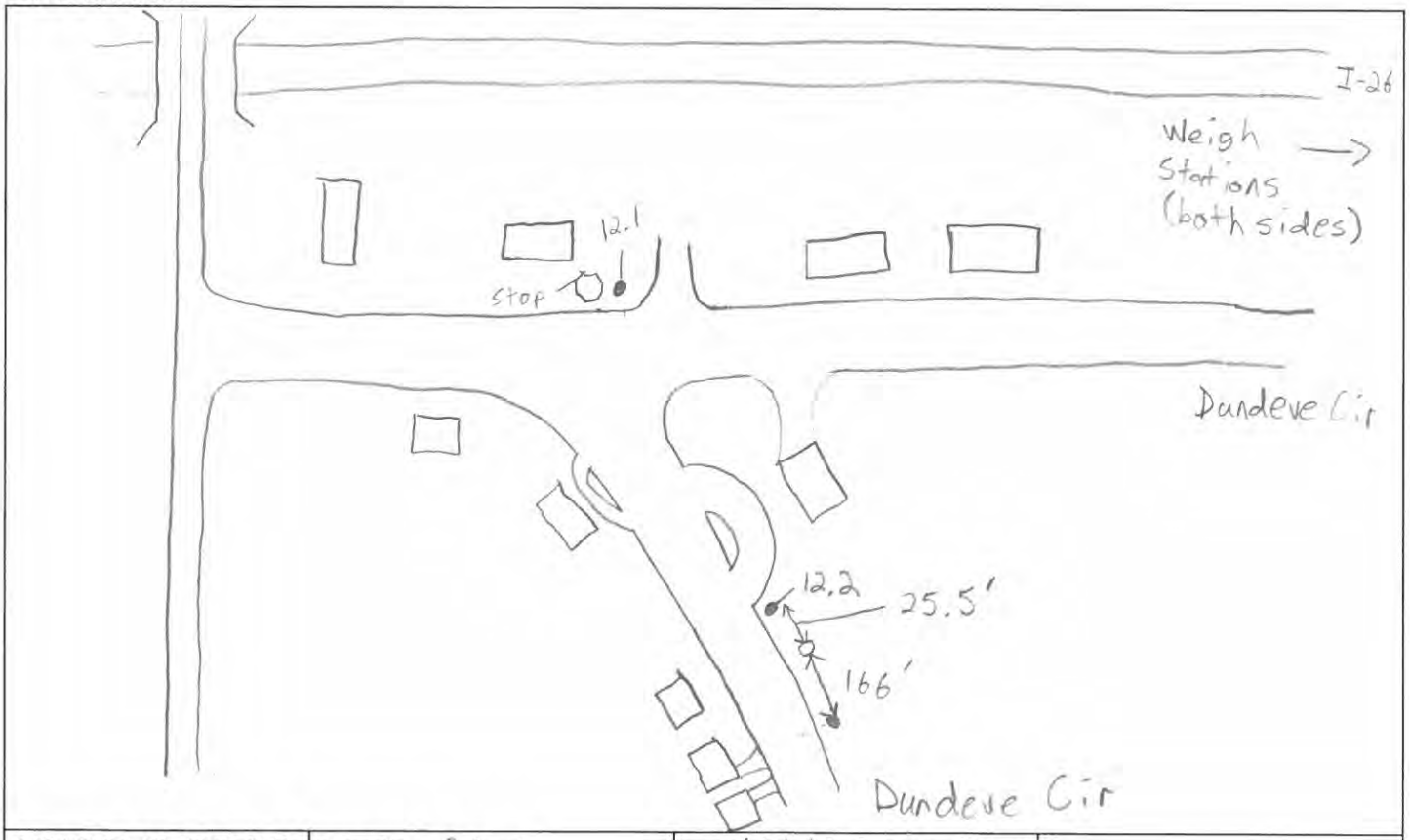
CALIBRATION: 94.0 dB.

RESPONSE: FAST / [SLOW] WEIGHTING: [A] / C / LIN.

TRAFFIC DATA		
ROAD (Name/Dir)		I-26
AUTOS	___EB ___WB	531 NB 675 SB
MED TRKS	___EB ___WB	16 NB 15 SB
HVY TRKS	___EB ___WB	82 NB 56 SB
BUS	___EB ___WB	0 NB 0 SB
MOTORCYCLE	___EB ___WB	4 NB 1 SB
SPEED		65

EQUIPMENT	
INSTRUMENT	See Site 0.1-3
SLM MANUFACTURER	
SLM MODEL	
SLM	
PREAMPLIFIER – Type 1206	
MICROPHONE – Type 1225	
CALIBRATOR – Type 1251	

SITE SKETCH



MEASUREMENT DATA	Duration 20 min	Leq (dB) 62.4, 58.5, 54.0	

WEATHER DATA WIND SPEED (MPH) 3 DIR. S/SE TEMP. 77° HUMIDITY 70% CLOUD COVER Partly Cloudy

BACKGROUND NOISE

MAJOR SOURCES

UNUSUAL EVENTS

OTHER NOTES

Noise Monitoring Site 12

Dundeve Cir – Single Family Residential

Noise Meter 12.1 Looking Southwest

Noise Meter 12.2 Looking West

Noise Meter 12.3 Looking East

HNTB

NOISE MEASUREMENT DATA SHEET

PROJECT: I-4400/4700 JOB #: 41470 BY: Trey Jordan

SITE: 13.1-3 DATE: 6/3/14 TIME: 16:00-16:20

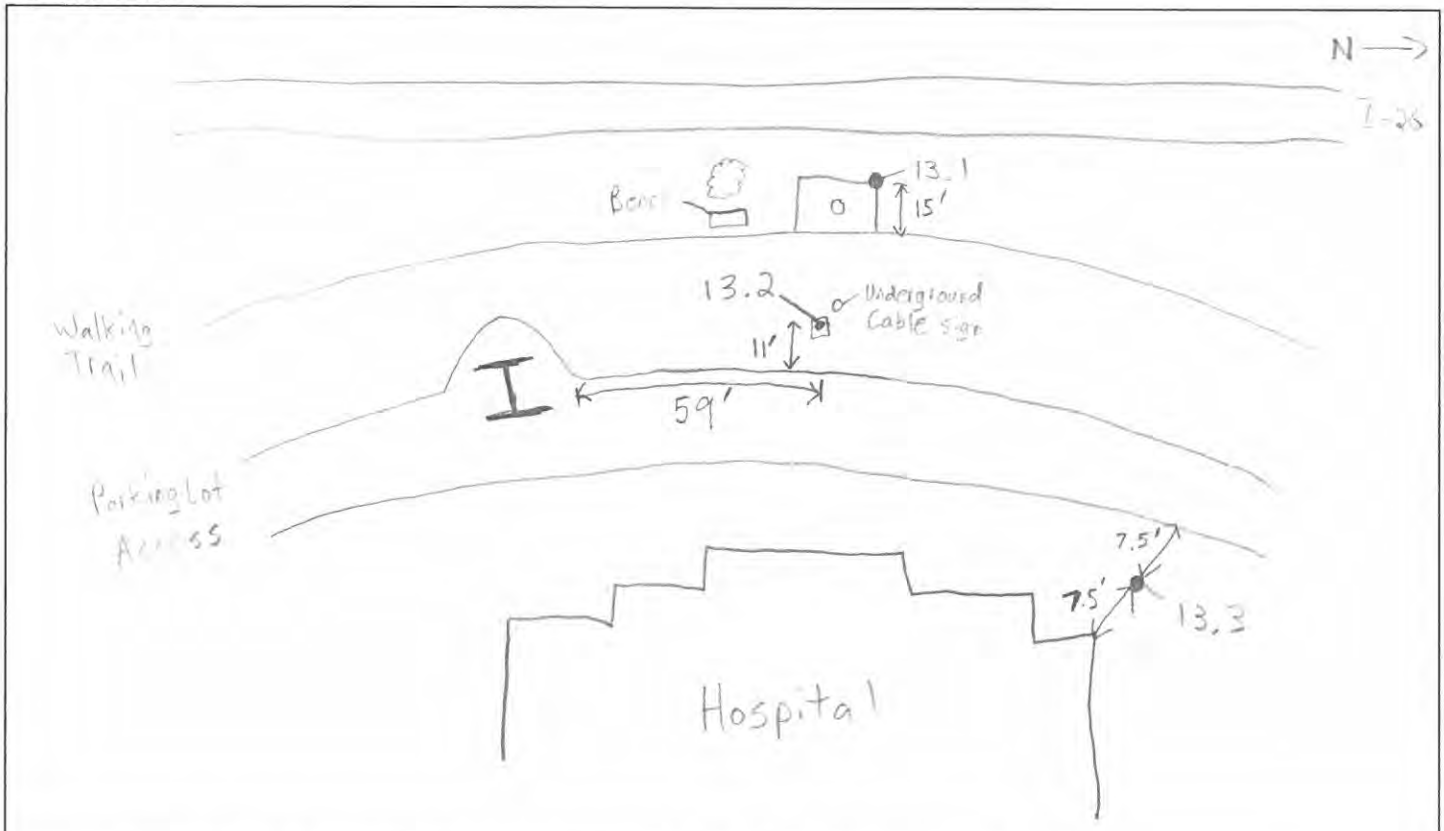
CALIBRATION: 94.0 dB.

RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.

TRAFFIC DATA		
ROAD (Name/Dir)		
AUTOS	___EB ___WB	513 NB 640 SB
MED TRKS	___EB ___WB	12 NB 15 SB
HVY TRKS	___EB ___WB	79 NB 60 SB
BUS	___EB ___WB	1 NB 0 SB
MOTORCYCLE	___EB ___WB	2 NB 0 SB
SPEED		65

EQUIPMENT	
INSTRUMENT	See Site 0.1-3
SLM MANUFACTURER	
SLM MODEL	
SLM	
PREAMPLIFIER – Type 1206	
MICROPHONE – Type 1225	
CALIBRATOR – Type 1251	

SITE SKETCH



MEASUREMENT DATA	Duration 20 min	Leq (dB) 67.4, 69.2, 64.1	

WEATHER DATA WIND SPEED (MPH) 4 DIR. E TEMP. 76° HUMIDITY 71% CLOUD COVER Mostly Cloudy

BACKGROUND NOISE

MAJOR SOURCES

UNUSUAL EVENTS

OTHER NOTES

Noise Monitoring Site 13

Park Ridge Health – Commercial (Medical)

Noise Meter 13.1 Looking East

Noise Meter 13.2 Looking West

Noise Meter 13.3 Looking East

NOISE MEASUREMENT DATA SHEET

PROJECT: I-4400/4700 JOB #: 41476 BY: Trey Jordan

SITE: 14.1-3 DATE: 6/3/14 TIME: 14:30 - 14:50

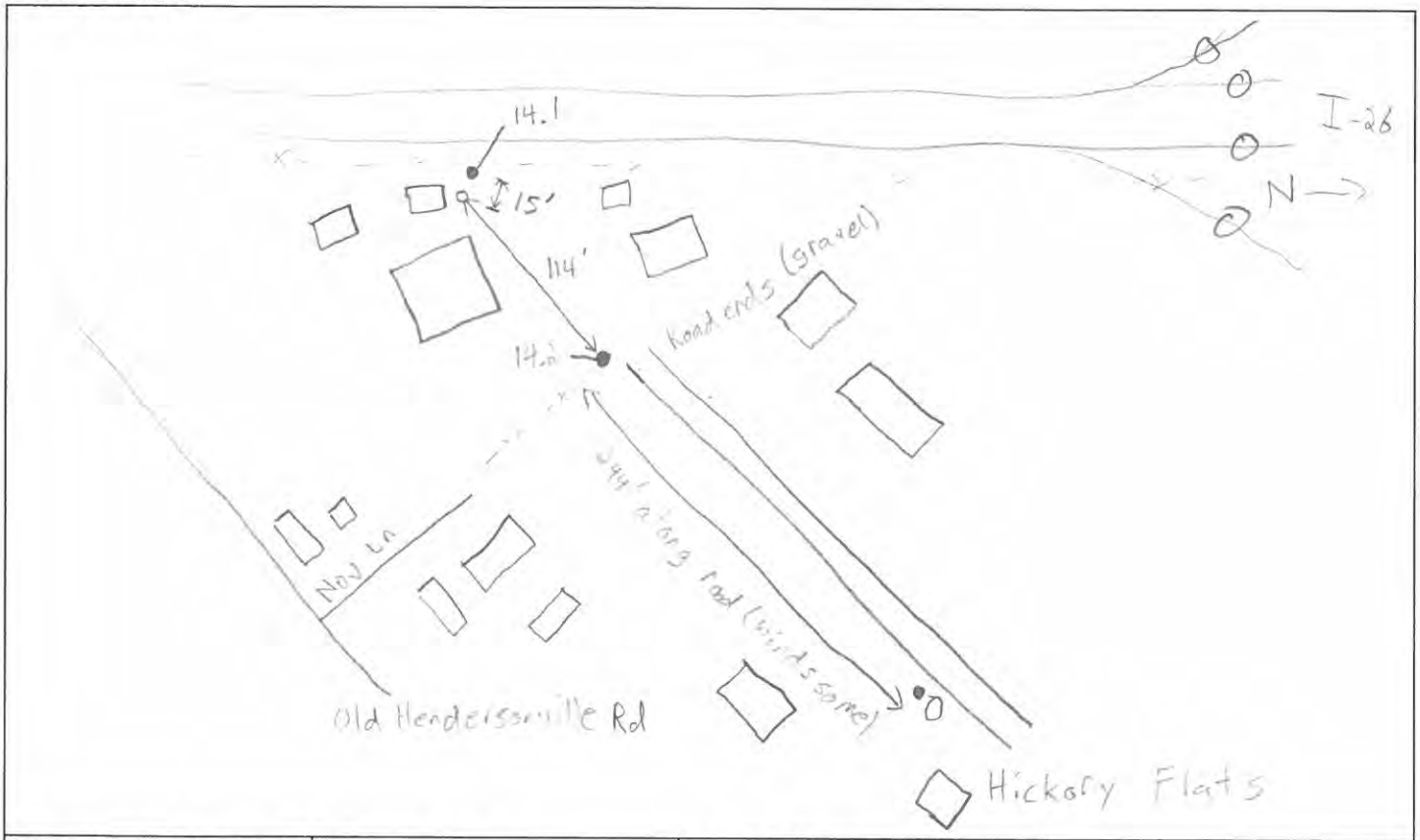
CALIBRATION: 94.0 dB.

RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.

NB RAMP	TRAFFIC DATA			SB RAMP
	ROAD (Name/Dir)		I-26	
118	AUTOS	___EB ___WB	349 NB 410 SB	117
6	MED TRKS	___EB ___WB	7 NB 12 SB	2
5	HVY TRKS	___EB ___WB	76 NB 67 SB	9
0	BUS	___EB ___WB	3 NB 0 SB	0
0	MOTORCYCLE	___EB ___WB	0 NB 1 SB	2
	SPEED		65	

EQUIPMENT	
INSTRUMENT	See Site 0.1-3
SLM MANUFACTURER	
SLM MODEL	
SLM	
PREAMPLIFIER – Type 1206	
MICROPHONE – Type 1225	
CALIBRATOR – Type 1251	

SITE SKETCH



MEASUREMENT DATA	Duration 20 min	Leq (dB) 62.6, 60.3, 55.8	

WEATHER DATA WIND SPEED (MPH) 5 DIR. E TEMP. 76° HUMIDITY 70% CLOUD COVER Mostly Cloudy

BACKGROUND NOISE

MAJOR SOURCES

UNUSUAL EVENTS Dogs (1')

OTHER NOTES

Noise Monitoring Site 14

Hickory Flats Dr – Single Family Residential

Noise Meter 14.1 Looking Southeast

Noise Meter 14.2 Looking South

Noise Meter 14.3 Looking South

HNTB

NOISE MEASUREMENT DATA SHEET

PROJECT: I-4400/I-4700 JOB #: 41470 BY: T. J.

SITE: M15.1-3 DATE: 6-2-2014 TIME: 11:00-11:20

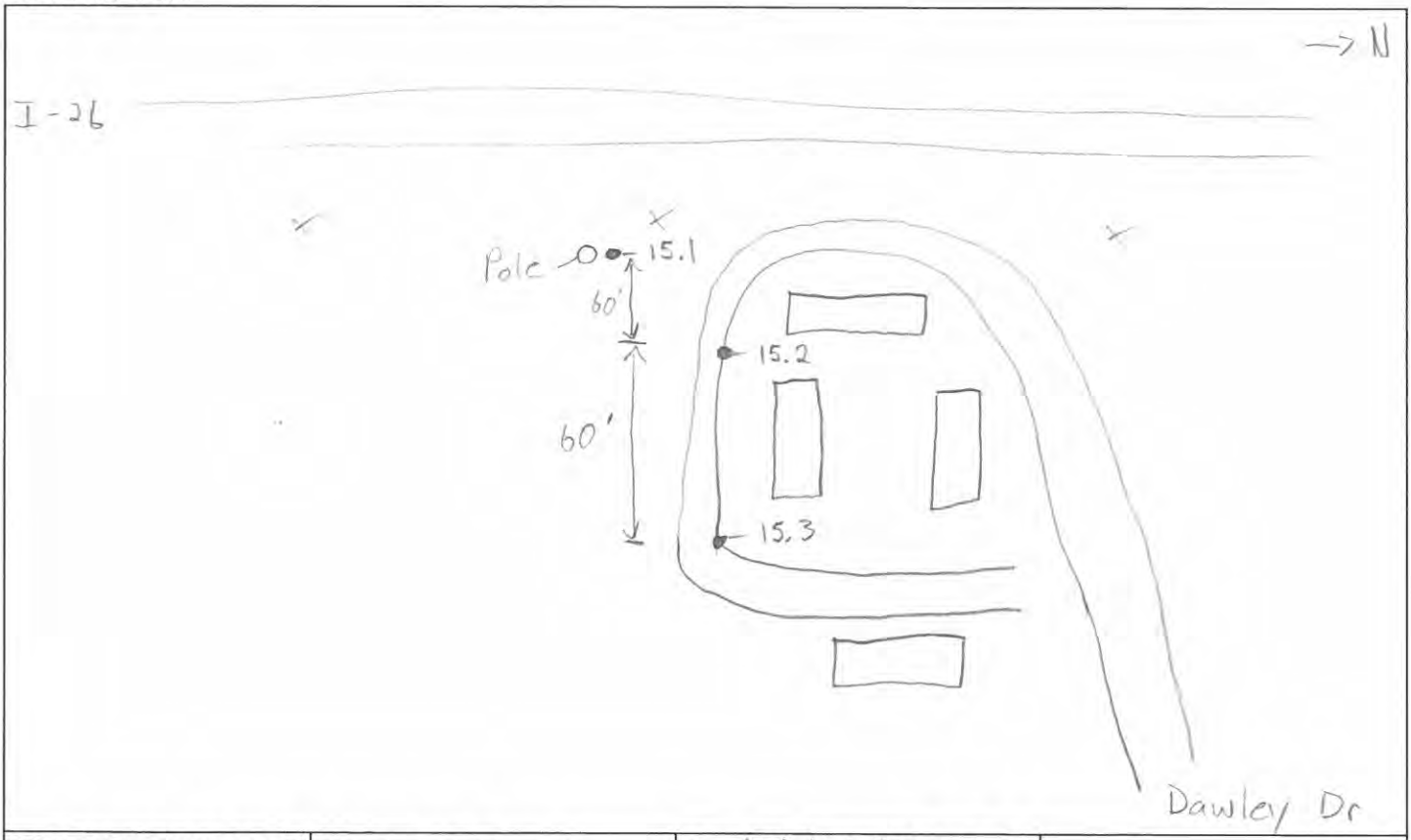
CALIBRATION: 94.0 dB.

RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.

TRAFFIC DATA		
ROAD (Name/Dir)		I-26
AUTOS	___EB ___WB	463 NB 489 SB
MED TRKS	___EB ___WB	27 NB 12 SB
HVY TRKS	___EB ___WB	60 NB 75 SB
BUS	___EB ___WB	0 NB 1 SB
MOTORCYCLE	___EB ___WB	2 NB 3 SB
SPEED		

EQUIPMENT	
INSTRUMENT	See Site 0-1-3
SLM MANUFACTURER	
SLM MODEL	
SLM	
PREAMPLIFIER – Type 1206	
MICROPHONE – Type 1225	
CALIBRATOR – Type 1251	

SITE SKETCH



MEASUREMENT DATA	Duration 20 min.	Leq (dB) 61.6, 58.1, 56.0	

WEATHER DATA WIND SPEED (MPH) calm DIR. TEMP. 70° HUMIDITY 41% CLOUD COVER Scattered clouds

BACKGROUND NOISE Birds

MAJOR SOURCES

UNUSUAL EVENTS Car door shutting (16') Dog (17') Loud bird (20')

OTHER NOTES

Pictures: 15.1, 15.2, 15.3

Noise Monitoring Site 15

Dawley Dr – Single Family Residential

Noise Meter 15.1 Looking Southwest

Noise Meter 15.2 Looking West

Noise Meter 15.3 Looking Southwest

NOISE MEASUREMENT DATA SHEET

PROJECT: I-4400/I-4700 JOB #: 41470 BY: T. J.

SITE: M16.1 - 16.3 DATE: 6-2-2014 TIME: 9:40 - 10:00

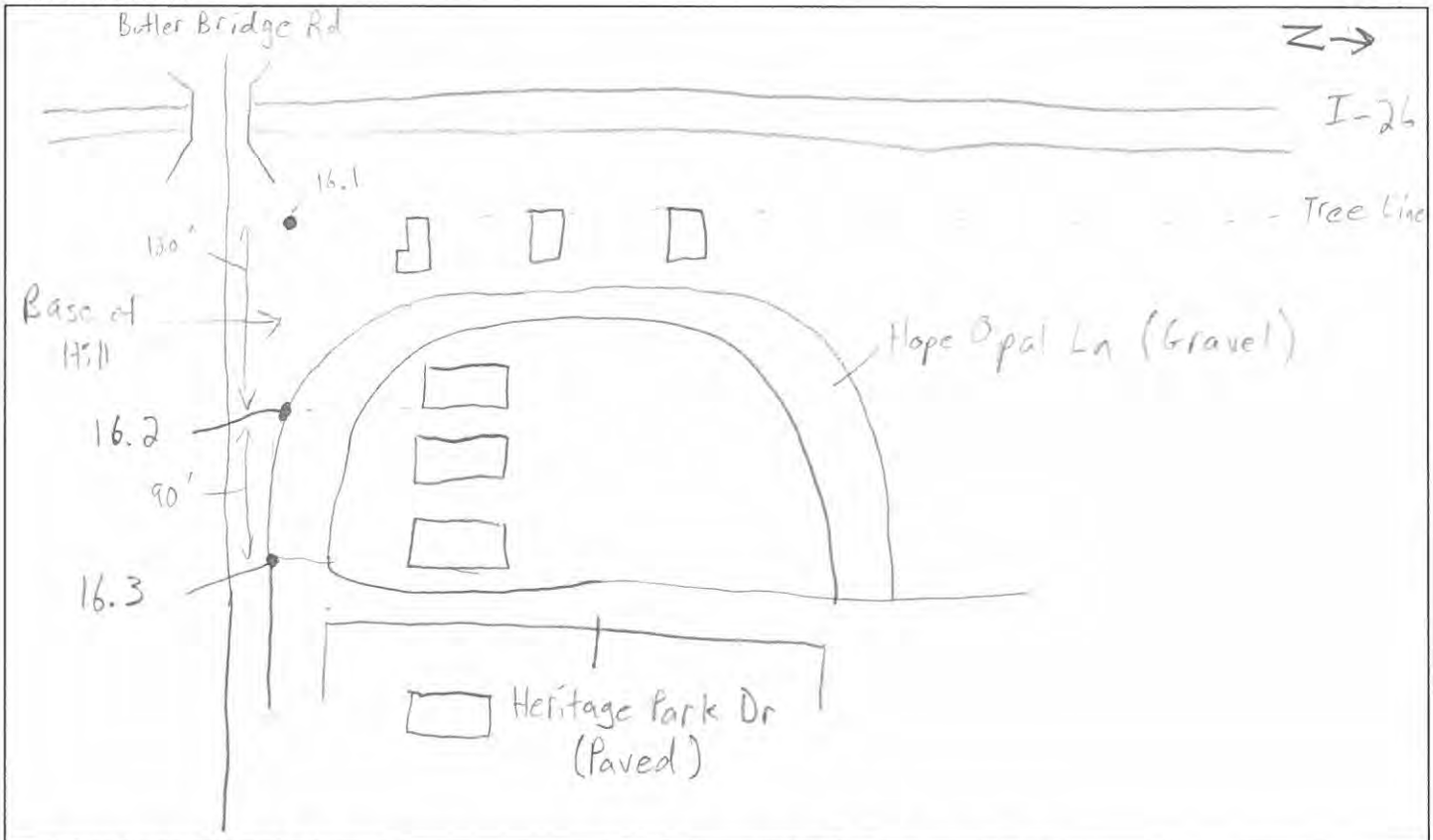
CALIBRATION: 94.0 dB.

RESPONSE: FAST / [SLOW] WEIGHTING: [A] / C / LIN.

TRAFFIC DATA		
ROAD (Name/Dir)	Butler Bridge Rd	I-26
AUTOS	69 EB 57 WB	369 NB 388 SB
MED TRKS	1 EB 2 WB	6 NB 7 SB
HVY TRKS	2 EB 2 WB	83 NB 52 SB
BUS	0 EB 0 WB	2 NB 2 SB
MOTORCYCLE	2 EB 0 WB	0 NB 5 SB
SPEED	35 mph	65 mph

EQUIPMENT	
INSTRUMENT	See Site 0.1-3
SLM MANUFACTURER	
SLM MODEL	
SLM	
PREAMPLIFIER – Type 1206	
MICROPHONE – Type 1225	
CALIBRATOR – Type 1251	

SITE SKETCH



MEASUREMENT DATA	Duration 20 minutes	Leq (dB) 69.3, 63.3, 62.3	

WEATHER DATA WIND SPEED (MPH) Calm DIR. TEMP. 60° HUMIDITY 55% CLOUD COVER Scattered clouds

BACKGROUND NOISE

MAJOR SOURCES

UNUSUAL EVENTS Airplane flyover (16')

OTHER NOTES

Picture order: 16.3, 16.2, 16.1

Noise Monitoring Site 16

Hope Opal Ln – Single Family Residential

Noise Meter 16.1 Looking West

Noise Meter 16.2 Looking West

Noise Meter 16.3 Looking West

HNTB

NOISE MEASUREMENT DATA SHEET

PROJECT: I-4400/4700 JOB #: 41470 BY: Trey Jordan

SITE: 17.1 - 17.3 DATE: 6/2/14 TIME: 14:35 - 14:55

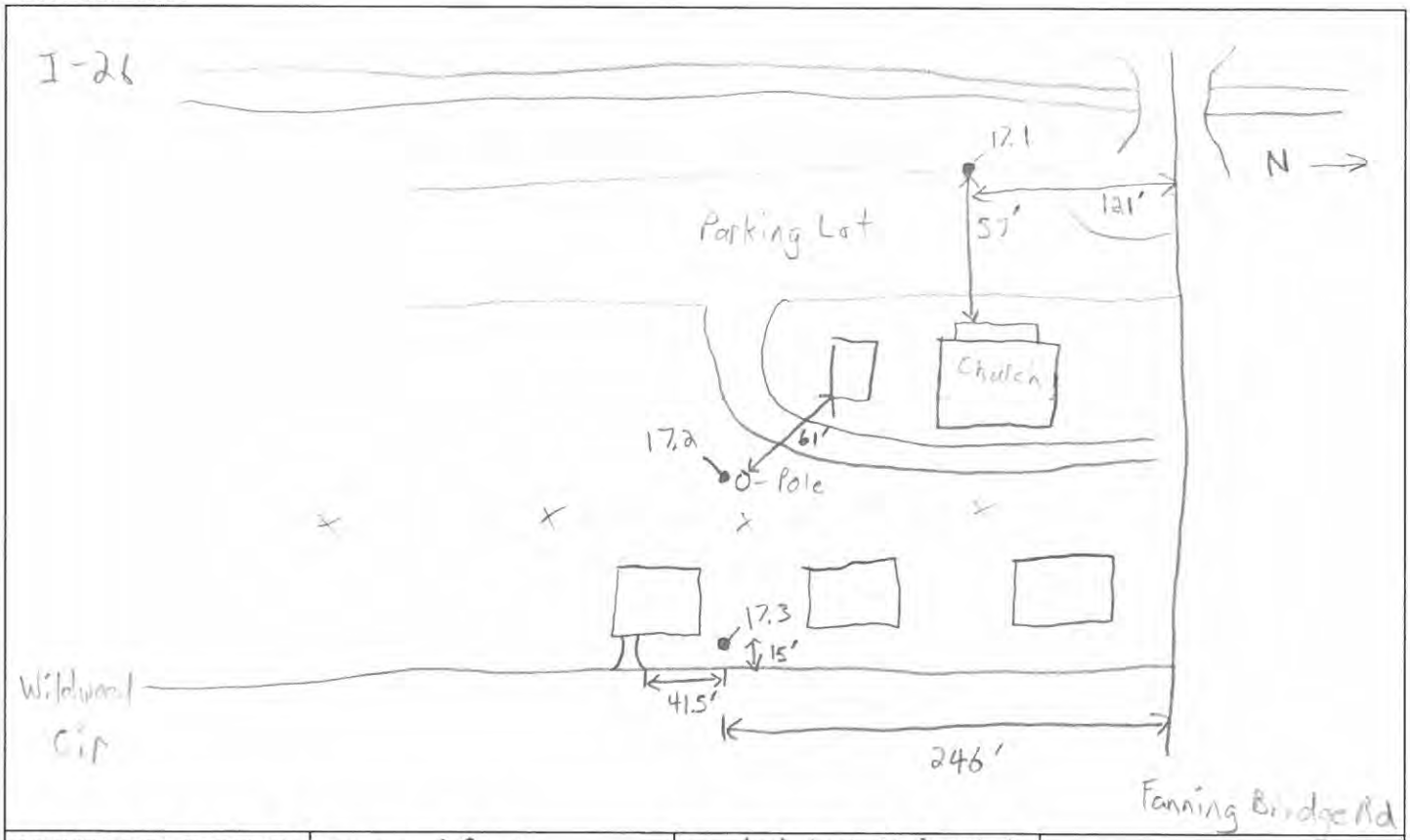
CALIBRATION: 94.0 dB.

RESPONSE: FAST / [SLOW] WEIGHTING: [A] / C / LIN.

TRAFFIC DATA		
ROAD (Name/Dir)	Fanning Bridge Rd	I-26
AUTOS	59 EB 53 WB	520 NB 561 SB
MED TRKS	0 EB 1 WB	19 NB 12 SB
HVY TRKS	0 EB 0 WB	84 NB 75 SB
BUS	0 EB 0 WB	0 NB 0 SB
MOTORCYCLE	0 EB 0 WB	2 NB 3 SB
SPEED	35	65

EQUIPMENT	
INSTRUMENT	See Site 0.1-3
SLM MANUFACTURER	
SLM MODEL	
SLM	
PREAMPLIFIER – Type 1206	
MICROPHONE – Type 1225	
CALIBRATOR – Type 1251	

SITE SKETCH



MEASUREMENT DATA	Duration 20 min	Leq (dB) 68.6, 61.8, 54.6	

WEATHER DATA WIND SPEED (MPH) 1 DIR. SE TEMP. 75° HUMIDITY 68% CLOUD COVER Scattered Clouds

BACKGROUND NOISE

MAJOR SOURCES

UNUSUAL EVENTS

OTHER NOTES

Picture order: 17.1, 17.2, 17.3

Noise Monitoring Site 17

Wildwood Cir – Single Family Residential

Noise Meter 17.1 Looking Northwest

Noise Meter 17.2 Looking Northwest

Noise Meter 17.3 Looking West

HNTB

NOISE MEASUREMENT DATA SHEET

PROJECT: I-4400/4700 JOB #: 41470 BY: Trey Jordan

SITE: M 18.1-18.3 DATE: 6/2/14 TIME: 13:30-13:50

CALIBRATION: 94.0 dB.

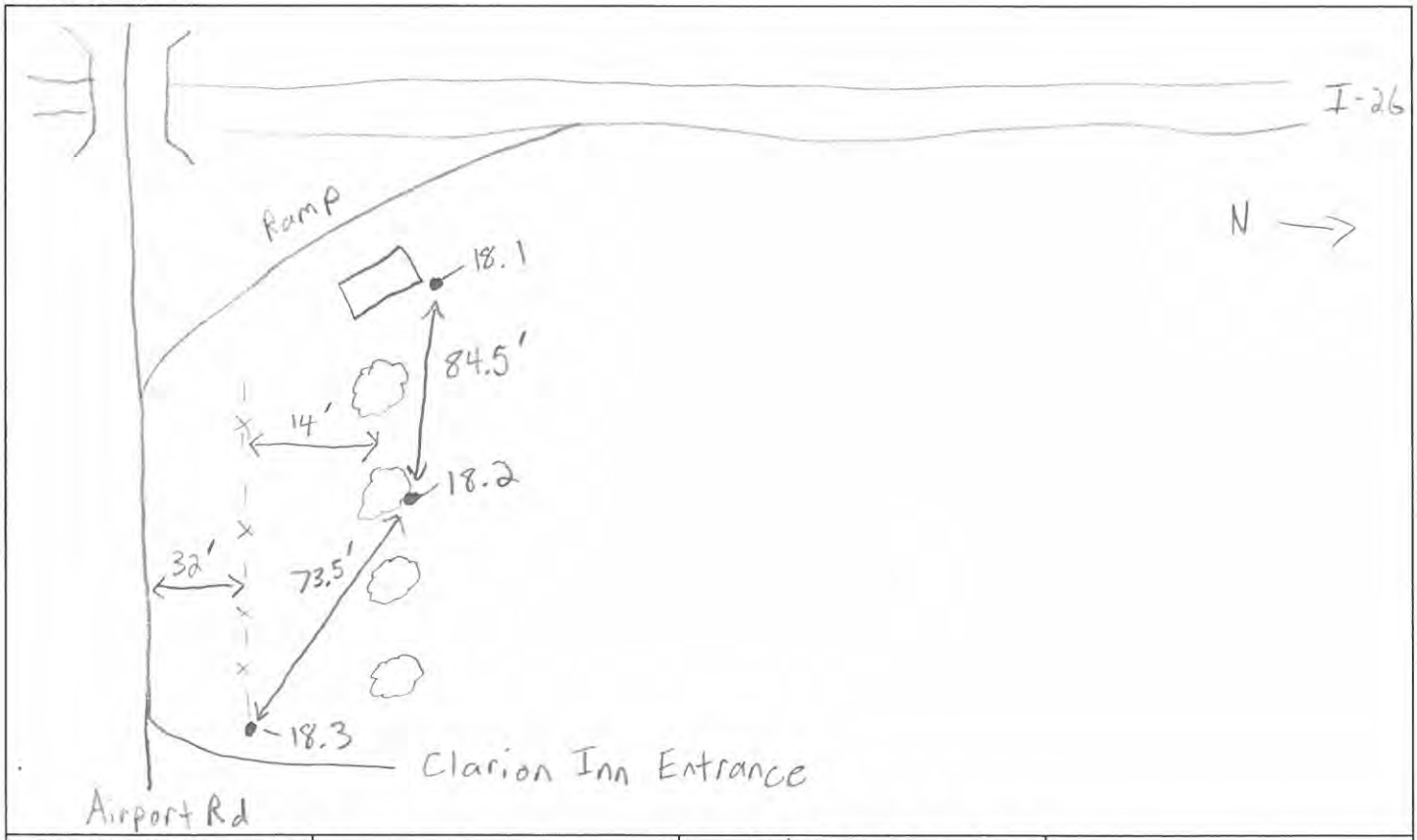
RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.

TRAFFIC DATA		
ROAD (Name/Dir)	Airport Rd	I-26
AUTOS	370 EB 312 WB	367 NB 365 SB
MED TRKS	8 EB 12 WB	21 NB 17 SB
HVY TRKS	12 EB 12 WB	87 NB 35 SB
BUS	1 EB 1 WB	0 NB 0 SB
MOTORCYCLE	0 EB 2 WB	3 NB 5 SB
SPEED		

RAMP 206 9 9 2 1

EQUIPMENT	
INSTRUMENT	See Site 0.1-3
SLM MANUFACTURER	
SLM MODEL	
SLM	
PREAMPLIFIER – Type 1206	
MICROPHONE – Type 1225	
CALIBRATOR – Type 1251	

SITE SKETCH



MEASUREMENT DATA	Duration 20 min	Leq (dB) 67.9, 65.8, 68.0	

WEATHER DATA WIND SPEED (MPH) Calm DIR. TEMP. 73° HUMIDITY 74 % CLOUD COVER Scattered Clouds

BACKGROUND NOISE

MAJOR SOURCES

UNUSUAL EVENTS

OTHER NOTES New hotel construction nearby

Noise Monitoring Site 18

Airport Rd – Commercial

Noise Meter 18.1 Looking South

Noise Meter 18.2 Looking Southwest

Noise Meter 18.3 Looking Southwest

HNTB

NOISE MEASUREMENT DATA SHEET

PROJECT: I-4400/4700 JOB #: 41470 BY: Trey Jordan

SITE: 19.1-3 DATE: 6/2/14 TIME: 15:50 - 16:10

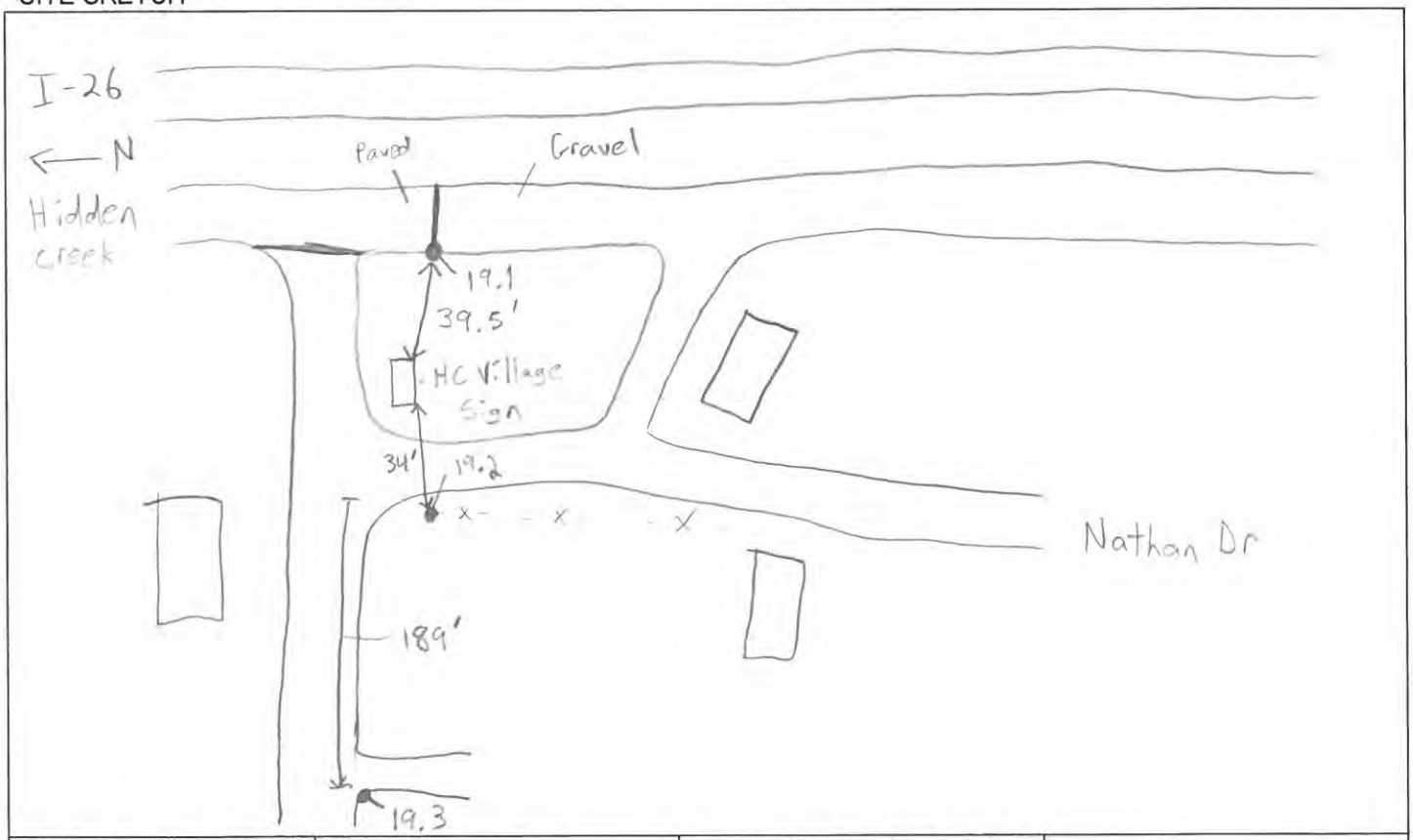
CALIBRATION: 94.0 dB.

RESPONSE: FAST / [SLOW] WEIGHTING: [A] / C / LIN.

TRAFFIC DATA		
ROAD (Name/Dir)		I-26
AUTOS	___EB ___WB	800 NB 745 SB
MED TRKS	___EB ___WB	20 NB 15 SB
HVY TRKS	___EB ___WB	104 NB 65 SB
BUS	___EB ___WB	0 NB 0 SB
MOTORCYCLE	___EB ___WB	5 NB 5 SB
SPEED		

EQUIPMENT	
INSTRUMENT	See Site 0.1-3
SLM MANUFACTURER	
SLM MODEL	
SLM	
PREAMPLIFIER – Type 1206	
MICROPHONE – Type 1225	
CALIBRATOR – Type 1251	

SITE SKETCH



MEASUREMENT DATA	Duration 20 min	Leq (dB) 67.5, 66.0, 62.0	

WEATHER DATA WIND SPEED (MPH) 3 mph DIR. NE TEMP. 77° HUMIDITY 37% CLOUD COVER Scattered Clouds

BACKGROUND NOISE

MAJOR SOURCES

UNUSUAL EVENTS Go Kart (4'), Dog Barking (13'), Loud Car (18')

OTHER NOTES

Noise Monitoring Site 19

Hidden Creek Dr – Single Family Residential

Noise Meter 19.1 Looking West

Noise Meter 19.2 Looking East

Noise Meter 19.3 Looking East

HNTB

NOISE MEASUREMENT DATA SHEET

PROJECT: I-4460/4700 JOB #: 41470 BY: Trey Jordan

SITE: 20.1-3 DATE: 6/2/14 TIME: 16:55 - 17:15

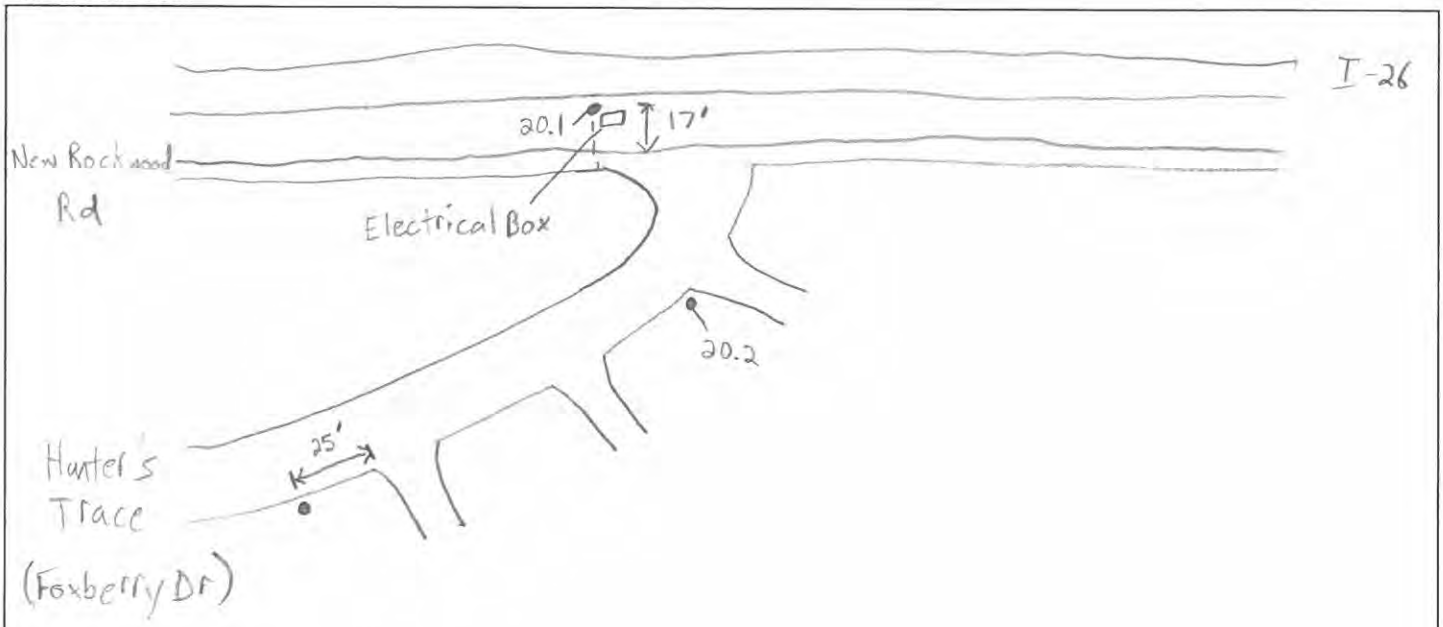
CALIBRATION: 94.0 dB.

RESPONSE: FAST / [SLOW] WEIGHTING: [A] / C / LIN.

TRAFFIC DATA		
ROAD (Name/Dir)		I-26
AUTOS	22 NB EB 10 ~~WB~~	831 NB 858 SB
MED TRKS	2 EB 0 WB	16 NB 17 SB
HVY TRKS	3 EB 0 WB	110 NB 52 SB
BUS	0 EB 0 WB	0 NB 0 SB
MOTORCYCLE	2 EB 0 WB	2 NB 2 SB
SPEED	35	65

EQUIPMENT	
INSTRUMENT	See Site 0.1-3
SLM MANUFACTURER	
SLM MODEL	
SLM	
PREAMPLIFIER – Type 1206	
MICROPHONE – Type 1225	
CALIBRATOR – Type 1251	

SITE SKETCH



MEASUREMENT DATA	Duration 20 min	Leq (dB) 76.0, 66.4, 62.3	

WEATHER DATA WIND SPEED (MPH) Calm DIR. TEMP. 78° HUMIDITY 37% CLOUD COVER Scattered Clouds

BACKGROUND NOISE

MAJOR SOURCES

UNUSUAL EVENTS Motorcycle (7'), Truck Idling (14')

OTHER NOTES

Noise Monitoring Site 20

Foxberry Dr – Single Family Residential

Noise Meter 20.1 Looking West

Noise Meter 20.2 Looking West

Noise Meter 20.3 Looking Northwest

HNTB

NOISE MEASUREMENT DATA SHEET

PROJECT: I-4400/4700 JOB #: 41470 BY: Trey Jordan

SITE: 21.1-3 DATE: 6/2/14 TIME: 18:05-18:25

CALIBRATION: 94.0 dB.

RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.

TRAFFIC DATA		
ROAD (Name/Dir)		I-26
AUTOS	___EB ___WB	520 NB 494 SB
MED TRKS	___EB ___WB	16 NB 27 SB
HVY TRKS	___EB ___WB	74 NB 60 SB
BUS	___EB ___WB	0 NB 0 SB
MOTORCYCLE	___EB ___WB	2 NB 1 SB
SPEED		65

RAMP 152 1 0 1 0

EQUIPMENT	
INSTRUMENT	See Site 0.1-3
SLM MANUFACTURER	
SLM MODEL	
SLM	
PREAMPLIFIER – Type 1206	
MICROPHONE – Type 1225	
CALIBRATOR – Type 1251	

SITE SKETCH

MEASUREMENT DATA	Duration 20 min	Leq (dB) 66.8, 59.1, 54.5	

WEATHER DATA WIND SPEED (MPH) Calm DIR. TEMP. 76° HUMIDITY 37% CLOUD COVER Clear

BACKGROUND NOISE

MAJOR SOURCES

UNUSUAL EVENTS People chatting (11')

OTHER NOTES New health center construction nearby

Noise Monitoring Site 21

Skyland Inn Dr – Commercial

Noise Meter 21.1 Looking West

Noise Meter 21.2 Looking West

Noise Meter 21.3 Looking West

HNTB

NOISE MEASUREMENT DATA SHEET

PROJECT: I-4400/4700 JOB #: 41470 BY: Trey Jordan

SITE: 22.1-3 DATE: 6/3/14 TIME: 9:05-9:25

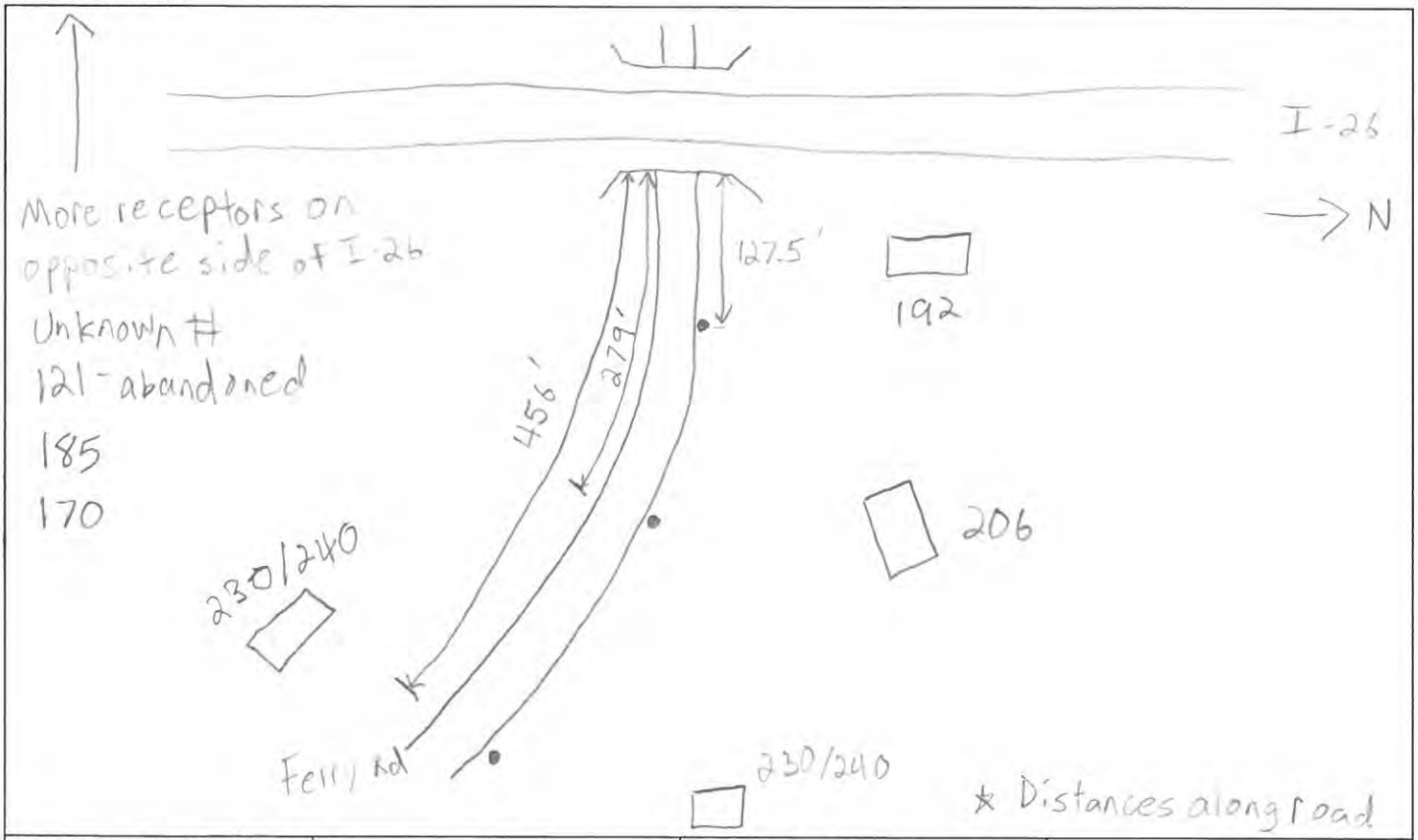
CALIBRATION: 94.0 dB.

RESPONSE: FAST / [SLOW] WEIGHTING: [A] / C / LIN.

TRAFFIC DATA		
ROAD (Name/Dir)		I-26
AUTOS	___EB ___WB	572 NB 544 SB
MED TRKS	___EB ___WB	27 NB 26 SB
HVY TRKS	___EB ___WB	68 NB 48 SB
BUS	___EB ___WB	0 NB 0 SB
MOTORCYCLE	___EB ___WB	1 NB 0 SB
SPEED		65

EQUIPMENT	
INSTRUMENT	See Site 0.1-3
SLM MANUFACTURER	
SLM MODEL	
SLM	
PREAMPLIFIER – Type 1206	
MICROPHONE – Type 1225	
CALIBRATOR – Type 1251	

SITE SKETCH



MEASUREMENT DATA	Duration 20 min	Leq (dB) 62.1, 59.4, 56.6	

WEATHER DATA WIND SPEED (MPH) Calm DIR. TEMP. 70° HUMIDITY 41% CLOUD COVER Overcast

BACKGROUND NOISE

MAJOR SOURCES I-26

UNUSUAL EVENTS Car (8') Car (14' - 22.1 only)

OTHER NOTES

Noise Monitoring Site 22

Ferry Rd – Single Family Residential

Noise Meter 22.1 Looking Southwest

Noise Meter 22.2 Looking North

Noise Meter 22.3 Looking West

NOISE MEASUREMENT DATA SHEET

PROJECT: I-4400/4700 JOB #: 41470 BY: Trey Jordan

SITE: 23.1-3 DATE: 6/3/14 TIME: 10:15 - 10:35

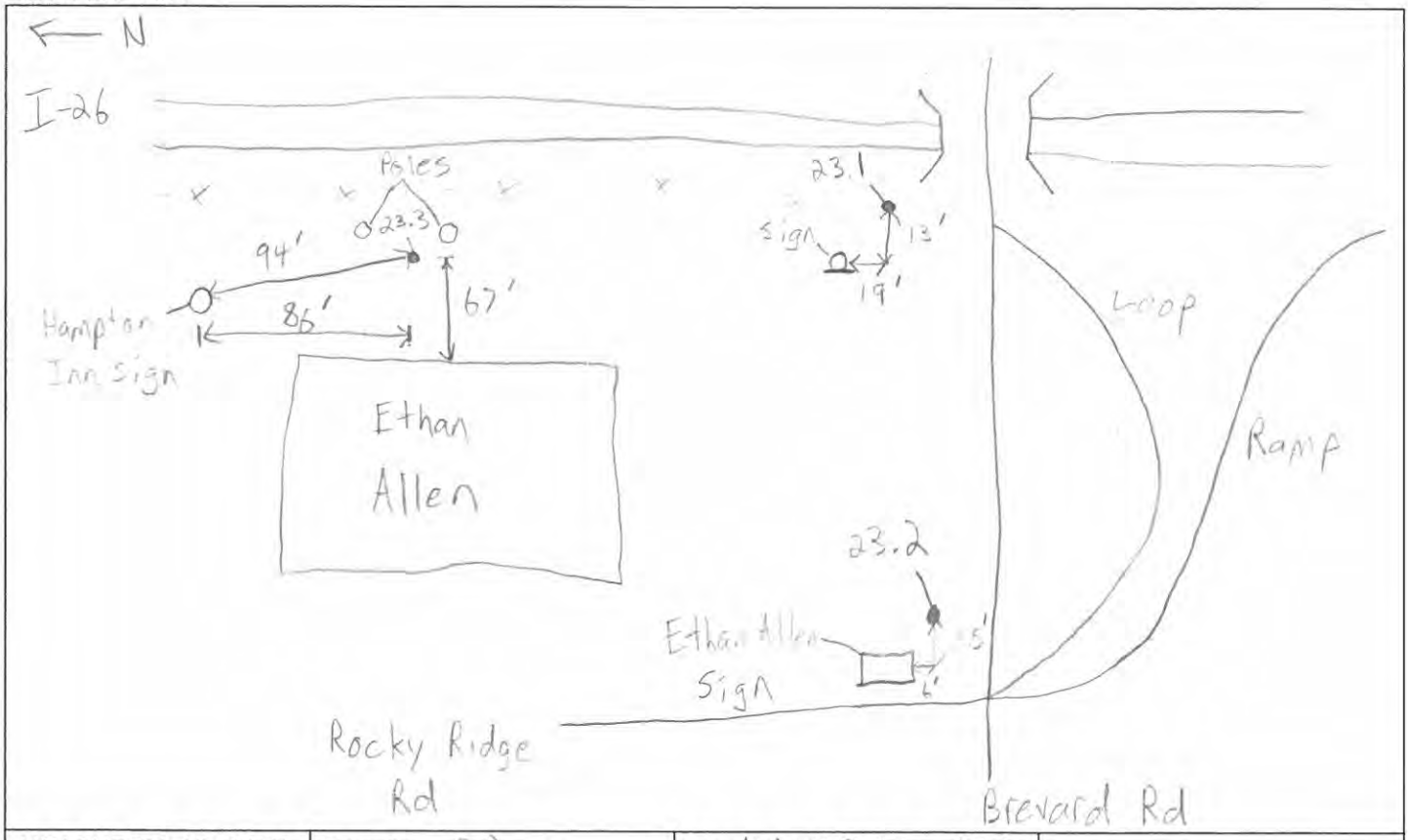
CALIBRATION: 94.0 dB.

RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.

LOOP	TRAFFIC DATA			RAMP
	ROAD (Name/Dir)	Brevard Rd	I-26	
151	AUTOS	231 EB 162 WB	551 NB 483 SB	71
2	MED TRKS	11 EB 4 WB	27 NB 16 SB	3
1	HVY TRKS	6 EB 8 WB	81 NB 84 SB	1
1	BUS	0 EB 0 WB	6 NB 0 SB	0
2	MOTORCYCLE	0 EB 0 WB	1 NB 1 SB	1
	SPEED	45	65	

EQUIPMENT	
INSTRUMENT	See Site 0.1-3
SLM MANUFACTURER	
SLM MODEL	
SLM	
PREAMPLIFIER – Type 1206	
MICROPHONE – Type 1225	
CALIBRATOR – Type 1251	

SITE SKETCH



MEASUREMENT DATA	Duration 30 min	Leq (dB) 70.3, 69.0, 65.2	

WEATHER DATA WIND SPEED (MPH) 3 DIR. NE TEMP. 70° HUMIDITY 76% CLOUD COVER Mostly Cloudy

BACKGROUND NOISE

MAJOR SOURCES

UNUSUAL EVENTS

OTHER NOTES

Picture order: 23.3, 23.2, 23.1

Noise Monitoring Site 23

Brevard Rd – Commercial

Noise Meter 23.1 Looking Southeast

Noise Meter 23.2 Looking Northeast

Noise Meter 23.3 Looking Northwest

HNTB

NOISE MEASUREMENT DATA SHEET

PROJECT: I-4400/4700 JOB #: 41470 BY: Trey Jordan

SITE: 24.1-3 DATE: 6/3/14 TIME: 11:55 - 12:15

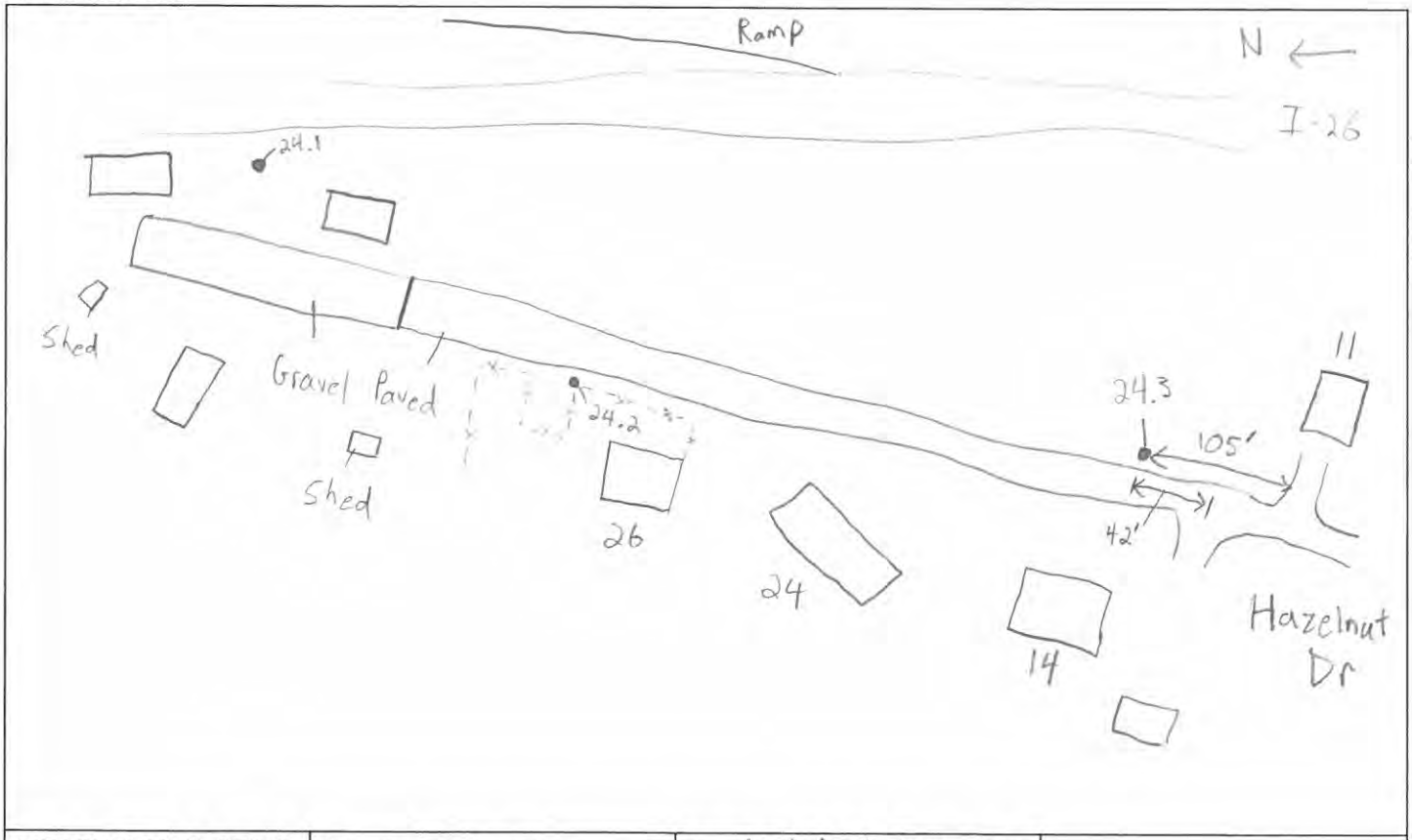
CALIBRATION: 94.0 dB.

RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.

TRAFFIC DATA			RAMP
ROAD (Name/Dir)		I-26	
AUTOS	___EB ___WB	468 NB 600 SB	98
MED TRKS	___EB ___WB	16 NB 26 SB	5
HVY TRKS	___EB ___WB	69 NB 88 SB	6
BUS	___EB ___WB	1 NB 0 SB	1
MOTORCYCLE	___EB ___WB	3 NB 3 SB	0
SPEED		65	

EQUIPMENT	
INSTRUMENT	See Site 0.1-3
SLM MANUFACTURER	
SLM MODEL	
SLM	
PREAMPLIFIER – Type 1206	
MICROPHONE – Type 1225	
CALIBRATOR – Type 1251	

SITE SKETCH



MEASUREMENT DATA	Duration 20 min	Leq (dB) 63.9, 64.3, 60.2	

WEATHER DATA WIND SPEED (MPH) 3 DIR. SE TEMP. 72° HUMIDITY 75% CLOUD COVER Scattered Clouds

BACKGROUND NOISE

MAJOR SOURCES

UNUSUAL EVENTS Car (18'/19')

OTHER NOTES

Noise Monitoring Site 24

Hazelnut Dr – Single Family Residential

Noise Meter 24.1 Looking Southeast

Noise Meter 24.2 Looking Southwest

Noise Meter 24.3 Looking North

HNTB

NOISE MEASUREMENT DATA SHEET

PROJECT: I-4400/4700 JOB #: 41470 BY: Trey Jordan

SITE: 25.1-3 DATE: 6/5/14 TIME: 14:40 - 15:00

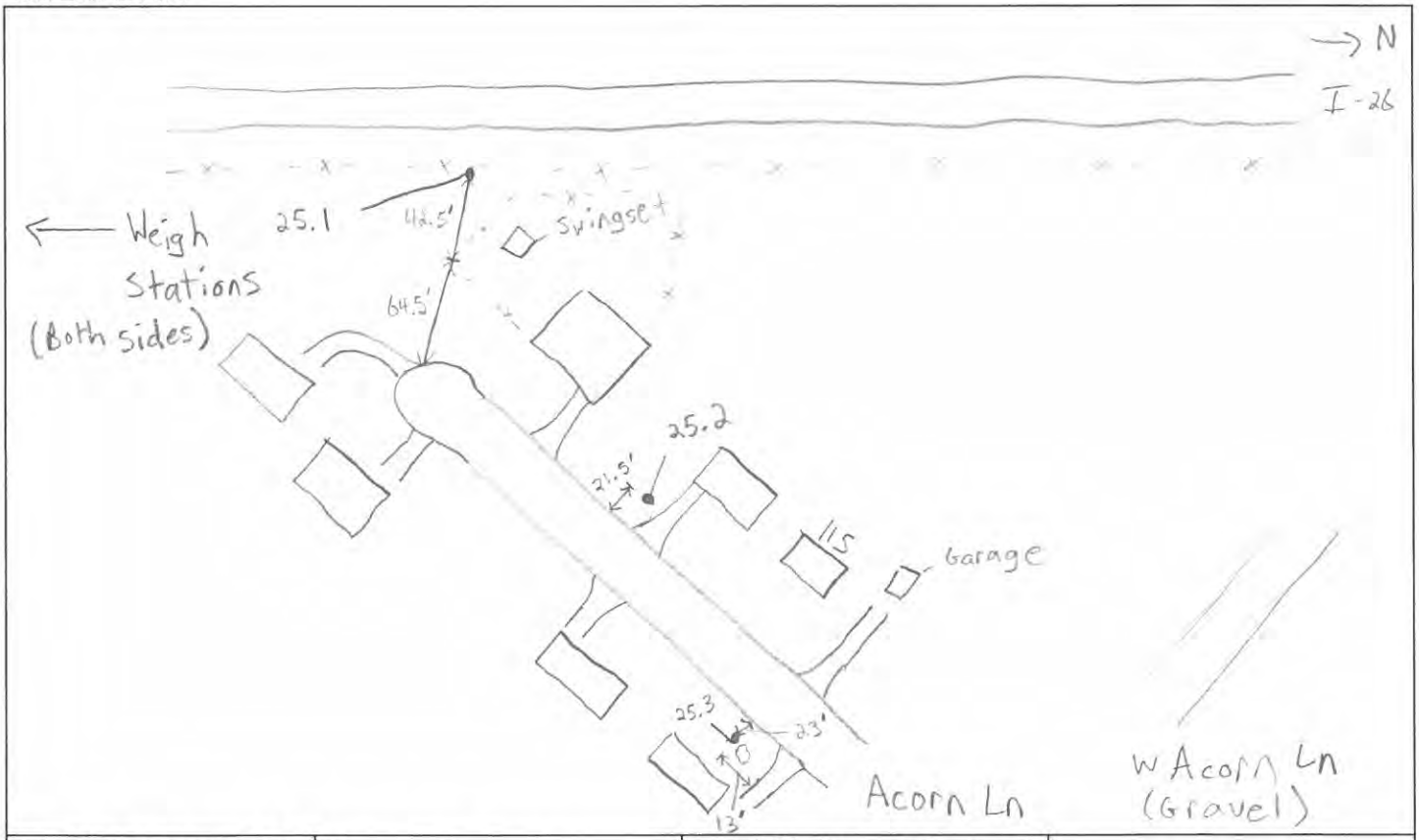
CALIBRATION: 94.0 dB.

RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.

TRAFFIC DATA		
ROAD (Name/Dir)		I-26
AUTOS	___EB ___WB	578 NB 574 SB
MED TRKS	___EB ___WB	21 NB 15 SB
HVY TRKS	___EB ___WB	64 NB 63 SB
BUS	___EB ___WB	0 NB 0 SB
MOTORCYCLE	___EB ___WB	3 NB 0 SB
SPEED		65

EQUIPMENT	
INSTRUMENT	See Site 0.1-3
SLM MANUFACTURER	
SLM MODEL	
SLM	
PREAMPLIFIER – Type 1206	
MICROPHONE – Type 1225	
CALIBRATOR – Type 1251	

SITE SKETCH



MEASUREMENT DATA	Duration 20 min	Leq (dB) 69.5, 61.9, 60.0	

WEATHER DATA WIND SPEED (MPH) 5 DIR. SE TEMP. 81° HUMIDITY 59% CLOUD COVER Scattered Cloud

BACKGROUND NOISE Birds

MAJOR SOURCES

UNUSUAL EVENTS Siren (7')

OTHER NOTES

Pictures: 25.1, 25.2, 25.3

Noise Monitoring Site 25

Acorn Dr – Single Family Residential

Noise Meter 25.1 Looking Northwest

Noise Meter 25.2 Looking South

Noise Meter 25.3 Looking Southeast

NOISE MEASUREMENT DATA SHEET

PROJECT: I-4400/4700 JOB #: 41470 BY: Trey Jordan

SITE: 26.1-3 DATE: 6/5/14 TIME: 16:10-16:30

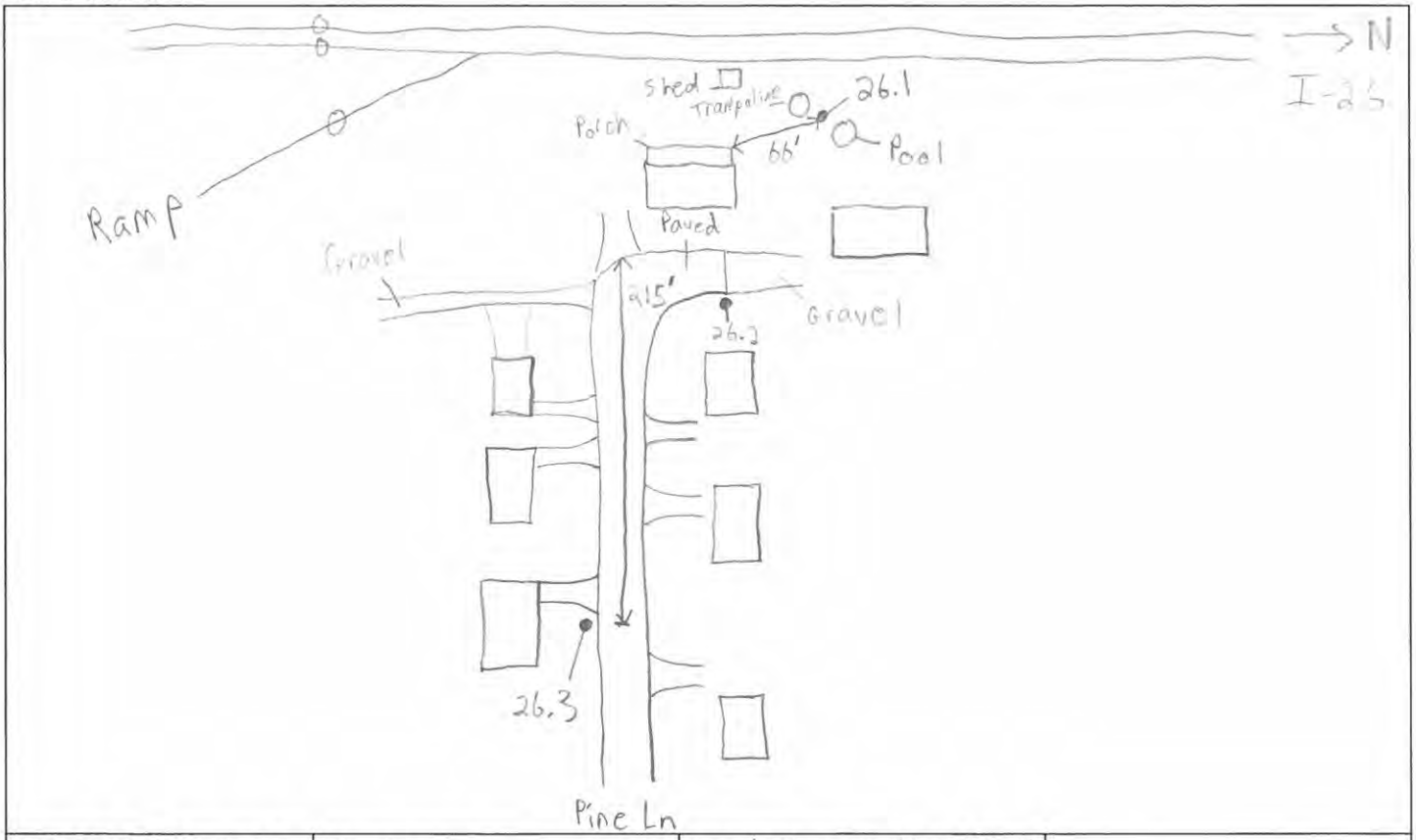
CALIBRATION: 94.0 dB.

RESPONSE: FAST / SLOW NB WEIGHTING: A / C / LIN.

TRAFFIC DATA			RAMP
ROAD (Name/Dir)		I-26	
AUTOS	___EB ___WB	837 NB 892 SB	145
MED TRKS	___EB ___WB	17 NB 30 SB	4
HVY TRKS	___EB ___WB	62 NB 65 SB	4
BUS	___EB ___WB	0 NB 1 SB	0
MOTORCYCLE	___EB ___WB	4 NB 5 SB	0
SPEED		60	

EQUIPMENT	
INSTRUMENT	See Site 0.1-3
SLM MANUFACTURER	
SLM MODEL	
SLM	
PREAMPLIFIER – Type 1206	
MICROPHONE – Type 1225	
CALIBRATOR – Type 1251	

SITE SKETCH



MEASUREMENT DATA	Duration 20 min	Leq (dB) 64.0, 61.5, 56.5	

WEATHER DATA WIND SPEED (MPH) 2 DIR. S TEMP. 76° HUMIDITY 74% CLOUD COVER Scattered Clouds

BACKGROUND NOISE

MAJOR SOURCES

UNUSUAL EVENTS Man shouting (3'), Dog (10'), Dog (16'), Kids talking (19-20')

OTHER NOTES

Pictures: Wrong, 26.3, 26.2, 26.1

Noise Monitoring Site 26

Pine Ln – Single Family Residential

Noise Meter 26.1 Looking Southeast

Noise Meter 26.2 Looking Northwest

Noise Meter 26.3 Looking West

Scantek, Inc.
CALIBRATION LABORATORY

ISO 17025: 2005, ANSI/NCSL Z540:1994 Part 1
ACCREDITED by NVLAP (an ILAC MRA signatory)

NVLAP®

NVLAP Lab Code: 200625-0

Calibration Certificate No.30299

Instrument: **Sound Level Meter**
Model: **NL32**
Manufacturer: **Rion**
Serial number: **01161899**
Tested with: **Microphone UC53A s/n 311127**
Preamplifier NH21 s/n 21932
Type (class): **1**
Customer: **Scantek, Inc.**
Tel/Fax: **410-290-7726 / 410-290-9167**

Date Calibrated: **1/7/2014** *Cal Due:* **1/7/2015**

Status:	Received	Sent
In tolerance:	X	X
Out of tolerance:		
See comments:		

Contains non-accredited tests: __Yes X No
Calibration service: __ Basic X Standard
Address: **6430 Dobbin Road, Suite C, Columbia, MD 21045**

Tested in accordance with the following procedures and standards:
Calibration of Sound Level Meters, Scantek Inc., Rev. 6/22/2012
SLM & Dosimeters – Acoustical Tests, Scantek Inc., Rev. 7/6/2011

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
483B-Norsonic	SME Cal Unit	31052	Oct 7, 2013	Scantek, Inc./ NVLAP	Oct 7, 2014
DS-360-SRS	Function Generator	33584	Sep 30, 2013	ACR Env./ A2LA	Sep 30, 2015
34401A-Agilent Technologies	Digital Voltmeter	US36120731	Sep 30, 2013	ACR Env. / A2LA	Sep 30, 2014
HM30-Thommen	Meteo Station	1040170/39633	Sep 30,2013	ACR Env./ A2LA	Sep 30, 2014
PC Program 1019 Norsonic	Calibration software	v.5.2	Validated Mar 2011	Scantek, Inc.	-
1251-Norsonic	Calibrator	30878	Nov 8, 2013	Scantek, Inc./ NVLAP	Nov 8, 2014

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK).

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
24.2 °C	101.06 kPa	30.0 %RH

Calibrated by:	Lydon Dawkins	**Authorized signatory:**	Mariana Buzduga
Signature	Lydon Dawkins	Signature	
Date	01/7/2014	Date	1/8/2014

Calibration Certificates or Test Reports shall not be reproduced, except in full, without written approval of the laboratory.
This Calibration Certificate or Test Reports shall not be used to claim product certification, approval or endorsement by NVLAP, NIST, or any agency of the federal government.

Results summary: Device complies with following clauses of mentioned specifications:

CLAUSES [1] FROM IEC/ANSI STANDARDS REFERENCED IN PROCEDURES:	RESULT[2,3]	EXPANDED UNCERTAINTY (coverage factor 2) [dB]
CALIBRATION OF SOUND LEVEL METER - ANSI S1.4 CLAUSE 3.2	Passed	0.2
INPUT AMPLIFIER TEST: GAIN TEST / ATTENUATOR SETTING - ANSI S1.4-1983 CLAUSE 5.3	Passed	0.25
LEVEL LINEARITY TEST - ANSI S1.4-1983, CLAUSE 6.9 & 6.10	Passed	0.25
WEIGHTING NETWORK TEST: A NETWORK - ANSI S1.4-1983 CLAUSE 8.2.1	Passed	0.25
WEIGHTING NETWORK TEST: C NETWORK - ANSI S1.4-1983 CLAUSE 8.2.1	Passed	0.25
WEIGHTING NETWORK TEST: LINEAR NETWORK - ANSI S1.4-1983 CLAUSE 8.2.1	Passed	0.25
OVERLOAD DETECTOR TEST: A-NETWORK - ANSI S1.4-1983 CLAUSE 8.3.1	Passed	0.25
F/S/I/PEAK TEST: STEADY STATE RESPONSE - ANSI S1.4 1983 CLAUSE 6.4	Passed	0.25
FAST-SLOW TEST: OVERSHOOT TEST - ANSI S1.4 1983 CLAUSE 8.4.1	Passed	0.25
FAST-SLOW TEST: SINGLE SINE WAVE BURST - ANSI S1.4 1983 CLAUSE 8.4.1 & 8.4.3	Passed	0.25
PEAK DETECTOR TEST, SINGLE SQUARE WAVE BURST - ANSI S1.4 1983 CLAUSE 8.4.4	Passed	0.25
RMS DETECTOR TEST: CREST FACTOR TEST - ANSI S1.4-1983 CLAUSE 8.4.2	Passed	0.25
RMS DETECTOR TEST: CONTINUOUS SINE WAVE BURST - ANSI S1.4-1983 CLAUSE 8.4.2	Passed	0.25
TIME AVERAGING TEST: AVERAGING FUNCTIONS - ANSI S1.43 CLAUSE 9.3.2	Passed	0.25
LINEARITY TEST - ANSI S1.43 CLAUSE 9.3.3	Passed	0.15
SUMMATION OF ACOUSTIC TESTS - ANSI S1.4 CLAUSE 5 USING ACTUATOR	Passed	0.2-0.5

[1] The results of this calibration apply only to the instrument type with serial number identified in this report.

[2] Parameters are certified at actual environmental conditions.

[3] The tests marked with (*) are not covered by the current NVLAP accreditation.

Comments: The instrument was tested and met all specifications found in the referenced procedures.

Note: The instrument was tested for the parameters listed in the table above, using the test methods described in the listed standards. All tests were performed around the reference conditions. The test results were compared with the manufacturer's or with the standard's specifications, whichever are larger.
Compliance with any standard cannot be claimed based solely on the periodic tests.

Tests made with the following attachments to the instrument:

Microphone: Rion UC53A s/n 311127 for acoustical test
Preamplifier: Rion NH21 s/n 21932 for all tests
Other: line adaptor ADP005 (18pF) for electrical tests
Accompanying acoustical calibrator: none
Windscreen: none

Measured Data: in Test Report # 30299 of 8 + 1 pages.

Place of Calibration: Scantek, Inc.
6430 Dobbin Road, Suite C
Columbia, MD 21045 USA
Ph/Fax: 410-290-7726/ -9167
callab@scantekinc.com

Calibration Certificates or Test Reports shall not be reproduced, except in full, without written approval of the laboratory.
This Calibration Certificate or Test Reports shall not be used to claim product certification, approval or endorsement by NVLAP, NIST, or any agency of the federal government.

Scantek, Inc.
CALIBRATION LABORATORY

ISO 17025: 2005, ANSI/NCSL Z540:1994 Part 1
ACCREDITED by NVLAP (an ILAC MRA signatory)

NVLAP®
NVLAP Lab Code: 200625-0

Calibration Certificate No.30373

Instrument: **Sound Level Meter**
Model: **NL32**
Manufacturer: **Rion**
Serial number: **01161900**
Tested with: **Microphone UC53A s/n 311130**
Preamplifier NH21 s/n 21933
Type (class): **1**
Customer: **Scantek, Inc.**
Tel/Fax: **410-290-7726 / 410-290-9167**

Date Calibrated: **1/20/2014** *Cal Due:* **1/20/2015**

Status:	Received	Sent
In tolerance:	X	X
Out of tolerance:		
See comments:		

Contains non-accredited tests: __Yes X No
Calibration service: __ Basic X Standard
Address: **6430 Dobbin Road, Suite C, Columbia, MD 21045**

Tested in accordance with the following procedures and standards:
Calibration of Sound Level Meters, Scantek Inc., Rev. 6/22/2012
SLM & Dosimeters – Acoustical Tests, Scantek Inc., Rev. 7/6/2011

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
483B-Norsonic	SME Cal Unit	31052	Oct 7, 2013	Scantek, Inc./ NVLAP	Oct 7, 2014
DS-360-SRS	Function Generator	33584	Sep 30, 2013	ACR Env./ A2LA	Sep 30, 2015
34401A-Agilent Technologies	Digital Voltmeter	US36120731	Sep 30, 2013	ACR Env. / A2LA	Sep 30, 2014
HM30-Thommen	Meteo Station	1040170/39633	Sep 30,2013	ACR Env./ A2LA	Sep 30, 2014
PC Program 1019 Norsonic	Calibration software	v.5.2	Validated Mar 2011	Scantek, Inc.	-
1251-Norsonic	Calibrator	30878	Nov 8, 2013	Scantek, Inc./ NVLAP	Nov 8, 2014

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK).

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
23.3 °C	99.570 kPa	33.3 %RH

Calibrated by:	Lydon Dawkins	**Authorized signatory:**	Mariana Buzduga
Signature	Lydon Dawkins	Signature	
Date	01/21/2014	Date	1/22/2014

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Document stored Z:\Calibration Lab\SLM 2014\RIONL32_01161900_M1.doc

Results summary: Device complies with following clauses of mentioned specifications:

CLAUSES [1] FROM IEC/ANSI STANDARDS REFERENCED IN PROCEDURES:	RESULT[2,3]	EXPANDED UNCERTAINTY (coverage factor 2) [dB]
CALIBRATION OF SOUND LEVEL METER - ANSI S1.4 CLAUSE 3.2	Passed	0.2
INPUT AMPLIFIER TEST: GAIN TEST / ATTENUATOR SETTING - ANSI S1.4-1983 CLAUSE 5.3	Passed	0.25
LEVEL LINEARITY TEST - ANSI S1.4-1983, CLAUSE 6.9 & 6.10	Passed	0.25
WEIGHTING NETWORK TEST: A NETWORK - ANSI S1.4-1983 CLAUSE 8.2.1	Passed	0.25
WEIGHTING NETWORK TEST: C NETWORK - ANSI S1.4-1983 CLAUSE 8.2.1	Passed	0.25
WEIGHTING NETWORK TEST: LINEAR NETWORK - ANSI S1.4-1983 CLAUSE 8.2.1	Passed	0.25
OVERLOAD DETECTOR TEST: A-NETWORK - ANSI S1.4-1983 CLAUSE 8.3.1	Passed	0.25
F/S/I/PEAK TEST: STEADY STATE RESPONSE - ANSI S1.4 1983 CLAUSE 6.4	Passed	0.25
FAST-SLOW TEST: OVERSHOOT TEST - ANSI S1.4 1983 CLAUSE 8.4.1	Passed	0.25
FAST-SLOW TEST: SINGLE SINE WAVE BURST - ANSI S1.4 1983 CLAUSE 8.4.1 & 8.4.3	Passed	0.25
PEAK DETECTOR TEST, SINGLE SQUARE WAVE BURST - ANSI S1.4 1983 CLAUSE 8.4.4	Passed	0.25
RMS DETECTOR TEST: CREST FACTOR TEST - ANSI S1.4-1983 CLAUSE 8.4.2	Passed	0.25
RMS DETECTOR TEST: CONTINUOUS SINE WAVE BURST - ANSI S1.4-1983 CLAUSE 8.4.2	Passed	0.25
TIME AVERAGING TEST: AVERAGING FUNCTIONS - ANSI S1.43 CLAUSE 9.3.2	Passed	0.25
LINEARITY TEST - ANSI S1.43 CLAUSE 9.3.3	Passed	0.15
SUMMATION OF ACOUSTIC TESTS - ANSI S1.4 CLAUSE 5 USING ACTUATOR	Passed	0.2-0.5

[1] The results of this calibration apply only to the instrument type with serial number identified in this report.

[2] Parameters are certified at actual environmental conditions.

[3] The tests marked with (*) are not covered by the current NVLAP accreditation.

Comments: The instrument was tested and met all specifications found in the referenced procedures.

Note: The instrument was tested for the parameters listed in the table above, using the test methods described in the listed standards. All tests were performed around the reference conditions. The test results were compared with the manufacturer's or with the standard's specifications, whichever are larger.
Compliance with any standard cannot be claimed based solely on the periodic tests.

Tests made with the following attachments to the instrument:

Microphone: Rion UC53A s/n 311130 for acoustical test
Preamplifier: Rion NH21 s/n 21933 for all tests
Other: line adaptor ADP005 (18pF) for electrical tests
Accompanying acoustical calibrator: none
Windscreen: none

Measured Data: in Test Report # 30373 of 8 + 1 pages.

Place of Calibration: Scantek, Inc.
6430 Dobbin Road, Suite C
Columbia, MD 21045 USA
Ph/Fax: 410-290-7726/ -9167
callab@scantekinc.com

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Scantek, Inc.
CALIBRATION LABORATORY

ISO 17025: 2005, ANSI/NCSL Z540:1994 Part 1
ACCREDITED by NVLAP (an ILAC MRA signatory)

NVLAP®

NVLAP Lab Code: 200625-0

Calibration Certificate No.30375

Instrument:	**Sound Level Meter**
Model:	**NL32**
Manufacturer:	**Rion**
Serial number:	**00282514**
Tested with:	**Microphone UC53A s/n 313875** **Preamplifier NH21 s/n 26713**
Type (class):	**1**
Customer:	**Scantek, Inc.**
Tel/Fax:	**410-290-7726 / 410-290-9167**

Date Calibrated: **1/21/2014** *Cal Due:* **1/21/2015**

Status:	Received	Sent
In tolerance:	X	X
Out of tolerance:		
See comments:		

Contains non-accredited tests: __Yes X No
Calibration service: __ Basic X Standard
Address: **6430 Dobbin Road, Suite C, Columbia, MD 21045**

Tested in accordance with the following procedures and standards:
Calibration of Sound Level Meters, Scantek Inc., Rev. 6/22/2012
SLM & Dosimeters – Acoustical Tests, Scantek Inc., Rev. 7/6/2011

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
483B-Norsonic	SME Cal Unit	31052	Oct 7, 2013	Scantek, Inc./ NVLAP	Oct 7, 2014
DS-360-SRS	Function Generator	33584	Sep 30, 2013	ACR Env./ A2LA	Sep 30, 2015
34401A-Agilent Technologies	Digital Voltmeter	US36120731	Sep 30, 2013	ACR Env. / A2LA	Sep 30, 2014
HM30-Thommen	Meteo Station	1040170/39633	Sep 30,2013	ACR Env./ A2LA	Sep 30, 2014
PC Program 1019 Norsonic	Calibration software	v.5.2	Validated Mar 2011	Scantek, Inc.	-
1251-Norsonic	Calibrator	30878	Nov 8, 2013	Scantek, Inc./ NVLAP	Nov 8, 2014

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK).

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
23.4 °C	99.280 kPa	32.6 %RH

Calibrated by:	Lydon Dawkins	Authorized signatory:	Mariana Buzduga
Signature	Lydon Dawkins	Signature	
Date	01/21/2014	Date	1/22/2014

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This Calibration Certificate or Test Reports shall not be used to claim product certification, approval or endorsement by NVLAP, NIST, or any agency of the federal government.

Results summary: Device complies with following clauses of mentioned specifications:

CLAUSES [1] FROM IEC/ANSI STANDARDS REFERENCED IN PROCEDURES:	RESULT[2,3]	EXPANDED UNCERTAINTY (coverage factor 2) [dB]
CALIBRATION OF SOUND LEVEL METER - ANSI S1.4 CLAUSE 3.2	Passed	0.2
INPUT AMPLIFIER TEST: GAIN TEST / ATTENUATOR SETTING - ANSI S1.4-1983 CLAUSE 5.3	Passed	0.25
LEVEL LINEARITY TEST - ANSI S1.4-1983, CLAUSE 6.9 & 6.10	Passed	0.25
WEIGHTING NETWORK TEST: A NETWORK - ANSI S1.4-1983 CLAUSE 8.2.1	Passed	0.25
WEIGHTING NETWORK TEST: C NETWORK - ANSI S1.4-1983 CLAUSE 8.2.1	Passed	0.25
WEIGHTING NETWORK TEST: LINEAR NETWORK - ANSI S1.4-1983 CLAUSE 8.2.1	Passed	0.25
OVERLOAD DETECTOR TEST: A-NETWORK - ANSI S1.4-1983 CLAUSE 8.3.1	Passed	0.25
F/S/I/PEAK TEST: STEADY STATE RESPONSE - ANSI S1.4 1983 CLAUSE 6.4	Passed	0.25
FAST-SLOW TEST: OVERSHOOT TEST - ANSI S1.4 1983 CLAUSE 8.4.1	Passed	0.25
FAST-SLOW TEST: SINGLE SINE WAVE BURST - ANSI S1.4 1983 CLAUSE 8.4.1 & 8.4.3	Passed	0.25
PEAK DETECTOR TEST, SINGLE SQUARE WAVE BURST - ANSI S1.4 1983 CLAUSE 8.4.4	Passed	0.25
RMS DETECTOR TEST: CREST FACTOR TEST - ANSI S1.4-1983 CLAUSE 8.4.2	Passed	0.25
RMS DETECTOR TEST: CONTINUOUS SINE WAVE BURST - ANSI S1.4-1983 CLAUSE 8.4.2	Passed	0.25
TIME AVERAGING TEST: AVERAGING FUNCTIONS - ANSI S1.43 CLAUSE 9.3.2	Passed	0.25
LINEARITY TEST - ANSI S1.43 CLAUSE 9.3.3	Passed	0.15
SUMMATION OF ACOUSTIC TESTS - ANSI S1.4 CLAUSE 5 USING ACTUATOR	Passed	0.2-0.5

[1] The results of this calibration apply only to the instrument type with serial number identified in this report.

[2] Parameters are certified at actual environmental conditions.

[3] The tests marked with (*) are not covered by the current NVLAP accreditation.

Comments: The instrument was tested and met all specifications found in the referenced procedures.

Note: The instrument was tested for the parameters listed in the table above, using the test methods described in the listed standards. All tests were performed around the reference conditions. The test results were compared with the manufacturer's or with the standard's specifications, whichever are larger.
Compliance with any standard cannot be claimed based solely on the periodic tests.

Tests made with the following attachments to the instrument:

Microphone: Rion UC53A s/n 313875 for acoustical test
Preamplifier: Rion NH21 s/n 26713 for all tests
Other: line adaptor ADP005 (18pF) for electrical tests
Accompanying acoustical calibrator: none
Windscreen: none

Measured Data: in Test Report # 30375 of 8 + 1 pages.

Place of Calibration: Scantek, Inc.
6430 Dobbin Road, Suite C
Columbia, MD 21045 USA

Ph/Fax: 410-290-7726/ -9167
callab@scantekinc.com

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Appendix B

Hourly Equivalent Traffic Noise Levels

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Base Year (2011) and No-Build Design Year (2040)

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Table B-1: Noise Sensitive Receptors and Hourly Equivalent Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	No-Build	Change
R-01	Res.	B	1	418 Felmet Rd	60	62	2
R-02	Res.	B	1	79 Bennison Ln	66	68	2
R-03	Res.	B	1	107 Bennison Ln	67	69	2
R-04	Res.	B	1	96 Bennison Ln	62	64	2
R-05	Res.	B	1	106 Bennison Ln	69	71	2
R-06	Res.	B	1	612 Crest Rd	67	68	1
R-07	Res.	B	1	620 Crest Rd	65	66	1
R-08	Res.	B	1	337 Mcmurray Rd	77	77	0
R-09	Res.	B	1	819 Mcmurray Rd	63	64	1
R-10	Res.	B	1	823 Mcmurray Rd	69	70	1
R-11	Res.	B	1	35 Justus Acres Ln	62	63	1
R-12	Res.	B	1	28 Randolph Ave	63	63	0
R-13	Res.	B	1	30 Justus Acres Ln	64	65	1
R-14	Res.	B	1	19 Justus Acres Ln	65	65	0
R-15	Res.	B	1	818 Tracy Grove Rd	67	67	0
R-16	Res.	B	1	824 Tracy Grove Rd	65	65	0
R-17	Res.	B	1	821 Tracy Grove Rd	64	64	0
R-18	Res.	B	1	809 Mid Allen Rd	76	76	0
R-19	Res.	B	1	837 Mid Allen Rd	66	66	0
R-20	Res.	B	1	282 Katie Dr	63	63	0
R-21	Res.	B	1	33 Springside Dr	63	63	0
R-22	Res.	B	1	31 Springside Dr	62	63	1
R-23	Res.	B	1	29 Springside Dr	60	60	0
R-24	Res.	B	1	27 Springside Dr	59	59	0
R-25	Res.	B	1	25 Springside Dr	57	58	1
R-26	Res.	B	1	16 Springside Dr	57	57	0
R-27	Res.	B	1	18 Springside Dr	57	58	1
R-28	Res.	B	1	20 Springside Dr	59	59	0
R-29	Res.	B	1	22 Springside Dr	60	60	0
R-30	Res.	B	1	24 Springside Dr	61	62	1
R-31	Res.	B	1	26 Springside Dr	63	63	0
R-32	Res.	B	1	28 Springside Dr	66	66	0
R-33	Res.	B	1	30 Springside Dr	67	68	1
R-34	Res.	B	1	32 Springside Dr	66	66	0
R-35	Res.	B	1	34 Springside Dr	63	63	0
R-36	Res.	B	1	36 Springside Dr	62	62	0

Table B-1: Noise Sensitive Receptors and Hourly Equivalent Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	No-Build	Change
R-37	Res.	B	1	38 Springside Dr	61	61	0
R-38	Res.	B	1	40 Springside Dr	60	60	0
R-39	Res.	B	1	42 Springside Dr	59	59	0
R-40	Res.	B	1	44 Springside Dr	55	56	1
R-41	Res.	B	1	46 Springside Dr	54	55	1
R-42	Res.	B	1	43 Springside Dr	73	74	1
R-43	Res.	B	1	45 Springside Dr	73	73	0
R-44	Res.	B	1	47 Springside Dr	70	70	0
R-45	Res.	B	1	49 Springside Dr	67	67	0
R-46	Res.	B	1	152 Willowbrook Rd	64	65	1
R-47	Res.	B	1	150 Willowbrook Rd	68	69	1
R-48	Res.	B	1	148 Willowbrook Rd	72	72	0
R-49	Res.	B	1	146 Willowbrook Rd	72	72	0
R-50	Res.	B	1	144 Willowbrook Rd	69	70	1
R-51	Res.	B	1	142 Willowbrook Rd	70	71	1
R-52	Res.	B	1	138 Willowbrook Rd	68	69	1
R-53	Res.	B	1	134 Willowbrook Rd	67	67	0
R-54	Res.	B	1	130 Willowbrook Rd	70	71	1
R-55	Res.	B	1	126 Willowbrook Rd	71	71	0
R-56	Res.	B	1	122 Willowbrook Rd	70	71	1
R-57	Res.	B	1	118 Willowbrook Rd	73	73	0
R-58	Res.	B	1	114 Willowbrook Rd	70	71	1
R-59	Res.	B	1	110 Willowbrook Rd	70	71	1
R-60	Res.	B	1	106 Willowbrook Rd	71	71	0
R-61	Res.	B	1	102 Willowbrook Rd	71	71	0
R-62	Res.	B	1	59 Springside Dr	58	58	0
R-63	Res.	B	1	57 Springside Dr	49	49	0
R-64	Res.	B	1	55 Springside Dr	55	55	0
R-65	Res.	B	1	53 Springside Dr	62	62	0
R-66	Res.	B	1	147 Willowbrook Rd	60	61	1
R-67	Res.	B	1	145 Willowbrook Rd	60	60	0
R-68	Res.	B	1	131 Maywood Rd	57	58	1
R-69	Res.	B	1	127 Maywood Rd	53	54	1
R-70	Res.	B	1	123 Maywood Rd	51	52	1
R-71	Res.	B	1	119 Maywood Rd	55	56	1
R-72	Res.	B	1	116 Maywood Rd	51	51	0

Table B-1: Noise Sensitive Receptors and Hourly Equivalent Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	No-Build	Change
R-73	Res.	B	1	120 Maywood Rd	47	47	0
R-74	Res.	B	1	124 Maywood Rd	48	48	0
R-75	Res.	B	1	133 Willowbrook Rd	56	56	0
R-76	Res.	B	1	129 Willowbrook Rd	57	58	1
R-77	Res.	B	1	121 Willowbrook Rd	58	58	0
R-78	Res.	B	1	117 Willowbrook Rd	61	62	1
R-79	Res.	B	1	113 Willowbrook Rd	61	62	1
R-80	Res.	B	1	109 Willowbrook Rd	62	63	1
R-81	Res.	B	1	105 Willowbrook Rd	64	65	1
R-82	Res.	B	1	710 Dana Rd	55	56	1
R-83	Res.	B	1	714 Dana Rd	56	56	0
R-84	Res.	B	1	703 Dana Rd	61	62	1
R-85	Res.	B	1	410 Lakeview Estate Rd	61	61	0
R-86	Res.	B	1	420 Lakeview Estate Rd	62	62	0
R-87	Res.	B	1	422 Lakeview Estate Rd	62	63	1
R-88	Res.	B	1	424 Lakeview Estate Rd	63	63	0
R-89	Res.	B	1	426 Lakeview Estate Rd	64	65	1
R-90	Res.	B	1	102 Wakefield Dr	62	62	0
R-91	Res.	B	1	99 Wakefield Dr	**72**	**73**	1
R-92	Res.	B	1	103 Wakefield Dr	**68**	**68**	0
R-93	Res.	B	1	419 Bird Haven Rd	**66**	**66**	0
R-94	Res.	B	1	417 Bird Haven Rd	63	64	1
R-95	Res.	B	1	414 Bird Haven Rd	58	59	1
R-96	Res.	B	1	416 Bird Haven Rd	58	58	0
R-97	Res.	B	1	25 Dove Valley Ln	58	58	0
R-98	Res.	B	1	23 Dove Valley Ln	57	58	1
R-99	Res.	B	1	425 Bird Haven Rd	**67**	**67**	0
R-100	Res.	B	1	81 Dove Valley Ln	61	61	0
R-101	Res.	B	1	420 Bird Haven Rd	65	65	0
R-102	Res.	B	1	424 Bird Haven Rd	65	65	0
R-103	Res.	B	1	411 Pine Hill Ln	65	**66**	1
R-104	Res.	B	1	508 Prince Rd	**70**	**70**	0
R-105	Res.	B	1	510 Prince Rd	**66**	**67**	1
R-106	Res.	B	1	520 Prince Rd	62	62	0
R-107	Res.	B	1	524 Prince Rd	60	60	0
R-108	Res.	B	1	527 Prince Rd	**68**	**68**	0

Table B-1: Noise Sensitive Receptors and Hourly Equivalent Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	No-Build	Change
R-109	Res.	B	1	529 Prince Rd	64	64	0
R-110	Res.	B	1	533 Prince Rd	61	61	0
R-111	Res.	B	1	641 Prince Rd	67	68	1
R-112	Res.	B	1	54 Francis Rd	67	68	1
R-113	Res.	B	1	68 Francis Rd	61	62	1
R-114	Res.	B	1	76 Francis Rd	63	63	0
R-115	Res.	B	1	82 Francis Rd	61	62	1
R-116	Res.	B	1	51 High Country Ln	63	63	0
R-117	Res.	B	1	65 High Country Ln	62	63	1
R-118	Res.	B	1	75 High Country Ln	63	63	0
R-119	Res.	B	1	66 High Country Ln	58	58	0
R-120	Res.	B	1	95 Francis Rd	61	61	0
R-121	Res.	B	1	125 High Country Ln	61	61	0
R-122	Res.	B	1	121 High Country Ln	61	62	1
R-123	Res.	B	1	125 Francis Rd	63	63	0
R-124	Res.	B	1	129 Francis Rd	63	63	0
R-125	Res.	B	1	1713 Clear Creek Rd	71	71	0
R-126	Res.	B	1	1733 Clear Creek Rd	71	71	0
R-127	Res.	B	1	1803 Clear Creek Rd	74	74	0
R-128	Res.	B	1	1845 Clear Creek Rd	71	72	1
R-129	Res.	B	1	1959 Clear Creek Rd	66	66	0
R-130	Res.	B	1	1982 Clear Creek Rd	64	65	1
R-131	Res.	B	1	170 Hart Ln	69	69	0
R-132	Res.	B	1	32 Hart Ln	71	71	0
R-133	Res.	B	1	28 Hart Ln	71	72	1
R-134	Res.	B	1	22 Hart Ln	71	71	0
R-135	Res.	B	1	39 Keeneland Dr	66	66	0
R-136	Res.	B	1	23 Keeneland Dr	64	64	0
R-137	Res.	B	1	20 Keeneland Dr	68	68	0
R-138	Res.	B	1	171 Keeneland Dr	67	67	0
R-139	Res.	B	1	195 Kingswood Dr	67	67	0
R-140	Res.	B	1	10 Hart Ln	73	73	0
R-141	Res.	B	1	223 Kingswood Dr	66	66	0
R-142	Res.	B	1	192 Kingswood Dr	60	60	0
R-143	Res.	B	1	216 Kingswood Dr	63	63	0
R-144	Res.	B	1	240 Kingswood Dr	63	63	0

Table B-1: Noise Sensitive Receptors and Hourly Equivalent Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	No-Build	Change
R-145	Res.	B	1	262 Kingswood Dr	63	63	0
R-146	Res.	B	1	282 Kingswood Dr	62	63	1
R-147	Res.	B	1	261 Kingswood Dr	66	66	0
R-148	Res.	B	1	275 Kingswood Dr	64	64	0
R-149	Res.	B	1	283 Kingswood Dr	66	66	0
R-150	Res.	B	1	339 Kingswood Dr	66	67	1
R-151	Res.	B	1	299 Kingswood Dr	66	66	0
R-152	Res.	B	1	345 Kingswood Dr	68	68	0
R-153	Res.	B	1	134 Wendy Ln	57	57	0
R-154	Res.	B	1	138 Wendy Ln	62	63	1
R-155	Res.	B	1	142 Wendy Ln	72	72	0
R-156	Res.	B	1	146 Wendy Ln	71	72	1
R-157	Res.	B	1	150 Wendy Ln	74	74	0
R-158	Res.	B	1	154 Wendy Ln	76	76	0
R-159	Res.	B	1	149 Wendy Ln	61	61	0
R-160	Res.	B	1	151 Wendy Ln	67	68	1
R-161	Res.	B	1	153 Wendy Ln	66	66	0
R-162	Res.	B	1	155 Wendy Ln	63	64	1
R-163	Res.	B	1	157 Wendy Ln	67	68	1
R-164	Res.	B	1	132 Shelly Dr	52	52	0
R-165	Res.	B	1	142 Shelly Dr	50	51	1
R-166	Res.	B	1	144 Shelly Dr	50	50	0
R-167	Res.	B	1	160 Wendy Ln	74	75	1
R-168	Res.	B	1	2026 Howard Gap Rd	65	65	0
R-169	Res.	B	1	2020 Howard Gap Rd	66	66	0
R-170	Res.	B	1	335 Carolina Cir	77	77	0
R-171	Res.	B	1	315 Carolina Cir	71	71	0
R-172	Res.	B	1	289 Carolina Cir	67	67	0
R-173	Res.	B	1	257 Carolina Cir	58	58	0
R-174	Res.	B	1	251 Carolina Cir	57	57	0
R-175	Res.	B	1	223 Carolina Cir	57	57	0
R-176	Res.	B	1	205 Carolina Cir	58	58	0
R-177	Res.	B	1	185 Carolina Cir	56	56	0
R-178	Res.	B	1	165 Carolina Cir	56	56	0
R-179	Res.	B	1	145 Carolina Cir	58	58	0
R-180	Res.	B	1	125 Carolina Cir	59	60	1

Table B-1: Noise Sensitive Receptors and Hourly Equivalent Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	No-Build	Change
R-181	Res.	B	1	113 Carolina Cir	60	61	1
R-182	Res.	B	1	93 Carolina Cir	59	60	1
R-183	Res.	B	1	73 Carolina Cir	59	59	0
R-184	Res.	B	1	55 Carolina Cir	58	58	0
R-185	Res.	B	1	35 Carolina Cir	58	59	1
R-186	Res.	B	1	512 Brookside Camp Rd	62	63	1
R-187	Res.	B	1	270 Carolina Cir	64	64	0
R-188	Res.	B	1	254 Carolina Cir	63	63	0
R-189	Res.	B	1	226 Carolina Cir	64	64	0
R-190	Res.	B	1	212 Carolina Cir	60	60	0
R-191	Res.	B	1	192 Carolina Cir	61	62	1
R-192	Res.	B	1	172 Carolina Cir	60	61	1
R-193	Res.	B	1	152 Carolina Cir	60	60	0
R-194	Res.	B	1	132 Carolina Cir	61	61	0
R-195	Res.	B	1	112 Carolina Cir	60	60	0
R-196	Res.	B	1	100 Carolina Cir	58	58	0
R-197	Res.	B	1	74 Carolina Cir	56	56	0
R-198	Res.	B	1	60 Carolina Cir	60	61	1
R-199	Res.	B	1	42 Carolina Cir	61	62	1
R-200	Res.	B	1	322 Carolina Cir	**74**	**74**	0
R-201	Res.	B	1	374 Carolina Cir	**74**	**74**	0
R-202	Res.	B	1	380 Carolina Cir	**72**	**72**	0
R-203	Res.	B	1	210 Carolina Cir	**69**	**69**	0
R-204	Res.	B	1	426 Carolina Cir	**69**	**69**	0
R-205	Res.	B	1	446 Carolina Cir	**67**	**67**	0
R-206	Res.	B	1	518 Carolina Cir	62	63	1
R-207	Res.	B	1	536 Carolina Cir	63	63	0
R-208	Res.	B	1	556 Carolina Cir	62	62	0
R-209	Res.	B	1	576 Carolina Cir	63	64	1
R-210	Res.	B	1	464 Carolina Cir	**70**	**70**	0
R-211	Res.	B	1	472 Carolina Cir	**75**	**75**	0
R-212	Res.	B	1	505 Carolina Cir	**76**	**76**	0
R-213	Res.	B	1	537 Carolina Cir	**75**	**76**	1
R-214	Res.	B	1	557 Carolina Cir	**74**	**74**	0
R-215	Res.	B	1	202 Kimberly Ann Dr	**74**	**74**	0
R-216	Res.	B	1	206 Dundeve Cir	**74**	**74**	0

Table B-1: Noise Sensitive Receptors and Hourly Equivalent Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	No-Build	Change
R-217	Res.	B	1	208 Dundeve Cir	74	74	0
R-218	Res.	B	1	212 Dundeve Cir	74	74	0
R-219	Res.	B	1	216 Dundeve Cir	73	73	0
R-220	Res.	B	1	505 Brookside Camp Rd	65	66	1
R-221	Res.	B	1	509 Brookside Camp Rd	59	60	1
R-222	Res.	B	1	203 Kimberly Ann Dr	62	63	1
R-223	Res.	B	1	207 Kimberly Ann Dr	62	62	0
R-224	Res.	B	1	211 Kimberly Ann Dr	60	60	0
R-225	Res.	B	1	217 Kimberly Ann Dr	60	60	0
R-226	Res.	B	1	206 Kimberly Ann Dr	64	64	0
R-227	Res.	B	1	209 Dundeve Cir	67	67	0
R-228	Res.	B	1	213 Dundeve Cir	63	63	0
R-229	Res.	B	1	237 Dundeve Cir	56	56	0
R-230	Res.	B	1	224 Dundeve Cir	69	69	0
R-231	Res.	B	1	228 Dundeve Cir	65	65	0
R-232	Res.	B	1	232 Dundeve Cir	61	61	0
R-233	Res.	B	1	236 Dundeve Cir	58	58	0
R-234	Res.	B	1	201 Sheneman Dr	69	69	0
R-235	Res.	B	1	213 Sheneman Dr	61	62	1
R-236	Res.	B	1	217 Sheneman Dr	58	58	0
R-237	Res.	B	1	204 Sheneman Dr	73	73	0
R-238	Res.	B	1	212 Sheneman Dr	66	66	0
R-239	Res.	B	1	214 Sheneman Dr	60	61	1
R-240	Res.	B	1	300 Whispering Hills Dr	59	60	1
R-241	Res.	B	1	312 Whispering Hills Dr	68	69	1
R-242	Res.	B	1	319 Whispering Hills Dr	61	61	0
R-243	Res.	B	1	325 Whispering Hills Dr	61	61	0
R-244	Res.	B	1	329 Whispering Hills Dr	60	60	0
R-245	Res.	B	1	318 Whispering Hills Dr	67	67	0
R-246	Res.	B	1	320 Whispering Hills Dr	68	68	0
R-247	Res.	B	1	324 Whispering Hills Dr	67	67	0
R-248	Res.	B	1	326 Whispering Hills Dr	63	63	0
R-249	Res.	B	1	328 Whispering Hills Dr	62	62	0
R-250	Res.	B	1	330 Whispering Hills Dr	59	59	0
R-251	Res.	B	1	336 Whispering Hills Dr	58	58	0
R-252	Res.	B	1	185 Acorn Dr	74	74	0

Table B-1: Noise Sensitive Receptors and Hourly Equivalent Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	No-Build	Change
R-253	Res.	B	1	120 Acorn Dr	69	70	1
R-254	Res.	B	1	112 Acorn Dr	65	65	0
R-255	Res.	B	1	108 Acorn Dr	62	62	0
R-256	Res.	B	1	40 Acorn Dr	62	62	0
R-257	Res.	B	1	181 Acorn Dr	74	75	1
R-258	Res.	B	1	119 Acorn Dr	72	72	0
R-259	Res.	B	1	115 Acorn Dr	69	70	1
R-260	Res.	B	1	105 W Acorn Dr	67	67	0
R-261	Res.	B	1	131 W Acorn Dr	70	70	0
R-262	Res.	B	1	188 W Acorn Dr	68	68	0
R-263	Res.	B	1	188 W Acorn Dr 2	66	66	0
R-264	Res.	B	1	107 Acorn Dr	62	62	0
R-265	Res.	B	1	45 Acorn Dr	59	59	0
R-266	Res.	B	1	402 Silver Loop Dr	59	59	0
R-267	Res.	B	1	276 Pjs Pl	63	64	1
R-268	Trail	C	5	100 Hospital Dr	75	75	0
R-269	Res.	B	1	185 Tulip Trail	61	61	0
R-270	Res.	B	1	32 Tulip Trail	62	62	0
R-271	Res.	B	1	42 Tulip Trail	61	62	1
R-272	Res.	B	1	187 Tulip Trail	58	58	0
R-273	Res.	B	1	193 Tulip Trail	60	61	1
R-274	Res.	B	1	50 Tulip Trail	60	60	0
R-275	Res.	B	1	197 Tulip Trail	59	60	1
R-276	Res.	B	1	195 Tulip Trail	48	48	0
R-277	Res.	B	1	18 Sunset Vista Rd	74	74	0
R-278	Res.	B	1	46 Sunset Vista Rd	66	66	0
R-279	Res.	B	1	72 Sunset Vista Rd	64	65	1
R-280	Res.	B	1	108 Sunset Vista Rd	63	64	1
R-281	Res.	B	1	126 Sunset Vista Rd	63	63	0
R-282	Res.	B	1	25 Sunset Vista Rd	70	70	0
R-283	Res.	B	1	91 Sunset Vista Rd	70	70	0
R-284	Res.	B	1	145 Sunset Vista Rd	68	69	1
R-285	Res.	B	1	67 Holly Oak Dr	61	62	1
R-286	Res.	B	1	67 Holly Oak Dr 2	59	60	1
R-287	Res.	B	1	25 Holly Oak Dr	72	72	0
R-288	Res.	B	1	104 Twin Springs Rd	69	70	1

Table B-1: Noise Sensitive Receptors and Hourly Equivalent Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	No-Build	Change
R-289	Res.	B	1	118 Twin Springs Rd	66	66	0
R-290	Res.	B	1	146 Twin Springs Rd	66	66	0
R-291	Res.	B	1	521 Old Hendersonville Rd	67	68	1
R-292	Res.	B	1	525 Old Hendersonville Rd	67	68	1
R-293	Res.	B	1	20 Pleasant Row Dr	64	65	1
R-294	Res.	B	1	15 Pleasant Row Dr	63	64	1
R-295	Res.	B	1	45 Pleasant Row Dr	62	63	1
R-296	Res.	B	1	526 Old Hendersonville Rd	64	65	1
R-297	Res.	B	1	522 Old Hendersonville Rd	64	64	0
R-298	Res.	B	1	19 November Ln	63	64	1
R-299	Res.	B	1	39 November Ln	62	63	1
R-300	Res.	B	1	37 November Ln	63	64	1
R-301	Res.	B	1	65 November Ln	64	65	1
R-302	Res.	B	1	244 Hickory Flats Dr	67	68	1
R-303	Res.	B	1	146 Hickory Flats Dr	63	64	1
R-304	Res.	B	1	60 November Ln	61	61	0
R-305	Res.	B	1	42 November Ln	60	61	1
R-306	Res.	B	1	434 Old Hendersonville Rd	60	61	1
R-307	Res.	B	1	211 Hickory Flats Dr	59	60	1
R-308	Res.	B	1	97 Hickory Flats Dr	61	62	1
R-309	Res.	B	1	71 Hickory Flats Dr	61	62	1
R-310	Res.	B	1	54 Hickory Flats Dr	59	60	1
R-311	Res.	B	1	143 Maxwell Dr	66	67	1
R-312	Res.	B	1	109 Maxwell Dr	62	63	1
R-313	Res.	B	1	123 Halliburton Rd	73	73	0
R-314	Res.	B	1	118 Halliburton Rd	64	64	0
R-315	Res.	B	1	124 Halliburton Rd	63	63	0
R-316	Res.	B	1	54 Dawley Dr	61	61	0
R-317	Res.	B	1	46 Dawley Dr	64	64	0
R-318	Res.	B	1	44 Dawley Dr	61	62	1
R-319	Res.	B	1	55 Dawley Dr	57	57	0
R-320	Res.	B	1	15 Dawley Dr	65	65	0
R-321	Res.	B	1	103 Dawley Dr	59	59	0
R-322	Res.	B	1	100 Halliburton Rd	61	62	1
R-323	Res.	B	1	102 Halliburton Rd	60	61	1
R-324	Res.	B	1	104 Halliburton Rd	57	57	0

Table B-1: Noise Sensitive Receptors and Hourly Equivalent Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	No-Build	Change
R-325	Res.	B	1	62 Dawley Dr	55	56	1
R-326	Res.	B	1	99 Dawley Dr	54	54	0
R-327	Res.	B	1	64 Halliburton Rd	60	61	1
R-328	Res.	B	1	128 Kennerly Dr	58	59	1
R-329	Res.	B	1	110 Kennerly Dr	56	57	1
R-330	Res.	B	1	96 Kennerly Dr	54	54	0
R-331	Res.	B	1	127 Kennerly Dr	61	62	1
R-332	Res.	B	1	46 Royal Oaks Dr	59	59	0
R-333	Res.	B	1	16 Royal Oaks Dr	57	57	0
R-334	Res.	B	1	106 Dawley Dr	64	64	0
R-335	Res.	B	1	76 Dawley Dr	54	54	0
R-336	Res.	B	1	120 Dawley Dr	**73**	**73**	0
R-337	Res.	B	1	24 Kennerly Dr	56	56	0
R-338	Res.	B	1	6077 Asheville Hwy	59	59	0
R-339	Res.	B	1	6075 Asheville Hwy	54	54	0
R-340	Res.	B	1	6073 Asheville Hwy	56	56	0
R-341	Res.	B	1	46 Hope Opal Ln	**72**	**72**	0
R-342	Res.	B	1	38 Hope Opal Ln	**73**	**73**	0
R-343	Res.	B	1	34 Hope Opal Ln	**73**	**73**	0
R-344	Res.	B	1	28 Hope Opal Ln	**73**	**73**	0
R-345	Res.	B	1	22 Hope Opal Ln	**72**	**72**	0
R-346	Res.	B	1	14 Hope Opal Ln	**71**	**71**	0
R-347	Res.	B	1	41 Hope Opal Ln	65	65	0
R-348	Res.	B	1	65 Hope Opal Ln	63	63	0
R-349	Res.	B	1	23 Hope Opal Ln	61	61	0
R-350	Res.	B	1	73 Hope Opal Ln	62	62	0
R-351	Res.	B	1	9 Hope Opal Ln	60	60	0
R-352	Res.	B	1	120 S Thomas St	**69**	**69**	0
R-353	Res.	B	1	60 Jim Mills Dr	**67**	**67**	0
R-354	Res.	B	1	52 Jim Mills Dr	**66**	**66**	0
R-355	Res.	B	1	36 Jim Mills Dr	65	65	0
R-356	Res.	B	1	20 Jim Mills Dr	64	64	0
R-357	Res.	B	1	109 S Thomas St	63	63	0
R-358	Res.	B	1	112 S Thomas St	63	64	1
R-359	Res.	B	1	98 S Thomas St	58	58	0
R-360	Res.	B	1	41 Lantern Walk Ln	62	62	0

Table B-1: Noise Sensitive Receptors and Hourly Equivalent Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	No-Build	Change
R-361	Res.	B	1	42 Lantern Walk Ln	59	59	0
R-362	Res.	B	1	33 Jim Mills Dr	60	60	0
R-363	Res.	B	1	23 Lantern Walk Ln	56	56	0
R-364	Res.	B	1	38 S Thomas St	55	55	0
R-365	Res.	B	1	55 Darity Rd	54	54	0
R-366	Res.	B	1	75 Darity Rd	58	58	0
R-367	Res.	B	1	11 Collins Rd	59	59	0
R-368	Res.	B	1	21 Collins Rd	61	61	0
R-369	Res.	B	1	51 Collins Rd	61	61	0
R-370	Res.	B	1	1015 The Carriage Rd	63	63	0
R-371	Res.	B	1	31 Wildwood Cir	57	57	0
R-372	Res.	B	1	33 Wildwood Cir	58	58	0
R-373	Res.	B	1	35 Wildwood Cir	62	62	0
R-374	Res.	B	1	37 Wildwood Cir	65	65	0
R-375	Res.	B	1	39 Wildwood Cir	**69**	**69**	0
R-376	Res.	B	1	41 Wildwood Cir	**73**	**73**	0
R-377	Res.	B	1	45 Wildwood Cir	**73**	**73**	0
R-378	Res.	B	1	47 Wildwood Cir	**73**	**73**	0
R-379	Res.	B	1	49 Wildwood Cir	**73**	**73**	0
R-380	Res.	B	1	51 Wildwood Cir	**74**	**74**	0
R-381	Res.	B	1	53 Wildwood Cir	**74**	**74**	0
R-382	Res.	B	1	55 Wildwood Cir	**70**	**70**	0
R-383	Res.	B	1	57 Wildwood Cir	63	63	0
R-384	Place of Worship	D	1	1291 Fanning Bridge Rd	40	40	0
R-385	Res.	B	1	59 Wildwood Cir	61	61	0
R-386	Res.	B	1	61 Wildwood Cir	60	60	0
R-387	Res.	B	1	63 Wildwood Cir	59	59	0
R-388	Res.	B	1	65 Wildwood Cir	59	60	1
R-389	Res.	B	1	67 Wildwood Cir	60	61	1
R-390	Res.	B	1	32 Wildwood Cir	51	52	1
R-391	Res.	B	1	34 Wildwood Cir	55	55	0
R-392	Res.	B	1	36 Wildwood Cir	58	59	1
R-393	Res.	B	1	38 Wildwood Cir	64	64	0
R-394	Res.	B	1	48 Wildwood Cir	64	64	0
R-395	Res.	B	1	50 Wildwood Cir	63	63	0

Table B-1: Noise Sensitive Receptors and Hourly Equivalent Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	No-Build	Change
R-396	Res.	B	1	52 Wildwood Cir	62	62	0
R-397	Res.	B	1	54 Wildwood Cir	58	59	1
R-398	Res.	B	1	56 Wildwood Cir	55	56	1
R-399	Res.	B	1	58 Wildwood Cir	50	51	1
R-400	Res.	B	1	60 Wildwood Cir	53	54	1
R-401	Res.	B	1	62 Wildwood Cir	54	54	0
R-402	Res.	B	1	64 Wildwood Cir	54	55	1
R-403	Res.	B	1	66 Wildwood Cir	57	58	1
R-404	Res.	B	1	21 Wildwood Ln	51	51	0
R-405	Res.	B	1	20 Wildwood Ln	57	57	0
R-406	Res.	B	1	18 Wildwood Ln	51	52	1
R-407	Res.	B	1	16 Wildwood Ln	53	53	0
R-408	Res.	B	1	14 Wildwood Ln	50	50	0
R-409	Res.	B	1	12 Wildwood Ln	49	49	0
R-410	Res.	B	1	10 Wildwood Ln	46	47	1
R-411	Res.	B	1	8 Wildwood Ln	50	50	0
R-412	Res.	B	1	6 Wildwood Ln	53	54	1
R-413	Res.	B	1	4 Wildwood Ln	54	55	1
R-414	Res.	B	1	25 Norman Rd	57	59	2
R-415	Res.	B	1	27 Norman Rd	55	57	2
R-416	Res.	B	1	29 Norman Rd	54	55	1
R-417	Res.	B	1	26 Norman Rd	54	55	1
R-418	Res.	B	1	92 Underwood Rd	60	60	0
R-419	Res.	B	1	5 Piney Dr	58	58	0
R-420	Res.	B	1	6 Piney Dr	55	55	0
R-421	Res.	B	1	15 Hickory Dr	54	55	1
R-422	Hotel - Pool	E	1	183 Underwood Rd	59	60	1
R-423	Hotel - Pool	E	1	196 Underwood Rd	51	51	0
R-424	Hotel - Pool	E	1	550 New Airport Rd	56	56	0
R-425	Res.	B	1	1101 Flycatcher Way	56	56	0
R-426	Res.	B	1	1201 Flycatcher Way	58	58	0
R-427	Res.	B	1	1301 Flycatcher Way	60	60	0
R-428	Res.	B	1	375 Rockwood Rd	56	56	0
R-429	Res.	B	1	26 Foxberry Dr	55	57	2
R-430	Res.	B	1	24 Foxberry Dr	56	58	2
R-431	Res.	B	1	22 Foxberry Dr	59	59	0

Table B-1: Noise Sensitive Receptors and Hourly Equivalent Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	No-Build	Change
R-432	Res.	B	1	18 Foxberry Dr	61	62	1
R-433	Res.	B	1	16 Foxberry Dr	63	63	0
R-434	Res.	B	1	14 Foxberry Dr	65	66	1
R-435	Res.	B	1	10 Foxberry Dr	70	70	0
R-436	Res.	B	1	8 Foxberry Dr	70	70	0
R-437	Res.	B	1	4 Foxberry Dr	70	70	0
R-438	Res.	B	1	27 Foxberry Dr	51	52	1
R-439	Res.	B	1	25 Foxberry Dr	54	54	0
R-440	Res.	B	1	19 Foxberry Dr	52	52	0
R-441	Res.	B	1	15 Foxberry Dr	60	60	0
R-442	Res.	B	1	9 Foxberry Dr	62	62	0
R-443	Res.	B	1	7 Foxberry Dr	65	65	0
R-444	Res.	B	1	5 Foxberry Dr	65	65	0
R-445	Res.	B	1	3 Foxberry Dr	64	64	0
R-446	Res.	B	1	54 Winding Oak Dr	51	51	0
R-447	Res.	B	1	58 Winding Oak Dr	53	53	0
R-448	Res.	B	1	62 Winding Oak Dr	56	56	0
R-449	Res.	B	1	66 Winding Oak Dr	60	60	0
R-450	Res.	B	1	63 Winding Oak Dr	58	58	0
R-451	Res.	B	1	57 Winding Oak Dr	57	57	0
R-452	Res.	B	1	53 Winding Oak Dr	52	52	0
R-453	Res.	B	1	47 Winding Oak Dr	52	52	0
R-454	Res.	B	1	37 Winding Oak Dr	53	53	0
R-455	Res.	B	1	31 Winding Oak Dr	54	54	0
R-456	Res.	B	1	27 Winding Oak Dr	54	54	0
R-457	Res.	B	1	102 Wood Glen Ct	53	53	0
R-458	Res.	B	1	106 Wood Glen Ct	57	57	0
R-459	Res.	B	1	110 Wood Glen Ct	55	55	0
R-460	Res.	B	1	114 Wood Glen Ct	60	60	0
R-461	Res.	B	1	118 Wood Glen Ct	67	67	0
R-462	Res.	B	1	109 Wood Glen Ct	66	66	0
R-463	Res.	B	1	105 Wood Glen Ct	62	62	0
R-464	Res.	B	1	15 Winding Oak Dr	61	61	0
R-465	Res.	B	1	9 Winding Oak Dr	61	61	0
R-466	Res.	B	1	5 Winding Oak Dr	60	60	0
R-467	Res.	B	1	1 Winding Oak Dr	61	61	0

Table B-1: Noise Sensitive Receptors and Hourly Equivalent Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	No-Build	Change
R-468	Res.	B	1	169 New Rockwood Rd	64	64	0
R-469	Res.	B	1	173 New Rockwood Rd	67	67	0
R-470	Res.	B	1	177 New Rockwood Rd	71	71	0
R-471	Res.	B	1	168 New Rockwood Rd	66	66	0
R-472	Res.	B	1	167 New Rockwood Rd	62	62	0
R-473	Res.	B	1	22 Winding Oak Dr	55	55	0
R-474	Res.	B	1	18 Winding Oak Dr	57	57	0
R-475	Res.	B	1	14 Winding Oak Dr	53	53	0
R-476	Res.	B	1	10 Winding Oak Dr	53	53	0
R-477	Res.	B	1	6 Winding Oak Dr	52	52	0
R-478	Res.	B	1	2 Winding Oak Dr	56	56	0
R-479	Res.	B	1	151 New Rockwood Rd	49	49	0
R-480	Res.	B	1	150 New Rockwood Rd	51	51	0
R-481	Res.	B	1	74 Aberdeen Dr	57	57	0
R-482	Res.	B	1	315 Long Shoals Rd	64	64	0
R-483	Medical Facility	D	1	379 Long Shoals Rd	40	40	0
R-484	Hotel - Restaurant	E	1	43 Town Square Blvd	63	64	1
R-485	Trail	C	3	Mountains-To-Sea Trail (East)	61	61	0
R-486	Res.	B	1	215 Ferry Rd	59	59	0
R-487	Res.	B	1	218 Ferry Rd	58	58	0
R-488	Res.	B	1	200 Ferry Rd	63	63	0
R-489	Res.	B	1	192 Ferry Rd	61	61	0
R-490	Res.	B	1	759 Brevard Rd	69	72	3
R-491	Res.	B	1	757 Old Brevard Rd	57	59	2
R-492	Res.	B	1	12 Pine Ln	62	63	1
R-493	Res.	B	1	20 Pine Ln	62	62	0
R-494	Res.	B	1	24 Pine Ln	63	63	0
R-495	Res.	B	1	26 Pine Ln	64	64	0
R-496	Res.	B	1	28 Pine Ln	64	64	0
R-497	Res.	B	1	50 Pine Ln	64	64	0
R-498	Res.	B	1	40 Pine Ln	64	64	0
R-499	Res.	B	1	36 Pine Ln	64	65	1
R-500	Res.	B	1	29 Pine Ln	63	63	0
R-501	Res.	B	1	27 Pine Ln	61	61	0
R-502	Res.	B	1	23 Pine Ln	58	58	0

Table B-1: Noise Sensitive Receptors and Hourly Equivalent Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	No-Build	Change
R-503	Res.	B	1	19 Pine Ln	59	59	0
R-504	Res.	B	1	17 Pine Ln	58	58	0
R-505	Res.	B	1	15 Pine Ln	59	60	1
R-506	Res.	B	1	13 Pine Ln	57	58	1
R-507	Res.	B	1	751 Brevard Rd	57	57	0
R-508	Res.	B	1	751 Old Brevard Rd	60	60	0
R-509	Res.	B	1	36 Dogwood Rd	65	65	0
R-510	Res.	B	1	50 Dogwood Rd	68	68	0
R-511	Res.	B	1	33 Rocky Ridge Rd	57	57	0
R-512	Hotel - Restaurant	E	1	1 Rocky Ridge Rd	56	56	0
R-513	Hotel - Pool	E	1	1 Wedgefield Dr	64	65	1
R-514	Res.	B	1	13 Wedgefield Dr	53	54	1
R-515	Res.	B	1	20 Wedgefield Dr	60	60	0
R-516	Hotel - Pool	E	1	845 Brevard Rd	52	53	1
R-517	Res.	B	1	184 Ferry Rd	73	73	0
R-518	Res.	B	1	184 Ferry Rd 2	67	67	0
R-519	Res.	B	1	191 Ferry Rd	73	73	0
R-520	Res.	B	1	185 Ferry Rd	61	61	0
R-521	Trail	C	3	Mountains-To-Sea Trail (West)	65	65	0
R-522	Res.	B	1	40 Bear Leah Trl	75	75	0
R-523	Res.	B	1	38 Bear Leah Trl	75	75	0
R-524	Res.	B	1	404 Glenn Bridge Rd	69	69	0
R-525	Res.	B	1	406 Glenn Bridge Rd	66	66	0
R-526	Res.	B	1	1 Hidden Creek Dr	68	68	0
R-527	Res.	B	1	3 Hidden Creek Dr	63	63	0
R-528	Res.	B	1	5 Hidden Creek Dr	64	64	0
R-529	Res.	B	1	20 Hidden Creek Dr	62	62	0
R-530	Res.	B	1	12 Wells Dr	63	63	0
R-531	Res.	B	1	10 Hidden Creek Dr	66	66	0
R-532	Res.	B	1	2 Hidden Creek Dr	66	66	0
R-533	Res.	B	1	1 Nathan Dr	65	65	0
R-534	Res.	B	1	5 Nathan Dr	64	64	0
R-535	Res.	B	1	105 Hidden Creek Rd	75	75	0
R-536	Res.	B	1	8 Nathan Dr	67	67	0
R-537	Res.	B	1	7 Nathan Dr	64	64	0

Table B-1: Noise Sensitive Receptors and Hourly Equivalent Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	No-Build	Change
R-538	Res.	B	1	15 Nathan Dr	60	60	0
R-539	Res.	B	1	14 Wells Dr	64	64	0
R-540	Res.	B	1	9 Wells Dr	66	66	0
R-541	Res.	B	1	101 Hidden Creek Rd	68	68	0
R-542	Res.	B	1	10 Nathan Dr	63	63	0
R-543	Res.	B	1	12 Nathan Dr	59	59	0
R-544	Res.	B	1	14 Nathan Dr	60	60	0
R-545	Res.	B	1	16 Nathan Dr	64	64	0
R-546	Golf Course	C	2	101 French Broad Ln - Golf Course	71	71	0
R-547	Res.	B	1	289 Butler Bridge Rd	63	63	0
R-548	Res.	B	1	247 Butler Bridge Rd	63	63	0
R-549	Res.	B	1	65 Dry Hollow Ln	57	58	1
R-550	Res.	B	1	2933 N Rugby Rd	57	58	1
R-551	Res.	B	1	2911 N Rugby Rd	56	57	1
R-552	Res.	B	1	34 Dry Hollow Ln	58	58	0
R-553	Res.	B	1	38 Dry Hollow Ln	58	58	0
R-554	Res.	B	1	36 Jade Dr	57	58	1
R-555	Res.	B	1	22 Jade Dr	56	56	0
R-556	Res.	B	1	12 Jade Dr	57	57	0
R-557	Res.	B	1	48 Cureton Pl	64	66	2
R-558	Res.	B	1	39 Cureton Pl	64	66	2
R-559	Res.	B	1	31 Cureton Pl	63	65	2
R-560	Res.	B	1	30 Alverson Ln	56	58	2
R-561	Res.	B	1	24 Alverson Ln	59	61	2
R-562	Res.	B	1	16 Alverson Dr	63	65	2
R-563	Res.	B	1	53 Alverson Ln	63	64	1
R-564	Res.	B	1	399 Naples Rd	65	66	1
R-565	Res.	B	1	73 Pack Rd	58	59	1
R-566	Res.	B	1	83 Naples Glenn Trl	70	70	0
R-567	Res.	B	1	288 Old Naples Rd	67	67	0
R-568	Res.	B	1	284 Old Naples Rd	67	68	1
R-569	Res.	B	1	15 Canterbury Way	78	78	0
R-570	Res.	B	1	41 Canterbury Way	69	70	1
R-571	Res.	B	1	41 Canterbury Way 2	70	70	0
R-572	Res.	B	1	118 Canterbury Way	70	70	0
R-573	Res.	B	1	121 Canterbury Hill Ln	71	71	0

Table B-1: Noise Sensitive Receptors and Hourly Equivalent Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	No-Build	Change
R-574	Res.	B	1	304 Canterbury Way	67	67	0
R-575	Res.	B	1	44 Canterbury Hill Ln	72	72	0
R-576	Res.	B	1	238 Canterbury Way	69	69	0
R-577	Res.	B	1	238 Canterbury Way 2	66	67	1
R-578	Res.	B	1	255 Canterbury Way	66	66	0
R-579	Res.	B	1	80 Oak Meadow Ln	68	68	0
R-580	Res.	B	1	73 Oak Meadow Ln	66	66	0
R-581	Res.	B	1	17 Sujo Trl	68	69	1
R-582	Res.	B	1	14 Sujo Trl	64	64	0
R-583	Recreation Area	C	5	485 Brookside Camp Rd	70	70	0
R-584	Res.	B	1	672 Hyder Farm Rd	60	60	0
R-585	Res.	B	1	679 Hyder Farm Rd	56	56	0
R-586	Res.	B	1	619 Hyder Farm Rd	74	74	0
R-587	Res.	B	1	104 Alex Cove Dr	68	69	1
R-588	Res.	B	1	507 Hyder Farm Rd	68	68	0
R-589	Res.	B	1	110 Alex Cove Dr	60	60	0
R-590	Res.	B	1	114 Alex Cove Dr	57	57	0
R-591	Res.	B	1	307 Hyder Farm Rd	63	64	1
R-592	Res.	B	1	825 Clear Creek Rd	62	62	0
R-593	Medical Facility	D	1	600 Carolina Village Rd	40	40	0
R-594	Res.	B	1	1118 Carolina Village Rd	60	61	1
R-595	Res.	B	1	1106 Carolina Village Rd	59	59	0
R-596	Res.	B	1	1102 Carolina Village Rd	46	47	1
R-597	Res.	B	1	1084 Carolina Village Rd	53	53	0
R-598	Res.	B	1	1076 Carolina Village Rd	56	56	0
R-599	Res.	B	1	1072 Carolina Village Rd	55	55	0
R-600	Res.	B	1	1133 Carolina Village Rd	61	61	0
R-601	Res.	B	1	1129 Carolina Village Rd	60	61	1
R-602	Res.	B	1	1117 Carolina Village Rd	42	42	0
R-603	Res.	B	1	1107 Carolina Village Rd	60	60	0
R-604	Res.	B	1	1099 Carolina Village Rd	57	57	0
R-605	Res.	B	1	1089 Carolina Village Rd	44	44	0
R-606	Res.	B	1	1065 Carolina Village Rd	53	53	0
R-607	Res.	B	1	1055 Carolina Village Rd	51	51	0
R-608	Res.	B	1	1047 Carolina Village Rd	45	46	1
R-609	Res.	B	1	1035 Carolina Village Rd	54	54	0

Table B-1: Noise Sensitive Receptors and Hourly Equivalent Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	No-Build	Change
R-610	Res.	B	1	1027 Carolina Village Rd	55	55	0
R-611	Res.	B	1	1021 Carolina Village Rd	46	46	0
R-612	Res.	B	1	1052 Carolina Village Rd	56	57	1
R-613	Res.	B	1	1040 Carolina Village Rd	49	49	0
R-614	Res.	B	1	1036 Carolina Village Rd	49	49	0
R-615	Res.	B	1	834 Carolina Village Rd	45	45	0
R-616	Res.	B	1	838 Carolina Village Rd	58	58	0
R-617	Res.	B	1	832 Carolina Village Rd	59	59	0
R-618	Res.	B	1	992 Carolina Village Rd	50	51	1
R-619	Res.	B	1	988 Carolina Village Rd	54	54	0
R-620	Res.	B	1	984 Carolina Village Rd	55	55	0
R-621	Recreation Area	C	1	600 Carolina Village Rd 2	60	60	0
R-622	Res.	B	1	10 Tanager Trail	53	53	0
R-623	Res.	B	1	14 Tanager Trail	49	49	0
R-624	Res.	B	1	12 Tanager Trail	47	47	0
R-625	Res.	B	1	24 White Quail Trail	55	55	0
R-626	Res.	B	1	22 White Quail Trail	58	58	0
R-627	Res.	B	1	20 White Quail Trail	56	56	0
R-628	Res.	B	1	21 White Quail Trail	59	59	0
R-629	Res.	B	1	23 White Quail Trail	56	56	0
R-630	Res.	B	1	25 White Quail Trail	47	48	1
R-631	Res.	B	1	418 Carolina Village Rd	**72**	**73**	1
R-632	Res.	B	1	30 Lake Spur Dr	49	49	0
R-633	Res.	B	1	34 Lake Spur Dr	49	50	1
R-634	Res.	B	1	32 Lake Spur Dr	47	48	1
R-635	Res.	B	1	38 Lake Spur Dr	53	53	0
R-636	Res.	B	1	36 Lake Spur Dr	56	57	1
R-637	Res.	B	1	40 Lake Spur Dr	51	52	1
R-638	Res.	B	1	35 Lake Spur Dr	60	61	1
R-639	Res.	B	1	37 Lake Spur Dr	65	**66**	1
R-640	Res.	B	1	39 Lake Spur Dr	65	**66**	1
R-641	Res.	B	1	348 Carolina Village Rd	**73**	**74**	1
R-642	Res.	B	1	346 Carolina Village Rd	**70**	**71**	1
R-643	Res.	B	1	108-A Lake Club Cir	50	51	1
R-644	Res.	B	1	108-B Lake Club Cir	51	52	1
R-645	Res.	B	1	108-C Lake Club Cir	51	52	1

Table B-1: Noise Sensitive Receptors and Hourly Equivalent Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	No-Build	Change
R-646	Res.	B	1	108-D Lake Club Cir	52	53	1
R-647	Res.	B	1	108-E Lake Club Cir	53	53	0
R-648	Res.	B	1	108-F Lake Club Cir	54	55	1
R-649	Res.	B	1	103-F Lake Club Cir	46	47	1
R-650	Res.	B	1	103-E Lake Club Cir	46	46	0
R-651	Res.	B	1	103-D Lake Club Cir	46	46	0
R-652	Res.	B	1	103-C Lake Club Cir	46	46	0
R-653	Res.	B	1	103-B Lake Club Cir	46	47	1
R-654	Res.	B	1	103-A Lake Club Cir	49	50	1
R-655	Res.	B	1	45-D Lake Club Cir	49	50	1
R-656	Res.	B	1	45-C Lake Club Cir	49	49	0
R-657	Res.	B	1	45-B Lake Club Cir	49	49	0
R-658	Res.	B	1	45-A Lake Club Cir	49	49	0
R-659	Res.	B	1	62-A Lake Club Cir	53	54	1
R-660	Res.	B	1	62-B Lake Club Cir	52	52	0
R-661	Res.	B	1	62-C Lake Club Cir	52	53	1
R-662	Res.	B	1	62-D Lake Club Cir	52	53	1
R-663	Res.	B	1	30-A Lake Club Cir	52	53	1
R-664	Res.	B	1	30-B Lake Club Cir	53	54	1
R-665	Res.	B	1	30-C Lake Club Cir	53	54	1
R-666	Res.	B	1	30-D Lake Club Cir	54	55	1
R-667	Campgrounds	C	1	300 Orrs Camp Rd	56	56	0
R-668	Campgrounds	C	1	300 Orrs Camp Rd 2	60	60	0
R-669	Res.	B	1	305 Prince Rd	**73**	**73**	0
R-670	Res.	B	1	77 Fairbanks Ln	**72**	**72**	0
R-671	Res.	B	1	69 Fairbanks Ln	65	65	0
R-672	Res.	B	1	47 Fairbanks Ln	59	59	0
R-673	Res.	B	1	317 Prince Rd	59	59	0
R-674	Res.	B	1	311 W Prince Rd	61	61	0
R-675	Res.	B	1	301 Prince Rd	61	62	1
R-676	Res.	B	1	323 Prince Rd	65	65	0
R-677	Res.	B	1	333 Prince Rd	**73**	**74**	1
R-678	Res.	B	1	324 Prince Rd	56	56	0
R-679	Res.	B	1	330 Prince Rd	63	64	1
R-680	Res.	B	1	334 Prince Rd	58	58	0
R-681	Res.	B	1	398 Prince Rd	57	57	0

Table B-1: Noise Sensitive Receptors and Hourly Equivalent Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	No-Build	Change
R-682	Res.	B	1	341 Prince Rd	69	70	1
R-683	Res.	B	1	365 Prince Rd	67	68	1
R-684	Res.	B	1	373 Prince Rd	64	64	0
R-685	Res.	B	1	381 Prince Rd	63	63	0
R-686	Res.	B	1	655 Dana Rd	61	61	0
R-687	Res.	B	1	665 Dana Rd	77	77	0
R-688	Res.	B	1	102 Papa Joes Way	60	61	1
R-689	Res.	B	1	101 Papa Joes Way	65	66	1
R-690	Res.	B	1	102 Papa Joes Way 2	55	56	1
R-691	Res.	B	1	2 Meadowlark Ln	68	68	0
R-692	Res.	B	1	4 Meadowlark Ln	66	67	1
R-693	Res.	B	1	6 Meadowlark Ln	64	65	1
R-694	Res.	B	1	8 Meadowlark Ln	63	63	0
R-695	Res.	B	1	10 Meadowlark Ln	61	62	1
R-696	Res.	B	1	12 Meadowlark Ln	58	59	1
R-697	Res.	B	1	14 Meadowlark Ln	57	58	1
R-698	Res.	B	1	18 Meadowlark Ln	57	58	1
R-699	Res.	B	1	20 Meadowlark Ln	56	57	1
R-700	Res.	B	1	24 Meadowlark Ln	56	57	1
R-701	Res.	B	1	26 Meadowlark Ln	57	57	0
R-702	Res.	B	1	28 Meadowlark Ln	57	57	0
R-703	Res.	B	1	30 Meadowlark Ln	56	57	1
R-704	Res.	B	1	32 Meadowlark Ln	55	55	0
R-705	Res.	B	1	3 Meadowlark Ln	71	71	0
R-706	Res.	B	1	5 Meadowlark Ln	70	70	0
R-707	Res.	B	1	9 Meadowlark Ln	66	67	1
R-708	Res.	B	1	11 Meadowlark Ln	65	65	0
R-709	Res.	B	1	13 Meadowlark Ln	64	64	0
R-710	Res.	B	1	15 Meadowlark Ln	63	63	0
R-711	Res.	B	1	17 Meadowlark Ln	62	63	1
R-712	Res.	B	1	19 Meadowlark Ln	62	62	0
R-713	Res.	B	1	21 Meadowlark Ln	61	62	1
R-714	Res.	B	1	23 Meadowlark Ln	62	62	0
R-715	Res.	B	1	27 Meadowlark Ln	62	62	0
R-716	Res.	B	1	29 Meadowlark Ln	62	62	0
R-717	Res.	B	1	33 Meadowlark Ln	61	61	0

Table B-1: Noise Sensitive Receptors and Hourly Equivalent Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	No-Build	Change
R-718	Res.	B	1	35 Meadowlark Ln	60	60	0
R-719	Res.	B	1	41 Meadowlark Ln	60	61	1
R-720	Res.	B	1	41 Meadowlark Ln 2	59	59	0
R-721	Res.	B	1	39 Meadowlark Ln	75	75	0
R-722	Res.	B	1	40 Meadowlark Ln	65	65	0
R-723	Res.	B	1	69 Orchard Park Rd	64	64	0
R-724	Res.	B	1	72 Orchard Park Rd	66	66	0
R-725	Res.	B	1	121 Friendship Ln	68	69	1
R-726	Res.	B	1	125 Friendship Ln	65	65	0
R-727	Res.	B	1	665 Tracy Grove Rd	63	63	0
R-728	Res.	B	1	701 Tracy Grove Rd	71	71	0
R-729	Res.	B	1	731 S Allen Rd	68	68	0
R-730	Res.	B	1	727 Allen Rd	66	67	1
R-731	Community Center	C	1	722 S Allen Rd	75	75	0
R-732	Res.	B	1	973 New Hope Rd	60	60	0
R-733	Res.	B	1	983 New Hope Rd	59	59	0
R-734	Res.	B	1	999 New Hope Rd	58	58	0
R-735	Res.	B	1	1075 New Hope Rd	57	57	0
R-736	Res.	B	1	1108 New Hope Rd	57	57	0
R-737	Res.	B	1	1103 New Hope Rd	55	55	0
R-738	Res.	B	1	87 Carroll Oaks Dr	57	57	0
R-739	Res.	B	1	73 Carroll Oaks Dr	57	57	0
R-740	Res.	B	1	45 Carroll Oaks Dr	54	54	0
R-741	Res.	B	1	25 Carroll Oaks Dr	59	59	0
R-742	Res.	B	1	11 Carroll Oaks Dr	64	65	1
R-743	Res.	B	1	713 Allen Rd	65	65	0
R-744	Res.	B	1	709 Allen Rd	63	63	0
R-745	Res.	B	1	695 Allen Rd	66	67	1
R-746	Res.	B	1	691 Allen Rd	68	69	1
R-747	Res.	B	1	677 Allen Rd	74	74	0
R-748	Baseball Field	C	1	625 College Dr - Baseball Field	62	63	1
R-749	Res.	B	1	92 Merry Oaks Ln	70	71	1
R-750	Res.	B	1	87 Merry Oaks Ln	60	60	0
R-751	Res.	B	1	630 Allen Rd	64	65	1
R-752	Res.	B	1	600 Allen Rd	73	73	0

Table B-1: Noise Sensitive Receptors and Hourly Equivalent Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	No-Build	Change
R-753	Res.	B	1	586 Allen Rd	58	59	1
R-754	Res.	B	1	536 Crest Rd	72	73	1
R-755	Res.	B	1	511 Crest Rd	61	64	3
R-756	Res.	B	1	134 Victoria Springs Dr	60	62	2
R-757	Res.	B	1	129 Hollyhock Ct	63	65	2
R-758	Res.	B	1	107 Hollyhock Ct	59	61	2
R-759	Res.	B	1	110 Hollyhock Ct	61	63	2
R-760	Res.	B	1	142 Hollyhock Ct	67	69	2
R-761	Res.	B	1	646 Oak Grove Rd	61	63	2
R-762	Res.	B	1	640 Oak Grove Rd	63	65	2
R-763	Res.	B	1	638 Oak Grove Rd	58	60	2
Predicted Existing and "No-Build" Alternative 2040 Traffic Noise Impacts[3,4]					221[1]	231[1]	0[2]

1. Predicted traffic noise level impact due to approaching or exceeding NAC.
2. Predicted "substantial increase" traffic noise level impact.
3. The number of predicted impacts is not duplicated if receptors are predicted to be impacted by more than one criterion (e.g. if a receptor is impacted by the NAC and a substantial increase, it is counted as only one impact).
4. Total number of predicted traffic noise impacts under the No-Build Alternative = 231.

6-Lane Widening Alternative
Design Year 2040

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Table B-2: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	6-Lane	Change
R-01	Res.	B	1	418 Felmet Rd	60	63	3
R-02	Res.	B	1	79 Bennison Ln	66	68	2
R-03	Res.	B	1	107 Bennison Ln	67	69	2
R-04	Res.	B	1	96 Bennison Ln	62	65	3
R-05	Res.	B	1	106 Bennison Ln	69	71	2
R-06	Res.	B	1	612 Crest Rd	67	68	1
R-07	Res.	B	1	620 Crest Rd	65	67	2
R-08	Res.	B	1	337 Mcmurray Rd	77	79	2
R-09	Res.	B	1	819 Mcmurray Rd	63	65	2
R-10	Res.	B	1	823 Mcmurray Rd	69	72	3
R-11	Res.	B	1	35 Justus Acres Ln	62	63	1
R-12	Res.	B	1	28 Randolph Ave	63	63	0
R-13	Res.	B	1	30 Justus Acres Ln	64	65	1
R-14	Res.	B	1	19 Justus Acres Ln	65	66	1
R-15	Res.	B	1	818 Tracy Grove Rd	67	68	1
R-16	Res.	B	1	824 Tracy Grove Rd	65	65	0
R-17	Res.	B	1	821 Tracy Grove Rd	64	64	0
R-18	Res.	B	1	809 Mid Allen Rd	76	78	2
R-19	Res.	B	1	837 Mid Allen Rd	66	66	0
R-20	Res.	B	1	282 Katie Dr	63	64	1
R-21	Res.	B	1	33 Springside Dr	63	64	1
R-22	Res.	B	1	31 Springside Dr	62	63	1
R-23	Res.	B	1	29 Springside Dr	60	61	1
R-24	Res.	B	1	27 Springside Dr	59	60	1
R-25	Res.	B	1	25 Springside Dr	57	58	1
R-26	Res.	B	1	16 Springside Dr	57	58	1
R-27	Res.	B	1	18 Springside Dr	57	59	2
R-28	Res.	B	1	20 Springside Dr	59	60	1
R-29	Res.	B	1	22 Springside Dr	60	61	1
R-30	Res.	B	1	24 Springside Dr	61	62	1
R-31	Res.	B	1	26 Springside Dr	63	63	0
R-32	Res.	B	1	28 Springside Dr	66	66	0
R-33	Res.	B	1	30 Springside Dr	67	67	0
R-34	Res.	B	1	32 Springside Dr	66	66	0
R-35	Res.	B	1	34 Springside Dr	63	64	1
R-36	Res.	B	1	36 Springside Dr	62	64	2

Table B-2: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	6-Lane	Change
R-37	Res.	B	1	38 Springside Dr	61	63	2
R-38	Res.	B	1	40 Springside Dr	60	62	2
R-39	Res.	B	1	42 Springside Dr	59	61	2
R-40	Res.	B	1	44 Springside Dr	55	56	1
R-41	Res.	B	1	46 Springside Dr	54	55	1
R-42	Res.	B	1	43 Springside Dr	73	73	0
R-43	Res.	B	1	45 Springside Dr	73	74	1
R-44	Res.	B	1	47 Springside Dr	70	71	1
R-45	Res.	B	1	49 Springside Dr	67	69	2
R-46	Res.	B	1	152 Willowbrook Rd	64	68	4
R-47	Res.	B	1	150 Willowbrook Rd	68	72	4
R-48	Res.	B	1	148 Willowbrook Rd	72	76	4
R-49	Res.	B	1	146 Willowbrook Rd	72	76	4
R-50	Res.	B	1	144 Willowbrook Rd	69	74	5
R-51	Res.	B	1	142 Willowbrook Rd	70	72	2
R-52	Res.	B	1	138 Willowbrook Rd	68	70	2
R-53	Res.	B	1	134 Willowbrook Rd	67	71	4
R-54	Res.	B	1	130 Willowbrook Rd	70	74	4
R-55	Res.	B	1	126 Willowbrook Rd	71	75	4
R-56	Res.	B	1	122 Willowbrook Rd	70	76	6
R-57	Res.	B	1	118 Willowbrook Rd	73	77	4
R-58	Res.	B	1	114 Willowbrook Rd	70	75	5
R-59	Res.	B	1	110 Willowbrook Rd	70	75	5
R-60	Res.	B	1	106 Willowbrook Rd	71	76	5
R-61	Res.	B	1	102 Willowbrook Rd	71	76	5
R-62	Res.	B	1	59 Springside Dr	58	59	1
R-63	Res.	B	1	57 Springside Dr	49	50	1
R-64	Res.	B	1	55 Springside Dr	55	56	1
R-65	Res.	B	1	53 Springside Dr	62	64	2
R-66	Res.	B	1	147 Willowbrook Rd	60	63	3
R-67	Res.	B	1	145 Willowbrook Rd	60	63	3
R-68	Res.	B	1	131 Maywood Rd	57	60	3
R-69	Res.	B	1	127 Maywood Rd	53	55	2
R-70	Res.	B	1	123 Maywood Rd	51	54	3
R-71	Res.	B	1	119 Maywood Rd	55	55	0
R-72	Res.	B	1	116 Maywood Rd	51	53	2
R-73	Res.	B	1	120 Maywood Rd	47	47	0

Table B-2: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	6-Lane	Change
R-74	Res.	B	1	124 Maywood Rd	48	50	2
R-75	Res.	B	1	133 Willowbrook Rd	56	59	3
R-76	Res.	B	1	129 Willowbrook Rd	57	61	4
R-77	Res.	B	1	121 Willowbrook Rd	58	62	4
R-78	Res.	B	1	117 Willowbrook Rd	61	65	4
R-79	Res.	B	1	113 Willowbrook Rd	61	64	3
R-80	Res.	B	1	109 Willowbrook Rd	62	65	3
R-81	Res.	B	1	105 Willowbrook Rd	64	**67**	3
R-82	Res.	B	1	710 Dana Rd	55	59	4
R-83	Res.	B	1	714 Dana Rd	56	57	1
R-84	Res.	B	1	703 Dana Rd	61	63	2
R-85	Res.	B	1	410 Lakeview Estate Rd	61	63	2
R-86	Res.	B	1	420 Lakeview Estate Rd	62	64	2
R-87	Res.	B	1	422 Lakeview Estate Rd	62	64	2
R-88	Res.	B	1	424 Lakeview Estate Rd	63	65	2
R-89	Res.	B	1	426 Lakeview Estate Rd	64	**67**	3
R-90	Res.	B	1	102 Wakefield Dr	62	64	2
R-91	Res.	B	1	99 Wakefield Dr	**72**	**76**	4
R-92	Res.	B	1	103 Wakefield Dr	**68**	**72**	4
R-93	Res.	B	1	419 Bird Haven Rd	**66**	**70**	4
R-94	Res.	B	1	417 Bird Haven Rd	63	**66**	3
R-95	Res.	B	1	414 Bird Haven Rd	58	61	3
R-96	Res.	B	1	416 Bird Haven Rd	58	60	2
R-97	Res.	B	1	25 Dove Valley Ln	58	60	2
R-98	Res.	B	1	23 Dove Valley Ln	57	60	3
R-99	Res.	B	1	425 Bird Haven Rd	**67**	**71**	4
R-100	Res.	B	1	81 Dove Valley Ln	61	64	3
R-101	Res.	B	1	420 Bird Haven Rd	65	**68**	3
R-102	Res.	B	1	424 Bird Haven Rd	65	**69**	4
R-103	Res.	B	1	411 Pine Hill Ln	65	**68**	3
R-104	Res.	B	1	508 Prince Rd	**70**	**72**	2
R-105	Res.	B	1	510 Prince Rd	**66**	**68**	2
R-106	Res.	B	1	520 Prince Rd	62	64	2
R-107	Res.	B	1	524 Prince Rd	60	62	2
R-108	Res.	B	1	527 Prince Rd	**68**	**70**	2
R-109	Res.	B	1	529 Prince Rd	64	**66**	2
R-110	Res.	B	1	533 Prince Rd	61	63	2

Table B-2: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	6-Lane	Change
R-111	Res.	B	1	641 Prince Rd	67	71	4
R-112	Res.	B	1	54 Francis Rd	67	69	2
R-113	Res.	B	1	68 Francis Rd	61	63	2
R-114	Res.	B	1	76 Francis Rd	63	65	2
R-115	Res.	B	1	82 Francis Rd	61	63	2
R-116	Res.	B	1	51 High Country Ln	63	64	1
R-117	Res.	B	1	65 High Country Ln	62	64	2
R-118	Res.	B	1	75 High Country Ln	63	64	1
R-119	Res.	B	1	66 High Country Ln	58	60	2
R-120	Res.	B	1	95 Francis Rd	61	63	2
R-121	Res.	B	1	125 High Country Ln	61	63	2
R-122	Res.	B	1	121 High Country Ln	61	63	2
R-123	Res.	B	1	125 Francis Rd	63	64	1
R-124	Res.	B	1	129 Francis Rd	63	64	1
R-125	Res.	B	1	1713 Clear Creek Rd	71	71	0
R-126	Res.	B	1	1733 Clear Creek Rd	71	72	1
R-127	Res.	B	1	1803 Clear Creek Rd	74	75	1
R-128	Res.	B	1	1845 Clear Creek Rd	71	72	1
R-129	Res.	B	1	1959 Clear Creek Rd	66	66	0
R-130	Res.	B	1	1982 Clear Creek Rd	64	65	1
R-131	Res.	B	1	170 Hart Ln	69	69	0
R-132	Res.	B	1	32 Hart Ln	71	72	1
R-133	Res.	B	1	28 Hart Ln	71	72	1
R-134	Res.	B	1	22 Hart Ln	71	72	1
R-135	Res.	B	1	39 Keeneland Dr	66	67	1
R-136	Res.	B	1	23 Keeneland Dr	64	65	1
R-137	Res.	B	1	20 Keeneland Dr	68	69	1
R-138	Res.	B	1	171 Keeneland Dr	67	69	2
R-139	Res.	B	1	195 Kingswood Dr	67	69	2
R-140	Res.	B	1	10 Hart Ln	73	75	2
R-141	Res.	B	1	223 Kingswood Dr	66	68	2
R-142	Res.	B	1	192 Kingswood Dr	60	63	3
R-143	Res.	B	1	216 Kingswood Dr	63	65	2
R-144	Res.	B	1	240 Kingswood Dr	63	65	2
R-145	Res.	B	1	262 Kingswood Dr	63	64	1
R-146	Res.	B	1	282 Kingswood Dr	62	65	3
R-147	Res.	B	1	261 Kingswood Dr	66	68	2

Table B-2: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	6-Lane	Change
R-148	Res.	B	1	275 Kingswood Dr	64	66	2
R-149	Res.	B	1	283 Kingswood Dr	66	68	2
R-150	Res.	B	1	339 Kingswood Dr	66	68	2
R-151	Res.	B	1	299 Kingswood Dr	66	68	2
R-152	Res.	B	1	345 Kingswood Dr	68	70	2
R-153	Res.	B	1	134 Wendy Ln	57	60	3
R-154	Res.	B	1	138 Wendy Ln	62	65	3
R-155	Res.	B	1	142 Wendy Ln	72	74	2
R-156	Res.	B	1	146 Wendy Ln	71	74	3
R-157	Res.	B	1	150 Wendy Ln	74	76	2
R-158	Res.	B	1	154 Wendy Ln	76	78	2
R-159	Res.	B	1	149 Wendy Ln	61	64	3
R-160	Res.	B	1	151 Wendy Ln	67	70	3
R-161	Res.	B	1	153 Wendy Ln	66	69	3
R-162	Res.	B	1	155 Wendy Ln	63	66	3
R-163	Res.	B	1	157 Wendy Ln	67	70	3
R-164	Res.	B	1	132 Shelly Dr	52	54	2
R-165	Res.	B	1	142 Shelly Dr	50	52	2
R-166	Res.	B	1	144 Shelly Dr	50	52	2
R-167	Res.	B	1	160 Wendy Ln	74	77	3
R-168	Res.	B	1	2026 Howard Gap Rd	65	67	2
R-169	Res.	B	1	2020 Howard Gap Rd	66	68	2
R-170	Res.	B	1	335 Carolina Cir	77	78	1
R-171	Res.	B	1	315 Carolina Cir	71	72	1
R-172	Res.	B	1	289 Carolina Cir	67	67	0
R-173	Res.	B	1	257 Carolina Cir	58	59	1
R-174	Res.	B	1	251 Carolina Cir	57	58	1
R-175	Res.	B	1	223 Carolina Cir	57	59	2
R-176	Res.	B	1	205 Carolina Cir	58	59	1
R-177	Res.	B	1	185 Carolina Cir	56	58	2
R-178	Res.	B	1	165 Carolina Cir	56	58	2
R-179	Res.	B	1	145 Carolina Cir	58	60	2
R-180	Res.	B	1	125 Carolina Cir	59	62	3
R-181	Res.	B	1	113 Carolina Cir	60	62	2
R-182	Res.	B	1	93 Carolina Cir	59	61	2
R-183	Res.	B	1	73 Carolina Cir	59	61	2
R-184	Res.	B	1	55 Carolina Cir	58	60	2

Table B-2: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	6-Lane	Change
R-185	Res.	B	1	35 Carolina Cir	58	60	2
R-186	Res.	B	1	512 Brookside Camp Rd	62	64	2
R-187	Res.	B	1	270 Carolina Cir	64	65	1
R-188	Res.	B	1	254 Carolina Cir	63	64	1
R-189	Res.	B	1	226 Carolina Cir	64	65	1
R-190	Res.	B	1	212 Carolina Cir	60	61	1
R-191	Res.	B	1	192 Carolina Cir	61	63	2
R-192	Res.	B	1	172 Carolina Cir	60	62	2
R-193	Res.	B	1	152 Carolina Cir	60	62	2
R-194	Res.	B	1	132 Carolina Cir	61	63	2
R-195	Res.	B	1	112 Carolina Cir	60	61	1
R-196	Res.	B	1	100 Carolina Cir	58	60	2
R-197	Res.	B	1	74 Carolina Cir	56	58	2
R-198	Res.	B	1	60 Carolina Cir	60	62	2
R-199	Res.	B	1	42 Carolina Cir	61	64	3
R-200	Res.	B	1	322 Carolina Cir	74	75	1
R-201	Res.	B	1	374 Carolina Cir	74	74	0
R-202	Res.	B	1	380 Carolina Cir	72	73	1
R-203	Res.	B	1	210 Carolina Cir	69	69	0
R-204	Res.	B	1	426 Carolina Cir	69	70	1
R-205	Res.	B	1	446 Carolina Cir	67	68	1
R-206	Res.	B	1	518 Carolina Cir	62	65	3
R-207	Res.	B	1	536 Carolina Cir	63	65	2
R-208	Res.	B	1	556 Carolina Cir	62	64	2
R-209	Res.	B	1	576 Carolina Cir	63	66	3
R-210	Res.	B	1	464 Carolina Cir	70	71	1
R-211	Res.	B	1	472 Carolina Cir	75	76	1
R-212	Res.	B	1	505 Carolina Cir	76	77	1
R-213	Res.	B	1	537 Carolina Cir	75	77	2
R-214	Res.	B	1	557 Carolina Cir	74	76	2
R-215	Res.	B	1	202 Kimberly Ann Dr	74	74	0
R-216	Res.	B	1	206 Dundeve Cir	74	74	0
R-217	Res.	B	1	208 Dundeve Cir	74	75	1
R-218	Res.	B	1	212 Dundeve Cir	74	76	2
R-219	Res.	B	1	216 Dundeve Cir	73	75	2
R-220	Res.	B	1	505 Brookside Camp Rd	65	67	2
R-221	Res.	B	1	509 Brookside Camp Rd	59	61	2

Table B-2: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	6-Lane	Change
R-222	Res.	B	1	203 Kimberly Ann Dr	62	64	2
R-223	Res.	B	1	207 Kimberly Ann Dr	62	63	1
R-224	Res.	B	1	211 Kimberly Ann Dr	60	62	2
R-225	Res.	B	1	217 Kimberly Ann Dr	60	62	2
R-226	Res.	B	1	206 Kimberly Ann Dr	64	66	2
R-227	Res.	B	1	209 Dundeve Cir	67	68	1
R-228	Res.	B	1	213 Dundeve Cir	63	64	1
R-229	Res.	B	1	237 Dundeve Cir	56	57	1
R-230	Res.	B	1	224 Dundeve Cir	69	71	2
R-231	Res.	B	1	228 Dundeve Cir	65	66	1
R-232	Res.	B	1	232 Dundeve Cir	61	62	1
R-233	Res.	B	1	236 Dundeve Cir	58	59	1
R-234	Res.	B	1	201 Sheneman Dr	69	71	2
R-235	Res.	B	1	213 Sheneman Dr	61	63	2
R-236	Res.	B	1	217 Sheneman Dr	58	60	2
R-237	Res.	B	1	204 Sheneman Dr	73	74	1
R-238	Res.	B	1	212 Sheneman Dr	66	67	1
R-239	Res.	B	1	214 Sheneman Dr	60	62	2
R-240	Res.	B	1	300 Whispering Hills Dr	59	61	2
R-241	Res.	B	1	312 Whispering Hills Dr	68	70	2
R-242	Res.	B	1	319 Whispering Hills Dr	61	63	2
R-243	Res.	B	1	325 Whispering Hills Dr	61	64	3
R-244	Res.	B	1	329 Whispering Hills Dr	60	64	4
R-245	Res.	B	1	318 Whispering Hills Dr	67	69	2
R-246	Res.	B	1	320 Whispering Hills Dr	68	71	3
R-247	Res.	B	1	324 Whispering Hills Dr	67	71	4
R-248	Res.	B	1	326 Whispering Hills Dr	63	67	4
R-249	Res.	B	1	328 Whispering Hills Dr	62	65	3
R-250	Res.	B	1	330 Whispering Hills Dr	59	62	3
R-251	Res.	B	1	336 Whispering Hills Dr	58	61	3
R-252	Res.	B	1	185 Acorn Dr	74	77	3
R-253	Res.	B	1	120 Acorn Dr	69	72	3
R-254	Res.	B	1	112 Acorn Dr	65	68	3
R-255	Res.	B	1	108 Acorn Dr	62	65	3
R-256	Res.	B	1	40 Acorn Dr	62	65	3
R-257	Res.	B	1	181 Acorn Dr	74	77	3
R-258	Res.	B	1	119 Acorn Dr	72	74	2

Table B-2: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	6-Lane	Change
R-259	Res.	B	1	115 Acorn Dr	69	72	3
R-260	Res.	B	1	105 W Acorn Dr	67	69	2
R-261	Res.	B	1	131 W Acorn Dr	70	72	2
R-262	Res.	B	1	188 W Acorn Dr	68	71	3
R-263	Res.	B	1	188 W Acorn Dr 2	66	69	3
R-264	Res.	B	1	107 Acorn Dr	62	65	3
R-265	Res.	B	1	45 Acorn Dr	59	62	3
R-266	Res.	B	1	402 Silver Loop Dr	59	62	3
R-267	Res.	B	1	276 Pjs Pl	63	68	5
R-268	Trail	C	5	100 Hospital Dr	75	79	4
R-269	Res.	B	1	185 Tulip Trail	61	63	2
R-270	Res.	B	1	32 Tulip Trail	62	64	2
R-271	Res.	B	1	42 Tulip Trail	61	64	3
R-272	Res.	B	1	187 Tulip Trail	58	60	2
R-273	Res.	B	1	193 Tulip Trail	60	63	3
R-274	Res.	B	1	50 Tulip Trail	60	63	3
R-275	Res.	B	1	197 Tulip Trail	59	62	3
R-276	Res.	B	1	195 Tulip Trail	48	50	2
R-277	Res.	B	1	18 Sunset Vista Rd	74	75	1
R-278	Res.	B	1	46 Sunset Vista Rd	66	68	2
R-279	Res.	B	1	72 Sunset Vista Rd	64	66	2
R-280	Res.	B	1	108 Sunset Vista Rd	63	66	3
R-281	Res.	B	1	126 Sunset Vista Rd	63	65	2
R-282	Res.	B	1	25 Sunset Vista Rd	70	72	2
R-283	Res.	B	1	91 Sunset Vista Rd	70	72	2
R-284	Res.	B	1	145 Sunset Vista Rd	68	70	2
R-285	Res.	B	1	67 Holly Oak Dr	61	62	1
R-286	Res.	B	1	67 Holly Oak Dr 2	59	60	1
R-287	Res.	B	1	25 Holly Oak Dr	72	74	2
R-288	Res.	B	1	104 Twin Springs Rd	69	72	3
R-289	Res.	B	1	118 Twin Springs Rd	66	68	2
R-290	Res.	B	1	146 Twin Springs Rd	66	68	2
R-291	Res.	B	1	521 Old Hendersonville Rd	67	70	3
R-292	Res.	B	1	525 Old Hendersonville Rd	67	70	3
R-293	Res.	B	1	20 Pleasant Row Dr	64	67	3
R-294	Res.	B	1	15 Pleasant Row Dr	63	65	2
R-295	Res.	B	1	45 Pleasant Row Dr	62	65	3

Table B-2: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	6-Lane	Change
R-296	Res.	B	1	526 Old Hendersonville Rd	64	67	3
R-297	Res.	B	1	522 Old Hendersonville Rd	64	67	3
R-298	Res.	B	1	19 November Ln	63	67	4
R-299	Res.	B	1	39 November Ln	62	66	4
R-300	Res.	B	1	37 November Ln	63	67	4
R-301	Res.	B	1	65 November Ln	64	67	3
R-302	Res.	B	1	244 Hickory Flats Dr	67	69	2
R-303	Res.	B	1	146 Hickory Flats Dr	63	65	2
R-304	Res.	B	1	60 November Ln	61	65	4
R-305	Res.	B	1	42 November Ln	60	63	3
R-306	Res.	B	1	434 Old Hendersonville Rd	60	64	4
R-307	Res.	B	1	211 Hickory Flats Dr	59	64	5
R-308	Res.	B	1	97 Hickory Flats Dr	61	64	3
R-309	Res.	B	1	71 Hickory Flats Dr	61	63	2
R-310	Res.	B	1	54 Hickory Flats Dr	59	63	4
R-311	Res.	B	1	143 Maxwell Dr	66	69	3
R-312	Res.	B	1	109 Maxwell Dr	62	64	2
R-313	Res.	B	1	123 Halliburton Rd	73	74	1
R-314	Res.	B	1	118 Halliburton Rd	64	66	2
R-315	Res.	B	1	124 Halliburton Rd	63	65	2
R-316	Res.	B	1	54 Dawley Dr	61	63	2
R-317	Res.	B	1	46 Dawley Dr	64	66	2
R-318	Res.	B	1	44 Dawley Dr	61	63	2
R-319	Res.	B	1	55 Dawley Dr	57	58	1
R-320	Res.	B	1	15 Dawley Dr	65	66	1
R-321	Res.	B	1	103 Dawley Dr	59	60	1
R-322	Res.	B	1	100 Halliburton Rd	61	64	3
R-323	Res.	B	1	102 Halliburton Rd	60	63	3
R-324	Res.	B	1	104 Halliburton Rd	57	59	2
R-325	Res.	B	1	62 Dawley Dr	55	57	2
R-326	Res.	B	1	99 Dawley Dr	54	55	1
R-327	Res.	B	1	64 Halliburton Rd	60	63	3
R-328	Res.	B	1	128 Kennerly Dr	58	61	3
R-329	Res.	B	1	110 Kennerly Dr	56	58	2
R-330	Res.	B	1	96 Kennerly Dr	54	55	1
R-331	Res.	B	1	127 Kennerly Dr	61	63	2
R-332	Res.	B	1	46 Royal Oaks Dr	59	61	2

Table B-2: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	6-Lane	Change
R-333	Res.	B	1	16 Royal Oaks Dr	57	59	2
R-334	Res.	B	1	106 Dawley Dr	64	64	0
R-335	Res.	B	1	76 Dawley Dr	54	55	1
R-336	Res.	B	1	120 Dawley Dr	73	74	1
R-337	Res.	B	1	24 Kennerly Dr	56	58	2
R-338	Res.	B	1	6077 Asheville Hwy	59	61	2
R-339	Res.	B	1	6075 Asheville Hwy	54	56	2
R-340	Res.	B	1	6073 Asheville Hwy	56	58	2
R-341	Res.	B	1	46 Hope Opal Ln	72	75	3
R-342	Res.	B	1	38 Hope Opal Ln	73	75	2
R-343	Res.	B	1	34 Hope Opal Ln	73	75	2
R-344	Res.	B	1	28 Hope Opal Ln	73	74	1
R-345	Res.	B	1	22 Hope Opal Ln	72	73	1
R-346	Res.	B	1	14 Hope Opal Ln	71	72	1
R-347	Res.	B	1	41 Hope Opal Ln	65	66	1
R-348	Res.	B	1	65 Hope Opal Ln	63	65	2
R-349	Res.	B	1	23 Hope Opal Ln	61	63	2
R-350	Res.	B	1	73 Hope Opal Ln	62	63	1
R-351	Res.	B	1	9 Hope Opal Ln	60	62	2
R-352	Res.	B	1	120 S Thomas St	69	69	0
R-353	Res.	B	1	60 Jim Mills Dr	67	67	0
R-354	Res.	B	1	52 Jim Mills Dr	66	67	1
R-355	Res.	B	1	36 Jim Mills Dr	65	65	0
R-356	Res.	B	1	20 Jim Mills Dr	64	64	0
R-357	Res.	B	1	109 S Thomas St	63	64	1
R-358	Res.	B	1	112 S Thomas St	63	65	2
R-359	Res.	B	1	98 S Thomas St	58	59	1
R-360	Res.	B	1	41 Lantern Walk Ln	62	63	1
R-361	Res.	B	1	42 Lantern Walk Ln	59	60	1
R-362	Res.	B	1	33 Jim Mills Dr	60	60	0
R-363	Res.	B	1	23 Lantern Walk Ln	56	57	1
R-364	Res.	B	1	38 S Thomas St	55	56	1
R-365	Res.	B	1	55 Darity Rd	54	55	1
R-366	Res.	B	1	75 Darity Rd	58	59	1
R-367	Res.	B	1	11 Collins Rd	59	59	0
R-368	Res.	B	1	21 Collins Rd	61	61	0
R-369	Res.	B	1	51 Collins Rd	61	61	0

Table B-2: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	6-Lane	Change
R-370	Res.	B	1	1015 The Carriage Rd	63	63	0
R-371	Res.	B	1	31 Wildwood Cir	57	57	0
R-372	Res.	B	1	33 Wildwood Cir	58	59	1
R-373	Res.	B	1	35 Wildwood Cir	62	63	1
R-374	Res.	B	1	37 Wildwood Cir	65	**67**	2
R-375	Res.	B	1	39 Wildwood Cir	**69**	**70**	1
R-376	Res.	B	1	41 Wildwood Cir	**73**	**73**	0
R-377	Res.	B	1	45 Wildwood Cir	**73**	**74**	1
R-378	Res.	B	1	47 Wildwood Cir	**73**	**74**	1
R-379	Res.	B	1	49 Wildwood Cir	**73**	**75**	2
R-380	Res.	B	1	51 Wildwood Cir	**74**	**76**	2
R-381	Res.	B	1	53 Wildwood Cir	**74**	**75**	1
R-382	Res.	B	1	55 Wildwood Cir	**70**	**73**	3
R-383	Res.	B	1	57 Wildwood Cir	63	65	2
R-384	Place of Worship	D	1	1291 Fanning Bridge Rd	40	41	1
R-385	Res.	B	1	59 Wildwood Cir	61	63	2
R-386	Res.	B	1	61 Wildwood Cir	60	62	2
R-387	Res.	B	1	63 Wildwood Cir	59	61	2
R-388	Res.	B	1	65 Wildwood Cir	59	61	2
R-389	Res.	B	1	67 Wildwood Cir	60	62	2
R-390	Res.	B	1	32 Wildwood Cir	51	53	2
R-391	Res.	B	1	34 Wildwood Cir	55	56	1
R-392	Res.	B	1	36 Wildwood Cir	58	60	2
R-393	Res.	B	1	38 Wildwood Cir	64	65	1
R-394	Res.	B	1	48 Wildwood Cir	64	**67**	3
R-395	Res.	B	1	50 Wildwood Cir	63	**66**	3
R-396	Res.	B	1	52 Wildwood Cir	62	65	3
R-397	Res.	B	1	54 Wildwood Cir	58	60	2
R-398	Res.	B	1	56 Wildwood Cir	55	57	2
R-399	Res.	B	1	58 Wildwood Cir	50	52	2
R-400	Res.	B	1	60 Wildwood Cir	53	55	2
R-401	Res.	B	1	62 Wildwood Cir	54	56	2
R-402	Res.	B	1	64 Wildwood Cir	54	55	1
R-403	Res.	B	1	66 Wildwood Cir	57	59	2
R-404	Res.	B	1	21 Wildwood Ln	51	51	0
R-405	Res.	B	1	20 Wildwood Ln	57	59	2

Table B-2: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	6-Lane	Change
R-406	Res.	B	1	18 Wildwood Ln	51	53	2
R-407	Res.	B	1	16 Wildwood Ln	53	54	1
R-408	Res.	B	1	14 Wildwood Ln	50	52	2
R-409	Res.	B	1	12 Wildwood Ln	49	51	2
R-410	Res.	B	1	10 Wildwood Ln	46	47	1
R-411	Res.	B	1	8 Wildwood Ln	50	51	1
R-412	Res.	B	1	6 Wildwood Ln	53	55	2
R-413	Res.	B	1	4 Wildwood Ln	54	56	2
R-414	Res.	B	1	25 Norman Rd	57	59	2
R-415	Res.	B	1	27 Norman Rd	55	58	3
R-416	Res.	B	1	29 Norman Rd	54	58	4
R-417	Res.	B	1	26 Norman Rd	54	56	2
R-418	Res.	B	1	92 Underwood Rd	60	63	3
R-419	Res.	B	1	5 Piney Dr	58	60	2
R-420	Res.	B	1	6 Piney Dr	55	57	2
R-421	Res.	B	1	15 Hickory Dr	54	56	2
R-422	Hotel - Pool	E	1	183 Underwood Rd	59	61	2
R-423	Hotel - Pool	E	1	196 Underwood Rd	51	52	1
R-424	Hotel - Pool	E	1	550 New Airport Rd	56	57	1
R-425	Res.	B	1	1101 Flycatcher Way	56	58	2
R-426	Res.	B	1	1201 Flycatcher Way	58	60	2
R-427	Res.	B	1	1301 Flycatcher Way	60	62	2
R-428	Res.	B	1	375 Rockwood Rd	56	59	3
R-429	Res.	B	1	26 Foxberry Dr	55	57	2
R-430	Res.	B	1	24 Foxberry Dr	56	58	2
R-431	Res.	B	1	22 Foxberry Dr	59	61	2
R-432	Res.	B	1	18 Foxberry Dr	61	63	2
R-433	Res.	B	1	16 Foxberry Dr	63	65	2
R-434	Res.	B	1	14 Foxberry Dr	65	**68**	3
R-435	Res.	B	1	10 Foxberry Dr	**70**	**73**	3
R-436	Res.	B	1	8 Foxberry Dr	**70**	**73**	3
R-437	Res.	B	1	4 Foxberry Dr	**70**	**74**	4
R-438	Res.	B	1	27 Foxberry Dr	51	54	3
R-439	Res.	B	1	25 Foxberry Dr	54	57	3
R-440	Res.	B	1	19 Foxberry Dr	52	55	3
R-441	Res.	B	1	15 Foxberry Dr	60	63	3
R-442	Res.	B	1	9 Foxberry Dr	62	65	3

Table B-2: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	6-Lane	Change
R-443	Res.	B	1	7 Foxberry Dr	65	68	3
R-444	Res.	B	1	5 Foxberry Dr	65	68	3
R-445	Res.	B	1	3 Foxberry Dr	64	68	4
R-446	Res.	B	1	54 Winding Oak Dr	51	55	4
R-447	Res.	B	1	58 Winding Oak Dr	53	56	3
R-448	Res.	B	1	62 Winding Oak Dr	56	59	3
R-449	Res.	B	1	66 Winding Oak Dr	60	64	4
R-450	Res.	B	1	63 Winding Oak Dr	58	62	4
R-451	Res.	B	1	57 Winding Oak Dr	57	60	3
R-452	Res.	B	1	53 Winding Oak Dr	52	56	4
R-453	Res.	B	1	47 Winding Oak Dr	52	55	3
R-454	Res.	B	1	37 Winding Oak Dr	53	56	3
R-455	Res.	B	1	31 Winding Oak Dr	54	57	3
R-456	Res.	B	1	27 Winding Oak Dr	54	58	4
R-457	Res.	B	1	102 Wood Glen Ct	53	56	3
R-458	Res.	B	1	106 Wood Glen Ct	57	60	3
R-459	Res.	B	1	110 Wood Glen Ct	55	58	3
R-460	Res.	B	1	114 Wood Glen Ct	60	63	3
R-461	Res.	B	1	118 Wood Glen Ct	67	71	4
R-462	Res.	B	1	109 Wood Glen Ct	66	70	4
R-463	Res.	B	1	105 Wood Glen Ct	62	65	3
R-464	Res.	B	1	15 Winding Oak Dr	61	65	4
R-465	Res.	B	1	9 Winding Oak Dr	61	65	4
R-466	Res.	B	1	5 Winding Oak Dr	60	64	4
R-467	Res.	B	1	1 Winding Oak Dr	61	66	5
R-468	Res.	B	1	169 New Rockwood Rd	64	67	3
R-469	Res.	B	1	173 New Rockwood Rd	67	71	4
R-470	Res.	B	1	177 New Rockwood Rd	71	75	4
R-471	Res.	B	1	168 New Rockwood Rd	66	72	6
R-472	Res.	B	1	167 New Rockwood Rd	62	67	5
R-473	Res.	B	1	22 Winding Oak Dr	55	57	2
R-474	Res.	B	1	18 Winding Oak Dr	57	60	3
R-475	Res.	B	1	14 Winding Oak Dr	53	56	3
R-476	Res.	B	1	10 Winding Oak Dr	53	56	3
R-477	Res.	B	1	6 Winding Oak Dr	52	55	3
R-478	Res.	B	1	2 Winding Oak Dr	56	60	4
R-479	Res.	B	1	151 New Rockwood Rd	49	51	2

Table B-2: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	6-Lane	Change
R-480	Res.	B	1	150 New Rockwood Rd	51	53	2
R-481	Res.	B	1	74 Aberdeen Dr	57	58	1
R-482	Res.	B	1	315 Long Shoals Rd	64	68	4
R-483	Medical Facility	D	1	379 Long Shoals Rd	40	40	0
R-484	Hotel - Restaurant	E	1	43 Town Square Blvd	63	66	3
R-485	Trail	C	3	Mountains-To-Sea Trail (East)	61	67	6
R-486	Res.	B	1	215 Ferry Rd	59	59	0
R-487	Res.	B	1	218 Ferry Rd	58	59	1
R-488	Res.	B	1	200 Ferry Rd	63	63	0
R-489	Res.	B	1	192 Ferry Rd	61	62	1
R-490	Res.	B	1	759 Brevard Rd	69	73	4
R-491	Res.	B	1	757 Old Brevard Rd	57	59	2
R-492	Res.	B	1	12 Pine Ln	62	R/W	R/W
R-493	Res.	B	1	20 Pine Ln	62	70	8
R-494	Res.	B	1	24 Pine Ln	63	67	4
R-495	Res.	B	1	26 Pine Ln	64	66	2
R-496	Res.	B	1	28 Pine Ln	64	65	1
R-497	Res.	B	1	50 Pine Ln	64	R/W	R/W
R-498	Res.	B	1	40 Pine Ln	64	65	1
R-499	Res.	B	1	36 Pine Ln	64	66	2
R-500	Res.	B	1	29 Pine Ln	63	65	2
R-501	Res.	B	1	27 Pine Ln	61	64	3
R-502	Res.	B	1	23 Pine Ln	58	61	3
R-503	Res.	B	1	19 Pine Ln	59	61	2
R-504	Res.	B	1	17 Pine Ln	58	60	2
R-505	Res.	B	1	15 Pine Ln	59	63	4
R-506	Res.	B	1	13 Pine Ln	57	59	2
R-507	Res.	B	1	751 Brevard Rd	57	58	1
R-508	Res.	B	1	751 Old Brevard Rd	60	61	1
R-509	Res.	B	1	36 Dogwood Rd	65	66	1
R-510	Res.	B	1	50 Dogwood Rd	68	69	1
R-511	Res.	B	1	33 Rocky Ridge Rd	57	58	1
R-512	Hotel - Restaurant	E	1	1 Rocky Ridge Rd	56	58	2
R-513	Hotel - Pool	E	1	1 Wedgefield Dr	64	64	0
R-514	Res.	B	1	13 Wedgefield Dr	53	55	2

Table B-2: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	6-Lane	Change
R-515	Res.	B	1	20 Wedgefield Dr	60	60	0
R-516	Hotel - Pool	E	1	845 Brevard Rd	52	53	1
R-517	Res.	B	1	184 Ferry Rd	73	74	1
R-518	Res.	B	1	184 Ferry Rd 2	67	68	1
R-519	Res.	B	1	191 Ferry Rd	73	73	0
R-520	Res.	B	1	185 Ferry Rd	61	63	2
R-521	Trail	C	3	Mountains-To-Sea Trail (West)	65	70	5
R-522	Res.	B	1	40 Bear Leah Trl	75	73	-2[5]
R-523	Res.	B	1	38 Bear Leah Trl	75	76	1
R-524	Res.	B	1	404 Glenn Bridge Rd	69	71	2
R-525	Res.	B	1	406 Glenn Bridge Rd	66	68	2
R-526	Res.	B	1	1 Hidden Creek Dr	68	69	1
R-527	Res.	B	1	3 Hidden Creek Dr	63	65	2
R-528	Res.	B	1	5 Hidden Creek Dr	64	66	2
R-529	Res.	B	1	20 Hidden Creek Dr	62	64	2
R-530	Res.	B	1	12 Wells Dr	63	64	1
R-531	Res.	B	1	10 Hidden Creek Dr	66	67	1
R-532	Res.	B	1	2 Hidden Creek Dr	66	68	2
R-533	Res.	B	1	1 Nathan Dr	65	66	1
R-534	Res.	B	1	5 Nathan Dr	64	66	2
R-535	Res.	B	1	105 Hidden Creek Rd	75	77	2
R-536	Res.	B	1	8 Nathan Dr	67	68	1
R-537	Res.	B	1	7 Nathan Dr	64	65	1
R-538	Res.	B	1	15 Nathan Dr	60	62	2
R-539	Res.	B	1	14 Wells Dr	64	66	2
R-540	Res.	B	1	9 Wells Dr	66	67	1
R-541	Res.	B	1	101 Hidden Creek Rd	68	70	2
R-542	Res.	B	1	10 Nathan Dr	63	65	2
R-543	Res.	B	1	12 Nathan Dr	59	61	2
R-544	Res.	B	1	14 Nathan Dr	60	62	2
R-545	Res.	B	1	16 Nathan Dr	64	66	2
R-546	Golf Course	C	2	101 French Broad Ln - Golf Course	71	72	1
R-547	Res.	B	1	289 Butler Bridge Rd	63	64	1
R-548	Res.	B	1	247 Butler Bridge Rd	63	64	1
R-549	Res.	B	1	65 Dry Hollow Ln	57	58	1
R-550	Res.	B	1	2933 N Rugby Rd	57	60	3
R-551	Res.	B	1	2911 N Rugby Rd	56	59	3

Table B-2: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	6-Lane	Change
R-552	Res.	B	1	34 Dry Hollow Ln	58	60	2
R-553	Res.	B	1	38 Dry Hollow Ln	58	59	1
R-554	Res.	B	1	36 Jade Dr	57	59	2
R-555	Res.	B	1	22 Jade Dr	56	58	2
R-556	Res.	B	1	12 Jade Dr	57	59	2
R-557	Res.	B	1	48 Cureton Pl	64	66	2
R-558	Res.	B	1	39 Cureton Pl	64	66	2
R-559	Res.	B	1	31 Cureton Pl	63	65	2
R-560	Res.	B	1	30 Alverson Ln	56	58	2
R-561	Res.	B	1	24 Alverson Ln	59	60	1
R-562	Res.	B	1	16 Alverson Dr	63	64	1
R-563	Res.	B	1	53 Alverson Ln	63	64	1
R-564	Res.	B	1	399 Naples Rd	65	66	1
R-565	Res.	B	1	73 Pack Rd	58	59	1
R-566	Res.	B	1	83 Naples Glenn Trl	70	71	1
R-567	Res.	B	1	288 Old Naples Rd	67	68	1
R-568	Res.	B	1	284 Old Naples Rd	67	68	1
R-569	Res.	B	1	15 Canterbury Way	78	79	1
R-570	Res.	B	1	41 Canterbury Way	69	72	3
R-571	Res.	B	1	41 Canterbury Way 2	70	73	3
R-572	Res.	B	1	118 Canterbury Way	70	71	1
R-573	Res.	B	1	121 Canterbury Hill Ln	71	72	1
R-574	Res.	B	1	304 Canterbury Way	67	69	2
R-575	Res.	B	1	44 Canterbury Hill Ln	72	72	0
R-576	Res.	B	1	238 Canterbury Way	69	70	1
R-577	Res.	B	1	238 Canterbury Way 2	66	67	1
R-578	Res.	B	1	255 Canterbury Way	66	67	1
R-579	Res.	B	1	80 Oak Meadow Ln	68	69	1
R-580	Res.	B	1	73 Oak Meadow Ln	66	68	2
R-581	Res.	B	1	17 Sujo Trl	68	69	1
R-582	Res.	B	1	14 Sujo Trl	64	65	1
R-583	Recreation Area	C	5	485 Brookside Camp Rd	70	71	1
R-584	Res.	B	1	672 Hyder Farm Rd	60	62	2
R-585	Res.	B	1	679 Hyder Farm Rd	56	59	3
R-586	Res.	B	1	619 Hyder Farm Rd	74	75	1
R-587	Res.	B	1	104 Alex Cove Dr	68	70	2
R-588	Res.	B	1	507 Hyder Farm Rd	68	72	4

Table B-2: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	6-Lane	Change
R-589	Res.	B	1	110 Alex Cove Dr	60	63	3
R-590	Res.	B	1	114 Alex Cove Dr	57	60	3
R-591	Res.	B	1	307 Hyder Farm Rd	63	66	3
R-592	Res.	B	1	825 Clear Creek Rd	62	63	1
R-593	Medical Facility	D	1	600 Carolina Village Rd	40	41	1
R-594	Res.	B	1	1118 Carolina Village Rd	60	63	3
R-595	Res.	B	1	1106 Carolina Village Rd	59	62	3
R-596	Res.	B	1	1102 Carolina Village Rd	46	50	4
R-597	Res.	B	1	1084 Carolina Village Rd	53	57	4
R-598	Res.	B	1	1076 Carolina Village Rd	56	58	2
R-599	Res.	B	1	1072 Carolina Village Rd	55	57	2
R-600	Res.	B	1	1133 Carolina Village Rd	61	63	2
R-601	Res.	B	1	1129 Carolina Village Rd	60	62	2
R-602	Res.	B	1	1117 Carolina Village Rd	42	45	3
R-603	Res.	B	1	1107 Carolina Village Rd	60	62	2
R-604	Res.	B	1	1099 Carolina Village Rd	57	59	2
R-605	Res.	B	1	1089 Carolina Village Rd	44	47	3
R-606	Res.	B	1	1065 Carolina Village Rd	53	56	3
R-607	Res.	B	1	1055 Carolina Village Rd	51	53	2
R-608	Res.	B	1	1047 Carolina Village Rd	45	48	3
R-609	Res.	B	1	1035 Carolina Village Rd	54	56	2
R-610	Res.	B	1	1027 Carolina Village Rd	55	56	1
R-611	Res.	B	1	1021 Carolina Village Rd	46	49	3
R-612	Res.	B	1	1052 Carolina Village Rd	56	60	4
R-613	Res.	B	1	1040 Carolina Village Rd	49	52	3
R-614	Res.	B	1	1036 Carolina Village Rd	49	51	2
R-615	Res.	B	1	834 Carolina Village Rd	45	48	3
R-616	Res.	B	1	838 Carolina Village Rd	58	61	3
R-617	Res.	B	1	832 Carolina Village Rd	59	62	3
R-618	Res.	B	1	992 Carolina Village Rd	50	53	3
R-619	Res.	B	1	988 Carolina Village Rd	54	56	2
R-620	Res.	B	1	984 Carolina Village Rd	55	57	2
R-621	Recreation Area	C	1	600 Carolina Village Rd 2	60	62	2
R-622	Res.	B	1	10 Tanager Trail	53	55	2
R-623	Res.	B	1	14 Tanager Trail	49	50	1
R-624	Res.	B	1	12 Tanager Trail	47	49	2
R-625	Res.	B	1	24 White Quail Trail	55	55	0

Table B-2: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	6-Lane	Change
R-626	Res.	B	1	22 White Quail Trail	58	59	1
R-627	Res.	B	1	20 White Quail Trail	56	58	2
R-628	Res.	B	1	21 White Quail Trail	59	60	1
R-629	Res.	B	1	23 White Quail Trail	56	58	2
R-630	Res.	B	1	25 White Quail Trail	47	50	3
R-631	Res.	B	1	418 Carolina Village Rd	72	74	2
R-632	Res.	B	1	30 Lake Spur Dr	49	50	1
R-633	Res.	B	1	34 Lake Spur Dr	49	51	2
R-634	Res.	B	1	32 Lake Spur Dr	47	50	3
R-635	Res.	B	1	38 Lake Spur Dr	53	55	2
R-636	Res.	B	1	36 Lake Spur Dr	56	58	2
R-637	Res.	B	1	40 Lake Spur Dr	51	54	3
R-638	Res.	B	1	35 Lake Spur Dr	60	63	3
R-639	Res.	B	1	37 Lake Spur Dr	65	67	2
R-640	Res.	B	1	39 Lake Spur Dr	65	67	2
R-641	Res.	B	1	348 Carolina Village Rd	73	74	1
R-642	Res.	B	1	346 Carolina Village Rd	70	71	1
R-643	Res.	B	1	108-A Lake Club Cir	50	52	2
R-644	Res.	B	1	108-B Lake Club Cir	51	53	2
R-645	Res.	B	1	108-C Lake Club Cir	51	53	2
R-646	Res.	B	1	108-D Lake Club Cir	52	54	2
R-647	Res.	B	1	108-E Lake Club Cir	53	55	2
R-648	Res.	B	1	108-F Lake Club Cir	54	56	2
R-649	Res.	B	1	103-F Lake Club Cir	46	48	2
R-650	Res.	B	1	103-E Lake Club Cir	46	48	2
R-651	Res.	B	1	103-D Lake Club Cir	46	48	2
R-652	Res.	B	1	103-C Lake Club Cir	46	48	2
R-653	Res.	B	1	103-B Lake Club Cir	46	48	2
R-654	Res.	B	1	103-A Lake Club Cir	49	51	2
R-655	Res.	B	1	45-D Lake Club Cir	49	52	3
R-656	Res.	B	1	45-C Lake Club Cir	49	51	2
R-657	Res.	B	1	45-B Lake Club Cir	49	51	2
R-658	Res.	B	1	45-A Lake Club Cir	49	50	1
R-659	Res.	B	1	62-A Lake Club Cir	53	56	3
R-660	Res.	B	1	62-B Lake Club Cir	52	53	1
R-661	Res.	B	1	62-C Lake Club Cir	52	54	2
R-662	Res.	B	1	62-D Lake Club Cir	52	54	2

Table B-2: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	6-Lane	Change
R-663	Res.	B	1	30-A Lake Club Cir	52	54	2
R-664	Res.	B	1	30-B Lake Club Cir	53	54	1
R-665	Res.	B	1	30-C Lake Club Cir	53	54	1
R-666	Res.	B	1	30-D Lake Club Cir	54	55	1
R-667	Campgrounds	C	1	300 Orrs Camp Rd	56	58	2
R-668	Campgrounds	C	1	300 Orrs Camp Rd 2	60	61	1
R-669	Res.	B	1	305 Prince Rd	73	74	1
R-670	Res.	B	1	77 Fairbanks Ln	72	73	1
R-671	Res.	B	1	69 Fairbanks Ln	65	66	1
R-672	Res.	B	1	47 Fairbanks Ln	59	60	1
R-673	Res.	B	1	317 Prince Rd	59	60	1
R-674	Res.	B	1	311 W Prince Rd	61	63	2
R-675	Res.	B	1	301 Prince Rd	61	63	2
R-676	Res.	B	1	323 Prince Rd	65	66	1
R-677	Res.	B	1	333 Prince Rd	73	75	2
R-678	Res.	B	1	324 Prince Rd	56	58	2
R-679	Res.	B	1	330 Prince Rd	63	65	2
R-680	Res.	B	1	334 Prince Rd	58	59	1
R-681	Res.	B	1	398 Prince Rd	57	59	2
R-682	Res.	B	1	341 Prince Rd	69	70	1
R-683	Res.	B	1	365 Prince Rd	67	69	2
R-684	Res.	B	1	373 Prince Rd	64	65	1
R-685	Res.	B	1	381 Prince Rd	63	64	1
R-686	Res.	B	1	655 Dana Rd	61	63	2
R-687	Res.	B	1	665 Dana Rd	77	79	2
R-688	Res.	B	1	102 Papa Joes Way	60	62	2
R-689	Res.	B	1	101 Papa Joes Way	65	67	2
R-690	Res.	B	1	102 Papa Joes Way 2	55	57	2
R-691	Res.	B	1	2 Meadowlark Ln	68	70	2
R-692	Res.	B	1	4 Meadowlark Ln	66	68	2
R-693	Res.	B	1	6 Meadowlark Ln	64	66	2
R-694	Res.	B	1	8 Meadowlark Ln	63	65	2
R-695	Res.	B	1	10 Meadowlark Ln	61	63	2
R-696	Res.	B	1	12 Meadowlark Ln	58	60	2
R-697	Res.	B	1	14 Meadowlark Ln	57	59	2
R-698	Res.	B	1	18 Meadowlark Ln	57	59	2
R-699	Res.	B	1	20 Meadowlark Ln	56	59	3

Table B-2: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	6-Lane	Change
R-700	Res.	B	1	24 Meadowlark Ln	56	58	2
R-701	Res.	B	1	26 Meadowlark Ln	57	59	2
R-702	Res.	B	1	28 Meadowlark Ln	57	58	1
R-703	Res.	B	1	30 Meadowlark Ln	56	58	2
R-704	Res.	B	1	32 Meadowlark Ln	55	57	2
R-705	Res.	B	1	3 Meadowlark Ln	71	73	2
R-706	Res.	B	1	5 Meadowlark Ln	70	72	2
R-707	Res.	B	1	9 Meadowlark Ln	66	68	2
R-708	Res.	B	1	11 Meadowlark Ln	65	67	2
R-709	Res.	B	1	13 Meadowlark Ln	64	66	2
R-710	Res.	B	1	15 Meadowlark Ln	63	65	2
R-711	Res.	B	1	17 Meadowlark Ln	62	64	2
R-712	Res.	B	1	19 Meadowlark Ln	62	64	2
R-713	Res.	B	1	21 Meadowlark Ln	61	63	2
R-714	Res.	B	1	23 Meadowlark Ln	62	63	1
R-715	Res.	B	1	27 Meadowlark Ln	62	64	2
R-716	Res.	B	1	29 Meadowlark Ln	62	63	1
R-717	Res.	B	1	33 Meadowlark Ln	61	62	1
R-718	Res.	B	1	35 Meadowlark Ln	60	61	1
R-719	Res.	B	1	41 Meadowlark Ln	60	62	2
R-720	Res.	B	1	41 Meadowlark Ln 2	59	60	1
R-721	Res.	B	1	39 Meadowlark Ln	75	75	0
R-722	Res.	B	1	40 Meadowlark Ln	65	65	0
R-723	Res.	B	1	69 Orchard Park Rd	64	65	1
R-724	Res.	B	1	72 Orchard Park Rd	66	67	1
R-725	Res.	B	1	121 Friendship Ln	68	69	1
R-726	Res.	B	1	125 Friendship Ln	65	67	2
R-727	Res.	B	1	665 Tracy Grove Rd	63	64	1
R-728	Res.	B	1	701 Tracy Grove Rd	71	73	2
R-729	Res.	B	1	731 S Allen Rd	68	70	2
R-730	Res.	B	1	727 Allen Rd	66	69	3
R-731	Community Center	C	1	722 S Allen Rd	75	76	1
R-732	Res.	B	1	973 New Hope Rd	60	61	1
R-733	Res.	B	1	983 New Hope Rd	59	60	1
R-734	Res.	B	1	999 New Hope Rd	58	59	1
R-735	Res.	B	1	1075 New Hope Rd	57	58	1

Table B-2: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	6-Lane	Change
R-736	Res.	B	1	1108 New Hope Rd	57	59	2
R-737	Res.	B	1	1103 New Hope Rd	55	56	1
R-738	Res.	B	1	87 Carroll Oaks Dr	57	58	1
R-739	Res.	B	1	73 Carroll Oaks Dr	57	58	1
R-740	Res.	B	1	45 Carroll Oaks Dr	54	56	2
R-741	Res.	B	1	25 Carroll Oaks Dr	59	61	2
R-742	Res.	B	1	11 Carroll Oaks Dr	64	**67**	3
R-743	Res.	B	1	713 Allen Rd	65	**67**	2
R-744	Res.	B	1	709 Allen Rd	63	**66**	3
R-745	Res.	B	1	695 Allen Rd	**66**	**69**	3
R-746	Res.	B	1	691 Allen Rd	**68**	**71**	3
R-747	Res.	B	1	677 Allen Rd	**74**	**75**	1
R-748	Baseball Field	C	1	625 College Dr - Baseball Field	62	64	2
R-749	Res.	B	1	92 Merry Oaks Ln	**70**	**72**	2
R-750	Res.	B	1	87 Merry Oaks Ln	60	62	2
R-751	Res.	B	1	630 Allen Rd	64	**68**	4
R-752	Res.	B	1	600 Allen Rd	**73**	**74**	1
R-753	Res.	B	1	586 Allen Rd	58	60	2
R-754	Res.	B	1	536 Crest Rd	**72**	**73**	1
R-755	Res.	B	1	511 Crest Rd	61	65	4
R-756	Res.	B	1	134 Victoria Springs Dr	60	62	2
R-757	Res.	B	1	129 Hollyhock Ct	63	65	2
R-758	Res.	B	1	107 Hollyhock Ct	59	62	3
R-759	Res.	B	1	110 Hollyhock Ct	61	63	2
R-760	Res.	B	1	142 Hollyhock Ct	**67**	**69**	2
R-761	Res.	B	1	646 Oak Grove Rd	61	63	2
R-762	Res.	B	1	640 Oak Grove Rd	63	65	2
R-763	Res.	B	1	638 Oak Grove Rd	58	61	3
Predicted "6-Lane" Widening Alternative 2040 Traffic Noise Impacts[3,4]					221[1]	297[1]	0[2]

1. Predicted traffic noise level impact due to approaching or exceeding NAC.
2. Predicted "substantial increase" traffic noise level impact.
3. The number of predicted impacts is not duplicated if receptors are predicted to be impacted by more than one criterion (e.g. if a receptor is impacted by the NAC and a substantial increase, it is counted as only one impact).
4. Total number of predicted traffic noise impacts under the 6-Lane Widening Alternative = 297.
5. Negative change in noise level between Existing Condition and 6-Lane Widening Alternative is caused by coarse existing survey data that results in slightly different elevations for the nearby I-26 mainline roadway segments between the two alternatives.

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8-Lane Widening Alternative
Design Year 2040

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Table B-3: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	8-Lane	Change
R-01	Res.	B	1	418 Felmet Rd	60	63	3
R-02	Res.	B	1	79 Bennison Ln	66	68	2
R-03	Res.	B	1	107 Bennison Ln	67	69	2
R-04	Res.	B	1	96 Bennison Ln	62	65	3
R-05	Res.	B	1	106 Bennison Ln	69	71	2
R-06	Res.	B	1	612 Crest Rd	67	69	2
R-07	Res.	B	1	620 Crest Rd	65	68	3
R-08	Res.	B	1	337 Mcmurray Rd	77	79	2
R-09	Res.	B	1	819 Mcmurray Rd	63	65	2
R-10	Res.	B	1	823 Mcmurray Rd	69	74	5
R-11	Res.	B	1	35 Justus Acres Ln	62	64	2
R-12	Res.	B	1	28 Randolph Ave	63	64	1
R-13	Res.	B	1	30 Justus Acres Ln	64	66	2
R-14	Res.	B	1	19 Justus Acres Ln	65	67	2
R-15	Res.	B	1	818 Tracy Grove Rd	67	69	2
R-16	Res.	B	1	824 Tracy Grove Rd	65	66	1
R-17	Res.	B	1	821 Tracy Grove Rd	64	64	0
R-18	Res.	B	1	809 Mid Allen Rd	76	78	2
R-19	Res.	B	1	837 Mid Allen Rd	66	67	1
R-20	Res.	B	1	282 Katie Dr	63	64	1
R-21	Res.	B	1	33 Springside Dr	63	65	2
R-22	Res.	B	1	31 Springside Dr	62	64	2
R-23	Res.	B	1	29 Springside Dr	60	62	2
R-24	Res.	B	1	27 Springside Dr	59	60	1
R-25	Res.	B	1	25 Springside Dr	57	59	2
R-26	Res.	B	1	16 Springside Dr	57	59	2
R-27	Res.	B	1	18 Springside Dr	57	60	3
R-28	Res.	B	1	20 Springside Dr	59	61	2
R-29	Res.	B	1	22 Springside Dr	60	62	2
R-30	Res.	B	1	24 Springside Dr	61	63	2
R-31	Res.	B	1	26 Springside Dr	63	65	2
R-32	Res.	B	1	28 Springside Dr	66	68	2
R-33	Res.	B	1	30 Springside Dr	67	69	2
R-34	Res.	B	1	32 Springside Dr	66	68	2
R-35	Res.	B	1	34 Springside Dr	63	65	2
R-36	Res.	B	1	36 Springside Dr	62	64	2

Table B-3: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	8-Lane	Change
R-37	Res.	B	1	38 Springside Dr	61	63	2
R-38	Res.	B	1	40 Springside Dr	60	63	3
R-39	Res.	B	1	42 Springside Dr	59	61	2
R-40	Res.	B	1	44 Springside Dr	55	57	2
R-41	Res.	B	1	46 Springside Dr	54	55	1
R-42	Res.	B	1	43 Springside Dr	73	76	3
R-43	Res.	B	1	45 Springside Dr	73	76	3
R-44	Res.	B	1	47 Springside Dr	70	72	2
R-45	Res.	B	1	49 Springside Dr	67	70	3
R-46	Res.	B	1	152 Willowbrook Rd	64	68	4
R-47	Res.	B	1	150 Willowbrook Rd	68	73	5
R-48	Res.	B	1	148 Willowbrook Rd	72	78	6
R-49	Res.	B	1	146 Willowbrook Rd	72	78	6
R-50	Res.	B	1	144 Willowbrook Rd	69	75	6
R-51	Res.	B	1	142 Willowbrook Rd	70	77	7
R-52	Res.	B	1	138 Willowbrook Rd	68	74	6
R-53	Res.	B	1	134 Willowbrook Rd	67	73	6
R-54	Res.	B	1	130 Willowbrook Rd	70	76	6
R-55	Res.	B	1	126 Willowbrook Rd	71	75	4
R-56	Res.	B	1	122 Willowbrook Rd	70	76	6
R-57	Res.	B	1	118 Willowbrook Rd	73	78	5
R-58	Res.	B	1	114 Willowbrook Rd	70	76	6
R-59	Res.	B	1	110 Willowbrook Rd	70	76	6
R-60	Res.	B	1	106 Willowbrook Rd	71	77	6
R-61	Res.	B	1	102 Willowbrook Rd	71	77	6
R-62	Res.	B	1	59 Springside Dr	58	59	1
R-63	Res.	B	1	57 Springside Dr	49	51	2
R-64	Res.	B	1	55 Springside Dr	55	57	2
R-65	Res.	B	1	53 Springside Dr	62	65	3
R-66	Res.	B	1	147 Willowbrook Rd	60	64	4
R-67	Res.	B	1	145 Willowbrook Rd	60	64	4
R-68	Res.	B	1	131 Maywood Rd	57	60	3
R-69	Res.	B	1	127 Maywood Rd	53	56	3
R-70	Res.	B	1	123 Maywood Rd	51	54	3
R-71	Res.	B	1	119 Maywood Rd	55	56	1
R-72	Res.	B	1	116 Maywood Rd	51	53	2
R-73	Res.	B	1	120 Maywood Rd	47	48	1

Table B-3: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	8-Lane	Change
R-74	Res.	B	1	124 Maywood Rd	48	51	3
R-75	Res.	B	1	133 Willowbrook Rd	56	60	4
R-76	Res.	B	1	129 Willowbrook Rd	57	61	4
R-77	Res.	B	1	121 Willowbrook Rd	58	62	4
R-78	Res.	B	1	117 Willowbrook Rd	61	65	4
R-79	Res.	B	1	113 Willowbrook Rd	61	65	4
R-80	Res.	B	1	109 Willowbrook Rd	62	65	3
R-81	Res.	B	1	105 Willowbrook Rd	64	67	3
R-82	Res.	B	1	710 Dana Rd	55	59	4
R-83	Res.	B	1	714 Dana Rd	56	58	2
R-84	Res.	B	1	703 Dana Rd	61	64	3
R-85	Res.	B	1	410 Lakeview Estate Rd	61	63	2
R-86	Res.	B	1	420 Lakeview Estate Rd	62	64	2
R-87	Res.	B	1	422 Lakeview Estate Rd	62	65	3
R-88	Res.	B	1	424 Lakeview Estate Rd	63	65	2
R-89	Res.	B	1	426 Lakeview Estate Rd	64	67	3
R-90	Res.	B	1	102 Wakefield Dr	62	64	2
R-91	Res.	B	1	99 Wakefield Dr	72	77	5
R-92	Res.	B	1	103 Wakefield Dr	68	72	4
R-93	Res.	B	1	419 Bird Haven Rd	66	70	4
R-94	Res.	B	1	417 Bird Haven Rd	63	66	3
R-95	Res.	B	1	414 Bird Haven Rd	58	61	3
R-96	Res.	B	1	416 Bird Haven Rd	58	60	2
R-97	Res.	B	1	25 Dove Valley Ln	58	60	2
R-98	Res.	B	1	23 Dove Valley Ln	57	60	3
R-99	Res.	B	1	425 Bird Haven Rd	67	70	3
R-100	Res.	B	1	81 Dove Valley Ln	61	63	2
R-101	Res.	B	1	420 Bird Haven Rd	65	68	3
R-102	Res.	B	1	424 Bird Haven Rd	65	69	4
R-103	Res.	B	1	411 Pine Hill Ln	65	69	4
R-104	Res.	B	1	508 Prince Rd	70	74	4
R-105	Res.	B	1	510 Prince Rd	66	69	3
R-106	Res.	B	1	520 Prince Rd	62	65	3
R-107	Res.	B	1	524 Prince Rd	60	63	3
R-108	Res.	B	1	527 Prince Rd	68	71	3
R-109	Res.	B	1	529 Prince Rd	64	67	3
R-110	Res.	B	1	533 Prince Rd	61	63	2

Table B-3: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	8-Lane	Change
R-111	Res.	B	1	641 Prince Rd	67	71	4
R-112	Res.	B	1	54 Francis Rd	67	69	2
R-113	Res.	B	1	68 Francis Rd	61	63	2
R-114	Res.	B	1	76 Francis Rd	63	65	2
R-115	Res.	B	1	82 Francis Rd	61	64	3
R-116	Res.	B	1	51 High Country Ln	63	64	1
R-117	Res.	B	1	65 High Country Ln	62	64	2
R-118	Res.	B	1	75 High Country Ln	63	65	2
R-119	Res.	B	1	66 High Country Ln	58	60	2
R-120	Res.	B	1	95 Francis Rd	61	63	2
R-121	Res.	B	1	125 High Country Ln	61	63	2
R-122	Res.	B	1	121 High Country Ln	61	63	2
R-123	Res.	B	1	125 Francis Rd	63	65	2
R-124	Res.	B	1	129 Francis Rd	63	65	2
R-125	Res.	B	1	1713 Clear Creek Rd	71	73	2
R-126	Res.	B	1	1733 Clear Creek Rd	71	73	2
R-127	Res.	B	1	1803 Clear Creek Rd	74	76	2
R-128	Res.	B	1	1845 Clear Creek Rd	71	74	3
R-129	Res.	B	1	1959 Clear Creek Rd	66	68	2
R-130	Res.	B	1	1982 Clear Creek Rd	64	66	2
R-131	Res.	B	1	170 Hart Ln	69	71	2
R-132	Res.	B	1	32 Hart Ln	71	73	2
R-133	Res.	B	1	28 Hart Ln	71	73	2
R-134	Res.	B	1	22 Hart Ln	71	74	3
R-135	Res.	B	1	39 Keeneland Dr	66	68	2
R-136	Res.	B	1	23 Keeneland Dr	64	67	3
R-137	Res.	B	1	20 Keeneland Dr	68	70	2
R-138	Res.	B	1	171 Keeneland Dr	67	69	2
R-139	Res.	B	1	195 Kingswood Dr	67	70	3
R-140	Res.	B	1	10 Hart Ln	73	76	3
R-141	Res.	B	1	223 Kingswood Dr	66	69	3
R-142	Res.	B	1	192 Kingswood Dr	60	63	3
R-143	Res.	B	1	216 Kingswood Dr	63	66	3
R-144	Res.	B	1	240 Kingswood Dr	63	66	3
R-145	Res.	B	1	262 Kingswood Dr	63	66	3
R-146	Res.	B	1	282 Kingswood Dr	62	66	4
R-147	Res.	B	1	261 Kingswood Dr	66	69	3

Table B-3: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	8-Lane	Change
R-148	Res.	B	1	275 Kingswood Dr	64	67	3
R-149	Res.	B	1	283 Kingswood Dr	66	69	3
R-150	Res.	B	1	339 Kingswood Dr	66	69	3
R-151	Res.	B	1	299 Kingswood Dr	66	69	3
R-152	Res.	B	1	345 Kingswood Dr	68	71	3
R-153	Res.	B	1	134 Wendy Ln	57	60	3
R-154	Res.	B	1	138 Wendy Ln	62	66	4
R-155	Res.	B	1	142 Wendy Ln	72	75	3
R-156	Res.	B	1	146 Wendy Ln	71	74	3
R-157	Res.	B	1	150 Wendy Ln	74	77	3
R-158	Res.	B	1	154 Wendy Ln	76	79	3
R-159	Res.	B	1	149 Wendy Ln	61	65	4
R-160	Res.	B	1	151 Wendy Ln	67	71	4
R-161	Res.	B	1	153 Wendy Ln	66	70	4
R-162	Res.	B	1	155 Wendy Ln	63	67	4
R-163	Res.	B	1	157 Wendy Ln	67	71	4
R-164	Res.	B	1	132 Shelly Dr	52	54	2
R-165	Res.	B	1	142 Shelly Dr	50	53	3
R-166	Res.	B	1	144 Shelly Dr	50	53	3
R-167	Res.	B	1	160 Wendy Ln	74	79	5
R-168	Res.	B	1	2026 Howard Gap Rd	65	68	3
R-169	Res.	B	1	2020 Howard Gap Rd	66	69	3
R-170	Res.	B	1	335 Carolina Cir	77	79	2
R-171	Res.	B	1	315 Carolina Cir	71	73	2
R-172	Res.	B	1	289 Carolina Cir	67	69	2
R-173	Res.	B	1	257 Carolina Cir	58	60	2
R-174	Res.	B	1	251 Carolina Cir	57	59	2
R-175	Res.	B	1	223 Carolina Cir	57	60	3
R-176	Res.	B	1	205 Carolina Cir	58	60	2
R-177	Res.	B	1	185 Carolina Cir	56	59	3
R-178	Res.	B	1	165 Carolina Cir	56	59	3
R-179	Res.	B	1	145 Carolina Cir	58	60	2
R-180	Res.	B	1	125 Carolina Cir	59	63	4
R-181	Res.	B	1	113 Carolina Cir	60	63	3
R-182	Res.	B	1	93 Carolina Cir	59	62	3
R-183	Res.	B	1	73 Carolina Cir	59	62	3
R-184	Res.	B	1	55 Carolina Cir	58	61	3

Table B-3: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	8-Lane	Change
R-185	Res.	B	1	35 Carolina Cir	58	60	2
R-186	Res.	B	1	512 Brookside Camp Rd	62	64	2
R-187	Res.	B	1	270 Carolina Cir	64	66	2
R-188	Res.	B	1	254 Carolina Cir	63	65	2
R-189	Res.	B	1	226 Carolina Cir	64	66	2
R-190	Res.	B	1	212 Carolina Cir	60	62	2
R-191	Res.	B	1	192 Carolina Cir	61	64	3
R-192	Res.	B	1	172 Carolina Cir	60	63	3
R-193	Res.	B	1	152 Carolina Cir	60	63	3
R-194	Res.	B	1	132 Carolina Cir	61	63	2
R-195	Res.	B	1	112 Carolina Cir	60	62	2
R-196	Res.	B	1	100 Carolina Cir	58	60	2
R-197	Res.	B	1	74 Carolina Cir	56	58	2
R-198	Res.	B	1	60 Carolina Cir	60	61	1
R-199	Res.	B	1	42 Carolina Cir	61	63	2
R-200	Res.	B	1	322 Carolina Cir	74	76	2
R-201	Res.	B	1	374 Carolina Cir	74	76	2
R-202	Res.	B	1	380 Carolina Cir	72	75	3
R-203	Res.	B	1	210 Carolina Cir	69	71	2
R-204	Res.	B	1	426 Carolina Cir	69	71	2
R-205	Res.	B	1	446 Carolina Cir	67	69	2
R-206	Res.	B	1	518 Carolina Cir	62	66	4
R-207	Res.	B	1	536 Carolina Cir	63	65	2
R-208	Res.	B	1	556 Carolina Cir	62	64	2
R-209	Res.	B	1	576 Carolina Cir	63	65	2
R-210	Res.	B	1	464 Carolina Cir	70	73	3
R-211	Res.	B	1	472 Carolina Cir	75	78	3
R-212	Res.	B	1	505 Carolina Cir	76	78	2
R-213	Res.	B	1	537 Carolina Cir	75	78	3
R-214	Res.	B	1	557 Carolina Cir	74	76	2
R-215	Res.	B	1	202 Kimberly Ann Dr	74	76	2
R-216	Res.	B	1	206 Dundeve Cir	74	76	2
R-217	Res.	B	1	208 Dundeve Cir	74	77	3
R-218	Res.	B	1	212 Dundeve Cir	74	77	3
R-219	Res.	B	1	216 Dundeve Cir	73	76	3
R-220	Res.	B	1	505 Brookside Camp Rd	65	68	3
R-221	Res.	B	1	509 Brookside Camp Rd	59	62	3

Table B-3: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	8-Lane	Change
R-222	Res.	B	1	203 Kimberly Ann Dr	62	65	3
R-223	Res.	B	1	207 Kimberly Ann Dr	62	65	3
R-224	Res.	B	1	211 Kimberly Ann Dr	60	63	3
R-225	Res.	B	1	217 Kimberly Ann Dr	60	63	3
R-226	Res.	B	1	206 Kimberly Ann Dr	64	67	3
R-227	Res.	B	1	209 Dundeve Cir	67	70	3
R-228	Res.	B	1	213 Dundeve Cir	63	66	3
R-229	Res.	B	1	237 Dundeve Cir	56	57	1
R-230	Res.	B	1	224 Dundeve Cir	69	72	3
R-231	Res.	B	1	228 Dundeve Cir	65	67	2
R-232	Res.	B	1	232 Dundeve Cir	61	63	2
R-233	Res.	B	1	236 Dundeve Cir	58	60	2
R-234	Res.	B	1	201 Sheneman Dr	69	72	3
R-235	Res.	B	1	213 Sheneman Dr	61	64	3
R-236	Res.	B	1	217 Sheneman Dr	58	61	3
R-237	Res.	B	1	204 Sheneman Dr	73	75	2
R-238	Res.	B	1	212 Sheneman Dr	66	69	3
R-239	Res.	B	1	214 Sheneman Dr	60	63	3
R-240	Res.	B	1	300 Whispering Hills Dr	59	61	2
R-241	Res.	B	1	312 Whispering Hills Dr	68	71	3
R-242	Res.	B	1	319 Whispering Hills Dr	61	63	2
R-243	Res.	B	1	325 Whispering Hills Dr	61	64	3
R-244	Res.	B	1	329 Whispering Hills Dr	60	64	4
R-245	Res.	B	1	318 Whispering Hills Dr	67	70	3
R-246	Res.	B	1	320 Whispering Hills Dr	68	72	4
R-247	Res.	B	1	324 Whispering Hills Dr	67	71	4
R-248	Res.	B	1	326 Whispering Hills Dr	63	67	4
R-249	Res.	B	1	328 Whispering Hills Dr	62	66	4
R-250	Res.	B	1	330 Whispering Hills Dr	59	63	4
R-251	Res.	B	1	336 Whispering Hills Dr	58	62	4
R-252	Res.	B	1	185 Acorn Dr	74	78	4
R-253	Res.	B	1	120 Acorn Dr	69	73	4
R-254	Res.	B	1	112 Acorn Dr	65	69	4
R-255	Res.	B	1	108 Acorn Dr	62	66	4
R-256	Res.	B	1	40 Acorn Dr	62	66	4
R-257	Res.	B	1	181 Acorn Dr	74	78	4
R-258	Res.	B	1	119 Acorn Dr	72	75	3

Table B-3: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	8-Lane	Change
R-259	Res.	B	1	115 Acorn Dr	69	73	4
R-260	Res.	B	1	105 W Acorn Dr	67	70	3
R-261	Res.	B	1	131 W Acorn Dr	70	74	4
R-262	Res.	B	1	188 W Acorn Dr	68	72	4
R-263	Res.	B	1	188 W Acorn Dr 2	66	70	4
R-264	Res.	B	1	107 Acorn Dr	62	66	4
R-265	Res.	B	1	45 Acorn Dr	59	63	4
R-266	Res.	B	1	402 Silver Loop Dr	59	63	4
R-267	Res.	B	1	276 Pjs Pl	63	69	6
R-268	Trail	C	5	100 Hospital Dr	75	80	5
R-269	Res.	B	1	185 Tulip Trail	61	64	3
R-270	Res.	B	1	32 Tulip Trail	62	65	3
R-271	Res.	B	1	42 Tulip Trail	61	65	4
R-272	Res.	B	1	187 Tulip Trail	58	60	2
R-273	Res.	B	1	193 Tulip Trail	60	64	4
R-274	Res.	B	1	50 Tulip Trail	60	63	3
R-275	Res.	B	1	197 Tulip Trail	59	63	4
R-276	Res.	B	1	195 Tulip Trail	48	51	3
R-277	Res.	B	1	18 Sunset Vista Rd	74	76	2
R-278	Res.	B	1	46 Sunset Vista Rd	66	68	2
R-279	Res.	B	1	72 Sunset Vista Rd	64	68	4
R-280	Res.	B	1	108 Sunset Vista Rd	63	66	3
R-281	Res.	B	1	126 Sunset Vista Rd	63	65	2
R-282	Res.	B	1	25 Sunset Vista Rd	70	72	2
R-283	Res.	B	1	91 Sunset Vista Rd	70	73	3
R-284	Res.	B	1	145 Sunset Vista Rd	68	71	3
R-285	Res.	B	1	67 Holly Oak Dr	61	63	2
R-286	Res.	B	1	67 Holly Oak Dr 2	59	61	2
R-287	Res.	B	1	25 Holly Oak Dr	72	75	3
R-288	Res.	B	1	104 Twin Springs Rd	69	72	3
R-289	Res.	B	1	118 Twin Springs Rd	66	69	3
R-290	Res.	B	1	146 Twin Springs Rd	66	69	3
R-291	Res.	B	1	521 Old Hendersonville Rd	67	70	3
R-292	Res.	B	1	525 Old Hendersonville Rd	67	71	4
R-293	Res.	B	1	20 Pleasant Row Dr	64	67	3
R-294	Res.	B	1	15 Pleasant Row Dr	63	67	4
R-295	Res.	B	1	45 Pleasant Row Dr	62	66	4

Table B-3: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	8-Lane	Change
R-296	Res.	B	1	526 Old Hendersonville Rd	64	68	4
R-297	Res.	B	1	522 Old Hendersonville Rd	64	68	4
R-298	Res.	B	1	19 November Ln	63	67	4
R-299	Res.	B	1	39 November Ln	62	66	4
R-300	Res.	B	1	37 November Ln	63	66	3
R-301	Res.	B	1	65 November Ln	64	68	4
R-302	Res.	B	1	244 Hickory Flats Dr	67	70	3
R-303	Res.	B	1	146 Hickory Flats Dr	63	66	3
R-304	Res.	B	1	60 November Ln	61	64	3
R-305	Res.	B	1	42 November Ln	60	64	4
R-306	Res.	B	1	434 Old Hendersonville Rd	60	63	3
R-307	Res.	B	1	211 Hickory Flats Dr	59	62	3
R-308	Res.	B	1	97 Hickory Flats Dr	61	64	3
R-309	Res.	B	1	71 Hickory Flats Dr	61	64	3
R-310	Res.	B	1	54 Hickory Flats Dr	59	63	4
R-311	Res.	B	1	143 Maxwell Dr	66	69	3
R-312	Res.	B	1	109 Maxwell Dr	62	65	3
R-313	Res.	B	1	123 Halliburton Rd	73	78	5
R-314	Res.	B	1	118 Halliburton Rd	64	69	5
R-315	Res.	B	1	124 Halliburton Rd	63	68	5
R-316	Res.	B	1	54 Dawley Dr	61	66	5
R-317	Res.	B	1	46 Dawley Dr	64	69	5
R-318	Res.	B	1	44 Dawley Dr	61	66	5
R-319	Res.	B	1	55 Dawley Dr	57	59	2
R-320	Res.	B	1	15 Dawley Dr	65	69	4
R-321	Res.	B	1	103 Dawley Dr	59	62	3
R-322	Res.	B	1	100 Halliburton Rd	61	65	4
R-323	Res.	B	1	102 Halliburton Rd	60	63	3
R-324	Res.	B	1	104 Halliburton Rd	57	59	2
R-325	Res.	B	1	62 Dawley Dr	55	57	2
R-326	Res.	B	1	99 Dawley Dr	54	56	2
R-327	Res.	B	1	64 Halliburton Rd	60	64	4
R-328	Res.	B	1	128 Kennerly Dr	58	62	4
R-329	Res.	B	1	110 Kennerly Dr	56	59	3
R-330	Res.	B	1	96 Kennerly Dr	54	56	2
R-331	Res.	B	1	127 Kennerly Dr	61	63	2
R-332	Res.	B	1	46 Royal Oaks Dr	59	62	3

Table B-3: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	8-Lane	Change
R-333	Res.	B	1	16 Royal Oaks Dr	57	59	2
R-334	Res.	B	1	106 Dawley Dr	64	68	4
R-335	Res.	B	1	76 Dawley Dr	54	56	2
R-336	Res.	B	1	120 Dawley Dr	73	77	4
R-337	Res.	B	1	24 Kennerly Dr	56	58	2
R-338	Res.	B	1	6077 Asheville Hwy	59	62	3
R-339	Res.	B	1	6075 Asheville Hwy	54	56	2
R-340	Res.	B	1	6073 Asheville Hwy	56	58	2
R-341	Res.	B	1	46 Hope Opal Ln	72	77	5
R-342	Res.	B	1	38 Hope Opal Ln	73	77	4
R-343	Res.	B	1	34 Hope Opal Ln	73	76	3
R-344	Res.	B	1	28 Hope Opal Ln	73	76	3
R-345	Res.	B	1	22 Hope Opal Ln	72	75	3
R-346	Res.	B	1	14 Hope Opal Ln	71	73	2
R-347	Res.	B	1	41 Hope Opal Ln	65	68	3
R-348	Res.	B	1	65 Hope Opal Ln	63	66	3
R-349	Res.	B	1	23 Hope Opal Ln	61	63	2
R-350	Res.	B	1	73 Hope Opal Ln	62	63	1
R-351	Res.	B	1	9 Hope Opal Ln	60	62	2
R-352	Res.	B	1	120 S Thomas St	69	71	2
R-353	Res.	B	1	60 Jim Mills Dr	67	69	2
R-354	Res.	B	1	52 Jim Mills Dr	66	68	2
R-355	Res.	B	1	36 Jim Mills Dr	65	67	2
R-356	Res.	B	1	20 Jim Mills Dr	64	66	2
R-357	Res.	B	1	109 S Thomas St	63	65	2
R-358	Res.	B	1	112 S Thomas St	63	66	3
R-359	Res.	B	1	98 S Thomas St	58	60	2
R-360	Res.	B	1	41 Lantern Walk Ln	62	64	2
R-361	Res.	B	1	42 Lantern Walk Ln	59	61	2
R-362	Res.	B	1	33 Jim Mills Dr	60	61	1
R-363	Res.	B	1	23 Lantern Walk Ln	56	58	2
R-364	Res.	B	1	38 S Thomas St	55	57	2
R-365	Res.	B	1	55 Darity Rd	54	56	2
R-366	Res.	B	1	75 Darity Rd	58	60	2
R-367	Res.	B	1	11 Collins Rd	59	60	1
R-368	Res.	B	1	21 Collins Rd	61	62	1
R-369	Res.	B	1	51 Collins Rd	61	62	1

Table B-3: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	8-Lane	Change
R-370	Res.	B	1	1015 The Carriage Rd	63	65	2
R-371	Res.	B	1	31 Wildwood Cir	57	58	1
R-372	Res.	B	1	33 Wildwood Cir	58	60	2
R-373	Res.	B	1	35 Wildwood Cir	62	64	2
R-374	Res.	B	1	37 Wildwood Cir	65	67	2
R-375	Res.	B	1	39 Wildwood Cir	69	71	2
R-376	Res.	B	1	41 Wildwood Cir	73	75	2
R-377	Res.	B	1	45 Wildwood Cir	73	75	2
R-378	Res.	B	1	47 Wildwood Cir	73	76	3
R-379	Res.	B	1	49 Wildwood Cir	73	76	3
R-380	Res.	B	1	51 Wildwood Cir	74	77	3
R-381	Res.	B	1	53 Wildwood Cir	74	76	2
R-382	Res.	B	1	55 Wildwood Cir	70	75	5
R-383	Res.	B	1	57 Wildwood Cir	63	67	4
R-384	Place of Worship	D	1	1291 Fanning Bridge Rd	40	42	2
R-385	Res.	B	1	59 Wildwood Cir	61	65	4
R-386	Res.	B	1	61 Wildwood Cir	60	63	3
R-387	Res.	B	1	63 Wildwood Cir	59	62	3
R-388	Res.	B	1	65 Wildwood Cir	59	61	2
R-389	Res.	B	1	67 Wildwood Cir	60	62	2
R-390	Res.	B	1	32 Wildwood Cir	51	53	2
R-391	Res.	B	1	34 Wildwood Cir	55	56	1
R-392	Res.	B	1	36 Wildwood Cir	58	61	3
R-393	Res.	B	1	38 Wildwood Cir	64	66	2
R-394	Res.	B	1	48 Wildwood Cir	64	67	3
R-395	Res.	B	1	50 Wildwood Cir	63	66	3
R-396	Res.	B	1	52 Wildwood Cir	62	66	4
R-397	Res.	B	1	54 Wildwood Cir	58	61	3
R-398	Res.	B	1	56 Wildwood Cir	55	59	4
R-399	Res.	B	1	58 Wildwood Cir	50	53	3
R-400	Res.	B	1	60 Wildwood Cir	53	56	3
R-401	Res.	B	1	62 Wildwood Cir	54	57	3
R-402	Res.	B	1	64 Wildwood Cir	54	57	3
R-403	Res.	B	1	66 Wildwood Cir	57	59	2
R-404	Res.	B	1	21 Wildwood Ln	51	52	1
R-405	Res.	B	1	20 Wildwood Ln	57	60	3

Table B-3: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	8-Lane	Change
R-406	Res.	B	1	18 Wildwood Ln	51	54	3
R-407	Res.	B	1	16 Wildwood Ln	53	55	2
R-408	Res.	B	1	14 Wildwood Ln	50	53	3
R-409	Res.	B	1	12 Wildwood Ln	49	52	3
R-410	Res.	B	1	10 Wildwood Ln	46	49	3
R-411	Res.	B	1	8 Wildwood Ln	50	53	3
R-412	Res.	B	1	6 Wildwood Ln	53	56	3
R-413	Res.	B	1	4 Wildwood Ln	54	57	3
R-414	Res.	B	1	25 Norman Rd	57	60	3
R-415	Res.	B	1	27 Norman Rd	55	59	4
R-416	Res.	B	1	29 Norman Rd	54	55	1
R-417	Res.	B	1	26 Norman Rd	54	56	2
R-418	Res.	B	1	92 Underwood Rd	60	60	0
R-419	Res.	B	1	5 Piney Dr	58	60	2
R-420	Res.	B	1	6 Piney Dr	55	58	3
R-421	Res.	B	1	15 Hickory Dr	54	57	3
R-422	Hotel - Pool	E	1	183 Underwood Rd	59	64	5
R-423	Hotel - Pool	E	1	196 Underwood Rd	51	53	2
R-424	Hotel - Pool	E	1	550 New Airport Rd	56	57	1
R-425	Res.	B	1	1101 Flycatcher Way	56	59	3
R-426	Res.	B	1	1201 Flycatcher Way	58	61	3
R-427	Res.	B	1	1301 Flycatcher Way	60	63	3
R-428	Res.	B	1	375 Rockwood Rd	56	60	4
R-429	Res.	B	1	26 Foxberry Dr	55	57	2
R-430	Res.	B	1	24 Foxberry Dr	56	59	3
R-431	Res.	B	1	22 Foxberry Dr	59	62	3
R-432	Res.	B	1	18 Foxberry Dr	61	65	4
R-433	Res.	B	1	16 Foxberry Dr	63	**67**	4
R-434	Res.	B	1	14 Foxberry Dr	65	**70**	5
R-435	Res.	B	1	10 Foxberry Dr	**70**	**74**	4
R-436	Res.	B	1	8 Foxberry Dr	**70**	**75**	5
R-437	Res.	B	1	4 Foxberry Dr	**70**	**75**	5
R-438	Res.	B	1	27 Foxberry Dr	51	55	4
R-439	Res.	B	1	25 Foxberry Dr	54	58	4
R-440	Res.	B	1	19 Foxberry Dr	52	56	4
R-441	Res.	B	1	15 Foxberry Dr	60	64	4
R-442	Res.	B	1	9 Foxberry Dr	62	**67**	5

Table B-3: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	8-Lane	Change
R-443	Res.	B	1	7 Foxberry Dr	65	69	4
R-444	Res.	B	1	5 Foxberry Dr	65	70	5
R-445	Res.	B	1	3 Foxberry Dr	64	69	5
R-446	Res.	B	1	54 Winding Oak Dr	51	56	5
R-447	Res.	B	1	58 Winding Oak Dr	53	57	4
R-448	Res.	B	1	62 Winding Oak Dr	56	60	4
R-449	Res.	B	1	66 Winding Oak Dr	60	65	5
R-450	Res.	B	1	63 Winding Oak Dr	58	63	5
R-451	Res.	B	1	57 Winding Oak Dr	57	61	4
R-452	Res.	B	1	53 Winding Oak Dr	52	57	5
R-453	Res.	B	1	47 Winding Oak Dr	52	56	4
R-454	Res.	B	1	37 Winding Oak Dr	53	57	4
R-455	Res.	B	1	31 Winding Oak Dr	54	59	5
R-456	Res.	B	1	27 Winding Oak Dr	54	59	5
R-457	Res.	B	1	102 Wood Glen Ct	53	57	4
R-458	Res.	B	1	106 Wood Glen Ct	57	62	5
R-459	Res.	B	1	110 Wood Glen Ct	55	59	4
R-460	Res.	B	1	114 Wood Glen Ct	60	65	5
R-461	Res.	B	1	118 Wood Glen Ct	67	72	5
R-462	Res.	B	1	109 Wood Glen Ct	66	71	5
R-463	Res.	B	1	105 Wood Glen Ct	62	66	4
R-464	Res.	B	1	15 Winding Oak Dr	61	66	5
R-465	Res.	B	1	9 Winding Oak Dr	61	66	5
R-466	Res.	B	1	5 Winding Oak Dr	60	66	6
R-467	Res.	B	1	1 Winding Oak Dr	61	67	6
R-468	Res.	B	1	169 New Rockwood Rd	64	69	5
R-469	Res.	B	1	173 New Rockwood Rd	67	73	6
R-470	Res.	B	1	177 New Rockwood Rd	71	76	5
R-471	Res.	B	1	168 New Rockwood Rd	66	74	8
R-472	Res.	B	1	167 New Rockwood Rd	62	69	7
R-473	Res.	B	1	22 Winding Oak Dr	55	58	3
R-474	Res.	B	1	18 Winding Oak Dr	57	61	4
R-475	Res.	B	1	14 Winding Oak Dr	53	58	5
R-476	Res.	B	1	10 Winding Oak Dr	53	57	4
R-477	Res.	B	1	6 Winding Oak Dr	52	56	4
R-478	Res.	B	1	2 Winding Oak Dr	56	61	5
R-479	Res.	B	1	151 New Rockwood Rd	49	52	3

Table B-3: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	8-Lane	Change
R-480	Res.	B	1	150 New Rockwood Rd	51	54	3
R-481	Res.	B	1	74 Aberdeen Dr	57	60	3
R-482	Res.	B	1	315 Long Shoals Rd	64	69	5
R-483	Medical Facility	D	1	379 Long Shoals Rd	40	40	0
R-484	Hotel - Restaurant	E	1	43 Town Square Blvd	63	66	3
R-485	Trail	C	3	Mountains-To-Sea Trail (East)	61	69	8
R-486	Res.	B	1	215 Ferry Rd	59	61	2
R-487	Res.	B	1	218 Ferry Rd	58	61	3
R-488	Res.	B	1	200 Ferry Rd	63	66	3
R-489	Res.	B	1	192 Ferry Rd	61	65	4
R-490	Res.	B	1	759 Brevard Rd	69	73	4
R-491	Res.	B	1	757 Old Brevard Rd	57	60	3
R-492	Res.	B	1	12 Pine Ln	62	R/W	R/W
R-493	Res.	B	1	20 Pine Ln	62	70	8
R-494	Res.	B	1	24 Pine Ln	63	68	5
R-495	Res.	B	1	26 Pine Ln	64	67	3
R-496	Res.	B	1	28 Pine Ln	64	65	1
R-497	Res.	B	1	50 Pine Ln	64	R/W	R/W
R-498	Res.	B	1	40 Pine Ln	64	66	2
R-499	Res.	B	1	36 Pine Ln	64	67	3
R-500	Res.	B	1	29 Pine Ln	63	66	3
R-501	Res.	B	1	27 Pine Ln	61	65	4
R-502	Res.	B	1	23 Pine Ln	58	62	4
R-503	Res.	B	1	19 Pine Ln	59	62	3
R-504	Res.	B	1	17 Pine Ln	58	61	3
R-505	Res.	B	1	15 Pine Ln	59	64	5
R-506	Res.	B	1	13 Pine Ln	57	60	3
R-507	Res.	B	1	751 Brevard Rd	57	59	2
R-508	Res.	B	1	751 Old Brevard Rd	60	63	3
R-509	Res.	B	1	36 Dogwood Rd	65	67	2
R-510	Res.	B	1	50 Dogwood Rd	68	71	3
R-511	Res.	B	1	33 Rocky Ridge Rd	57	60	3
R-512	Hotel - Restaurant	E	1	1 Rocky Ridge Rd	56	59	3
R-513	Hotel - Pool	E	1	1 Wedgefield Dr	64	65	1
R-514	Res.	B	1	13 Wedgefield Dr	53	55	2

Table B-3: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	8-Lane	Change
R-515	Res.	B	1	20 Wedgefield Dr	60	61	1
R-516	Hotel - Pool	E	1	845 Brevard Rd	52	53	1
R-517	Res.	B	1	184 Ferry Rd	73	76	3
R-518	Res.	B	1	184 Ferry Rd 2	67	69	2
R-519	Res.	B	1	191 Ferry Rd	73	75	2
R-520	Res.	B	1	185 Ferry Rd	61	65	4
R-521	Trail	C	3	Mountains-To-Sea Trail (West)	65	72	7
R-522	Res.	B	1	40 Bear Leah Trl	75	77	2
R-523	Res.	B	1	38 Bear Leah Trl	75	78	3
R-524	Res.	B	1	404 Glenn Bridge Rd	69	72	3
R-525	Res.	B	1	406 Glenn Bridge Rd	66	69	3
R-526	Res.	B	1	1 Hidden Creek Dr	68	70	2
R-527	Res.	B	1	3 Hidden Creek Dr	63	66	3
R-528	Res.	B	1	5 Hidden Creek Dr	64	67	3
R-529	Res.	B	1	20 Hidden Creek Dr	62	65	3
R-530	Res.	B	1	12 Wells Dr	63	65	2
R-531	Res.	B	1	10 Hidden Creek Dr	66	68	2
R-532	Res.	B	1	2 Hidden Creek Dr	66	69	3
R-533	Res.	B	1	1 Nathan Dr	65	68	3
R-534	Res.	B	1	5 Nathan Dr	64	67	3
R-535	Res.	B	1	105 Hidden Creek Rd	75	78	3
R-536	Res.	B	1	8 Nathan Dr	67	70	3
R-537	Res.	B	1	7 Nathan Dr	64	67	3
R-538	Res.	B	1	15 Nathan Dr	60	63	3
R-539	Res.	B	1	14 Wells Dr	64	67	3
R-540	Res.	B	1	9 Wells Dr	66	69	3
R-541	Res.	B	1	101 Hidden Creek Rd	68	71	3
R-542	Res.	B	1	10 Nathan Dr	63	66	3
R-543	Res.	B	1	12 Nathan Dr	59	62	3
R-544	Res.	B	1	14 Nathan Dr	60	63	3
R-545	Res.	B	1	16 Nathan Dr	64	67	3
R-546	Golf Course	C	2	101 French Broad Ln - Golf Course	71	73	2
R-547	Res.	B	1	289 Butler Bridge Rd	63	64	1
R-548	Res.	B	1	247 Butler Bridge Rd	63	63	0
R-549	Res.	B	1	65 Dry Hollow Ln	57	58	1
R-550	Res.	B	1	2933 N Rugby Rd	57	61	4
R-551	Res.	B	1	2911 N Rugby Rd	56	59	3

Table B-3: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	8-Lane	Change
R-552	Res.	B	1	34 Dry Hollow Ln	58	60	2
R-553	Res.	B	1	38 Dry Hollow Ln	58	60	2
R-554	Res.	B	1	36 Jade Dr	57	60	3
R-555	Res.	B	1	22 Jade Dr	56	58	2
R-556	Res.	B	1	12 Jade Dr	57	60	3
R-557	Res.	B	1	48 Cureton Pl	64	66	2
R-558	Res.	B	1	39 Cureton Pl	64	66	2
R-559	Res.	B	1	31 Cureton Pl	63	65	2
R-560	Res.	B	1	30 Alverson Ln	56	58	2
R-561	Res.	B	1	24 Alverson Ln	59	60	1
R-562	Res.	B	1	16 Alverson Dr	63	64	1
R-563	Res.	B	1	53 Alverson Ln	63	64	1
R-564	Res.	B	1	399 Naples Rd	65	66	1
R-565	Res.	B	1	73 Pack Rd	58	60	2
R-566	Res.	B	1	83 Naples Glenn Trl	70	72	2
R-567	Res.	B	1	288 Old Naples Rd	67	68	1
R-568	Res.	B	1	284 Old Naples Rd	67	69	2
R-569	Res.	B	1	15 Canterbury Way	78	80	2
R-570	Res.	B	1	41 Canterbury Way	69	72	3
R-571	Res.	B	1	41 Canterbury Way 2	70	74	4
R-572	Res.	B	1	118 Canterbury Way	70	72	2
R-573	Res.	B	1	121 Canterbury Hill Ln	71	73	2
R-574	Res.	B	1	304 Canterbury Way	67	70	3
R-575	Res.	B	1	44 Canterbury Hill Ln	72	73	1
R-576	Res.	B	1	238 Canterbury Way	69	71	2
R-577	Res.	B	1	238 Canterbury Way 2	66	68	2
R-578	Res.	B	1	255 Canterbury Way	66	68	2
R-579	Res.	B	1	80 Oak Meadow Ln	68	70	2
R-580	Res.	B	1	73 Oak Meadow Ln	66	69	3
R-581	Res.	B	1	17 Sujo Trl	68	70	2
R-582	Res.	B	1	14 Sujo Trl	64	66	2
R-583	Recreation Area	C	5	485 Brookside Camp Rd	70	72	2
R-584	Res.	B	1	672 Hyder Farm Rd	60	63	3
R-585	Res.	B	1	679 Hyder Farm Rd	56	59	3
R-586	Res.	B	1	619 Hyder Farm Rd	74	76	2
R-587	Res.	B	1	104 Alex Cove Dr	68	71	3
R-588	Res.	B	1	507 Hyder Farm Rd	68	71	3

Table B-3: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	8-Lane	Change
R-589	Res.	B	1	110 Alex Cove Dr	60	63	3
R-590	Res.	B	1	114 Alex Cove Dr	57	60	3
R-591	Res.	B	1	307 Hyder Farm Rd	63	67	4
R-592	Res.	B	1	825 Clear Creek Rd	62	64	2
R-593	Medical Facility	D	1	600 Carolina Village Rd	40	44	4
R-594	Res.	B	1	1118 Carolina Village Rd	60	64	4
R-595	Res.	B	1	1106 Carolina Village Rd	59	62	3
R-596	Res.	B	1	1102 Carolina Village Rd	46	51	5
R-597	Res.	B	1	1084 Carolina Village Rd	53	57	4
R-598	Res.	B	1	1076 Carolina Village Rd	56	59	3
R-599	Res.	B	1	1072 Carolina Village Rd	55	58	3
R-600	Res.	B	1	1133 Carolina Village Rd	61	64	3
R-601	Res.	B	1	1129 Carolina Village Rd	60	63	3
R-602	Res.	B	1	1117 Carolina Village Rd	42	45	3
R-603	Res.	B	1	1107 Carolina Village Rd	60	62	2
R-604	Res.	B	1	1099 Carolina Village Rd	57	59	2
R-605	Res.	B	1	1089 Carolina Village Rd	44	47	3
R-606	Res.	B	1	1065 Carolina Village Rd	53	56	3
R-607	Res.	B	1	1055 Carolina Village Rd	51	54	3
R-608	Res.	B	1	1047 Carolina Village Rd	45	49	4
R-609	Res.	B	1	1035 Carolina Village Rd	54	57	3
R-610	Res.	B	1	1027 Carolina Village Rd	55	58	3
R-611	Res.	B	1	1021 Carolina Village Rd	46	50	4
R-612	Res.	B	1	1052 Carolina Village Rd	56	60	4
R-613	Res.	B	1	1040 Carolina Village Rd	49	53	4
R-614	Res.	B	1	1036 Carolina Village Rd	49	52	3
R-615	Res.	B	1	834 Carolina Village Rd	45	49	4
R-616	Res.	B	1	838 Carolina Village Rd	58	61	3
R-617	Res.	B	1	832 Carolina Village Rd	59	63	4
R-618	Res.	B	1	992 Carolina Village Rd	50	53	3
R-619	Res.	B	1	988 Carolina Village Rd	54	57	3
R-620	Res.	B	1	984 Carolina Village Rd	55	58	3
R-621	Recreation Area	C	1	600 Carolina Village Rd 2	60	63	3
R-622	Res.	B	1	10 Tanager Trail	53	53	0
R-623	Res.	B	1	14 Tanager Trail	49	50	1
R-624	Res.	B	1	12 Tanager Trail	47	49	2
R-625	Res.	B	1	24 White Quail Trail	55	56	1

Table B-3: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	8-Lane	Change
R-626	Res.	B	1	22 White Quail Trail	58	60	2
R-627	Res.	B	1	20 White Quail Trail	56	58	2
R-628	Res.	B	1	21 White Quail Trail	59	61	2
R-629	Res.	B	1	23 White Quail Trail	56	59	3
R-630	Res.	B	1	25 White Quail Trail	47	50	3
R-631	Res.	B	1	418 Carolina Village Rd	72	74	2
R-632	Res.	B	1	30 Lake Spur Dr	49	51	2
R-633	Res.	B	1	34 Lake Spur Dr	49	52	3
R-634	Res.	B	1	32 Lake Spur Dr	47	50	3
R-635	Res.	B	1	38 Lake Spur Dr	53	55	2
R-636	Res.	B	1	36 Lake Spur Dr	56	58	2
R-637	Res.	B	1	40 Lake Spur Dr	51	54	3
R-638	Res.	B	1	35 Lake Spur Dr	60	63	3
R-639	Res.	B	1	37 Lake Spur Dr	65	68	3
R-640	Res.	B	1	39 Lake Spur Dr	65	67	2
R-641	Res.	B	1	348 Carolina Village Rd	73	75	2
R-642	Res.	B	1	346 Carolina Village Rd	70	72	2
R-643	Res.	B	1	108-A Lake Club Cir	50	52	2
R-644	Res.	B	1	108-B Lake Club Cir	51	53	2
R-645	Res.	B	1	108-C Lake Club Cir	51	53	2
R-646	Res.	B	1	108-D Lake Club Cir	52	54	2
R-647	Res.	B	1	108-E Lake Club Cir	53	55	2
R-648	Res.	B	1	108-F Lake Club Cir	54	56	2
R-649	Res.	B	1	103-F Lake Club Cir	46	48	2
R-650	Res.	B	1	103-E Lake Club Cir	46	48	2
R-651	Res.	B	1	103-D Lake Club Cir	46	48	2
R-652	Res.	B	1	103-C Lake Club Cir	46	48	2
R-653	Res.	B	1	103-B Lake Club Cir	46	48	2
R-654	Res.	B	1	103-A Lake Club Cir	49	51	2
R-655	Res.	B	1	45-D Lake Club Cir	49	52	3
R-656	Res.	B	1	45-C Lake Club Cir	49	51	2
R-657	Res.	B	1	45-B Lake Club Cir	49	51	2
R-658	Res.	B	1	45-A Lake Club Cir	49	50	1
R-659	Res.	B	1	62-A Lake Club Cir	53	55	2
R-660	Res.	B	1	62-B Lake Club Cir	52	53	1
R-661	Res.	B	1	62-C Lake Club Cir	52	53	1
R-662	Res.	B	1	62-D Lake Club Cir	52	54	2

Table B-3: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	8-Lane	Change
R-663	Res.	B	1	30-A Lake Club Cir	52	54	2
R-664	Res.	B	1	30-B Lake Club Cir	53	54	1
R-665	Res.	B	1	30-C Lake Club Cir	53	54	1
R-666	Res.	B	1	30-D Lake Club Cir	54	55	1
R-667	Campgrounds	C	1	300 Orrs Camp Rd	56	59	3
R-668	Campgrounds	C	1	300 Orrs Camp Rd 2	60	62	2
R-669	Res.	B	1	305 Prince Rd	73	75	2
R-670	Res.	B	1	77 Fairbanks Ln	72	74	2
R-671	Res.	B	1	69 Fairbanks Ln	65	67	2
R-672	Res.	B	1	47 Fairbanks Ln	59	61	2
R-673	Res.	B	1	317 Prince Rd	59	61	2
R-674	Res.	B	1	311 W Prince Rd	61	63	2
R-675	Res.	B	1	301 Prince Rd	61	63	2
R-676	Res.	B	1	323 Prince Rd	65	67	2
R-677	Res.	B	1	333 Prince Rd	73	75	2
R-678	Res.	B	1	324 Prince Rd	56	58	2
R-679	Res.	B	1	330 Prince Rd	63	65	2
R-680	Res.	B	1	334 Prince Rd	58	60	2
R-681	Res.	B	1	398 Prince Rd	57	59	2
R-682	Res.	B	1	341 Prince Rd	69	71	2
R-683	Res.	B	1	365 Prince Rd	67	69	2
R-684	Res.	B	1	373 Prince Rd	64	66	2
R-685	Res.	B	1	381 Prince Rd	63	65	2
R-686	Res.	B	1	655 Dana Rd	61	63	2
R-687	Res.	B	1	665 Dana Rd	77	80	3
R-688	Res.	B	1	102 Papa Joes Way	60	63	3
R-689	Res.	B	1	101 Papa Joes Way	65	69	4
R-690	Res.	B	1	102 Papa Joes Way 2	55	57	2
R-691	Res.	B	1	2 Meadowlark Ln	68	71	3
R-692	Res.	B	1	4 Meadowlark Ln	66	69	3
R-693	Res.	B	1	6 Meadowlark Ln	64	67	3
R-694	Res.	B	1	8 Meadowlark Ln	63	65	2
R-695	Res.	B	1	10 Meadowlark Ln	61	64	3
R-696	Res.	B	1	12 Meadowlark Ln	58	61	3
R-697	Res.	B	1	14 Meadowlark Ln	57	60	3
R-698	Res.	B	1	18 Meadowlark Ln	57	59	2
R-699	Res.	B	1	20 Meadowlark Ln	56	59	3

Table B-3: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	8-Lane	Change
R-700	Res.	B	1	24 Meadowlark Ln	56	58	2
R-701	Res.	B	1	26 Meadowlark Ln	57	59	2
R-702	Res.	B	1	28 Meadowlark Ln	57	59	2
R-703	Res.	B	1	30 Meadowlark Ln	56	58	2
R-704	Res.	B	1	32 Meadowlark Ln	55	57	2
R-705	Res.	B	1	3 Meadowlark Ln	71	75	4
R-706	Res.	B	1	5 Meadowlark Ln	70	73	3
R-707	Res.	B	1	9 Meadowlark Ln	66	69	3
R-708	Res.	B	1	11 Meadowlark Ln	65	68	3
R-709	Res.	B	1	13 Meadowlark Ln	64	66	2
R-710	Res.	B	1	15 Meadowlark Ln	63	65	2
R-711	Res.	B	1	17 Meadowlark Ln	62	64	2
R-712	Res.	B	1	19 Meadowlark Ln	62	64	2
R-713	Res.	B	1	21 Meadowlark Ln	61	63	2
R-714	Res.	B	1	23 Meadowlark Ln	62	63	1
R-715	Res.	B	1	27 Meadowlark Ln	62	64	2
R-716	Res.	B	1	29 Meadowlark Ln	62	63	1
R-717	Res.	B	1	33 Meadowlark Ln	61	62	1
R-718	Res.	B	1	35 Meadowlark Ln	60	62	2
R-719	Res.	B	1	41 Meadowlark Ln	60	62	2
R-720	Res.	B	1	41 Meadowlark Ln 2	59	60	1
R-721	Res.	B	1	39 Meadowlark Ln	75	79	4
R-722	Res.	B	1	40 Meadowlark Ln	65	66	1
R-723	Res.	B	1	69 Orchard Park Rd	64	66	2
R-724	Res.	B	1	72 Orchard Park Rd	66	68	2
R-725	Res.	B	1	121 Friendship Ln	68	70	2
R-726	Res.	B	1	125 Friendship Ln	65	67	2
R-727	Res.	B	1	665 Tracy Grove Rd	63	65	2
R-728	Res.	B	1	701 Tracy Grove Rd	71	73	2
R-729	Res.	B	1	731 S Allen Rd	68	70	2
R-730	Res.	B	1	727 Allen Rd	66	69	3
R-731	Community Center	C	1	722 S Allen Rd	75	78	3
R-732	Res.	B	1	973 New Hope Rd	60	61	1
R-733	Res.	B	1	983 New Hope Rd	59	60	1
R-734	Res.	B	1	999 New Hope Rd	58	59	1
R-735	Res.	B	1	1075 New Hope Rd	57	59	2

Table B-3: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	8-Lane	Change
R-736	Res.	B	1	1108 New Hope Rd	57	59	2
R-737	Res.	B	1	1103 New Hope Rd	55	57	2
R-738	Res.	B	1	87 Carroll Oaks Dr	57	58	1
R-739	Res.	B	1	73 Carroll Oaks Dr	57	59	2
R-740	Res.	B	1	45 Carroll Oaks Dr	54	56	2
R-741	Res.	B	1	25 Carroll Oaks Dr	59	62	3
R-742	Res.	B	1	11 Carroll Oaks Dr	64	**67**	3
R-743	Res.	B	1	713 Allen Rd	65	**68**	3
R-744	Res.	B	1	709 Allen Rd	63	**66**	3
R-745	Res.	B	1	695 Allen Rd	**66**	**69**	3
R-746	Res.	B	1	691 Allen Rd	**68**	**71**	3
R-747	Res.	B	1	677 Allen Rd	**74**	**75**	1
R-748	Baseball Field	C	1	625 College Dr - Baseball Field	62	65	3
R-749	Res.	B	1	92 Merry Oaks Ln	**70**	**72**	2
R-750	Res.	B	1	87 Merry Oaks Ln	60	63	3
R-751	Res.	B	1	630 Allen Rd	64	**68**	4
R-752	Res.	B	1	600 Allen Rd	**73**	**75**	2
R-753	Res.	B	1	586 Allen Rd	58	60	2
R-754	Res.	B	1	536 Crest Rd	**72**	**74**	2
R-755	Res.	B	1	511 Crest Rd	61	64	3
R-756	Res.	B	1	134 Victoria Springs Dr	60	62	2
R-757	Res.	B	1	129 Hollyhock Ct	63	65	2
R-758	Res.	B	1	107 Hollyhock Ct	59	62	3
R-759	Res.	B	1	110 Hollyhock Ct	61	63	2
R-760	Res.	B	1	142 Hollyhock Ct	**67**	**69**	2
R-761	Res.	B	1	646 Oak Grove Rd	61	63	2
R-762	Res.	B	1	640 Oak Grove Rd	63	65	2
R-763	Res.	B	1	638 Oak Grove Rd	58	61	3
Predicted "8-Lane" Widening Alternative 2040 Traffic Noise Impacts[3,4]					211[1]	344[1]	0[2]

1. Predicted traffic noise level impact due to approaching or exceeding NAC.
2. Predicted "substantial increase" traffic noise level impact.
3. The number of predicted impacts is not duplicated if receptors are predicted to be impacted by more than one criterion (e.g. if a receptor is impacted by the NAC and a substantial increase, it is counted as only one impact).
4. Total number of predicted traffic noise impacts under the 8-Lane Widening Alternative = 344.

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Hybrid Widening Alternative
Design Year 2040

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Table B-4: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	Hybrid	Change
R-01	Res.	B	1	418 Felmet Rd	60	63	3
R-02	Res.	B	1	79 Bennison Ln	66	68	2
R-03	Res.	B	1	107 Bennison Ln	67	69	2
R-04	Res.	B	1	96 Bennison Ln	62	65	3
R-05	Res.	B	1	106 Bennison Ln	69	71	2
R-06	Res.	B	1	612 Crest Rd	67	68	1
R-07	Res.	B	1	620 Crest Rd	65	67	2
R-08	Res.	B	1	337 Mcmurray Rd	77	79	2
R-09	Res.	B	1	819 Mcmurray Rd	63	65	2
R-10	Res.	B	1	823 Mcmurray Rd	69	72	3
R-11	Res.	B	1	35 Justus Acres Ln	62	63	1
R-12	Res.	B	1	28 Randolph Ave	63	63	0
R-13	Res.	B	1	30 Justus Acres Ln	64	65	1
R-14	Res.	B	1	19 Justus Acres Ln	65	66	1
R-15	Res.	B	1	818 Tracy Grove Rd	67	68	1
R-16	Res.	B	1	824 Tracy Grove Rd	65	65	0
R-17	Res.	B	1	821 Tracy Grove Rd	64	64	0
R-18	Res.	B	1	809 Mid Allen Rd	76	78	2
R-19	Res.	B	1	837 Mid Allen Rd	66	66	0
R-20	Res.	B	1	282 Katie Dr	63	64	1
R-21	Res.	B	1	33 Springside Dr	63	64	1
R-22	Res.	B	1	31 Springside Dr	62	63	1
R-23	Res.	B	1	29 Springside Dr	60	61	1
R-24	Res.	B	1	27 Springside Dr	59	60	1
R-25	Res.	B	1	25 Springside Dr	57	58	1
R-26	Res.	B	1	16 Springside Dr	57	58	1
R-27	Res.	B	1	18 Springside Dr	57	59	2
R-28	Res.	B	1	20 Springside Dr	59	60	1
R-29	Res.	B	1	22 Springside Dr	60	61	1
R-30	Res.	B	1	24 Springside Dr	61	62	1
R-31	Res.	B	1	26 Springside Dr	63	63	0
R-32	Res.	B	1	28 Springside Dr	66	66	0
R-33	Res.	B	1	30 Springside Dr	67	67	0
R-34	Res.	B	1	32 Springside Dr	66	66	0
R-35	Res.	B	1	34 Springside Dr	63	64	1
R-36	Res.	B	1	36 Springside Dr	62	64	2

Table B-4: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	Hybrid	Change
R-37	Res.	B	1	38 Springside Dr	61	63	2
R-38	Res.	B	1	40 Springside Dr	60	62	2
R-39	Res.	B	1	42 Springside Dr	59	61	2
R-40	Res.	B	1	44 Springside Dr	55	56	1
R-41	Res.	B	1	46 Springside Dr	54	55	1
R-42	Res.	B	1	43 Springside Dr	73	73	0
R-43	Res.	B	1	45 Springside Dr	73	74	1
R-44	Res.	B	1	47 Springside Dr	70	71	1
R-45	Res.	B	1	49 Springside Dr	67	69	2
R-46	Res.	B	1	152 Willowbrook Rd	64	68	4
R-47	Res.	B	1	150 Willowbrook Rd	68	72	4
R-48	Res.	B	1	148 Willowbrook Rd	72	76	4
R-49	Res.	B	1	146 Willowbrook Rd	72	76	4
R-50	Res.	B	1	144 Willowbrook Rd	69	74	5
R-51	Res.	B	1	142 Willowbrook Rd	70	72	2
R-52	Res.	B	1	138 Willowbrook Rd	68	70	2
R-53	Res.	B	1	134 Willowbrook Rd	67	71	4
R-54	Res.	B	1	130 Willowbrook Rd	70	74	4
R-55	Res.	B	1	126 Willowbrook Rd	71	75	4
R-56	Res.	B	1	122 Willowbrook Rd	70	76	6
R-57	Res.	B	1	118 Willowbrook Rd	73	77	4
R-58	Res.	B	1	114 Willowbrook Rd	70	75	5
R-59	Res.	B	1	110 Willowbrook Rd	70	75	5
R-60	Res.	B	1	106 Willowbrook Rd	71	76	5
R-61	Res.	B	1	102 Willowbrook Rd	71	76	5
R-62	Res.	B	1	59 Springside Dr	58	59	1
R-63	Res.	B	1	57 Springside Dr	49	50	1
R-64	Res.	B	1	55 Springside Dr	55	56	1
R-65	Res.	B	1	53 Springside Dr	62	64	2
R-66	Res.	B	1	147 Willowbrook Rd	60	63	3
R-67	Res.	B	1	145 Willowbrook Rd	60	63	3
R-68	Res.	B	1	131 Maywood Rd	57	60	3
R-69	Res.	B	1	127 Maywood Rd	53	55	2
R-70	Res.	B	1	123 Maywood Rd	51	54	3
R-71	Res.	B	1	119 Maywood Rd	55	55	0
R-72	Res.	B	1	116 Maywood Rd	51	53	2
R-73	Res.	B	1	120 Maywood Rd	47	47	0

Table B-4: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	Hybrid	Change
R-74	Res.	B	1	124 Maywood Rd	48	50	2
R-75	Res.	B	1	133 Willowbrook Rd	56	59	3
R-76	Res.	B	1	129 Willowbrook Rd	57	61	4
R-77	Res.	B	1	121 Willowbrook Rd	58	62	4
R-78	Res.	B	1	117 Willowbrook Rd	61	65	4
R-79	Res.	B	1	113 Willowbrook Rd	61	64	3
R-80	Res.	B	1	109 Willowbrook Rd	62	65	3
R-81	Res.	B	1	105 Willowbrook Rd	64	**67**	3
R-82	Res.	B	1	710 Dana Rd	55	59	4
R-83	Res.	B	1	714 Dana Rd	56	57	1
R-84	Res.	B	1	703 Dana Rd	61	63	2
R-85	Res.	B	1	410 Lakeview Estate Rd	61	63	2
R-86	Res.	B	1	420 Lakeview Estate Rd	62	64	2
R-87	Res.	B	1	422 Lakeview Estate Rd	62	64	2
R-88	Res.	B	1	424 Lakeview Estate Rd	63	65	2
R-89	Res.	B	1	426 Lakeview Estate Rd	64	**67**	3
R-90	Res.	B	1	102 Wakefield Dr	62	64	2
R-91	Res.	B	1	99 Wakefield Dr	**72**	**76**	4
R-92	Res.	B	1	103 Wakefield Dr	**68**	**72**	4
R-93	Res.	B	1	419 Bird Haven Rd	**66**	**70**	4
R-94	Res.	B	1	417 Bird Haven Rd	63	**66**	3
R-95	Res.	B	1	414 Bird Haven Rd	58	61	3
R-96	Res.	B	1	416 Bird Haven Rd	58	60	2
R-97	Res.	B	1	25 Dove Valley Ln	58	60	2
R-98	Res.	B	1	23 Dove Valley Ln	57	60	3
R-99	Res.	B	1	425 Bird Haven Rd	**67**	**71**	4
R-100	Res.	B	1	81 Dove Valley Ln	61	64	3
R-101	Res.	B	1	420 Bird Haven Rd	65	**68**	3
R-102	Res.	B	1	424 Bird Haven Rd	65	**69**	4
R-103	Res.	B	1	411 Pine Hill Ln	65	**68**	3
R-104	Res.	B	1	508 Prince Rd	**70**	**72**	2
R-105	Res.	B	1	510 Prince Rd	**66**	**68**	2
R-106	Res.	B	1	520 Prince Rd	62	64	2
R-107	Res.	B	1	524 Prince Rd	60	62	2
R-108	Res.	B	1	527 Prince Rd	**68**	**70**	2
R-109	Res.	B	1	529 Prince Rd	64	**66**	2
R-110	Res.	B	1	533 Prince Rd	61	63	2

Table B-4: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	Hybrid	Change
R-111	Res.	B	1	641 Prince Rd	67	71	4
R-112	Res.	B	1	54 Francis Rd	67	69	2
R-113	Res.	B	1	68 Francis Rd	61	63	2
R-114	Res.	B	1	76 Francis Rd	63	65	2
R-115	Res.	B	1	82 Francis Rd	61	63	2
R-116	Res.	B	1	51 High Country Ln	63	64	1
R-117	Res.	B	1	65 High Country Ln	62	64	2
R-118	Res.	B	1	75 High Country Ln	63	64	1
R-119	Res.	B	1	66 High Country Ln	58	60	2
R-120	Res.	B	1	95 Francis Rd	61	63	2
R-121	Res.	B	1	125 High Country Ln	61	63	2
R-122	Res.	B	1	121 High Country Ln	61	63	2
R-123	Res.	B	1	125 Francis Rd	63	64	1
R-124	Res.	B	1	129 Francis Rd	63	64	1
R-125	Res.	B	1	1713 Clear Creek Rd	71	71	0
R-126	Res.	B	1	1733 Clear Creek Rd	71	72	1
R-127	Res.	B	1	1803 Clear Creek Rd	74	75	1
R-128	Res.	B	1	1845 Clear Creek Rd	71	72	1
R-129	Res.	B	1	1959 Clear Creek Rd	66	66	0
R-130	Res.	B	1	1982 Clear Creek Rd	64	65	1
R-131	Res.	B	1	170 Hart Ln	69	69	0
R-132	Res.	B	1	32 Hart Ln	71	72	1
R-133	Res.	B	1	28 Hart Ln	71	72	1
R-134	Res.	B	1	22 Hart Ln	71	72	1
R-135	Res.	B	1	39 Keeneland Dr	66	67	1
R-136	Res.	B	1	23 Keeneland Dr	64	65	1
R-137	Res.	B	1	20 Keeneland Dr	68	69	1
R-138	Res.	B	1	171 Keeneland Dr	67	69	2
R-139	Res.	B	1	195 Kingswood Dr	67	69	2
R-140	Res.	B	1	10 Hart Ln	73	75	2
R-141	Res.	B	1	223 Kingswood Dr	66	68	2
R-142	Res.	B	1	192 Kingswood Dr	60	63	3
R-143	Res.	B	1	216 Kingswood Dr	63	65	2
R-144	Res.	B	1	240 Kingswood Dr	63	65	2
R-145	Res.	B	1	262 Kingswood Dr	63	64	1
R-146	Res.	B	1	282 Kingswood Dr	62	65	3
R-147	Res.	B	1	261 Kingswood Dr	66	68	2

Table B-4: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	Hybrid	Change
R-148	Res.	B	1	275 Kingswood Dr	64	66	2
R-149	Res.	B	1	283 Kingswood Dr	66	68	2
R-150	Res.	B	1	339 Kingswood Dr	66	68	2
R-151	Res.	B	1	299 Kingswood Dr	66	68	2
R-152	Res.	B	1	345 Kingswood Dr	68	70	2
R-153	Res.	B	1	134 Wendy Ln	57	60	3
R-154	Res.	B	1	138 Wendy Ln	62	65	3
R-155	Res.	B	1	142 Wendy Ln	72	74	2
R-156	Res.	B	1	146 Wendy Ln	71	74	3
R-157	Res.	B	1	150 Wendy Ln	74	76	2
R-158	Res.	B	1	154 Wendy Ln	76	78	2
R-159	Res.	B	1	149 Wendy Ln	61	64	3
R-160	Res.	B	1	151 Wendy Ln	67	70	3
R-161	Res.	B	1	153 Wendy Ln	66	69	3
R-162	Res.	B	1	155 Wendy Ln	63	66	3
R-163	Res.	B	1	157 Wendy Ln	67	70	3
R-164	Res.	B	1	132 Shelly Dr	52	54	2
R-165	Res.	B	1	142 Shelly Dr	50	52	2
R-166	Res.	B	1	144 Shelly Dr	50	52	2
R-167	Res.	B	1	160 Wendy Ln	74	77	3
R-168	Res.	B	1	2026 Howard Gap Rd	65	67	2
R-169	Res.	B	1	2020 Howard Gap Rd	66	68	2
R-170	Res.	B	1	335 Carolina Cir	77	78	1
R-171	Res.	B	1	315 Carolina Cir	71	72	1
R-172	Res.	B	1	289 Carolina Cir	67	67	0
R-173	Res.	B	1	257 Carolina Cir	58	59	1
R-174	Res.	B	1	251 Carolina Cir	57	58	1
R-175	Res.	B	1	223 Carolina Cir	57	59	2
R-176	Res.	B	1	205 Carolina Cir	58	59	1
R-177	Res.	B	1	185 Carolina Cir	56	58	2
R-178	Res.	B	1	165 Carolina Cir	56	58	2
R-179	Res.	B	1	145 Carolina Cir	58	60	2
R-180	Res.	B	1	125 Carolina Cir	59	62	3
R-181	Res.	B	1	113 Carolina Cir	60	62	2
R-182	Res.	B	1	93 Carolina Cir	59	61	2
R-183	Res.	B	1	73 Carolina Cir	59	61	2
R-184	Res.	B	1	55 Carolina Cir	58	60	2

Table B-4: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	Hybrid	Change
R-185	Res.	B	1	35 Carolina Cir	58	60	2
R-186	Res.	B	1	512 Brookside Camp Rd	62	64	2
R-187	Res.	B	1	270 Carolina Cir	64	65	1
R-188	Res.	B	1	254 Carolina Cir	63	64	1
R-189	Res.	B	1	226 Carolina Cir	64	65	1
R-190	Res.	B	1	212 Carolina Cir	60	61	1
R-191	Res.	B	1	192 Carolina Cir	61	63	2
R-192	Res.	B	1	172 Carolina Cir	60	62	2
R-193	Res.	B	1	152 Carolina Cir	60	62	2
R-194	Res.	B	1	132 Carolina Cir	61	63	2
R-195	Res.	B	1	112 Carolina Cir	60	61	1
R-196	Res.	B	1	100 Carolina Cir	58	60	2
R-197	Res.	B	1	74 Carolina Cir	56	58	2
R-198	Res.	B	1	60 Carolina Cir	60	62	2
R-199	Res.	B	1	42 Carolina Cir	61	64	3
R-200	Res.	B	1	322 Carolina Cir	**74**	**75**	1
R-201	Res.	B	1	374 Carolina Cir	**74**	**74**	0
R-202	Res.	B	1	380 Carolina Cir	**72**	**73**	1
R-203	Res.	B	1	210 Carolina Cir	**69**	**69**	0
R-204	Res.	B	1	426 Carolina Cir	**69**	**70**	1
R-205	Res.	B	1	446 Carolina Cir	**67**	**68**	1
R-206	Res.	B	1	518 Carolina Cir	62	65	3
R-207	Res.	B	1	536 Carolina Cir	63	65	2
R-208	Res.	B	1	556 Carolina Cir	62	64	2
R-209	Res.	B	1	576 Carolina Cir	63	**66**	3
R-210	Res.	B	1	464 Carolina Cir	**70**	**71**	1
R-211	Res.	B	1	472 Carolina Cir	**75**	**76**	1
R-212	Res.	B	1	505 Carolina Cir	**76**	**77**	1
R-213	Res.	B	1	537 Carolina Cir	**75**	**77**	2
R-214	Res.	B	1	557 Carolina Cir	**74**	**76**	2
R-215	Res.	B	1	202 Kimberly Ann Dr	**74**	**74**	0
R-216	Res.	B	1	206 Dundeve Cir	**74**	**74**	0
R-217	Res.	B	1	208 Dundeve Cir	**74**	**75**	1
R-218	Res.	B	1	212 Dundeve Cir	**74**	**76**	2
R-219	Res.	B	1	216 Dundeve Cir	**73**	**75**	2
R-220	Res.	B	1	505 Brookside Camp Rd	65	**67**	2
R-221	Res.	B	1	509 Brookside Camp Rd	59	61	2

Table B-4: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	Hybrid	Change
R-222	Res.	B	1	203 Kimberly Ann Dr	62	64	2
R-223	Res.	B	1	207 Kimberly Ann Dr	62	63	1
R-224	Res.	B	1	211 Kimberly Ann Dr	60	62	2
R-225	Res.	B	1	217 Kimberly Ann Dr	60	62	2
R-226	Res.	B	1	206 Kimberly Ann Dr	64	66	2
R-227	Res.	B	1	209 Dundeve Cir	67	68	1
R-228	Res.	B	1	213 Dundeve Cir	63	64	1
R-229	Res.	B	1	237 Dundeve Cir	56	57	1
R-230	Res.	B	1	224 Dundeve Cir	69	71	2
R-231	Res.	B	1	228 Dundeve Cir	65	66	1
R-232	Res.	B	1	232 Dundeve Cir	61	62	1
R-233	Res.	B	1	236 Dundeve Cir	58	59	1
R-234	Res.	B	1	201 Sheneman Dr	69	71	2
R-235	Res.	B	1	213 Sheneman Dr	61	63	2
R-236	Res.	B	1	217 Sheneman Dr	58	60	2
R-237	Res.	B	1	204 Sheneman Dr	73	74	1
R-238	Res.	B	1	212 Sheneman Dr	66	67	1
R-239	Res.	B	1	214 Sheneman Dr	60	62	2
R-240	Res.	B	1	300 Whispering Hills Dr	59	61	2
R-241	Res.	B	1	312 Whispering Hills Dr	68	70	2
R-242	Res.	B	1	319 Whispering Hills Dr	61	63	2
R-243	Res.	B	1	325 Whispering Hills Dr	61	64	3
R-244	Res.	B	1	329 Whispering Hills Dr	60	64	4
R-245	Res.	B	1	318 Whispering Hills Dr	67	69	2
R-246	Res.	B	1	320 Whispering Hills Dr	68	71	3
R-247	Res.	B	1	324 Whispering Hills Dr	67	71	4
R-248	Res.	B	1	326 Whispering Hills Dr	63	67	4
R-249	Res.	B	1	328 Whispering Hills Dr	62	65	3
R-250	Res.	B	1	330 Whispering Hills Dr	59	62	3
R-251	Res.	B	1	336 Whispering Hills Dr	58	61	3
R-252	Res.	B	1	185 Acorn Dr	74	77	3
R-253	Res.	B	1	120 Acorn Dr	69	72	3
R-254	Res.	B	1	112 Acorn Dr	65	68	3
R-255	Res.	B	1	108 Acorn Dr	62	65	3
R-256	Res.	B	1	40 Acorn Dr	62	65	3
R-257	Res.	B	1	181 Acorn Dr	74	77	3
R-258	Res.	B	1	119 Acorn Dr	72	74	2

Table B-4: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	Hybrid	Change
R-259	Res.	B	1	115 Acorn Dr	69	72	3
R-260	Res.	B	1	105 W Acorn Dr	67	69	2
R-261	Res.	B	1	131 W Acorn Dr	70	72	2
R-262	Res.	B	1	188 W Acorn Dr	68	71	3
R-263	Res.	B	1	188 W Acorn Dr 2	66	69	3
R-264	Res.	B	1	107 Acorn Dr	62	65	3
R-265	Res.	B	1	45 Acorn Dr	59	62	3
R-266	Res.	B	1	402 Silver Loop Dr	59	62	3
R-267	Res.	B	1	276 Pjs Pl	63	68	5
R-268	Trail	C	5	100 Hospital Dr	75	79	4
R-269	Res.	B	1	185 Tulip Trail	61	63	2
R-270	Res.	B	1	32 Tulip Trail	62	64	2
R-271	Res.	B	1	42 Tulip Trail	61	64	3
R-272	Res.	B	1	187 Tulip Trail	58	60	2
R-273	Res.	B	1	193 Tulip Trail	60	63	3
R-274	Res.	B	1	50 Tulip Trail	60	63	3
R-275	Res.	B	1	197 Tulip Trail	59	62	3
R-276	Res.	B	1	195 Tulip Trail	48	50	2
R-277	Res.	B	1	18 Sunset Vista Rd	74	75	1
R-278	Res.	B	1	46 Sunset Vista Rd	66	68	2
R-279	Res.	B	1	72 Sunset Vista Rd	64	66	2
R-280	Res.	B	1	108 Sunset Vista Rd	63	66	3
R-281	Res.	B	1	126 Sunset Vista Rd	63	65	2
R-282	Res.	B	1	25 Sunset Vista Rd	70	72	2
R-283	Res.	B	1	91 Sunset Vista Rd	70	72	2
R-284	Res.	B	1	145 Sunset Vista Rd	68	70	2
R-285	Res.	B	1	67 Holly Oak Dr	61	62	1
R-286	Res.	B	1	67 Holly Oak Dr 2	59	60	1
R-287	Res.	B	1	25 Holly Oak Dr	72	74	2
R-288	Res.	B	1	104 Twin Springs Rd	69	72	3
R-289	Res.	B	1	118 Twin Springs Rd	66	68	2
R-290	Res.	B	1	146 Twin Springs Rd	66	68	2
R-291	Res.	B	1	521 Old Hendersonville Rd	67	70	3
R-292	Res.	B	1	525 Old Hendersonville Rd	67	70	3
R-293	Res.	B	1	20 Pleasant Row Dr	64	67	3
R-294	Res.	B	1	15 Pleasant Row Dr	63	65	2
R-295	Res.	B	1	45 Pleasant Row Dr	62	65	3

Table B-4: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	Hybrid	Change
R-296	Res.	B	1	526 Old Hendersonville Rd	64	67	3
R-297	Res.	B	1	522 Old Hendersonville Rd	64	67	3
R-298	Res.	B	1	19 November Ln	63	67	4
R-299	Res.	B	1	39 November Ln	62	66	4
R-300	Res.	B	1	37 November Ln	63	67	4
R-301	Res.	B	1	65 November Ln	64	67	3
R-302	Res.	B	1	244 Hickory Flats Dr	67	69	2
R-303	Res.	B	1	146 Hickory Flats Dr	63	65	2
R-304	Res.	B	1	60 November Ln	61	65	4
R-305	Res.	B	1	42 November Ln	60	63	3
R-306	Res.	B	1	434 Old Hendersonville Rd	60	64	4
R-307	Res.	B	1	211 Hickory Flats Dr	59	64	5
R-308	Res.	B	1	97 Hickory Flats Dr	61	64	3
R-309	Res.	B	1	71 Hickory Flats Dr	61	63	2
R-310	Res.	B	1	54 Hickory Flats Dr	59	63	4
R-311	Res.	B	1	143 Maxwell Dr	66	69	3
R-312	Res.	B	1	109 Maxwell Dr	62	64	2
R-313	Res.	B	1	123 Halliburton Rd	73	77	4
R-314	Res.	B	1	118 Halliburton Rd	64	68	4
R-315	Res.	B	1	124 Halliburton Rd	63	68	5
R-316	Res.	B	1	54 Dawley Dr	61	66	5
R-317	Res.	B	1	46 Dawley Dr	64	68	4
R-318	Res.	B	1	44 Dawley Dr	61	65	4
R-319	Res.	B	1	55 Dawley Dr	57	59	2
R-320	Res.	B	1	15 Dawley Dr	65	69	4
R-321	Res.	B	1	103 Dawley Dr	59	62	3
R-322	Res.	B	1	100 Halliburton Rd	61	65	4
R-323	Res.	B	1	102 Halliburton Rd	60	63	3
R-324	Res.	B	1	104 Halliburton Rd	57	59	2
R-325	Res.	B	1	62 Dawley Dr	55	57	2
R-326	Res.	B	1	99 Dawley Dr	54	55	1
R-327	Res.	B	1	64 Halliburton Rd	60	64	4
R-328	Res.	B	1	128 Kennerly Dr	58	61	3
R-329	Res.	B	1	110 Kennerly Dr	56	58	2
R-330	Res.	B	1	96 Kennerly Dr	54	56	2
R-331	Res.	B	1	127 Kennerly Dr	61	63	2
R-332	Res.	B	1	46 Royal Oaks Dr	59	61	2

Table B-4: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	Hybrid	Change
R-333	Res.	B	1	16 Royal Oaks Dr	57	59	2
R-334	Res.	B	1	106 Dawley Dr	64	68	4
R-335	Res.	B	1	76 Dawley Dr	54	56	2
R-336	Res.	B	1	120 Dawley Dr	73	77	4
R-337	Res.	B	1	24 Kennerly Dr	56	58	2
R-338	Res.	B	1	6077 Asheville Hwy	59	61	2
R-339	Res.	B	1	6075 Asheville Hwy	54	56	2
R-340	Res.	B	1	6073 Asheville Hwy	56	58	2
R-341	Res.	B	1	46 Hope Opal Ln	72	77	5
R-342	Res.	B	1	38 Hope Opal Ln	73	77	4
R-343	Res.	B	1	34 Hope Opal Ln	73	76	3
R-344	Res.	B	1	28 Hope Opal Ln	73	76	3
R-345	Res.	B	1	22 Hope Opal Ln	72	75	3
R-346	Res.	B	1	14 Hope Opal Ln	71	73	2
R-347	Res.	B	1	41 Hope Opal Ln	65	68	3
R-348	Res.	B	1	65 Hope Opal Ln	63	66	3
R-349	Res.	B	1	23 Hope Opal Ln	61	63	2
R-350	Res.	B	1	73 Hope Opal Ln	62	63	1
R-351	Res.	B	1	9 Hope Opal Ln	60	62	2
R-352	Res.	B	1	120 S Thomas St	69	71	2
R-353	Res.	B	1	60 Jim Mills Dr	67	69	2
R-354	Res.	B	1	52 Jim Mills Dr	66	68	2
R-355	Res.	B	1	36 Jim Mills Dr	65	67	2
R-356	Res.	B	1	20 Jim Mills Dr	64	66	2
R-357	Res.	B	1	109 S Thomas St	63	65	2
R-358	Res.	B	1	112 S Thomas St	63	66	3
R-359	Res.	B	1	98 S Thomas St	58	60	2
R-360	Res.	B	1	41 Lantern Walk Ln	62	64	2
R-361	Res.	B	1	42 Lantern Walk Ln	59	61	2
R-362	Res.	B	1	33 Jim Mills Dr	60	61	1
R-363	Res.	B	1	23 Lantern Walk Ln	56	58	2
R-364	Res.	B	1	38 S Thomas St	55	56	1
R-365	Res.	B	1	55 Darity Rd	54	56	2
R-366	Res.	B	1	75 Darity Rd	58	60	2
R-367	Res.	B	1	11 Collins Rd	59	60	1
R-368	Res.	B	1	21 Collins Rd	61	62	1
R-369	Res.	B	1	51 Collins Rd	61	62	1

Table B-4: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	Hybrid	Change
R-370	Res.	B	1	1015 The Carriage Rd	63	65	2
R-371	Res.	B	1	31 Wildwood Cir	57	58	1
R-372	Res.	B	1	33 Wildwood Cir	58	60	2
R-373	Res.	B	1	35 Wildwood Cir	62	64	2
R-374	Res.	B	1	37 Wildwood Cir	65	67	2
R-375	Res.	B	1	39 Wildwood Cir	69	71	2
R-376	Res.	B	1	41 Wildwood Cir	73	75	2
R-377	Res.	B	1	45 Wildwood Cir	73	75	2
R-378	Res.	B	1	47 Wildwood Cir	73	76	3
R-379	Res.	B	1	49 Wildwood Cir	73	76	3
R-380	Res.	B	1	51 Wildwood Cir	74	77	3
R-381	Res.	B	1	53 Wildwood Cir	74	76	2
R-382	Res.	B	1	55 Wildwood Cir	70	75	5
R-383	Res.	B	1	57 Wildwood Cir	63	67	4
R-384	Place of Worship	D	1	1291 Fanning Bridge Rd	40	42	2
R-385	Res.	B	1	59 Wildwood Cir	61	65	4
R-386	Res.	B	1	61 Wildwood Cir	60	63	3
R-387	Res.	B	1	63 Wildwood Cir	59	62	3
R-388	Res.	B	1	65 Wildwood Cir	59	61	2
R-389	Res.	B	1	67 Wildwood Cir	60	62	2
R-390	Res.	B	1	32 Wildwood Cir	51	53	2
R-391	Res.	B	1	34 Wildwood Cir	55	56	1
R-392	Res.	B	1	36 Wildwood Cir	58	61	3
R-393	Res.	B	1	38 Wildwood Cir	64	66	2
R-394	Res.	B	1	48 Wildwood Cir	64	67	3
R-395	Res.	B	1	50 Wildwood Cir	63	66	3
R-396	Res.	B	1	52 Wildwood Cir	62	66	4
R-397	Res.	B	1	54 Wildwood Cir	58	61	3
R-398	Res.	B	1	56 Wildwood Cir	55	59	4
R-399	Res.	B	1	58 Wildwood Cir	50	53	3
R-400	Res.	B	1	60 Wildwood Cir	53	56	3
R-401	Res.	B	1	62 Wildwood Cir	54	57	3
R-402	Res.	B	1	64 Wildwood Cir	54	57	3
R-403	Res.	B	1	66 Wildwood Cir	57	59	2
R-404	Res.	B	1	21 Wildwood Ln	51	52	1
R-405	Res.	B	1	20 Wildwood Ln	57	60	3

Table B-4: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	Hybrid	Change
R-406	Res.	B	1	18 Wildwood Ln	51	54	3
R-407	Res.	B	1	16 Wildwood Ln	53	55	2
R-408	Res.	B	1	14 Wildwood Ln	50	53	3
R-409	Res.	B	1	12 Wildwood Ln	49	52	3
R-410	Res.	B	1	10 Wildwood Ln	46	49	3
R-411	Res.	B	1	8 Wildwood Ln	50	53	3
R-412	Res.	B	1	6 Wildwood Ln	53	56	3
R-413	Res.	B	1	4 Wildwood Ln	54	57	3
R-414	Res.	B	1	25 Norman Rd	57	60	3
R-415	Res.	B	1	27 Norman Rd	55	59	4
R-416	Res.	B	1	29 Norman Rd	54	55	1
R-417	Res.	B	1	26 Norman Rd	54	56	2
R-418	Res.	B	1	92 Underwood Rd	60	60	0
R-419	Res.	B	1	5 Piney Dr	58	60	2
R-420	Res.	B	1	6 Piney Dr	55	58	3
R-421	Res.	B	1	15 Hickory Dr	54	57	3
R-422	Hotel - Pool	E	1	183 Underwood Rd	59	64	5
R-423	Hotel - Pool	E	1	196 Underwood Rd	51	53	2
R-424	Hotel - Pool	E	1	550 New Airport Rd	56	57	1
R-425	Res.	B	1	1101 Flycatcher Way	56	59	3
R-426	Res.	B	1	1201 Flycatcher Way	58	61	3
R-427	Res.	B	1	1301 Flycatcher Way	60	63	3
R-428	Res.	B	1	375 Rockwood Rd	56	60	4
R-429	Res.	B	1	26 Foxberry Dr	55	57	2
R-430	Res.	B	1	24 Foxberry Dr	56	59	3
R-431	Res.	B	1	22 Foxberry Dr	59	62	3
R-432	Res.	B	1	18 Foxberry Dr	61	65	4
R-433	Res.	B	1	16 Foxberry Dr	63	**67**	4
R-434	Res.	B	1	14 Foxberry Dr	65	**70**	5
R-435	Res.	B	1	10 Foxberry Dr	**70**	**74**	4
R-436	Res.	B	1	8 Foxberry Dr	**70**	**75**	5
R-437	Res.	B	1	4 Foxberry Dr	**70**	**75**	5
R-438	Res.	B	1	27 Foxberry Dr	51	55	4
R-439	Res.	B	1	25 Foxberry Dr	54	58	4
R-440	Res.	B	1	19 Foxberry Dr	52	56	4
R-441	Res.	B	1	15 Foxberry Dr	60	64	4
R-442	Res.	B	1	9 Foxberry Dr	62	**67**	5

Table B-4: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	Hybrid	Change
R-443	Res.	B	1	7 Foxberry Dr	65	69	4
R-444	Res.	B	1	5 Foxberry Dr	65	70	5
R-445	Res.	B	1	3 Foxberry Dr	64	69	5
R-446	Res.	B	1	54 Winding Oak Dr	51	56	5
R-447	Res.	B	1	58 Winding Oak Dr	53	57	4
R-448	Res.	B	1	62 Winding Oak Dr	56	60	4
R-449	Res.	B	1	66 Winding Oak Dr	60	65	5
R-450	Res.	B	1	63 Winding Oak Dr	58	63	5
R-451	Res.	B	1	57 Winding Oak Dr	57	61	4
R-452	Res.	B	1	53 Winding Oak Dr	52	57	5
R-453	Res.	B	1	47 Winding Oak Dr	52	56	4
R-454	Res.	B	1	37 Winding Oak Dr	53	57	4
R-455	Res.	B	1	31 Winding Oak Dr	54	59	5
R-456	Res.	B	1	27 Winding Oak Dr	54	59	5
R-457	Res.	B	1	102 Wood Glen Ct	53	57	4
R-458	Res.	B	1	106 Wood Glen Ct	57	62	5
R-459	Res.	B	1	110 Wood Glen Ct	55	59	4
R-460	Res.	B	1	114 Wood Glen Ct	60	65	5
R-461	Res.	B	1	118 Wood Glen Ct	67	72	5
R-462	Res.	B	1	109 Wood Glen Ct	66	71	5
R-463	Res.	B	1	105 Wood Glen Ct	62	66	4
R-464	Res.	B	1	15 Winding Oak Dr	61	66	5
R-465	Res.	B	1	9 Winding Oak Dr	61	66	5
R-466	Res.	B	1	5 Winding Oak Dr	60	66	6
R-467	Res.	B	1	1 Winding Oak Dr	61	67	6
R-468	Res.	B	1	169 New Rockwood Rd	64	69	5
R-469	Res.	B	1	173 New Rockwood Rd	67	73	6
R-470	Res.	B	1	177 New Rockwood Rd	71	76	5
R-471	Res.	B	1	168 New Rockwood Rd	66	74	8
R-472	Res.	B	1	167 New Rockwood Rd	62	69	7
R-473	Res.	B	1	22 Winding Oak Dr	55	58	3
R-474	Res.	B	1	18 Winding Oak Dr	57	61	4
R-475	Res.	B	1	14 Winding Oak Dr	53	58	5
R-476	Res.	B	1	10 Winding Oak Dr	53	57	4
R-477	Res.	B	1	6 Winding Oak Dr	52	56	4
R-478	Res.	B	1	2 Winding Oak Dr	56	61	5
R-479	Res.	B	1	151 New Rockwood Rd	49	52	3

Table B-4: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	Hybrid	Change
R-480	Res.	B	1	150 New Rockwood Rd	51	54	3
R-481	Res.	B	1	74 Aberdeen Dr	57	60	3
R-482	Res.	B	1	315 Long Shoals Rd	64	69	5
R-483	Medical Facility	D	1	379 Long Shoals Rd	40	40	0
R-484	Hotel - Restaurant	E	1	43 Town Square Blvd	63	66	3
R-485	Trail	C	3	Mountains-To-Sea Trail (East)	61	69	8
R-486	Res.	B	1	215 Ferry Rd	59	61	2
R-487	Res.	B	1	218 Ferry Rd	58	61	3
R-488	Res.	B	1	200 Ferry Rd	63	66	3
R-489	Res.	B	1	192 Ferry Rd	61	65	4
R-490	Res.	B	1	759 Brevard Rd	69	73	4
R-491	Res.	B	1	757 Old Brevard Rd	57	60	3
R-492	Res.	B	1	12 Pine Ln	62	R/W	R/W
R-493	Res.	B	1	20 Pine Ln	62	70	8
R-494	Res.	B	1	24 Pine Ln	63	68	5
R-495	Res.	B	1	26 Pine Ln	64	67	3
R-496	Res.	B	1	28 Pine Ln	64	65	1
R-497	Res.	B	1	50 Pine Ln	64	R/W	R/W
R-498	Res.	B	1	40 Pine Ln	64	66	2
R-499	Res.	B	1	36 Pine Ln	64	67	3
R-500	Res.	B	1	29 Pine Ln	63	66	3
R-501	Res.	B	1	27 Pine Ln	61	65	4
R-502	Res.	B	1	23 Pine Ln	58	62	4
R-503	Res.	B	1	19 Pine Ln	59	62	3
R-504	Res.	B	1	17 Pine Ln	58	61	3
R-505	Res.	B	1	15 Pine Ln	59	64	5
R-506	Res.	B	1	13 Pine Ln	57	60	3
R-507	Res.	B	1	751 Brevard Rd	57	59	2
R-508	Res.	B	1	751 Old Brevard Rd	60	63	3
R-509	Res.	B	1	36 Dogwood Rd	65	67	2
R-510	Res.	B	1	50 Dogwood Rd	68	71	3
R-511	Res.	B	1	33 Rocky Ridge Rd	57	60	3
R-512	Hotel - Restaurant	E	1	1 Rocky Ridge Rd	56	59	3
R-513	Hotel - Pool	E	1	1 Wedgefield Dr	64	65	1
R-514	Res.	B	1	13 Wedgefield Dr	53	56	3

Table B-4: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	Hybrid	Change
R-515	Res.	B	1	20 Wedgefield Dr	60	61	1
R-516	Hotel - Pool	E	1	845 Brevard Rd	52	53	1
R-517	Res.	B	1	184 Ferry Rd	73	76	3
R-518	Res.	B	1	184 Ferry Rd 2	67	69	2
R-519	Res.	B	1	191 Ferry Rd	73	75	2
R-520	Res.	B	1	185 Ferry Rd	61	65	4
R-521	Trail	C	3	Mountains-To-Sea Trail (West)	65	72	7
R-522	Res.	B	1	40 Bear Leah Trl	75	77	2
R-523	Res.	B	1	38 Bear Leah Trl	75	78	3
R-524	Res.	B	1	404 Glenn Bridge Rd	69	72	3
R-525	Res.	B	1	406 Glenn Bridge Rd	66	69	3
R-526	Res.	B	1	1 Hidden Creek Dr	68	70	2
R-527	Res.	B	1	3 Hidden Creek Dr	63	66	3
R-528	Res.	B	1	5 Hidden Creek Dr	64	67	3
R-529	Res.	B	1	20 Hidden Creek Dr	62	65	3
R-530	Res.	B	1	12 Wells Dr	63	65	2
R-531	Res.	B	1	10 Hidden Creek Dr	66	68	2
R-532	Res.	B	1	2 Hidden Creek Dr	66	69	3
R-533	Res.	B	1	1 Nathan Dr	65	68	3
R-534	Res.	B	1	5 Nathan Dr	64	67	3
R-535	Res.	B	1	105 Hidden Creek Rd	75	78	3
R-536	Res.	B	1	8 Nathan Dr	67	70	3
R-537	Res.	B	1	7 Nathan Dr	64	67	3
R-538	Res.	B	1	15 Nathan Dr	60	63	3
R-539	Res.	B	1	14 Wells Dr	64	67	3
R-540	Res.	B	1	9 Wells Dr	66	69	3
R-541	Res.	B	1	101 Hidden Creek Rd	68	71	3
R-542	Res.	B	1	10 Nathan Dr	63	66	3
R-543	Res.	B	1	12 Nathan Dr	59	62	3
R-544	Res.	B	1	14 Nathan Dr	60	63	3
R-545	Res.	B	1	16 Nathan Dr	64	67	3
R-546	Golf Course	C	2	101 French Broad Ln - Golf Course	71	73	2
R-547	Res.	B	1	289 Butler Bridge Rd	63	64	1
R-548	Res.	B	1	247 Butler Bridge Rd	63	63	0
R-549	Res.	B	1	65 Dry Hollow Ln	57	57	0
R-550	Res.	B	1	2933 N Rugby Rd	57	60	3
R-551	Res.	B	1	2911 N Rugby Rd	56	59	3

Table B-4: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	Hybrid	Change
R-552	Res.	B	1	34 Dry Hollow Ln	58	60	2
R-553	Res.	B	1	38 Dry Hollow Ln	58	60	2
R-554	Res.	B	1	36 Jade Dr	57	59	2
R-555	Res.	B	1	22 Jade Dr	56	58	2
R-556	Res.	B	1	12 Jade Dr	57	59	2
R-557	Res.	B	1	48 Cureton Pl	64	**66**	2
R-558	Res.	B	1	39 Cureton Pl	64	**66**	2
R-559	Res.	B	1	31 Cureton Pl	63	65	2
R-560	Res.	B	1	30 Alverson Ln	56	58	2
R-561	Res.	B	1	24 Alverson Ln	59	60	1
R-562	Res.	B	1	16 Alverson Dr	63	64	1
R-563	Res.	B	1	53 Alverson Ln	63	64	1
R-564	Res.	B	1	399 Naples Rd	65	**66**	1
R-565	Res.	B	1	73 Pack Rd	58	59	1
R-566	Res.	B	1	83 Naples Glenn Trl	**70**	**71**	1
R-567	Res.	B	1	288 Old Naples Rd	**67**	**68**	1
R-568	Res.	B	1	284 Old Naples Rd	**67**	**68**	1
R-569	Res.	B	1	15 Canterbury Way	**78**	**79**	1
R-570	Res.	B	1	41 Canterbury Way	**69**	**72**	3
R-571	Res.	B	1	41 Canterbury Way 2	**70**	**73**	3
R-572	Res.	B	1	118 Canterbury Way	**70**	**71**	1
R-573	Res.	B	1	121 Canterbury Hill Ln	**71**	**72**	1
R-574	Res.	B	1	304 Canterbury Way	**67**	**69**	2
R-575	Res.	B	1	44 Canterbury Hill Ln	**72**	**72**	0
R-576	Res.	B	1	238 Canterbury Way	**69**	**70**	1
R-577	Res.	B	1	238 Canterbury Way 2	**66**	**67**	1
R-578	Res.	B	1	255 Canterbury Way	**66**	**67**	1
R-579	Res.	B	1	80 Oak Meadow Ln	**68**	**69**	1
R-580	Res.	B	1	73 Oak Meadow Ln	**66**	**68**	2
R-581	Res.	B	1	17 Sujo Trl	**68**	**69**	1
R-582	Res.	B	1	14 Sujo Trl	64	65	1
R-583	Recreation Area	C	5	485 Brookside Camp Rd	**70**	**71**	1
R-584	Res.	B	1	672 Hyder Farm Rd	60	62	2
R-585	Res.	B	1	679 Hyder Farm Rd	56	59	3
R-586	Res.	B	1	619 Hyder Farm Rd	**74**	**75**	1
R-587	Res.	B	1	104 Alex Cove Dr	**68**	**70**	2
R-588	Res.	B	1	507 Hyder Farm Rd	**68**	**72**	4

Table B-4: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	Hybrid	Change
R-589	Res.	B	1	110 Alex Cove Dr	60	63	3
R-590	Res.	B	1	114 Alex Cove Dr	57	60	3
R-591	Res.	B	1	307 Hyder Farm Rd	63	66	3
R-592	Res.	B	1	825 Clear Creek Rd	62	63	1
R-593	Medical Facility	D	1	600 Carolina Village Rd	40	41	1
R-594	Res.	B	1	1118 Carolina Village Rd	60	63	3
R-595	Res.	B	1	1106 Carolina Village Rd	59	62	3
R-596	Res.	B	1	1102 Carolina Village Rd	46	50	4
R-597	Res.	B	1	1084 Carolina Village Rd	53	57	4
R-598	Res.	B	1	1076 Carolina Village Rd	56	58	2
R-599	Res.	B	1	1072 Carolina Village Rd	55	57	2
R-600	Res.	B	1	1133 Carolina Village Rd	61	63	2
R-601	Res.	B	1	1129 Carolina Village Rd	60	62	2
R-602	Res.	B	1	1117 Carolina Village Rd	42	45	3
R-603	Res.	B	1	1107 Carolina Village Rd	60	62	2
R-604	Res.	B	1	1099 Carolina Village Rd	57	59	2
R-605	Res.	B	1	1089 Carolina Village Rd	44	47	3
R-606	Res.	B	1	1065 Carolina Village Rd	53	56	3
R-607	Res.	B	1	1055 Carolina Village Rd	51	53	2
R-608	Res.	B	1	1047 Carolina Village Rd	45	48	3
R-609	Res.	B	1	1035 Carolina Village Rd	54	56	2
R-610	Res.	B	1	1027 Carolina Village Rd	55	56	1
R-611	Res.	B	1	1021 Carolina Village Rd	46	49	3
R-612	Res.	B	1	1052 Carolina Village Rd	56	60	4
R-613	Res.	B	1	1040 Carolina Village Rd	49	52	3
R-614	Res.	B	1	1036 Carolina Village Rd	49	51	2
R-615	Res.	B	1	834 Carolina Village Rd	45	48	3
R-616	Res.	B	1	838 Carolina Village Rd	58	61	3
R-617	Res.	B	1	832 Carolina Village Rd	59	62	3
R-618	Res.	B	1	992 Carolina Village Rd	50	53	3
R-619	Res.	B	1	988 Carolina Village Rd	54	56	2
R-620	Res.	B	1	984 Carolina Village Rd	55	57	2
R-621	Recreation Area	C	1	600 Carolina Village Rd 2	60	62	2
R-622	Res.	B	1	10 Tanager Trail	53	55	2
R-623	Res.	B	1	14 Tanager Trail	49	50	1
R-624	Res.	B	1	12 Tanager Trail	47	49	2
R-625	Res.	B	1	24 White Quail Trail	55	55	0

Table B-4: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	Hybrid	Change
R-626	Res.	B	1	22 White Quail Trail	58	59	1
R-627	Res.	B	1	20 White Quail Trail	56	58	2
R-628	Res.	B	1	21 White Quail Trail	59	60	1
R-629	Res.	B	1	23 White Quail Trail	56	58	2
R-630	Res.	B	1	25 White Quail Trail	47	50	3
R-631	Res.	B	1	418 Carolina Village Rd	72	74	2
R-632	Res.	B	1	30 Lake Spur Dr	49	50	1
R-633	Res.	B	1	34 Lake Spur Dr	49	51	2
R-634	Res.	B	1	32 Lake Spur Dr	47	50	3
R-635	Res.	B	1	38 Lake Spur Dr	53	55	2
R-636	Res.	B	1	36 Lake Spur Dr	56	58	2
R-637	Res.	B	1	40 Lake Spur Dr	51	54	3
R-638	Res.	B	1	35 Lake Spur Dr	60	63	3
R-639	Res.	B	1	37 Lake Spur Dr	65	67	2
R-640	Res.	B	1	39 Lake Spur Dr	65	67	2
R-641	Res.	B	1	348 Carolina Village Rd	73	75	2
R-642	Res.	B	1	346 Carolina Village Rd	70	71	1
R-643	Res.	B	1	108-A Lake Club Cir	50	52	2
R-644	Res.	B	1	108-B Lake Club Cir	51	53	2
R-645	Res.	B	1	108-C Lake Club Cir	51	53	2
R-646	Res.	B	1	108-D Lake Club Cir	52	54	2
R-647	Res.	B	1	108-E Lake Club Cir	53	55	2
R-648	Res.	B	1	108-F Lake Club Cir	54	56	2
R-649	Res.	B	1	103-F Lake Club Cir	46	48	2
R-650	Res.	B	1	103-E Lake Club Cir	46	48	2
R-651	Res.	B	1	103-D Lake Club Cir	46	48	2
R-652	Res.	B	1	103-C Lake Club Cir	46	48	2
R-653	Res.	B	1	103-B Lake Club Cir	46	48	2
R-654	Res.	B	1	103-A Lake Club Cir	49	51	2
R-655	Res.	B	1	45-D Lake Club Cir	49	52	3
R-656	Res.	B	1	45-C Lake Club Cir	49	51	2
R-657	Res.	B	1	45-B Lake Club Cir	49	51	2
R-658	Res.	B	1	45-A Lake Club Cir	49	50	1
R-659	Res.	B	1	62-A Lake Club Cir	53	56	3
R-660	Res.	B	1	62-B Lake Club Cir	52	53	1
R-661	Res.	B	1	62-C Lake Club Cir	52	54	2
R-662	Res.	B	1	62-D Lake Club Cir	52	54	2

Table B-4: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	Hybrid	Change
R-663	Res.	B	1	30-A Lake Club Cir	52	54	2
R-664	Res.	B	1	30-B Lake Club Cir	53	54	1
R-665	Res.	B	1	30-C Lake Club Cir	53	54	1
R-666	Res.	B	1	30-D Lake Club Cir	54	55	1
R-667	Campgrounds	C	1	300 Orrs Camp Rd	56	58	2
R-668	Campgrounds	C	1	300 Orrs Camp Rd 2	60	61	1
R-669	Res.	B	1	305 Prince Rd	73	74	1
R-670	Res.	B	1	77 Fairbanks Ln	72	73	1
R-671	Res.	B	1	69 Fairbanks Ln	65	66	1
R-672	Res.	B	1	47 Fairbanks Ln	59	60	1
R-673	Res.	B	1	317 Prince Rd	59	61	2
R-674	Res.	B	1	311 W Prince Rd	61	63	2
R-675	Res.	B	1	301 Prince Rd	61	63	2
R-676	Res.	B	1	323 Prince Rd	65	66	1
R-677	Res.	B	1	333 Prince Rd	73	75	2
R-678	Res.	B	1	324 Prince Rd	56	58	2
R-679	Res.	B	1	330 Prince Rd	63	65	2
R-680	Res.	B	1	334 Prince Rd	58	59	1
R-681	Res.	B	1	398 Prince Rd	57	59	2
R-682	Res.	B	1	341 Prince Rd	69	70	1
R-683	Res.	B	1	365 Prince Rd	67	69	2
R-684	Res.	B	1	373 Prince Rd	64	65	1
R-685	Res.	B	1	381 Prince Rd	63	64	1
R-686	Res.	B	1	655 Dana Rd	61	63	2
R-687	Res.	B	1	665 Dana Rd	77	79	2
R-688	Res.	B	1	102 Papa Joes Way	60	62	2
R-689	Res.	B	1	101 Papa Joes Way	65	67	2
R-690	Res.	B	1	102 Papa Joes Way 2	55	57	2
R-691	Res.	B	1	2 Meadowlark Ln	68	70	2
R-692	Res.	B	1	4 Meadowlark Ln	66	68	2
R-693	Res.	B	1	6 Meadowlark Ln	64	66	2
R-694	Res.	B	1	8 Meadowlark Ln	63	65	2
R-695	Res.	B	1	10 Meadowlark Ln	61	63	2
R-696	Res.	B	1	12 Meadowlark Ln	58	60	2
R-697	Res.	B	1	14 Meadowlark Ln	57	59	2
R-698	Res.	B	1	18 Meadowlark Ln	57	59	2
R-699	Res.	B	1	20 Meadowlark Ln	56	59	3

Table B-4: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	Hybrid	Change
R-700	Res.	B	1	24 Meadowlark Ln	56	58	2
R-701	Res.	B	1	26 Meadowlark Ln	57	59	2
R-702	Res.	B	1	28 Meadowlark Ln	57	58	1
R-703	Res.	B	1	30 Meadowlark Ln	56	58	2
R-704	Res.	B	1	32 Meadowlark Ln	55	57	2
R-705	Res.	B	1	3 Meadowlark Ln	**71**	**73**	2
R-706	Res.	B	1	5 Meadowlark Ln	**70**	**72**	2
R-707	Res.	B	1	9 Meadowlark Ln	**66**	**68**	2
R-708	Res.	B	1	11 Meadowlark Ln	65	**67**	2
R-709	Res.	B	1	13 Meadowlark Ln	64	**66**	2
R-710	Res.	B	1	15 Meadowlark Ln	63	65	2
R-711	Res.	B	1	17 Meadowlark Ln	62	64	2
R-712	Res.	B	1	19 Meadowlark Ln	62	64	2
R-713	Res.	B	1	21 Meadowlark Ln	61	63	2
R-714	Res.	B	1	23 Meadowlark Ln	62	63	1
R-715	Res.	B	1	27 Meadowlark Ln	62	64	2
R-716	Res.	B	1	29 Meadowlark Ln	62	63	1
R-717	Res.	B	1	33 Meadowlark Ln	61	62	1
R-718	Res.	B	1	35 Meadowlark Ln	60	61	1
R-719	Res.	B	1	41 Meadowlark Ln	60	62	2
R-720	Res.	B	1	41 Meadowlark Ln 2	59	60	1
R-721	Res.	B	1	39 Meadowlark Ln	**75**	**75**	0
R-722	Res.	B	1	40 Meadowlark Ln	65	65	0
R-723	Res.	B	1	69 Orchard Park Rd	64	65	1
R-724	Res.	B	1	72 Orchard Park Rd	**66**	**67**	1
R-725	Res.	B	1	121 Friendship Ln	**68**	**69**	1
R-726	Res.	B	1	125 Friendship Ln	65	**67**	2
R-727	Res.	B	1	665 Tracy Grove Rd	63	64	1
R-728	Res.	B	1	701 Tracy Grove Rd	**71**	**73**	2
R-729	Res.	B	1	731 S Allen Rd	**68**	**70**	2
R-730	Res.	B	1	727 Allen Rd	**66**	**69**	3
R-731	Community Center	C	1	722 S Allen Rd	**75**	**76**	1
R-732	Res.	B	1	973 New Hope Rd	60	61	1
R-733	Res.	B	1	983 New Hope Rd	59	60	1
R-734	Res.	B	1	999 New Hope Rd	58	59	1
R-735	Res.	B	1	1075 New Hope Rd	57	58	1

Table B-4: Noise Sensitive Receptors and Hourly Equivalent Noise Levels
Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Ex.	Hybrid	Change
R-736	Res.	B	1	1108 New Hope Rd	57	59	2
R-737	Res.	B	1	1103 New Hope Rd	55	56	1
R-738	Res.	B	1	87 Carroll Oaks Dr	57	58	1
R-739	Res.	B	1	73 Carroll Oaks Dr	57	58	1
R-740	Res.	B	1	45 Carroll Oaks Dr	54	56	2
R-741	Res.	B	1	25 Carroll Oaks Dr	59	61	2
R-742	Res.	B	1	11 Carroll Oaks Dr	64	**67**	3
R-743	Res.	B	1	713 Allen Rd	65	**67**	2
R-744	Res.	B	1	709 Allen Rd	63	**66**	3
R-745	Res.	B	1	695 Allen Rd	**66**	**69**	3
R-746	Res.	B	1	691 Allen Rd	**68**	**71**	3
R-747	Res.	B	1	677 Allen Rd	**74**	**75**	1
R-748	Baseball Field	C	1	625 College Dr - Baseball Field	62	64	2
R-749	Res.	B	1	92 Merry Oaks Ln	**70**	**72**	2
R-750	Res.	B	1	87 Merry Oaks Ln	60	62	2
R-751	Res.	B	1	630 Allen Rd	64	**68**	4
R-752	Res.	B	1	600 Allen Rd	**73**	**74**	1
R-753	Res.	B	1	586 Allen Rd	58	60	2
R-754	Res.	B	1	536 Crest Rd	**72**	**73**	1
R-755	Res.	B	1	511 Crest Rd	61	65	4
R-756	Res.	B	1	134 Victoria Springs Dr	60	62	2
R-757	Res.	B	1	129 Hollyhock Ct	63	65	2
R-758	Res.	B	1	107 Hollyhock Ct	59	62	3
R-759	Res.	B	1	110 Hollyhock Ct	61	63	2
R-760	Res.	B	1	142 Hollyhock Ct	**67**	**69**	2
R-761	Res.	B	1	646 Oak Grove Rd	61	63	2
R-762	Res.	B	1	640 Oak Grove Rd	63	65	2
R-763	Res.	B	1	638 Oak Grove Rd	58	61	3
Predicted "Hybrid" Widening Alternative 2040 Traffic Noise Impacts[3,4]					211[1]	320[1]	0[2]

1. Predicted traffic noise level impact due to approaching or exceeding NAC.
2. Predicted "substantial increase" traffic noise level impact.
3. The number of predicted impacts is not duplicated if receptors are predicted to be impacted by more than one criterion (e.g. if a receptor is impacted by the NAC and a substantial increase, it is counted as only one impact).
4. Total number of predicted traffic noise impacts under the Hybrid Widening Alternative = 320.

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Appendix C

Traffic Noise Models

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Appendix C: Traffic Noise Models

General

The appendix documents the TNM Model Inputs used in this traffic noise analysis. The models utilized various TNM object types to approximate the traffic segments assessed for the I-4400 / I-4700 project:

- Roadway
- Receptors
- Barriers
- Terrain Lines
- Tree Zones
- Ground Zones

Coordinate System
Each of the TNM Objects was modeled using the North American Datum 1983 (NAD83) horizontal coordinate system, and North American Vertical Datum 1988 (NAVD88).

Modeling Procedure
Roadways:
TNM Roadway Element widths were selected based upon representation of one (1) or two (2) lanes of traffic per TNM roadway element. For the proposed facility, TNM Roadway vertices were selected to represent interval lengths that appropriately represent fluctuations in the horizontal and vertical roadway geometry. For facilities in which more than one parallel TNM roadway element were modeled, the modeled roadway lane widths were set to ensure horizontal overlapping of adjacent modeled roadway elements. Overlapping TNM roadway elements is necessary to accurately represent the contiguous paved surface. TNM roadway elements of various widths were also modeled to represent the existing local roadways.

Receptors:
TNM Receptor Elements were modeled by assigning a point location to the most sensitive likely 'exterior area of frequent human use' for each residence, school, church, and noise-sensitive commercial land use within the project limits. All receptors in the TNM models were assigned a height of 4.92 feet except upper level multi-family units were assigned at height of 14.92 feet if second floor and 24.92 feet if third floor. Given the non-homogeneous terrain and resulting inconsistent intervening source-to-receptor topography throughout the project vicinity, noise levels at each discrete receptor were determined by means of modeling an individual TNM receptor at all representative locations for 'loudest-condition' Base Year 2011, Design Year 2040 No- Build, Design Year 2040 6-Lane Build, 8-Lane Build and 6/8-Lane Hybrid Build-condition predicted traffic.

Barriers:
Houses, office buildings, and other structures were individually modeled as barriers in the TNM models and assigned heights based on observations of the structures. Generally, structures were assumed to be 10-feet tall per story with an additional 5 feet for a pitched roof. Future jersey barriers in the median of I-26 were modeled as 46-inch high barriers.

Sound barriers for abatement of predicted traffic noise impacts were also input to the TNM models using logical alignments based on the topography between I-26 and the nearby receptors. Equally spaced barrier segments of 60 feet were used to coincide with the least common multiple of typical constructed panel lengths, 10-foot, 12-foot and 15-foot. Barrier heights were generally analyzed between 10 feet and 25 feet with 5 perturbations, resulting in an incremental increase of 3 feet.

Terrain Lines (Elevation Contours):
Elevations (vertical, "Z" coordinates) were input into TNM by hand (typing) the English coordinate values of vertices that define significant changes in grades and/or slopes throughout the study area.

Tree Zones:
Tree Zones were defined at vertices along the perimeter of areas with dense foliage likely to impact traffic noise levels in the vicinity of the I-4400 / I-4700 project. For each tree zone, an average height was assigned based on general observations of the area.

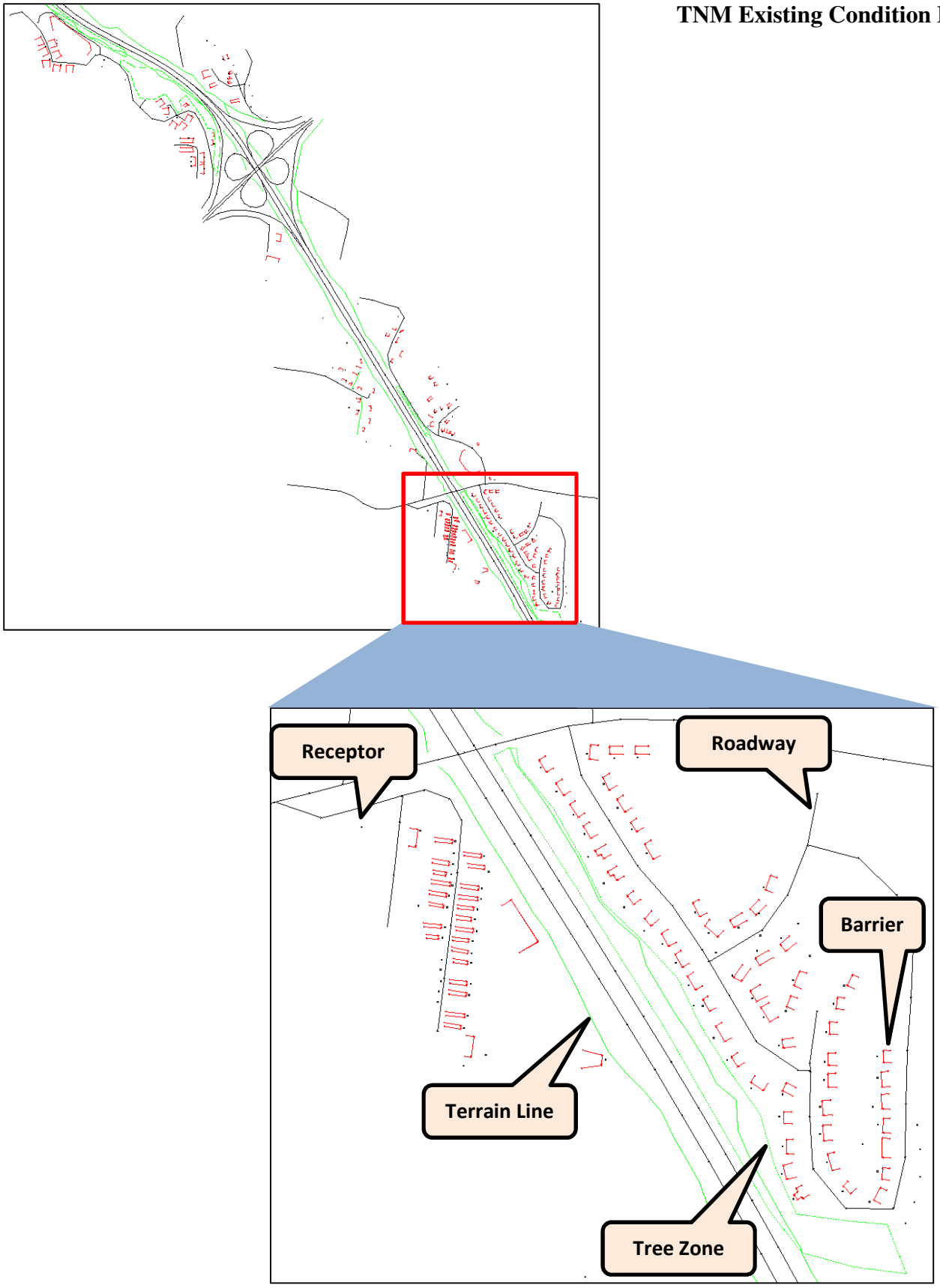
Ground Zones:
Ground Zones were defined at vertices along the perimeter of areas where the ground surface differed from the typical soil condition in the area and, therefore, could impact the predicted noise levels. Since ground zones do not define elevation, terrain lines were developed around each ground zone to ensure accurate representation of the topography in the model.

TNM Model Traffic Noise Level Assessment
The TNM model traffic noise level assessment is divided into four tasks:

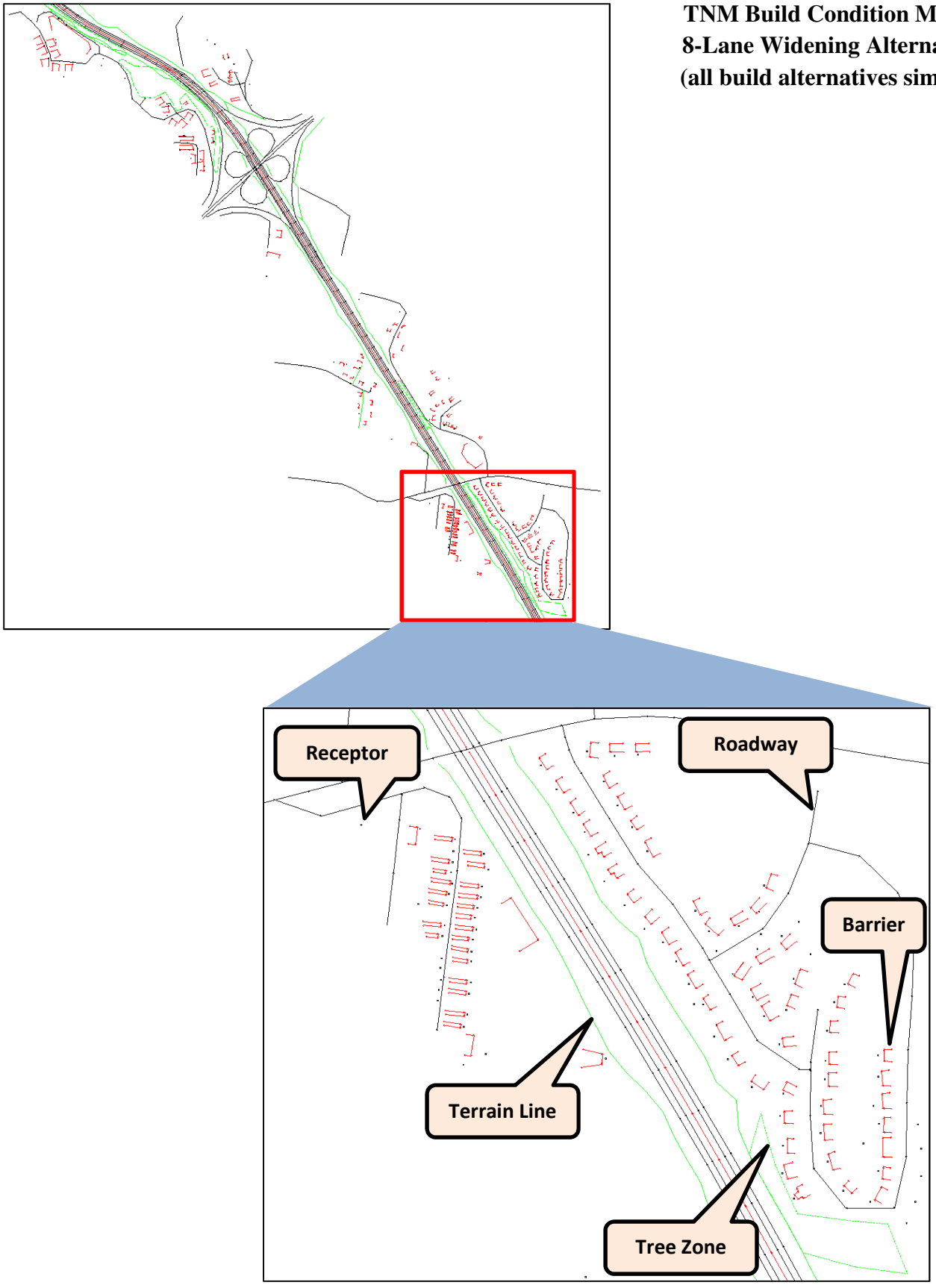
1. Creation of Validated TNM Computer Model(s)
2. Assessment of Existing Loudest-Hour Traffic Noise Levels
3. Assessment of Predicted Loudest-Hour Design Year No-Build and Build-Condition Without-Barrier Levels
4. Assessment of Predicted Loudest-Hour Design Year Build-Condition With-Barrier Levels

The following pages show TNM screenshots of representative models for the existing and build conditions.

TNM Existing Condition Model



TNM Build Condition Model
8-Lane Widening Alternative
(all build alternatives similar)



Validation

TNM model validation is the process by which the precision of the modeled relationship between traffic and equivalent noise levels is refined and/or confirmed. If the TNM model is well-constituted, it should generate predicted traffic noise levels that are similar to the ambient noise levels obtained in the field. If the tolerance between TNM-predicted and ambient noise monitored noise levels is not within ±1.7 dB(A), then the model must be adjusted, as appropriate. A TNM model is considered to be validated if it is a reasonable representation of the existing noise study area and/or project area, and the TNM-predicted noise levels are within ±1.7 dB(A) at all monitoring locations for which traffic was the dominant noise source.

The I-4400 / I-4700 TNM models validated ambient noise level data to within acceptable tolerance levels for 25 of the 27 modeled ambient monitoring locations. Information on the validation process and results – including explanations for the two sites that did not validate – can be found in Table C-1.

Table C-1
TNM Validation Results

Monitoring Site	TNM-Predicted $L_{eq(h)}$ dB(A)[1]	Measured $L_{eq(h)}$ dB(A)[1]	Validation Delta (Pred. – Meas.)[1]	TNM Validation Run
0.1	65.3	63.6	1.7	Val_M0
0.2	58.9	57.9	1.0	Val_M0
0.3	57.9	56.2	1.7	Val_M0
1.1	65.8	64.6	1.2	Val_M1
1.2	56.1	55.3	0.8	Val_M1
1.3	52.3	53.4	-1.1	Val_M1
2.1	59.3	59.7	-0.4	Val_M2
2.2	58.7	58.3	0.4	Val_M2
2.3	57.4	56.7	0.7	Val_M2
3.1	67.7	62.0	5.7[2]	Val_M3
3.2	58.0	56.7	1.3	Val_M3
3.3	52.1	52.0	0.1	Val_M3
4.1	64.8	63.9	0.9	Val_M4
4.2	54.4	55.1	-0.7	Val_M4
4.3	50.5	51.9	-1.4	Val_M4
5.1	65.6	65.0	0.6	Val_M5
5.2	58.6	60.2	-1.6	Val_M5
5.3	53.7	55.2	-1.5	Val_M5
6.1	70.7	69.4	1.3	Val_M6
6.2	62.4	61.6	0.8	Val_M6
6.3	56.7	58.2	-1.5	Val_M6
7.1	62.8	62.8	0.0	Val_M7
7.2	57.4	56.3	1.1	Val_M7
7.3	55.1	54.1	1.0	Val_M7
8.1	58.2	59.9	-1.7	Val_M8
8.2	59.6	61.1	-1.5	Val_M8
8.3	69.5	69.1	0.4	Val_M8
9.1	70.2	69.2	1.0	Val_M9
9.2	61.9	62.1	-0.2	Val_M9
9.3	60.1	59.2	0.9	Val_M9

[1] Hourly equivalent noise levels, Leq(h), are expressed to the nearest one-tenth decibels to ensure that TNM-predicted levels validate to within +/- 1.7 dB(A) of measured noise levels without the benefits of rounding.

[2] Unable to validate. Fluctuations in terrain near I-26 were observed to be more significant in the field than in the digital terrain model. Second and third row monitors in this area validated.

Table C-1 TNM Validation Results				
Monitoring Site	TNM-Predicted $L_{eq(h)}$ dB(A)[1]	Measured $L_{eq(h)}$ dB(A)[1]	Validation Delta (Pred. – Meas.)[1]	TNM Validation Run
10.1	65.4	64.6	0.8	Val_M10
10.2	62.6	63.1	-0.5	Val_M10
10.3	59.0	59.1	-0.1	Val_M10
11.1	67.2	65.9	1.3	Val_M11
11.2	60.1	59.9	0.2	Val_M11
11.3	60.7	60.3	0.4	Val_M11
12.1	64.1	62.4	1.7	Val_M12
12.2	58.0	58.5	-0.5	Val_M12
12.3	55.5	54.0	1.5	Val_M12
13.1	68.9	67.4	1.5	Val_M13
13.2	68.7	69.2	-0.5	Val_M13
13.3	65.0	64.1	0.9	Val_M13
14.1	63.4	62.6	0.8	Val_M14
14.2	61.9	60.3	1.6	Val_M14
14.3	57.3	55.8	1.5	Val_M14
15.1	62.2	61.6	0.6	Val_M15
15.2	57.9	58.1	-0.2	Val_M15
15.3	54.4	56.0	-1.6	Val_M15
16.1	70.6	69.3	1.3	Val_M16
16.2	63.1	63.3	-0.2	Val_M16
16.3	61.4	62.3	-0.9	Val_M16
17.1	70.1	68.6	1.5	Val_M17
17.2	62.1	61.8	0.3	Val_M17
17.3	54.6	54.6	0.0	Val_M17
18.1	68.8	67.9	0.9	Val_M18
18.2	67.3	65.8	1.5	Val_M18
18.3	68.5	68.0	0.5	Val_M18
19.1	68.3	67.5	0.8	Val_M19
19.2	66.7	66.0	0.7	Val_M19
19.3	62.9	62.0	0.9	Val_M19

[1] Hourly equivalent noise levels, Leq(h), are expressed to the nearest one-tenth decibels to ensure that TNM-predicted levels validate to within +/- 1.7 dB(A) of measured noise levels without the benefits of rounding.

[2] Unable to validate. Observed fluctuations in terrain near I-26 were less pronounced in the digital terrain model. However, second and third row monitors in this area validated.

Table C-1
TNM Validation Results

Monitoring Site	TNM-Predicted $L_{eq(h)}$ dB(A)[1]	Measured $L_{eq(h)}$ dB(A)[1]	Validation Delta (Pred. – Meas.)[1]	TNM Validation Run
20.1	75.6	76.0	**-0.4**	Val_M20
20.2	67.0	66.4	**0.6**	Val_M20
20.3	63.6	62.3	**1.3**	Val_M20
21.1	67.0	66.8	**0.2**	Val_M21
21.2	60.8	59.1	**1.7**	Val_M21
21.3	55.8	54.5	**1.3**	Val_M21
22.1	61.2	62.1	**-0.9**	Val_M22
22.2	58.6	59.4	**-0.8**	Val_M22
22.3	55.8	56.6	**-0.8**	Val_M22
23.1	70.8	70.3	**0.5**	Val_M23
23.2	69.7	69.0	**0.7**	Val_M23
23.3	65.7	65.2	**0.5**	Val_M23
24.1	63.4	63.9	**-0.5**	Val_M24
24.2	64.9	64.3	**0.6**	Val_M24
24.3	61.1	60.2	**0.9**	Val_M24
25.1	73.0	69.5	**3.5**[2]	Val_M25
25.2	61.3	61.9	**-0.6**	Val_M25
25.3	58.5	60.0	**-1.5**	Val_M25
26.1	64.0	64.0	**0.0**	Val_M26
26.2	63.0	61.5	**1.5**	Val_M26
26.3	58.2	56.5	**1.7**	Val_M26

[1] Hourly equivalent noise levels, Leq(h), are expressed to the nearest one-tenth decibels to ensure that TNM-predicted levels validate to within +/- 1.7 dB(A) of measured noise levels without the benefits of rounding.

[2] Unable to validate. Observed fluctuations in terrain near I-26 were less pronounced in the digital terrain model. However, second and third row monitors in this area validated.

Appendix D

Noise Barrier Analyses

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6-Lane Widening Alternative
Design Year 2040
Noise Barrier Analysis

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6-Lane Widening Alternative

A total of 36 noise walls have been evaluated for the 6-Lane Widening Alternative. Nine noise walls presently meet feasibility and reasonableness criteria including: NW5 and NW32 in NSA 2, NW9 and NW12 in NSA 3, NW14 and NW15 in NSA 4, NW16 and NW24 in NSA 5 and NW19 in NSA 6. The heights, lengths, areas, locations, noise level reductions, and benefits cited in this TNA represent a preliminary assessment of noise wall feasibility and reasonableness. A final decision on noise wall construction will be made following completion of the final design, public involvement process, and concurrence with NCDOT Policy and FHWA approval.

The summary of the evaluated noise walls is as follows:

NW1
Location: NW1 is located south of Crest Road along the shoulder of the I-26 westbound on-ramp from US 25 northbound and provides abatement for residences on Bennison Lane.

Dimensions: Length = 960 ft., Avg. Height = 22 ft., Area = 21,480 ft^2
Impacts: 3
Benefits: 2
Area / Benefit: 10,740 ft^2.
Allowable Area / Benefit: 2,570 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 2
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-1: Noise Barrier –NW1- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-02	Res.	B	1	79 Bennison Ln	68	66	2
R-03	Res.	B	1	107 Bennison Ln	69	62	7
R-04	Res.	B	1	96 Bennison Ln	65	62	3
R-05	Res.	B	1	106 Bennison Ln	71	66	5
Predicted "6-Lane" Widening Alternative With Barrier Benefits							2

Noise Level Impact

Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW1 – 6-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 3 # BENEFITS - 2 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 10,740 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,570 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.		sq.ft./cu.yd (CIRCLE ONE)	Bar No.		sq.ft./cu.yd (CIRCLE ONE)
Bar No.		sq.ft./cu.yd	Bar No.		sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of sq.ft./cu.yd (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW2

Location: NW2 is located just north of Crest Road along I-26 westbound beginning at the Crest Road bridge and continuing approximately 1,980 feet to the west, transitioning from the top of a cut section near Crest Road to edge of shoulder. It provides abatement for residences accessible via Crest Road.

Dimensions: Length = 1,980 ft., Avg. Height = 19 ft., Area = 37,440 ft^2
Impacts: 2
Benefits: 2
Area / Benefit: 18,720 ft^2.
Allowable Area / Benefit: 2,570 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 2
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-2: Noise Barrier –NW2- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-06	Res.	B	1	612 Crest Rd	68	62	6
R-07	Res.	B	1	620 Crest Rd	67	60	7
Predicted "6-Lane" Widening Alternative With Barrier Benefits							2

	Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW2 – 6-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 2 # BENEFITS - 2 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 18,720 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,570 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW3

Location: NW3 is located at the top of a cut section between Upward Road and Tracy Grove Road along I-26 westbound and provides abatement for residences accessible via McMurray Road.

Dimensions: Length = 1,140 ft., Avg. Height = 10 ft., Area = 11,580 ft^2
Impacts: 2
Benefits: 2
Area / Benefit: 5,790 ft^2.
Allowable Area / Benefit: 2,605 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 2
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-3: Noise Barrier –NW3- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-08	Res.	B	1	337 Mcmurray Rd	79	69	10
R-09	Res.	B	1	819 Mcmurray Rd	65	62	3
R-10	Res.	B	1	823 Mcmurray Rd	72	67	5
Predicted "6-Lane" Widening Alternative With Barrier Benefits							2

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW3 – 6-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 2 # BENEFITS - 2 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 5,790 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,605 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW4

Location: NW4 begins approximately 2,160 feet south of Tracy Grove Road along I-26 westbound edge of shoulder and continues approximately 2,580 feet to the northwest with a small gap at the Tracy Grove Road bridge. It provides abatement for residences along Tracy Grove Road, Justus Acres Lane and Randolph Avenue.

Dimensions: Length = 2,580 ft., Avg. Height = 24 ft., Area = 61,260 ft^2
Impacts: 3
Benefits: 7
Area / Benefit: 8,751 ft^2.
Allowable Area / Benefit: 2,535 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 3
NLR ≥ 7dB(A) for Front Row Receptors: 6

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-4: Noise Barrier –NW4- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-11	Res.	B	1	35 Justus Acres Ln	63	56	7
R-12	Res.	B	1	28 Randolph Ave	63	56	7
R-13	Res.	B	1	30 Justus Acres Ln	65	58	7
R-14	Res.	B	1	19 Justus Acres Ln	66	59	7
R-15	Res.	B	1	818 Tracy Grove Rd	68	59	9
R-16	Res.	B	1	824 Tracy Grove Rd	65	60	5
R-17	Res.	B	1	821 Tracy Grove Rd	64	61	3
R-18	Res.	B	1	809 Mid Allen Rd	78	71	7
Predicted "6-Lane" Widening Alternative With Barrier Benefits							7

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW4 – 6-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 3 # BENEFITS - 7 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 8,751 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,535 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW5

Location: NW5 begins between Tracy Grove Road and Dana Road along I-26 westbound and continues approximately 3,360 feet, transitioning from the edge of shoulder to the top of a cut section, and ending at the Dana Road bridge. It provides abatement for residences along Springside Drive, Willowbrook Road and Maywood Road.

Dimensions: Length = 3,360 ft., Avg. Height = 21 ft., Area = 71,400 ft^2
Impacts: 25
Benefits: 50
Area / Benefit: 1,428 ft^2.
Allowable Area / Benefit: 2,605 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 23
NLR ≥ 7dB(A) for Front Row Receptors: 20

This noise wall does meet feasibility and reasonableness criteria

Table D-5: Noise Barrier –NW5- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-19	Res.	B	1	837 Mid Allen Rd	66	64	2
R-20	Res.	B	1	282 Katie Dr	64	57	7
R-21	Res.	B	1	33 Springside Dr	64	55	9
R-22	Res.	B	1	31 Springside Dr	63	55	8
R-23	Res.	B	1	29 Springside Dr	61	54	7
R-24	Res.	B	1	27 Springside Dr	60	53	7
R-25	Res.	B	1	25 Springside Dr	58	53	5
R-26	Res.	B	1	16 Springside Dr	58	50	8
R-27	Res.	B	1	18 Springside Dr	59	50	9
R-28	Res.	B	1	20 Springside Dr	60	51	9
R-29	Res.	B	1	22 Springside Dr	61	51	10
R-30	Res.	B	1	24 Springside Dr	62	52	10
R-31	Res.	B	1	26 Springside Dr	63	53	10
R-32	Res.	B	1	28 Springside Dr	66	55	11
R-33	Res.	B	1	30 Springside Dr	67	56	11
R-34	Res.	B	1	32 Springside Dr	66	56	10
R-35	Res.	B	1	34 Springside Dr	64	55	9
R-36	Res.	B	1	36 Springside Dr	64	53	11
R-37	Res.	B	1	38 Springside Dr	63	53	10
R-38	Res.	B	1	40 Springside Dr	62	52	10
R-39	Res.	B	1	42 Springside Dr	61	50	11

Table D-5: Noise Barrier –NW5- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-40	Res.	B	1	44 Springside Dr	56	50	6
R-41	Res.	B	1	46 Springside Dr	55	53	2
R-42	Res.	B	1	43 Springside Dr	73	59	14
R-43	Res.	B	1	45 Springside Dr	74	58	16
R-44	Res.	B	1	47 Springside Dr	71	56	15
R-45	Res.	B	1	49 Springside Dr	69	57	12
R-46	Res.	B	1	152 Willowbrook Rd	68	55	13
R-47	Res.	B	1	150 Willowbrook Rd	72	62	10
R-48	Res.	B	1	148 Willowbrook Rd	76	62	14
R-49	Res.	B	1	146 Willowbrook Rd	76	62	14
R-50	Res.	B	1	144 Willowbrook Rd	74	62	12
R-51	Res.	B	1	142 Willowbrook Rd	72	62	10
R-52	Res.	B	1	138 Willowbrook Rd	70	62	8
R-53	Res.	B	1	134 Willowbrook Rd	71	62	9
R-54	Res.	B	1	130 Willowbrook Rd	74	62	12
R-55	Res.	B	1	126 Willowbrook Rd	75	60	15
R-56	Res.	B	1	122 Willowbrook Rd	76	60	16
R-57	Res.	B	1	118 Willowbrook Rd	77	61	16
R-58	Res.	B	1	114 Willowbrook Rd	75	63	12
R-59	Res.	B	1	110 Willowbrook Rd	75	63	12
R-60	Res.	B	1	106 Willowbrook Rd	76	64	12
R-61	Res.	B	1	102 Willowbrook Rd	76	66	10
R-62	Res.	B	1	59 Springside Dr	59	53	6
R-63	Res.	B	1	57 Springside Dr	50	48	2
R-64	Res.	B	1	55 Springside Dr	56	52	4
R-65	Res.	B	1	53 Springside Dr	64	56	8
R-66	Res.	B	1	147 Willowbrook Rd	63	58	5
R-67	Res.	B	1	145 Willowbrook Rd	63	58	5
R-68	Res.	B	1	131 Maywood Rd	60	56	4
R-69	Res.	B	1	127 Maywood Rd	55	53	2
R-70	Res.	B	1	123 Maywood Rd	54	51	3
R-71	Res.	B	1	119 Maywood Rd	55	53	2
R-72	Res.	B	1	116 Maywood Rd	53	49	4
R-73	Res.	B	1	120 Maywood Rd	47	45	2
R-74	Res.	B	1	124 Maywood Rd	50	47	3
R-75	Res.	B	1	133 Willowbrook Rd	59	53	6

Table D-5: Noise Barrier –NW5- Performance
Without Barrier and With Barrier Noise Levels
6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-76	Res.	B	1	129 Willowbrook Rd	61	54	7
R-77	Res.	B	1	121 Willowbrook Rd	62	54	8
R-78	Res.	B	1	117 Willowbrook Rd	65	57	8
R-79	Res.	B	1	113 Willowbrook Rd	64	59	5
R-80	Res.	B	1	109 Willowbrook Rd	65	62	3
R-81	Res.	B	1	105 Willowbrook Rd	67	65	2
R-82	Res.	B	1	710 Dana Rd	59	55	4
R-83	Res.	B	1	714 Dana Rd	57	55	2
R-84	Res.	B	1	703 Dana Rd	63	63	0
Predicted "6-Lane" Widening Alternative With Barrier Benefits							50

Noise Level Impact

Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW5 – 6-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 25 # BENEFITS - 50 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 1,428 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,605 (sq.ft.) / cu.yd.? (CIRCLE ONE)	X YES	NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	X YES	NO
3	Is the noise mitigation likely?	X YES	NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	X YES	NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW6

Location: NW6 begins approximately 200 feet north of Dana Road along I-26 westbound and transitions from edge of shoulder to the top of a cut section, ending north of the East Prince Road dead end. It provides abatement to residences along East Prince Road, Lakeview Estate Drive and Wakefield Drive.

Dimensions: Length = 3,360 ft., Avg. Height = 21 ft., Area = 69,960 ft^2
Impacts: 14
Benefits: 23
Area / Benefit: 3,042 ft^2.
Allowable Area / Benefit: 2,605 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 14
NLR ≥ 7dB(A) for Front Row Receptors: 9

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-6: Noise Barrier –NW6- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-85	Res.	B	1	410 Lakeview Estate Rd	63	58	5
R-86	Res.	B	1	420 Lakeview Estate Rd	64	57	7
R-87	Res.	B	1	422 Lakeview Estate Rd	64	59	5
R-88	Res.	B	1	424 Lakeview Estate Rd	65	59	6
R-89	Res.	B	1	426 Lakeview Estate Rd	67	60	7
R-90	Res.	B	1	102 Wakefield Dr	64	59	5
R-91	Res.	B	1	99 Wakefield Dr	76	64	12
R-92	Res.	B	1	103 Wakefield Dr	72	60	12
R-93	Res.	B	1	419 Bird Haven Rd	70	61	9
R-94	Res.	B	1	417 Bird Haven Rd	66	60	6
R-95	Res.	B	1	414 Bird Haven Rd	61	57	4
R-96	Res.	B	1	416 Bird Haven Rd	60	57	3
R-97	Res.	B	1	25 Dove Valley Ln	60	57	3
R-98	Res.	B	1	23 Dove Valley Ln	60	56	4
R-99	Res.	B	1	425 Bird Haven Rd	71	60	11
R-100	Res.	B	1	81 Dove Valley Ln	64	58	6
R-101	Res.	B	1	420 Bird Haven Rd	68	61	7
R-102	Res.	B	1	424 Bird Haven Rd	69	62	7
R-103	Res.	B	1	411 Pine Hill Ln	68	63	5
R-104	Res.	B	1	508 Prince Rd	72	61	11

Table D-6: Noise Barrier –NW6- Performance
Without Barrier and With Barrier Noise Levels
6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-105	Res.	B	1	510 Prince Rd	68	60	8
R-106	Res.	B	1	520 Prince Rd	64	57	7
R-107	Res.	B	1	524 Prince Rd	62	55	7
R-108	Res.	B	1	527 Prince Rd	70	61	9
R-109	Res.	B	1	529 Prince Rd	66	58	8
R-110	Res.	B	1	533 Prince Rd	63	58	5
R-111	Res.	B	1	641 Prince Rd	71	64	7
Predicted "6-Lane" Widening Alternative With Barrier Benefits							23

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW6 – 6-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 14 # BENEFITS - 23 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 3,042 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,605 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW7

Location: NW7 is located at the top of the cut section near Francis Road along the I-26 westbound on-ramp from US 64 westbound and provides abatement for residences along Francis Road.

Dimensions: Length = 1,080 ft., Avg. Height = 13 ft., Area = 13,860 ft^2
Impacts: 1
Benefits: 1
Area / Benefit: 13,860 ft^2.
Allowable Area / Benefit: 2,500 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 1
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-7: Noise Barrier –NW7- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-112	Res.	B	1	54 Francis Rd	69	62	7
R-113	Res.	B	1	68 Francis Rd	63	61	2
R-114	Res.	B	1	76 Francis Rd	65	64	1
R-115	Res.	B	1	82 Francis Rd	63	63	0
Predicted "6-Lane" Widening Alternative With Barrier Benefits							1

Noise Level Impact **Benefited Receptor**

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW7 – 6-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 1 # BENEFITS - 1 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 13,860 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,500 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW8

Location: NW8 begins just north of the Clear Creek Road bridge along I-26 westbound and continues approximately 2,040 feet to the northwest, transitioning from edge of shoulder to the top of a cut section. It provides abatement for residences along Clear Creek Road.

Dimensions: Length = 2,040 ft., Avg. Height = 14 ft., Area = 27,960 ft^2
Impacts: 5
Benefits: 5
Area / Benefit: 5,592 ft^2.
Allowable Area / Benefit: 2,535 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 5
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-8: Noise Barrier –NW8- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-125	Res.	B	1	1713 Clear Creek Rd	71	66	5
R-126	Res.	B	1	1733 Clear Creek Rd	72	64	8
R-127	Res.	B	1	1803 Clear Creek Rd	75	70	5
R-128	Res.	B	1	1845 Clear Creek Rd	72	67	5
R-129	Res.	B	1	1959 Clear Creek Rd	66	61	5
R-130	Res.	B	1	1982 Clear Creek Rd	65	64	1
Predicted "6-Lane" Widening Alternative With Barrier Benefits							5

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening — TIP # - I-4400 / I-4700

LOCATION - NW8 – 6-Lane — COUNTY(IES) – Henderson and Buncombe

IMPACTS - 5 # BENEFITS - 5 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 5,592 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,535 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.		sq.ft./cu.yd (CIRCLE ONE)	Bar No.		sq.ft./cu.yd (CIRCLE ONE)
Bar No.		sq.ft./cu.yd	Bar No.		sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of (sq.ft./cu.yd) (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan — Date: 3/20/2015

In Consultation With: Tracy Roberts — Date: 3/20/2015

NW9

Location: NW9 begins south of Hart Lane along I-26 westbound and continues nearly two miles to the northwest, with a small gap at the Brookside Camp Road bridge, before ending north of West Acorn Drive. It generally follows the edge of shoulder but has a few transitions to the top of cut sections, including one at the weigh station located near Sheneman Drive. It provides abatement for residences along all of the intervening local roads.

Dimensions: Length = 10,260 ft., Avg. Height = 22 ft., Area = 226,795 ft^2
Impacts: 70
Benefits: 116
Area / Benefit: 1,955 ft^2.
Allowable Area / Benefit: 2,570 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 61
NLR ≥ 7dB(A) for Front Row Receptors: 37

This noise wall does meet feasibility and reasonableness criteria.

Table D-9: Noise Barrier -NW9- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-131	Res.	B	1	170 Hart Ln	69	57	12
R-132	Res.	B	1	32 Hart Ln	72	58	14
R-133	Res.	B	1	28 Hart Ln	72	59	13
R-134	Res.	B	1	22 Hart Ln	72	59	13
R-135	Res.	B	1	39 Keeneland Dr	67	55	12
R-136	Res.	B	1	23 Keeneland Dr	65	54	11
R-137	Res.	B	1	20 Keeneland Dr	69	57	12
R-138	Res.	B	1	171 Keeneland Dr	69	56	13
R-139	Res.	B	1	195 Kingswood Dr	69	58	11
R-140	Res.	B	1	10 Hart Ln	75	65	10
R-141	Res.	B	1	223 Kingswood Dr	68	58	10
R-142	Res.	B	1	192 Kingswood Dr	63	55	8
R-143	Res.	B	1	216 Kingswood Dr	65	57	8
R-144	Res.	B	1	240 Kingswood Dr	65	59	6
R-145	Res.	B	1	262 Kingswood Dr	64	59	5
R-146	Res.	B	1	282 Kingswood Dr	65	61	4
R-147	Res.	B	1	261 Kingswood Dr	68	61	7
R-148	Res.	B	1	275 Kingswood Dr	66	61	5
R-149	Res.	B	1	283 Kingswood Dr	68	65	3

Table D-9: Noise Barrier -NW9- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-150	Res.	B	1	339 Kingswood Dr	68	66	2
R-151	Res.	B	1	299 Kingswood Dr	68	66	2
R-152	Res.	B	1	345 Kingswood Dr	70	67	3
R-153	Res.	B	1	134 Wendy Ln	60	53	7
R-154	Res.	B	1	138 Wendy Ln	65	58	7
R-155	Res.	B	1	142 Wendy Ln	74	68	6
R-156	Res.	B	1	146 Wendy Ln	74	67	7
R-157	Res.	B	1	150 Wendy Ln	76	70	6
R-158	Res.	B	1	154 Wendy Ln	78	67	11
R-159	Res.	B	1	149 Wendy Ln	64	60	4
R-160	Res.	B	1	151 Wendy Ln	70	66	4
R-161	Res.	B	1	153 Wendy Ln	69	63	6
R-162	Res.	B	1	155 Wendy Ln	66	61	5
R-163	Res.	B	1	157 Wendy Ln	70	64	6
R-164	Res.	B	1	132 Shelly Dr	54	50	4
R-165	Res.	B	1	142 Shelly Dr	52	50	2
R-166	Res.	B	1	144 Shelly Dr	52	50	2
R-167	Res.	B	1	160 Wendy Ln	77	65	12
R-168	Res.	B	1	2026 Howard Gap Rd	67	61	6
R-169	Res.	B	1	2020 Howard Gap Rd	68	60	8
R-170	Res.	B	1	335 Carolina Cir	78	62	16
R-171	Res.	B	1	315 Carolina Cir	72	58	14
R-172	Res.	B	1	289 Carolina Cir	67	55	12
R-173	Res.	B	1	257 Carolina Cir	59	51	8
R-174	Res.	B	1	251 Carolina Cir	58	51	7
R-175	Res.	B	1	223 Carolina Cir	59	52	7
R-176	Res.	B	1	205 Carolina Cir	59	52	7
R-177	Res.	B	1	185 Carolina Cir	58	52	6
R-178	Res.	B	1	165 Carolina Cir	58	52	6
R-179	Res.	B	1	145 Carolina Cir	60	54	6
R-180	Res.	B	1	125 Carolina Cir	62	56	6
R-181	Res.	B	1	113 Carolina Cir	62	57	5
R-182	Res.	B	1	93 Carolina Cir	61	56	5
R-183	Res.	B	1	73 Carolina Cir	61	56	5
R-184	Res.	B	1	55 Carolina Cir	60	56	4
R-185	Res.	B	1	35 Carolina Cir	60	57	3

Table D-9: Noise Barrier -NW9- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-186	Res.	B	1	512 Brookside Camp Rd	64	63	1
R-187	Res.	B	1	270 Carolina Cir	65	55	10
R-188	Res.	B	1	254 Carolina Cir	64	55	9
R-189	Res.	B	1	226 Carolina Cir	65	56	9
R-190	Res.	B	1	212 Carolina Cir	61	53	8
R-191	Res.	B	1	192 Carolina Cir	63	54	9
R-192	Res.	B	1	172 Carolina Cir	62	54	8
R-193	Res.	B	1	152 Carolina Cir	62	54	8
R-194	Res.	B	1	132 Carolina Cir	63	55	8
R-195	Res.	B	1	112 Carolina Cir	61	54	7
R-196	Res.	B	1	100 Carolina Cir	60	55	5
R-197	Res.	B	1	74 Carolina Cir	58	53	5
R-198	Res.	B	1	60 Carolina Cir	62	57	5
R-199	Res.	B	1	42 Carolina Cir	64	61	3
R-200	Res.	B	1	322 Carolina Cir	75	60	15
R-201	Res.	B	1	374 Carolina Cir	74	60	14
R-202	Res.	B	1	380 Carolina Cir	73	59	14
R-203	Res.	B	1	210 Carolina Cir	69	58	11
R-204	Res.	B	1	426 Carolina Cir	70	59	11
R-205	Res.	B	1	446 Carolina Cir	68	57	11
R-206	Res.	B	1	518 Carolina Cir	65	56	9
R-207	Res.	B	1	536 Carolina Cir	65	57	8
R-208	Res.	B	1	556 Carolina Cir	64	59	5
R-209	Res.	B	1	576 Carolina Cir	66	62	4
R-210	Res.	B	1	464 Carolina Cir	71	60	11
R-211	Res.	B	1	472 Carolina Cir	76	62	14
R-212	Res.	B	1	505 Carolina Cir	77	62	15
R-213	Res.	B	1	537 Carolina Cir	77	62	15
R-214	Res.	B	1	557 Carolina Cir	76	62	14
R-215	Res.	B	1	202 Kimberly Ann Dr	74	63	11
R-216	Res.	B	1	206 Dundeve Cir	74	62	12
R-217	Res.	B	1	208 Dundeve Cir	75	63	12
R-218	Res.	B	1	212 Dundeve Cir	76	65	11
R-219	Res.	B	1	216 Dundeve Cir	75	63	12
R-220	Res.	B	1	505 Brookside Camp Rd	67	63	4
R-221	Res.	B	1	509 Brookside Camp Rd	61	58	3

Table D-9: Noise Barrier -NW9- Performance
Without Barrier and With Barrier Noise Levels
6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-222	Res.	B	1	203 Kimberly Ann Dr	64	57	7
R-223	Res.	B	1	207 Kimberly Ann Dr	63	56	7
R-224	Res.	B	1	211 Kimberly Ann Dr	62	55	7
R-225	Res.	B	1	217 Kimberly Ann Dr	62	56	6
R-226	Res.	B	1	206 Kimberly Ann Dr	66	58	8
R-227	Res.	B	1	209 Dundeve Cir	68	59	9
R-228	Res.	B	1	213 Dundeve Cir	64	55	9
R-229	Res.	B	1	237 Dundeve Cir	57	51	6
R-230	Res.	B	1	224 Dundeve Cir	71	59	12
R-231	Res.	B	1	228 Dundeve Cir	66	55	11
R-232	Res.	B	1	232 Dundeve Cir	62	52	10
R-233	Res.	B	1	236 Dundeve Cir	59	51	8
R-234	Res.	B	1	201 Sheneman Dr	71	59	12
R-235	Res.	B	1	213 Sheneman Dr	63	54	9
R-236	Res.	B	1	217 Sheneman Dr	60	53	7
R-237	Res.	B	1	204 Sheneman Dr	74	62	12
R-238	Res.	B	1	212 Sheneman Dr	67	59	8
R-239	Res.	B	1	214 Sheneman Dr	62	57	5
R-240	Res.	B	1	300 Whispering Hills Dr	61	56	5
R-241	Res.	B	1	312 Whispering Hills Dr	70	66	4
R-242	Res.	B	1	319 Whispering Hills Dr	63	60	3
R-243	Res.	B	1	325 Whispering Hills Dr	64	59	5
R-244	Res.	B	1	329 Whispering Hills Dr	64	58	6
R-245	Res.	B	1	318 Whispering Hills Dr	69	65	4
R-246	Res.	B	1	320 Whispering Hills Dr	71	66	5
R-247	Res.	B	1	324 Whispering Hills Dr	71	62	9
R-248	Res.	B	1	326 Whispering Hills Dr	67	59	8
R-249	Res.	B	1	328 Whispering Hills Dr	65	57	8
R-250	Res.	B	1	330 Whispering Hills Dr	62	55	7
R-251	Res.	B	1	336 Whispering Hills Dr	61	54	7
R-252	Res.	B	1	185 Acorn Dr	77	61	16
R-253	Res.	B	1	120 Acorn Dr	72	57	15
R-254	Res.	B	1	112 Acorn Dr	68	56	12
R-255	Res.	B	1	108 Acorn Dr	65	56	9
R-256	Res.	B	1	40 Acorn Dr	65	55	10
R-257	Res.	B	1	181 Acorn Dr	77	62	15

Table D-9: Noise Barrier -NW9- Performance
Without Barrier and With Barrier Noise Levels
6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-258	Res.	B	1	119 Acorn Dr	74	60	14
R-259	Res.	B	1	115 Acorn Dr	72	59	13
R-260	Res.	B	1	105 W Acorn Dr	69	57	12
R-261	Res.	B	1	131 W Acorn Dr	72	60	12
R-262	Res.	B	1	188 W Acorn Dr	71	62	9
R-263	Res.	B	1	188 W Acorn Dr 2	69	63	6
R-264	Res.	B	1	107 Acorn Dr	65	57	8
R-265	Res.	B	1	45 Acorn Dr	62	53	9
R-266	Res.	B	1	402 Silver Loop Dr	62	56	6
Predicted "6-Lane" Widening Alternative With Barrier Benefits							116

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW9 – 6-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 70 # BENEFITS - 116 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 1,955 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,570 (sq.ft.) / cu.yd.? (CIRCLE ONE)	X YES	NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	X YES	NO
3	Is the noise mitigation likely?	X YES	NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	X YES	NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.		sq.ft./cu.yd (CIRCLE ONE)	Bar No.		sq.ft./cu.yd (CIRCLE ONE)
Bar No.		sq.ft./cu.yd	Bar No.		sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of (sq.ft./cu.yd) (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW10

Location: NW10 is located between Brookside Camp Road and Naples Road at the top of a cut section along I-26 westbound. It provides abatement for the Park Ridge Health walking trail, as well as a residence on PJ's Place.

Dimensions: Length = 2,340 ft., Avg. Height = 19 ft., Area = 43,920 ft^2
Impacts: 6
Benefits: 5
Area / Benefit: 8,784 ft^2.
Allowable Area / Benefit: 2,640 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 5
NLR ≥ 7dB(A) for Front Row Receptors: 3

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-10: Noise Barrier –NW10- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-267	Res.	B	1	276 Pjs Pl	68	63	5
R-268.01	Trail	C	0.12[1]	100 Hospital Dr	57	55	2
R-268.02	Trail	C	0.12[1]	100 Hospital Dr	58	55	3
R-268.03	Trail	C	0.12[1]	100 Hospital Dr	59	56	3
R-268.04	Trail	C	0.12[1]	100 Hospital Dr	61	57	4
R-268.05	Trail	C	0.12[1]	100 Hospital Dr	62	58	4
R-268.06	Trail	C	0.12[1]	100 Hospital Dr	64	60	4
R-268.07	Trail	C	0.12[1]	100 Hospital Dr	66	61	5
R-268.08	Trail	C	0.12[1]	100 Hospital Dr	68	62	6
R-268.09	Trail	C	0.12[1]	100 Hospital Dr	69	63	6
R-268.10	Trail	C	0.12[1]	100 Hospital Dr	72	64	8
R-268.11	Trail	C	0.12[1]	100 Hospital Dr	75	65	10
R-268.12	Trail	C	0.12[1]	100 Hospital Dr	77	65	12
R-268.13	Trail	C	0.12[1]	100 Hospital Dr	78	64	14
R-268.14	Trail	C	0.12[1]	100 Hospital Dr	78	63	15
R-268.15	Trail	C	0.12[1]	100 Hospital Dr	79	63	16
R-268.16	Trail	C	0.12[1]	100 Hospital Dr	80	62	18
R-268.17	Trail	C	0.12[1]	100 Hospital Dr	80	62	18
R-268.18	Trail	C	0.12[1]	100 Hospital Dr	79	61	18
R-268.19	Trail	C	0.12[1]	100 Hospital Dr	80	61	19
R-268.20	Trail	C	0.12[1]	100 Hospital Dr	80	61	19

Table D-10: Noise Barrier –NW10- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-268.21	Trail	C	0.12[1]	100 Hospital Dr	80	61	19
R-268.22	Trail	C	0.12[1]	100 Hospital Dr	79	62	17
R-268.23	Trail	C	0.12[1]	100 Hospital Dr	79	61	18
R-268.24	Trail	C	0.12[1]	100 Hospital Dr	79	61	18
R-268.25	Trail	C	0.12[1]	100 Hospital Dr	78	62	16
R-268.26	Trail	C	0.12[1]	100 Hospital Dr	76	64	12
R-268.27	Trail	C	0.12[1]	100 Hospital Dr	75	66	9
R-268.28	Trail	C	0.12[1]	100 Hospital Dr	74	68	6
R-268.29	Trail	C	0.12[1]	100 Hospital Dr	74	69	5
R-268.30	Trail	C	0.12[1]	100 Hospital Dr	74	69	5
R-268.31	Trail	C	0.12[1]	100 Hospital Dr	73	67	6
R-268.32	Trail	C	0.12[1]	100 Hospital Dr	72	66	6
R-268.33	Trail	C	0.12[1]	100 Hospital Dr	71	65	6
R-268.34	Trail	C	0.12[1]	100 Hospital Dr	69	64	5
R-268.35	Trail	C	0.12[1]	100 Hospital Dr	68	64	4
R-268.36	Trail	C	0.12[1]	100 Hospital Dr	67	64	3
R-268.37	Trail	C	0.12[1]	100 Hospital Dr	66	63	3
R-268.38	Trail	C	0.12[1]	100 Hospital Dr	65	64	1
R-268.39	Trail	C	0.12[1]	100 Hospital Dr	66	64	2
R-268.40	Trail	C	0.12[1]	100 Hospital Dr	66	66	0
R-268.41	Trail	C	0.12[1]	100 Hospital Dr	67	67	0
Predicted "6-Lane" Widening Alternative With Barrier Benefits							5[2]

[1] Walking trail was analyzed as a nodal array of receptors (5 equivalent residences represented by 41 nodes).

[2] Total benefits for walking trail were rounded up to the nearest whole dB(A).

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW10 – 6-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 6 # BENEFITS - 5 NAC: A (B) (C) D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 8,784 (CIRCLE ONE) (sq.ft./cu.yd) less than the maximum allowable design criteria per benefited receptor of 2,640 (CIRCLE ONE) (sq.ft.) / cu.yd.?	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ (CIRCLE ONE) sq.ft./cu.yd Bar No. _____ _____ (CIRCLE ONE) sq.ft./cu.yd

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ (CIRCLE ONE) sq.ft./cu.yd	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW11

Location: NW11 begins south of the Naples Road bridge along I-26 westbound at the top of a cut section near Naples road. At the Naples Road bridge, it transitions to the edge of shoulder and continues along I-26 westbound for another 1,020 feet to the northwest. It provides abatement for residences along Sunset Vista Road and Twin Springs Road.

Dimensions: Length = 2,940 ft., Avg. Height = 20 ft., Area = 60,000 ft^2
Impacts: 11
Benefits: 10
Area / Benefit: 6,000 ft^2.
Allowable Area / Benefit: 2,570 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 9
NLR ≥ 7dB(A) for Front Row Receptors: 2

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-11: Noise Barrier –NW11- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-277	Res.	B	1	18 Sunset Vista Rd	75	68	7
R-278	Res.	B	1	46 Sunset Vista Rd	68	60	8
R-279	Res.	B	1	72 Sunset Vista Rd	66	61	5
R-280	Res.	B	1	108 Sunset Vista Rd	66	61	5
R-281	Res.	B	1	126 Sunset Vista Rd	65	60	5
R-282	Res.	B	1	25 Sunset Vista Rd	72	66	6
R-283	Res.	B	1	91 Sunset Vista Rd	72	66	6
R-284	Res.	B	1	145 Sunset Vista Rd	70	64	6
R-285	Res.	B	1	67 Holly Oak Dr	62	59	3
R-286	Res.	B	1	67 Holly Oak Dr 2	60	58	2
R-287	Res.	B	1	25 Holly Oak Dr	74	69	5
R-288	Res.	B	1	104 Twin Springs Rd	72	67	5
R-289	Res.	B	1	118 Twin Springs Rd	68	65	3
R-290	Res.	B	1	146 Twin Springs Rd	68	66	2
Predicted "6-Lane" Widening Alternative With Barrier Benefits							10

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW11 – 6-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 11 # BENEFITS - 10 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 6,000 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,570 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.		sq.ft./cu.yd (CIRCLE ONE)	Bar No.		sq.ft./cu.yd (CIRCLE ONE)
Bar No.		sq.ft./cu.yd	Bar No.		sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of (sq.ft./cu.yd) (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW12

Location: NW12 is located along the I-26 westbound off-ramp to US 25 (Asheville Highway) beginning near the westbound bridge over railroad tracks and continuing along the edge of shoulder approximately 1,560 feet to the northwest. The portion of this wall along the bridge over railroad tracks is on structure. It provides abatement for residences on Old Hendersonville Road, November Lane and Hickory Flats Drive.

Dimensions: Length = 1,560 ft., Avg. Height = 15 ft., Area = 22,620 ft^2
Impacts: 11
Benefits: 19
Area / Benefit: 1,191 ft^2.
Allowable Area / Benefit: 2,605 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 10
NLR ≥ 7dB(A) for Front Row Receptors: 6

This noise wall does meet feasibility and reasonableness criteria.

Table D-12: Noise Barrier –NW12- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-291	Res.	B	1	521 Old Hendersonville Rd	70	64	6
R-292	Res.	B	1	525 Old Hendersonville Rd	70	62	8
R-293	Res.	B	1	20 Pleasant Row Dr	67	58	9
R-294	Res.	B	1	15 Pleasant Row Dr	65	57	8
R-295	Res.	B	1	45 Pleasant Row Dr	65	57	8
R-296	Res.	B	1	526 Old Hendersonville Rd	67	59	8
R-297	Res.	B	1	522 Old Hendersonville Rd	67	58	9
R-298	Res.	B	1	19 November Ln	67	58	9
R-299	Res.	B	1	39 November Ln	66	58	8
R-300	Res.	B	1	37 November Ln	67	58	9
R-301	Res.	B	1	65 November Ln	67	59	8
R-302	Res.	B	1	244 Hickory Flats Dr	69	62	7
R-303	Res.	B	1	146 Hickory Flats Dr	65	60	5
R-304	Res.	B	1	60 November Ln	65	58	7
R-305	Res.	B	1	42 November Ln	63	56	7
R-306	Res.	B	1	434 Old Hendersonville Rd	64	57	7
R-307	Res.	B	1	211 Hickory Flats Dr	64	56	8
R-308	Res.	B	1	97 Hickory Flats Dr	64	56	8
R-309	Res.	B	1	71 Hickory Flats Dr	63	58	5

Table D-12: Noise Barrier –NW12- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-310	Res.	B	1	54 Hickory Flats Dr	63	60	3
R-311	Res.	B	1	143 Maxwell Dr	**69**	**69**	0
R-312	Res.	B	1	109 Maxwell Dr	64	64	0
Predicted "6-Lane" Widening Alternative With Barrier Benefits							19

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW12 – 6-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 11 # BENEFITS - 19 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 1,191 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,605 (sq.ft.) / cu.yd.? (CIRCLE ONE)	X YES	NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	X YES	NO
3	Is the noise mitigation likely?	X YES	NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	X YES	NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.		sq.ft./cu.yd (CIRCLE ONE)	Bar No.		sq.ft./cu.yd (CIRCLE ONE)
Bar No.		sq.ft./cu.yd	Bar No.		sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of (sq.ft./cu.yd) (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW13

Location: NW13 is located between US 25 (Asheville Highway) and Butler Bridge Road at the top of a cut section along I-26 westbound beginning near the I-26 westbound on-ramp from US 25 (Asheville Highway) and continuing approximately 1,380 feet to the northwest. It provides abatement for residences on Halliburton Road, Kennerly Drive and Dawley Drive.

Dimensions: Length = 1,380 ft., Avg. Height = 13 ft., Area = 18,480 ft^2
Impacts: 5
Benefits: 2
Area / Benefit: 9,240 ft^2.
Allowable Area / Benefit: 2,535 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 2
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-13: Noise Barrier –NW13- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-313	Res.	B	1	123 Halliburton Rd	74	69	5
R-314	Res.	B	1	118 Halliburton Rd	66	64	2
R-315	Res.	B	1	124 Halliburton Rd	65	63	2
R-316	Res.	B	1	54 Dawley Dr	63	61	2
R-317	Res.	B	1	46 Dawley Dr	66	64	2
R-318	Res.	B	1	44 Dawley Dr	63	60	3
R-319	Res.	B	1	55 Dawley Dr	58	55	3
R-320	Res.	B	1	15 Dawley Dr	66	64	2
R-321	Res.	B	1	103 Dawley Dr	60	57	3
R-322	Res.	B	1	100 Halliburton Rd	64	63	1
R-323	Res.	B	1	102 Halliburton Rd	63	62	1
R-324	Res.	B	1	104 Halliburton Rd	59	58	1
R-325	Res.	B	1	62 Dawley Dr	57	56	1
R-326	Res.	B	1	99 Dawley Dr	55	55	0
R-327	Res.	B	1	64 Halliburton Rd	63	62	1
R-328	Res.	B	1	128 Kennerly Dr	61	59	2
R-329	Res.	B	1	110 Kennerly Dr	58	58	0
R-330	Res.	B	1	96 Kennerly Dr	55	55	0
R-331	Res.	B	1	127 Kennerly Dr	63	63	0

Table D-13: Noise Barrier –NW13- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-332	Res.	B	1	46 Royal Oaks Dr	61	60	1
R-333	Res.	B	1	16 Royal Oaks Dr	59	58	1
R-334	Res.	B	1	106 Dawley Dr	64	62	2
R-335	Res.	B	1	76 Dawley Dr	55	55	0
R-336	Res.	B	1	120 Dawley Dr	74	66	8
R-337	Res.	B	1	24 Kennerly Dr	58	58	0
R-338	Res.	B	1	6077 Asheville Hwy	61	60	1
R-339	Res.	B	1	6075 Asheville Hwy	56	55	1
R-340	Res.	B	1	6073 Asheville Hwy	58	58	0
Predicted "6-Lane" Widening Alternative With Barrier Benefits							2

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW13 – 6-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 5 # BENEFITS - 2 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 9,240 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,535 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW14

Location: NW14 is located along I-26 westbound edge of shoulder beginning just north of the Butler Bridge Road and continuing approximately 2,280 feet to the northwest. It provides abatement for residences on Hope Opal Lane, South Thomas Street and Jim Mills Drive.

Dimensions: Length = 2,280 ft., Avg. Height = 23 ft., Area = 52,680 ft^2
Impacts: 10
Benefits: 26
Area / Benefit: 2,026 ft^2.
Allowable Area / Benefit: 2,535 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 10
NLR ≥ 7dB(A) for Front Row Receptors: 11

This noise wall does meet feasibility and reasonableness criteria.

Table D-14: Noise Barrier –NW14- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-341	Res.	B	1	46 Hope Opal Ln	75	64	11
R-342	Res.	B	1	38 Hope Opal Ln	75	64	11
R-343	Res.	B	1	34 Hope Opal Ln	75	63	12
R-344	Res.	B	1	28 Hope Opal Ln	74	62	12
R-345	Res.	B	1	22 Hope Opal Ln	73	59	14
R-346	Res.	B	1	14 Hope Opal Ln	72	58	14
R-347	Res.	B	1	41 Hope Opal Ln	66	61	5
R-348	Res.	B	1	65 Hope Opal Ln	65	61	4
R-349	Res.	B	1	23 Hope Opal Ln	63	58	5
R-350	Res.	B	1	73 Hope Opal Ln	63	61	2
R-351	Res.	B	1	9 Hope Opal Ln	62	58	4
R-352	Res.	B	1	120 S Thomas St	69	58	11
R-353	Res.	B	1	60 Jim Mills Dr	67	57	10
R-354	Res.	B	1	52 Jim Mills Dr	67	57	10
R-355	Res.	B	1	36 Jim Mills Dr	65	56	9
R-356	Res.	B	1	20 Jim Mills Dr	64	56	8
R-357	Res.	B	1	109 S Thomas St	64	54	10
R-358	Res.	B	1	112 S Thomas St	65	55	10
R-359	Res.	B	1	98 S Thomas St	59	51	8
R-360	Res.	B	1	41 Lantern Walk Ln	63	54	9
R-361	Res.	B	1	42 Lantern Walk Ln	60	52	8

Table D-14: Noise Barrier –NW14- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-362	Res.	B	1	33 Jim Mills Dr	60	53	7
R-363	Res.	B	1	23 Lantern Walk Ln	57	52	5
R-364	Res.	B	1	38 S Thomas St	56	51	5
R-365	Res.	B	1	55 Darity Rd	55	50	5
R-366	Res.	B	1	75 Darity Rd	59	53	6
R-367	Res.	B	1	11 Collins Rd	59	53	6
R-368	Res.	B	1	21 Collins Rd	61	54	7
R-369	Res.	B	1	51 Collins Rd	61	54	7
Predicted "6-Lane" Widening Alternative With Barrier Benefits							26

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW14 – 6-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 10 # BENEFITS - 26 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 2,026 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,535 (sq.ft.) / cu.yd.? (CIRCLE ONE)	X YES	NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	X YES	NO
3	Is the noise mitigation likely?	X YES	NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	X YES	NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO
2	If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:		

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW15

Location: NW15 is located south of Fanning Bridge Road along I-26 westbound beginning near the rest area south of Wildwood Circle and continuing approximately 1,860 feet to the northwest. It transitions from the edge of shoulder along the I-26 westbound on-ramp from the rest area to the top of a cut section and provides abatement for residences along Wildwood Circle and South Wildwood Lane.

Dimensions: Length = 1,860 ft., Avg. Height = 19 ft., Area = 35,160 ft^2
Impacts: 11
Benefits: 20
Area / Benefit: 1,758 ft^2.
Allowable Area / Benefit: 2,570 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 11
NLR ≥ 7dB(A) for Front Row Receptors: 9

This noise wall does meet feasibility and reasonableness criteria.

Table D-15: Noise Barrier –NW15- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-371	Res.	B	1	31 Wildwood Cir	57	56	1
R-372	Res.	B	1	33 Wildwood Cir	59	56	3
R-373	Res.	B	1	35 Wildwood Cir	63	58	5
R-374	Res.	B	1	37 Wildwood Cir	67	60	7
R-375	Res.	B	1	39 Wildwood Cir	70	61	9
R-376	Res.	B	1	41 Wildwood Cir	73	62	11
R-377	Res.	B	1	45 Wildwood Cir	74	63	11
R-378	Res.	B	1	47 Wildwood Cir	74	63	11
R-379	Res.	B	1	49 Wildwood Cir	75	63	12
R-380	Res.	B	1	51 Wildwood Cir	76	63	13
R-381	Res.	B	1	53 Wildwood Cir	75	63	12
R-382	Res.	B	1	55 Wildwood Cir	73	60	13
R-383	Res.	B	1	57 Wildwood Cir	65	58	7
R-384	Church	D	1	1291 Fanning Bridge Rd	41	40	1
R-385	Res.	B	1	59 Wildwood Cir	63	56	7
R-386	Res.	B	1	61 Wildwood Cir	62	56	6
R-387	Res.	B	1	63 Wildwood Cir	61	56	5
R-388	Res.	B	1	65 Wildwood Cir	61	58	3
R-389	Res.	B	1	67 Wildwood Cir	62	62	0
R-390	Res.	B	1	32 Wildwood Cir	53	50	3

Table D-15: Noise Barrier –NW15- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-391	Res.	B	1	34 Wildwood Cir	56	53	3
R-392	Res.	B	1	36 Wildwood Cir	60	56	4
R-393	Res.	B	1	38 Wildwood Cir	65	60	5
R-394	Res.	B	1	48 Wildwood Cir	67	61	6
R-395	Res.	B	1	50 Wildwood Cir	66	60	6
R-396	Res.	B	1	52 Wildwood Cir	65	58	7
R-397	Res.	B	1	54 Wildwood Cir	60	55	5
R-398	Res.	B	1	56 Wildwood Cir	57	52	5
R-399	Res.	B	1	58 Wildwood Cir	52	49	3
R-400	Res.	B	1	60 Wildwood Cir	55	52	3
R-401	Res.	B	1	62 Wildwood Cir	56	54	2
R-402	Res.	B	1	64 Wildwood Cir	55	55	0
R-403	Res.	B	1	66 Wildwood Cir	59	59	0
R-404	Res.	B	1	21 Wildwood Ln	51	50	1
R-405	Res.	B	1	20 Wildwood Ln	59	56	3
R-406	Res.	B	1	18 Wildwood Ln	53	51	2
R-407	Res.	B	1	16 Wildwood Ln	54	50	4
R-408	Res.	B	1	14 Wildwood Ln	52	48	4
R-409	Res.	B	1	12 Wildwood Ln	51	48	3
R-410	Res.	B	1	10 Wildwood Ln	47	45	2
R-411	Res.	B	1	8 Wildwood Ln	51	49	2
R-412	Res.	B	1	6 Wildwood Ln	55	54	1
R-413	Res.	B	1	4 Wildwood Ln	56	56	0
Predicted "6-Lane" Widening Alternative With Barrier Benefits							20

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW15 – 6-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 11 # BENEFITS - 20 NAC: A (B) C (D) E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 1,758 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,570 (sq.ft.) / cu.yd.? (CIRCLE ONE)	X YES	NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	X YES	NO
3	Is the noise mitigation likely?	X YES	NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	X YES	NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO
2	If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:		

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW16

Location: NW16 begins south of Glenn Bridge Road along I-26 westbound and continues approximately 1,620 feet to the northwest, ending between New Rockwood Road and Mahogany Road. It generally follows the top of the cut section but transitions to edge of shoulder near Glenn Bridge Road, and the portion of the wall along the I-26 westbound bridge over Glenn Bridge Road is on structure. This noise wall provides abatement for residences in the Hunter's Trace neighborhood.

Dimensions: Length = 1,620 ft., Avg. Height = 23 ft., Area = 37,800 ft^2
Impacts: 15
Benefits: 36
Area / Benefit: 1,050 ft^2.
Allowable Area / Benefit: 2,640 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 15
NLR ≥ 7dB(A) for Front Row Receptors: 11

This noise wall does meet feasibility and reasonableness criteria.

Table D-16: Noise Barrier –NW16- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-429	Res.	B	1	26 Foxberry Dr	57	57	0
R-430	Res.	B	1	24 Foxberry Dr	58	58	0
R-431	Res.	B	1	22 Foxberry Dr	61	58	3
R-432	Res.	B	1	18 Foxberry Dr	63	59	4
R-433	Res.	B	1	16 Foxberry Dr	65	60	**5**
R-434	Res.	B	1	14 Foxberry Dr	**68**	62	**6**
R-435	Res.	B	1	10 Foxberry Dr	**73**	64	**9**
R-436	Res.	B	1	8 Foxberry Dr	**73**	63	**10**
R-437	Res.	B	1	4 Foxberry Dr	**74**	61	**13**
R-438	Res.	B	1	27 Foxberry Dr	54	53	1
R-439	Res.	B	1	25 Foxberry Dr	57	54	3
R-440	Res.	B	1	19 Foxberry Dr	55	52	3
R-441	Res.	B	1	15 Foxberry Dr	63	57	**6**
R-442	Res.	B	1	9 Foxberry Dr	65	58	**7**
R-443	Res.	B	1	7 Foxberry Dr	**68**	60	**8**
R-444	Res.	B	1	5 Foxberry Dr	**68**	58	**10**
R-445	Res.	B	1	3 Foxberry Dr	**68**	58	**10**
R-446	Res.	B	1	54 Winding Oak Dr	55	50	**5**
R-447	Res.	B	1	58 Winding Oak Dr	56	50	**6**
R-448	Res.	B	1	62 Winding Oak Dr	59	53	**6**

Table D-16: Noise Barrier –NW16- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-449	Res.	B	1	66 Winding Oak Dr	64	57	7
R-450	Res.	B	1	63 Winding Oak Dr	62	57	5
R-451	Res.	B	1	57 Winding Oak Dr	60	54	6
R-452	Res.	B	1	53 Winding Oak Dr	56	49	7
R-453	Res.	B	1	47 Winding Oak Dr	55	49	6
R-454	Res.	B	1	37 Winding Oak Dr	56	49	7
R-455	Res.	B	1	31 Winding Oak Dr	57	52	5
R-456	Res.	B	1	27 Winding Oak Dr	58	54	4
R-457	Res.	B	1	102 Wood Glen Ct	56	55	1
R-458	Res.	B	1	106 Wood Glen Ct	60	55	5
R-459	Res.	B	1	110 Wood Glen Ct	58	53	5
R-460	Res.	B	1	114 Wood Glen Ct	63	57	6
R-461	Res.	B	1	118 Wood Glen Ct	71	62	9
R-462	Res.	B	1	109 Wood Glen Ct	70	62	8
R-463	Res.	B	1	105 Wood Glen Ct	65	58	7
R-464	Res.	B	1	15 Winding Oak Dr	65	60	5
R-465	Res.	B	1	9 Winding Oak Dr	65	57	8
R-466	Res.	B	1	5 Winding Oak Dr	64	58	6
R-467	Res.	B	1	1 Winding Oak Dr	66	56	10
R-468	Res.	B	1	169 New Rockwood Rd	67	56	11
R-469	Res.	B	1	173 New Rockwood Rd	71	58	13
R-470	Res.	B	1	177 New Rockwood Rd	75	60	15
R-471	Res.	B	1	168 New Rockwood Rd	72	59	13
R-472	Res.	B	1	167 New Rockwood Rd	67	62	5
R-473	Res.	B	1	22 Winding Oak Dr	57	56	1
R-474	Res.	B	1	18 Winding Oak Dr	60	59	1
R-475	Res.	B	1	14 Winding Oak Dr	56	53	3
R-476	Res.	B	1	10 Winding Oak Dr	56	52	4
R-477	Res.	B	1	6 Winding Oak Dr	55	51	4
R-478	Res.	B	1	2 Winding Oak Dr	60	53	7
Predicted "6-Lane" Widening Alternative With Barrier Benefits							36
					Noise Level Impact		**Benefited Receptor**

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW16 – 6-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 15 # BENEFITS - 36 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 1,050 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,640 (sq.ft.) / cu.yd.? (CIRCLE ONE)	X YES	NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	X YES	NO
3	Is the noise mitigation likely?	X YES	NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	X YES	NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.		sq.ft./cu.yd (CIRCLE ONE)	Bar No.		sq.ft./cu.yd (CIRCLE ONE)
Bar No.		sq.ft./cu.yd	Bar No.		sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of (sq.ft./cu.yd) (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW17

Location: NW17 is located south of NC 146 (Long Shoals Road) along I-26 westbound at the top of a cut section and transitions to the edge of shoulder at the I-26 westbound off-ramp to NC 146 before ending in front of the Quality Inn & Suites. It provides abatement for a residence accessible via Long Shoals Road.

Dimensions: Length = 1,980 ft., Avg. Height = 25 ft., Area = 49,500 ft^2
Impacts: 1
Benefits: 0
Area / Benefit: N/A
Allowable Area / Benefit: 2,500 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 0
NLR ≥ 7dB(A) for Front Row Receptors: 0

This noise wall meets neither feasibility nor reasonableness criteria because a 5 dB(A) noise reduction could not be achieved for the only receptor in the area.

Table D-17: Noise Barrier –NW17- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-482	Res.	B	1	315 Long Shoals Rd	68	66	2
Predicted "6-Lane" Widening Alternative With Barrier Benefits							0[1]

[1] The NCDOT noise reduction design goal of 7 dB(A) could not be achieved for at least one benefited receptor to meet reasonableness criteria.

Noise Level Impact

Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW17 – 6-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 1 # BENEFITS - 0 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	____ YES	X NO
2	Does topography negatively affect the proposed abatement measure?	____ YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	____ YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	____ NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	____ YES	X NO
2	Is the design criteria per benefited receptor of N/A (CIRCLE ONE) sq.ft./cu.yd less than the maximum allowable design criteria per benefited receptor of ____ 2,500 (CIRCLE ONE) sq.ft./cu.yd.?	____ YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	____ YES	X NO
2	Is the noise mitigation reasonable?	____ YES	X NO
3	Is the noise mitigation likely?	____ YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	____ YES	X NO
5	Is the noise mitigation recommended for construction?	____ YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	____ YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. ____ ____ (CIRCLE ONE) sq.ft./cu.yd Bar No. ____ ____ (CIRCLE ONE) sq.ft./cu.yd

Bar No. ____ ____ sq.ft./cu.yd Bar No. ____ ____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of ____ (CIRCLE ONE) sq.ft./cu.yd ____ YES ____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW19

Location: NW19 is located along the future I-26 westbound on-ramp from NC 191 (Brevard Road) edge of shoulder. It provides abatement for residences on Pine Lane.

Dimensions: Length = 2,040 ft., Avg. Height = 12 ft., Area = 25,440 ft^2
Impacts: 5
Benefits: 10
Area / Benefit: 2,544 ft^2.
Allowable Area / Benefit: 2,640 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 4
NLR ≥ 7dB(A) for Front Row Receptors: 6

This noise wall does meet feasibility and reasonableness criteria.

Table D-18: Noise Barrier –NW19- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-490	Res.	B	1	759 Brevard Rd	73	73	0
R-491	Res.	B	1	757 Old Brevard Rd	59	58	1
R-492	Res.	B	1	12 Pine Ln	R/W	R/W	R/W
R-493	Res.	B	1	20 Pine Ln	70	60	10
R-494	Res.	B	1	24 Pine Ln	67	59	8
R-495	Res.	B	1	26 Pine Ln	66	58	8
R-496	Res.	B	1	28 Pine Ln	65	57	8
R-497	Res.	B	1	50 Pine Ln	R/W	R/W	R/W
R-498	Res.	B	1	40 Pine Ln	65	58	7
R-499	Res.	B	1	36 Pine Ln	66	58	8
R-500	Res.	B	1	29 Pine Ln	65	58	7
R-501	Res.	B	1	27 Pine Ln	64	57	7
R-502	Res.	B	1	23 Pine Ln	61	56	5
R-503	Res.	B	1	19 Pine Ln	61	59	2
R-504	Res.	B	1	17 Pine Ln	60	58	2
R-505	Res.	B	1	15 Pine Ln	63	58	5
R-506	Res.	B	1	13 Pine Ln	59	58	1
R-507	Res.	B	1	751 Brevard Rd	58	58	0
R-508	Res.	B	1	751 Old Brevard Rd	61	59	2
Predicted "6-Lane" Widening Alternative With Barrier Benefits							10
					Noise Level Impact		**Benefited Receptor**

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW19 – 6-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 5 # BENEFITS - 10 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 2,544 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,640 (sq.ft.) / cu.yd.? (CIRCLE ONE)	X YES	NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	X YES	NO
3	Is the noise mitigation likely?	X YES	NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	X YES	NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.		sq.ft./cu.yd (CIRCLE ONE)	Bar No.		sq.ft./cu.yd (CIRCLE ONE)
Bar No.		sq.ft./cu.yd	Bar No.		sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of (sq.ft./cu.yd) (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW20

Location: NW20 is located between NC 191 (Brevard Road) and Pond Road along I-26 westbound edge of shoulder. It provides abatement for residences on Dogwood Road.

Dimensions: Length = 1,440 ft., Avg. Height = 21 ft., Area = 30,060 ft^2
Impacts: 2
Benefits: 2
Area / Benefit: 15,030 ft^2.
Allowable Area / Benefit: 2,535 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 2
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-19: Noise Barrier –NW20- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-509	Res.	B	1	36 Dogwood Rd	66	59	7
R-510	Res.	B	1	50 Dogwood Rd	69	62	7
Predicted "6-Lane" Widening Alternative With Barrier Benefits							2

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW20 – 6-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 2 # BENEFITS - 2 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 15,030 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,535 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW21

Location: NW21 is located between NC 191 (Brevard Road) and Blue Ridge Parkway along I-26 eastbound edge of shoulder. It provides abatement for residences on Ferry Road.

Dimensions: Length = 1,320 ft., Avg. Height = 11 ft., Area = 13,740 ft^2
Impacts: 3
Benefits: 3
Area / Benefit: 4,580 ft^2.
Allowable Area / Benefit: 2,535 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 3
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-20: Noise Barrier –NW21- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-517	Res.	B	1	184 Ferry Rd	74	67	7
R-518	Res.	B	1	184 Ferry Rd 2	68	63	5
R-519	Res.	B	1	191 Ferry Rd	73	68	5
Predicted "6-Lane" Widening Alternative With Barrier Benefits							3

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW21 – 6-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 3 # BENEFITS - 3 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 4,580 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,535 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW22

Location: NW22 is located between NC 146 (Long Shoals Road) and Glenn Bridge Road along I-26 eastbound edge of shoulder. It provides abatement for residences on Bear Leah Trail, accessible via Glenn Bridge Road.

Dimensions: Length = 900 ft., Avg. Height = 10 ft., Area = 9,360 ft^2
Impacts: 2
Benefits: 2
Area / Benefit: 4,680 ft^2.
Allowable Area / Benefit: 2,535 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 2
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-21: Noise Barrier –NW22- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-522	Res.	B	1	40 Bear Leah Trl	73	68	5
R-523	Res.	B	1	38 Bear Leah Trl	76	69	7
Predicted "6-Lane" Widening Alternative With Barrier Benefits							2
					Noise Level Impact		**Benefited Receptor**

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW22 – 6-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 2 # BENEFITS - 2 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 4,680 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,535 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW23

Location: NW23 begins approximately 540 feet north of Glenn Bridge Road along I-26 eastbound edge of shoulder and continues approximately 1,080 feet to the southeast. The portion of the wall along the I-26 eastbound bridge over Glenn Bridge Road is on structure. It provides abatement for residences on Glenn Bridge Road.

Dimensions: Length = 1,080 ft., Avg. Height = 25 ft., Area = 27,000 ft^2
Impacts: 2
Benefits: 1
Area / Benefit: 27,000 ft^2.
Allowable Area / Benefit: 2,570 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 1
NLR ≥ 7dB(A) for Front Row Receptors: 0

This noise wall does not meet reasonableness criteria because a 7 dB(A) noise reduction could not be achieved for at least one benefited front row receptor.

Table D-22: Noise Barrier –NW23- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-524	Res.	B	1	404 Glenn Bridge Rd	71	66	5
R-525	Res.	B	1	406 Glenn Bridge Rd	68	64	4
Predicted "6-Lane" Widening Alternative With Barrier Benefits							1[1]

[1] The NCDOT noise reduction design goal of 7 dB(A) could not be achieved for at least one benefited receptor to meet reasonableness criteria.

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW23 – 6-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 2 # BENEFITS - 1 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	YES	X NO
2	Is the design criteria per benefited receptor of 27,000 (CIRCLE ONE) (sq.ft./cu.yd) less than the maximum allowable design criteria per benefited receptor of 2,570 (CIRCLE ONE) (sq.ft.) / cu.yd.?	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ (CIRCLE ONE) sq.ft./cu.yd Bar No. _____ _____ (CIRCLE ONE) sq.ft./cu.yd

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ (CIRCLE ONE) sq.ft./cu.yd	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW24

Location: NW24 is located between Glenn Bridge Road and NC 280 (Airport Road) along I-26 eastbound edge of shoulder. It provides abatement for residences on Hidden Creek Drive, Nathan Drive and Wells Drive.

Dimensions: Length = 1,860 ft., Avg. Height = 15 ft., Area = 28,680 ft^2
Impacts: 12
Benefits: 20
Area / Benefit: 1,434 ft^2.
Allowable Area / Benefit: 2,570 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 12
NLR ≥ 7dB(A) for Front Row Receptors: 4

This noise wall does meet feasibility and reasonableness criteria.

Table D-23: Noise Barrier –NW24- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-526	Res.	B	1	1 Hidden Creek Dr	69	60	9
R-527	Res.	B	1	3 Hidden Creek Dr	65	57	8
R-528	Res.	B	1	5 Hidden Creek Dr	66	59	7
R-529	Res.	B	1	20 Hidden Creek Dr	64	55	9
R-530	Res.	B	1	12 Wells Dr	64	57	7
R-531	Res.	B	1	10 Hidden Creek Dr	67	60	7
R-532	Res.	B	1	2 Hidden Creek Dr	68	58	10
R-533	Res.	B	1	1 Nathan Dr	66	58	8
R-534	Res.	B	1	5 Nathan Dr	66	58	8
R-535	Res.	B	1	105 Hidden Creek Rd	77	65	12
R-536	Res.	B	1	8 Nathan Dr	68	60	8
R-537	Res.	B	1	7 Nathan Dr	65	58	7
R-538	Res.	B	1	15 Nathan Dr	62	55	7
R-539	Res.	B	1	14 Wells Dr	66	59	7
R-540	Res.	B	1	9 Wells Dr	67	62	5
R-541	Res.	B	1	101 Hidden Creek Rd	70	62	8
R-542	Res.	B	1	10 Nathan Dr	65	59	6
R-543	Res.	B	1	12 Nathan Dr	61	56	5
R-544	Res.	B	1	14 Nathan Dr	62	57	5
R-545	Res.	B	1	16 Nathan Dr	66	60	6

Table D-23: Noise Barrier –NW24- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
Predicted "6-Lane" Widening Alternative With Barrier Benefits							20
					Noise Level Impact		Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW24 – 6-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 12 # BENEFITS - 20 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 1,434 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,570 (sq.ft.) / cu.yd.? (CIRCLE ONE)	X YES	NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	X YES	NO
3	Is the noise mitigation likely?	X YES	NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	X YES	NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW25

Location: NW25 is located south of the rest area between Fanning Bridge Road and Butler Bridge Road along I-26 eastbound edge of shoulder. It provides abatement for the Broadmoor Golf Links golf course.

Dimensions: Length = 2,460 ft., Avg. Height = 15 ft., Area = 37,200 ft^2
Impacts: 2
Benefits: 2
Area / Benefit: 18,600 ft^2.
Allowable Area / Benefit: 2,535 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 2
NLR ≥ 7dB(A) for Front Row Receptors: 2

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-24: Noise Barrier –NW25- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-555.01	Golf	C	0.03[1]	101 French Broad Ln	73	64	9
R-555.02	Golf	C	0.03[1]	101 French Broad Ln	72	63	9
R-555.03	Golf	C	0.03[1]	101 French Broad Ln	72	63	9
R-555.04	Golf	C	0.03[1]	101 French Broad Ln	72	63	9
R-555.05	Golf	C	0.03[1]	101 French Broad Ln	72	62	10
R-555.06	Golf	C	0.03[1]	101 French Broad Ln	71	62	9
R-555.07	Golf	C	0.03[1]	101 French Broad Ln	71	62	9
R-555.08	Golf	C	0.03[1]	101 French Broad Ln	71	62	9
R-555.09	Golf	C	0.03[1]	101 French Broad Ln	71	62	9
R-555.10	Golf	C	0.03[1]	101 French Broad Ln	71	62	9
R-555.11	Golf	C	0.03[1]	101 French Broad Ln	71	62	9
R-555.12	Golf	C	0.03[1]	101 French Broad Ln	71	62	9
R-555.13	Golf	C	0.03[1]	101 French Broad Ln	72	62	10
R-555.14	Golf	C	0.03[1]	101 French Broad Ln	70	64	6
R-555.15	Golf	C	0.03[1]	101 French Broad Ln	70	63	7
R-555.16	Golf	C	0.03[1]	101 French Broad Ln	70	62	8
R-555.17	Golf	C	0.03[1]	101 French Broad Ln	70	62	8
R-555.18	Golf	C	0.03[1]	101 French Broad Ln	70	62	8
R-555.19	Golf	C	0.03[1]	101 French Broad Ln	70	61	9
R-555.20	Golf	C	0.03[1]	101 French Broad Ln	70	61	9
R-555.21	Golf	C	0.03[1]	101 French Broad Ln	70	61	9

Table D-24: Noise Barrier –NW25- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-555.22	Golf	C	0.03[1]	101 French Broad Ln	70	61	9
R-555.23	Golf	C	0.03[1]	101 French Broad Ln	69	60	9
R-555.24	Golf	C	0.03[1]	101 French Broad Ln	70	61	9
R-555.25	Golf	C	0.03[1]	101 French Broad Ln	70	61	9
R-555.26	Golf	C	0.03[1]	101 French Broad Ln	70	61	9
R-555.27	Golf	C	0.03[1]	101 French Broad Ln	68	63	5
R-555.28	Golf	C	0.03[1]	101 French Broad Ln	68	62	6
R-555.29	Golf	C	0.03[1]	101 French Broad Ln	68	61	7
R-555.30	Golf	C	0.03[1]	101 French Broad Ln	68	61	7
R-555.31	Golf	C	0.03[1]	101 French Broad Ln	68	61	7
R-555.32	Golf	C	0.03[1]	101 French Broad Ln	68	61	7
R-555.33	Golf	C	0.03[1]	101 French Broad Ln	68	60	8
R-555.34	Golf	C	0.03[1]	101 French Broad Ln	68	60	8
R-555.35	Golf	C	0.03[1]	101 French Broad Ln	68	60	8
R-555.36	Golf	C	0.03[1]	101 French Broad Ln	67	60	7
R-555.37	Golf	C	0.03[1]	101 French Broad Ln	67	60	7
R-555.38	Golf	C	0.03[1]	101 French Broad Ln	68	60	8
R-555.39	Golf	C	0.03[1]	101 French Broad Ln	68	60	8
R-555.40	Golf	C	0.03[1]	101 French Broad Ln	68	60	8
R-555.41	Golf	C	0.03[1]	101 French Broad Ln	66	61	5
R-555.42	Golf	C	0.03[1]	101 French Broad Ln	66	61	5
R-555.43	Golf	C	0.03[1]	101 French Broad Ln	66	61	5
R-555.44	Golf	C	0.03[1]	101 French Broad Ln	66	60	6
R-555.45	Golf	C	0.03[1]	101 French Broad Ln	66	60	6
R-555.46	Golf	C	0.03[1]	101 French Broad Ln	66	60	6
R-555.47	Golf	C	0.03[1]	101 French Broad Ln	66	59	7
R-555.48	Golf	C	0.03[1]	101 French Broad Ln	66	59	7
R-555.49	Golf	C	0.03[1]	101 French Broad Ln	66	59	7
R-555.50	Golf	C	0.03[1]	101 French Broad Ln	66	59	7
R-555.51	Golf	C	0.03[1]	101 French Broad Ln	66	59	7
R-555.52	Golf	C	0.03[1]	101 French Broad Ln	66	59	7
R-555.53	Golf	C	0.03[1]	101 French Broad Ln	66	59	7
R-555.54	Golf	C	0.03[1]	101 French Broad Ln	64	59	5
R-555.55	Golf	C	0.03[1]	101 French Broad Ln	64	58	6
R-555.56	Golf	C	0.03[1]	101 French Broad Ln	64	58	6
R-555.57	Golf	C	0.03[1]	101 French Broad Ln	64	58	6

Table D-24: Noise Barrier –NW25- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-555.58	Golf	C	0.03[1]	101 French Broad Ln	64	58	6
R-555.59	Golf	C	0.03[1]	101 French Broad Ln	64	58	6
R-555.60	Golf	C	0.03[1]	101 French Broad Ln	64	58	6
R-555.61	Golf	C	0.03[1]	101 French Broad Ln	62	57	5
R-555.62	Golf	C	0.03[1]	101 French Broad Ln	62	57	5
R-555.63	Golf	C	0.03[1]	101 French Broad Ln	62	57	5
R-555.64	Golf	C	0.03[1]	101 French Broad Ln	62	57	5
R-555.65	Golf	C	0.03[1]	101 French Broad Ln	62	57	5
Predicted "6-Lane" Widening Alternative With Barrier Benefits							2[2]

[1] Golf course was analyzed as a nodal array of receptors (2 equivalent residences represented by 65 nodes).

[2] Total benefits for golf course were rounded up to the nearest whole dB(A).

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW25 – 6-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 2 # BENEFITS - 2 NAC: A B (C) D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 18,600 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,535 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW26

Location: NW26 begins along the I-26 eastbound off-ramp to US 25 (Asheville Highway) edge of shoulder and continues approximately 840 feet to the southeast along Cuerton Place, ending prior to the Cuerton Place intersection with Asheville Highway. It provides abatement for residences on Cuerton Place and Alverson Lane.

Dimensions: Length = 840 ft., Avg. Height = 19 ft., Area = 15,960 ft^2
Impacts: 2
Benefits: 5
Area / Benefit: 3,192 ft^2.
Allowable Area / Benefit: 2,570 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 1
NLR ≥ 7dB(A) for Front Row Receptors: 2

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-25: Noise Barrier –NW26- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-557	Res.	B	1	48 Cureton Pl	66	66	0
R-558	Res.	B	1	39 Cureton Pl	66	61	5
R-559	Res.	B	1	31 Cureton Pl	65	57	8
R-560	Res.	B	1	30 Alverson Ln	58	54	4
R-561	Res.	B	1	24 Alverson Ln	60	55	5
R-562	Res.	B	1	16 Alverson Dr	64	57	7
R-563	Res.	B	1	53 Alverson Ln	64	59	5
Predicted "6-Lane" Widening Alternative With Barrier Benefits							5

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW26 – 6-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 2 # BENEFITS - 5 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 3,192 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,570 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW27

Location: NW27 is located just south of Naples Road along I-26 eastbound edge of shoulder beginning at the Naples Road bridge and continuing approximately 4,980 feet to the southeast. It provides abatement for residences along Old Naples Road, Canterbury Way and Oak Meadow Lane.

Dimensions: Length = 4,980 ft., Avg. Height = 16 ft., Area = 81,480 ft^2
Impacts: 16
Benefits: 16
Area / Benefit: 5,093 ft^2.
Allowable Area / Benefit: 2,535 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 15
NLR ≥ 7dB(A) for Front Row Receptors: 9

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-26: Noise Barrier –NW27- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-566	Res.	B	1	83 Naples Glenn Trl	71	69	2
R-567	Res.	B	1	288 Old Naples Rd	68	62	6
R-568	Res.	B	1	284 Old Naples Rd	68	61	7
R-569	Res.	B	1	15 Canterbury Way	79	66	13
R-570	Res.	B	1	41 Canterbury Way	72	62	10
R-571	Res.	B	1	41 Canterbury Way 2	73	62	11
R-572	Res.	B	1	118 Canterbury Way	71	60	11
R-573	Res.	B	1	121 Canterbury Hill Ln	72	65	7
R-574	Res.	B	1	304 Canterbury Way	69	64	5
R-575	Res.	B	1	44 Canterbury Hill Ln	72	62	10
R-576	Res.	B	1	238 Canterbury Way	70	62	8
R-577	Res.	B	1	238 Canterbury Way 2	67	61	6
R-578	Res.	B	1	255 Canterbury Way	67	59	8
R-579	Res.	B	1	80 Oak Meadow Ln	69	59	10
R-580	Res.	B	1	73 Oak Meadow Ln	68	61	7
R-581	Res.	B	1	17 Sujo Trl	69	62	7
R-582	Res.	B	1	14 Sujo Trl	65	59	6
Predicted "6-Lane" Widening Alternative With Barrier Benefits							16
					Noise Level Impact		Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW27 – 6-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 16 # BENEFITS - 16 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 5,093 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,535 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW28

Location: NW28 begins near the weigh station between Naples Road and Brookside Camp Road along I-26 eastbound edge of shoulder and continues approximately 1,380 feet to the southeast, ending just north of the Brookside Camp Road bridge. It provides abatement for Champions Golf Learning Center.

Dimensions: Length = 1,380 ft., Avg. Height = 14 ft., Area = 18,840 ft^2
Impacts: 5
Benefits: 5
Area / Benefit: 3,768 ft^2.
Allowable Area / Benefit: 2,535 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 5
NLR ≥ 7dB(A) for Front Row Receptors: 3

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-27: Noise Barrier –NW28- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-583.01	Recreation	C	0.07[1]	485 Brookside Camp Rd	74	65	9
R-583.02	Recreation	C	0.07[1]	485 Brookside Camp Rd	73	65	8
R-583.03	Recreation	C	0.07[1]	485 Brookside Camp Rd	73	65	8
R-583.04	Recreation	C	0.07[1]	485 Brookside Camp Rd	72	64	8
R-583.05	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	62	8
R-583.06	Recreation	C	0.07[1]	485 Brookside Camp Rd	71	63	8
R-583.07	Recreation	C	0.07[1]	485 Brookside Camp Rd	72	64	8
R-583.08	Recreation	C	0.07[1]	485 Brookside Camp Rd	72	64	8
R-583.09	Recreation	C	0.07[1]	485 Brookside Camp Rd	68	62	6
R-583.10	Recreation	C	0.07[1]	485 Brookside Camp Rd	69	63	6
R-583.11	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	63	7
R-583.12	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	63	7
R-583.13	Recreation	C	0.07[1]	485 Brookside Camp Rd	67	61	6
R-583.14	Recreation	C	0.07[1]	485 Brookside Camp Rd	67	62	5
R-583.15	Recreation	C	0.07[1]	485 Brookside Camp Rd	68	62	6
R-583.16	Recreation	C	0.07[1]	485 Brookside Camp Rd	72	63	9
R-583.17	Recreation	C	0.07[1]	485 Brookside Camp Rd	72	63	9
R-583.18	Recreation	C	0.07[1]	485 Brookside Camp Rd	71	63	8
R-583.19	Recreation	C	0.07[1]	485 Brookside Camp Rd	71	63	8
R-583.20	Recreation	C	0.07[1]	485 Brookside Camp Rd	71	63	8

Table D-27: Noise Barrier –NW28- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-583.21	Recreation	C	0.07[1]	485 Brookside Camp Rd	71	63	8
R-583.22	Recreation	C	0.07[1]	485 Brookside Camp Rd	71	63	8
R-583.23	Recreation	C	0.07[1]	485 Brookside Camp Rd	71	63	8
R-583.24	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	63	7
R-583.25	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	63	7
R-583.26	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	63	7
R-583.27	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	62	8
R-583.28	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	62	8
R-583.29	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	62	8
R-583.30	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	62	8
R-583.31	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	62	8
R-583.32	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	62	8
R-583.33	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	62	8
R-583.34	Recreation	C	0.07[1]	485 Brookside Camp Rd	69	62	7
R-583.35	Recreation	C	0.07[1]	485 Brookside Camp Rd	69	62	7
R-583.36	Recreation	C	0.07[1]	485 Brookside Camp Rd	69	62	7
R-583.37	Recreation	C	0.07[1]	485 Brookside Camp Rd	69	62	7
R-583.38	Recreation	C	0.07[1]	485 Brookside Camp Rd	69	62	7
R-583.39	Recreation	C	0.07[1]	485 Brookside Camp Rd	69	62	7
R-583.40	Recreation	C	0.07[1]	485 Brookside Camp Rd	68	62	6
R-583.41	Recreation	C	0.07[1]	485 Brookside Camp Rd	68	62	6
R-583.42	Recreation	C	0.07[1]	485 Brookside Camp Rd	69	63	6
R-583.43	Recreation	C	0.07[1]	485 Brookside Camp Rd	69	63	6
R-583.44	Recreation	C	0.07[1]	485 Brookside Camp Rd	68	61	7
R-583.45	Recreation	C	0.07[1]	485 Brookside Camp Rd	68	61	7
R-583.46	Recreation	C	0.07[1]	485 Brookside Camp Rd	67	61	6
R-583.47	Recreation	C	0.07[1]	485 Brookside Camp Rd	67	61	6
R-583.48	Recreation	C	0.07[1]	485 Brookside Camp Rd	67	62	5
R-583.49	Recreation	C	0.07[1]	485 Brookside Camp Rd	67	62	5
R-583.50	Recreation	C	0.07[1]	485 Brookside Camp Rd	68	62	6
R-583.51	Recreation	C	0.07[1]	485 Brookside Camp Rd	68	63	5
R-583.52	Recreation	C	0.07[1]	485 Brookside Camp Rd	68	63	5
R-583.53	Recreation	C	0.07[1]	485 Brookside Camp Rd	67	61	6
R-583.54	Recreation	C	0.07[1]	485 Brookside Camp Rd	66	61	5
R-583.55	Recreation	C	0.07[1]	485 Brookside Camp Rd	67	61	6
R-583.56	Recreation	C	0.07[1]	485 Brookside Camp Rd	67	61	6

Table D-27: Noise Barrier –NW28- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-583.57	Recreation	C	0.07[1]	485 Brookside Camp Rd	67	61	6
R-583.58	Recreation	C	0.07[1]	485 Brookside Camp Rd	67	62	5
R-583.59	Recreation	C	0.07[1]	485 Brookside Camp Rd	68	62	6
R-583.60	Recreation	C	0.07[1]	485 Brookside Camp Rd	69	63	6
R-583.61	Recreation	C	0.07[1]	485 Brookside Camp Rd	66	60	6
R-583.62	Recreation	C	0.07[1]	485 Brookside Camp Rd	66	61	5
R-583.63	Recreation	C	0.07[1]	485 Brookside Camp Rd	67	61	6
R-583.64	Recreation	C	0.07[1]	485 Brookside Camp Rd	67	61	6
R-583.65	Recreation	C	0.07[1]	485 Brookside Camp Rd	68	62	6
R-583.66	Recreation	C	0.07[1]	485 Brookside Camp Rd	65	60	5
R-583.67	Recreation	C	0.07[1]	485 Brookside Camp Rd	66	60	6
R-583.68	Recreation	C	0.07[1]	485 Brookside Camp Rd	66	60	6
R-583.69	Recreation	C	0.07[1]	485 Brookside Camp Rd	66	61	5
R-583.70	Recreation	C	0.07[1]	485 Brookside Camp Rd	65	60	5
R-583.71	Recreation	C	0.07[1]	485 Brookside Camp Rd	65	60	5
Predicted "6-Lane" Widening Alternative With Barrier Benefits							5[2]

[1] Recreation facility was analyzed as a nodal array of receptors (5 equivalent residences represented by 71 nodes).

[2] Total benefits for recreation facility were rounded up to the nearest whole dB(A).

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening — TIP # - I-4400 / I-4700

LOCATION - NW28 – 6-Lane — COUNTY(IES) – Henderson and Buncombe

IMPACTS - 5 # BENEFITS - 5 NAC: A B (C) D E F G (CIRCLE ALL THAT APPLY)

A.	**FEASIBILITY:**		
1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO
B.	**REASONABLENESS:**		
1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 3,768 (CIRCLE ONE) (sq.ft./cu.yd) less than the maximum allowable design criteria per benefited receptor of 2,535 (CIRCLE ONE) (sq.ft.) / cu.yd.?	YES	X NO
C.	**NOISE ABATEMENT DECISION:**		
1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO
D.	**OPTIONAL REASONABLENESS CONSIDERATION:**		
1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO
2	If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:		
	Bar No. _____ _____ (CIRCLE ONE) sq.ft./cu.yd Bar No. _____ _____ (CIRCLE ONE) sq.ft./cu.yd		
	Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd		
3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ (CIRCLE ONE) sq.ft./cu.yd	YES	NO

Form Completed By: Trey Jordan — Date: 3/20/2015

In Consultation With: Tracy Roberts — Date: 3/20/2015

NW29

Location: NW29 is located between Brookside Camp Road and Clear Creek Road along I-26 eastbound near Alex Cove Drive. It begins at the top of a cut section but transitions to the edge of shoulder and provides abatement for residences along Hyder Farm Road and Alex Cove Drive.

Dimensions: Length = 1,620 ft., Avg. Height = 12 ft., Area = 18,720 ft^2
Impacts: 4
Benefits: 6
Area / Benefit: 3,120 ft^2.
Allowable Area / Benefit: 2,605 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 4
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-28: Noise Barrier –NW29- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-586	Res.	B	1	619 Hyder Farm Rd	75	68	7
R-587	Res.	B	1	104 Alex Cove Dr	70	64	6
R-588	Res.	B	1	507 Hyder Farm Rd	72	66	6
R-589	Res.	B	1	110 Alex Cove Dr	63	58	5
R-590	Res.	B	1	114 Alex Cove Dr	60	55	5
R-591	Res.	B	1	307 Hyder Farm Rd	66	61	5
Predicted "6-Lane" Widening Alternative With Barrier Benefits							6

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW29 – 6-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 4 # BENEFITS - 6 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 3,120 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,605 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW30

Location: NW30 is located along the I-26 eastbound off-ramp to US 64 westbound edge of shoulder. It provides abatement for residences along Lake Club Circle, Carolina Village Road and Lake Spur Drive.

Dimensions: Length = 1,560 ft., Avg. Height = 22 ft., Area = 34,140 ft^2
Impacts: 5
Benefits: 10
Area / Benefit: 3,414 ft^2.
Allowable Area / Benefit: 2,570 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 5
NLR ≥ 7dB(A) for Front Row Receptors: 3

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-29: Noise Barrier –NW30- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-622	Res.	B	1	10 Tanager Trail	55	54	1
R-623	Res.	B	1	14 Tanager Trail	50	49	1
R-624	Res.	B	1	12 Tanager Trail	49	46	3
R-625	Res.	B	1	24 White Quail Trail	55	53	2
R-626	Res.	B	1	22 White Quail Trail	59	55	4
R-627	Res.	B	1	20 White Quail Trail	58	55	3
R-628	Res.	B	1	21 White Quail Trail	60	55	5
R-629	Res.	B	1	23 White Quail Trail	58	53	5
R-630	Res.	B	1	25 White Quail Trail	50	48	2
R-631	Res.	B	1	418 Carolina Village Rd	74	61	13
R-632	Res.	B	1	30 Lake Spur Dr	50	46	4
R-633	Res.	B	1	34 Lake Spur Dr	51	47	4
R-634	Res.	B	1	32 Lake Spur Dr	50	48	2
R-635	Res.	B	1	38 Lake Spur Dr	55	50	5
R-636	Res.	B	1	36 Lake Spur Dr	58	53	5
R-637	Res.	B	1	40 Lake Spur Dr	54	50	4
R-638	Res.	B	1	35 Lake Spur Dr	63	54	9
R-639	Res.	B	1	37 Lake Spur Dr	67	59	8
R-640	Res.	B	1	39 Lake Spur Dr	67	61	6
R-641	Res.	B	1	348 Carolina Village Rd	74	65	9
R-642	Res.	B	1	346 Carolina Village Rd	71	66	5

Table D-29: Noise Barrier –NW30- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-643	Res.	B	1	108-A Lake Club Cir	52	48	4
R-644	Res.	B	1	108-B Lake Club Cir	53	49	4
R-645	Res.	B	1	108-C Lake Club Cir	53	49	4
R-646	Res.	B	1	108-D Lake Club Cir	54	50	4
R-647	Res.	B	1	108-E Lake Club Cir	55	51	4
R-648	Res.	B	1	108-F Lake Club Cir	56	53	3
R-649	Res.	B	1	103-F Lake Club Cir	48	48	0
R-650	Res.	B	1	103-E Lake Club Cir	48	47	1
R-651	Res.	B	1	103-D Lake Club Cir	48	47	1
R-652	Res.	B	1	103-C Lake Club Cir	48	48	0
R-653	Res.	B	1	103-B Lake Club Cir	48	48	0
R-654	Res.	B	1	103-A Lake Club Cir	51	49	2
R-655	Res.	B	1	45-D Lake Club Cir	52	50	2
R-656	Res.	B	1	45-C Lake Club Cir	51	50	1
R-657	Res.	B	1	45-B Lake Club Cir	51	50	1
R-658	Res.	B	1	45-A Lake Club Cir	50	49	1
R-659	Res.	B	1	62-A Lake Club Cir	56	54	2
R-660	Res.	B	1	62-B Lake Club Cir	53	52	1
R-661	Res.	B	1	62-C Lake Club Cir	54	53	1
R-662	Res.	B	1	62-D Lake Club Cir	54	53	1
R-663	Res.	B	1	30-A Lake Club Cir	54	54	0
R-664	Res.	B	1	30-B Lake Club Cir	54	54	0
R-665	Res.	B	1	30-C Lake Club Cir	54	54	0
R-666	Res.	B	1	30-D Lake Club Cir	55	55	0
Predicted "6-Lane" Widening Alternative With Barrier Benefits							10

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW30 – 6-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 5 # BENEFITS - 10 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 3,414 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,570 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW31

Location: NW31 begins just south of Camp Pinewood between US 64 and Dana road along I-26 eastbound and continues approximately 2,520 feet to the southeast. It generally follows the top of a cut section but has one transition to edge of shoulder. It provides abatement for residences on West Prince Road and Fairbanks Lane, as well as a few residences accessible via Dana Road.

Dimensions: Length = 2,520 ft., Avg. Height = 21 ft., Area = 55,080 ft^2
Impacts: 8
Benefits: 19
Area / Benefit: 2,899 ft^2.
Allowable Area / Benefit: 2,535 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 8
NLR ≥ 7dB(A) for Front Row Receptors: 7

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-30: Noise Barrier –NW31- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-669	Res.	B	1	305 Prince Rd	74	62	12
R-670	Res.	B	1	77 Fairbanks Ln	73	61	12
R-671	Res.	B	1	69 Fairbanks Ln	66	59	7
R-672	Res.	B	1	47 Fairbanks Ln	60	55	5
R-673	Res.	B	1	317 Prince Rd	60	55	5
R-674	Res.	B	1	311 W Prince Rd	63	57	6
R-675	Res.	B	1	301 Prince Rd	63	58	5
R-676	Res.	B	1	323 Prince Rd	66	59	7
R-677	Res.	B	1	333 Prince Rd	75	61	14
R-678	Res.	B	1	324 Prince Rd	58	53	5
R-679	Res.	B	1	330 Prince Rd	65	56	9
R-680	Res.	B	1	334 Prince Rd	59	54	5
R-681	Res.	B	1	398 Prince Rd	59	52	7
R-682	Res.	B	1	341 Prince Rd	70	58	12
R-683	Res.	B	1	365 Prince Rd	69	58	11
R-684	Res.	B	1	373 Prince Rd	65	59	6
R-685	Res.	B	1	381 Prince Rd	64	58	6
R-686	Res.	B	1	655 Dana Rd	63	57	6
R-687	Res.	B	1	665 Dana Rd	79	67	12

Table D-30: Noise Barrier –NW31- Performance
Without Barrier and With Barrier Noise Levels
6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
Predicted "6-Lane" Widening Alternative With Barrier Benefits							19
					Noise Level Impact		Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW31 – 6-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 8 # BENEFITS - 19 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 2,899 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,535 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW32

Location: NW32 begins just south of the Dana Road bridge along I-26 eastbound edge of shoulder and transitions to the top of a cut section before returning to edge of shoulder. It continues approximately 3,300 feet and provides abatement for residences on Meadowlark Lane, Papa Joes Way and Orchard Park Road, as well as one residence accessible via Tracy Grove Road.

Dimensions: Length = 3,300 ft., Avg. Height = 23 ft., Area = 75,000 ft^2
Impacts: 14
Benefits: 38
Area / Benefit: 1,974 ft^2.
Allowable Area / Benefit: 2,570 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 13
NLR ≥ 7dB(A) for Front Row Receptors: 22

This noise wall does meet feasibility and reasonableness criteria.

Table D-31: Noise Barrier –NW32- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-688	Res.	B	1	102 Papa Joes Way	62	59	3
R-689	Res.	B	1	101 Papa Joes Way	67	60	7
R-690	Res.	B	1	102 Papa Joes Way 2	57	54	3
R-691	Res.	B	1	2 Meadowlark Ln	70	60	10
R-692	Res.	B	1	4 Meadowlark Ln	68	58	10
R-693	Res.	B	1	6 Meadowlark Ln	66	57	9
R-694	Res.	B	1	8 Meadowlark Ln	65	56	9
R-695	Res.	B	1	10 Meadowlark Ln	63	57	6
R-696	Res.	B	1	12 Meadowlark Ln	60	54	6
R-697	Res.	B	1	14 Meadowlark Ln	59	54	5
R-698	Res.	B	1	18 Meadowlark Ln	59	54	5
R-699	Res.	B	1	20 Meadowlark Ln	59	53	6
R-700	Res.	B	1	24 Meadowlark Ln	58	53	5
R-701	Res.	B	1	26 Meadowlark Ln	59	53	6
R-702	Res.	B	1	28 Meadowlark Ln	58	53	5
R-703	Res.	B	1	30 Meadowlark Ln	58	52	6
R-704	Res.	B	1	32 Meadowlark Ln	57	52	5
R-705	Res.	B	1	3 Meadowlark Ln	73	62	11
R-706	Res.	B	1	5 Meadowlark Ln	72	61	11
R-707	Res.	B	1	9 Meadowlark Ln	68	57	11

Table D-31: Noise Barrier –NW32- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-708	Res.	B	1	11 Meadowlark Ln	67	57	10
R-709	Res.	B	1	13 Meadowlark Ln	66	57	9
R-710	Res.	B	1	15 Meadowlark Ln	65	56	9
R-711	Res.	B	1	17 Meadowlark Ln	64	57	7
R-712	Res.	B	1	19 Meadowlark Ln	64	57	7
R-713	Res.	B	1	21 Meadowlark Ln	63	56	7
R-714	Res.	B	1	23 Meadowlark Ln	63	56	7
R-715	Res.	B	1	27 Meadowlark Ln	64	56	8
R-716	Res.	B	1	29 Meadowlark Ln	63	55	8
R-717	Res.	B	1	33 Meadowlark Ln	62	55	7
R-718	Res.	B	1	35 Meadowlark Ln	61	54	7
R-719	Res.	B	1	41 Meadowlark Ln	62	55	7
R-720	Res.	B	1	41 Meadowlark Ln 2	60	54	6
R-721	Res.	B	1	39 Meadowlark Ln	75	64	11
R-722	Res.	B	1	40 Meadowlark Ln	65	56	9
R-723	Res.	B	1	69 Orchard Park Rd	65	55	10
R-724	Res.	B	1	72 Orchard Park Rd	67	57	10
R-725	Res.	B	1	121 Friendship Ln	69	60	9
R-726	Res.	B	1	125 Friendship Ln	67	60	7
R-727	Res.	B	1	665 Tracy Grove Rd	64	59	5
R-728	Res.	B	1	701 Tracy Grove Rd	73	73	0
Predicted "6-Lane" Widening Alternative With Barrier Benefits							38

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW32 – 6-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 14 # BENEFITS - 38 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 1,974 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,570 (sq.ft.) / cu.yd.? (CIRCLE ONE)	X YES	NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	X YES	NO
3	Is the noise mitigation likely?	X YES	NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	X YES	NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.		sq.ft./cu.yd (CIRCLE ONE)	Bar No.		sq.ft./cu.yd (CIRCLE ONE)
Bar No.		sq.ft./cu.yd	Bar No.		sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of (sq.ft./cu.yd) (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW33

Location: NW33 begins approximately 200 feet south of the Tracy Grove Road bridge along I-26 eastbound edge of shoulder and continues approximately 4,980 feet to the southeast. It provides abatement for residences on South Allen Road, Carroll Oaks Drive, East New Hope Road and Merry Oaks Lane.

Dimensions: Length = 4,980 ft., Avg. Height = 17 ft., Area = 86,160 ft^2
Impacts: 12
Benefits: 22
Area / Benefit: 3,916 ft^2.
Allowable Area / Benefit: 2,570 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 12
NLR ≥ 7dB(A) for Front Row Receptors: 10

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-32: Noise Barrier –NW33- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-729	Res.	B	1	731 S Allen Rd	70	60	10
R-730	Res.	B	1	727 Allen Rd	69	60	9
R-731	Comm. Center	C	1	722 S Allen Rd	76	64	12
R-732	Res.	B	1	973 New Hope Rd	61	55	6
R-733	Res.	B	1	983 New Hope Rd	60	55	5
R-734	Res.	B	1	999 New Hope Rd	59	54	5
R-735	Res.	B	1	1075 New Hope Rd	58	53	5
R-736	Res.	B	1	1108 New Hope Rd	59	53	6
R-737	Res.	B	1	1103 New Hope Rd	56	51	5
R-738	Res.	B	1	87 Carroll Oaks Dr	58	53	5
R-739	Res.	B	1	73 Carroll Oaks Dr	58	53	5
R-740	Res.	B	1	45 Carroll Oaks Dr	56	52	4
R-741	Res.	B	1	25 Carroll Oaks Dr	61	55	6
R-742	Res.	B	1	11 Carroll Oaks Dr	67	59	8
R-743	Res.	B	1	713 Allen Rd	67	60	7
R-744	Res.	B	1	709 Allen Rd	66	58	8
R-745	Res.	B	1	695 Allen Rd	69	61	8
R-746	Res.	B	1	691 Allen Rd	71	61	10
R-747	Res.	B	1	677 Allen Rd	75	63	12
R-749	Res.	B	1	92 Merry Oaks Ln	72	62	10

Table D-32: Noise Barrier –NW33- Performance
Without Barrier and With Barrier Noise Levels
6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-750	Res.	B	1	87 Merry Oaks Ln	62	57	5
R-751	Res.	B	1	630 Allen Rd	68	62	6
R-752	Res.	B	1	600 Allen Rd	74	69	5
R-753	Res.	B	1	586 Allen Rd	60	59	1
Predicted "6-Lane" Widening Alternative With Barrier Benefits							22

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening | TIP # - I-4400 / I-4700

LOCATION - NW33 – 6-Lane | COUNTY(IES) – Henderson and Buncombe

IMPACTS - 12 # BENEFITS - 22 NAC: A (B) (C) D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:			
1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO
B. REASONABLENESS:			
1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 3,916 (sq.ft./cu.yd) less than the maximum allowable design criteria per benefited receptor of 2,570 (sq.ft.) / cu.yd.?	YES	X NO
C. NOISE ABATEMENT DECISION:			
1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO
D. OPTIONAL REASONABLENESS CONSIDERATION:			
1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO
2	If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:		
	Bar No. _____ _____ (CIRCLE ONE) sq.ft./cu.yd	Bar No. _____ _____ (CIRCLE ONE) sq.ft./cu.yd	
	Bar No. _____ _____ sq.ft./cu.yd	Bar No. _____ _____ sq.ft./cu.yd	
3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ (CIRCLE ONE) sq.ft./cu.yd	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW34

Location: NW34 is located just north of the Crest Road bridge along I-26 eastbound edge of shoulder. It provides abatement for residences on Crest Road.

Dimensions: Length = 780 ft., Avg. Height = 15 ft., Area = 11,400 ft^2
Impacts: 1
Benefits: 1
Area / Benefit: 11,400 ft^2.
Allowable Area / Benefit: 2,500 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 1
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-33: Noise Barrier –NW34- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-754	Res.	B	1	536 Crest Rd	73	66	7
R-755	Res.	B	1	511 Crest Rd	65	64	1
Predicted "6-Lane" Widening Alternative With Barrier Benefits							1

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening — TIP # - I-4400 / I-4700

LOCATION - NW34 – 6-Lane — COUNTY(IES) – Henderson and Buncombe

IMPACTS - 1 — # BENEFITS - 1 — NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 11,400 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,500 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan — Date: 3/20/2015

In Consultation With: Tracy Roberts — Date: 3/20/2015

NW35

Location: NW35 is located along I-26 westbound off-ramp to US 25 southbound edge of shoulder. It provides abatement for residences on Hollyhock Court and Oak Grove Road.

Dimensions: Length = 1,500 ft., Avg. Height = 21 ft., Area = 32,100 ft^2
Impacts: 1
Benefits: 2
Area / Benefit: 16,050 ft^2.
Allowable Area / Benefit: 2,500 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 1
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-34: Noise Barrier –NW35- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-757	Res.	B	1	129 Hollyhock Ct	65	62	3
R-758	Res.	B	1	107 Hollyhock Ct	62	59	3
R-759	Res.	B	1	110 Hollyhock Ct	63	61	2
R-760	Res.	B	1	142 Hollyhock Ct	**69**	62	**7**
R-761	Res.	B	1	646 Oak Grove Rd	63	61	2
R-762	Res.	B	1	640 Oak Grove Rd	65	63	2
R-763	Res.	B	1	638 Oak Grove Rd	61	56	**5**
Predicted "6-Lane" Widening Alternative With Barrier Benefits							2

Noise Level Impact **Benefited Receptor**

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW35 – 6-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 1 # BENEFITS - 2 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 16,050 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,500 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.		sq.ft./cu.yd (CIRCLE ONE)	Bar No.		sq.ft./cu.yd (CIRCLE ONE)
Bar No.		sq.ft./cu.yd	Bar No.		sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of (sq.ft./cu.yd) (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW36

Location: NW36 is located along I-26 westbound just south of the Blue Ridge Parkway bridge at the top of a cut section. It provides abatement for the Mountains-to-Sea Trail on the east side of I-26.

Dimensions: Length = 900 ft., Avg. Height = 25 ft., Area = 22,500 ft^2
Impacts: 2
Benefits: 0
Area / Benefit: N/A
Allowable Area / Benefit: 2,710 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 0
NLR ≥ 7dB(A) for Front Row Receptors: 0

This noise wall meets neither feasibility nor reasonableness criteria because a 5 dB(A) noise reduction could not be achieved for any receptor in the area.

Table D-35: Noise Barrier –NW36- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-485.01	Trail	C	0.3[1]	Mountains-to-Sea Trail (E)	56	55	1
R-485.02	Trail	C	0.3[1]	Mountains-to-Sea Trail (E)	57	56	1
R-485.03	Trail	C	0.3[1]	Mountains-to-Sea Trail (E)	62	59	3
R-485.04	Trail	C	0.3[1]	Mountains-to-Sea Trail (E)	65	62	3
R-485.05	Trail	C	0.3[1]	Mountains-to-Sea Trail (E)	**66**	64	2
R-485.06	Trail	C	0.3[1]	Mountains-to-Sea Trail (E)	**67**	65	2
R-485.07	Trail	C	0.3[1]	Mountains-to-Sea Trail (E)	**66**	63	3
R-485.08	Trail	C	0.3[1]	Mountains-to-Sea Trail (E)	**66**	63	3
R-485.09	Trail	C	0.3[1]	Mountains-to-Sea Trail (E)	**68**	**66**	2
R-485.10	Trail	C	0.3[1]	Mountains-to-Sea Trail (E)	**70**	**69**	1
Predicted "6-Lane" Widening Alternative With Barrier Benefits							0[2]

[1] Walking trail was analyzed as a nodal array of receptors (3 equivalent residences represented by 10 nodes).
[2] The NCDOT noise reduction design goal of 7 dB(A) could not be achieved for at least one benefited receptor to meet reasonableness criteria.

Noise Level Impact **Benefited Receptor**

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW36 – 6-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 2 # BENEFITS - 0 NAC: A B (C) D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	___ YES	X NO
2	Does topography negatively affect the proposed abatement measure?	___ YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	___ YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	___ NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	___ YES	X NO
2	Is the design criteria per benefited receptor of N/A (CIRCLE ONE) (sq.ft./cu.yd) less than the maximum allowable design criteria per benefited receptor of ___ 2,710 (CIRCLE ONE) (sq.ft.) / cu.yd.?	___ YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	___ YES	X NO
2	Is the noise mitigation reasonable?	___ YES	X NO
3	Is the noise mitigation likely?	___ YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	___ YES	X NO
5	Is the noise mitigation recommended for construction?	___ YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	___ YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.	___	___ (CIRCLE ONE) sq.ft./cu.yd	Bar No.	___	___ (CIRCLE ONE) sq.ft./cu.yd
Bar No.	___	___ sq.ft./cu.yd	Bar No.	___	___ sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of ___ (CIRCLE ONE) sq.ft./cu.yd	___ YES	___ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW37

Location: NW37 is located along I-26 eastbound just north of the Blue Ridge Parkway bridge at the top of a cut section. It provides abatement for the Mountains-to-Sea Trail on the west side of I-26.

Dimensions: Length = 1,140 ft., Avg. Height = 22 ft., Area = 24,720 ft^2
Impacts: 3
Benefits: 3
Area / Benefit: 8,240 ft^2.
Allowable Area / Benefit: 2,675 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 3
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-36: Noise Barrier –NW37- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-521.01	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	60	58	2
R-521.02	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	60	57	3
R-521.03	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	61	56	5
R-521.04	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	63	58	5
R-521.05	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	68	62	6
R-521.06	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	70	64	6
R-521.07	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	70	65	5
R-521.08	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	70	64	6
R-521.09	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	69	63	6
R-521.10	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	69	62	7
R-521.11	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	69	62	7
R-521.12	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	68	61	7
R-521.13	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	68	61	7
R-521.14	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	68	61	7
R-521.15	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	67	61	6
R-521.16	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	66	61	5
R-521.17	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	66	64	2

Table D-36: Noise Barrier –NW37- Performance Without Barrier and With Barrier Noise Levels 6-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
Predicted "6-Lane" Widening Alternative With Barrier Benefits							3[2]

[1] Walking trail was analyzed as a nodal array of receptors (3 equivalent residences represented by 17 nodes).

[2] Total benefits for walking trail were rounded up to the nearest whole dB(A).

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW37 – 6-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 3 # BENEFITS - 3 NAC: A B (C) D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 8,240 (CIRCLE ONE) (sq.ft./cu.yd) less than the maximum allowable design criteria per benefited receptor of 2,675 (CIRCLE ONE) (sq.ft.) / cu.yd.?	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.	_____	_____ (CIRCLE ONE) sq.ft./cu.yd	Bar No.	_____	_____ (CIRCLE ONE) sq.ft./cu.yd
Bar No.	_____	_____ sq.ft./cu.yd	Bar No.	_____	_____ sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ (CIRCLE ONE) sq.ft./cu.yd	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

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8-Lane Widening Alternative
Design Year 2040
Noise Barrier Analysis

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8-Lane Widening Alternative

A total of 37 noise walls have been evaluated for the 8-Lane Widening Alternative. Nine noise walls presently meet feasibility and reasonableness criteria including: NW5 and NW32 in NSA 2, NW9 and NW12 in NSA 3, NW14 and NW15 in NSA 4, NW16 and NW24 in NSA 5 and NW19 in NSA 6. The heights, lengths, areas, locations, noise level reductions, and benefits cited in this TNA represent a preliminary assessment of noise wall feasibility and reasonableness. A final decision on noise wall construction will be made following completion of the final design, public involvement process, and concurrence with NCDOT Policy and FHWA approval.

The summary of the evaluated noise walls is as follows:

NW1
Location: NW1 is located south of Crest Road along the shoulder of the I-26 westbound on-ramp from US 25 northbound and provides abatement for residences on Bennison Lane.

Dimensions: Length = 480 ft., Avg. Height = 24 ft., Area = 11,280 ft^2
Impacts: 3
Benefits: 1
Area / Benefit: 11,280 ft^2.
Allowable Area / Benefit: 2,570 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 1
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-37: Noise Barrier –NW1- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-02	Res.	B	1	79 Bennison Ln	68	66	2
R-03	Res.	B	1	107 Bennison Ln	69	62	7
R-04	Res.	B	1	96 Bennison Ln	65	63	2
R-05	Res.	B	1	106 Bennison Ln	71	71	0
Predicted "8-Lane" Widening Alternative With Barrier Benefits							1

Noise Level Impact

Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening — TIP # - I-4400 / I-4700

LOCATION - NW1 – 8-Lane — COUNTY(IES) – Henderson and Buncombe

IMPACTS - 3 # BENEFITS - 1 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 11,280 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,570 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.		sq.ft./cu.yd (CIRCLE ONE)	Bar No.		sq.ft./cu.yd (CIRCLE ONE)
Bar No.		sq.ft./cu.yd	Bar No.		sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of sq.ft./cu.yd (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan — Date: 3/20/2015

In Consultation With: Tracy Roberts — Date: 3/20/2015

NW2

Location: NW2 is located just north of Crest Road along I-26 westbound edge of shoulder beginning at the Crest Road bridge and continuing approximately 1,200 feet to the west. It provides abatement for residences accessible via Crest Road.

Dimensions: Length = 1,200 ft., Avg. Height = 18 ft., Area = 21,900 ft^2
Impacts: 2
Benefits: 2
Area / Benefit: 10,950 ft^2.
Allowable Area / Benefit: 2,605 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 2
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-38: Noise Barrier –NW2- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-06	Res.	B	1	612 Crest Rd	69	62	7
R-07	Res.	B	1	620 Crest Rd	68	63	5
Predicted "8-Lane" Widening Alternative With Barrier Benefits							2
					Noise Level Impact		Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW2 – 8-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 2 # BENEFITS - 2 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 10,950 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,605 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW3

Location: NW3 is located at the top of a cut section between Upward Road and Tracy Grove Road along I-26 westbound and provides abatement for residences accessible via McMurray Road.

Dimensions: Length = 780 ft., Avg. Height = 11 ft., Area = 8,520 ft^2
Impacts: 2
Benefits: 2
Area / Benefit: 4,260 ft^2.
Allowable Area / Benefit: 2,640 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 2
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-39: Noise Barrier –NW3- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-08	Res.	B	1	337 Mcmurray Rd	79	72	7
R-09	Res.	B	1	819 Mcmurray Rd	65	63	2
R-10	Res.	B	1	823 Mcmurray Rd	74	69	5
Predicted "8-Lane" Widening Alternative With Barrier Benefits							2

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW3 – 8-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 2 # BENEFITS - 2 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 4,260 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,640 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW4

Location: NW4 begins approximately 2,160 feet south of Tracy Grove Road along I-26 westbound edge of shoulder and continues approximately 2,580 feet to the northwest with a small gap at the Tracy Grove Road bridge. It provides abatement for residences along Tracy Grove Road, Justus Acres Lane and Randolph Avenue.

Dimensions: Length = 2,580 ft., Avg. Height = 22 ft., Area = 55,680 ft^2
Impacts: 5
Benefits: 7
Area / Benefit: 7,954 ft^2.
Allowable Area / Benefit: 2,570 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 5
NLR ≥ 7dB(A) for Front Row Receptors: 5

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-40: Noise Barrier –NW4- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-11	Res.	B	1	35 Justus Acres Ln	64	57	7
R-12	Res.	B	1	28 Randolph Ave	64	58	6
R-13	Res.	B	1	30 Justus Acres Ln	66	59	7
R-14	Res.	B	1	19 Justus Acres Ln	67	59	8
R-15	Res.	B	1	818 Tracy Grove Rd	69	60	9
R-16	Res.	B	1	824 Tracy Grove Rd	66	61	5
R-17	Res.	B	1	821 Tracy Grove Rd	64	62	2
R-18	Res.	B	1	809 Mid Allen Rd	78	71	7
Predicted "8-Lane" Widening Alternative With Barrier Benefits							7

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW4 – 8-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 5 # BENEFITS - 7 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 7,954 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,570 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are: (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW5

Location: NW5 begins between Tracy Grove Road and Dana Road along I-26 westbound and continues approximately 3,360 feet, transitioning from the edge of shoulder to the top of a cut section, and ending at the Dana Road bridge. It provides abatement for residences along Springside Drive, Willowbrook Road and Maywood Road.

Dimensions: Length = 3,360 ft., Avg. Height = 23 ft., Area = 75,900 ft^2
Impacts: 25
Benefits: 51
Area / Benefit: 1,488 ft^2.
Allowable Area / Benefit: 2,640 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 23
NLR ≥ 7dB(A) for Front Row Receptors: 20

This noise wall does meet feasibility and reasonableness criteria

Table D-41: Noise Barrier –NW5- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-19	Res.	B	1	837 Mid Allen Rd	67	65	2
R-20	Res.	B	1	282 Katie Dr	64	58	6
R-21	Res.	B	1	33 Springside Dr	65	57	8
R-22	Res.	B	1	31 Springside Dr	64	56	8
R-23	Res.	B	1	29 Springside Dr	62	55	7
R-24	Res.	B	1	27 Springside Dr	60	54	6
R-25	Res.	B	1	25 Springside Dr	59	54	5
R-26	Res.	B	1	16 Springside Dr	59	50	9
R-27	Res.	B	1	18 Springside Dr	60	51	9
R-28	Res.	B	1	20 Springside Dr	61	52	9
R-29	Res.	B	1	22 Springside Dr	62	52	10
R-30	Res.	B	1	24 Springside Dr	63	52	11
R-31	Res.	B	1	26 Springside Dr	65	53	12
R-32	Res.	B	1	28 Springside Dr	68	56	12
R-33	Res.	B	1	30 Springside Dr	69	57	12
R-34	Res.	B	1	32 Springside Dr	68	57	11
R-35	Res.	B	1	34 Springside Dr	65	56	9
R-36	Res.	B	1	36 Springside Dr	64	54	10
R-37	Res.	B	1	38 Springside Dr	63	54	9
R-38	Res.	B	1	40 Springside Dr	63	52	11
R-39	Res.	B	1	42 Springside Dr	61	51	10

Table D-41: Noise Barrier –NW5- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-40	Res.	B	1	44 Springside Dr	57	51	6
R-41	Res.	B	1	46 Springside Dr	55	53	2
R-42	Res.	B	1	43 Springside Dr	76	60	16
R-43	Res.	B	1	45 Springside Dr	76	59	17
R-44	Res.	B	1	47 Springside Dr	72	57	15
R-45	Res.	B	1	49 Springside Dr	70	58	12
R-46	Res.	B	1	152 Willowbrook Rd	68	56	12
R-47	Res.	B	1	150 Willowbrook Rd	73	63	10
R-48	Res.	B	1	148 Willowbrook Rd	78	62	16
R-49	Res.	B	1	146 Willowbrook Rd	78	63	15
R-50	Res.	B	1	144 Willowbrook Rd	75	63	12
R-51	Res.	B	1	142 Willowbrook Rd	77	63	14
R-52	Res.	B	1	138 Willowbrook Rd	74	63	11
R-53	Res.	B	1	134 Willowbrook Rd	73	62	11
R-54	Res.	B	1	130 Willowbrook Rd	76	63	13
R-55	Res.	B	1	126 Willowbrook Rd	75	61	14
R-56	Res.	B	1	122 Willowbrook Rd	76	61	15
R-57	Res.	B	1	118 Willowbrook Rd	78	63	15
R-58	Res.	B	1	114 Willowbrook Rd	76	64	12
R-59	Res.	B	1	110 Willowbrook Rd	76	64	12
R-60	Res.	B	1	106 Willowbrook Rd	77	65	12
R-61	Res.	B	1	102 Willowbrook Rd	77	65	12
R-62	Res.	B	1	59 Springside Dr	59	53	6
R-63	Res.	B	1	57 Springside Dr	51	48	3
R-64	Res.	B	1	55 Springside Dr	57	52	5
R-65	Res.	B	1	53 Springside Dr	65	57	8
R-66	Res.	B	1	147 Willowbrook Rd	64	58	6
R-67	Res.	B	1	145 Willowbrook Rd	64	59	5
R-68	Res.	B	1	131 Maywood Rd	60	56	4
R-69	Res.	B	1	127 Maywood Rd	56	54	2
R-70	Res.	B	1	123 Maywood Rd	54	51	3
R-71	Res.	B	1	119 Maywood Rd	56	54	2
R-72	Res.	B	1	116 Maywood Rd	53	50	3
R-73	Res.	B	1	120 Maywood Rd	48	46	2
R-74	Res.	B	1	124 Maywood Rd	51	47	4
R-75	Res.	B	1	133 Willowbrook Rd	60	55	5

Table D-41: Noise Barrier –NW5- Performance
Without Barrier and With Barrier Noise Levels
8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-76	Res.	B	1	129 Willowbrook Rd	61	55	6
R-77	Res.	B	1	121 Willowbrook Rd	62	54	8
R-78	Res.	B	1	117 Willowbrook Rd	65	58	7
R-79	Res.	B	1	113 Willowbrook Rd	65	60	5
R-80	Res.	B	1	109 Willowbrook Rd	65	62	3
R-81	Res.	B	1	105 Willowbrook Rd	67	66	1
R-82	Res.	B	1	710 Dana Rd	59	56	3
R-83	Res.	B	1	714 Dana Rd	58	55	3
R-84	Res.	B	1	703 Dana Rd	64	64	0
Predicted "8-Lane" Widening Alternative With Barrier Benefits							51

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW5 – 8-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 25 # BENEFITS - 51 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 1,488 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,640 (sq.ft.) / cu.yd.? (CIRCLE ONE)	X YES	NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	X YES	NO
3	Is the noise mitigation likely?	X YES	NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	X YES	NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO
2	If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:		
	Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)		
	Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd		
3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE)	_____ YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW6

Location: NW6 begins approximately 200 feet north of Dana Road along I-26 westbound and transitions from edge of shoulder to the top of a cut section, ending north of the East Prince Road dead end. It provides abatement to residences along East Prince Road, Lakeview Estate Drive and Wakefield Drive.

Dimensions: Length = 3,360 ft., Avg. Height = 22 ft., Area = 74,280 ft^2
Impacts: 14
Benefits: 22
Area / Benefit: 3,376 ft^2.
Allowable Area / Benefit: 2,640 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 14
NLR ≥ 7dB(A) for Front Row Receptors: 8

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-42: Noise Barrier –NW6- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-85	Res.	B	1	410 Lakeview Estate Rd	63	58	5
R-86	Res.	B	1	420 Lakeview Estate Rd	64	57	7
R-87	Res.	B	1	422 Lakeview Estate Rd	65	59	6
R-88	Res.	B	1	424 Lakeview Estate Rd	65	59	6
R-89	Res.	B	1	426 Lakeview Estate Rd	67	60	7
R-90	Res.	B	1	102 Wakefield Dr	64	60	4
R-91	Res.	B	1	99 Wakefield Dr	77	65	12
R-92	Res.	B	1	103 Wakefield Dr	72	61	11
R-93	Res.	B	1	419 Bird Haven Rd	70	62	8
R-94	Res.	B	1	417 Bird Haven Rd	66	60	6
R-95	Res.	B	1	414 Bird Haven Rd	61	58	3
R-96	Res.	B	1	416 Bird Haven Rd	60	57	3
R-97	Res.	B	1	25 Dove Valley Ln	60	57	3
R-98	Res.	B	1	23 Dove Valley Ln	60	56	4
R-99	Res.	B	1	425 Bird Haven Rd	70	61	9
R-100	Res.	B	1	81 Dove Valley Ln	63	58	5
R-101	Res.	B	1	420 Bird Haven Rd	68	61	7
R-102	Res.	B	1	424 Bird Haven Rd	69	61	8
R-103	Res.	B	1	411 Pine Hill Ln	69	63	6
R-104	Res.	B	1	508 Prince Rd	74	63	11

Table D-42: Noise Barrier –NW6- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-105	Res.	B	1	510 Prince Rd	69	59	10
R-106	Res.	B	1	520 Prince Rd	65	57	8
R-107	Res.	B	1	524 Prince Rd	63	56	7
R-108	Res.	B	1	527 Prince Rd	71	61	10
R-109	Res.	B	1	529 Prince Rd	67	59	8
R-110	Res.	B	1	533 Prince Rd	63	58	5
R-111	Res.	B	1	641 Prince Rd	71	65	6
Predicted "8-Lane" Widening Alternative With Barrier Benefits							22

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW6 – 8-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 14 # BENEFITS - 22 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 3,376 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,640 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.		sq.ft./cu.yd (CIRCLE ONE)	Bar No.		sq.ft./cu.yd (CIRCLE ONE)
Bar No.		sq.ft./cu.yd	Bar No.		sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of	sq.ft./cu.yd (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW7

Location: NW7 is located at the top of the cut section near Francis Road along the I-26 westbound on-ramp from US 64 westbound and provides abatement for residences along Francis Road.

Dimensions: Length = 1,080 ft., Avg. Height = 12 ft., Area = 12,600 ft^2
Impacts: 1
Benefits: 1
Area / Benefit: 12,600 ft^2.
Allowable Area / Benefit: 2,500 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 1
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-43: Noise Barrier –NW7- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-112	Res.	B	1	54 Francis Rd	69	62	7
R-113	Res.	B	1	68 Francis Rd	63	61	2
R-114	Res.	B	1	76 Francis Rd	65	65	0
R-115	Res.	B	1	82 Francis Rd	64	64	0
Predicted "8-Lane" Widening Alternative With Barrier Benefits							1

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW7 – 8-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 1 # BENEFITS - 1 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 12,600 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,500 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW8

Location: NW8 begins just north of the Clear Creek Road bridge along I-26 westbound and continues approximately 1,800 feet to the northwest, transitioning from edge of shoulder to the top of a cut section. It provides abatement for residences along Clear Creek Road.

Dimensions: Length = 1,800 ft., Avg. Height = 13 ft., Area = 22,860 ft^2
Impacts: 6
Benefits: 5
Area / Benefit: 4,572 ft^2.
Allowable Area / Benefit: 2,570 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 5
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-44: Noise Barrier –NW8- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-125	Res.	B	1	1713 Clear Creek Rd	73	68	5
R-126	Res.	B	1	1733 Clear Creek Rd	73	65	8
R-127	Res.	B	1	1803 Clear Creek Rd	76	70	6
R-128	Res.	B	1	1845 Clear Creek Rd	74	68	6
R-129	Res.	B	1	1959 Clear Creek Rd	68	63	5
R-130	Res.	B	1	1982 Clear Creek Rd	66	65	1
Predicted "8-Lane" Widening Alternative With Barrier Benefits							5

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening — TIP # - I-4400 / I-4700

LOCATION - NW8 – 8-Lane — COUNTY(IES) – Henderson and Buncombe

IMPACTS - 6 # BENEFITS - 5 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 4,572 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,570 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW9

Location: NW9 begins south of Hart Lane along I-26 westbound and continues nearly two miles to the northwest, with a small gap at the Brookside Camp Road bridge, before ending north of West Acorn Drive. It generally follows the edge of shoulder but has a few transitions to the top of cut sections, including one at the weigh station located near Sheneman Drive. It provides abatement for residences along all of the intervening local roads.

Dimensions: Length = 10,248 ft., Avg. Height = 23 ft., Area = 231,945 ft^2
Impacts: 83
Benefits: 116
Area / Benefit: 2,000 ft^2.
Allowable Area / Benefit: 2,605 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 76
NLR ≥ 7dB(A) for Front Row Receptors: 40

This noise wall does meet feasibility and reasonableness criteria.

Table D-45: Noise Barrier -NW9- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-131	Res.	B	1	170 Hart Ln	71	58	13
R-132	Res.	B	1	32 Hart Ln	73	60	13
R-133	Res.	B	1	28 Hart Ln	73	60	13
R-134	Res.	B	1	22 Hart Ln	74	60	14
R-135	Res.	B	1	39 Keeneland Dr	68	57	11
R-136	Res.	B	1	23 Keeneland Dr	67	55	12
R-137	Res.	B	1	20 Keeneland Dr	70	58	12
R-138	Res.	B	1	171 Keeneland Dr	69	57	12
R-139	Res.	B	1	195 Kingswood Dr	70	59	11
R-140	Res.	B	1	10 Hart Ln	76	66	10
R-141	Res.	B	1	223 Kingswood Dr	69	60	9
R-142	Res.	B	1	192 Kingswood Dr	63	56	7
R-143	Res.	B	1	216 Kingswood Dr	66	59	7
R-144	Res.	B	1	240 Kingswood Dr	66	60	6
R-145	Res.	B	1	262 Kingswood Dr	66	61	5
R-146	Res.	B	1	282 Kingswood Dr	66	61	5
R-147	Res.	B	1	261 Kingswood Dr	69	63	6
R-148	Res.	B	1	275 Kingswood Dr	67	64	3
R-149	Res.	B	1	283 Kingswood Dr	69	66	3

Table D-45: Noise Barrier -NW9- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-150	Res.	B	1	339 Kingswood Dr	69	66	3
R-151	Res.	B	1	299 Kingswood Dr	69	66	3
R-152	Res.	B	1	345 Kingswood Dr	71	67	4
R-153	Res.	B	1	134 Wendy Ln	60	53	7
R-154	Res.	B	1	138 Wendy Ln	66	57	9
R-155	Res.	B	1	142 Wendy Ln	75	68	7
R-156	Res.	B	1	146 Wendy Ln	74	65	9
R-157	Res.	B	1	150 Wendy Ln	77	70	7
R-158	Res.	B	1	154 Wendy Ln	79	67	12
R-159	Res.	B	1	149 Wendy Ln	65	59	6
R-160	Res.	B	1	151 Wendy Ln	71	65	6
R-161	Res.	B	1	153 Wendy Ln	70	62	8
R-162	Res.	B	1	155 Wendy Ln	67	61	6
R-163	Res.	B	1	157 Wendy Ln	71	64	7
R-164	Res.	B	1	132 Shelly Dr	54	50	4
R-165	Res.	B	1	142 Shelly Dr	53	51	2
R-166	Res.	B	1	144 Shelly Dr	53	51	2
R-167	Res.	B	1	160 Wendy Ln	79	69	10
R-168	Res.	B	1	2026 Howard Gap Rd	68	63	5
R-169	Res.	B	1	2020 Howard Gap Rd	69	63	6
R-170	Res.	B	1	335 Carolina Cir	79	64	15
R-171	Res.	B	1	315 Carolina Cir	73	60	13
R-172	Res.	B	1	289 Carolina Cir	69	57	12
R-173	Res.	B	1	257 Carolina Cir	60	52	8
R-174	Res.	B	1	251 Carolina Cir	59	52	7
R-175	Res.	B	1	223 Carolina Cir	60	53	7
R-176	Res.	B	1	205 Carolina Cir	60	53	7
R-177	Res.	B	1	185 Carolina Cir	59	53	6
R-178	Res.	B	1	165 Carolina Cir	59	53	6
R-179	Res.	B	1	145 Carolina Cir	60	55	5
R-180	Res.	B	1	125 Carolina Cir	63	57	6
R-181	Res.	B	1	113 Carolina Cir	63	57	6
R-182	Res.	B	1	93 Carolina Cir	62	57	5
R-183	Res.	B	1	73 Carolina Cir	62	57	5
R-184	Res.	B	1	55 Carolina Cir	61	57	4
R-185	Res.	B	1	35 Carolina Cir	60	58	2

Table D-45: Noise Barrier -NW9- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-186	Res.	B	1	512 Brookside Camp Rd	64	63	1
R-187	Res.	B	1	270 Carolina Cir	66	56	10
R-188	Res.	B	1	254 Carolina Cir	65	56	9
R-189	Res.	B	1	226 Carolina Cir	66	57	9
R-190	Res.	B	1	212 Carolina Cir	62	54	8
R-191	Res.	B	1	192 Carolina Cir	64	56	8
R-192	Res.	B	1	172 Carolina Cir	63	55	8
R-193	Res.	B	1	152 Carolina Cir	63	55	8
R-194	Res.	B	1	132 Carolina Cir	63	56	7
R-195	Res.	B	1	112 Carolina Cir	62	55	7
R-196	Res.	B	1	100 Carolina Cir	60	55	5
R-197	Res.	B	1	74 Carolina Cir	58	54	4
R-198	Res.	B	1	60 Carolina Cir	61	58	3
R-199	Res.	B	1	42 Carolina Cir	63	61	2
R-200	Res.	B	1	322 Carolina Cir	76	62	14
R-201	Res.	B	1	374 Carolina Cir	76	61	15
R-202	Res.	B	1	380 Carolina Cir	75	61	14
R-203	Res.	B	1	210 Carolina Cir	71	59	12
R-204	Res.	B	1	426 Carolina Cir	71	60	11
R-205	Res.	B	1	446 Carolina Cir	69	59	10
R-206	Res.	B	1	518 Carolina Cir	66	58	8
R-207	Res.	B	1	536 Carolina Cir	65	58	7
R-208	Res.	B	1	556 Carolina Cir	64	59	5
R-209	Res.	B	1	576 Carolina Cir	65	61	4
R-210	Res.	B	1	464 Carolina Cir	73	62	11
R-211	Res.	B	1	472 Carolina Cir	78	64	14
R-212	Res.	B	1	505 Carolina Cir	78	65	13
R-213	Res.	B	1	537 Carolina Cir	78	65	13
R-214	Res.	B	1	557 Carolina Cir	76	64	12
R-215	Res.	B	1	202 Kimberly Ann Dr	76	65	11
R-216	Res.	B	1	206 Dundeve Cir	76	64	12
R-217	Res.	B	1	208 Dundeve Cir	77	65	12
R-218	Res.	B	1	212 Dundeve Cir	77	67	10
R-219	Res.	B	1	216 Dundeve Cir	76	65	11
R-220	Res.	B	1	505 Brookside Camp Rd	68	64	4
R-221	Res.	B	1	509 Brookside Camp Rd	62	58	4

Table D-45: Noise Barrier -NW9- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-222	Res.	B	1	203 Kimberly Ann Dr	65	58	7
R-223	Res.	B	1	207 Kimberly Ann Dr	65	57	8
R-224	Res.	B	1	211 Kimberly Ann Dr	63	56	7
R-225	Res.	B	1	217 Kimberly Ann Dr	63	57	6
R-226	Res.	B	1	206 Kimberly Ann Dr	67	59	8
R-227	Res.	B	1	209 Dundeve Cir	70	60	10
R-228	Res.	B	1	213 Dundeve Cir	66	56	10
R-229	Res.	B	1	237 Dundeve Cir	57	52	5
R-230	Res.	B	1	224 Dundeve Cir	72	59	13
R-231	Res.	B	1	228 Dundeve Cir	67	56	11
R-232	Res.	B	1	232 Dundeve Cir	63	53	10
R-233	Res.	B	1	236 Dundeve Cir	60	52	8
R-234	Res.	B	1	201 Sheneman Dr	72	60	12
R-235	Res.	B	1	213 Sheneman Dr	64	55	9
R-236	Res.	B	1	217 Sheneman Dr	61	54	7
R-237	Res.	B	1	204 Sheneman Dr	75	62	13
R-238	Res.	B	1	212 Sheneman Dr	69	60	9
R-239	Res.	B	1	214 Sheneman Dr	63	57	6
R-240	Res.	B	1	300 Whispering Hills Dr	61	56	5
R-241	Res.	B	1	312 Whispering Hills Dr	71	66	5
R-242	Res.	B	1	319 Whispering Hills Dr	63	61	2
R-243	Res.	B	1	325 Whispering Hills Dr	64	60	4
R-244	Res.	B	1	329 Whispering Hills Dr	64	59	5
R-245	Res.	B	1	318 Whispering Hills Dr	70	66	4
R-246	Res.	B	1	320 Whispering Hills Dr	72	67	5
R-247	Res.	B	1	324 Whispering Hills Dr	71	63	8
R-248	Res.	B	1	326 Whispering Hills Dr	67	59	8
R-249	Res.	B	1	328 Whispering Hills Dr	66	57	9
R-250	Res.	B	1	330 Whispering Hills Dr	63	55	8
R-251	Res.	B	1	336 Whispering Hills Dr	62	55	7
R-252	Res.	B	1	185 Acorn Dr	78	62	16
R-253	Res.	B	1	120 Acorn Dr	73	58	15
R-254	Res.	B	1	112 Acorn Dr	69	56	13
R-255	Res.	B	1	108 Acorn Dr	66	55	11
R-256	Res.	B	1	40 Acorn Dr	66	55	11
R-257	Res.	B	1	181 Acorn Dr	78	62	16

Table D-45: Noise Barrier -NW9- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-258	Res.	B	1	119 Acorn Dr	75	60	15
R-259	Res.	B	1	115 Acorn Dr	73	59	14
R-260	Res.	B	1	105 W Acorn Dr	70	57	13
R-261	Res.	B	1	131 W Acorn Dr	74	60	14
R-262	Res.	B	1	188 W Acorn Dr	72	61	11
R-263	Res.	B	1	188 W Acorn Dr 2	70	62	8
R-264	Res.	B	1	107 Acorn Dr	66	56	10
R-265	Res.	B	1	45 Acorn Dr	63	53	10
R-266	Res.	B	1	402 Silver Loop Dr	63	55	8
Predicted "8-Lane" Widening Alternative With Barrier Benefits							116

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW9 – 8-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 83 # BENEFITS - 116 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 2,000 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,605 (sq.ft.) / cu.yd.? (CIRCLE ONE)	X YES	NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	X YES	NO
3	Is the noise mitigation likely?	X YES	NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	X YES	NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.		sq.ft./cu.yd (CIRCLE ONE)	Bar No.		sq.ft./cu.yd (CIRCLE ONE)
Bar No.		sq.ft./cu.yd	Bar No.		sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of (sq.ft./cu.yd) (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW10

Location: NW10 is located between Brookside Camp Road and Naples Road at the top of a cut section along I-26 westbound. It provides abatement for the Park Ridge Health walking trail, as well as a residence on PJ's Place.

Dimensions: Length = 2,520 ft., Avg. Height = 19 ft., Area = 48,960 ft^2
Impacts: 6
Benefits: 5
Area / Benefit: 9,792 ft^2.
Allowable Area / Benefit: 2,675 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 5
NLR ≥ 7dB(A) for Front Row Receptors: 3

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-46: Noise Barrier –NW10- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-267	Res.	B	1	276 Pjs Pl	69	64	5
R-268.01	Trail	C	0.12[1]	100 Hospital Dr	58	55	3
R-268.02	Trail	C	0.12[1]	100 Hospital Dr	59	55	4
R-268.03	Trail	C	0.12[1]	100 Hospital Dr	60	57	3
R-268.04	Trail	C	0.12[1]	100 Hospital Dr	61	58	3
R-268.05	Trail	C	0.12[1]	100 Hospital Dr	64	60	4
R-268.06	Trail	C	0.12[1]	100 Hospital Dr	66	62	4
R-268.07	Trail	C	0.12[1]	100 Hospital Dr	67	62	5
R-268.08	Trail	C	0.12[1]	100 Hospital Dr	69	63	6
R-268.09	Trail	C	0.12[1]	100 Hospital Dr	71	65	6
R-268.10	Trail	C	0.12[1]	100 Hospital Dr	73	66	7
R-268.11	Trail	C	0.12[1]	100 Hospital Dr	78	68	10
R-268.12	Trail	C	0.12[1]	100 Hospital Dr	79	68	11
R-268.13	Trail	C	0.12[1]	100 Hospital Dr	79	67	12
R-268.14	Trail	C	0.12[1]	100 Hospital Dr	80	66	14
R-268.15	Trail	C	0.12[1]	100 Hospital Dr	81	65	16
R-268.16	Trail	C	0.12[1]	100 Hospital Dr	81	65	16
R-268.17	Trail	C	0.12[1]	100 Hospital Dr	81	64	17
R-268.18	Trail	C	0.12[1]	100 Hospital Dr	81	63	18
R-268.19	Trail	C	0.12[1]	100 Hospital Dr	81	62	19
R-268.20	Trail	C	0.12[1]	100 Hospital Dr	81	63	18

Table D-46: Noise Barrier –NW10- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-268.21	Trail	C	0.12[1]	100 Hospital Dr	81	63	18
R-268.22	Trail	C	0.12[1]	100 Hospital Dr	80	63	17
R-268.23	Trail	C	0.12[1]	100 Hospital Dr	80	63	17
R-268.24	Trail	C	0.12[1]	100 Hospital Dr	80	63	17
R-268.25	Trail	C	0.12[1]	100 Hospital Dr	79	64	15
R-268.26	Trail	C	0.12[1]	100 Hospital Dr	77	66	11
R-268.27	Trail	C	0.12[1]	100 Hospital Dr	77	68	9
R-268.28	Trail	C	0.12[1]	100 Hospital Dr	75	69	6
R-268.29	Trail	C	0.12[1]	100 Hospital Dr	75	70	5
R-268.30	Trail	C	0.12[1]	100 Hospital Dr	75	70	5
R-268.31	Trail	C	0.12[1]	100 Hospital Dr	74	67	7
R-268.32	Trail	C	0.12[1]	100 Hospital Dr	73	66	7
R-268.33	Trail	C	0.12[1]	100 Hospital Dr	72	65	7
R-268.34	Trail	C	0.12[1]	100 Hospital Dr	71	65	6
R-268.35	Trail	C	0.12[1]	100 Hospital Dr	69	64	5
R-268.36	Trail	C	0.12[1]	100 Hospital Dr	68	64	4
R-268.37	Trail	C	0.12[1]	100 Hospital Dr	67	64	3
R-268.38	Trail	C	0.12[1]	100 Hospital Dr	66	63	3
R-268.39	Trail	C	0.12[1]	100 Hospital Dr	66	64	2
R-268.40	Trail	C	0.12[1]	100 Hospital Dr	66	65	1
R-268.41	Trail	C	0.12[1]	100 Hospital Dr	67	66	1
Predicted "8-Lane" Widening Alternative With Barrier Benefits							5[2]

[1] Walking trail was analyzed as a nodal array of receptors (5 equivalent residences represented by 41 nodes).

[2] Total benefits for walking trail were rounded up to the nearest whole dB(A).

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening | TIP # - I-4400 / I-4700

LOCATION - NW10 – 8-Lane | COUNTY(IES) – Henderson and Buncombe

IMPACTS - 6 | # BENEFITS - 5 | NAC: A (B) (C) D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 9,792 (CIRCLE ONE) (sq.ft.) cu.yd less than the maximum allowable design criteria per benefited receptor of 2,675 (CIRCLE ONE) (sq.ft.) cu.yd.?	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.		sq.ft./cu.yd (CIRCLE ONE)	Bar No.		sq.ft./cu.yd (CIRCLE ONE)
Bar No.		sq.ft./cu.yd	Bar No.		sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of (CIRCLE ONE) sq.ft./cu.yd	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW11

Location: NW11 begins south of the Naples Road bridge along I-26 westbound at the top of a cut section near Naples road. At the Naples Road bridge, it transitions to the edge of shoulder and continues along I-26 westbound for another 1,020 feet to the northwest. It provides abatement for residences along Sunset Vista Road, Holly Oak Drive and Twin Springs Road.

Dimensions: Length = 2,640 ft., Avg. Height = 21 ft., Area = 54,840 ft^2
Impacts: 11
Benefits: 10
Area / Benefit: 5,484 ft^2.
Allowable Area / Benefit: 2,605 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 9
NLR ≥ 7dB(A) for Front Row Receptors: 2

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-47: Noise Barrier –NW11- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-277	Res.	B	1	18 Sunset Vista Rd	76	71	5
R-278	Res.	B	1	46 Sunset Vista Rd	68	61	7
R-279	Res.	B	1	72 Sunset Vista Rd	68	62	6
R-280	Res.	B	1	108 Sunset Vista Rd	66	61	5
R-281	Res.	B	1	126 Sunset Vista Rd	65	60	5
R-282	Res.	B	1	25 Sunset Vista Rd	72	66	6
R-283	Res.	B	1	91 Sunset Vista Rd	73	66	7
R-284	Res.	B	1	145 Sunset Vista Rd	71	65	6
R-285	Res.	B	1	67 Holly Oak Dr	63	60	3
R-286	Res.	B	1	67 Holly Oak Dr 2	61	58	3
R-287	Res.	B	1	25 Holly Oak Dr	75	70	5
R-288	Res.	B	1	104 Twin Springs Rd	72	67	5
R-289	Res.	B	1	118 Twin Springs Rd	69	65	4
R-290	Res.	B	1	146 Twin Springs Rd	69	66	3
Predicted "8-Lane" Widening Alternative With Barrier Benefits							10

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening — TIP # - I-4400 / I-4700

LOCATION - NW11 – 8-Lane — COUNTY(IES) – Henderson and Buncombe

IMPACTS - 11 # BENEFITS - 10 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 5,484 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,605 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW12

Location: NW12 is located along the I-26 westbound off-ramp to US 25 (Asheville Highway) beginning near the westbound bridge over railroad tracks and continuing along the edge of shoulder approximately 1,560 feet to the northwest. The portion of this wall along the bridge over railroad tracks is on structure. It provides abatement for residences on Old Hendersonville Road, November Lane and Hickory Flats Drive.

Dimensions: Length = 1,560 ft., Avg. Height = 16 ft., Area = 24,600 ft^2
Impacts: 14
Benefits: 19
Area / Benefit: 1,295 ft^2.
Allowable Area / Benefit: 2,640 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 13
NLR ≥ 7dB(A) for Front Row Receptors: 7

This noise wall does meet feasibility and reasonableness criteria.

Table D-48: Noise Barrier –NW12- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-291	Res.	B	1	521 Old Hendersonville Rd	70	62	8
R-292	Res.	B	1	525 Old Hendersonville Rd	71	61	10
R-293	Res.	B	1	20 Pleasant Row Dr	67	58	9
R-294	Res.	B	1	15 Pleasant Row Dr	67	57	10
R-295	Res.	B	1	45 Pleasant Row Dr	66	58	8
R-296	Res.	B	1	526 Old Hendersonville Rd	68	59	9
R-297	Res.	B	1	522 Old Hendersonville Rd	68	59	9
R-298	Res.	B	1	19 November Ln	67	58	9
R-299	Res.	B	1	39 November Ln	66	58	8
R-300	Res.	B	1	37 November Ln	66	58	8
R-301	Res.	B	1	65 November Ln	68	60	8
R-302	Res.	B	1	244 Hickory Flats Dr	70	63	7
R-303	Res.	B	1	146 Hickory Flats Dr	66	61	5
R-304	Res.	B	1	60 November Ln	64	58	6
R-305	Res.	B	1	42 November Ln	64	56	8
R-306	Res.	B	1	434 Old Hendersonville Rd	63	57	6
R-307	Res.	B	1	211 Hickory Flats Dr	62	56	6
R-308	Res.	B	1	97 Hickory Flats Dr	64	56	8
R-309	Res.	B	1	71 Hickory Flats Dr	64	59	5
R-310	Res.	B	1	54 Hickory Flats Dr	63	61	2

Table D-48: Noise Barrier –NW12- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-311	Res.	B	1	143 Maxwell Dr	69	69	0
R-312	Res.	B	1	109 Maxwell Dr	65	65	0
Predicted "8-Lane" Widening Alternative With Barrier Benefits							19

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW12 – 8-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 14 # BENEFITS - 19 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 1,295 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,640 (sq.ft.) / cu.yd.? (CIRCLE ONE)	X YES	NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	X YES	NO
3	Is the noise mitigation likely?	X YES	NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	X YES	NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.		sq.ft./cu.yd (CIRCLE ONE)	Bar No.		sq.ft./cu.yd (CIRCLE ONE)
Bar No.		sq.ft./cu.yd	Bar No.		sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of	sq.ft./cu.yd (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW13

Location: NW13 is located between US 25 (Asheville Highway) and Butler Bridge Road at the top of a cut section along I-26 westbound beginning near the I-26 westbound on-ramp from US 25 (Asheville Highway) and continuing approximately 1,380 feet to the northwest. It provides abatement for residences on Halliburton Road, Kennerly Drive and Dawley Drive.

Dimensions: Length = 1,380 ft., Avg. Height = 18 ft., Area = 24,960 ft^2
Impacts: 9
Benefits: 3
Area / Benefit: 8,320 ft^2.
Allowable Area / Benefit: 2,675 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 3
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-49: Noise Barrier –NW13- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-313	Res.	B	1	123 Halliburton Rd	78	72	6
R-314	Res.	B	1	118 Halliburton Rd	69	67	2
R-315	Res.	B	1	124 Halliburton Rd	68	66	2
R-316	Res.	B	1	54 Dawley Dr	66	64	2
R-317	Res.	B	1	46 Dawley Dr	69	66	3
R-318	Res.	B	1	44 Dawley Dr	66	64	2
R-319	Res.	B	1	55 Dawley Dr	59	57	2
R-320	Res.	B	1	15 Dawley Dr	69	65	4
R-321	Res.	B	1	103 Dawley Dr	62	58	4
R-322	Res.	B	1	100 Halliburton Rd	65	64	1
R-323	Res.	B	1	102 Halliburton Rd	63	63	0
R-324	Res.	B	1	104 Halliburton Rd	59	59	0
R-325	Res.	B	1	62 Dawley Dr	57	56	1
R-326	Res.	B	1	99 Dawley Dr	56	55	1
R-327	Res.	B	1	64 Halliburton Rd	64	63	1
R-328	Res.	B	1	128 Kennerly Dr	62	61	1
R-329	Res.	B	1	110 Kennerly Dr	59	58	1
R-330	Res.	B	1	96 Kennerly Dr	56	55	1
R-331	Res.	B	1	127 Kennerly Dr	63	63	0

Table D-49: Noise Barrier –NW13- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-332	Res.	B	1	46 Royal Oaks Dr	62	61	1
R-333	Res.	B	1	16 Royal Oaks Dr	59	59	0
R-334	Res.	B	1	106 Dawley Dr	68	63	5
R-335	Res.	B	1	76 Dawley Dr	56	55	1
R-336	Res.	B	1	120 Dawley Dr	77	64	13
R-337	Res.	B	1	24 Kennerly Dr	58	58	0
R-338	Res.	B	1	6077 Asheville Hwy	62	59	3
R-339	Res.	B	1	6075 Asheville Hwy	56	55	1
R-340	Res.	B	1	6073 Asheville Hwy	58	57	1
Predicted "8-Lane" Widening Alternative With Barrier Benefits							3

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening | TIP # - I-4400 / I-4700

LOCATION - NW13 – 8-Lane | COUNTY(IES) – Henderson and Buncombe

IMPACTS - 9 | # BENEFITS - 3 | NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 8,320 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,675 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.		sq.ft./cu.yd (CIRCLE ONE)	Bar No.		sq.ft./cu.yd (CIRCLE ONE)
Bar No.		sq.ft./cu.yd	Bar No.		sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of (sq.ft./cu.yd) (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW14

Location: NW14 is located along I-26 westbound edge of shoulder beginning just north of the Butler Bridge Road and continuing approximately 2,460 feet to the northwest. It provides abatement for residences on Hope Opal Lane, South Thomas Street and Jim Mills Drive.

Dimensions: Length = 2,460 ft., Avg. Height = 21 ft., Area = 52,140 ft^2
Impacts: 14
Benefits: 24
Area / Benefit: 2,173 ft^2.
Allowable Area / Benefit: 2,605 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 12
NLR ≥ 7dB(A) for Front Row Receptors: 9

This noise wall does meet feasibility and reasonableness criteria.

Table D-50: Noise Barrier –NW14- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-341	Res.	B	1	46 Hope Opal Ln	77	74	3
R-342	Res.	B	1	38 Hope Opal Ln	77	71	6
R-343	Res.	B	1	34 Hope Opal Ln	76	68	8
R-344	Res.	B	1	28 Hope Opal Ln	76	67	9
R-345	Res.	B	1	22 Hope Opal Ln	75	60	15
R-346	Res.	B	1	14 Hope Opal Ln	73	59	14
R-347	Res.	B	1	41 Hope Opal Ln	68	63	5
R-348	Res.	B	1	65 Hope Opal Ln	66	63	3
R-349	Res.	B	1	23 Hope Opal Ln	63	59	4
R-350	Res.	B	1	73 Hope Opal Ln	63	62	1
R-351	Res.	B	1	9 Hope Opal Ln	62	59	3
R-352	Res.	B	1	120 S Thomas St	71	59	12
R-353	Res.	B	1	60 Jim Mills Dr	69	58	11
R-354	Res.	B	1	52 Jim Mills Dr	68	58	10
R-355	Res.	B	1	36 Jim Mills Dr	67	57	10
R-356	Res.	B	1	20 Jim Mills Dr	66	57	9
R-357	Res.	B	1	109 S Thomas St	65	56	9
R-358	Res.	B	1	112 S Thomas St	66	56	10
R-359	Res.	B	1	98 S Thomas St	60	52	8
R-360	Res.	B	1	41 Lantern Walk Ln	64	55	9
R-361	Res.	B	1	42 Lantern Walk Ln	61	53	8

Table D-50: Noise Barrier –NW14- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-362	Res.	B	1	33 Jim Mills Dr	61	53	8
R-363	Res.	B	1	23 Lantern Walk Ln	58	53	5
R-364	Res.	B	1	38 S Thomas St	57	52	5
R-365	Res.	B	1	55 Darity Rd	56	51	5
R-366	Res.	B	1	75 Darity Rd	60	54	6
R-367	Res.	B	1	11 Collins Rd	60	54	6
R-368	Res.	B	1	21 Collins Rd	62	55	7
R-369	Res.	B	1	51 Collins Rd	62	55	7
Predicted "8-Lane" Widening Alternative With Barrier Benefits							24

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW14 – 8-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 14 # BENEFITS - 24 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 2,173 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,605 (sq.ft.) / cu.yd.? (CIRCLE ONE)	X YES	NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	X YES	NO
3	Is the noise mitigation likely?	X YES	NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	X YES	NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.		sq.ft./cu.yd (CIRCLE ONE)	Bar No.		sq.ft./cu.yd (CIRCLE ONE)
Bar No.		sq.ft./cu.yd	Bar No.		sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of (sq.ft./cu.yd) (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW15

Location: NW15 is located south of Fanning Bridge Road along I-26 westbound beginning near the rest area south of Wildwood Circle and continuing approximately 1,800 feet to the northwest. It transitions from the edge of shoulder along the I-26 westbound on-ramp from the rest area to the top of a cut section and provides abatement for residences along Wildwood Circle and South Wildwood Lane.

Dimensions: Length = 1,800 ft., Avg. Height = 20 ft., Area = 35,460 ft^2
Impacts: 14
Benefits: 20
Area / Benefit: 1,773 ft^2.
Allowable Area / Benefit: 2,605 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 14
NLR ≥ 7dB(A) for Front Row Receptors: 9

This noise wall does meet feasibility and reasonableness criteria.

Table D-51: Noise Barrier –NW15- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-371	Res.	B	1	31 Wildwood Cir	58	57	1
R-372	Res.	B	1	33 Wildwood Cir	60	57	3
R-373	Res.	B	1	35 Wildwood Cir	64	59	5
R-374	Res.	B	1	37 Wildwood Cir	67	61	6
R-375	Res.	B	1	39 Wildwood Cir	71	62	9
R-376	Res.	B	1	41 Wildwood Cir	75	63	12
R-377	Res.	B	1	45 Wildwood Cir	75	64	11
R-378	Res.	B	1	47 Wildwood Cir	76	64	12
R-379	Res.	B	1	49 Wildwood Cir	76	64	12
R-380	Res.	B	1	51 Wildwood Cir	77	64	13
R-381	Res.	B	1	53 Wildwood Cir	76	64	12
R-382	Res.	B	1	55 Wildwood Cir	75	62	13
R-383	Res.	B	1	57 Wildwood Cir	67	59	8
R-384	Church	D	1	1291 Fanning Bridge Rd	42	40	2
R-385	Res.	B	1	59 Wildwood Cir	65	58	7
R-386	Res.	B	1	61 Wildwood Cir	63	57	6
R-387	Res.	B	1	63 Wildwood Cir	62	57	5
R-388	Res.	B	1	65 Wildwood Cir	61	58	3
R-389	Res.	B	1	67 Wildwood Cir	62	61	1
R-390	Res.	B	1	32 Wildwood Cir	53	51	2

Table D-51: Noise Barrier –NW15- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-391	Res.	B	1	34 Wildwood Cir	56	54	2
R-392	Res.	B	1	36 Wildwood Cir	61	57	4
R-393	Res.	B	1	38 Wildwood Cir	**66**	61	**5**
R-394	Res.	B	1	48 Wildwood Cir	**67**	61	**6**
R-395	Res.	B	1	50 Wildwood Cir	**66**	60	**6**
R-396	Res.	B	1	52 Wildwood Cir	**66**	58	**8**
R-397	Res.	B	1	54 Wildwood Cir	61	56	**5**
R-398	Res.	B	1	56 Wildwood Cir	59	53	**6**
R-399	Res.	B	1	58 Wildwood Cir	53	50	3
R-400	Res.	B	1	60 Wildwood Cir	56	54	2
R-401	Res.	B	1	62 Wildwood Cir	57	55	2
R-402	Res.	B	1	64 Wildwood Cir	57	57	0
R-403	Res.	B	1	66 Wildwood Cir	59	59	0
R-404	Res.	B	1	21 Wildwood Ln	52	51	1
R-405	Res.	B	1	20 Wildwood Ln	60	57	3
R-406	Res.	B	1	18 Wildwood Ln	54	52	2
R-407	Res.	B	1	16 Wildwood Ln	55	51	4
R-408	Res.	B	1	14 Wildwood Ln	53	50	3
R-409	Res.	B	1	12 Wildwood Ln	52	49	3
R-410	Res.	B	1	10 Wildwood Ln	49	47	2
R-411	Res.	B	1	8 Wildwood Ln	53	51	2
R-412	Res.	B	1	6 Wildwood Ln	56	55	1
R-413	Res.	B	1	4 Wildwood Ln	57	57	0
Predicted "8-Lane" Widening Alternative With Barrier Benefits							20

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening | TIP # - I-4400 / I-4700

LOCATION - NW15 – 8-Lane | COUNTY(IES) – Henderson and Buncombe

IMPACTS - 14 | # BENEFITS - 20 | NAC: A (B) C (D) E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 1,773 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,605 (sq.ft.) / cu.yd.? (CIRCLE ONE)	X YES	NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	X YES	NO
3	Is the noise mitigation likely?	X YES	NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	X YES	NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.		sq.ft./cu.yd (CIRCLE ONE)	Bar No.		sq.ft./cu.yd (CIRCLE ONE)
Bar No.		sq.ft./cu.yd	Bar No.		sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of (sq.ft./cu.yd) (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW16

Location: NW16 begins south of Glenn Bridge Road along I-26 westbound and continues approximately 1,620 feet to the northwest, ending between New Rockwood Road and Mahogany Road. It generally follows the top of the cut section but transitions to edge of shoulder near Glenn Bridge Road, and the portion of the wall along the I-26 westbound bridge over Glenn Bridge Road is on structure. This noise wall provides abatement for residences in the Hunter's Trace neighborhood.

Dimensions: Length = 1,620 ft., Avg. Height = 23 ft., Area = 37,620 ft^2
Impacts: 21
Benefits: 28
Area / Benefit: 1,344 ft^2.
Allowable Area / Benefit: 2,675 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 16
NLR ≥ 7dB(A) for Front Row Receptors: 7

This noise wall does meet feasibility and reasonableness criteria.

Table D-52: Noise Barrier –NW16- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-429	Res.	B	1	26 Foxberry Dr	57	57	0
R-430	Res.	B	1	24 Foxberry Dr	59	58	1
R-431	Res.	B	1	22 Foxberry Dr	62	58	4
R-432	Res.	B	1	18 Foxberry Dr	65	60	5
R-433	Res.	B	1	16 Foxberry Dr	67	62	5
R-434	Res.	B	1	14 Foxberry Dr	70	63	7
R-435	Res.	B	1	10 Foxberry Dr	74	65	9
R-436	Res.	B	1	8 Foxberry Dr	75	65	10
R-437	Res.	B	1	4 Foxberry Dr	75	63	12
R-438	Res.	B	1	27 Foxberry Dr	55	54	1
R-439	Res.	B	1	25 Foxberry Dr	58	55	3
R-440	Res.	B	1	19 Foxberry Dr	56	53	3
R-441	Res.	B	1	15 Foxberry Dr	64	59	5
R-442	Res.	B	1	9 Foxberry Dr	67	60	7
R-443	Res.	B	1	7 Foxberry Dr	69	62	7
R-444	Res.	B	1	5 Foxberry Dr	70	60	10
R-445	Res.	B	1	3 Foxberry Dr	69	60	9
R-446	Res.	B	1	54 Winding Oak Dr	56	51	5
R-447	Res.	B	1	58 Winding Oak Dr	57	53	4
R-448	Res.	B	1	62 Winding Oak Dr	60	55	5

Table D-52: Noise Barrier –NW16- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-449	Res.	B	1	66 Winding Oak Dr	65	60	5
R-450	Res.	B	1	63 Winding Oak Dr	63	59	4
R-451	Res.	B	1	57 Winding Oak Dr	61	55	6
R-452	Res.	B	1	53 Winding Oak Dr	57	51	6
R-453	Res.	B	1	47 Winding Oak Dr	56	51	5
R-454	Res.	B	1	37 Winding Oak Dr	57	51	6
R-455	Res.	B	1	31 Winding Oak Dr	59	53	6
R-456	Res.	B	1	27 Winding Oak Dr	59	55	4
R-457	Res.	B	1	102 Wood Glen Ct	57	56	1
R-458	Res.	B	1	106 Wood Glen Ct	62	58	4
R-459	Res.	B	1	110 Wood Glen Ct	59	55	4
R-460	Res.	B	1	114 Wood Glen Ct	65	59	6
R-461	Res.	B	1	118 Wood Glen Ct	72	67	5
R-462	Res.	B	1	109 Wood Glen Ct	71	66	5
R-463	Res.	B	1	105 Wood Glen Ct	66	64	2
R-464	Res.	B	1	15 Winding Oak Dr	66	63	3
R-465	Res.	B	1	9 Winding Oak Dr	66	63	3
R-466	Res.	B	1	5 Winding Oak Dr	66	62	4
R-467	Res.	B	1	1 Winding Oak Dr	67	59	8
R-468	Res.	B	1	169 New Rockwood Rd	69	61	8
R-469	Res.	B	1	173 New Rockwood Rd	73	63	10
R-470	Res.	B	1	177 New Rockwood Rd	76	67	9
R-471	Res.	B	1	168 New Rockwood Rd	74	63	11
R-472	Res.	B	1	167 New Rockwood Rd	69	66	3
R-473	Res.	B	1	22 Winding Oak Dr	58	57	1
R-474	Res.	B	1	18 Winding Oak Dr	61	60	1
R-475	Res.	B	1	14 Winding Oak Dr	58	56	2
R-476	Res.	B	1	10 Winding Oak Dr	57	55	2
R-477	Res.	B	1	6 Winding Oak Dr	56	54	2
R-478	Res.	B	1	2 Winding Oak Dr	61	56	5
Predicted "8-Lane" Widening Alternative With Barrier Benefits							28

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW16 – 8-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 21 # BENEFITS - 28 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 1,344 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,675 (sq.ft.) / cu.yd.? (CIRCLE ONE)	X YES	NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	X YES	NO
3	Is the noise mitigation likely?	X YES	NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	X YES	NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO
2	If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:		

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW17

Location: NW17 is located south of NC 146 (Long Shoals Road) along I-26 westbound at the top of a cut section and transitions to the edge of shoulder at the I-26 westbound off-ramp to NC 146 before ending in front of the Quality Inn & Suites. It provides abatement for a residence accessible via Long Shoals Road.

Dimensions: Length = 1,920 ft., Avg. Height = 25 ft., Area = 48,000 ft^2
Impacts: 1
Benefits: 0
Area / Benefit: N/A
Allowable Area / Benefit: 2,500 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 0
NLR ≥ 7dB(A) for Front Row Receptors: 0

This noise wall meets neither feasibility nor reasonableness criteria because a 5 dB(A) noise reduction could not be achieved for the only receptor in the area.

Table D-53: Noise Barrier –NW17- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-482	Res.	B	1	315 Long Shoals Rd	69	67	2
Predicted "8-Lane" Widening Alternative With Barrier Benefits							0[1]

[1] The NCDOT noise reduction design goal of 7 dB(A) could not be achieved for at least one benefited receptor to meet reasonableness criteria.

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW17 – 8-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 1 # BENEFITS - 0 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	____ YES	X NO
2	Does topography negatively affect the proposed abatement measure?	____ YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	____ YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	____ NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	____ YES	X NO
2	Is the design criteria per benefited receptor of N/A (CIRCLE ONE) sq.ft./cu.yd less than the maximum allowable design criteria per benefited receptor of ____ 2,500 (CIRCLE ONE) sq.ft./cu.yd.?	____ YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	____ YES	X NO
2	Is the noise mitigation reasonable?	____ YES	X NO
3	Is the noise mitigation likely?	____ YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	____ YES	X NO
5	Is the noise mitigation recommended for construction?	____ YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	____ YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.	____	____ (CIRCLE ONE) sq.ft./cu.yd	Bar No.	____	____ (CIRCLE ONE) sq.ft./cu.yd
Bar No.	____	____ sq.ft./cu.yd	Bar No.	____	____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of ____ (CIRCLE ONE) sq.ft./cu.yd ____ YES ____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW18

Location: NW18 begins at the top of a cut section between Blue Ridge Parkway and NC 191 (Brevard Road) along I-26 westbound and transitions to edge of shoulder. It provides abatement for residences on Ferry Road.

Dimensions: Length = 1,500 ft., Avg. Height = 11 ft., Area = 16,980 ft^2
Impacts: 1
Benefits: 4
Area / Benefit: 4,245 ft^2.
Allowable Area / Benefit: 2,500 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 1
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-54: Noise Barrier –NW18- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-486	Res.	B	1	215 Ferry Rd	61	56	5
R-487	Res.	B	1	218 Ferry Rd	61	55	6
R-488	Res.	B	1	200 Ferry Rd	66	59	7
R-489	Res.	B	1	192 Ferry Rd	65	60	5
Predicted "8-Lane" Widening Alternative With Barrier Benefits							4

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW18 – 8-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 1 # BENEFITS - 4 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 4,245 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,500 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW19

Location: NW19 is located along the future I-26 westbound on-ramp from NC 191 (Brevard Road) edge of shoulder. It provides abatement for residences on Pine Lane.

Dimensions: Length = 1,980 ft., Avg. Height = 13 ft., Area = 25,380 ft^2
Impacts: 7
Benefits: 10
Area / Benefit: 2,538 ft^2.
Allowable Area / Benefit: 2,640 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 6
NLR ≥ 7dB(A) for Front Row Receptors: 4

This noise wall does meet feasibility and reasonableness criteria.

Table D-55: Noise Barrier –NW19- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-490	Res.	B	1	759 Brevard Rd	73	73	0
R-491	Res.	B	1	757 Old Brevard Rd	60	59	1
R-492	Res.	B	1	12 Pine Ln	R/W	R/W	R/W
R-493	Res.	B	1	20 Pine Ln	70	60	10
R-494	Res.	B	1	24 Pine Ln	68	59	9
R-495	Res.	B	1	26 Pine Ln	67	59	8
R-496	Res.	B	1	28 Pine Ln	65	58	7
R-497	Res.	B	1	50 Pine Ln	R/W	R/W	R/W
R-498	Res.	B	1	40 Pine Ln	66	60	6
R-499	Res.	B	1	36 Pine Ln	67	61	6
R-500	Res.	B	1	29 Pine Ln	66	60	6
R-501	Res.	B	1	27 Pine Ln	65	59	6
R-502	Res.	B	1	23 Pine Ln	62	57	5
R-503	Res.	B	1	19 Pine Ln	62	60	2
R-504	Res.	B	1	17 Pine Ln	61	59	2
R-505	Res.	B	1	15 Pine Ln	64	59	5
R-506	Res.	B	1	13 Pine Ln	60	59	1
R-507	Res.	B	1	751 Brevard Rd	59	59	0
R-508	Res.	B	1	751 Old Brevard Rd	63	60	3
Predicted "8-Lane" Widening Alternative With Barrier Benefits							10
					Noise Level Impact		**Benefited Receptor**

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW19 – 8-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 7 # BENEFITS - 10 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 2,538 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,640 (sq.ft.) / cu.yd.? (CIRCLE ONE)	X YES	NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	X YES	NO
3	Is the noise mitigation likely?	X YES	NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	X YES	NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO
2	If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:		

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW20

Location: NW20 is located between NC 191 (Brevard Road) and Pond Road along I-26 westbound edge of shoulder. It provides abatement for residences on Dogwood Road.

Dimensions: Length = 1,440 ft., Avg. Height = 17 ft., Area = 25,020 ft^2
Impacts: 2
Benefits: 2
Area / Benefit: 12,510 ft^2.
Allowable Area / Benefit: 2,605 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 2
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-56: Noise Barrier –NW20- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-509	Res.	B	1	36 Dogwood Rd	67	60	7
R-510	Res.	B	1	50 Dogwood Rd	71	64	7
Predicted "8-Lane" Widening Alternative With Barrier Benefits							2

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW20 – 8-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 2 # BENEFITS - 2 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 12,510 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,605 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW21

Location: NW21 is located between NC 191 (Brevard Road) and Blue Ridge Parkway along I-26 eastbound edge of shoulder. It provides abatement for residences on Ferry Road.

Dimensions: Length = 1,320 ft., Avg. Height = 10 ft., Area = 13,380 ft^2
Impacts: 3
Benefits: 3
Area / Benefit: 4,460 ft^2.
Allowable Area / Benefit: 2,570 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 3
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-57: Noise Barrier –NW21- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-517	Res.	B	1	184 Ferry Rd	76	67	9
R-518	Res.	B	1	184 Ferry Rd 2	69	64	5
R-519	Res.	B	1	191 Ferry Rd	75	69	6
Predicted "8-Lane" Widening Alternative With Barrier Benefits							3

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening | TIP # - I-4400 / I-4700

LOCATION - NW21 – 8-Lane | COUNTY(IES) – Henderson and Buncombe

IMPACTS - 3 | # BENEFITS - 3 | NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 4,460 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,570 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.		sq.ft./cu.yd (CIRCLE ONE)	Bar No.		sq.ft./cu.yd (CIRCLE ONE)
Bar No.		sq.ft./cu.yd	Bar No.		sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of (sq.ft./cu.yd) (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW22

Location: NW22 is located between NC 146 (Long Shoals Road) and Glenn Bridge Road along I-26 eastbound edge of shoulder. It provides abatement for residences on Bear Leah Trail, accessible via Glenn Bridge Road.

Dimensions: Length = 780 ft., Avg. Height = 10 ft., Area = 7,800 ft^2
Impacts: 2
Benefits: 2
Area / Benefit: 3,900 ft^2.
Allowable Area / Benefit: 2,605 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 2
NLR ≥ 7dB(A) for Front Row Receptors: 2

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-58: Noise Barrier –NW22- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-522	Res.	B	1	40 Bear Leah Trl	77	68	9
R-523	Res.	B	1	38 Bear Leah Trl	78	71	7
Predicted "8-Lane" Widening Alternative With Barrier Benefits							2

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW22 – 8-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 2 # BENEFITS - 2 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 3,900 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,605 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW23

Location: NW23 begins approximately 480 feet north of Glenn Bridge Road along I-26 eastbound edge of shoulder and continues approximately 980 feet to the southeast. The portion of the wall along the I-26 eastbound bridge over Glenn Bridge Road is on structure. It provides abatement for residences on Glenn Bridge Road.

Dimensions: Length = 980 ft., Avg. Height = 25 ft., Area = 24,530 ft^2
Impacts: 2
Benefits: 2
Area / Benefit: 12,265 ft^2.
Allowable Area / Benefit: 2,605 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 2
NLR ≥ 7dB(A) for Front Row Receptors: 0

This noise wall does not meet reasonableness criteria because a 7 dB(A) noise reduction could not be achieved for at least one benefited front row receptor.

Table D-59: Noise Barrier –NW23- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-524	Res.	B	1	404 Glenn Bridge Rd	72	66	6
R-525	Res.	B	1	406 Glenn Bridge Rd	69	64	5
Predicted "8-Lane" Widening Alternative With Barrier Benefits							2[1]

[1] The NCDOT noise reduction design goal of 7 dB(A) could not be achieved for at least one benefited receptor to meet reasonableness criteria.

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW23 – 8-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 2 # BENEFITS - 2 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	YES	X NO
2	Is the design criteria per benefited receptor of 12,265 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,605 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW24

Location: NW24 is located between Glenn Bridge Road and NC 280 (Airport Road) along I-26 eastbound edge of shoulder. It provides abatement for residences on Hidden Creek Drive, Nathan Drive and Wells Drive.

Dimensions: Length = 1,740 ft., Avg. Height = 17 ft., Area = 28,740 ft^2
Impacts: 15
Benefits: 20
Area / Benefit: 1,437 ft^2.
Allowable Area / Benefit: 2,605 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 15
NLR ≥ 7dB(A) for Front Row Receptors: 4

This noise wall does meet feasibility and reasonableness criteria.

Table D-60: Noise Barrier –NW24- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-526	Res.	B	1	1 Hidden Creek Dr	70	61	9
R-527	Res.	B	1	3 Hidden Creek Dr	66	58	8
R-528	Res.	B	1	5 Hidden Creek Dr	67	60	7
R-529	Res.	B	1	20 Hidden Creek Dr	65	56	9
R-530	Res.	B	1	12 Wells Dr	65	58	7
R-531	Res.	B	1	10 Hidden Creek Dr	68	61	7
R-532	Res.	B	1	2 Hidden Creek Dr	69	59	10
R-533	Res.	B	1	1 Nathan Dr	68	59	9
R-534	Res.	B	1	5 Nathan Dr	67	58	9
R-535	Res.	B	1	105 Hidden Creek Rd	78	65	13
R-536	Res.	B	1	8 Nathan Dr	70	61	9
R-537	Res.	B	1	7 Nathan Dr	67	59	8
R-538	Res.	B	1	15 Nathan Dr	63	56	7
R-539	Res.	B	1	14 Wells Dr	67	60	7
R-540	Res.	B	1	9 Wells Dr	69	63	6
R-541	Res.	B	1	101 Hidden Creek Rd	71	63	8
R-542	Res.	B	1	10 Nathan Dr	66	59	7
R-543	Res.	B	1	12 Nathan Dr	62	57	5
R-544	Res.	B	1	14 Nathan Dr	63	58	5
R-545	Res.	B	1	16 Nathan Dr	67	61	6

Table D-60: Noise Barrier –NW24- Performance
Without Barrier and With Barrier Noise Levels
8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
Predicted "8-Lane" Widening Alternative With Barrier Benefits							20
					Noise Level Impact		Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW24 – 8-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 15 # BENEFITS - 20 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 1,437 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,605 (sq.ft.) / cu.yd.? (CIRCLE ONE)	X YES	NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	X YES	NO
3	Is the noise mitigation likely?	X YES	NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	X YES	NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW25

Location: NW25 is located south of the rest area between Fanning Bridge Road and Butler Bridge Road along I-26 eastbound edge of shoulder. It provides abatement for the Broadmoor Golf Links golf course.

Dimensions: Length = 2,340 ft., Avg. Height = 14 ft., Area = 33,840 ft^2
Impacts: 2
Benefits: 2
Area / Benefit: 16,920 ft^2.
Allowable Area / Benefit: 2,570 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 2
NLR ≥ 7dB(A) for Front Row Receptors: 2

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-61: Noise Barrier –NW25- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-555.01	Golf	C	0.03[1]	101 French Broad Ln	74	64	10
R-555.02	Golf	C	0.03[1]	101 French Broad Ln	73	64	9
R-555.03	Golf	C	0.03[1]	101 French Broad Ln	73	64	9
R-555.04	Golf	C	0.03[1]	101 French Broad Ln	72	64	8
R-555.05	Golf	C	0.03[1]	101 French Broad Ln	72	64	8
R-555.06	Golf	C	0.03[1]	101 French Broad Ln	72	63	9
R-555.07	Golf	C	0.03[1]	101 French Broad Ln	72	63	9
R-555.08	Golf	C	0.03[1]	101 French Broad Ln	72	62	10
R-555.09	Golf	C	0.03[1]	101 French Broad Ln	72	62	10
R-555.10	Golf	C	0.03[1]	101 French Broad Ln	72	62	10
R-555.11	Golf	C	0.03[1]	101 French Broad Ln	72	62	10
R-555.12	Golf	C	0.03[1]	101 French Broad Ln	71	62	9
R-555.13	Golf	C	0.03[1]	101 French Broad Ln	72	63	9
R-555.14	Golf	C	0.03[1]	101 French Broad Ln	72	64	8
R-555.15	Golf	C	0.03[1]	101 French Broad Ln	71	64	7
R-555.16	Golf	C	0.03[1]	101 French Broad Ln	71	64	7
R-555.17	Golf	C	0.03[1]	101 French Broad Ln	71	63	8
R-555.18	Golf	C	0.03[1]	101 French Broad Ln	71	63	8
R-555.19	Golf	C	0.03[1]	101 French Broad Ln	71	62	9
R-555.20	Golf	C	0.03[1]	101 French Broad Ln	71	62	9
R-555.21	Golf	C	0.03[1]	101 French Broad Ln	71	62	9

Table D-61: Noise Barrier –NW25- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-555.22	Golf	C	0.03[1]	101 French Broad Ln	71	62	9
R-555.23	Golf	C	0.03[1]	101 French Broad Ln	70	61	9
R-555.24	Golf	C	0.03[1]	101 French Broad Ln	70	61	9
R-555.25	Golf	C	0.03[1]	101 French Broad Ln	71	62	9
R-555.26	Golf	C	0.03[1]	101 French Broad Ln	71	62	9
R-555.27	Golf	C	0.03[1]	101 French Broad Ln	69	64	5
R-555.28	Golf	C	0.03[1]	101 French Broad Ln	69	63	6
R-555.29	Golf	C	0.03[1]	101 French Broad Ln	69	63	6
R-555.30	Golf	C	0.03[1]	101 French Broad Ln	69	62	7
R-555.31	Golf	C	0.03[1]	101 French Broad Ln	69	62	7
R-555.32	Golf	C	0.03[1]	101 French Broad Ln	69	62	7
R-555.33	Golf	C	0.03[1]	101 French Broad Ln	69	61	8
R-555.34	Golf	C	0.03[1]	101 French Broad Ln	69	61	8
R-555.35	Golf	C	0.03[1]	101 French Broad Ln	69	61	8
R-555.36	Golf	C	0.03[1]	101 French Broad Ln	68	60	8
R-555.37	Golf	C	0.03[1]	101 French Broad Ln	68	60	8
R-555.38	Golf	C	0.03[1]	101 French Broad Ln	69	61	8
R-555.39	Golf	C	0.03[1]	101 French Broad Ln	69	61	8
R-555.40	Golf	C	0.03[1]	101 French Broad Ln	69	61	8
R-555.41	Golf	C	0.03[1]	101 French Broad Ln	67	62	5
R-555.42	Golf	C	0.03[1]	101 French Broad Ln	68	62	6
R-555.43	Golf	C	0.03[1]	101 French Broad Ln	67	62	5
R-555.44	Golf	C	0.03[1]	101 French Broad Ln	67	62	5
R-555.45	Golf	C	0.03[1]	101 French Broad Ln	67	61	6
R-555.46	Golf	C	0.03[1]	101 French Broad Ln	67	61	6
R-555.47	Golf	C	0.03[1]	101 French Broad Ln	67	61	6
R-555.48	Golf	C	0.03[1]	101 French Broad Ln	67	61	6
R-555.49	Golf	C	0.03[1]	101 French Broad Ln	67	60	7
R-555.50	Golf	C	0.03[1]	101 French Broad Ln	67	60	7
R-555.51	Golf	C	0.03[1]	101 French Broad Ln	67	60	7
R-555.52	Golf	C	0.03[1]	101 French Broad Ln	67	60	7
R-555.53	Golf	C	0.03[1]	101 French Broad Ln	67	60	7
R-555.54	Golf	C	0.03[1]	101 French Broad Ln	65	60	5
R-555.55	Golf	C	0.03[1]	101 French Broad Ln	65	59	6
R-555.56	Golf	C	0.03[1]	101 French Broad Ln	65	59	6
R-555.57	Golf	C	0.03[1]	101 French Broad Ln	65	59	6

Table D-61: Noise Barrier –NW25- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-555.58	Golf	C	0.03[1]	101 French Broad Ln	65	59	6
R-555.59	Golf	C	0.03[1]	101 French Broad Ln	65	59	6
R-555.60	Golf	C	0.03[1]	101 French Broad Ln	65	59	6
R-555.61	Golf	C	0.03[1]	101 French Broad Ln	64	58	6
R-555.62	Golf	C	0.03[1]	101 French Broad Ln	64	58	6
R-555.63	Golf	C	0.03[1]	101 French Broad Ln	63	58	5
R-555.64	Golf	C	0.03[1]	101 French Broad Ln	63	58	5
R-555.65	Golf	C	0.03[1]	101 French Broad Ln	63	58	5
Predicted "8-Lane" Widening Alternative With Barrier Benefits							2[2]

[1] Gof course was analyzed as a nodal array of receptors (2 equivalent residences represented by 65 nodes).

[2] Total benefits for golf course were rounded up to the nearest whole dB(A).

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW25 – 8-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 2 # BENEFITS - 2 NAC: A B (C) D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 16,920 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,570 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW26

Location: NW26 begins along the I-26 eastbound off-ramp to US 25 (Asheville Highway) edge of shoulder and continues approximately 1,080 feet to the southeast along Cuerton Place, ending prior to the Cuerton Place intersection with Asheville Highway. It provides abatement for residences on Cuerton Place and Alverson Lane.

Dimensions: Length = 1,080 ft., Avg. Height = 15 ft., Area = 15,840 ft^2
Impacts: 2
Benefits: 4
Area / Benefit: 3,960 ft^2.
Allowable Area / Benefit: 2,570 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 1
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-62: Noise Barrier –NW26- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-557	Res.	B	1	48 Cureton Pl	66	66	0
R-558	Res.	B	1	39 Cureton Pl	66	61	5
R-559	Res.	B	1	31 Cureton Pl	65	57	8
R-560	Res.	B	1	30 Alverson Ln	58	54	4
R-561	Res.	B	1	24 Alverson Ln	60	55	5
R-562	Res.	B	1	16 Alverson Dr	64	58	6
R-563	Res.	B	1	53 Alverson Ln	64	62	2
Predicted "8-Lane" Widening Alternative With Barrier Benefits							4

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening | TIP # - I-4400 / I-4700

LOCATION - NW26 – 8-Lane | COUNTY(IES) – Henderson and Buncombe

IMPACTS - 2 | # BENEFITS - 4 | NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 3,960 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,570 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.		sq.ft./cu.yd (CIRCLE ONE)	Bar No.		sq.ft./cu.yd (CIRCLE ONE)
Bar No.		sq.ft./cu.yd	Bar No.		sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of ____ sq.ft./cu.yd (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW27

Location: NW27 is located just south of Naples Road along I-26 eastbound edge of shoulder beginning at the Naples Road bridge and continuing approximately 5,280 feet to the southeast. It provides abatement for residences along Old Naples Road, Canterbury Way and Oak Meadow Lane.

Dimensions: Length = 5,280 ft., Avg. Height = 17 ft., Area = 92,220 ft^2
Impacts: 17
Benefits: 16
Area / Benefit: 5,764 ft^2.
Allowable Area / Benefit: 2,570 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 16
NLR ≥ 7dB(A) for Front Row Receptors: 8

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-63: Noise Barrier –NW27- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-566	Res.	B	1	83 Naples Glenn Trl	72	70	2
R-567	Res.	B	1	288 Old Naples Rd	68	62	6
R-568	Res.	B	1	284 Old Naples Rd	69	61	8
R-569	Res.	B	1	15 Canterbury Way	80	65	15
R-570	Res.	B	1	41 Canterbury Way	72	62	10
R-571	Res.	B	1	41 Canterbury Way 2	74	62	12
R-572	Res.	B	1	118 Canterbury Way	72	61	11
R-573	Res.	B	1	121 Canterbury Hill Ln	73	67	6
R-574	Res.	B	1	304 Canterbury Way	70	65	5
R-575	Res.	B	1	44 Canterbury Hill Ln	73	62	11
R-576	Res.	B	1	238 Canterbury Way	71	63	8
R-577	Res.	B	1	238 Canterbury Way 2	68	60	8
R-578	Res.	B	1	255 Canterbury Way	68	59	9
R-579	Res.	B	1	80 Oak Meadow Ln	70	59	11
R-580	Res.	B	1	73 Oak Meadow Ln	69	60	9
R-581	Res.	B	1	17 Sujo Trl	70	62	8
R-582	Res.	B	1	14 Sujo Trl	66	59	7
Predicted "8-Lane" Widening Alternative With Barrier Benefits							16
					Noise Level Impact		Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening | TIP # - I-4400 / I-4700

LOCATION - NW27 – 8-Lane | COUNTY(IES) – Henderson and Buncombe

IMPACTS - 17 | # BENEFITS - 16 | NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 5,764 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,570 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.		sq.ft./cu.yd (CIRCLE ONE)	Bar No.		sq.ft./cu.yd (CIRCLE ONE)
Bar No.		sq.ft./cu.yd	Bar No.		sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of	sq.ft./cu.yd (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW28

Location: NW28 begins near the weigh station between Naples Road and Brookside Camp Road along I-26 eastbound edge of shoulder and continues approximately 1,380 feet to the southeast, ending just north of the Brookside Camp Road bridge. It provides abatement for Champions Golf Learning Center.

Dimensions: Length = 1,380 ft., Avg. Height = 15 ft., Area = 21,180 ft^2
Impacts: 5
Benefits: 5
Area / Benefit: 4,236 ft^2.
Allowable Area / Benefit: 2,570 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 5
NLR ≥ 7dB(A) for Front Row Receptors: 3

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-64: Noise Barrier –NW28- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-583.01	Recreation	C	0.07[1]	485 Brookside Camp Rd	76	70	6
R-583.02	Recreation	C	0.07[1]	485 Brookside Camp Rd	74	65	9
R-583.03	Recreation	C	0.07[1]	485 Brookside Camp Rd	74	64	10
R-583.04	Recreation	C	0.07[1]	485 Brookside Camp Rd	74	64	10
R-583.05	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	64	6
R-583.06	Recreation	C	0.07[1]	485 Brookside Camp Rd	71	64	7
R-583.07	Recreation	C	0.07[1]	485 Brookside Camp Rd	72	63	9
R-583.08	Recreation	C	0.07[1]	485 Brookside Camp Rd	72	63	9
R-583.09	Recreation	C	0.07[1]	485 Brookside Camp Rd	68	63	5
R-583.10	Recreation	C	0.07[1]	485 Brookside Camp Rd	71	63	8
R-583.11	Recreation	C	0.07[1]	485 Brookside Camp Rd	71	63	8
R-583.12	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	63	7
R-583.13	Recreation	C	0.07[1]	485 Brookside Camp Rd	66	61	5
R-583.14	Recreation	C	0.07[1]	485 Brookside Camp Rd	69	62	7
R-583.15	Recreation	C	0.07[1]	485 Brookside Camp Rd	69	62	7
R-583.16	Recreation	C	0.07[1]	485 Brookside Camp Rd	73	63	10
R-583.17	Recreation	C	0.07[1]	485 Brookside Camp Rd	73	63	10
R-583.18	Recreation	C	0.07[1]	485 Brookside Camp Rd	73	63	10
R-583.19	Recreation	C	0.07[1]	485 Brookside Camp Rd	72	63	9
R-583.20	Recreation	C	0.07[1]	485 Brookside Camp Rd	72	63	9

Table D-64: Noise Barrier –NW28- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-583.21	Recreation	C	0.07[1]	485 Brookside Camp Rd	72	63	9
R-583.22	Recreation	C	0.07[1]	485 Brookside Camp Rd	72	63	9
R-583.23	Recreation	C	0.07[1]	485 Brookside Camp Rd	73	63	10
R-583.24	Recreation	C	0.07[1]	485 Brookside Camp Rd	72	63	9
R-583.25	Recreation	C	0.07[1]	485 Brookside Camp Rd	71	63	8
R-583.26	Recreation	C	0.07[1]	485 Brookside Camp Rd	71	63	8
R-583.27	Recreation	C	0.07[1]	485 Brookside Camp Rd	71	62	9
R-583.28	Recreation	C	0.07[1]	485 Brookside Camp Rd	71	62	9
R-583.29	Recreation	C	0.07[1]	485 Brookside Camp Rd	72	63	9
R-583.30	Recreation	C	0.07[1]	485 Brookside Camp Rd	71	63	8
R-583.31	Recreation	C	0.07[1]	485 Brookside Camp Rd	71	63	8
R-583.32	Recreation	C	0.07[1]	485 Brookside Camp Rd	72	63	9
R-583.33	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	62	8
R-583.34	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	62	8
R-583.35	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	62	8
R-583.36	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	62	8
R-583.37	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	62	8
R-583.38	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	62	8
R-583.39	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	62	8
R-583.40	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	62	8
R-583.41	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	62	8
R-583.42	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	63	7
R-583.43	Recreation	C	0.07[1]	485 Brookside Camp Rd	71	63	8
R-583.44	Recreation	C	0.07[1]	485 Brookside Camp Rd	69	61	8
R-583.45	Recreation	C	0.07[1]	485 Brookside Camp Rd	69	61	8
R-583.46	Recreation	C	0.07[1]	485 Brookside Camp Rd	69	61	8
R-583.47	Recreation	C	0.07[1]	485 Brookside Camp Rd	69	61	8
R-583.48	Recreation	C	0.07[1]	485 Brookside Camp Rd	69	62	7
R-583.49	Recreation	C	0.07[1]	485 Brookside Camp Rd	69	62	7
R-583.50	Recreation	C	0.07[1]	485 Brookside Camp Rd	69	62	7
R-583.51	Recreation	C	0.07[1]	485 Brookside Camp Rd	69	62	7
R-583.52	Recreation	C	0.07[1]	485 Brookside Camp Rd	69	63	6
R-583.53	Recreation	C	0.07[1]	485 Brookside Camp Rd	67	61	6
R-583.54	Recreation	C	0.07[1]	485 Brookside Camp Rd	67	61	6
R-583.55	Recreation	C	0.07[1]	485 Brookside Camp Rd	68	61	7
R-583.56	Recreation	C	0.07[1]	485 Brookside Camp Rd	68	61	7

Table D-64: Noise Barrier –NW28- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-583.57	Recreation	C	0.07[1]	485 Brookside Camp Rd	68	61	7
R-583.58	Recreation	C	0.07[1]	485 Brookside Camp Rd	68	62	6
R-583.59	Recreation	C	0.07[1]	485 Brookside Camp Rd	68	62	6
R-583.60	Recreation	C	0.07[1]	485 Brookside Camp Rd	68	62	6
R-583.61	Recreation	C	0.07[1]	485 Brookside Camp Rd	66	60	6
R-583.62	Recreation	C	0.07[1]	485 Brookside Camp Rd	66	61	5
R-583.63	Recreation	C	0.07[1]	485 Brookside Camp Rd	67	61	6
R-583.64	Recreation	C	0.07[1]	485 Brookside Camp Rd	67	61	6
R-583.65	Recreation	C	0.07[1]	485 Brookside Camp Rd	67	61	6
R-583.66	Recreation	C	0.07[1]	485 Brookside Camp Rd	65	60	5
R-583.67	Recreation	C	0.07[1]	485 Brookside Camp Rd	65	60	5
R-583.68	Recreation	C	0.07[1]	485 Brookside Camp Rd	66	60	6
R-583.69	Recreation	C	0.07[1]	485 Brookside Camp Rd	66	61	5
R-583.70	Recreation	C	0.07[1]	485 Brookside Camp Rd	65	60	5
R-583.71	Recreation	C	0.07[1]	485 Brookside Camp Rd	65	60	5
Predicted "8-Lane" Widening Alternative With Barrier Benefits							5[2]

[1] Recreation facility was analyzed as a nodal array of receptors (5 equivalent residences represented by 71 nodes).

[2] Total benefits for recreation facility were rounded up to the nearest whole dB(A).

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening — TIP # - I-4400 / I-4700

LOCATION - NW28 – 8-Lane — COUNTY(IES) – Henderson and Buncombe

IMPACTS - 5 # BENEFITS - 5 NAC: A B (C) D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 4,236 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,570 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.		sq.ft./cu.yd (CIRCLE ONE)	Bar No.		sq.ft./cu.yd (CIRCLE ONE)
Bar No.		sq.ft./cu.yd	Bar No.		sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of (sq.ft./cu.yd) (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan — Date: 3/20/2015

In Consultation With: Tracy Roberts — Date: 3/20/2015

NW29

Location: NW29 is located between Brookside Camp Road and Clear Creek Road along I-26 eastbound edge of shoulder near Alex Cove Drive. It provides abatement for residences along Hyder Farm Road and Alex Cove Drive.

Dimensions: Length = 1,860 ft., Avg. Height = 11 ft., Area = 19,680 ft^2
Impacts: 4
Benefits: 6
Area / Benefit: 3,280 ft^2.
Allowable Area / Benefit: 2,605 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 4
NLR ≥ 7dB(A) for Front Row Receptors: 2

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-65: Noise Barrier –NW29- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-586	Res.	B	1	619 Hyder Farm Rd	76	71	5
R-587	Res.	B	1	104 Alex Cove Dr	71	64	7
R-588	Res.	B	1	507 Hyder Farm Rd	71	64	7
R-589	Res.	B	1	110 Alex Cove Dr	63	58	5
R-590	Res.	B	1	114 Alex Cove Dr	60	55	5
R-591	Res.	B	1	307 Hyder Farm Rd	67	62	5
Predicted "8-Lane" Widening Alternative With Barrier Benefits							6
					Noise Level Impact		Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW29 – 8-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 4 # BENEFITS - 6 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 3,280 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,605 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.		sq.ft./cu.yd (CIRCLE ONE)	Bar No.		sq.ft./cu.yd (CIRCLE ONE)
Bar No.		sq.ft./cu.yd	Bar No.		sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of (sq.ft./cu.yd) (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW30

Location: NW30 is located along the I-26 eastbound off-ramp to US 64 westbound edge of shoulder. It provides abatement for residences along Lake Club Circle, Carolina Village Road and Lake Spur Drive.

Dimensions: Length = 1,320 ft., Avg. Height = 22 ft., Area = 28,500 ft^2
Impacts: 5
Benefits: 9
Area / Benefit: 3,167 ft^2.
Allowable Area / Benefit: 2,570 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 4
NLR ≥ 7dB(A) for Front Row Receptors: 3

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-66: Noise Barrier –NW30- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-622	Res.	B	1	10 Tanager Trail	53	52	1
R-623	Res.	B	1	14 Tanager Trail	50	48	2
R-624	Res.	B	1	12 Tanager Trail	49	46	3
R-625	Res.	B	1	24 White Quail Trail	56	53	3
R-626	Res.	B	1	22 White Quail Trail	60	56	4
R-627	Res.	B	1	20 White Quail Trail	58	56	2
R-628	Res.	B	1	21 White Quail Trail	61	56	5
R-629	Res.	B	1	23 White Quail Trail	59	53	6
R-630	Res.	B	1	25 White Quail Trail	50	48	2
R-631	Res.	B	1	418 Carolina Village Rd	74	63	11
R-632	Res.	B	1	30 Lake Spur Dr	51	47	4
R-633	Res.	B	1	34 Lake Spur Dr	52	48	4
R-634	Res.	B	1	32 Lake Spur Dr	50	48	2
R-635	Res.	B	1	38 Lake Spur Dr	55	50	5
R-636	Res.	B	1	36 Lake Spur Dr	58	53	5
R-637	Res.	B	1	40 Lake Spur Dr	54	51	3
R-638	Res.	B	1	35 Lake Spur Dr	63	55	8
R-639	Res.	B	1	37 Lake Spur Dr	68	61	7
R-640	Res.	B	1	39 Lake Spur Dr	67	62	5
R-641	Res.	B	1	348 Carolina Village Rd	75	70	5
R-642	Res.	B	1	346 Carolina Village Rd	72	71	1

Table D-66: Noise Barrier –NW30- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-643	Res.	B	1	108-A Lake Club Cir	52	48	4
R-644	Res.	B	1	108-B Lake Club Cir	53	50	3
R-645	Res.	B	1	108-C Lake Club Cir	53	50	3
R-646	Res.	B	1	108-D Lake Club Cir	54	51	3
R-647	Res.	B	1	108-E Lake Club Cir	55	51	4
R-648	Res.	B	1	108-F Lake Club Cir	56	53	3
R-649	Res.	B	1	103-F Lake Club Cir	48	48	0
R-650	Res.	B	1	103-E Lake Club Cir	48	48	0
R-651	Res.	B	1	103-D Lake Club Cir	48	48	0
R-652	Res.	B	1	103-C Lake Club Cir	48	48	0
R-653	Res.	B	1	103-B Lake Club Cir	48	48	0
R-654	Res.	B	1	103-A Lake Club Cir	51	49	2
R-655	Res.	B	1	45-D Lake Club Cir	52	51	1
R-656	Res.	B	1	45-C Lake Club Cir	51	50	1
R-657	Res.	B	1	45-B Lake Club Cir	51	50	1
R-658	Res.	B	1	45-A Lake Club Cir	50	49	1
R-659	Res.	B	1	62-A Lake Club Cir	55	54	1
R-660	Res.	B	1	62-B Lake Club Cir	53	52	1
R-661	Res.	B	1	62-C Lake Club Cir	53	52	1
R-662	Res.	B	1	62-D Lake Club Cir	54	53	1
R-663	Res.	B	1	30-A Lake Club Cir	54	54	0
R-664	Res.	B	1	30-B Lake Club Cir	54	54	0
R-665	Res.	B	1	30-C Lake Club Cir	54	54	0
R-666	Res.	B	1	30-D Lake Club Cir	55	55	0
Predicted "8-Lane" Widening Alternative With Barrier Benefits							9

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW30 – 8-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 5 # BENEFITS - 9 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 3,167 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,570 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.		sq.ft./cu.yd (CIRCLE ONE)	Bar No.		sq.ft./cu.yd (CIRCLE ONE)
Bar No.		sq.ft./cu.yd	Bar No.		sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of	sq.ft./cu.yd (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW31

Location: NW31 begins just south of Camp Pinewood between US 64 and Dana road along I-26 eastbound and continues approximately 2,520 feet to the southeast. It generally follows the top of a cut section but has one transition to edge of shoulder. It provides abatement for residences on West Prince Road and Fairbanks Lane, as well as a few residences accessible via Dana Road.

Dimensions: Length = 2,520 ft., Avg. Height = 20 ft., Area = 49,862 ft^2
Impacts: 9
Benefits: 19
Area / Benefit: 2,624 ft^2.
Allowable Area / Benefit: 2,570 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 9
NLR ≥ 7dB(A) for Front Row Receptors: 7

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-67: Noise Barrier –NW31- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-669	Res.	B	1	305 Prince Rd	75	64	11
R-670	Res.	B	1	77 Fairbanks Ln	74	62	12
R-671	Res.	B	1	69 Fairbanks Ln	67	60	7
R-672	Res.	B	1	47 Fairbanks Ln	61	56	5
R-673	Res.	B	1	317 Prince Rd	61	56	5
R-674	Res.	B	1	311 W Prince Rd	63	57	6
R-675	Res.	B	1	301 Prince Rd	63	58	5
R-676	Res.	B	1	323 Prince Rd	67	59	8
R-677	Res.	B	1	333 Prince Rd	75	62	13
R-678	Res.	B	1	324 Prince Rd	58	53	5
R-679	Res.	B	1	330 Prince Rd	65	57	8
R-680	Res.	B	1	334 Prince Rd	60	54	6
R-681	Res.	B	1	398 Prince Rd	59	53	6
R-682	Res.	B	1	341 Prince Rd	71	59	12
R-683	Res.	B	1	365 Prince Rd	69	59	10
R-684	Res.	B	1	373 Prince Rd	66	59	7
R-685	Res.	B	1	381 Prince Rd	65	58	7
R-686	Res.	B	1	655 Dana Rd	63	58	5
R-687	Res.	B	1	665 Dana Rd	80	71	9

Table D-67: Noise Barrier –NW31- Performance
Without Barrier and With Barrier Noise Levels
8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
Predicted "8-Lane" Widening Alternative With Barrier Benefits							19
					Noise Level Impact		Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW31 – 8-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 9 # BENEFITS - 19 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 2,624 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,570 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW32

Location: NW32 begins just south of the Dana Road bridge along I-26 eastbound edge of shoulder and transitions to the top of a cut section before returning to edge of shoulder. It continues approximately 3,300 feet and provides abatement for residences on Meadowlark Lane, Papa Joes Way and Orchard Park Road, as well as one residence accessible via Tracy Grove Road.

Dimensions: Length = 3,300 ft., Avg. Height = 25 ft., Area = 81,240 ft^2
Impacts: 16
Benefits: 37
Area / Benefit: 2,196 ft^2.
Allowable Area / Benefit: 2,605 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 15
NLR ≥ 7dB(A) for Front Row Receptors: 21

This noise wall does meet feasibility and reasonableness criteria.

Table D-68: Noise Barrier –NW32- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-688	Res.	B	1	102 Papa Joes Way	63	59	4
R-689	Res.	B	1	101 Papa Joes Way	69	60	9
R-690	Res.	B	1	102 Papa Joes Way 2	57	55	2
R-691	Res.	B	1	2 Meadowlark Ln	71	60	11
R-692	Res.	B	1	4 Meadowlark Ln	69	57	12
R-693	Res.	B	1	6 Meadowlark Ln	67	57	10
R-694	Res.	B	1	8 Meadowlark Ln	65	57	8
R-695	Res.	B	1	10 Meadowlark Ln	64	57	7
R-696	Res.	B	1	12 Meadowlark Ln	61	54	7
R-697	Res.	B	1	14 Meadowlark Ln	60	54	6
R-698	Res.	B	1	18 Meadowlark Ln	59	54	5
R-699	Res.	B	1	20 Meadowlark Ln	59	53	6
R-700	Res.	B	1	24 Meadowlark Ln	58	53	5
R-701	Res.	B	1	26 Meadowlark Ln	59	54	5
R-702	Res.	B	1	28 Meadowlark Ln	59	53	6
R-703	Res.	B	1	30 Meadowlark Ln	58	53	5
R-704	Res.	B	1	32 Meadowlark Ln	57	53	4
R-705	Res.	B	1	3 Meadowlark Ln	75	61	14
R-706	Res.	B	1	5 Meadowlark Ln	73	60	13
R-707	Res.	B	1	9 Meadowlark Ln	69	58	11

Table D-68: Noise Barrier –NW32- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-708	Res.	B	1	11 Meadowlark Ln	68	57	11
R-709	Res.	B	1	13 Meadowlark Ln	66	57	9
R-710	Res.	B	1	15 Meadowlark Ln	65	57	8
R-711	Res.	B	1	17 Meadowlark Ln	64	58	6
R-712	Res.	B	1	19 Meadowlark Ln	64	57	7
R-713	Res.	B	1	21 Meadowlark Ln	63	57	6
R-714	Res.	B	1	23 Meadowlark Ln	63	57	6
R-715	Res.	B	1	27 Meadowlark Ln	64	57	7
R-716	Res.	B	1	29 Meadowlark Ln	63	56	7
R-717	Res.	B	1	33 Meadowlark Ln	62	56	6
R-718	Res.	B	1	35 Meadowlark Ln	62	54	8
R-719	Res.	B	1	41 Meadowlark Ln	62	56	6
R-720	Res.	B	1	41 Meadowlark Ln 2	60	54	6
R-721	Res.	B	1	39 Meadowlark Ln	79	64	15
R-722	Res.	B	1	40 Meadowlark Ln	66	57	9
R-723	Res.	B	1	69 Orchard Park Rd	66	56	10
R-724	Res.	B	1	72 Orchard Park Rd	68	58	10
R-725	Res.	B	1	121 Friendship Ln	70	61	9
R-726	Res.	B	1	125 Friendship Ln	67	60	7
R-727	Res.	B	1	665 Tracy Grove Rd	65	60	5
R-728	Res.	B	1	701 Tracy Grove Rd	73	73	0
Predicted "8-Lane" Widening Alternative With Barrier Benefits							37

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW32 – 8-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 16 # BENEFITS - 37 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 2,196 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,605 (sq.ft.) / cu.yd.? (CIRCLE ONE)	X YES	NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	X YES	NO
3	Is the noise mitigation likely?	X YES	NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	X YES	NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.		sq.ft./cu.yd (CIRCLE ONE)	Bar No.		sq.ft./cu.yd (CIRCLE ONE)
Bar No.		sq.ft./cu.yd	Bar No.		sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of (sq.ft./cu.yd) (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW33

Location: NW33 begins approximately 200 feet south of the Tracy Grove Road bridge along I-26 eastbound edge of shoulder and continues approximately 4,860 feet to the southeast. It provides abatement for residences on South Allen Road, Carroll Oaks Drive, East New Hope Road and Merry Oaks Lane.

Dimensions: Length = 4,860 ft., Avg. Height = 19 ft., Area = 90,540 ft^2
Impacts: 12
Benefits: 22
Area / Benefit: 4,115 ft^2.
Allowable Area / Benefit: 2,605 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 12
NLR ≥ 7dB(A) for Front Row Receptors: 10

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-69: Noise Barrier –NW33- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-729	Res.	B	1	731 S Allen Rd	70	61	9
R-730	Res.	B	1	727 Allen Rd	69	60	9
R-731	Comm. Center	C	1	722 S Allen Rd	78	63	15
R-732	Res.	B	1	973 New Hope Rd	61	55	6
R-733	Res.	B	1	983 New Hope Rd	60	55	5
R-734	Res.	B	1	999 New Hope Rd	59	54	5
R-735	Res.	B	1	1075 New Hope Rd	59	53	6
R-736	Res.	B	1	1108 New Hope Rd	59	53	6
R-737	Res.	B	1	1103 New Hope Rd	57	52	5
R-738	Res.	B	1	87 Carroll Oaks Dr	58	53	5
R-739	Res.	B	1	73 Carroll Oaks Dr	59	53	6
R-740	Res.	B	1	45 Carroll Oaks Dr	56	52	4
R-741	Res.	B	1	25 Carroll Oaks Dr	62	56	6
R-742	Res.	B	1	11 Carroll Oaks Dr	67	59	8
R-743	Res.	B	1	713 Allen Rd	68	60	8
R-744	Res.	B	1	709 Allen Rd	66	59	7
R-745	Res.	B	1	695 Allen Rd	69	60	9
R-746	Res.	B	1	691 Allen Rd	71	60	11
R-747	Res.	B	1	677 Allen Rd	75	63	12
R-749	Res.	B	1	92 Merry Oaks Ln	72	63	9

Table D-69: Noise Barrier –NW33- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-750	Res.	B	1	87 Merry Oaks Ln	63	57	6
R-751	Res.	B	1	630 Allen Rd	68	62	6
R-752	Res.	B	1	600 Allen Rd	75	70	5
R-753	Res.	B	1	586 Allen Rd	60	59	1
Predicted "8-Lane" Widening Alternative With Barrier Benefits							22

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW33 – 8-Lane COUNTY(IES) – Henderson and Buncombe

IMPACTS - 12 # BENEFITS - 22 NAC: A (B) (C) D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 4,115 (CIRCLE ONE) (sq.ft./cu.yd) less than the maximum allowable design criteria per benefited receptor of 2,605 (CIRCLE ONE) (sq.ft.) / cu.yd.?	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ (CIRCLE ONE) sq.ft./cu.yd Bar No. _____ _____ (CIRCLE ONE) sq.ft./cu.yd

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ (CIRCLE ONE) sq.ft./cu.yd _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW34

Location: NW34 is located just north of the Crest Road bridge along I-26 eastbound edge of shoulder. It provides abatement for residences on Crest Road.

Dimensions: Length = 720 ft., Avg. Height = 14 ft., Area = 10,260 ft^2
Impacts: 1
Benefits: 1
Area / Benefit: 10,260 ft^2.
Allowable Area / Benefit: 2,500 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 1
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-70: Noise Barrier –NW34- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-754	Res.	B	1	536 Crest Rd	74	67	7
R-755	Res.	B	1	511 Crest Rd	64	64	0
Predicted "8-Lane" Widening Alternative With Barrier Benefits							1

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening | TIP # - I-4400 / I-4700

LOCATION - NW34 – 8-Lane | COUNTY(IES) – Henderson and Buncombe

IMPACTS - 1 | # BENEFITS - 1 | NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 10,260 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,500 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are: (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ (sq.ft./cu.yd) (CIRCLE ONE) YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW35

Location: NW35 is located along the I-26 eastbound off-ramp to US 25 southbound edge of shoulder. It provides abatement for residences on Hollyhock Court and Oak Grove Road.

Dimensions: Length = 1,380 ft., Avg. Height = 24 ft., Area = 33,600 ft^2
Impacts: 1
Benefits: 3
Area / Benefit: 11,200 ft^2.
Allowable Area / Benefit: 2,500 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 1
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-71: Noise Barrier –NW35- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-757	Res.	B	1	129 Hollyhock Ct	65	62	3
R-758	Res.	B	1	107 Hollyhock Ct	62	59	3
R-759	Res.	B	1	110 Hollyhock Ct	63	61	2
R-760	Res.	B	1	142 Hollyhock Ct	69	61	8
R-761	Res.	B	1	646 Oak Grove Rd	63	60	3
R-762	Res.	B	1	640 Oak Grove Rd	65	60	5
R-763	Res.	B	1	638 Oak Grove Rd	61	56	5
Predicted "8-Lane" Widening Alternative With Barrier Benefits							3

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening — TIP # - I-4400 / I-4700

LOCATION - NW35 – 8-Lane — COUNTY(IES) – Henderson and Buncombe

IMPACTS - 1 — # BENEFITS - 3 — NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 11,200 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,500 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.		sq.ft./cu.yd (CIRCLE ONE)	Bar No.		sq.ft./cu.yd (CIRCLE ONE)
Bar No.		sq.ft./cu.yd	Bar No.		sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of sq.ft./cu.yd (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan — Date: 3/20/2015

In Consultation With: Tracy Roberts — Date: 3/20/2015

NW36

Location: NW36 is located along I-26 westbound just south of the Blue Ridge Parkway bridge at the top of a cut section. It provides abatement for the Mountains-to-Sea Trail on the east side of I-26.

Dimensions: Length = 900 ft., Avg. Height = 25 ft., Area = 22,500 ft^2
Impacts: 3
Benefits: 0
Area / Benefit: N/A
Allowable Area / Benefit: 2,780 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 0
NLR ≥ 7dB(A) for Front Row Receptors: 0

This noise wall meets neither feasibility nor reasonableness criteria because a 5 dB(A) noise reduction could not be achieved for any receptor in the area.

Table D-72: Noise Barrier –NW36- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-485.01	Trail	C	0.3[1]	Mountains-to-Sea Trail (E)	57	57	0
R-485.02	Trail	C	0.3[1]	Mountains-to-Sea Trail (E)	59	59	0
R-485.03	Trail	C	0.3[1]	Mountains-to-Sea Trail (E)	64	64	0
R-485.04	Trail	C	0.3[1]	Mountains-to-Sea Trail (E)	**67**	**66**	1
R-485.05	Trail	C	0.3[1]	Mountains-to-Sea Trail (E)	**69**	**68**	1
R-485.06	Trail	C	0.3[1]	Mountains-to-Sea Trail (E)	**70**	**69**	1
R-485.07	Trail	C	0.3[1]	Mountains-to-Sea Trail (E)	**69**	**68**	1
R-485.08	Trail	C	0.3[1]	Mountains-to-Sea Trail (E)	**66**	**66**	0
R-485.09	Trail	C	0.3[1]	Mountains-to-Sea Trail (E)	**67**	**67**	0
R-485.10	Trail	C	0.3[1]	Mountains-to-Sea Trail (E)	**71**	**71**	0
Predicted "8-Lane" Widening Alternative With Barrier Benefits							0[2]

[1] Walking trail was analyzed as a nodal array of receptors (3 equivalent residences represented by 10 nodes).
[2] The NCDOT noise reduction design goal of 7 dB(A) could not be achieved for at least one benefited receptor to meet reasonableness criteria.

Noise Level Impact **Benefited Receptor**

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening | TIP # - I-4400 / I-4700

LOCATION - NW36 – 8-Lane | COUNTY(IES) – Henderson and Buncombe

IMPACTS - 3 | # BENEFITS - 0 | NAC: A B (C) D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:			
1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	___ YES	X NO
2	Does topography negatively affect the proposed abatement measure?	___ YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	___ YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	___ NO
B. REASONABLENESS:			
1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	___ YES	X NO
2	Is the design criteria per benefited receptor of N/A (CIRCLE ONE) (sq.ft./cu.yd) less than the maximum allowable design criteria per benefited receptor of ___ 2,780 (CIRCLE ONE) (sq.ft.) / cu.yd.?	___ YES	X NO
C. NOISE ABATEMENT DECISION:			
1	Is the noise mitigation feasible?	___ YES	X NO
2	Is the noise mitigation reasonable?	___ YES	X NO
3	Is the noise mitigation likely?	___ YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	___ YES	X NO
5	Is the noise mitigation recommended for construction?	___ YES	X NO
D. OPTIONAL REASONABLENESS CONSIDERATION:			
1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	___ YES	X NO
2	If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:		
	Bar No. ___ ___ (CIRCLE ONE) sq.ft./cu.yd Bar No. ___ ___ (CIRCLE ONE) sq.ft./cu.yd		
	Bar No. ___ ___ sq.ft./cu.yd Bar No. ___ ___ sq.ft./cu.yd		
3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of ___ (CIRCLE ONE) sq.ft./cu.yd	___ YES	___ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW37

Location: NW37 is located along I-26 eastbound just north of the Blue Ridge Parkway bridge at the top of a cut section. It provides abatement for the Mountains-to-Sea Trail on the west side of I-26.

Dimensions: Length = 1,200 ft., Avg. Height = 23 ft., Area = 27,480 ft^2
Impacts: 3
Benefits: 2
Area / Benefit: 13,740 ft^2.
Allowable Area / Benefit: 2,745 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 1
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-73: Noise Barrier –NW37- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-521.01	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	61	58	3
R-521.02	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	62	57	5
R-521.03	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	63	56	7
R-521.04	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	65	59	6
R-521.05	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	69	63	6
R-521.06	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	72	67	5
R-521.07	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	72	67	5
R-521.08	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	72	67	5
R-521.09	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	71	67	4
R-521.10	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	71	67	4
R-521.11	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	71	67	4
R-521.12	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	70	67	3
R-521.13	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	70	67	3
R-521.14	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	70	67	3
R-521.15	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	69	67	2
R-521.16	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	69	67	2
R-521.17	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	67	66	1

Table D-73: Noise Barrier –NW37- Performance Without Barrier and With Barrier Noise Levels 8-Lane Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
Predicted "8-Lane" Widening Alternative With Barrier Benefits							2[2]

[1] Walking trail was analyzed as a nodal array of receptors (3 equivalent residences represented by 17 nodes).

[2] Total benefits for walking trail were rounded up to the nearest whole dB(A).

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening — TIP # - I-4400 / I-4700

LOCATION - NW37 – 8-Lane — COUNTY(IES) – Henderson and Buncombe

IMPACTS - 3 # BENEFITS - 2 NAC: A B (C) D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 13,740 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,745 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

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6/8-Lane Hybrid Widening Alternative
Design Year 2040
Noise Barrier Analysis

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6/8-Lane Hybrid Widening Alternative

A total of 37 noise walls have been evaluated for the Hybrid Widening Alternative. Nine noise walls presently meet feasibility and reasonableness criteria including: NW5 and NW32 in NSA 2, NW9 and NW12 in NSA 3, NW14 and NW15 in NSA 4, NW16 and NW24 in NSA 5 and NW19 in NSA 6. The heights, lengths, areas, locations, noise level reductions, and benefits cited in this TNA represent a preliminary assessment of noise wall feasibility and reasonableness. A final decision on noise wall construction will be made following completion of the final design, public involvement process, and concurrence with NCDOT Policy and FHWA approval.

The summary of the evaluated noise walls is as follows:

NW1
Location: NW1 is located south of Crest Road along the shoulder of the I-26 westbound on-ramp from US 25 northbound and provides abatement for residences on Bennison Lane.

Dimensions: Length = 960 ft., Avg. Height = 22 ft., Area = 21,480 ft^2
Impacts: 3
Benefits: 2
Area / Benefit: 10,740 ft^2.
Allowable Area / Benefit: 2,570 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 2
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-74: Noise Barrier –NW1- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-02	Res.	B	1	79 Bennison Ln	68	66	2
R-03	Res.	B	1	107 Bennison Ln	69	62	7
R-04	Res.	B	1	96 Bennison Ln	65	62	3
R-05	Res.	B	1	106 Bennison Ln	71	66	5
Predicted "Hybrid" Widening Alternative With Barrier Benefits							2

Noise Level Impact

Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening | TIP # - I-4400 / I-4700

LOCATION - NW1 – 6/8-Lane Hybrid | COUNTY(IES) – Henderson and Buncombe

IMPACTS - 3 | # BENEFITS - 2 | NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 10,740 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,570 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW2

Location: NW2 is located just north of Crest Road along I-26 westbound beginning at the Crest Road bridge and continuing approximately 1,980 feet to the west, transitioning from the top of a cut section near Crest Road to edge of shoulder. It provides abatement for residences accessible via Crest Road.

Dimensions: Length = 1,980 ft., Avg. Height = 19 ft., Area = 37,620 ft^2
Impacts: 2
Benefits: 2
Area / Benefit: 18,810 ft^2.
Allowable Area / Benefit: 2,570 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 2
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-75: Noise Barrier –NW2- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-06	Res.	B	1	612 Crest Rd	68	62	6
R-07	Res.	B	1	620 Crest Rd	67	60	7
Predicted "Hybrid" Widening Alternative With Barrier Benefits							2

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening | TIP # - I-4400 / I-4700

LOCATION - NW2 – 6/8-Lane Hybrid | COUNTY(IES) – Henderson and Buncombe

IMPACTS - 2 | # BENEFITS - 2 | NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 18,810 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,570 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.	_____	_____ sq.ft./cu.yd (CIRCLE ONE)	Bar No.	_____	_____ sq.ft./cu.yd (CIRCLE ONE)
Bar No.	_____	_____ sq.ft./cu.yd	Bar No.	_____	_____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW3

Location: NW3 is located at the top of a cut section between Upward Road and Tracy Grove Road along I-26 westbound and provides abatement for residences accessible via McMurray Road.

Dimensions: Length = 1,140 ft., Avg. Height = 10 ft., Area = 11,580 ft^2
Impacts: 2
Benefits: 2
Area / Benefit: 5,790 ft^2.
Allowable Area / Benefit: 2,605 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 2
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-76: Noise Barrier –NW3- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-08	Res.	B	1	337 Mcmurray Rd	79	69	10
R-09	Res.	B	1	819 Mcmurray Rd	65	62	3
R-10	Res.	B	1	823 Mcmurray Rd	72	67	5
Predicted "Hybrid" Widening Alternative With Barrier Benefits							2
					Noise Level Impact		Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening | TIP # - I-4400 / I-4700

LOCATION - NW3 – 6/8-Lane Hybrid | COUNTY(IES) – Henderson and Buncombe

IMPACTS - 2 | # BENEFITS - 2 | NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 5.790 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,605 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW4

Location: NW4 begins approximately 2,160 feet south of Tracy Grove Road along I-26 westbound edge of shoulder and continues approximately 2,580 feet to the northwest with a small gap at the Tracy Grove Road bridge. It provides abatement for residences along Tracy Grove Road, Justus Acres Lane and Randolph Avenue.

Dimensions: Length = 2,580 ft., Avg. Height = 24 ft., Area = 61,080 ft^2
Impacts: 3
Benefits: 7
Area / Benefit: 8,726 ft^2.
Allowable Area / Benefit: 2,535 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 3
NLR ≥ 7dB(A) for Front Row Receptors: 6

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-77: Noise Barrier –NW4- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-11	Res.	B	1	35 Justus Acres Ln	63	56	7
R-12	Res.	B	1	28 Randolph Ave	63	56	7
R-13	Res.	B	1	30 Justus Acres Ln	65	58	7
R-14	Res.	B	1	19 Justus Acres Ln	66	59	7
R-15	Res.	B	1	818 Tracy Grove Rd	68	59	9
R-16	Res.	B	1	824 Tracy Grove Rd	65	60	5
R-17	Res.	B	1	821 Tracy Grove Rd	64	61	3
R-18	Res.	B	1	809 Mid Allen Rd	78	71	7
Predicted "Hybrid" Widening Alternative With Barrier Benefits							7

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening — TIP # - I-4400 / I-4700

LOCATION - NW4 – 6/8-Lane Hybrid — COUNTY(IES) – Henderson and Buncombe

IMPACTS - 3 # BENEFITS - 7 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 8,726 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,535 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW5

Location: NW5 begins between Tracy Grove Road and Dana Road along I-26 westbound and continues approximately 3,360 feet, transitioning from the edge of shoulder to the top of a cut section, and ending at the Dana Road bridge. It provides abatement for residences along Springside Drive, Willowbrook Road and Maywood Road.

Dimensions: Length = 3,360 ft., Avg. Height = 21 ft., Area = 70,685 ft^2
Impacts: 25
Benefits: 50
Area / Benefit: 1,414 ft^2.
Allowable Area / Benefit: 2,605 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 23
NLR ≥ 7dB(A) for Front Row Receptors: 20

This noise wall does meet feasibility and reasonableness criteria

Table D-78: Noise Barrier –NW5- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-19	Res.	B	1	837 Mid Allen Rd	66	64	2
R-20	Res.	B	1	282 Katie Dr	64	57	7
R-21	Res.	B	1	33 Springside Dr	64	55	9
R-22	Res.	B	1	31 Springside Dr	63	55	8
R-23	Res.	B	1	29 Springside Dr	61	54	7
R-24	Res.	B	1	27 Springside Dr	60	53	7
R-25	Res.	B	1	25 Springside Dr	58	53	5
R-26	Res.	B	1	16 Springside Dr	58	50	8
R-27	Res.	B	1	18 Springside Dr	59	50	9
R-28	Res.	B	1	20 Springside Dr	60	51	9
R-29	Res.	B	1	22 Springside Dr	61	51	10
R-30	Res.	B	1	24 Springside Dr	62	52	10
R-31	Res.	B	1	26 Springside Dr	63	53	10
R-32	Res.	B	1	28 Springside Dr	66	55	11
R-33	Res.	B	1	30 Springside Dr	67	56	11
R-34	Res.	B	1	32 Springside Dr	66	56	10
R-35	Res.	B	1	34 Springside Dr	64	55	9
R-36	Res.	B	1	36 Springside Dr	64	53	11
R-37	Res.	B	1	38 Springside Dr	63	53	10
R-38	Res.	B	1	40 Springside Dr	62	52	10
R-39	Res.	B	1	42 Springside Dr	61	50	11

Table D-78: Noise Barrier –NW5- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-40	Res.	B	1	44 Springside Dr	56	50	6
R-41	Res.	B	1	46 Springside Dr	55	53	2
R-42	Res.	B	1	43 Springside Dr	73	59	14
R-43	Res.	B	1	45 Springside Dr	74	59	15
R-44	Res.	B	1	47 Springside Dr	71	56	15
R-45	Res.	B	1	49 Springside Dr	69	57	12
R-46	Res.	B	1	152 Willowbrook Rd	68	55	13
R-47	Res.	B	1	150 Willowbrook Rd	72	62	10
R-48	Res.	B	1	148 Willowbrook Rd	76	62	14
R-49	Res.	B	1	146 Willowbrook Rd	76	62	14
R-50	Res.	B	1	144 Willowbrook Rd	74	62	12
R-51	Res.	B	1	142 Willowbrook Rd	72	62	10
R-52	Res.	B	1	138 Willowbrook Rd	70	62	8
R-53	Res.	B	1	134 Willowbrook Rd	71	62	9
R-54	Res.	B	1	130 Willowbrook Rd	74	62	12
R-55	Res.	B	1	126 Willowbrook Rd	75	60	15
R-56	Res.	B	1	122 Willowbrook Rd	76	60	16
R-57	Res.	B	1	118 Willowbrook Rd	77	61	16
R-58	Res.	B	1	114 Willowbrook Rd	75	63	12
R-59	Res.	B	1	110 Willowbrook Rd	75	64	11
R-60	Res.	B	1	106 Willowbrook Rd	76	64	12
R-61	Res.	B	1	102 Willowbrook Rd	76	66	10
R-62	Res.	B	1	59 Springside Dr	59	53	6
R-63	Res.	B	1	57 Springside Dr	50	48	2
R-64	Res.	B	1	55 Springside Dr	56	52	4
R-65	Res.	B	1	53 Springside Dr	64	56	8
R-66	Res.	B	1	147 Willowbrook Rd	63	58	5
R-67	Res.	B	1	145 Willowbrook Rd	63	58	5
R-68	Res.	B	1	131 Maywood Rd	60	56	4
R-69	Res.	B	1	127 Maywood Rd	55	53	2
R-70	Res.	B	1	123 Maywood Rd	54	51	3
R-71	Res.	B	1	119 Maywood Rd	55	53	2
R-72	Res.	B	1	116 Maywood Rd	53	49	4
R-73	Res.	B	1	120 Maywood Rd	47	45	2
R-74	Res.	B	1	124 Maywood Rd	50	47	3
R-75	Res.	B	1	133 Willowbrook Rd	59	53	6

Table D-78: Noise Barrier –NW5- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-76	Res.	B	1	129 Willowbrook Rd	61	54	7
R-77	Res.	B	1	121 Willowbrook Rd	62	54	8
R-78	Res.	B	1	117 Willowbrook Rd	65	57	8
R-79	Res.	B	1	113 Willowbrook Rd	64	59	5
R-80	Res.	B	1	109 Willowbrook Rd	65	62	3
R-81	Res.	B	1	105 Willowbrook Rd	67	65	2
R-82	Res.	B	1	710 Dana Rd	59	55	4
R-83	Res.	B	1	714 Dana Rd	57	55	2
R-84	Res.	B	1	703 Dana Rd	63	63	0
Predicted "Hybrid" Widening Alternative With Barrier Benefits							50

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW5 – 6/8-Lane Hybrid COUNTY(IES) – Henderson and Buncombe

IMPACTS - 25 # BENEFITS - 50 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 1,414 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,605 (sq.ft.) / cu.yd.? (CIRCLE ONE)	X YES	NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	X YES	NO
3	Is the noise mitigation likely?	X YES	NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	X YES	NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO
2	If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:		

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW6

Location: NW6 begins approximately 200 feet north of Dana Road along I-26 westbound and transitions from edge of shoulder to the top of a cut section, ending north of the East Prince Road dead end. It provides abatement to residences along East Prince Road, Lakeview Estate Drive and Wakefield Drive.

Dimensions: Length = 3,360 ft., Avg. Height = 20 ft., Area = 67,800 ft^2
Impacts: 14
Benefits: 23
Area / Benefit: 2,948 ft^2.
Allowable Area / Benefit: 2,605 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 14
NLR ≥ 7dB(A) for Front Row Receptors: 8

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-79: Noise Barrier –NW6- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-85	Res.	B	1	410 Lakeview Estate Rd	63	58	5
R-86	Res.	B	1	420 Lakeview Estate Rd	64	57	7
R-87	Res.	B	1	422 Lakeview Estate Rd	64	59	5
R-88	Res.	B	1	424 Lakeview Estate Rd	65	59	6
R-89	Res.	B	1	426 Lakeview Estate Rd	67	60	7
R-90	Res.	B	1	102 Wakefield Dr	64	59	5
R-91	Res.	B	1	99 Wakefield Dr	76	64	12
R-92	Res.	B	1	103 Wakefield Dr	72	60	12
R-93	Res.	B	1	419 Bird Haven Rd	70	61	9
R-94	Res.	B	1	417 Bird Haven Rd	66	60	6
R-95	Res.	B	1	414 Bird Haven Rd	61	57	4
R-96	Res.	B	1	416 Bird Haven Rd	60	57	3
R-97	Res.	B	1	25 Dove Valley Ln	60	57	3
R-98	Res.	B	1	23 Dove Valley Ln	60	56	4
R-99	Res.	B	1	425 Bird Haven Rd	71	60	11
R-100	Res.	B	1	81 Dove Valley Ln	64	58	6
R-101	Res.	B	1	420 Bird Haven Rd	68	61	7
R-102	Res.	B	1	424 Bird Haven Rd	69	62	7
R-103	Res.	B	1	411 Pine Hill Ln	68	63	5
R-104	Res.	B	1	508 Prince Rd	72	61	11

Table D-79: Noise Barrier –NW6- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-105	Res.	B	1	510 Prince Rd	68	59	9
R-106	Res.	B	1	520 Prince Rd	64	57	7
R-107	Res.	B	1	524 Prince Rd	62	56	6
R-108	Res.	B	1	527 Prince Rd	70	61	9
R-109	Res.	B	1	529 Prince Rd	66	59	7
R-110	Res.	B	1	533 Prince Rd	63	58	5
R-111	Res.	B	1	641 Prince Rd	71	65	6
Predicted "Hybrid" Widening Alternative With Barrier Benefits							23

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW6 – 6/8-Lane Hybrid COUNTY(IES) – Henderson and Buncombe

IMPACTS - 14 # BENEFITS - 23 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 2,948 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,605 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.		sq.ft./cu.yd (CIRCLE ONE)	Bar No.		sq.ft./cu.yd (CIRCLE ONE)
Bar No.		sq.ft./cu.yd	Bar No.		sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of (sq.ft./cu.yd) (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW7

Location: NW7 is located at the top of the cut section near Francis Road along the I-26 westbound on-ramp from US 64 westbound and provides abatement for residences along Francis Road.

Dimensions: Length = 1,140 ft., Avg. Height = 12 ft., Area = 13,320 ft^2
Impacts: 1
Benefits: 1
Area / Benefit: 13,320 ft^2.
Allowable Area / Benefit: 2,500 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 1
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-80: Noise Barrier –NW7- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-112	Res.	B	1	54 Francis Rd	69	62	7
R-113	Res.	B	1	68 Francis Rd	63	61	2
R-114	Res.	B	1	76 Francis Rd	65	64	1
R-115	Res.	B	1	82 Francis Rd	63	63	0
Predicted "Hybrid" Widening Alternative With Barrier Benefits							1

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening — TIP # - I-4400 / I-4700

LOCATION - NW7 – 6/8-Lane Hybrid — COUNTY(IES) – Henderson and Buncombe

IMPACTS - 1 # BENEFITS - 1 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A.	**FEASIBILITY:**			
1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES		NO
2	Does topography negatively affect the proposed abatement measure?	YES	X	NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X	NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES		NO
B.	**REASONABLENESS:**			
1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES		NO
2	Is the design criteria per benefited receptor of 13,320 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,500 (sq.ft./cu.yd) (CIRCLE ONE)?	YES	X	NO
C.	**NOISE ABATEMENT DECISION:**			
1	Is the noise mitigation feasible?	X YES		NO
2	Is the noise mitigation reasonable?	YES	X	NO
3	Is the noise mitigation likely?	YES	X	NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X	NO
5	Is the noise mitigation recommended for construction?	YES	X	NO
D.	**OPTIONAL REASONABLENESS CONSIDERATION:**			
1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X	NO
2	If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:			
	Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)			
	Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd			
3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE)	YES		NO

Form Completed By: Trey Jordan — Date: 3/20/2015

In Consultation With: Tracy Roberts — Date: 3/20/2015

NW8

Location: NW8 begins just north of the Clear Creek Road bridge along I-26 westbound and continues approximately 2,040 feet to the northwest, transitioning from edge of shoulder to the top of a cut section. It provides abatement for residences along Clear Creek Road.

Dimensions: Length = 2,040 ft., Avg. Height = 14 ft., Area = 27,960 ft^2
Impacts: 5
Benefits: 5
Area / Benefit: 5,592 ft^2.
Allowable Area / Benefit: 2,535 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 5
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-81: Noise Barrier –NW8- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-125	Res.	B	1	1713 Clear Creek Rd	71	66	5
R-126	Res.	B	1	1733 Clear Creek Rd	72	64	8
R-127	Res.	B	1	1803 Clear Creek Rd	75	70	5
R-128	Res.	B	1	1845 Clear Creek Rd	72	67	5
R-129	Res.	B	1	1959 Clear Creek Rd	66	61	5
R-130	Res.	B	1	1982 Clear Creek Rd	65	64	1
Predicted "Hybrid" Widening Alternative With Barrier Benefits							5

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW8 – 6/8-Lane Hybrid COUNTY(IES) – Henderson and Buncombe

IMPACTS - 5 # BENEFITS - 5 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 5,592 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,535 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW9

Location: NW9 begins south of Hart Lane along I-26 westbound and continues nearly two miles to the northwest, with a small gap at the Brookside Camp Road bridge, before ending north of West Acorn Drive. It generally follows the edge of shoulder but has a few transitions to the top of cut sections, including one at the weigh station located near Sheneman Drive. It provides abatement for residences along all of the intervening local roads.

Dimensions: Length = 10,260 ft., Avg. Height = 22 ft., Area = 226,795 ft^2
Impacts: 70
Benefits: 116
Area / Benefit: 1,955 ft^2.
Allowable Area / Benefit: 2,570 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 61
NLR ≥ 7dB(A) for Front Row Receptors: 37

This noise wall does meet feasibility and reasonableness criteria.

Table D-82: Noise Barrier -NW9- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-131	Res.	B	1	170 Hart Ln	69	57	12
R-132	Res.	B	1	32 Hart Ln	72	58	14
R-133	Res.	B	1	28 Hart Ln	72	59	13
R-134	Res.	B	1	22 Hart Ln	72	59	13
R-135	Res.	B	1	39 Keeneland Dr	67	55	12
R-136	Res.	B	1	23 Keeneland Dr	65	54	11
R-137	Res.	B	1	20 Keeneland Dr	69	57	12
R-138	Res.	B	1	171 Keeneland Dr	69	56	13
R-139	Res.	B	1	195 Kingswood Dr	69	58	11
R-140	Res.	B	1	10 Hart Ln	75	65	10
R-141	Res.	B	1	223 Kingswood Dr	68	58	10
R-142	Res.	B	1	192 Kingswood Dr	63	55	8
R-143	Res.	B	1	216 Kingswood Dr	65	57	8
R-144	Res.	B	1	240 Kingswood Dr	65	59	6
R-145	Res.	B	1	262 Kingswood Dr	64	59	5
R-146	Res.	B	1	282 Kingswood Dr	65	61	4
R-147	Res.	B	1	261 Kingswood Dr	68	61	7
R-148	Res.	B	1	275 Kingswood Dr	66	61	5
R-149	Res.	B	1	283 Kingswood Dr	68	65	3

Table D-82: Noise Barrier -NW9- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-150	Res.	B	1	339 Kingswood Dr	68	66	2
R-151	Res.	B	1	299 Kingswood Dr	68	66	2
R-152	Res.	B	1	345 Kingswood Dr	70	67	3
R-153	Res.	B	1	134 Wendy Ln	60	53	7
R-154	Res.	B	1	138 Wendy Ln	65	58	7
R-155	Res.	B	1	142 Wendy Ln	74	68	6
R-156	Res.	B	1	146 Wendy Ln	74	67	7
R-157	Res.	B	1	150 Wendy Ln	76	70	6
R-158	Res.	B	1	154 Wendy Ln	78	67	11
R-159	Res.	B	1	149 Wendy Ln	64	60	4
R-160	Res.	B	1	151 Wendy Ln	70	66	4
R-161	Res.	B	1	153 Wendy Ln	69	63	6
R-162	Res.	B	1	155 Wendy Ln	66	61	5
R-163	Res.	B	1	157 Wendy Ln	70	64	6
R-164	Res.	B	1	132 Shelly Dr	54	50	4
R-165	Res.	B	1	142 Shelly Dr	52	50	2
R-166	Res.	B	1	144 Shelly Dr	52	50	2
R-167	Res.	B	1	160 Wendy Ln	77	65	12
R-168	Res.	B	1	2026 Howard Gap Rd	67	61	6
R-169	Res.	B	1	2020 Howard Gap Rd	68	60	8
R-170	Res.	B	1	335 Carolina Cir	78	62	16
R-171	Res.	B	1	315 Carolina Cir	72	58	14
R-172	Res.	B	1	289 Carolina Cir	67	55	12
R-173	Res.	B	1	257 Carolina Cir	59	51	8
R-174	Res.	B	1	251 Carolina Cir	58	51	7
R-175	Res.	B	1	223 Carolina Cir	59	52	7
R-176	Res.	B	1	205 Carolina Cir	59	52	7
R-177	Res.	B	1	185 Carolina Cir	58	52	6
R-178	Res.	B	1	165 Carolina Cir	58	52	6
R-179	Res.	B	1	145 Carolina Cir	60	54	6
R-180	Res.	B	1	125 Carolina Cir	62	56	6
R-181	Res.	B	1	113 Carolina Cir	62	57	5
R-182	Res.	B	1	93 Carolina Cir	61	56	5
R-183	Res.	B	1	73 Carolina Cir	61	56	5
R-184	Res.	B	1	55 Carolina Cir	60	56	4
R-185	Res.	B	1	35 Carolina Cir	60	57	3

Table D-82: Noise Barrier -NW9- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-186	Res.	B	1	512 Brookside Camp Rd	64	63	1
R-187	Res.	B	1	270 Carolina Cir	65	55	10
R-188	Res.	B	1	254 Carolina Cir	64	55	9
R-189	Res.	B	1	226 Carolina Cir	65	56	9
R-190	Res.	B	1	212 Carolina Cir	61	53	8
R-191	Res.	B	1	192 Carolina Cir	63	54	9
R-192	Res.	B	1	172 Carolina Cir	62	54	8
R-193	Res.	B	1	152 Carolina Cir	62	54	8
R-194	Res.	B	1	132 Carolina Cir	63	55	8
R-195	Res.	B	1	112 Carolina Cir	61	54	7
R-196	Res.	B	1	100 Carolina Cir	60	55	5
R-197	Res.	B	1	74 Carolina Cir	58	53	5
R-198	Res.	B	1	60 Carolina Cir	62	57	5
R-199	Res.	B	1	42 Carolina Cir	64	61	3
R-200	Res.	B	1	322 Carolina Cir	75	60	15
R-201	Res.	B	1	374 Carolina Cir	74	60	14
R-202	Res.	B	1	380 Carolina Cir	73	59	14
R-203	Res.	B	1	210 Carolina Cir	69	58	11
R-204	Res.	B	1	426 Carolina Cir	70	59	11
R-205	Res.	B	1	446 Carolina Cir	68	57	11
R-206	Res.	B	1	518 Carolina Cir	65	56	9
R-207	Res.	B	1	536 Carolina Cir	65	57	8
R-208	Res.	B	1	556 Carolina Cir	64	59	5
R-209	Res.	B	1	576 Carolina Cir	66	62	4
R-210	Res.	B	1	464 Carolina Cir	71	60	11
R-211	Res.	B	1	472 Carolina Cir	76	62	14
R-212	Res.	B	1	505 Carolina Cir	77	62	15
R-213	Res.	B	1	537 Carolina Cir	77	62	15
R-214	Res.	B	1	557 Carolina Cir	76	62	14
R-215	Res.	B	1	202 Kimberly Ann Dr	74	63	11
R-216	Res.	B	1	206 Dundeve Cir	74	62	12
R-217	Res.	B	1	208 Dundeve Cir	75	63	12
R-218	Res.	B	1	212 Dundeve Cir	76	65	11
R-219	Res.	B	1	216 Dundeve Cir	75	63	12
R-220	Res.	B	1	505 Brookside Camp Rd	67	63	4
R-221	Res.	B	1	509 Brookside Camp Rd	61	58	3

Table D-82: Noise Barrier -NW9- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-222	Res.	B	1	203 Kimberly Ann Dr	64	57	7
R-223	Res.	B	1	207 Kimberly Ann Dr	63	56	7
R-224	Res.	B	1	211 Kimberly Ann Dr	62	55	7
R-225	Res.	B	1	217 Kimberly Ann Dr	62	56	6
R-226	Res.	B	1	206 Kimberly Ann Dr	66	58	8
R-227	Res.	B	1	209 Dundeve Cir	68	59	9
R-228	Res.	B	1	213 Dundeve Cir	64	55	9
R-229	Res.	B	1	237 Dundeve Cir	57	51	6
R-230	Res.	B	1	224 Dundeve Cir	71	59	12
R-231	Res.	B	1	228 Dundeve Cir	66	55	11
R-232	Res.	B	1	232 Dundeve Cir	62	52	10
R-233	Res.	B	1	236 Dundeve Cir	59	51	8
R-234	Res.	B	1	201 Sheneman Dr	71	59	12
R-235	Res.	B	1	213 Sheneman Dr	63	54	9
R-236	Res.	B	1	217 Sheneman Dr	60	53	7
R-237	Res.	B	1	204 Sheneman Dr	74	62	12
R-238	Res.	B	1	212 Sheneman Dr	67	59	8
R-239	Res.	B	1	214 Sheneman Dr	62	57	5
R-240	Res.	B	1	300 Whispering Hills Dr	61	56	5
R-241	Res.	B	1	312 Whispering Hills Dr	70	66	4
R-242	Res.	B	1	319 Whispering Hills Dr	63	60	3
R-243	Res.	B	1	325 Whispering Hills Dr	64	59	5
R-244	Res.	B	1	329 Whispering Hills Dr	64	58	6
R-245	Res.	B	1	318 Whispering Hills Dr	69	65	4
R-246	Res.	B	1	320 Whispering Hills Dr	71	66	5
R-247	Res.	B	1	324 Whispering Hills Dr	71	62	9
R-248	Res.	B	1	326 Whispering Hills Dr	67	59	8
R-249	Res.	B	1	328 Whispering Hills Dr	65	57	8
R-250	Res.	B	1	330 Whispering Hills Dr	62	55	7
R-251	Res.	B	1	336 Whispering Hills Dr	61	54	7
R-252	Res.	B	1	185 Acorn Dr	77	61	16
R-253	Res.	B	1	120 Acorn Dr	72	57	15
R-254	Res.	B	1	112 Acorn Dr	68	56	12
R-255	Res.	B	1	108 Acorn Dr	65	56	9
R-256	Res.	B	1	40 Acorn Dr	65	55	10
R-257	Res.	B	1	181 Acorn Dr	77	62	15

Table D-82: Noise Barrier -NW9- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-258	Res.	B	1	119 Acorn Dr	74	60	14
R-259	Res.	B	1	115 Acorn Dr	72	59	13
R-260	Res.	B	1	105 W Acorn Dr	69	57	12
R-261	Res.	B	1	131 W Acorn Dr	72	60	12
R-262	Res.	B	1	188 W Acorn Dr	71	62	9
R-263	Res.	B	1	188 W Acorn Dr 2	69	63	6
R-264	Res.	B	1	107 Acorn Dr	65	57	8
R-265	Res.	B	1	45 Acorn Dr	62	53	9
R-266	Res.	B	1	402 Silver Loop Dr	62	56	6
Predicted " Hybrid " Widening Alternative With Barrier Benefits							116

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening

TIP # - I-4400 / I-4700

LOCATION - NW9 – 6/8-Lane Hybrid

COUNTY(IES) – Henderson and Buncombe

IMPACTS - 70 # BENEFITS - 116 NAC: A (B) C D E F G

(CIRCLE ALL THAT APPLY)

A. FEASIBILITY:			
1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO
B. REASONABLENESS:			
1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 1,955 (sq.ft./cu.yd) less than the maximum allowable design criteria per benefited receptor of 2,570 (sq.ft.) / cu.yd.?	X YES	NO
C. NOISE ABATEMENT DECISION:			
1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	X YES	NO
3	Is the noise mitigation likely?	X YES	NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	X YES	NO
D. OPTIONAL REASONABLENESS CONSIDERATION:			
1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO
2	If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:		
	Bar No. _____ _____ (CIRCLE ONE) sq.ft./cu.yd	Bar No. _____ _____ (CIRCLE ONE) sq.ft./cu.yd	
	Bar No. _____ _____ sq.ft./cu.yd	Bar No. _____ _____ sq.ft./cu.yd	
3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ (CIRCLE ONE) sq.ft./cu.yd	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW10

Location: NW10 is located between Brookside Camp Road and Naples Road at the top of a cut section along I-26 westbound. It provides abatement for the Park Ridge Health walking trail, as well as a residence on PJ's Place.

Dimensions: Length = 2,340 ft., Avg. Height = 19 ft., Area = 43,920 ft^2
Impacts: 6
Benefits: 5
Area / Benefit: 8,784 ft^2.
Allowable Area / Benefit: 2,640 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 5
NLR ≥ 7dB(A) for Front Row Receptors: 3

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-83: Noise Barrier –NW10- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-267	Res.	B	1	276 Pjs Pl	68	63	5
R-268.01	Trail	C	0.12[1]	100 Hospital Dr	57	55	2
R-268.02	Trail	C	0.12[1]	100 Hospital Dr	58	55	3
R-268.03	Trail	C	0.12[1]	100 Hospital Dr	59	56	3
R-268.04	Trail	C	0.12[1]	100 Hospital Dr	61	57	4
R-268.05	Trail	C	0.12[1]	100 Hospital Dr	62	58	4
R-268.06	Trail	C	0.12[1]	100 Hospital Dr	64	60	4
R-268.07	Trail	C	0.12[1]	100 Hospital Dr	66	61	5
R-268.08	Trail	C	0.12[1]	100 Hospital Dr	68	62	6
R-268.09	Trail	C	0.12[1]	100 Hospital Dr	69	63	6
R-268.10	Trail	C	0.12[1]	100 Hospital Dr	72	64	8
R-268.11	Trail	C	0.12[1]	100 Hospital Dr	75	65	10
R-268.12	Trail	C	0.12[1]	100 Hospital Dr	77	65	12
R-268.13	Trail	C	0.12[1]	100 Hospital Dr	78	64	14
R-268.14	Trail	C	0.12[1]	100 Hospital Dr	78	63	15
R-268.15	Trail	C	0.12[1]	100 Hospital Dr	79	63	16
R-268.16	Trail	C	0.12[1]	100 Hospital Dr	80	62	18
R-268.17	Trail	C	0.12[1]	100 Hospital Dr	80	62	18
R-268.18	Trail	C	0.12[1]	100 Hospital Dr	79	61	18
R-268.19	Trail	C	0.12[1]	100 Hospital Dr	80	61	19
R-268.20	Trail	C	0.12[1]	100 Hospital Dr	80	61	19

Table D-83: Noise Barrier –NW10- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-268.21	Trail	C	0.12[1]	100 Hospital Dr	80	61	19
R-268.22	Trail	C	0.12[1]	100 Hospital Dr	79	62	17
R-268.23	Trail	C	0.12[1]	100 Hospital Dr	79	61	18
R-268.24	Trail	C	0.12[1]	100 Hospital Dr	79	61	18
R-268.25	Trail	C	0.12[1]	100 Hospital Dr	78	62	16
R-268.26	Trail	C	0.12[1]	100 Hospital Dr	76	64	12
R-268.27	Trail	C	0.12[1]	100 Hospital Dr	75	66	9
R-268.28	Trail	C	0.12[1]	100 Hospital Dr	74	68	6
R-268.29	Trail	C	0.12[1]	100 Hospital Dr	74	69	5
R-268.30	Trail	C	0.12[1]	100 Hospital Dr	74	69	5
R-268.31	Trail	C	0.12[1]	100 Hospital Dr	73	67	6
R-268.32	Trail	C	0.12[1]	100 Hospital Dr	72	66	6
R-268.33	Trail	C	0.12[1]	100 Hospital Dr	71	65	6
R-268.34	Trail	C	0.12[1]	100 Hospital Dr	69	64	5
R-268.35	Trail	C	0.12[1]	100 Hospital Dr	68	64	4
R-268.36	Trail	C	0.12[1]	100 Hospital Dr	67	64	3
R-268.37	Trail	C	0.12[1]	100 Hospital Dr	66	63	3
R-268.38	Trail	C	0.12[1]	100 Hospital Dr	65	64	1
R-268.39	Trail	C	0.12[1]	100 Hospital Dr	66	64	2
R-268.40	Trail	C	0.12[1]	100 Hospital Dr	66	66	0
R-268.41	Trail	C	0.12[1]	100 Hospital Dr	67	67	0
Predicted " Hybrid " Widening Alternative With Barrier Benefits							5[2]

[1] Walking trail was analyzed as a nodal array of receptors (5 equivalent residences represented by 41 nodes).

[2] Total benefits for walking trail were rounded up to the nearest whole dB(A).

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW10 – 6/8-Lane Hybrid COUNTY(IES) – Henderson and Buncombe

IMPACTS - 6 # BENEFITS - 5 NAC: A (B) (C) D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 8,784 (CIRCLE ONE) (sq.ft.) cu.yd less than the maximum allowable design criteria per benefited receptor of 2,640 (CIRCLE ONE) (sq.ft.) cu.yd.?	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.		sq.ft./cu.yd (CIRCLE ONE)	Bar No.		sq.ft./cu.yd (CIRCLE ONE)
Bar No.		sq.ft./cu.yd	Bar No.		sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of (CIRCLE ONE) sq.ft./cu.yd	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW11

Location: NW11 begins south of the Naples Road bridge along I-26 westbound at the top of a cut section near Naples road. At the Naples Road bridge, it transitions to the edge of shoulder and continues along I-26 westbound for another 1,020 feet to the northwest. It provides abatement for residences along Sunset Vista Road and Twin Springs Road.

Dimensions: Length = 2,940 ft., Avg. Height = 20 ft., Area = 56,940 ft^2
Impacts: 11
Benefits: 10
Area / Benefit: 5,694 ft^2.
Allowable Area / Benefit: 2,570 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 9
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-84: Noise Barrier –NW11- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-277	Res.	B	1	18 Sunset Vista Rd	75	69	6
R-278	Res.	B	1	46 Sunset Vista Rd	68	60	8
R-279	Res.	B	1	72 Sunset Vista Rd	66	61	5
R-280	Res.	B	1	108 Sunset Vista Rd	66	61	5
R-281	Res.	B	1	126 Sunset Vista Rd	65	60	5
R-282	Res.	B	1	25 Sunset Vista Rd	72	66	6
R-283	Res.	B	1	91 Sunset Vista Rd	72	66	6
R-284	Res.	B	1	145 Sunset Vista Rd	70	64	6
R-285	Res.	B	1	67 Holly Oak Dr	62	59	3
R-286	Res.	B	1	67 Holly Oak Dr 2	60	58	2
R-287	Res.	B	1	25 Holly Oak Dr	74	69	5
R-288	Res.	B	1	104 Twin Springs Rd	72	67	5
R-289	Res.	B	1	118 Twin Springs Rd	68	65	3
R-290	Res.	B	1	146 Twin Springs Rd	68	66	2
Predicted "Hybrid" Widening Alternative With Barrier Benefits							10
					Noise Level Impact		**Benefited Receptor**

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening — TIP # - I-4400 / I-4700

LOCATION - NW11 – 6/8-Lane Hybrid — COUNTY(IES) – Henderson and Buncombe

IMPACTS - 11 # BENEFITS - 10 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 5,694 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,570 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.		sq.ft./cu.yd (CIRCLE ONE)	Bar No.		sq.ft./cu.yd (CIRCLE ONE)
Bar No.		sq.ft./cu.yd	Bar No.		sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of (sq.ft./cu.yd) (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan — Date: 3/20/2015

In Consultation With: Tracy Roberts — Date: 3/20/2015

NW12

Location: NW12 is located along the I-26 westbound off-ramp to US 25 (Asheville Highway) beginning near the westbound bridge over railroad tracks and continuing along the edge of shoulder approximately 1,560 feet to the northwest. The portion of this wall along the bridge over railroad tracks is on structure. It provides abatement for residences on Old Hendersonville Road, November Lane and Hickory Flats Drive.

Dimensions: Length = 1,560 ft., Avg. Height = 15 ft., Area = 22,620 ft^2
Impacts: 11
Benefits: 19
Area / Benefit: 1,191 ft^2.
Allowable Area / Benefit: 2,605 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 10
NLR ≥ 7dB(A) for Front Row Receptors: 6

This noise wall does meet feasibility and reasonableness criteria.

Table D-85: Noise Barrier –NW12- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-291	Res.	B	1	521 Old Hendersonville Rd	70	64	6
R-292	Res.	B	1	525 Old Hendersonville Rd	70	62	8
R-293	Res.	B	1	20 Pleasant Row Dr	67	58	9
R-294	Res.	B	1	15 Pleasant Row Dr	65	57	8
R-295	Res.	B	1	45 Pleasant Row Dr	65	57	8
R-296	Res.	B	1	526 Old Hendersonville Rd	67	59	8
R-297	Res.	B	1	522 Old Hendersonville Rd	67	58	9
R-298	Res.	B	1	19 November Ln	67	58	9
R-299	Res.	B	1	39 November Ln	66	58	8
R-300	Res.	B	1	37 November Ln	67	58	9
R-301	Res.	B	1	65 November Ln	67	59	8
R-302	Res.	B	1	244 Hickory Flats Dr	69	62	7
R-303	Res.	B	1	146 Hickory Flats Dr	65	60	5
R-304	Res.	B	1	60 November Ln	65	58	7
R-305	Res.	B	1	42 November Ln	63	56	7
R-306	Res.	B	1	434 Old Hendersonville Rd	64	57	7
R-307	Res.	B	1	211 Hickory Flats Dr	64	56	8
R-308	Res.	B	1	97 Hickory Flats Dr	64	56	8
R-309	Res.	B	1	71 Hickory Flats Dr	63	58	5

Table D-85: Noise Barrier –NW12- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-310	Res.	B	1	54 Hickory Flats Dr	63	60	3
R-311	Res.	B	1	143 Maxwell Dr	**69**	**69**	0
R-312	Res.	B	1	109 Maxwell Dr	64	64	0
Predicted "Hybrid" Widening Alternative With Barrier Benefits							19

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW12 – 6/8-Lane Hybrid COUNTY(IES) – Henderson and Buncombe

IMPACTS - 11 # BENEFITS - 19 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A.	**FEASIBILITY:**							
1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X	YES					NO
2	Does topography negatively affect the proposed abatement measure?		YES				X	NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?		YES				X	NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X	YES					NO
B.	**REASONABLENESS:**							
1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X	YES					NO
2	Is the design criteria per benefited receptor of 1,191 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,605 (sq.ft.) / cu.yd.? (CIRCLE ONE)	X	YES					NO
C.	**NOISE ABATEMENT DECISION:**							
1	Is the noise mitigation feasible?	X	YES					NO
2	Is the noise mitigation reasonable?	X	YES					NO
3	Is the noise mitigation likely?	X	YES					NO
4	Have the owners' and residents' viewpoints been solicited?		YES				X	NO
5	Is the noise mitigation recommended for construction?	X	YES					NO
D.	**OPTIONAL REASONABLENESS CONSIDERATION:**							
1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?		YES				X	NO
2	If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:							
	Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)			Bar No. _____		_____ sq.ft./cu.yd (CIRCLE ONE)		
	Bar No. _____ _____ sq.ft./cu.yd			Bar No. _____		_____ sq.ft./cu.yd		
3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE)		YES					NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW13

Location: NW13 is located between US 25 (Asheville Highway) and Butler Bridge Road at the top of a cut section along I-26 westbound beginning near the I-26 westbound on-ramp from US 25 (Asheville Highway) and continuing approximately 1,380 feet to the northwest. It provides abatement for residences on Halliburton Road, Kennerly Drive and Dawley Drive.

Dimensions: Length = 1,380 ft., Avg. Height = 18 ft., Area = 24,600 ft^2
Impacts: 8
Benefits: 3
Area / Benefit: 8,200 ft^2.
Allowable Area / Benefit: 2,640 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 3
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-86: Noise Barrier –NW13- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-313	Res.	B	1	123 Halliburton Rd	77	72	5
R-314	Res.	B	1	118 Halliburton Rd	68	66	2
R-315	Res.	B	1	124 Halliburton Rd	68	66	2
R-316	Res.	B	1	54 Dawley Dr	66	64	2
R-317	Res.	B	1	46 Dawley Dr	68	66	2
R-318	Res.	B	1	44 Dawley Dr	65	63	2
R-319	Res.	B	1	55 Dawley Dr	59	57	2
R-320	Res.	B	1	15 Dawley Dr	69	65	4
R-321	Res.	B	1	103 Dawley Dr	62	58	4
R-322	Res.	B	1	100 Halliburton Rd	65	63	2
R-323	Res.	B	1	102 Halliburton Rd	63	63	0
R-324	Res.	B	1	104 Halliburton Rd	59	59	0
R-325	Res.	B	1	62 Dawley Dr	57	56	1
R-326	Res.	B	1	99 Dawley Dr	55	55	0
R-327	Res.	B	1	64 Halliburton Rd	64	63	1
R-328	Res.	B	1	128 Kennerly Dr	61	60	1
R-329	Res.	B	1	110 Kennerly Dr	58	58	0
R-330	Res.	B	1	96 Kennerly Dr	56	55	1
R-331	Res.	B	1	127 Kennerly Dr	63	63	0

Table D-86: Noise Barrier –NW13- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-332	Res.	B	1	46 Royal Oaks Dr	61	61	0
R-333	Res.	B	1	16 Royal Oaks Dr	59	59	0
R-334	Res.	B	1	106 Dawley Dr	68	63	5
R-335	Res.	B	1	76 Dawley Dr	56	55	1
R-336	Res.	B	1	120 Dawley Dr	77	64	13
R-337	Res.	B	1	24 Kennerly Dr	58	58	0
R-338	Res.	B	1	6077 Asheville Hwy	61	59	2
R-339	Res.	B	1	6075 Asheville Hwy	56	55	1
R-340	Res.	B	1	6073 Asheville Hwy	58	57	1
Predicted "Hybrid" Widening Alternative With Barrier Benefits							3

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening — TIP # - I-4400 / I-4700

LOCATION - NW13 – 6/8-Lane Hybrid — COUNTY(IES) – Henderson and Buncombe

IMPACTS - 8 # BENEFITS - 3 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 8,200 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,640 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.		sq.ft./cu.yd (CIRCLE ONE)	Bar No.		sq.ft./cu.yd (CIRCLE ONE)
Bar No.		sq.ft./cu.yd	Bar No.		sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of (sq.ft./cu.yd) (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan — Date: 3/20/2015

In Consultation With: Tracy Roberts — Date: 3/20/2015

NW14

Location: NW14 is located along I-26 westbound edge of shoulder beginning just north of the Butler Bridge Road and continuing approximately 2,460 feet to the northwest. It provides abatement for residences on Hope Opal Lane, South Thomas Street and Jim Mills Drive.

Dimensions: Length = 2,460 ft., Avg. Height = 21 ft., Area = 52,140 ft^2
Impacts: 14
Benefits: 24
Area / Benefit: 2,173 ft^2.
Allowable Area / Benefit: 2,605 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 12
NLR ≥ 7dB(A) for Front Row Receptors: 9

This noise wall does meet feasibility and reasonableness criteria.

Table D-87: Noise Barrier –NW14- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-341	Res.	B	1	46 Hope Opal Ln	77	74	3
R-342	Res.	B	1	38 Hope Opal Ln	77	71	6
R-343	Res.	B	1	34 Hope Opal Ln	76	68	8
R-344	Res.	B	1	28 Hope Opal Ln	76	67	9
R-345	Res.	B	1	22 Hope Opal Ln	75	60	15
R-346	Res.	B	1	14 Hope Opal Ln	73	59	14
R-347	Res.	B	1	41 Hope Opal Ln	68	63	5
R-348	Res.	B	1	65 Hope Opal Ln	66	63	3
R-349	Res.	B	1	23 Hope Opal Ln	63	59	4
R-350	Res.	B	1	73 Hope Opal Ln	63	62	1
R-351	Res.	B	1	9 Hope Opal Ln	62	59	3
R-352	Res.	B	1	120 S Thomas St	71	59	12
R-353	Res.	B	1	60 Jim Mills Dr	69	58	11
R-354	Res.	B	1	52 Jim Mills Dr	68	58	10
R-355	Res.	B	1	36 Jim Mills Dr	67	57	10
R-356	Res.	B	1	20 Jim Mills Dr	66	57	9
R-357	Res.	B	1	109 S Thomas St	65	56	9
R-358	Res.	B	1	112 S Thomas St	66	56	10
R-359	Res.	B	1	98 S Thomas St	60	52	8
R-360	Res.	B	1	41 Lantern Walk Ln	64	55	9
R-361	Res.	B	1	42 Lantern Walk Ln	61	53	8

Table D-87: Noise Barrier –NW14- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-362	Res.	B	1	33 Jim Mills Dr	61	53	8
R-363	Res.	B	1	23 Lantern Walk Ln	58	52	6
R-364	Res.	B	1	38 S Thomas St	56	51	5
R-365	Res.	B	1	55 Darity Rd	56	51	5
R-366	Res.	B	1	75 Darity Rd	60	54	6
R-367	Res.	B	1	11 Collins Rd	60	54	6
R-368	Res.	B	1	21 Collins Rd	62	55	7
R-369	Res.	B	1	51 Collins Rd	62	55	7
Predicted "Hybrid" Widening Alternative With Barrier Benefits							24

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW14 – 6/8-Lane Hybrid COUNTY(IES) – Henderson and Buncombe

IMPACTS - 14 # BENEFITS - 24 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 2,173 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,605 (sq.ft.) / cu.yd.? (CIRCLE ONE)	X YES	NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	X YES	NO
3	Is the noise mitigation likely?	X YES	NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	X YES	NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW15

Location: NW15 is located south of Fanning Bridge Road along I-26 westbound beginning near the rest area south of Wildwood Circle and continuing approximately 1,800 feet to the northwest. It transitions from the edge of shoulder along the I-26 westbound on-ramp from the rest area to the top of a cut section and provides abatement for residences along Wildwood Circle and South Wildwood Lane.

Dimensions: Length = 1,800 ft., Avg. Height = 20 ft., Area = 35,280 ft^2
Impacts: 14
Benefits: 21
Area / Benefit: 1,680 ft^2.
Allowable Area / Benefit: 2,605 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 14
NLR ≥ 7dB(A) for Front Row Receptors: 9

This noise wall does meet feasibility and reasonableness criteria.

Table D-88: Noise Barrier –NW15- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-371	Res.	B	1	31 Wildwood Cir	58	57	1
R-372	Res.	B	1	33 Wildwood Cir	60	57	3
R-373	Res.	B	1	35 Wildwood Cir	64	59	5
R-374	Res.	B	1	37 Wildwood Cir	67	61	6
R-375	Res.	B	1	39 Wildwood Cir	71	62	9
R-376	Res.	B	1	41 Wildwood Cir	75	63	12
R-377	Res.	B	1	45 Wildwood Cir	75	64	11
R-378	Res.	B	1	47 Wildwood Cir	76	64	12
R-379	Res.	B	1	49 Wildwood Cir	76	64	12
R-380	Res.	B	1	51 Wildwood Cir	77	64	13
R-381	Res.	B	1	53 Wildwood Cir	76	64	12
R-382	Res.	B	1	55 Wildwood Cir	75	62	13
R-383	Res.	B	1	57 Wildwood Cir	67	59	8
R-384	Place of Worship	D	1	1291 Fanning Bridge Rd	42	40	2
R-385	Res.	B	1	59 Wildwood Cir	65	58	7
R-386	Res.	B	1	61 Wildwood Cir	63	57	6
R-387	Res.	B	1	63 Wildwood Cir	62	57	5
R-388	Res.	B	1	65 Wildwood Cir	61	58	3
R-389	Res.	B	1	67 Wildwood Cir	62	61	1
R-390	Res.	B	1	32 Wildwood Cir	53	51	2

Table D-88: Noise Barrier –NW15- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-391	Res.	B	1	34 Wildwood Cir	56	54	2
R-392	Res.	B	1	36 Wildwood Cir	61	56	**5**
R-393	Res.	B	1	38 Wildwood Cir	**66**	61	**5**
R-394	Res.	B	1	48 Wildwood Cir	**67**	61	**6**
R-395	Res.	B	1	50 Wildwood Cir	**66**	60	**6**
R-396	Res.	B	1	52 Wildwood Cir	**66**	59	**7**
R-397	Res.	B	1	54 Wildwood Cir	61	56	**5**
R-398	Res.	B	1	56 Wildwood Cir	59	53	**6**
R-399	Res.	B	1	58 Wildwood Cir	53	50	3
R-400	Res.	B	1	60 Wildwood Cir	56	54	2
R-401	Res.	B	1	62 Wildwood Cir	57	55	2
R-402	Res.	B	1	64 Wildwood Cir	57	57	0
R-403	Res.	B	1	66 Wildwood Cir	59	59	0
R-404	Res.	B	1	21 Wildwood Ln	52	51	1
R-405	Res.	B	1	20 Wildwood Ln	60	57	3
R-406	Res.	B	1	18 Wildwood Ln	54	52	2
R-407	Res.	B	1	16 Wildwood Ln	55	51	4
R-408	Res.	B	1	14 Wildwood Ln	53	50	3
R-409	Res.	B	1	12 Wildwood Ln	52	49	3
R-410	Res.	B	1	10 Wildwood Ln	49	47	2
R-411	Res.	B	1	8 Wildwood Ln	53	51	2
R-412	Res.	B	1	6 Wildwood Ln	56	55	1
R-413	Res.	B	1	4 Wildwood Ln	57	56	1
Predicted "Hybrid" Widening Alternative With Barrier Benefits							21

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening | TIP # - I-4400 / I-4700

LOCATION - NW15 – 6/8-Lane Hybrid | COUNTY(IES) – Henderson and Buncombe

IMPACTS - 14 | # BENEFITS - 21 | NAC: A (B) C (D) E F G (CIRCLE ALL THAT APPLY)

A.	**FEASIBILITY:**		
1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO
B.	**REASONABLENESS:**		
1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 1,680 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,605 (sq.ft.) / cu.yd.? (CIRCLE ONE)	X YES	NO
C.	**NOISE ABATEMENT DECISION:**		
1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	X YES	NO
3	Is the noise mitigation likely?	X YES	NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	X YES	NO
D.	**OPTIONAL REASONABLENESS CONSIDERATION:**		
1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO
2	If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:		
	Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)		
	Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd		
3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE)	_____ YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW16

Location: NW16 begins south of Glenn Bridge Road along I-26 westbound and continues approximately 1,620 feet to the northwest, ending between New Rockwood Road and Mahogany Road. It generally follows the top of the cut section but transitions to edge of shoulder near Glenn Bridge Road, and the portion of the wall along the I-26 westbound bridge over Glenn Bridge Road is on structure. This noise wall provides abatement for residences in the Hunter's Trace neighborhood.

Dimensions: Length = 1,620 ft., Avg. Height = 23 ft., Area = 37,620 ft^2
Impacts: 21
Benefits: 28
Area / Benefit: 1,344 ft^2.
Allowable Area / Benefit: 2,675 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 16
NLR ≥ 7dB(A) for Front Row Receptors: 7

This noise wall does meet feasibility and reasonableness criteria.

Table D-89: Noise Barrier –NW16- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-429	Res.	B	1	26 Foxberry Dr	57	57	0
R-430	Res.	B	1	24 Foxberry Dr	59	58	1
R-431	Res.	B	1	22 Foxberry Dr	62	58	4
R-432	Res.	B	1	18 Foxberry Dr	65	60	5
R-433	Res.	B	1	16 Foxberry Dr	67	62	5
R-434	Res.	B	1	14 Foxberry Dr	70	63	7
R-435	Res.	B	1	10 Foxberry Dr	74	65	9
R-436	Res.	B	1	8 Foxberry Dr	75	65	10
R-437	Res.	B	1	4 Foxberry Dr	75	63	12
R-438	Res.	B	1	27 Foxberry Dr	55	54	1
R-439	Res.	B	1	25 Foxberry Dr	58	55	3
R-440	Res.	B	1	19 Foxberry Dr	56	53	3
R-441	Res.	B	1	15 Foxberry Dr	64	59	5
R-442	Res.	B	1	9 Foxberry Dr	67	60	7
R-443	Res.	B	1	7 Foxberry Dr	69	62	7
R-444	Res.	B	1	5 Foxberry Dr	70	60	10
R-445	Res.	B	1	3 Foxberry Dr	69	60	9
R-446	Res.	B	1	54 Winding Oak Dr	56	51	5
R-447	Res.	B	1	58 Winding Oak Dr	57	53	4
R-448	Res.	B	1	62 Winding Oak Dr	60	55	5

Table D-89: Noise Barrier –NW16- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-449	Res.	B	1	66 Winding Oak Dr	65	60	5
R-450	Res.	B	1	63 Winding Oak Dr	63	59	4
R-451	Res.	B	1	57 Winding Oak Dr	61	55	6
R-452	Res.	B	1	53 Winding Oak Dr	57	51	6
R-453	Res.	B	1	47 Winding Oak Dr	56	51	5
R-454	Res.	B	1	37 Winding Oak Dr	57	51	6
R-455	Res.	B	1	31 Winding Oak Dr	59	53	6
R-456	Res.	B	1	27 Winding Oak Dr	59	55	4
R-457	Res.	B	1	102 Wood Glen Ct	57	56	1
R-458	Res.	B	1	106 Wood Glen Ct	62	58	4
R-459	Res.	B	1	110 Wood Glen Ct	59	55	4
R-460	Res.	B	1	114 Wood Glen Ct	65	59	6
R-461	Res.	B	1	118 Wood Glen Ct	72	67	5
R-462	Res.	B	1	109 Wood Glen Ct	71	66	5
R-463	Res.	B	1	105 Wood Glen Ct	66	64	2
R-464	Res.	B	1	15 Winding Oak Dr	66	63	3
R-465	Res.	B	1	9 Winding Oak Dr	66	63	3
R-466	Res.	B	1	5 Winding Oak Dr	66	62	4
R-467	Res.	B	1	1 Winding Oak Dr	67	59	8
R-468	Res.	B	1	169 New Rockwood Rd	69	61	8
R-469	Res.	B	1	173 New Rockwood Rd	73	63	10
R-470	Res.	B	1	177 New Rockwood Rd	76	67	9
R-471	Res.	B	1	168 New Rockwood Rd	74	63	11
R-472	Res.	B	1	167 New Rockwood Rd	69	66	3
R-473	Res.	B	1	22 Winding Oak Dr	58	57	1
R-474	Res.	B	1	18 Winding Oak Dr	61	60	1
R-475	Res.	B	1	14 Winding Oak Dr	58	56	2
R-476	Res.	B	1	10 Winding Oak Dr	57	55	2
R-477	Res.	B	1	6 Winding Oak Dr	56	54	2
R-478	Res.	B	1	2 Winding Oak Dr	61	56	5
Predicted "Hybrid" Widening Alternative With Barrier Benefits							28

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW16 – 6/8-Lane Hybrid COUNTY(IES) – Henderson and Buncombe

IMPACTS - 21 # BENEFITS - 28 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 1,344 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,675 (sq.ft.) / cu.yd.? (CIRCLE ONE)	X YES	NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	X YES	NO
3	Is the noise mitigation likely?	X YES	NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	X YES	NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.		sq.ft./cu.yd (CIRCLE ONE)	Bar No.		sq.ft./cu.yd (CIRCLE ONE)
Bar No.		sq.ft./cu.yd	Bar No.		sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of (sq.ft./cu.yd) (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW17

Location: NW17 is located south of NC 146 (Long Shoals Road) along I-26 westbound at the top of a cut section and transitions to the edge of shoulder at the I-26 westbound off-ramp to NC 146 before ending in front of the Quality Inn & Suites. It provides abatement for a residence accessible via Long Shoals Road.

Dimensions: Length = 1,920 ft., Avg. Height = 25 ft., Area = 48,000 ft^2
Impacts: 1
Benefits: 0
Area / Benefit: N/A
Allowable Area / Benefit: 2,500 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 0
NLR ≥ 7dB(A) for Front Row Receptors: 0

This noise wall meets neither feasibility nor reasonableness criteria because a 5 dB(A) noise reduction could not be achieved for the only receptor in the area.

Table D-90: Noise Barrier –NW17- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-482	Res.	B	1	315 Long Shoals Rd	69	67	2
Predicted "Hybrid" Widening Alternative With Barrier Benefits							0[1]

[1] The NCDOT noise reduction design goal of 7 dB(A) could not be achieved for at least one benefited receptor to meet reasonableness criteria.

Noise Level Impact

Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW17 – 6/8-Lane Hybrid COUNTY(IES) – Henderson and Buncombe

IMPACTS - 1 # BENEFITS - 0 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	____ YES	X NO
2	Does topography negatively affect the proposed abatement measure?	____ YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	____ YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	____ NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	____ YES	X NO
2	Is the design criteria per benefited receptor of N/A (CIRCLE ONE) sq.ft./cu.yd less than the maximum allowable design criteria per benefited receptor of ____ 2,500 (CIRCLE ONE) sq.ft. / cu.yd.?	____ YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	____ YES	X NO
2	Is the noise mitigation reasonable?	____ YES	X NO
3	Is the noise mitigation likely?	____ YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	____ YES	X NO
5	Is the noise mitigation recommended for construction?	____ YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	____ YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. ____ ____ (CIRCLE ONE) sq.ft./cu.yd Bar No. ____ ____ (CIRCLE ONE) sq.ft./cu.yd

Bar No. ____ ____ sq.ft./cu.yd Bar No. ____ ____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of ____ (CIRCLE ONE) sq.ft./cu.yd ____ YES ____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW18

Location: NW18 begins at the top of a cut section between Blue Ridge Parkway and NC 191 (Brevard Road) along I-26 westbound and transitions to edge of shoulder. It provides abatement for residences on Ferry Road.

Dimensions: Length = 1,500 ft., Avg. Height = 11 ft., Area = 16,980 ft^2
Impacts: 1
Benefits: 4
Area / Benefit: 4,245 ft^2.
Allowable Area / Benefit: 2,500 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 1
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-91: Noise Barrier –NW18- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-486	Res.	B	1	215 Ferry Rd	61	56	5
R-487	Res.	B	1	218 Ferry Rd	61	55	6
R-488	Res.	B	1	200 Ferry Rd	66	59	7
R-489	Res.	B	1	192 Ferry Rd	65	60	5
Predicted "Hybrid" Widening Alternative With Barrier Benefits							4

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening

TIP # - I-4400 / I-4700

LOCATION - NW18 – 6/8-Lane Hybrid

COUNTY(IES) – Henderson and Buncombe

IMPACTS - 1 # BENEFITS - 4 NAC: A (B) C D E F G

(CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 4,245 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,500 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.		sq.ft./cu.yd (CIRCLE ONE)	Bar No.		sq.ft./cu.yd (CIRCLE ONE)
Bar No.		sq.ft./cu.yd	Bar No.		sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of (sq.ft./cu.yd) (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW19

Location: NW19 is located along the future I-26 westbound on-ramp from NC 191 (Brevard Road) edge of shoulder. It provides abatement for residences on Pine Lane.

Dimensions: Length = 1,980 ft., Avg. Height = 13 ft., Area = 25,200 ft^2
Impacts: 7
Benefits: 10
Area / Benefit: 2,520 ft^2.
Allowable Area / Benefit: 2,640 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 6
NLR ≥ 7dB(A) for Front Row Receptors: 4

This noise wall does meet feasibility and reasonableness criteria.

Table D-92: Noise Barrier –NW19- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-490	Res.	B	1	759 Brevard Rd	73	73	0
R-491	Res.	B	1	757 Old Brevard Rd	60	59	1
R-492	Res.	B	1	12 Pine Ln	R/W	R/W	R/W
R-493	Res.	B	1	20 Pine Ln	70	60	10
R-494	Res.	B	1	24 Pine Ln	68	59	9
R-495	Res.	B	1	26 Pine Ln	67	59	8
R-496	Res.	B	1	28 Pine Ln	65	58	7
R-497	Res.	B	1	50 Pine Ln	R/W	R/W	R/W
R-498	Res.	B	1	40 Pine Ln	66	60	6
R-499	Res.	B	1	36 Pine Ln	67	61	6
R-500	Res.	B	1	29 Pine Ln	66	60	6
R-501	Res.	B	1	27 Pine Ln	65	59	6
R-502	Res.	B	1	23 Pine Ln	62	57	5
R-503	Res.	B	1	19 Pine Ln	62	60	2
R-504	Res.	B	1	17 Pine Ln	61	59	2
R-505	Res.	B	1	15 Pine Ln	64	59	5
R-506	Res.	B	1	13 Pine Ln	60	59	1
R-507	Res.	B	1	751 Brevard Rd	59	59	0
R-508	Res.	B	1	751 Old Brevard Rd	63	60	3
Predicted "Hybrid" Widening Alternative With Barrier Benefits							10
					Noise Level Impact		**Benefited Receptor**

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW19 – 6/8-Lane Hybrid COUNTY(IES) – Henderson and Buncombe

IMPACTS - 7 # BENEFITS - 10 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 2,520 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,640 (sq.ft.) / cu.yd.? (CIRCLE ONE)	X YES	NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	X YES	NO
3	Is the noise mitigation likely?	X YES	NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	X YES	NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW20

Location: NW20 is located between NC 191 (Brevard Road) and Pond Road along I-26 westbound edge of shoulder. It provides abatement for residences on Dogwood Road.

Dimensions: Length = 1,440 ft., Avg. Height = 18 ft., Area = 25,740 ft^2
Impacts: 2
Benefits: 2
Area / Benefit: 12,870 ft^2.
Allowable Area / Benefit: 2,605 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 2
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-93: Noise Barrier –NW20- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-509	Res.	B	1	36 Dogwood Rd	67	61	6
R-510	Res.	B	1	50 Dogwood Rd	71	64	7
Predicted "Hybrid" Widening Alternative With Barrier Benefits							2

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening — TIP # - I-4400 / I-4700

LOCATION - NW20 – 6/8-Lane Hybrid — COUNTY(IES) – Henderson and Buncombe

IMPACTS - 2 # BENEFITS - 2 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 12,870 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,605 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW21

Location: NW21 is located between NC 191 (Brevard Road) and Blue Ridge Parkway along I-26 eastbound edge of shoulder. It provides abatement for residences on Ferry Road.

Dimensions: Length = 1,320 ft., Avg. Height = 10 ft., Area = 13,380 ft^2
Impacts: 3
Benefits: 3
Area / Benefit: 4,460 ft^2.
Allowable Area / Benefit: 2,570 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 3
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-94: Noise Barrier –NW21- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-517	Res.	B	1	184 Ferry Rd	76	67	9
R-518	Res.	B	1	184 Ferry Rd 2	69	64	5
R-519	Res.	B	1	191 Ferry Rd	75	69	6
Predicted "Hybrid" Widening Alternative With Barrier Benefits							3

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening

TIP # - I-4400 / I-4700

LOCATION - NW21 – 6/8-Lane Hybrid

COUNTY(IES) – Henderson and Buncombe

IMPACTS - 3 # BENEFITS - 3 NAC: A (B) C D E F G

(CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 4,460 (CIRCLE ONE) (sq.ft./cu.yd) less than the maximum allowable design criteria per benefited receptor of 2,570 (CIRCLE ONE) (sq.ft.) / cu.yd.?	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

(CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ (CIRCLE ONE) sq.ft./cu.yd

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ (CIRCLE ONE) sq.ft./cu.yd _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW22

Location: NW22 is located between NC 146 (Long Shoals Road) and Glenn Bridge Road along I-26 eastbound edge of shoulder. It provides abatement for residences on Bear Leah Trail, accessible via Glenn Bridge Road.

Dimensions: Length = 780 ft., Avg. Height = 10 ft., Area = 7,800 ft^2
Impacts: 2
Benefits: 2
Area / Benefit: 3,900 ft^2.
Allowable Area / Benefit: 2,605 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 2
NLR ≥ 7dB(A) for Front Row Receptors: 2

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-95: Noise Barrier –NW22- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-522	Res.	B	1	40 Bear Leah Trl	77	68	9
R-523	Res.	B	1	38 Bear Leah Trl	78	71	7
Predicted "Hybrid" Widening Alternative With Barrier Benefits							2

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening — TIP # - I-4400 / I-4700

LOCATION - NW22 – 6/8-Lane Hybrid — COUNTY(IES) – Henderson and Buncombe

IMPACTS - 2 # BENEFITS - 2 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A.	**FEASIBILITY:**			
1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES		NO
2	Does topography negatively affect the proposed abatement measure?	YES	X	NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X	NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES		NO
B.	**REASONABLENESS:**			
1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES		NO
2	Is the design criteria per benefited receptor of 3,900 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,605 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X	NO
C.	**NOISE ABATEMENT DECISION:**			
1	Is the noise mitigation feasible?	X YES		NO
2	Is the noise mitigation reasonable?	YES	X	NO
3	Is the noise mitigation likely?	YES	X	NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X	NO
5	Is the noise mitigation recommended for construction?	YES	X	NO
D.	**OPTIONAL REASONABLENESS CONSIDERATION:**			
1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X	NO
2	If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:			
	Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)			
	Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd			
3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE)	YES		NO

Form Completed By: Trey Jordan — Date: 3/20/2015

In Consultation With: Tracy Roberts — Date: 3/20/2015

NW23

Location: NW23 begins approximately 480 feet north of Glenn Bridge Road along I-26 eastbound edge of shoulder and continues approximately 980 feet to the southeast. The portion of the wall along the I-26 eastbound bridge over Glenn Bridge Road is on structure. It provides abatement for residences on Glenn Bridge Road.

Dimensions: Length = 980 ft., Avg. Height = 25 ft., Area = 24,530 ft^2
Impacts: 2
Benefits: 2
Area / Benefit: 12,265 ft^2.
Allowable Area / Benefit: 2,605 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 2
NLR ≥ 7dB(A) for Front Row Receptors: 0

This noise wall does not meet reasonableness criteria because a 7 dB(A) noise reduction could not be achieved for at least one benefited front row receptor.

Table D-96: Noise Barrier –NW23- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-524	Res.	B	1	404 Glenn Bridge Rd	72	66	6
R-525	Res.	B	1	406 Glenn Bridge Rd	69	64	5
Predicted "Hybrid" Widening Alternative With Barrier Benefits							2[1]

[1] The NCDOT noise reduction design goal of 7 dB(A) could not be achieved for at least one benefited receptor to meet reasonableness criteria.

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW23 – 6/8-Lane Hybrid COUNTY(IES) – Henderson and Buncombe

IMPACTS - 2 # BENEFITS - 2 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	YES	X NO
2	Is the design criteria per benefited receptor of 12,265 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,605 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW24

Location: NW24 is located between Glenn Bridge Road and NC 280 (Airport Road) along I-26 eastbound edge of shoulder. It provides abatement for residences on Hidden Creek Drive, Nathan Drive and Wells Drive.

Dimensions: Length = 1,740 ft., Avg. Height = 17 ft., Area = 28,740 ft^2
Impacts: 15
Benefits: 20
Area / Benefit: 1,437 ft^2.
Allowable Area / Benefit: 2,605 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 15
NLR ≥ 7dB(A) for Front Row Receptors: 4

This noise wall does meet feasibility and reasonableness criteria.

Table D-97: Noise Barrier –NW24- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-526	Res.	B	1	1 Hidden Creek Dr	70	61	9
R-527	Res.	B	1	3 Hidden Creek Dr	66	58	8
R-528	Res.	B	1	5 Hidden Creek Dr	67	60	7
R-529	Res.	B	1	20 Hidden Creek Dr	65	56	9
R-530	Res.	B	1	12 Wells Dr	65	58	7
R-531	Res.	B	1	10 Hidden Creek Dr	68	61	7
R-532	Res.	B	1	2 Hidden Creek Dr	69	59	10
R-533	Res.	B	1	1 Nathan Dr	68	59	9
R-534	Res.	B	1	5 Nathan Dr	67	58	9
R-535	Res.	B	1	105 Hidden Creek Rd	78	65	13
R-536	Res.	B	1	8 Nathan Dr	70	61	9
R-537	Res.	B	1	7 Nathan Dr	67	59	8
R-538	Res.	B	1	15 Nathan Dr	63	56	7
R-539	Res.	B	1	14 Wells Dr	67	60	7
R-540	Res.	B	1	9 Wells Dr	69	63	6
R-541	Res.	B	1	101 Hidden Creek Rd	71	63	8
R-542	Res.	B	1	10 Nathan Dr	66	59	7
R-543	Res.	B	1	12 Nathan Dr	62	57	5
R-544	Res.	B	1	14 Nathan Dr	63	58	5
R-545	Res.	B	1	16 Nathan Dr	67	61	6

Table D-97: Noise Barrier –NW24- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
Predicted "Hybrid" Widening Alternative With Barrier Benefits							20
					Noise Level Impact		Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW24 – 6/8-Lane Hybrid COUNTY(IES) – Henderson and Buncombe

IMPACTS - 15 # BENEFITS - 20 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 1,437 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,605 (sq.ft.) / cu.yd.? (CIRCLE ONE)	X YES	NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	X YES	NO
3	Is the noise mitigation likely?	X YES	NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	X YES	NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW25

Location: NW25 is located south of the rest area between Fanning Bridge Road and Butler Bridge Road along I-26 eastbound edge of shoulder. It provides abatement for the Broadmoor Golf Links golf course.

Dimensions: Length = 2,340 ft., Avg. Height = 15 ft., Area = 34,020 ft^2
Impacts: 2
Benefits: 2
Area / Benefit: 17,010 ft^2.
Allowable Area / Benefit: 2,570 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 2
NLR ≥ 7dB(A) for Front Row Receptors: 2

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-98: Noise Barrier –NW25- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-555.01	Golf	C	0.03[1]	101 French Broad Ln	74	64	10
R-555.02	Golf	C	0.03[1]	101 French Broad Ln	73	64	9
R-555.03	Golf	C	0.03[1]	101 French Broad Ln	73	64	9
R-555.04	Golf	C	0.03[1]	101 French Broad Ln	72	64	8
R-555.05	Golf	C	0.03[1]	101 French Broad Ln	72	64	8
R-555.06	Golf	C	0.03[1]	101 French Broad Ln	72	63	9
R-555.07	Golf	C	0.03[1]	101 French Broad Ln	72	63	9
R-555.08	Golf	C	0.03[1]	101 French Broad Ln	72	62	10
R-555.09	Golf	C	0.03[1]	101 French Broad Ln	71	62	9
R-555.10	Golf	C	0.03[1]	101 French Broad Ln	72	62	10
R-555.11	Golf	C	0.03[1]	101 French Broad Ln	72	62	10
R-555.12	Golf	C	0.03[1]	101 French Broad Ln	71	62	9
R-555.13	Golf	C	0.03[1]	101 French Broad Ln	72	62	10
R-555.14	Golf	C	0.03[1]	101 French Broad Ln	72	64	8
R-555.15	Golf	C	0.03[1]	101 French Broad Ln	71	64	7
R-555.16	Golf	C	0.03[1]	101 French Broad Ln	71	63	8
R-555.17	Golf	C	0.03[1]	101 French Broad Ln	71	63	8
R-555.18	Golf	C	0.03[1]	101 French Broad Ln	71	63	8
R-555.19	Golf	C	0.03[1]	101 French Broad Ln	70	63	7
R-555.20	Golf	C	0.03[1]	101 French Broad Ln	70	62	8
R-555.21	Golf	C	0.03[1]	101 French Broad Ln	71	62	9

Table D-98: Noise Barrier –NW25- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-555.22	Golf	C	0.03[1]	101 French Broad Ln	70	62	8
R-555.23	Golf	C	0.03[1]	101 French Broad Ln	70	61	9
R-555.24	Golf	C	0.03[1]	101 French Broad Ln	70	61	9
R-555.25	Golf	C	0.03[1]	101 French Broad Ln	71	62	9
R-555.26	Golf	C	0.03[1]	101 French Broad Ln	71	62	9
R-555.27	Golf	C	0.03[1]	101 French Broad Ln	69	64	5
R-555.28	Golf	C	0.03[1]	101 French Broad Ln	69	63	6
R-555.29	Golf	C	0.03[1]	101 French Broad Ln	69	63	6
R-555.30	Golf	C	0.03[1]	101 French Broad Ln	69	62	7
R-555.31	Golf	C	0.03[1]	101 French Broad Ln	69	62	7
R-555.32	Golf	C	0.03[1]	101 French Broad Ln	69	62	7
R-555.33	Golf	C	0.03[1]	101 French Broad Ln	69	61	8
R-555.34	Golf	C	0.03[1]	101 French Broad Ln	69	61	8
R-555.35	Golf	C	0.03[1]	101 French Broad Ln	68	61	7
R-555.36	Golf	C	0.03[1]	101 French Broad Ln	68	60	8
R-555.37	Golf	C	0.03[1]	101 French Broad Ln	68	60	8
R-555.38	Golf	C	0.03[1]	101 French Broad Ln	69	61	8
R-555.39	Golf	C	0.03[1]	101 French Broad Ln	69	61	8
R-555.40	Golf	C	0.03[1]	101 French Broad Ln	68	61	7
R-555.41	Golf	C	0.03[1]	101 French Broad Ln	67	62	5
R-555.42	Golf	C	0.03[1]	101 French Broad Ln	67	62	5
R-555.43	Golf	C	0.03[1]	101 French Broad Ln	67	62	5
R-555.44	Golf	C	0.03[1]	101 French Broad Ln	67	62	5
R-555.45	Golf	C	0.03[1]	101 French Broad Ln	67	61	6
R-555.46	Golf	C	0.03[1]	101 French Broad Ln	67	61	6
R-555.47	Golf	C	0.03[1]	101 French Broad Ln	67	61	6
R-555.48	Golf	C	0.03[1]	101 French Broad Ln	67	61	6
R-555.49	Golf	C	0.03[1]	101 French Broad Ln	66	60	6
R-555.50	Golf	C	0.03[1]	101 French Broad Ln	67	60	7
R-555.51	Golf	C	0.03[1]	101 French Broad Ln	67	60	7
R-555.52	Golf	C	0.03[1]	101 French Broad Ln	67	60	7
R-555.53	Golf	C	0.03[1]	101 French Broad Ln	67	60	7
R-555.54	Golf	C	0.03[1]	101 French Broad Ln	65	60	5
R-555.55	Golf	C	0.03[1]	101 French Broad Ln	65	59	6
R-555.56	Golf	C	0.03[1]	101 French Broad Ln	65	59	6
R-555.57	Golf	C	0.03[1]	101 French Broad Ln	65	59	6

Table D-98: Noise Barrier –NW25- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-555.58	Golf	C	0.03[1]	101 French Broad Ln	65	59	6
R-555.59	Golf	C	0.03[1]	101 French Broad Ln	65	59	6
R-555.60	Golf	C	0.03[1]	101 French Broad Ln	64	59	5
R-555.61	Golf	C	0.03[1]	101 French Broad Ln	64	58	6
R-555.62	Golf	C	0.03[1]	101 French Broad Ln	63	58	5
R-555.63	Golf	C	0.03[1]	101 French Broad Ln	63	58	5
R-555.64	Golf	C	0.03[1]	101 French Broad Ln	63	58	5
R-555.65	Golf	C	0.03[1]	101 French Broad Ln	63	58	5
Predicted "Hybrid" Widening Alternative With Barrier Benefits							2[2]

[1] Golf course was analyzed as a nodal array of receptors (2 equivalent residences represented by 65 nodes).

[2] Total benefits for golf course were rounded up to the nearest whole dB(A).

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW25 – 6/8-Lane Hybrid COUNTY(IES) – Henderson and Buncombe

IMPACTS - 2 # BENEFITS - 2 NAC: A B (C) D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 17,010 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,570 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW26

Location: NW26 begins along the I-26 eastbound off-ramp to US 25 (Asheville Highway) edge of shoulder and continues approximately 840 feet to the southeast along Cuerton Place, ending prior to the Cuerton Place intersection with Asheville Highway. It provides abatement for residences on Cuerton Place and Alverson Lane.

Dimensions: Length = 840 ft., Avg. Height = 19 ft., Area = 15,780 ft^2
Impacts: 2
Benefits: 6
Area / Benefit: 2,630 ft^2.
Allowable Area / Benefit: 2,570 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 1
NLR ≥ 7dB(A) for Front Row Receptors: 2

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-99: Noise Barrier –NW26- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-557	Res.	B	1	48 Cureton Pl	66	66	0
R-558	Res.	B	1	39 Cureton Pl	66	61	5
R-559	Res.	B	1	31 Cureton Pl	65	57	8
R-560	Res.	B	1	30 Alverson Ln	58	53	5
R-561	Res.	B	1	24 Alverson Ln	60	55	5
R-562	Res.	B	1	16 Alverson Dr	64	56	8
R-563	Res.	B	1	53 Alverson Ln	64	59	5
Predicted "Hybrid" Widening Alternative With Barrier Benefits							6

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW26 – 6/8-Lane Hybrid COUNTY(IES) – Henderson and Buncombe

IMPACTS - 2 # BENEFITS - 6 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 2,630 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,570 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW27

Location: NW27 is located just south of Naples Road along I-26 eastbound edge of shoulder beginning at the Naples Road bridge and continuing approximately 4,980 feet to the southeast. It provides abatement for residences along Old Naples Road, Canterbury Way and Oak Meadow Lane.

Dimensions: Length = 4,980 ft., Avg. Height = 16 ft., Area = 81,480 ft^2
Impacts: 16
Benefits: 16
Area / Benefit: 5,093 ft^2.
Allowable Area / Benefit: 2,535 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 15
NLR ≥ 7dB(A) for Front Row Receptors: 9

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-100: Noise Barrier –NW27- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-566	Res.	B	1	83 Naples Glenn Trl	71	69	2
R-567	Res.	B	1	288 Old Naples Rd	68	62	6
R-568	Res.	B	1	284 Old Naples Rd	68	61	7
R-569	Res.	B	1	15 Canterbury Way	79	66	13
R-570	Res.	B	1	41 Canterbury Way	72	62	10
R-571	Res.	B	1	41 Canterbury Way 2	73	62	11
R-572	Res.	B	1	118 Canterbury Way	71	60	11
R-573	Res.	B	1	121 Canterbury Hill Ln	72	65	7
R-574	Res.	B	1	304 Canterbury Way	69	64	5
R-575	Res.	B	1	44 Canterbury Hill Ln	72	62	10
R-576	Res.	B	1	238 Canterbury Way	70	62	8
R-577	Res.	B	1	238 Canterbury Way 2	67	61	6
R-578	Res.	B	1	255 Canterbury Way	67	59	8
R-579	Res.	B	1	80 Oak Meadow Ln	69	59	10
R-580	Res.	B	1	73 Oak Meadow Ln	68	61	7
R-581	Res.	B	1	17 Sujo Trl	69	62	7
R-582	Res.	B	1	14 Sujo Trl	65	59	6
Predicted " Hybrid " Widening Alternative With Barrier Benefits							16
					Noise Level Impact		**Benefited Receptor**

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW27 – 6/8-Lane Hybrid COUNTY(IES) – Henderson and Buncombe

IMPACTS - 16 # BENEFITS - 16 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 5,093 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,535 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW28

Location: NW28 begins near the weigh station between Naples Road and Brookside Camp Road along I-26 eastbound edge of shoulder and continues approximately 1,380 feet to the southeast, ending just north of the Brookside Camp Road bridge. It provides abatement for Champions Golf Learning Center.

Dimensions: Length = 1,380 ft., Avg. Height = 14 ft., Area = 18,840 ft^2
Impacts: 5
Benefits: 5
Area / Benefit: 3,768 ft^2.
Allowable Area / Benefit: 2,535 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 5
NLR ≥ 7dB(A) for Front Row Receptors: 3

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-101: Noise Barrier –NW28- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-583.01	Recreation	C	0.07[1]	485 Brookside Camp Rd	74	65	9
R-583.02	Recreation	C	0.07[1]	485 Brookside Camp Rd	73	65	8
R-583.03	Recreation	C	0.07[1]	485 Brookside Camp Rd	73	65	8
R-583.04	Recreation	C	0.07[1]	485 Brookside Camp Rd	72	64	8
R-583.05	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	62	8
R-583.06	Recreation	C	0.07[1]	485 Brookside Camp Rd	71	63	8
R-583.07	Recreation	C	0.07[1]	485 Brookside Camp Rd	72	64	8
R-583.08	Recreation	C	0.07[1]	485 Brookside Camp Rd	72	64	8
R-583.09	Recreation	C	0.07[1]	485 Brookside Camp Rd	68	62	6
R-583.10	Recreation	C	0.07[1]	485 Brookside Camp Rd	69	63	6
R-583.11	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	63	7
R-583.12	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	63	7
R-583.13	Recreation	C	0.07[1]	485 Brookside Camp Rd	67	61	6
R-583.14	Recreation	C	0.07[1]	485 Brookside Camp Rd	67	62	5
R-583.15	Recreation	C	0.07[1]	485 Brookside Camp Rd	68	62	6
R-583.16	Recreation	C	0.07[1]	485 Brookside Camp Rd	72	63	9
R-583.17	Recreation	C	0.07[1]	485 Brookside Camp Rd	72	63	9
R-583.18	Recreation	C	0.07[1]	485 Brookside Camp Rd	71	63	8
R-583.19	Recreation	C	0.07[1]	485 Brookside Camp Rd	71	63	8
R-583.20	Recreation	C	0.07[1]	485 Brookside Camp Rd	71	63	8

Table D-101: Noise Barrier –NW28- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-583.21	Recreation	C	0.07[1]	485 Brookside Camp Rd	71	63	8
R-583.22	Recreation	C	0.07[1]	485 Brookside Camp Rd	71	63	8
R-583.23	Recreation	C	0.07[1]	485 Brookside Camp Rd	71	63	8
R-583.24	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	63	7
R-583.25	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	63	7
R-583.26	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	63	7
R-583.27	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	62	8
R-583.28	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	62	8
R-583.29	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	62	8
R-583.30	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	62	8
R-583.31	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	62	8
R-583.32	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	62	8
R-583.33	Recreation	C	0.07[1]	485 Brookside Camp Rd	70	62	8
R-583.34	Recreation	C	0.07[1]	485 Brookside Camp Rd	69	62	7
R-583.35	Recreation	C	0.07[1]	485 Brookside Camp Rd	69	62	7
R-583.36	Recreation	C	0.07[1]	485 Brookside Camp Rd	69	62	7
R-583.37	Recreation	C	0.07[1]	485 Brookside Camp Rd	69	62	7
R-583.38	Recreation	C	0.07[1]	485 Brookside Camp Rd	69	62	7
R-583.39	Recreation	C	0.07[1]	485 Brookside Camp Rd	69	62	7
R-583.40	Recreation	C	0.07[1]	485 Brookside Camp Rd	68	62	6
R-583.41	Recreation	C	0.07[1]	485 Brookside Camp Rd	68	62	6
R-583.42	Recreation	C	0.07[1]	485 Brookside Camp Rd	69	63	6
R-583.43	Recreation	C	0.07[1]	485 Brookside Camp Rd	69	63	6
R-583.44	Recreation	C	0.07[1]	485 Brookside Camp Rd	68	61	7
R-583.45	Recreation	C	0.07[1]	485 Brookside Camp Rd	68	61	7
R-583.46	Recreation	C	0.07[1]	485 Brookside Camp Rd	67	61	6
R-583.47	Recreation	C	0.07[1]	485 Brookside Camp Rd	67	61	6
R-583.48	Recreation	C	0.07[1]	485 Brookside Camp Rd	67	62	5
R-583.49	Recreation	C	0.07[1]	485 Brookside Camp Rd	67	62	5
R-583.50	Recreation	C	0.07[1]	485 Brookside Camp Rd	68	62	6
R-583.51	Recreation	C	0.07[1]	485 Brookside Camp Rd	68	63	5
R-583.52	Recreation	C	0.07[1]	485 Brookside Camp Rd	68	63	5
R-583.53	Recreation	C	0.07[1]	485 Brookside Camp Rd	67	61	6
R-583.54	Recreation	C	0.07[1]	485 Brookside Camp Rd	66	61	5
R-583.55	Recreation	C	0.07[1]	485 Brookside Camp Rd	67	61	6
R-583.56	Recreation	C	0.07[1]	485 Brookside Camp Rd	67	61	6

Table D-101: Noise Barrier –NW28- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-583.57	Recreation	C	0.07[1]	485 Brookside Camp Rd	67	61	6
R-583.58	Recreation	C	0.07[1]	485 Brookside Camp Rd	67	62	5
R-583.59	Recreation	C	0.07[1]	485 Brookside Camp Rd	68	62	6
R-583.60	Recreation	C	0.07[1]	485 Brookside Camp Rd	69	63	6
R-583.61	Recreation	C	0.07[1]	485 Brookside Camp Rd	66	60	6
R-583.62	Recreation	C	0.07[1]	485 Brookside Camp Rd	66	61	5
R-583.63	Recreation	C	0.07[1]	485 Brookside Camp Rd	67	61	6
R-583.64	Recreation	C	0.07[1]	485 Brookside Camp Rd	67	61	6
R-583.65	Recreation	C	0.07[1]	485 Brookside Camp Rd	68	62	6
R-583.66	Recreation	C	0.07[1]	485 Brookside Camp Rd	65	60	5
R-583.67	Recreation	C	0.07[1]	485 Brookside Camp Rd	66	60	6
R-583.68	Recreation	C	0.07[1]	485 Brookside Camp Rd	66	60	6
R-583.69	Recreation	C	0.07[1]	485 Brookside Camp Rd	66	61	5
R-583.70	Recreation	C	0.07[1]	485 Brookside Camp Rd	65	60	5
R-583.71	Recreation	C	0.07[1]	485 Brookside Camp Rd	65	60	5
Predicted " Hybrid " Widening Alternative With Barrier Benefits							5[2]

[1] Recreation facility was analyzed as a nodal array of receptors (5 equivalent residences represented by 71 nodes).

[2] Total benefits for recreation facility were rounded up to the nearest whole dB(A).

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW28 – 6/8-Lane Hybrid COUNTY(IES) – Henderson and Buncombe

IMPACTS - 5 # BENEFITS - 5 NAC: A B (C) D E F G (CIRCLE ALL THAT APPLY)

A.	**FEASIBILITY:**		
1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO
B.	**REASONABLENESS:**		
1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 3,768 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,535 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO
C.	**NOISE ABATEMENT DECISION:**		
1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO
D.	**OPTIONAL REASONABLENESS CONSIDERATION:**		
1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO
2	If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:		
	Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)		
	Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd		
3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW29

Location: NW29 is located between Brookside Camp Road and Clear Creek Road along I-26 eastbound near Alex Cove Drive. It begins at the top of a cut section but transitions to the edge of shoulder and provides abatement for residences along Hyder Farm Road and Alex Cove Drive.

Dimensions: Length = 1,620 ft., Avg. Height = 12 ft., Area = 18,720 ft^2
Impacts: 4
Benefits: 6
Area / Benefit: 3,120 ft^2.
Allowable Area / Benefit: 2,605 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 4
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-102: Noise Barrier –NW29- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-586	Res.	B	1	619 Hyder Farm Rd	75	68	7
R-587	Res.	B	1	104 Alex Cove Dr	70	64	6
R-588	Res.	B	1	507 Hyder Farm Rd	72	66	6
R-589	Res.	B	1	110 Alex Cove Dr	63	58	5
R-590	Res.	B	1	114 Alex Cove Dr	60	55	5
R-591	Res.	B	1	307 Hyder Farm Rd	66	61	5
Predicted "Hybrid" Widening Alternative With Barrier Benefits							6

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW29 – 6/8-Lane Hybrid COUNTY(IES) – Henderson and Buncombe

IMPACTS - 4 # BENEFITS - 6 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 3,120 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,605 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are: (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ (sq.ft./cu.yd) (CIRCLE ONE) _____ YES NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW30

Location: NW30 is located along the I-26 eastbound off-ramp to US 64 westbound edge of shoulder. It provides abatement for residences along Lake Club Circle, Carolina Village Road and Lake Spur Drive.

Dimensions: Length = 1,560 ft., Avg. Height = 22 ft., Area = 33,780 ft^2
Impacts: 5
Benefits: 10
Area / Benefit: 3,378 ft^2.
Allowable Area / Benefit: 2,570 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 5
NLR ≥ 7dB(A) for Front Row Receptors: 3

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-103: Noise Barrier –NW30- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-622	Res.	B	1	10 Tanager Trail	55	54	1
R-623	Res.	B	1	14 Tanager Trail	50	49	1
R-624	Res.	B	1	12 Tanager Trail	49	46	3
R-625	Res.	B	1	24 White Quail Trail	55	53	2
R-626	Res.	B	1	22 White Quail Trail	59	55	4
R-627	Res.	B	1	20 White Quail Trail	58	55	3
R-628	Res.	B	1	21 White Quail Trail	60	55	5
R-629	Res.	B	1	23 White Quail Trail	58	53	5
R-630	Res.	B	1	25 White Quail Trail	50	48	2
R-631	Res.	B	1	418 Carolina Village Rd	74	61	13
R-632	Res.	B	1	30 Lake Spur Dr	50	46	4
R-633	Res.	B	1	34 Lake Spur Dr	51	47	4
R-634	Res.	B	1	32 Lake Spur Dr	50	48	2
R-635	Res.	B	1	38 Lake Spur Dr	55	50	5
R-636	Res.	B	1	36 Lake Spur Dr	58	53	5
R-637	Res.	B	1	40 Lake Spur Dr	54	50	4
R-638	Res.	B	1	35 Lake Spur Dr	63	54	9
R-639	Res.	B	1	37 Lake Spur Dr	67	59	8
R-640	Res.	B	1	39 Lake Spur Dr	67	61	6
R-641	Res.	B	1	348 Carolina Village Rd	75	66	9
R-642	Res.	B	1	346 Carolina Village Rd	71	66	5

Table D-103: Noise Barrier –NW30- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-643	Res.	B	1	108-A Lake Club Cir	52	48	4
R-644	Res.	B	1	108-B Lake Club Cir	53	49	4
R-645	Res.	B	1	108-C Lake Club Cir	53	49	4
R-646	Res.	B	1	108-D Lake Club Cir	54	50	4
R-647	Res.	B	1	108-E Lake Club Cir	55	51	4
R-648	Res.	B	1	108-F Lake Club Cir	56	53	3
R-649	Res.	B	1	103-F Lake Club Cir	48	48	0
R-650	Res.	B	1	103-E Lake Club Cir	48	47	1
R-651	Res.	B	1	103-D Lake Club Cir	48	47	1
R-652	Res.	B	1	103-C Lake Club Cir	48	48	0
R-653	Res.	B	1	103-B Lake Club Cir	48	48	0
R-654	Res.	B	1	103-A Lake Club Cir	51	49	2
R-655	Res.	B	1	45-D Lake Club Cir	52	50	2
R-656	Res.	B	1	45-C Lake Club Cir	51	50	1
R-657	Res.	B	1	45-B Lake Club Cir	51	50	1
R-658	Res.	B	1	45-A Lake Club Cir	50	49	1
R-659	Res.	B	1	62-A Lake Club Cir	56	54	2
R-660	Res.	B	1	62-B Lake Club Cir	53	52	1
R-661	Res.	B	1	62-C Lake Club Cir	54	53	1
R-662	Res.	B	1	62-D Lake Club Cir	54	53	1
R-663	Res.	B	1	30-A Lake Club Cir	54	54	0
R-664	Res.	B	1	30-B Lake Club Cir	54	54	0
R-665	Res.	B	1	30-C Lake Club Cir	54	54	0
R-666	Res.	B	1	30-D Lake Club Cir	55	55	0
Predicted "Hybrid" Widening Alternative With Barrier Benefits							10

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening — TIP # - I-4400 / I-4700

LOCATION - NW30 – 6/8-Lane Hybrid — COUNTY(IES) – Henderson and Buncombe

IMPACTS - 5 # BENEFITS - 10 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 3,378 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,570 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW31

Location: NW31 begins just south of Camp Pinewood between US 64 and Dana road along I-26 eastbound and continues approximately 2,520 feet to the southeast. It generally follows the top of a cut section but has one transition to edge of shoulder. It provides abatement for residences on West Prince Road and Fairbanks Lane, as well as a few residences accessible via Dana Road.

Dimensions: Length = 2,520 ft., Avg. Height = 20 ft., Area = 50,400 ft^2
Impacts: 8
Benefits: 19
Area / Benefit: 2,653 ft^2.
Allowable Area / Benefit: 2,535 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 8
NLR ≥ 7dB(A) for Front Row Receptors: 7

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-104: Noise Barrier –NW31- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-669	Res.	B	1	305 Prince Rd	74	63	11
R-670	Res.	B	1	77 Fairbanks Ln	73	62	11
R-671	Res.	B	1	69 Fairbanks Ln	66	59	7
R-672	Res.	B	1	47 Fairbanks Ln	60	55	5
R-673	Res.	B	1	317 Prince Rd	61	56	5
R-674	Res.	B	1	311 W Prince Rd	63	57	6
R-675	Res.	B	1	301 Prince Rd	63	58	5
R-676	Res.	B	1	323 Prince Rd	66	59	7
R-677	Res.	B	1	333 Prince Rd	75	61	14
R-678	Res.	B	1	324 Prince Rd	58	53	5
R-679	Res.	B	1	330 Prince Rd	65	56	9
R-680	Res.	B	1	334 Prince Rd	59	54	5
R-681	Res.	B	1	398 Prince Rd	59	53	6
R-682	Res.	B	1	341 Prince Rd	70	58	12
R-683	Res.	B	1	365 Prince Rd	69	58	11
R-684	Res.	B	1	373 Prince Rd	65	59	6
R-685	Res.	B	1	381 Prince Rd	64	59	5
R-686	Res.	B	1	655 Dana Rd	63	58	5
R-687	Res.	B	1	665 Dana Rd	79	67	12

Table D-104: Noise Barrier –NW31- Performance
Without Barrier and With Barrier Noise Levels
Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
Predicted "Hybrid" Widening Alternative With Barrier Benefits							19
					Noise Level Impact		Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening — TIP # - I-4400 / I-4700

LOCATION - NW31 – 6/8-Lane Hybrid — COUNTY(IES) – Henderson and Buncombe

IMPACTS - 8 # BENEFITS - 19 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 2,653 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,535 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW32

Location: NW32 begins just south of the Dana Road bridge along I-26 eastbound edge of shoulder and transitions to the top of a cut section before returning to edge of shoulder. It continues approximately 3,300 feet and provides abatement for residences on Meadowlark Lane, Papa Joes Way and Orchard Park Road, as well as one residence accessible via Tracy Grove Road.

Dimensions: Length = 3,300 ft., Avg. Height = 23 ft., Area = 74,645 ft^2
Impacts: 14
Benefits: 38
Area / Benefit: 1,964 ft^2.
Allowable Area / Benefit: 2,570 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 13
NLR ≥ 7dB(A) for Front Row Receptors: 21

This noise wall does meet feasibility and reasonableness criteria.

Table D-105: Noise Barrier –NW32- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-688	Res.	B	1	102 Papa Joes Way	62	59	3
R-689	Res.	B	1	101 Papa Joes Way	67	60	7
R-690	Res.	B	1	102 Papa Joes Way 2	57	54	3
R-691	Res.	B	1	2 Meadowlark Ln	70	60	10
R-692	Res.	B	1	4 Meadowlark Ln	68	58	10
R-693	Res.	B	1	6 Meadowlark Ln	66	57	9
R-694	Res.	B	1	8 Meadowlark Ln	65	56	9
R-695	Res.	B	1	10 Meadowlark Ln	63	56	7
R-696	Res.	B	1	12 Meadowlark Ln	60	54	6
R-697	Res.	B	1	14 Meadowlark Ln	59	54	5
R-698	Res.	B	1	18 Meadowlark Ln	59	54	5
R-699	Res.	B	1	20 Meadowlark Ln	59	53	6
R-700	Res.	B	1	24 Meadowlark Ln	58	53	5
R-701	Res.	B	1	26 Meadowlark Ln	59	53	6
R-702	Res.	B	1	28 Meadowlark Ln	58	53	5
R-703	Res.	B	1	30 Meadowlark Ln	58	52	6
R-704	Res.	B	1	32 Meadowlark Ln	57	52	5
R-705	Res.	B	1	3 Meadowlark Ln	73	62	11
R-706	Res.	B	1	5 Meadowlark Ln	72	61	11
R-707	Res.	B	1	9 Meadowlark Ln	68	57	11

Table D-105: Noise Barrier –NW32- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-708	Res.	B	1	11 Meadowlark Ln	67	57	10
R-709	Res.	B	1	13 Meadowlark Ln	66	57	9
R-710	Res.	B	1	15 Meadowlark Ln	65	57	8
R-711	Res.	B	1	17 Meadowlark Ln	64	57	7
R-712	Res.	B	1	19 Meadowlark Ln	64	57	7
R-713	Res.	B	1	21 Meadowlark Ln	63	56	7
R-714	Res.	B	1	23 Meadowlark Ln	63	56	7
R-715	Res.	B	1	27 Meadowlark Ln	64	56	8
R-716	Res.	B	1	29 Meadowlark Ln	63	56	7
R-717	Res.	B	1	33 Meadowlark Ln	62	55	7
R-718	Res.	B	1	35 Meadowlark Ln	61	54	7
R-719	Res.	B	1	41 Meadowlark Ln	62	55	7
R-720	Res.	B	1	41 Meadowlark Ln 2	60	54	6
R-721	Res.	B	1	39 Meadowlark Ln	75	64	11
R-722	Res.	B	1	40 Meadowlark Ln	65	56	9
R-723	Res.	B	1	69 Orchard Park Rd	65	55	10
R-724	Res.	B	1	72 Orchard Park Rd	67	57	10
R-725	Res.	B	1	121 Friendship Ln	69	60	9
R-726	Res.	B	1	125 Friendship Ln	67	60	7
R-727	Res.	B	1	665 Tracy Grove Rd	64	59	5
R-728	Res.	B	1	701 Tracy Grove Rd	73	73	0
Predicted "Hybrid" Widening Alternative With Barrier Benefits							38

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening — TIP # - I-4400 / I-4700

LOCATION - NW32 – 6/8-Lane Hybrid — COUNTY(IES) – Henderson and Buncombe

IMPACTS - 14 # BENEFITS - 38 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 1,964 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,570 (sq.ft.) / cu.yd.? (CIRCLE ONE)	X YES	NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	X YES	NO
3	Is the noise mitigation likely?	X YES	NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	X YES	NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW33

Location: NW33 begins approximately 200 feet south of the Tracy Grove Road bridge along I-26 eastbound edge of shoulder and continues approximately 4,980 feet to the southeast. It provides abatement for residences on South Allen Road, Carroll Oaks Drive, East New Hope Road and Merry Oaks Lane.

Dimensions: Length = 4,980 ft., Avg. Height = 17 ft., Area = 86,160 ft^2
Impacts: 12
Benefits: 22
Area / Benefit: 3,916 ft^2.
Allowable Area / Benefit: 2,570 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 12
NLR ≥ 7dB(A) for Front Row Receptors: 10

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-106: Noise Barrier –NW33- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-729	Res.	B	1	731 S Allen Rd	70	60	10
R-730	Res.	B	1	727 Allen Rd	69	60	9
R-731	Comm. Center	C	1	722 S Allen Rd	76	64	12
R-732	Res.	B	1	973 New Hope Rd	61	55	6
R-733	Res.	B	1	983 New Hope Rd	60	55	5
R-734	Res.	B	1	999 New Hope Rd	59	54	5
R-735	Res.	B	1	1075 New Hope Rd	58	53	5
R-736	Res.	B	1	1108 New Hope Rd	59	53	6
R-737	Res.	B	1	1103 New Hope Rd	56	51	5
R-738	Res.	B	1	87 Carroll Oaks Dr	58	53	5
R-739	Res.	B	1	73 Carroll Oaks Dr	58	53	5
R-740	Res.	B	1	45 Carroll Oaks Dr	56	52	4
R-741	Res.	B	1	25 Carroll Oaks Dr	61	55	6
R-742	Res.	B	1	11 Carroll Oaks Dr	67	59	8
R-743	Res.	B	1	713 Allen Rd	67	60	7
R-744	Res.	B	1	709 Allen Rd	66	58	8
R-745	Res.	B	1	695 Allen Rd	69	61	8
R-746	Res.	B	1	691 Allen Rd	71	61	10
R-747	Res.	B	1	677 Allen Rd	75	63	12
R-749	Res.	B	1	92 Merry Oaks Ln	72	62	10

Table D-106: Noise Barrier –NW33- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-750	Res.	B	1	87 Merry Oaks Ln	62	57	5
R-751	Res.	B	1	630 Allen Rd	68	62	6
R-752	Res.	B	1	600 Allen Rd	74	69	5
R-753	Res.	B	1	586 Allen Rd	60	59	1
Predicted "Hybrid" Widening Alternative With Barrier Benefits							22

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW33 – 6/8-Lane Hybrid COUNTY(IES) – Henderson and Buncombe

IMPACTS - 12 # BENEFITS - 22 NAC: A (B) (C) D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 3,916 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,570 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.		sq.ft./cu.yd (CIRCLE ONE)	Bar No.		sq.ft./cu.yd (CIRCLE ONE)
Bar No.		sq.ft./cu.yd	Bar No.		sq.ft./cu.yd

3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of (sq.ft./cu.yd) (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW34

Location: NW34 is located just north of the Crest Road bridge along I-26 eastbound edge of shoulder. It provides abatement for residences on Crest Road.

Dimensions: Length = 780 ft., Avg. Height = 15 ft., Area = 11,580 ft^2
Impacts: 1
Benefits: 1
Area / Benefit: 11,580 ft^2.
Allowable Area / Benefit: 2,500 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 1
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-107: Noise Barrier –NW34- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-754	Res.	B	1	536 Crest Rd	73	66	7
R-755	Res.	B	1	511 Crest Rd	65	64	1
Predicted "Hybrid" Widening Alternative With Barrier Benefits							1

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW34 – 6/8-Lane Hybrid COUNTY(IES) – Henderson and Buncombe

IMPACTS - 1 # BENEFITS - 1 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 11,580 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,500 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW35

Location: NW35 is located along the I-26 eastbound off-ramp to US 25 southbound edge of shoulder. It provides abatement for residences on Hollyhock Court and Oak Grove Road.

Dimensions: Length = 1,500 ft., Avg. Height = 21 ft., Area = 32,100 ft^2
Impacts: 1
Benefits: 2
Area / Benefit: 16,050 ft^2.
Allowable Area / Benefit: 2,500 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 1
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-108: Noise Barrier –NW35- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-757	Res.	B	1	129 Hollyhock Ct	65	62	3
R-758	Res.	B	1	107 Hollyhock Ct	62	59	3
R-759	Res.	B	1	110 Hollyhock Ct	63	61	2
R-760	Res.	B	1	142 Hollyhock Ct	**69**	62	**7**
R-761	Res.	B	1	646 Oak Grove Rd	63	61	2
R-762	Res.	B	1	640 Oak Grove Rd	65	63	2
R-763	Res.	B	1	638 Oak Grove Rd	61	56	**5**
Predicted "Hybrid" Widening Alternative With Barrier Benefits							2

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW35 – 6/8-Lane Hybrid COUNTY(IES) – Henderson and Buncombe

IMPACTS - 1 # BENEFITS - 2 NAC: A (B) C D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 16,050 (sq.ft./cu.yd) (CIRCLE ONE) less than the maximum allowable design criteria per benefited receptor of 2,500 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE) Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)

Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE) _____ YES _____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW36

Location: NW36 is located along I-26 westbound just south of the Blue Ridge Parkway bridge at the top of a cut section. It provides abatement for the Mountains-to-Sea Trail on the east side of I-26.

Dimensions: Length = 900 ft., Avg. Height = 25 ft., Area = 22,500 ft^2
Impacts: 3
Benefits: 0
Area / Benefit: N/A
Allowable Area / Benefit: 2,780 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 0
NLR ≥ 7dB(A) for Front Row Receptors: 0

This noise wall meets neither feasibility nor reasonableness criteria because a 5 dB(A) noise reduction could not be achieved for any receptor in the area.

Table D-109: Noise Barrier –NW36- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-485.01	Trail	C	0.3[1]	Mountains-to-Sea Trail (E)	57	57	0
R-485.02	Trail	C	0.3[1]	Mountains-to-Sea Trail (E)	59	59	0
R-485.03	Trail	C	0.3[1]	Mountains-to-Sea Trail (E)	64	64	0
R-485.04	Trail	C	0.3[1]	Mountains-to-Sea Trail (E)	**67**	**66**	1
R-485.05	Trail	C	0.3[1]	Mountains-to-Sea Trail (E)	**69**	**68**	1
R-485.06	Trail	C	0.3[1]	Mountains-to-Sea Trail (E)	**70**	**69**	1
R-485.07	Trail	C	0.3[1]	Mountains-to-Sea Trail (E)	**69**	**68**	1
R-485.08	Trail	C	0.3[1]	Mountains-to-Sea Trail (E)	**66**	**66**	0
R-485.09	Trail	C	0.3[1]	Mountains-to-Sea Trail (E)	**67**	**67**	0
R-485.10	Trail	C	0.3[1]	Mountains-to-Sea Trail (E)	**71**	**71**	0
Predicted "Hybrid" Widening Alternative With Barrier Benefits							0[2]

[1] Walking trail was analyzed as a nodal array of receptors (3 equivalent residences represented by 10 nodes).
[2] The NCDOT noise reduction design goal of 7 dB(A) could not be achieved for at least one benefited receptor to meet reasonableness criteria.

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening TIP # - I-4400 / I-4700

LOCATION - NW36 – 6/8-Lane Hybrid COUNTY(IES) – Henderson and Buncombe

IMPACTS - 3 # BENEFITS - 0 NAC: A B (C) D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:

1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	____ YES	X NO
2	Does topography negatively affect the proposed abatement measure?	____ YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	____ YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	____ NO

B. REASONABLENESS:

1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	____ YES	X NO
2	Is the design criteria per benefited receptor of N/A (CIRCLE ONE) (sq.ft./cu.yd) less than the maximum allowable design criteria per benefited receptor of ____ 2,780 (CIRCLE ONE) (sq.ft.) / cu.yd.?	____ YES	X NO

C. NOISE ABATEMENT DECISION:

1	Is the noise mitigation feasible?	____ YES	X NO
2	Is the noise mitigation reasonable?	____ YES	X NO
3	Is the noise mitigation likely?	____ YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	____ YES	X NO
5	Is the noise mitigation recommended for construction?	____ YES	X NO

D. OPTIONAL REASONABLENESS CONSIDERATION:

1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	____ YES	X NO

2 If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:

Bar No.	____	____ (CIRCLE ONE) sq.ft./cu.yd	Bar No.	____	____ (CIRCLE ONE) sq.ft./cu.yd
Bar No.	____	____ sq.ft./cu.yd	Bar No.	____	____ sq.ft./cu.yd

3 If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of ____ (CIRCLE ONE) sq.ft./cu.yd ____ YES ____ NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

NW37

Location: NW37 is located along I-26 eastbound just north of the Blue Ridge Parkway bridge at the top of a cut section. It provides abatement for the Mountains-to-Sea Trail on the west side of I-26.

Dimensions: Length = 1,200 ft., Avg. Height = 23 ft., Area = 27,480 ft^2
Impacts: 3
Benefits: 2
Area / Benefit: 13,740 ft^2.
Allowable Area / Benefit: 2,745 ft^2
NLR ≥ 5 dB(A) for Impacted Receptors: 1
NLR ≥ 7dB(A) for Front Row Receptors: 1

This noise wall does not meet reasonableness criteria because the area per benefit exceeds the allowable area per benefit.

Table D-110: Noise Barrier –NW37- Performance Without Barrier and With Barrier Noise Levels Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
R-521.01	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	61	58	3
R-521.02	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	62	57	5
R-521.03	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	63	56	7
R-521.04	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	65	59	6
R-521.05	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	69	63	6
R-521.06	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	72	67	5
R-521.07	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	72	67	5
R-521.08	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	72	67	5
R-521.09	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	71	67	4
R-521.10	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	71	67	4
R-521.11	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	71	67	4
R-521.12	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	70	67	3
R-521.13	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	70	67	3
R-521.14	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	70	67	3
R-521.15	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	69	67	2
R-521.16	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	69	67	2
R-521.17	Trail	C	0.18[1]	Mountains-to-Sea Trail (W)	67	66	1

Table D-110: Noise Barrier –NW37- Performance
Without Barrier and With Barrier Noise Levels
Hybrid Widening Alternative

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Use	NAC	D.U.s	Address	Build	With Barrier	NLR
Predicted "Hybrid" Widening Alternative With Barrier Benefits							2[2]

[1] Walking trail was analyzed as a nodal array of receptors (3 equivalent residences represented by 17 nodes).

[2] Total benefits for walking trail were rounded up to the nearest whole dB(A).

Noise Level Impact	Benefited Receptor

NCDOT SOUND BARRIER
FEASIBILITY and REASONABLENESS
WORKSHEET

PROJECT – I-26 Widening — TIP # - I-4400 / I-4700

LOCATION - NW37 – 6/8-Lane Hybrid — COUNTY(IES) – Henderson and Buncombe

IMPACTS - 3 # BENEFITS - 2 NAC: A B (C) D E F G (CIRCLE ALL THAT APPLY)

A. FEASIBILITY:			
1	Can a 5-dB(A) reduction in traffic noise levels be achieved for at least one impacted receptor?	X YES	NO
2	Does topography negatively affect the proposed abatement measure?	YES	X NO
3	Does the abatement measure negatively affect property access, drainage, safety and maintenance requirements?	YES	X NO
4	Is there control of access in the vicinity of the proposed abatement measure?	X YES	NO
B. REASONABLENESS:			
1	Can a 7-dB(A) reduction in traffic noise levels be achieved for at least one impacted front row receptor?	X YES	NO
2	Is the design criteria per benefited receptor of 13,740 (sq.ft./cu.yd) less than the maximum allowable design criteria per benefited receptor of 2,745 (sq.ft.) / cu.yd.? (CIRCLE ONE)	YES	X NO
C. NOISE ABATEMENT DECISION:			
1	Is the noise mitigation feasible?	X YES	NO
2	Is the noise mitigation reasonable?	YES	X NO
3	Is the noise mitigation likely?	YES	X NO
4	Have the owners' and residents' viewpoints been solicited?	YES	X NO
5	Is the noise mitigation recommended for construction?	YES	X NO
D. OPTIONAL REASONABLENESS CONSIDERATION:			
1	Was optional averaging noise abatement allowance within a common noise environment used for consideration of barrier reasonableness?	YES	X NO
2	If the answer to D.1 is YES, the design criteria per benefited receptor for each individual barrier within the common noise environment before averaging are:		
	Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd (CIRCLE ONE)		
	Bar No. _____ _____ sq.ft./cu.yd Bar No. _____ _____ sq.ft./cu.yd		
3	If the answer to D.1 is YES, is the design criteria per benefited receptor for each individual barrier less than or equal to twice the maximum allowable design criteria per benefited receptor of _____ sq.ft./cu.yd (CIRCLE ONE)	YES	NO

Form Completed By: Trey Jordan Date: 3/20/2015

In Consultation With: Tracy Roberts Date: 3/20/2015

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Appendix E

Predicted Traffic Volumes

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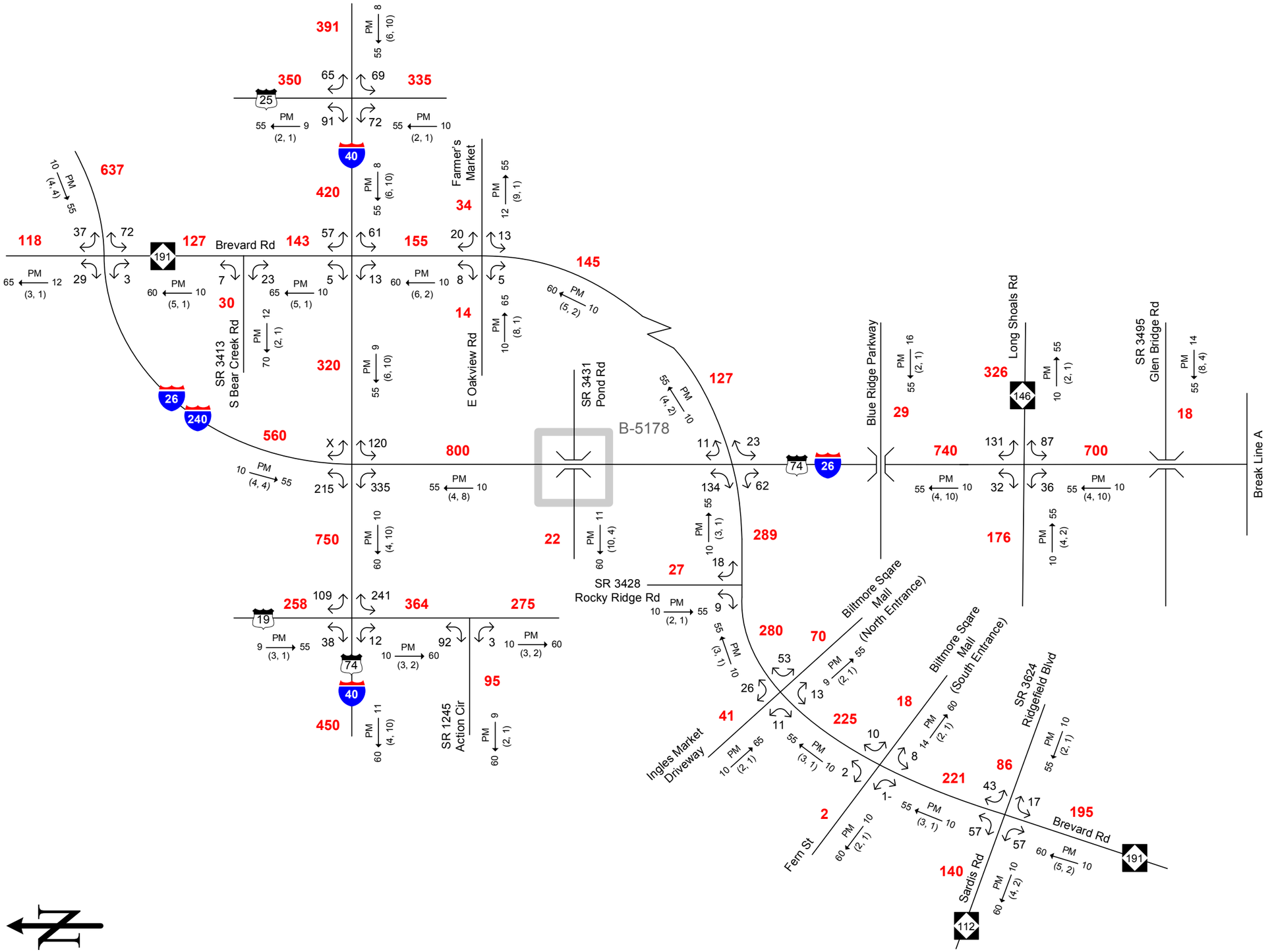
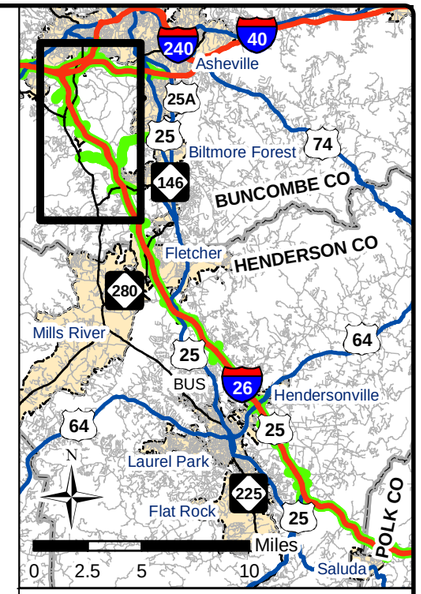
Traffic Forecast Diagrams





2011

ANNUAL AVERAGE DAILY TRAFFIC

No Build

Existing Conditions

SHEET 1 - 1

L E G E N D

PM K → D (d, t)

###	No. of Vehicles Per Day (VPD) in 100s
1-	Less than 50 VPD
X	Movement Prohibited
-------	Roadway
K	Design Hour Factor (%)
PM	PM Peak Period
D	Peak Hour Directional Split
→	Indicates Direction of D
(d,t)	Duals, TT-STs (%)

TIP: I-4400 / I-4700 | **WBS:** 34232.1.1

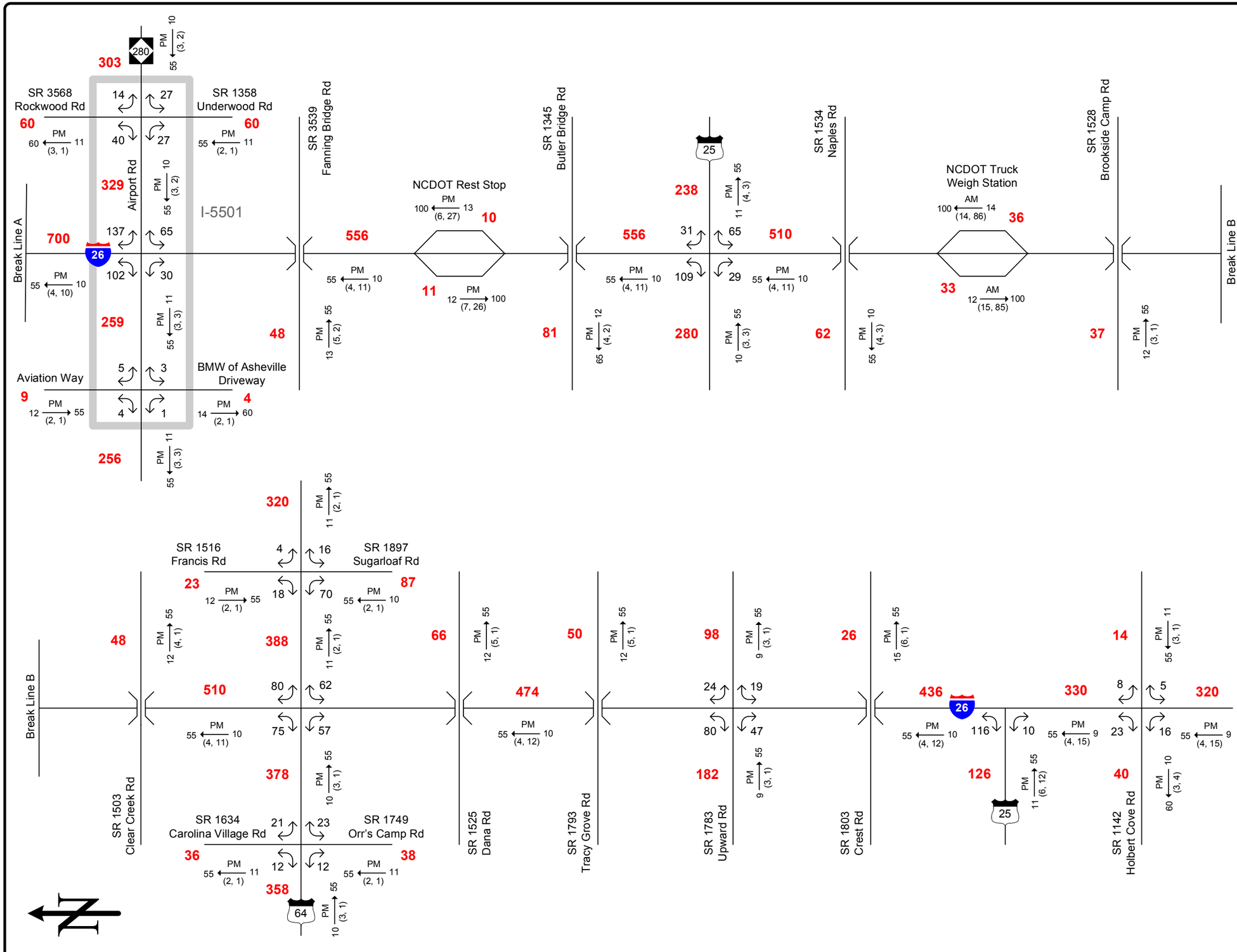
COUNTY: Buncombe | **DIVISION:** 13

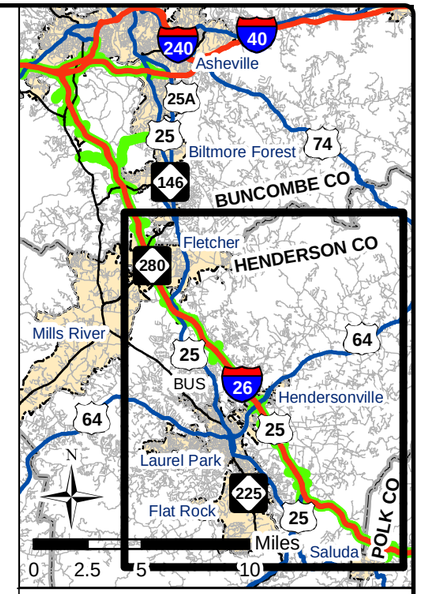
DATE: 02-14-2012

PREPARED BY: Keith Dixon

LOCATION: I-26 from I-40 in Buncombe Co. to US 25 in Henderson Co.

PROJECT: Widen I-26





2011

ANNUAL AVERAGE DAILY TRAFFIC

No Build
Existing Conditions

SHEET 1 – 2

L E G E N D

PM K → D (d, t)

###	No. of Vehicles Per Day (VPD) in 100s
1-	Less than 50 VPD
X	Movement Prohibited
-------	Roadway
K	Design Hour Factor (%)
PM	PM Peak Period
D	Peak Hour Directional Split
→	Indicates Direction of D
(d,t)	Duals, TT-STs (%)

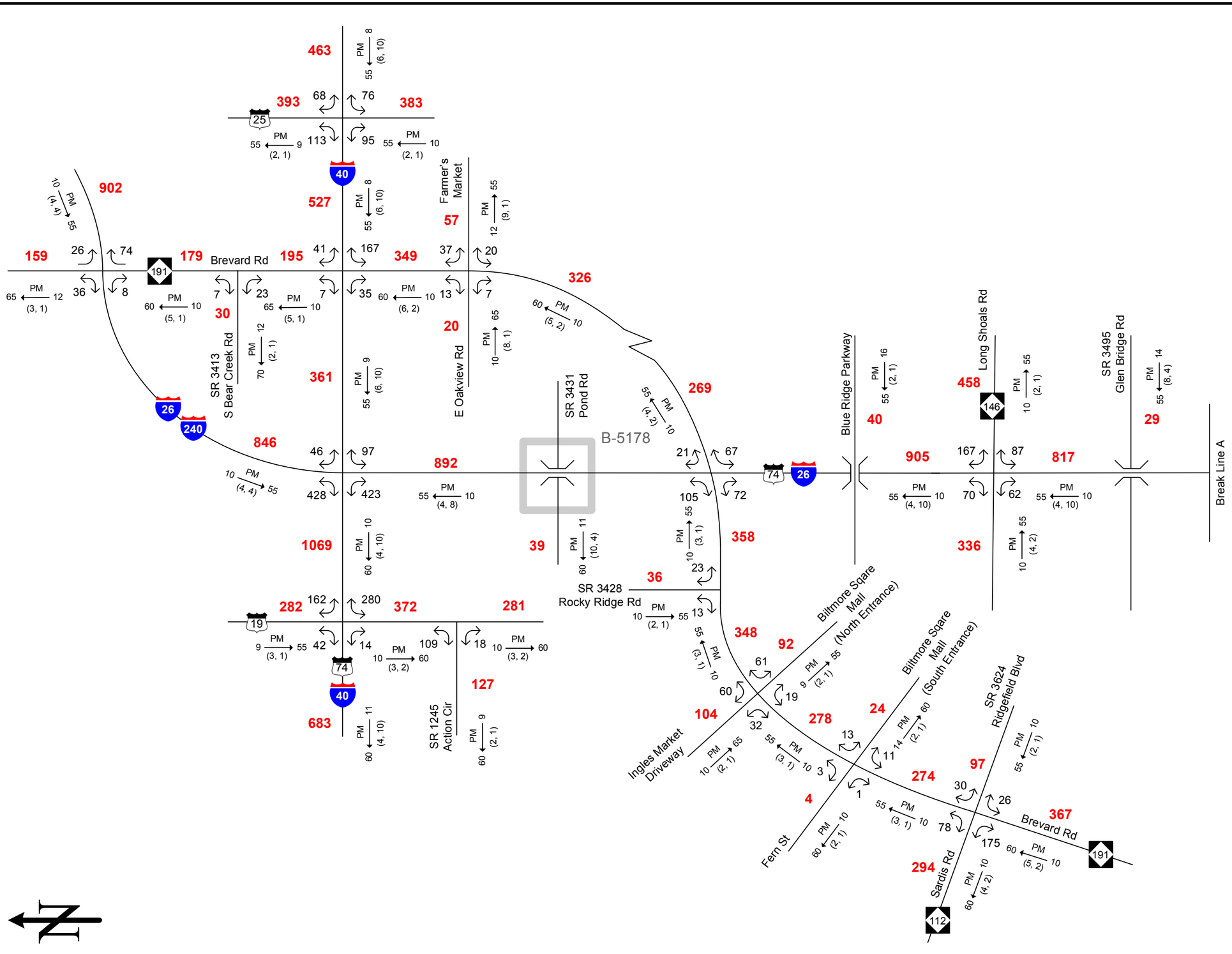
TIP: I-4400 / I-4700	**WBS:** 34232.1.1
COUNTY: Buncombe	**DIVISION:** 13

DATE: 02-14-2012

PREPARED BY: Keith Dixon

LOCATION: I-26 from I-40 in Buncombe Co. to US 25 in Henderson Co.

PROJECT: Widen I-26



2040

ANNUAL AVERAGE DAILY TRAFFIC

No Build

SHEET 4 - 1

L E G E N D

K PM (d, t) D

###	No. of Vehicles Per Day (VPD) in 100s
1-	Less than 50 VPD
X	Movement Prohibited
-------	Roadway
K	Design Hour Factor (%)
PM	PM Peak Period
D	Peak Hour Directional Split
→	Indicates Direction of D
(d,t)	Duals, TT-STs (%)

TIP: I-4400 / I-4700 | **WBS:** 34232.1.1

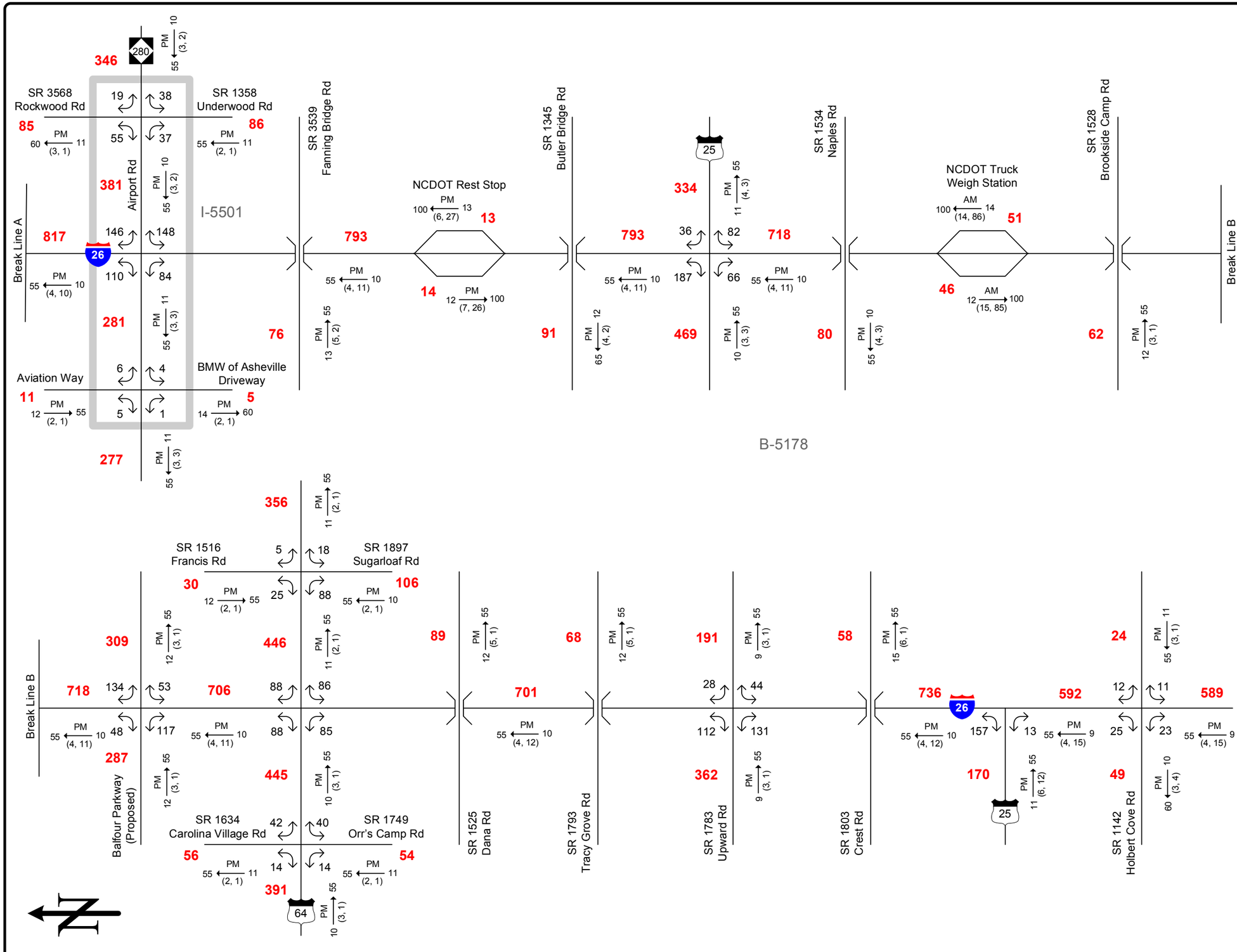
COUNTY: Buncombe | **DIVISION:** 13

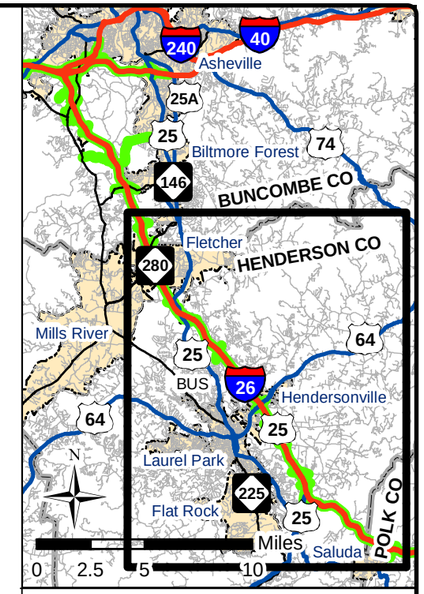
DATE: 02-14-2012

PREPARED BY: Keith Dixon

LOCATION: I-26 from I-40 in Buncombe Co. to US 25 in Henderson Co.

PROJECT: Widen I-26





2040

ANNUAL AVERAGE DAILY TRAFFIC

No Build

SHEET 4 – 2

L E G E N D

K PM (d, t) D

###	No. of Vehicles Per Day (VPD) in 100s
1-	Less than 50 VPD
X	Movement Prohibited
-------	Roadway
K	Design Hour Factor (%)
PM	PM Peak Period
D	Peak Hour Directional Split
→	Indicates Direction of D
(d,t)	Duals, TT-STs (%)

TIP: I-4400 / I-4700 | **WBS:** 34232.1.1

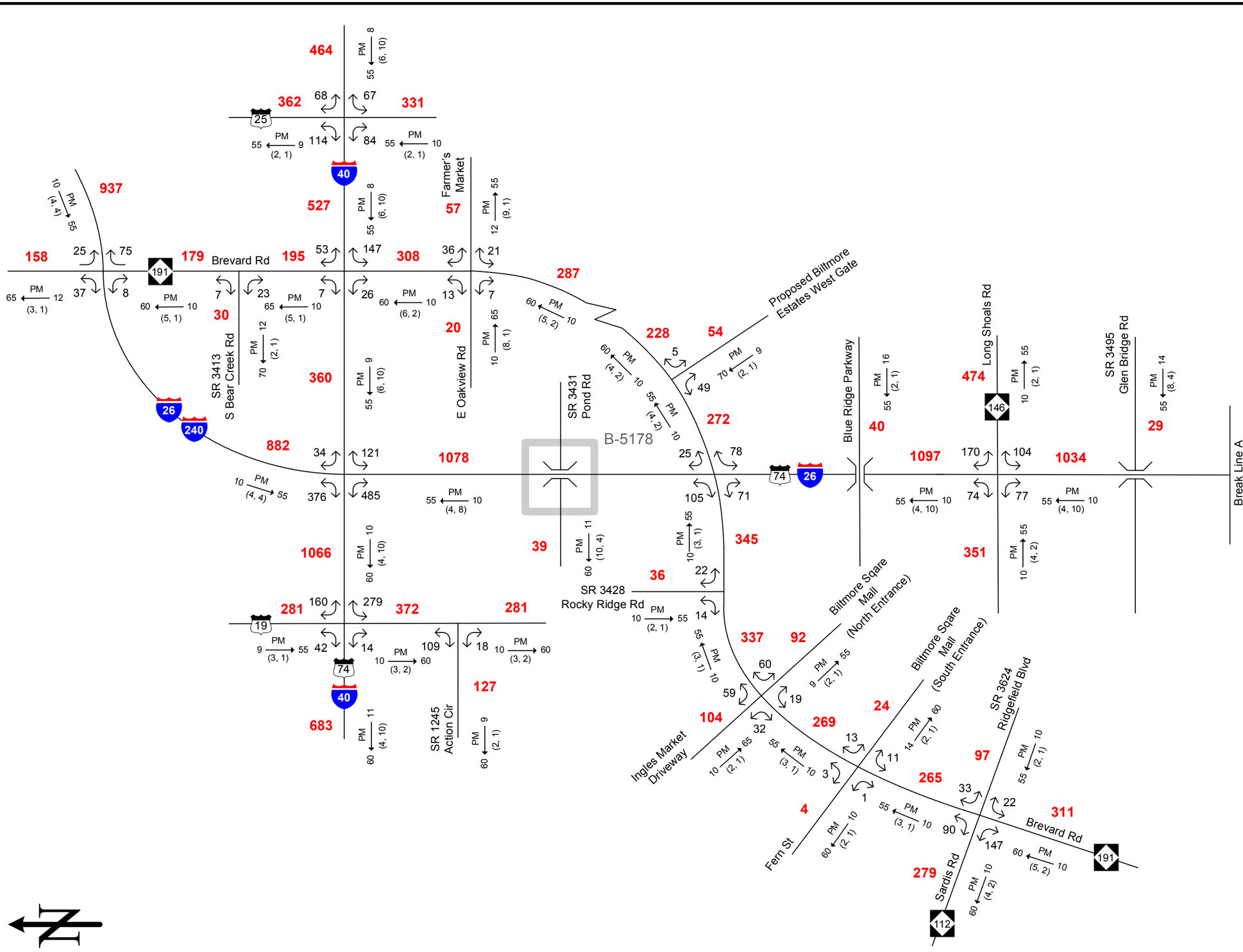
COUNTY: Buncombe | **DIVISION:** 13

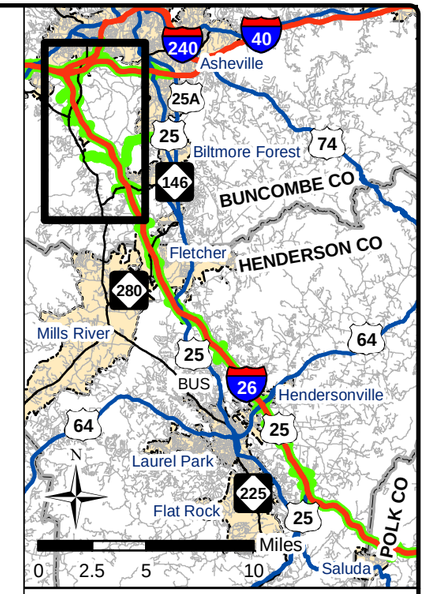
DATE: 02-14-2012

PREPARED BY: Keith Dixon

LOCATION: I-26 from I-40 in Buncombe Co. to US 25 in Henderson Co.

PROJECT: Widen I-26





2040

ANNUAL AVERAGE DAILY TRAFFIC

Build – 6 Lanes

SHEET 5 - 1

L E G E N D

PM
K → D
(d, t)

###	No. of Vehicles Per Day (VPD) in 100s
1-	Less than 50 VPD
X	Movement Prohibited
-------	Roadway
K	Design Hour Factor (%)
PM	PM Peak Period
D	Peak Hour Directional Split
→	Indicates Direction of D
(d,t)	Duals, TT-STs (%)

TIP: I-4400 / I-4700 | **WBS:** 34232.1.1

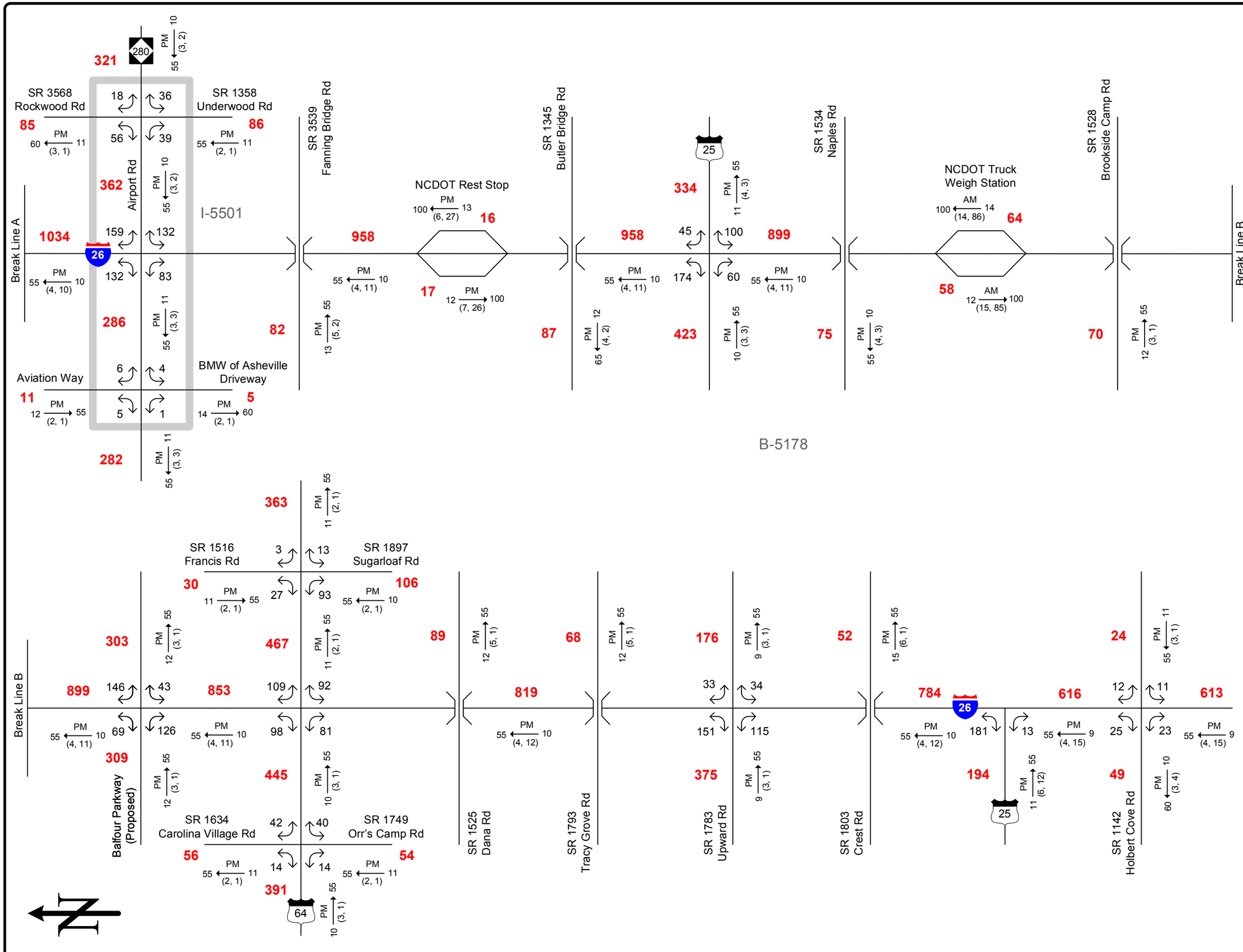
COUNTY: Buncombe | **DIVISION:** 13

DATE: 02-14-2012

PREPARED BY: Keith Dixon

LOCATION: I-26 from I-40 in Buncombe Co. to US 25 in Henderson Co.

PROJECT: Widen I-26



2040

ANNUAL AVERAGE DAILY TRAFFIC

Build – 6 Lanes

SHEET 5 - 2

L E G E N D

K PM (d, t) D

###	No. of Vehicles Per Day (VPD) in 100s
1-	Less than 50 VPD
X	Movement Prohibited
-------	Roadway
K	Design Hour Factor (%)
PM	PM Peak Period
D	Peak Hour Directional Split
→	Indicates Direction of D
(d,t)	Duals, TT-STs (%)

TIP: I-4400 / I-4700 | **WBS:** 34232.1.1

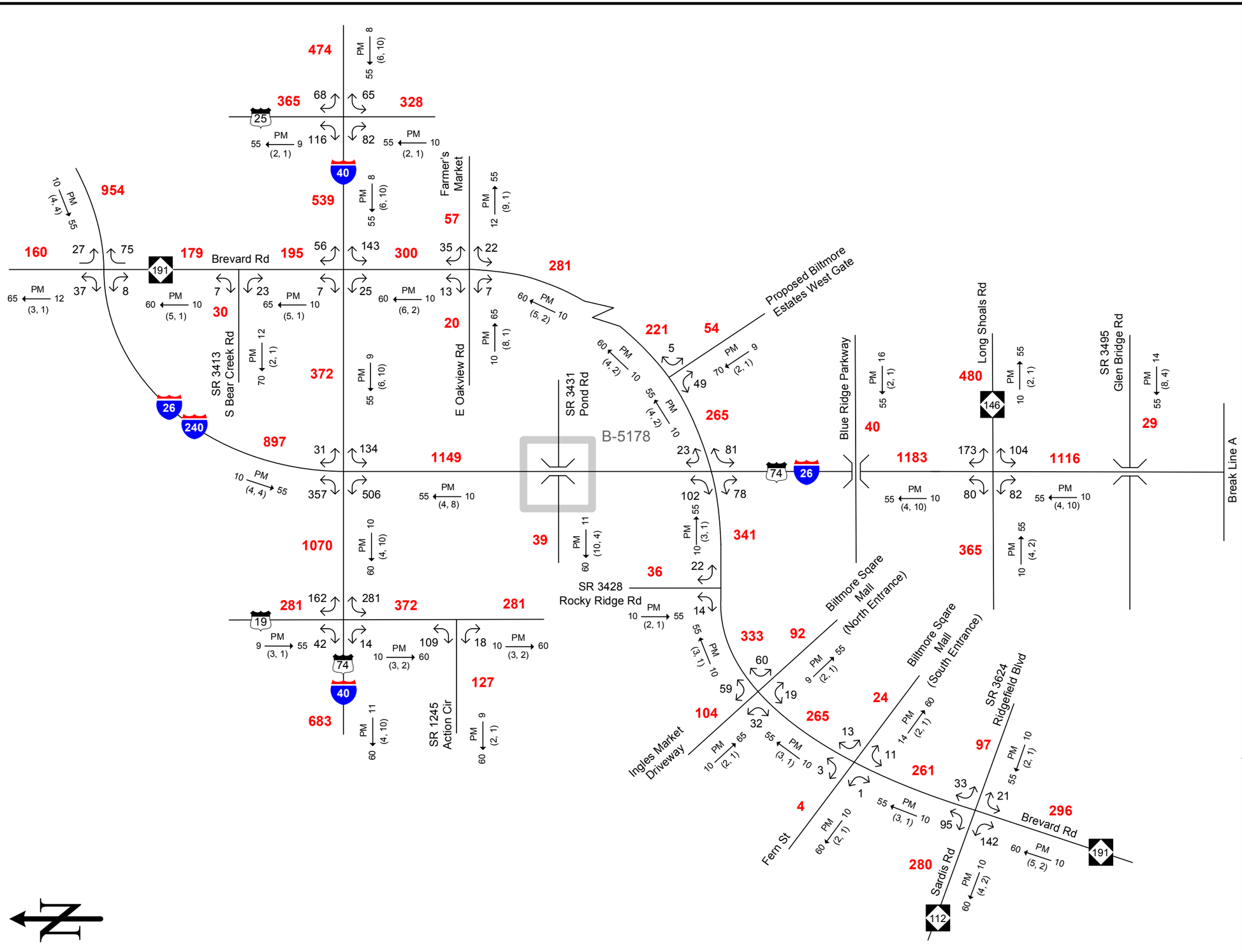
COUNTY: Buncombe | **DIVISION:** 13

DATE: 02-14-2012

PREPARED BY: Keith Dixon

LOCATION: I-26 from I-40 in Buncombe Co. to US 25 in Henderson Co.

PROJECT: Widen I-26



2040

ANNUAL AVERAGE DAILY TRAFFIC

Build – 8 Lanes

SHEET 6 - 1

L E G E N D

PM K → D (d, t)

###	No. of Vehicles Per Day (VPD) in 100s
1-	Less than 50 VPD
X	Movement Prohibited
-------	Roadway
K	Design Hour Factor (%)
PM	PM Peak Period
D	Peak Hour Directional Split
→	Indicates Direction of D
(d,t)	Duals, TT-STs (%)

TIP: I-4400 / I-4700 | **WBS:** 34232.1.1

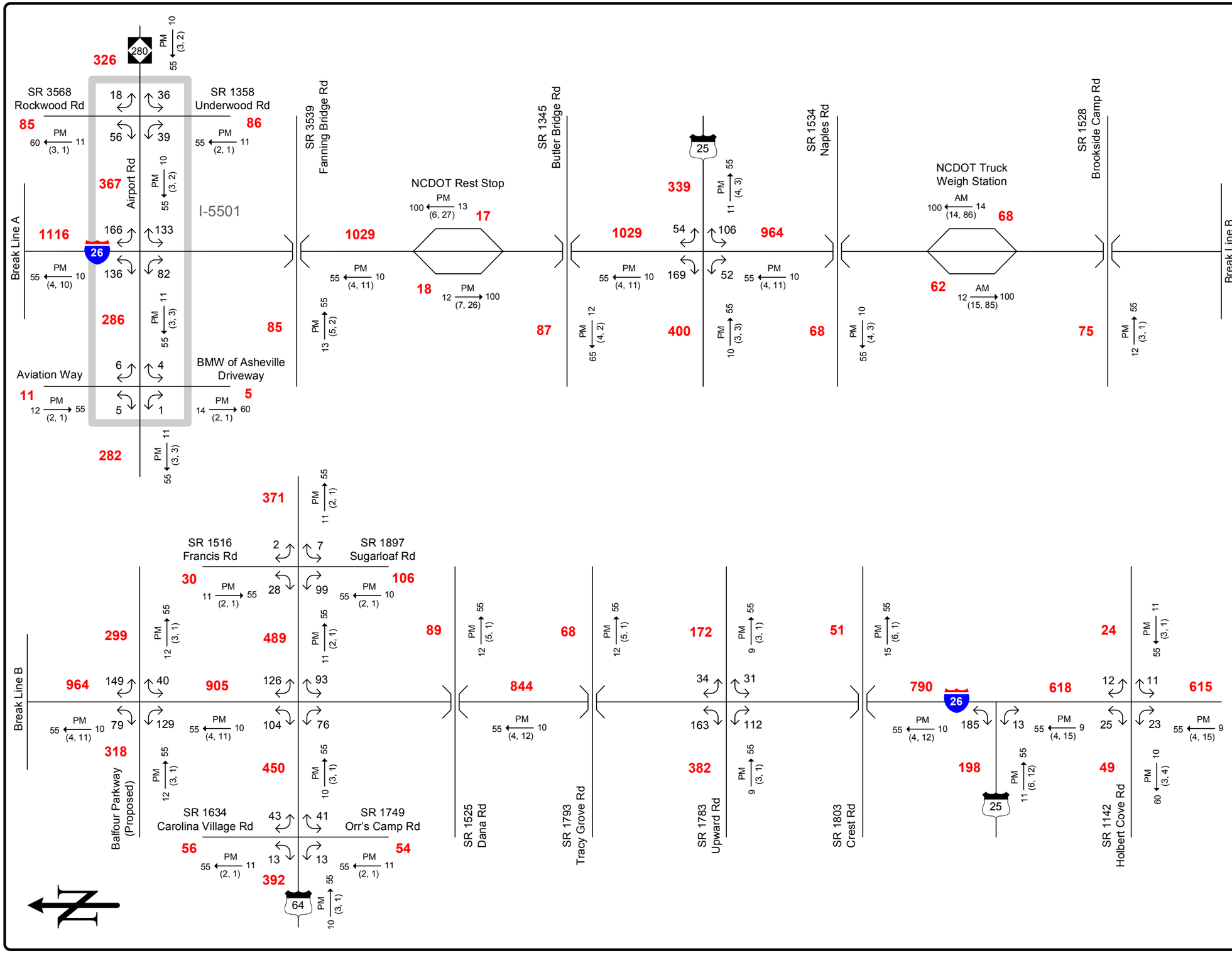
COUNTY: Buncombe | **DIVISION:** 13

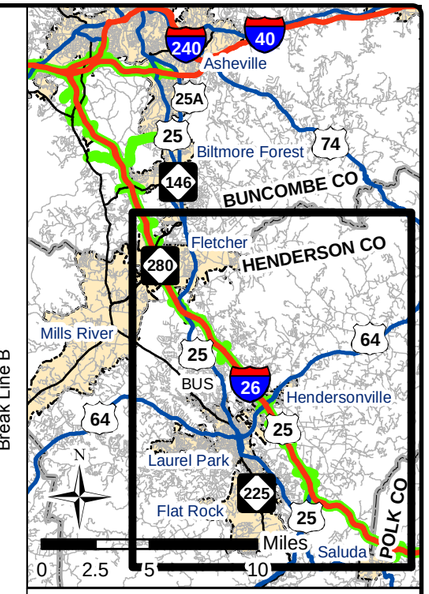
DATE: 02-14-2012

PREPARED BY: Keith Dixon

LOCATION: I-26 from I-40 in Buncombe Co. to US 25 in Henderson Co.

PROJECT: Widen I-26





2040

ANNUAL AVERAGE DAILY TRAFFIC

Build – 8 Lanes

SHEET 6 – 2

L E G E N D

PM (d, t): K → D

###	No. of Vehicles Per Day (VPD) in 100s
1-	Less than 50 VPD
X	Movement Prohibited
-------	Roadway
K	Design Hour Factor (%)
PM	PM Peak Period
D	Peak Hour Directional Split
→	Indicates Direction of D
(d,t)	Duals, TT-STs (%)

TIP: I-4400 / I-4700 | **WBS:** 34232.1.1

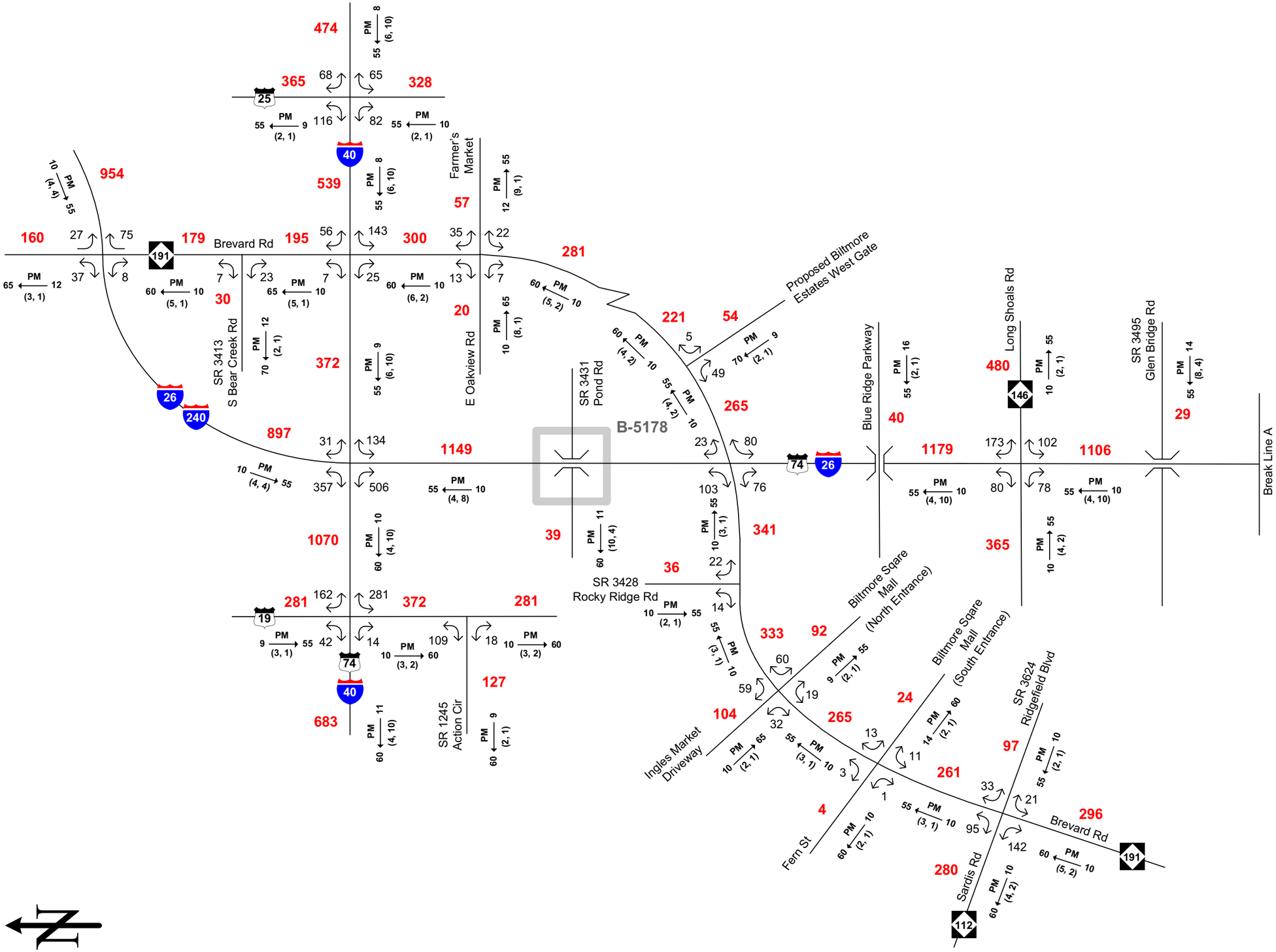
COUNTY: Buncombe | **DIVISION:** 13

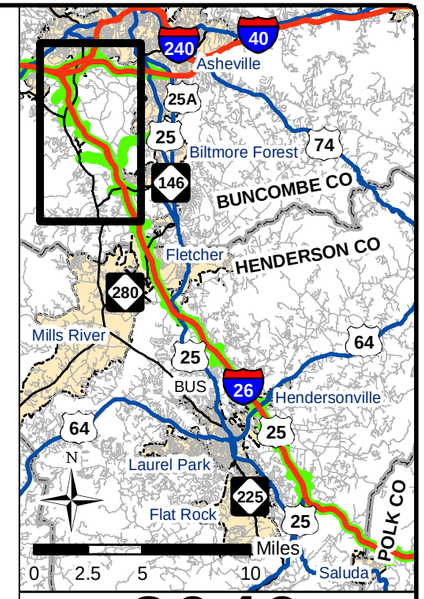
DATE: 02-14-2012

PREPARED BY: Keith Dixon

LOCATION: I-26 from I-40 in Buncombe Co. to US 25 in Henderson Co.

PROJECT: Widen I-26





2040

ANNUAL AVERAGE DAILY TRAFFIC

Build – 8/6 Lanes

8-lanes from I-40 (Exit 31) to US 25 (Exit 44)
6-lanes from US 25 (Exit 44) to US 25 (Exit 54)

SHEET 8 - 1

L E G E N D

K PM→ D (d, t)

###	No. of Vehicles Per Day (VPD) in 100s
1-	Less than 50 VPD
X	Movement Prohibited
-------	Roadway
K	Design Hour Factor (%)
PM	PM Peak Period
D	Peak Hour Directional Split
→	Indicates Direction of D
(d,t)	Duals, TT-STs (%)

TIP: I-4400 / I-4700 | **WBS:** 34232.1.1

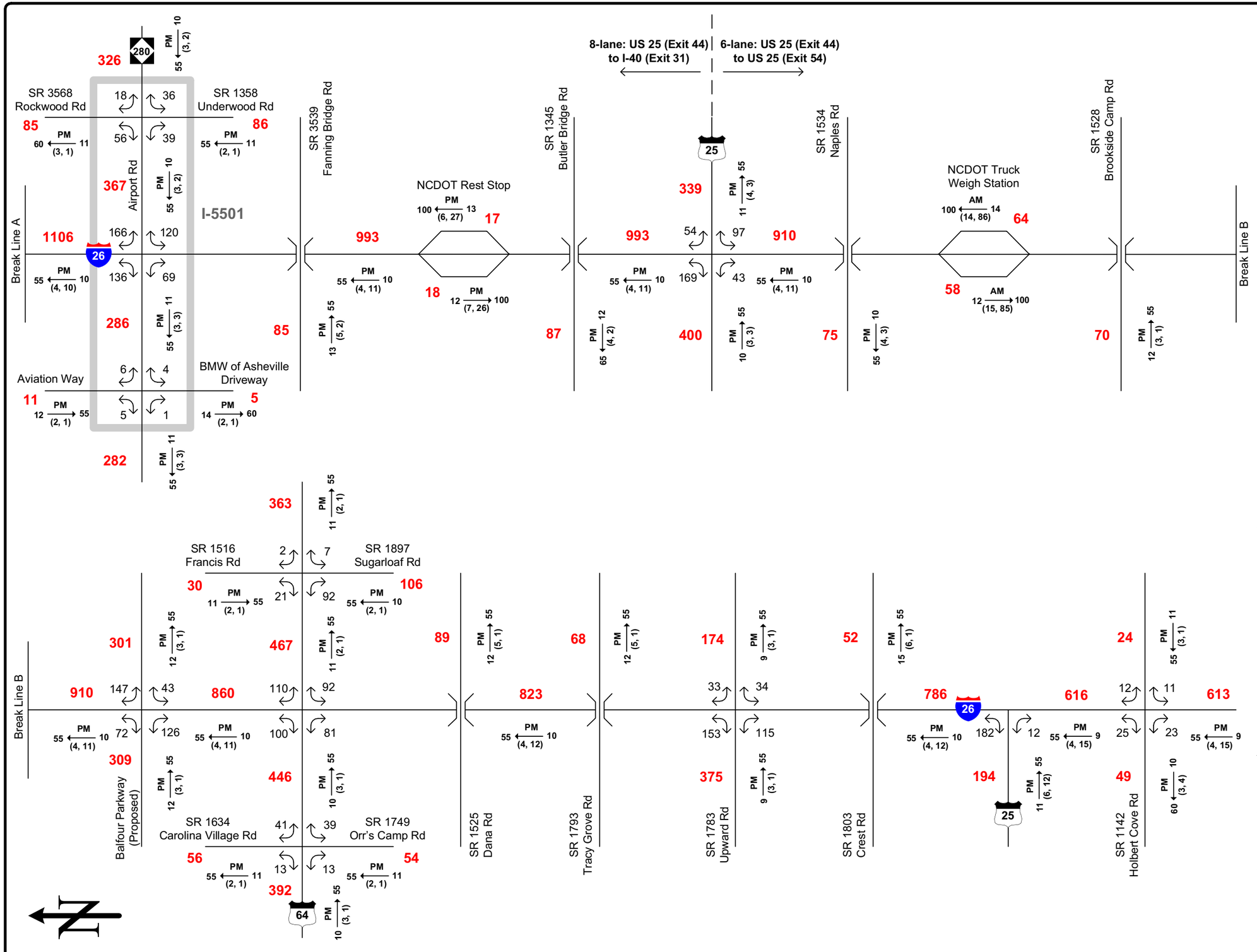
COUNTY: Buncombe | **DIVISION:** 13

DATE: 12-16-2013

PREPARED BY: Keith Dixon

LOCATION: I-26 from I-40 in Buncombe Co. to US 25 in Henderson Co.

PROJECT: Widen I-26



2040

ANNUAL AVERAGE DAILY TRAFFIC

Build – 8/6 Lanes

8-lanes from I-40 (Exit 31) to US 25 (Exit 44)
6-lanes from US 25 (Exit 44) to US 25 (Exit 54)

SHEET 8 - 2

L E G E N D

PM K → D (d, t)

###	No. of Vehicles Per Day (VPD) in 100s
1-	Less than 50 VPD
X	Movement Prohibited
-------	Roadway
K	Design Hour Factor (%)
PM	PM Peak Period
D	Peak Hour Directional Split
→	Indicates Direction of D
(d,t)	Duals, TT-STs (%)

TIP: I-4400 / I-4700 | **WBS:** 34232.1.1

COUNTY: Buncombe | **DIVISION:** 13

DATE: 12-16-2013

PREPARED BY: Keith Dixon

LOCATION: I-26 from I-40 in Buncombe Co. to US 25 in Henderson Co.

PROJECT: Widen I-26

Appendix F

North Carolina Department of Transportation

Traffic Noise Abatement Policy

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NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

TRAFFIC NOISE ABATEMENT POLICY

Effective Date: July 13, 2011

Noise Policy Committee:

Jay Bennett, PE.....Roadway Design Unit
Drew Joyner, PE.....Human Environment Unit
Daniel Keel, PE.....NCDOT Operations
Mike Mills, PE.....NCDOT Division 7
Gregory A. Smith, PE.....Human Environment Unit

Technical Resource Team:

Missy Dickens Pair, PE.....Project Development & Environmental Analysis Branch
Ed Lewis.....Human Environment Unit
Joe Rauseo.....Human Environment Unit
Tracy Roberts, AICP.....North Carolina Turnpike Authority
Steve Walker.....Human Environment Unit

Sponsors:

Rob Ayers.....Federal Highway Administration
Felix Davila, PE.....Federal Highway Administration
Mike Fox.....Board of Transportation
Nina Szlosberg-Landis.....Board of Transportation

APPROVED BY:

3/9/2011
Date of Approval

John F. Sullivan, III, PE
Division Administrator
Federal Highway Administration

2/28/2011
Date of Approval

Gene Conti
Secretary of Transportation

2/22/11
Date of Approval

Robert A. Collier, Jr.
Chairman
Board of Transportation

Person Responsible for Policy:

Gregory A. Smith, PE
Traffic Noise & Air Quality Supervisor
Human Environment Unit
1598 Mail Service Center
Raleigh, North Carolina 27699-1598
(919) 707-6087
gasmith@ncdot.gov

INTRODUCTION

This document contains the North Carolina Department of Transportation (hereinafter NCDOT) policy on highway traffic noise and construction noise and describes the implementation of the requirements of the Federal Highway Administration (hereinafter FHWA) Noise Standard at 23 Code of Federal Regulations (CFR) Part 772 as they relate to federal and state funded highway construction in North Carolina. This policy was developed by the NCDOT and reviewed and approved by the FHWA.

The North Carolina Department of Transportation Traffic Noise Analysis and Abatement Guidance Manual and 23 CFR 772 are intended to be companion documents to this policy.

PURPOSE

This policy describes the NCDOT process that is used in determining traffic noise impacts and abatement measures and the equitable and cost-effective expenditure of public funds for traffic noise abatement. Where the FHWA has given highway agencies flexibility in implementing the 23 CFR 772 standards, this policy describes the NCDOT approach to implementation.

APPLICABILITY

This policy applies to all "Type I" federal, state or federal-aid highway projects in the State of North Carolina, including federal projects that are administered by local public agencies. NCDOT does not participate in nor fund Type II (retrofit) projects along existing state transportation facilities. Noise analyses are not required for Type III projects. Each of these project types are defined below. This policy shall be applied uniformly and consistently to all Type I federal projects throughout the state.

Type I Project

(a) The construction of a highway on new location; or,

(b) The physical alteration of an existing highway where there is either:
   (i) Substantial Horizontal Alteration. A project that halves the distance between the traffic noise source and the closest receptor between the existing condition to the future build condition; or,
   (ii) Substantial Vertical Alteration. A project that removes shielding, therefore exposing the line-of-sight between the receptor and the traffic noise source. This is done by either altering the vertical alignment of the highway or by altering the topography between the highway traffic noise source and the receptor; or,

(c) The addition of a through-traffic lane(s). This includes the addition of a through-traffic lane that functions as a HOV lane, High-Occupancy Toll (HOT) lane, bus lane, or truck climbing lane; or,

(d) The addition of an auxiliary lane, except for when the auxiliary lane is a turn lane; or,

(e) The addition or relocation of interchange lanes or ramps added to a quadrant to complete an existing partial interchange; or,

(f) Restriping existing pavement for the purpose of adding a through-traffic lane or an auxiliary lane; or,

(g) The addition of a new or substantial alteration of a weigh station, rest stop, ride-share lot or toll plaza.

(h) If a project is determined to be a Type I project under this definition then the entire project area as defined in the environmental document is a Type I project.

Type II Project.

A Federal or Federal-aid highway project for noise abatement on an existing highway. For a Type II project to be eligible for Federal-aid funding, the highway agency must develop and implement a Type II program in accordance with section 772.7(e).

Type III Project

A Federal or Federal-aid highway project that does not meet the classifications of a Type I or Type II project. Type III projects do not require a noise analysis.

The highway traffic noise prediction requirements, noise analyses, noise abatement criteria, and requirements for informing local officials in 23 CFR 772 and this policy constitute the noise standards mandated by 23 U.S.C. 109(1). All highway projects which are developed in conformance with this policy shall be deemed to be in accordance with the FHWA noise standards.

Projects let for construction on or after July 13, 2011 shall be reviewed under the criteria of this policy; however, the original date of public knowledge shall remain unchanged.

DATE OF PUBLIC KNOWLEDGE

The Date of Public Knowledge of the location and potential noise impacts of a proposed highway project is the approval date of the final environmental document, e.g., Categorical Exclusion (CE), State or Federal Finding of No Significant Impact (FONSI) or State or Federal Record of Decision (ROD).

After this date, the federal and state governments are no longer responsible for providing noise abatement measures for new development within the noise impact area of the proposed highway project. It is the responsibility of local governments and private landowners to ensure that noise-compatible designs are used for development permitted after the Date of Public Knowledge.

This policy applies only to developed land and to undeveloped land for which development is permitted before the project Date of Public Knowledge. The criteria (trigger date) for determining when undeveloped land is permitted for development is the approval date of a building permit for an individual lot or site.

TRAFFIC NOISE PREDICTION

All traffic noise analyses performed by or for NCDOT must utilize the most current version of the FHWA Traffic Noise Model (TNM®) or any other model determined by the FHWA to be consistent with the methodology of the TNM® model, pursuant to 23 CFR 772.9.

Average pavement type shall be used in the FHWA TNM® for future noise level prediction.

Noise contour lines may be used for project alternative screening or for land use planning, but shall not be used for determining highway traffic noise impacts.

Traffic characteristics that would yield the loudest hourly equivalent traffic noise levels for the design year shall be used in predicting noise levels and assessing noise impacts.

Traffic noise prediction must adhere to all methodologies detailed in the NCDOT Traffic Noise Analysis and Abatement Guidance Manual.

NOISE IMPACT DETERMINATION

Traffic noise abatement for NCDOT highway projects is warranted and must be considered when traffic noise impacts are created by either of the following two conditions:

(a) The predicted traffic noise levels for the Design Year approach (reach one decibel less than) or exceed the Noise Abatement Criteria (NAC) contained in 23 CFR 772 and in Table 1, found on page 4 of this policy, OR

(b) The predicted traffic noise levels for the Design Year substantially exceed existing noise levels as defined in Table 2, found on page 5 of this policy.

A receptor is a discrete or representative location of a noise sensitive area(s) for any of the land uses listed in Table 1. For multifamily dwellings, each residence shall be counted as one receptor when determining impacted and benefited receptors.

Primary consideration shall be given to exterior areas where frequent human use occurs in the determination of traffic noise impacts.

A traffic noise analysis shall be completed for each project alternative under detailed study and for each Activity Category listed in Table 1 that is present in the study area.

Table 1

Noise Abatement Criteria

Hourly Equivalent A-Weighted Sound Level (decibels (dB(A))

Activity Category	Activity Criteria[1] Leq(h)[2]	Evaluation Location	Activity Description
A	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B [3]	67	Exterior	Residential
C [3]	67	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, daycare 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, Section4(f) sites, schools, television studios, trails, and trail crossings
D	52	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	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

1 The Leq(h) Activity Criteria values are for impact determination only, and are not design standards for noise abatement measures.

2 The equivalent steady-state sound level which in a stated period of time contains the same acoustic energy as the time-varying sound level during the same time period, with Leq(h) being the hourly value of Leq.

3 Includes undeveloped lands permitted for this activity category.

Table 2	
Substantial Noise Level Increase Hourly Equivalent A-Weighted Sound Level (decibels (dB(A))	
Existing Noise Level[1] (Leq(h))	**Predicted Design Year Noise Level Increase[2] (Leq(h))**
50 or less	15 or more
51	14 or more
52	13 or more
53	12 or more
54	11 or more
55 or more	10 or more

1 Loudest hourly equivalent noise level from the combination of natural and mechanical sources and human activity usually present in a particular area.

2 Predicted hourly equivalent Design Year traffic noise level minus existing noise level.

ANALYSIS OF NOISE ABATEMENT MEASURES

When traffic noise impacts are identified and noise abatement is warranted, noise abatement measures shall be considered and evaluated for feasibility and reasonableness. All of the following conditions must be met in order for noise abatement to be justified and incorporated into project design, as applicable. Failure to achieve any single element of feasibility or reasonableness will result in the noise abatement measure being deemed not feasible or not reasonable, whichever applies.

Feasibility

The combination of acoustical and engineering factors considered in the evaluation of a noise abatement measure.

(a) Any receptor that receives a minimum noise level reduction of five dB(A) due to noise abatement measures shall be considered a benefited receptor. Noise reduction of five dB(A) must be achieved for at least one impacted receptor.

(b) Engineering feasibility of the noise abatement measure(s) shall consider adverse impacts created by or upon property access, drainage, topography, utilities, safety, and maintenance requirements.

Reasonableness

The combination of social, economic, and environmental factors considered in the evaluation of a noise abatement measure.

(a) Viewpoints of the property owners and residents of all benefited receptors shall be solicited. One owner ballot and one resident ballot shall be solicited for each benefited receptor. Points per ballot shall be distributed in the following weighted manner:

- 3 points/ballot for benefited front row property owners
- 1 point/ballot for all other benefited property owners
- 1 point/ballot vote for all residents

Consideration of the noise abatement measure will continue unless a simple majority of all distributed points are returned that indicates the balloted voters do not want the abatement measure.

(b) The maximum allowable base quantity of noise walls and/or earthen berms per benefited receptor shall not exceed 2,500 ft^2 and 7,000 yd^3, respectively. Additionally, an incremental increase of 35 ft^2 for noise walls and 100 yd^3 for earthen berms shall be added to the base quantity per the average increase in dB(A) between existing and predicted exterior noise levels of all impacted receptors within each noise sensitive area, which is defined as a group of receptors that are exposed to similar noise sources. A base dollar value of $37,500 plus an incremental increase of $525 (as defined above) shall be used to determine reasonableness of buffer zones and noise insulation.

(c) A noise reduction design goal of at least 7 dB(A) must be evaluated for all front row receptors. At least one benefited front row receptor must achieve the noise reduction design goal of 7 dB(A) to indicate the noise abatement measure effectively reduces traffic noise.

Other Considerations

Prior to CE approval or issuance of a FONSI or ROD, NCDOT shall identify in environmental documents:

(a) Noise abatement measures that are feasible and reasonable,

(b) Noise impacts for which no abatement appears to be feasible and reasonable;

(c) Locations where noise impacts will occur, where noise abatement is feasible and reasonable, and the locations that have no feasible and reasonable abatement.

(d) Whether it is "likely" or "unlikely" that noise abatement measures will be installed for each noise sensitive area identified. "Likely" does not mean a firm commitment. The final decision on the installation of the abatement measures shall be made upon

completion of the project design, the public involvement process, concurrence with the NCDOT Policy, and FHWA approval.

Acceptable Noise Abatement Measures

The following noise abatement measures may be considered for incorporation into a project to reduce traffic noise impacts.

(a) Construction of noise barriers

(b) Traffic management measures

(c) Alteration of horizontal and vertical alignments

(d) Establishment of buffer zones

(e) Noise insulation of Activity Category D land use facilities listed in Table 1 on Page 4 of this policy.

Third Party Participation

(a) Third party funding of noise abatement measures cannot be used to make up the difference between the reasonable base quantity allowance and the actual quantity of noise abatement. Third party funding is allowed only by public entities, and can only be used to pay for additional features such as landscaping and aesthetic treatments for noise barriers that meet cost-effectiveness criteria.

(b) Traditional highway construction resources pay for required noise abatement measures. Should a local government request that materials be used that are more costly than those proposed by NCDOT, the requesting entity must assume 100% of the actual additional construction cost.

(c) If a local government insists on the provision of a noise abatement measure deemed not reasonable by NCDOT, an abatement measure may be installed provided the local government assumes 100% of the costs and obtains an encroachment permit from NCDOT to perform the work. These costs include, but are not limited to, preliminary engineering, actual construction and maintenance. In addition, local governments must ensure that NCDOT's material, design and construction specifications are met. The local government must also assume 100% of the liability associated with the measure and hold harmless the NCDOT.

(d) For (b) and (c) above, the settlement agreement shall be signed before third party noise abatement design begins and payment shall be made to NCDOT before project construction begins.

Quantity Averaging

NCDOT will utilize abatement measure quantity averaging among all noise sensitive areas within the same Activity Category in Table 1 that are exposed to a common noise environment, i.e., similar noise sources and levels, traffic volumes, traffic mix, speed and topographic features, if:

(a) No single common noise environment exceeds two times the base quantity reasonableness criteria (e.g., two times 2,500 square feet, or two times 7,000 cubic yards); and,

(b) Collectively, all common noise environments being averaged do not exceed the base quantity reasonableness criteria.

PUBLIC INVOLVEMENT

Communication with the community regarding noise impacts and possible noise abatement shall occur at the start of the noise study process and continue throughout the development of the project. NCDOT will communicate with citizens to present information on the nature of highway traffic noise and discuss the effects of noise abatement measures in attenuating traffic noise and the types of noise abatement measures that may be considered. The concerns of the community shall be a major consideration in reaching a decision on the abatement measures to be provided.

COORDINATION WITH LOCAL OFFICIALS

NCDOT will provide all traffic noise analyses to local government officials within whose jurisdiction a highway project is proposed as early in the project planning process as possible to protect future development from becoming incompatible with traffic noise levels. Specifically, environmental documents and design noise reports will contain information identifying areas that may be impacted by traffic noise, predicted noise level contour information, the best estimation of future noise levels for developed and undeveloped lands or properties in the immediate vicinity of the project and other appropriate design information. If requested, NCDOT will assist local officials with coordination and distribution of this information to residents, property owners and developers. NCDOT will provide assistance to local jurisdictions in the development of local noise controls, when requested. NCDOT will advocate the planning, design and construction of noise-compatible development and encourage its practice among planners, building officials, developers and others.

All noise-sensitive areas and any known noise abatement measures will be presented and discussed at the Design Public Hearing and Design Public Meetings.

CONSTRUCTION NOISE

To minimize the impacts of construction noise on the public, NCDOT shall:

(a) Identify land uses or activities that may be affected by noise from construction of the project.

(b) Determine the measures that are needed in the plans and specifications to minimize or eliminate adverse construction noise impacts to the community. This determination shall consider the benefits achieved and the overall adverse social, economic, and environmental effects and costs of the abatement measures.

(c) Consider construction techniques and scheduling to reduce construction noise impacts to nearby receptors and incorporate the needed abatement measures in the project plans and specifications.

FEDERAL PARTICIPATION

The costs of noise abatement measures may be included in federal-aid participating project costs with the federal share being the same as that for the system on which the project is located when:

(a) Traffic noise impacts have been identified; and

(b) Abatement measures have been determined to be feasible and reasonable pursuant to 23 CFR 772 and this policy.

REVIEW OF POLICY

This policy shall be reviewed by the NCDOT Board of Transportation at least every five years.

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