URS DIN 01561

Noise and Vibration Technical Report

Durham-Orange Light Rail Transit Project

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July 24, 2015

The NEPA Preferred Alternative for the D-O LRT Project would generally follow NC 54, I-40, US 15-501, and the North Carolina Railroad (NCRR) Corridor in downtown Durham and east Durham. The alignment would begin at UNC Hospitals, parallel Fordham Boulevard, proceed east on NC 54, travel north on I-40, parallel US 15-501 before it turns east toward the Duke University campus along Erwin Road, and then follow the NCRR Corridor parallel to NC 147 through downtown Durham, before reaching its eastern terminus near Alston Avenue. The alignment would consist of at-grade alignment, fill and cut sections, and elevated structures. In two sections of the alignment, Little Creek and New Hope Creek, multiple Light Rail Alternatives are evaluated in the DEIS.

This technical report contains information for all alternatives analyzed in the DEIS. However, pursuant to MAP 21, the Moving Ahead for Progress in the 21st Century Act (P.L. 112-141), a NEPA Preferred Alternative has been developed, which recommends C2A in the Little Creek section of the alignment, NHC 2 in the New Hope Creek section of the alignment, the Trent/Flowers Drive station, and the Farrington Road Rail Operations and Maintenance Facility.

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List of Acronyms and Abbreviations

Acronym/Abbreviation	Definition
dB	Decibel
dBA	A-Weighted Decibel
DEIS	Draft Environmental Impact Statement
D-O	Durham-Orange
D-O LRT	Durham-Orange Light Rail Transit
FTA	Federal Transit Administration
Hz	Hertz
I-40	Interstate 40
Ldn	24-Hour Average Noise Level
Leq	Hourly Equivalent Noise Level
LPA	Locally Preferred Alternative
LRT	Light Rail Transit
mph	miles per hour
LRV	Light Rail Vehicle
NC	North Carolina
NCRR	North Carolina Railroad
NHC	New Hope Creek
ROMF	Rail Operations Maintenance Facility
SEL	Source Exposure Level
STC	Sound Transmission Class
TPSS	Traction Power Substation
UNC	University of North Carolina
US	United States
VA	Veterans Affairs
VdB	Vibration Decibel

1. Introduction

> **Sensitive Receptors** – Resources sensitive to noise and vibration such as parks, residences, hospitals, hotels/motels, schools, libraries, churches, natural areas/wildlife habitats, and historic properties.

Triangle Transit, in cooperation with the Federal Transit Administration (FTA), has prepared a Draft Environmental Impact Statement (DEIS) to evaluate a potential high-capacity transit improvement in the Triangle region, within the Durham-Orange (D-O) Corridor, between Chapel Hill and Durham. This technical appendix focuses on the potential effects of the alternatives to resources sensitive to noise and vibration. These resources are generally referred to as **sensitive receptors** and include places such as parks, residences, hospitals, hotels/motels, schools, libraries, churches, natural areas/wildlife habitats, and historic properties.

This *Noise and Vibration Technical Report* provides a detailed technical appendix to the assessment of noise and vibration impacts presented in the *Durham-Orange Light Rail Transit Project DEIS,* chapter 4.10. The noise and vibration impact assessments have been developed in accordance with the *FTA Guidance Manual Transit Noise and Vibration Impact Assessment* (FTA Guidance Manual).

1.1 Description of the Study Corridor

The D-O Corridor is located within the Triangle region. It extends roughly 17 miles from southwest Chapel Hill to east Durham, and includes several educational, medical, and other key activity centers that generate a large number of trips each day. The land uses in the D-O Corridor are supported by a network of major highways, including NC 54, I-40, US 15-501, Erwin Road, and NC 147. Additional detail regarding the study corridor is included in the *Durham-Orange Light Rail Transit Project DEIS*, chapters 1 and 2.

1.2 Alternatives Considered

- No-Build Alternative
- Light Rail Alternatives

In addition to the Light Rail Alternatives under study in this DEIS, the DEIS considers a No-Build Alternative comprised of the existing and programmed transportation network improvements without the planned rail improvements and associated bus network modifications. Additional detail regarding the alternatives considered is included in the Durham-Orange Light Rail Transit Project DEIS, chapter 2.

1.2.1 No-Build Alternative

The No-Build Alternative includes the existing and planned transportation programs and projects scheduled to be built and implemented before forecast year 2040 and contained in the 2040 Metropolitan Transportation Plan, excluding only the proposed Light Rail Alternatives, rail transit improvements, and related bus transit modifications that would be associated with the proposed D-O LRT Project.

1.2.2 Light Rail Alternatives

Through the Alternatives Analysis and Scoping process, a majority of the proposed D-O LRT Project alignment was identified. However, there are a few areas where different alternatives were retained for further evaluation. As a result, multiple alignments crossing Little Creek and New Hope Creek are evaluated in the DEIS.

- Four potential crossings of Little Creek between Hamilton Road and the proposed Leigh Village Station (Alternatives C1, C1A, C2,and C2A)
- Three potential crossings of New Hope Creek and Sandy Creek between Patterson Place and South Square (Alternatives NHC LPA, NHC 1, and NHC 2)
- Station alternatives at Duke/VA Medical Centers (i.e., Duke Eye Center and Trent/Flowers Drive)

Five proposed locations for the ROMF (i.e., Leigh Village ROMF, Farrington Road ROMF, Patterson Place ROMF, Cornwallis Road ROMF, and Alston Avenue ROMF). The Light Rail Alternative would generally follow North Carolina (NC) Highway 54 (NC 54), Interstate 40 (I-40), United States (US) 15-501, and the North Carolina Railroad (NCRR) Corridor in downtown Durham and east Durham. The alignment would begin in Chapel Hill at University of North Carolina at Chapel Hill (UNC) Hospitals, parallel Fordham Boulevard, proceed eastward adjacent to NC 54, travel north along I-40, parallel US 15-501 before it would turn east toward Duke University and run within Erwin Road, and then follow the NCRR Corridor that parallels NC Highway 147 (NC 147) through downtown Durham, before reaching its eastern terminus in Durham near Alston Avenue. The alignment would consist of at-grade alignment, fill and cut sections, and elevated structures. A total of 17 stations are planned, and up to 5,100 parking spaces would be provided along the Light Rail Alternative. In addition, a rail operations maintenance facility (ROMF) would be constructed to accommodate the D-O LRT fleet (16 vehicles, expandable to 26).

Bus routes would be modified to feed into the D-O LRT stations, and headways would be adjusted to provide more frequent service and minimize transfer waiting times. These services would also connect light rail passengers with other area transportation hubs, including park-and-ride lots and transfer centers.

1.3 Transit Noise

1.3.1 Definition of Noise

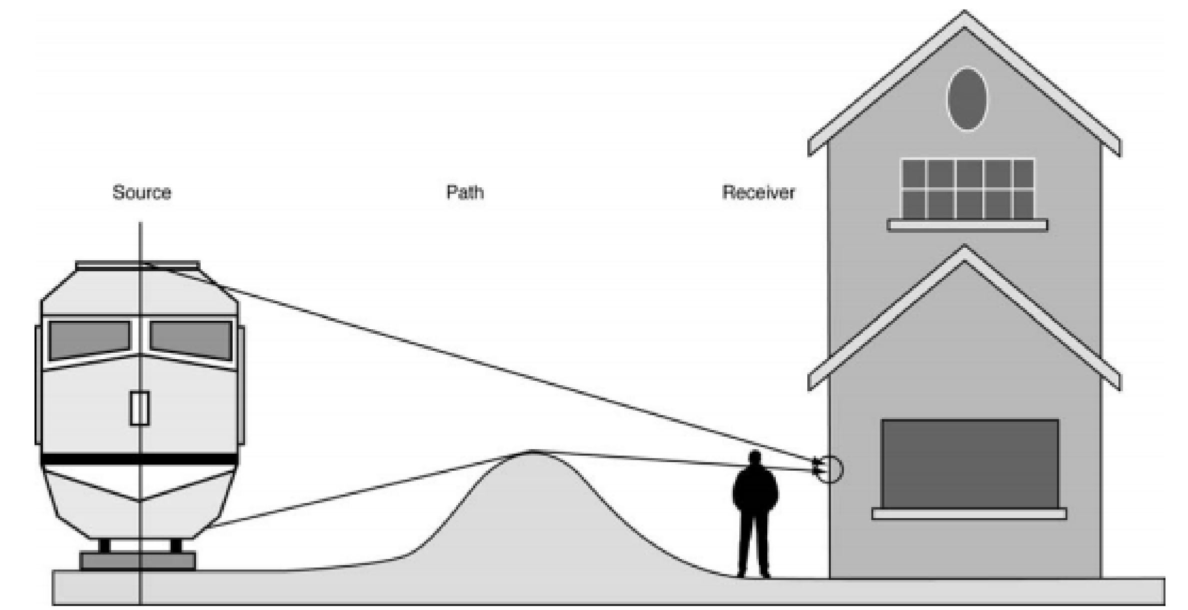
“Noise” is defined as “unwanted sound.” Sounds are described as noise if they interfere with an activity or disturb the person hearing them. Sound is measured in a logarithmic unit called a decibel (dB). Since the human ear is more sensitive to middle and high-frequency sounds than it is to low frequency sounds, sound levels are weighted to reflect human perceptions more closely. These “A-weighted” sounds are measured using the decibel unit dBA.

> **Noise** is defined as unwanted sound from a source that travels along a path to a receiver.
>
> **Sound** is measured in decibels (dB).
>
> **Amplitude** is the loudness of a sound.
>
> **Frequency** is the number of times the sound is observed.
>
> **A-weighted decibels (dBA)** are used to measure sounds in the spectrum that the human ear is more sensitive to hearing.

Typical sound levels from common noise sources are shown on Figure 1. Noise that is transmitted through the air is referred to as "airborne noise." Likewise, noise that is transmitted through the ground is referred to as "ground-borne noise." Ground-borne noise is discussed in section 4.1.

Sound levels fluctuate with time depending on the sources of the sound audible at a specific location. In addition, the degree of annoyance associated with certain sounds can vary by time of day, depending on other ambient sounds affecting the listener and the activities of the listener. Because the time-varying fluctuations in sound levels at a fixed location can be complex, they typically are reported using statistical or mathematical descriptors that are a function of sound intensity and time.

Figure 1: Path of Airborne Noise



Source: FTA Guidance Manual.

1.3.2 Sources of Transit Noise

Transit noise not only includes noise from moving vehicles, but also supporting services such as maintenance facilities. The perceptible transit noise generated from the proposed light rail transit system includes (1) light rail operations, (2) light rail stations and traction power substations (TPSSs), (3) an ROMF location, (4) associated feeder bus service, and (5) park-and-rides at transit stations. Table 1 identifies some of the most common noises generated from light rail operations.

Figure 2 lists the typical sound levels for common noise sources. The level of noise impact is based on the intensity of noise that originates from the source and the distance between the source and the receptor. Other factors that may increase or reduce the perceived impact of noise are:

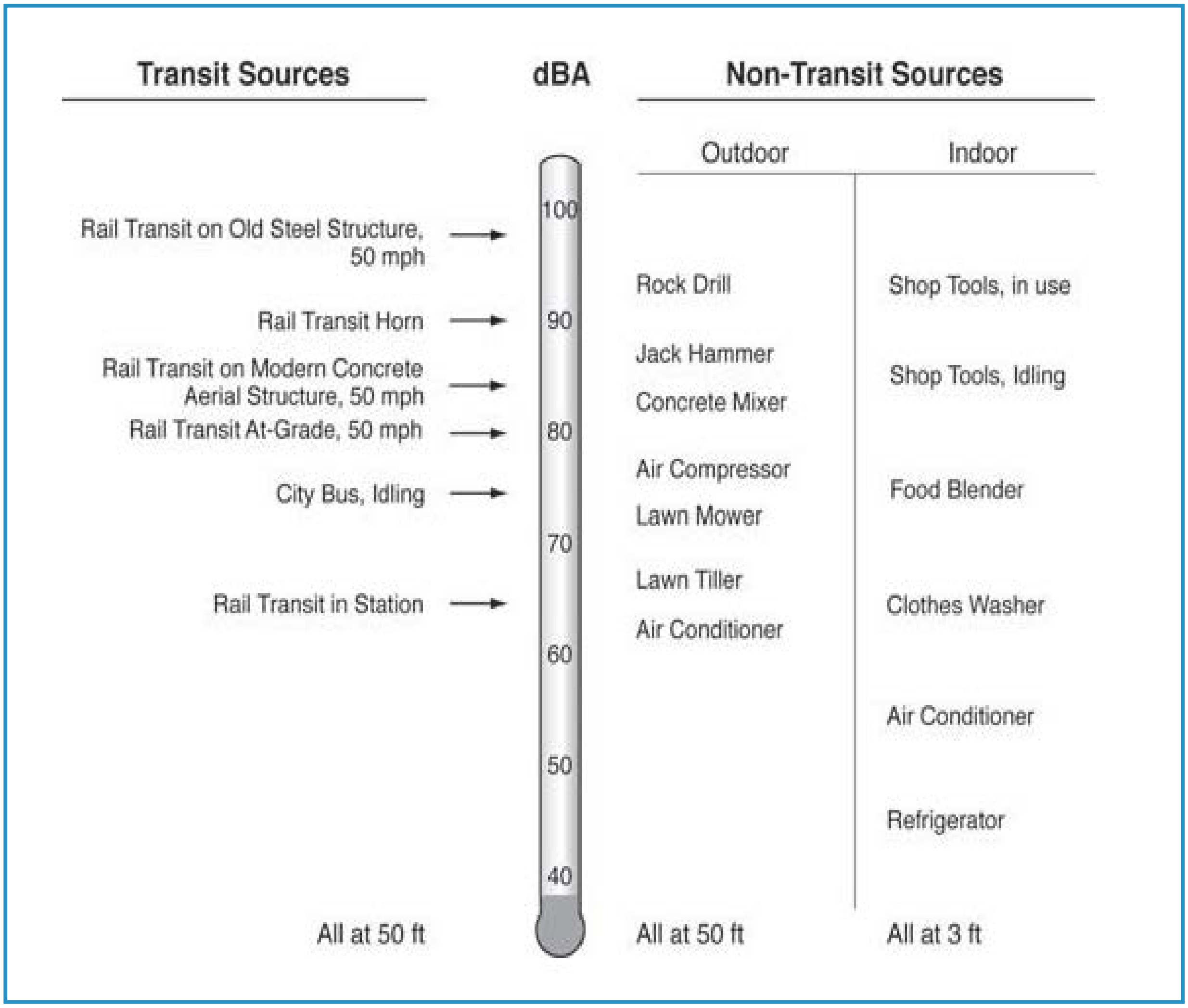
- **Topography/intervening buildings** – noise can be modified, dampened, or interrupted by buildings, structures, or topography standing between the noise source and the sensitive receptor.
- **Time of day** – the degree of annoyance with noise sensed by a listener can vary by time of day (e.g., at night).
- **Other sounds in the environment** – the degree of annoyance with noise sensed by a listener can vary based on the other sounds occurring in the environment (e.g., city noises).
- **Listener's other activities** – the degree of annoyance with noise sensed by a listener can vary based on the activity that the listener is doing at the time the sound is sensed (e.g., sleeping).

Table 1: Sources of Transit Noise for Light Rail

Transit Component	Source of Noise	Comments
Light rail vehicle in motion	Wheel rolling on rail	Increases with speed. Depends upon condition of wheels and rails. Can be controlled by regular system maintenance.
	Vehicle propulsion system	Increases somewhat while accelerating and at higher speeds. Can be controlled by vehicle procurement specification. Forced ventilated system is generally quieter than self-ventilated system when operating on embedded track.
	Auxiliary equipment for vehicle and ventilation	Usually not significant source of noise. Can be controlled by vehicle procurement specification.
	Wheel squeal	Can occur on tight curves of less than 1,000 feet radii. Can be controlled by wheel and rail treatments.
	Special trackwork	Impact noises occur when wheels encounter discontinuity in tracks such as rail joints, turnouts, or switches used at crossovers.
	Brakes	Occasional squeal when stopping.
	Horns and whistles	Used infrequently as warning device for pedestrians and at intersections.
	Bells	Used sometimes as warning device at grade crossings.
Light rail vehicle stopped	Auxiliary equipment for vehicle and ventilation	Dominant source for stationary vehicle. Controlled by vehicle procurement specification.
ROMF	Auxiliary equipment for vehicle and ventilation	Dominant source for stationary vehicle. Controlled by vehicle procurement specification.
Traction power substation	Transformers	Usually not significant source of noise for light rail.

Source: Wilson, Ihrig & Associates, Inc. 1995.

Figure 2: Typical Sound Levels for Common Noise Sources (Measured in dBA)



Source: FTA Guidance Manual.

1.3.3 Metrics When Noise is Affected by Other Factors

The intensity of the noise event varies due to a number of factors. Examples include the distance of the receptor from the tracks or the station locations, presence of intervening terrain or buildings, and specific train related parameters such as vehicle speed, vehicle length, vehicle equipment (e.g., air conditioning systems), and the type, condition and curvature of the running surfaces (i.e., rails and wheels). In addition, the guideway structure can radiate noise as it vibrates in response to dynamic loading of the vehicle. Stationary vehicles generate noise as well. Auxiliary equipment, such as cooling fans, radiator fans, and air-conditioning pumps, often continue to run after vehicles have stopped. Because many of these conditions concerning receptor location and light rail vehicle operation vary throughout the corridor, the noise impacts due to light rail can be expected to vary. Common noise metrics include:

- **L_{eq} – "equivalent continuous noise level":** an average noise level collected for a defined period of time. L_{eq} is used to describe sound levels that vary over time, resulting in a single decibel value that takes into account the total sound energy over the defined period of time. For example, the L_{eq} measures noise at peak traffic hour when noise levels are expected to be the highest.

- **L_{dn} – "Day-night equivalent level":** an average of "day" and "night" sound. L_{dn} is an L_{eq} sound level, measured over a 24-hour period, with a 10 dBA penalty added to nighttime levels to account for a listener's heightened noise sensitivity. L_{dn} is typically used in areas where sleep takes place, such as residences, hotels, and hospitals.

2. Legal and Regulatory Framework

The assessment of potential impacts for noise and vibration followed the FTA Guidance Manual. The local thresholds for noise within the D-O LRT Corridor are defined in the text of the relevant sections of the applicable noise ordinances for the Town of Chapel Hill and the City of Durham:

- Town of Chapel Hill, North Carolina, Code of Ordinances, Sections 11-37 through 11-43 (2001)
- City of Durham, North Carolina, Code of Ordinances, Article II. Noise, Sections 26-23 through 26-25 (1999)

2.1 FTA Guidance Manual

The FTA Guidance Manual provides the steps in defining noise and vibration impacts for transit projects. The Manual's impacts and mitigation sections are referenced throughout this technical appendix.

2.2 Municipal Noise Ordinances

The information below represents a summary of the noise ordinances for the Town of Chapel Hill and City of Durham. As such, sections of the ordinances that are not applicable are not included. The Chapel Hill noise ordinance is intended to prevent nuisance noises and applies to the behaviors of individuals or groups of persons. Government operations and infrastructure maintenance services are exempted from regulation. Similarly, the City of Durham noise ordinance does not apply to municipal, state, or federally authorized projects. As a result, the proposed D-O LRT project is exempt from the respective noise ordinances.

2.2.1 Town of Chapel Hill Noise Ordinance

Chapel Hill Noise Ordinance[1]

No person or group of persons shall operate or cause to be operated any source of sound in such a manner as to create a root mean square steady state sound level that exceeds the limits set forth in Table 1 and 2 (See Ref. 1) when measured at any point on the boundary planes of the property line from which the sound originates or beyond.

Primary Use Category	Daytime (7AM-11PM)	Nighttime (11PM-7AM)
Residential	50 dBA	45 dBA
Business, Office, Commercial, Institutional	65 dBA	55 dBA
Shopping Center, Thoroughfare, Industrial	70 dBA	65 dBA

[1] Chapel Hill, North Carolina Code of Ordinances, Sec. 11-37 through 11-43.

Exceptions include, among others, all noises from operations of motor vehicles properly operated, construction operations from 7:00 a.m. to 9:00 p.m. on weekdays and 8:00 a.m. to 9:00 p.m. on weekends.

2.2.2 City of Durham Noise Ordinance

City of Durham Noise Ordinance[2]

Sec. 26-23. – Generally

a. Subject to the provisions of this section, it shall be unlawful for any person or persons to make, permit, continue, or cause to be made or to create any unreasonably loud and disturbing noise in the city. For purposes of this section, the following definitions shall apply:

1) Unreasonably loud: Noise which is substantially incompatible with the time and location where created to the extent that it creates an actual or eminent interference with peace or good order.

2) Disturbing: Noise which is perceived by a person of ordinary sensibilities as interrupting the normal peace and calm of the area. In determining where a noise is unreasonably loud or disturbing, the following factors incident to such noise are to be considered: Time of day; proximity to residential structures; whether the noise is recurrent, intermittent, or constant; the volume and intensity; whether the noise has been enhanced in volume or range by any type of electronic or mechanical means; the character of the zoning of the area; whether the noise is related to the normal operation of a business or other labor activity; whether the noise is subject to being controlled without unreasonable effort or expense to the creator thereof.

d. Particular Standards Established

1) No person shall cause, produce, or allow any mechanically or electronically produced or amplified sound that: (i) exceeds the levels set out in subsection (d) of this section as such sound is measured at any point beyond the boundary of the property from which the sound emanates, and (ii) is not authorized by a permit issued pursuant to the City Code or state or federal authority;

2) No nighttime (11:00 p.m. – 8:00 a.m.) sound level shall exceed 50 dBA;

3) No daytime or evening (after 8:00 a.m. – before 11:00 p.m.) sound level shall exceed 60 dBA.

e. Applicable Exemptions

The following sounds shall be exempt from the provisions of this section: (5) Sounds emanating from a motor vehicle, or lawnmower or agricultural equipment operated between the hours of 7:00 a.m. and 9:00 p.m. when the vehicle or equipment is properly equipped with the manufacturer’s or other authorized standard muffler and sound reduction equipment and in use under proper operating conditions.

[2] City of Durham, North Carolina, Code of Ordinances, Article II. Noise, Sec.26-23 through 26-25.

3. Noise Impact Methodology

The FTA Guidance Manual describes the general process for assessing the potential effects of transit noise and vibration. This process involves three levels of assessment, which are described in more detail below.

- **Screening** – involves locating the alternatives within the D-O LRT Corridor and identifying any sensitive receptors along the D-O LRT Corridor.
- **General assessment** – identifies the existing ambient noise or vibration levels, the sensitive receptors, and the projected noise and vibration levels for each of the Light Rail Alternatives under consideration. The general assessment then estimates the anticipated impacts by comparing the existing levels to projected levels, and comparing projected levels and the allowable thresholds described in the FTA Guidance Manual. The thresholds vary by category for each type of sensitive receptor.
- **Detailed analysis -** identifies advanced design and operational details, such as the effects of track curve radii on noise levels and the location of special track work and geotechnical data on vibration levels. The FTA Guidance Manual provides details on how to incorporate design and operational details into overall project level assessments.

3.1 Noise Screening

Identify representative noise-sensitive receptors near Light Rail Alternative elements that would potentially be adversely affected by operating light rail.

- Consistent with FTA guidance, the following geographic areas were examined for the presence of noise-sensitive receptors:
  - 350 feet from the center of the proposed track and station location alternatives
  - 225 feet from the center of the proposed park-and-ride alternatives
  - 1,000 feet from the center of the five proposed ROMF alternatives
- If intervening buildings exist between the source (the proposed light rail) and the receptor (building or land use), the following geographic areas were examined:
  - 175 feet from the center of the proposed track and station location alternatives
  - 150 feet from the center of the proposed park-and-ride alternatives
  - 650 feet from the center of the five proposed ROMF alternatives

Maps, photographs, and field studies were used to identify noise-sensitive land uses within the appropriate screening distances.

3.2 Noise General Assessment

After noise-sensitive land uses were identified, receptor sites were established to judge the noise- and vibration-related impact that the Light Rail Alternatives might have. The following process was followed:

- **Measure existing noise levels** at each representative noise-sensitive receptor location.
- **Estimate the anticipated future transit-related noise** exposure levels at each receptor location and compare with FTA impact criteria.
- **Assess the noise impacts** by comparing the estimated levels to the applicable FTA impact thresholds.

- **Identify reasonable and feasible design refinements** that would reduce project-related noise and incorporate them into the project.

As part of the assessment, two types of noise impacts were evaluated:

- **Airborne Noise** is noise transmitted through the air.
- **Ground-borne noise** is noise transmitted through the ground.

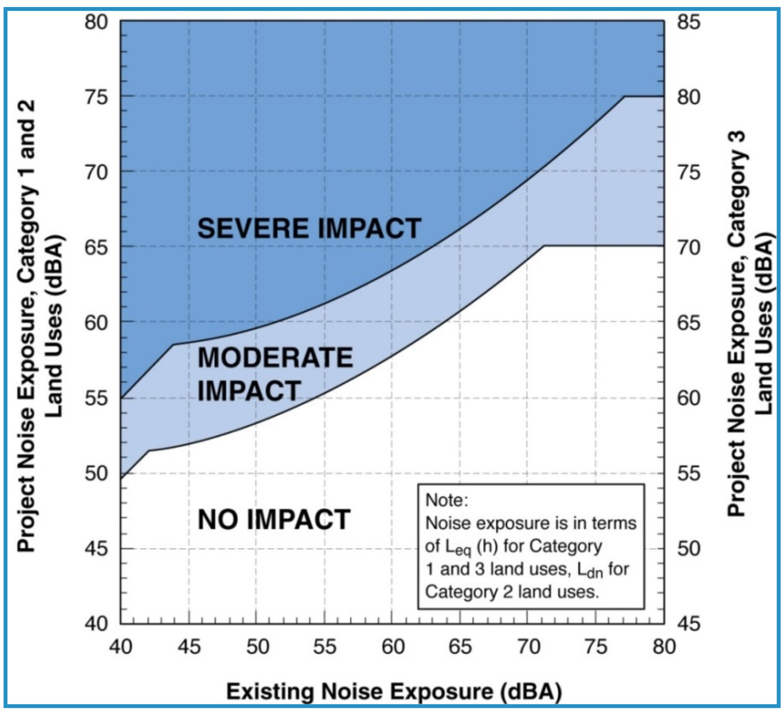
3.2.1 Noise Impact Criteria

To assess the effects of transit noise in the General Assessment, the FTA Guidance Manual provides criteria for assessing noise impacts, shown on Figure 3 and Table 2. These criteria are based on a comparison of the existing noise levels to future noise levels that would be anticipated to be associated with the Light Rail Alternatives. The criteria are defined by two curves, designating different levels of project noise — (1) no impact, (2) impact, and (3) severe impact conditions.

The basis of noise impact criteria is the percentage of people who would be highly annoyed by measured noise levels in their living environment. As a result, the criteria reflect a range of annoyance associated with different human activities that occur in areas such as homes, businesses, and parks.

It should be noted that historically significant sites and parklands may be evaluated based on their use and setting. For more information on these special cases, see the FTA Guidance Manual.

Figure 3: FTA Noise Impact Criteria



Source: FTA Guidance Manual.

Table 2: Noise Levels Defining Impact for Transit Projects

Existing Ambient Noise Level L_{eq} or L_{dn} (dBA)	Project Noise Impact Levels L_{eq} or L_{dn} (dBA)					
	Category 1 or 2 Sites			Category 3 Sites		
	No Impact	Moderate Impact	Severe Impact	No Impact	Moderate Impact	Severe Impact
<43	<(Amb.+10)	Ambient + 10 to 15	>(Amb.+15)	<(Amb.+15)	Ambient + 15 to 20	>(Amb.+20)
43	<52	52-58	>58	<57	57-63	>63
44	<52	52-58	>58	<57	57-63	>63
45	<52	52-58	>58	<57	57-63	>63
46	<53	53-59	>59	<58	58-64	>64
47	<53	53-59	>59	<58	58-64	>64
48	<53	53-59	>59	<58	58-64	>64
49	<54	54-59	>59	<59	59-64	>64
50	<54	54-59	>59	<59	59-64	>64
51	<54	54-60	>60	<59	59-65	>65
52	<55	55-60	>60	<60	60-65	>65
53	<55	55-60	>60	<60	60-65	>65
54	<55	55-61	>61	<60	60-66	>66
55	<56	56-61	>61	<61	61-66	>66
56	<56	56-62	>62	<61	61-67	>67
57	<57	57-62	>62	<62	62-67	>67
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60	<58	58-63	>63	<63	63-68	>68
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63	<60	60-65	>65	<65	65-70	>70
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65	<61	61-66	>66	<66	66-71	>71
66	<62	62-67	>67	<67	67-72	>72
67	<63	63-67	>67	<68	68-72	>72
68	<63	63-68	>68	<68	68-73	>73
69	<64	64-69	>69	<69	69-74	>74
70	<65	65-69	>69	<70	70-74	>74
71	<66	66-70	>70	<71	71-75	>75
72	<66	66-71	>71	<71	71-76	>76
73	<66	66-71	>71	<71	71-76	>76
74	<66	66-72	>72	<71	71-77	>77
75	<66	66-73	>73	<71	71-78	>78
76	<66	66-74	>74	<71	71-79	>79
77	<66	66-74	>74	<71	71-79	>79
>77	<66	66-75	>75	<71	71-80	>80

Note: Ldn is used for land uses where nighttime sensitivity is a factor and Leq during the noisiest transit-related hour is used for land use involving only daytime activities. Source: FTA Guidance Manual.

The noise criteria and descriptors used in an impact analysis depend on whether the land use is designated within one of the following three categories of noise-sensitive land use:

- **Category 1**: This category includes buildings and parks where quiet is an essential element in their intended purpose. Land uses include open space set aside for serenity and quiet (e.g., wilderness areas) and areas for outdoor concert pavilions.
- **Category 2**: This category includes residences and buildings where people normally sleep. Land uses include homes, hospitals, nursing homes, and hotels where nighttime sensitivity to noise is assumed to be of utmost importance.
- **Category 3**: This category includes institutional land uses with primary daytime and evening use. Land uses include schools, libraries, places of worship, museums, historically significant sites, and active parks where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material. For Category 3 uses, however, the entire use may not be designated as a sensitive receptor; rather, only those areas typically used for quiet activities are designated as sensitive receptor areas. Buildings with interior spaces where quiet is important, such as medical offices and conference rooms, recording studios, and concert halls, are also included in this category.

The criteria do not apply to most commercial and industrial uses because these activities generally are compatible with higher noise levels. They do apply to business uses that depend on quiet as an important part of operations, such as sound and motion picture recording studios.

3.3 Detailed Noise Assessment

In accordance with the FTA Guidance Manual, a detailed noise analysis is required for new fixed rail transit projects. This analysis utilizes the best available project details including engineering design and operational details, such as hourly operational schedules during day and night, speed profiles, plan and profiles of guideway, and location of grade crossings, curved track data, horn and bell inputs, and size and facilities of park-and-rides and ROMF.

3.3.1 Assumptions of Future Transit Noise Levels for the Light Rail Alternatives

The future transit noise levels that would be associated with the Light Rail Alternatives were computed by using conservative estimates of noise levels that would likely be generated from light rail operations, ROMF, connecting feeder bus service, and park-and-rides.

3.3.1.1 Light Rail Alternative Operations

Table 3 lists the assumptions that would be associated with light rail operations.

Table 3: Assumptions for Light Rail Operations

Item	Specification
Type of Source	Line
Source Exposure Level (SEL) at 50 feet	75 dBA
Alignment	At-grade and elevated
Track	Continuous welded rail on ballast

Item	Specification
Light Rail Operations (Headways) 5:30 am – 9:00 am 9:00 am –3:30 pm 3:30 pm – 7:00 pm 7:00 pm – 12:00 am	 10 minute 20 minute 10 minute 20 minute
Light Rail Daytime Hourly Volumes (7:00 am-10:00 pm)	8.2 Trains (both directions)
Light Rail Nighttime Hourly Volumes (10:00 pm – 7:00 am)	3.3 Trains (both directions)
Number of Cars per Train	1-2
Length of Train	180 feet
Hours of Operation	5:30 am – 12:00 am (Monday – Saturday) 6:30 am – 12:00 am (Sunday)
Nominal Speed Maximum Speed	10-55 mph depending on location 55 mph
Embedded Track (University Drive, Erwin Road, and Pettigrew Street)	+3 dBA
Aerial Structure	+4 dBA
ROMF SEL at 50 feet	111 dBA
Light Rail Bells at 50 feet entering stations	80 dBA
Light Rail Bells at 50 feet - unprotected at-grade crossings	80 dBA
Crossover Switches SEL at 50 feet	100 dBA
TPSS SEL at 50 feet	99 dBA
Light Rail Horns	For Emergency Use Only
Rail Curves (Wheel Squeal)	136 dBA
Bus Source Exposure Level (SEL) at 50 feet	82 dBA

Source: URS May 2015

Notes: * SEL levels provided by URS representing project specifications.

**Resilient/damped wheels are incorporated into project design to reduce wheel squeal noise 10-20 decibels.

The projected noise levels are based on operations of revenue trains on well-maintained, standard at-grade and elevated track. Noise from light rail wheel squeal on tight curve radii can result in high levels of noise. While evaluated in the noise analysis, vehicle specifications will include damped or resilient wheels, which attaches a vibration absorbing rubber flange to the wheels, significantly reducing or eliminating wheel squeal noise.

Special trackwork with gaps in the rail (e.g., track switches) can generate higher noise levels than those created by trains running on standard track. The relationship between standard track noise and switch noise levels depends on several factors such as train speed, type of switch, and distance from the gap in the rail at the “switch frog” (special trackwork that allows the trains to switch tracks). Less than 100 feet from the rail gap, the switch noise is almost always greater than the standard track noise by as much as 6 to 10 dBA. Consequently, it is important to locate switches in areas that are not particularly noise sensitive.

Light rail transit systems typically use bells before entering station areas to warn motorists and pedestrians of the oncoming train. Light rail bells would be sounded approximately 100 feet prior to entering stations. Horns are sometimes used at grade crossings to warn motorists and pedestrians. Triangle Transit does not propose to use horns on the D-O LRT as regular operating procedures. Horns would only be used in emergencies. Therefore, noise from horns is not included in this analysis.

3.3.1.2 ROMF Alternatives

Regardless of the alternative selected, the ROMF would include a TPSS, a cleaning platform with vehicle car wash, a wheel truing area, maintenance building and storage tracks. Noises from all sources were evaluated together at the center of activity, as required in the FTA Guidance Manual.

3.3.1.3 Connecting Feeder Bus Service and Park-and-Rides

Noise from light rail stations is generally related to those stations with park-and-ride lots. Table 4 lists the proposed stations with park-and-ride and associated bus operations.

Eight stations (Hamilton Rd., Meadowmont Lane, Patterson Place, LaSalle Street, Duke/VA Medical Centers: Duke Eye Center, Duke/VA Medical Centers: Trent/Flowers Drive, Ninth Street, and Buchanan Boulevard) have bus pull in driveways that accommodate between one and two buses in each direction. Based on the proposed bus operations plans, average headways were assumed to be 15 minutes in the peak period. These bus operations are evaluated in the detailed analysis.

Table 4: Light Rail Stations with Park-and-Ride Lots

Stations	Park-and-Ride Spaces	Buses/Hour*
UNC Hospitals Station	N/A	-
Mason Farm Road Station	N/A	-
Hamilton Road Station	N/A	-
Friday Center Drive Station (C1/C1A)	860 Existing Spaces	2/1
Friday Center Drive Station (C2)	860 Existing Spaces	2/1
Friday Center Drive Station (C2A)	860 Existing Spaces	2/1
Meadowmont Lane Station	N/A	-
Woodmont Station	N/A	-
Leigh Village Station	900 Spaces	14/8
Gateway Station	300 Spaces	17/8
Patterson Place Station (NHC 1/NHC 2)	N/A	-
Patterson Place Station (NHC LPA)	N/A	-
Martin Luther King Jr. Parkway Station (NHC 1)	500 Spaces	10/5
Martin Luther King Jr. Parkway Station (NHC 2/NHC LPA)	500 Spaces	10/5
South Square Station	250 Spaces	8/4
LaSalle Street Station	N/A	-
Duke/VA Medical Centers Station (Duke Eye Center)	N/A	-
Duke/VA Medical Centers Station (Trent Drive)	N/A	-
Ninth Street Station	N/A	-
Buchanan Boulevard Station	N/A	-
Durham Station	150 Spaces	4/2
Dillard Street Station	1,000 Spaces	4/2
Alston Avenue Station	978 Spaces	10/7

Source: URS March 2015.

Note: *Peak per hour / Off-peak per hour.

3.3.2 Detailed Noise Assessment Methodology

Noise impacts are identified by comparing the ambient noise levels and the predicted noise level. This process defines the level of noise impact (no impact, moderate impact, or severe impact) for each classification of land use.

As discussed in the previous section, noise associated with the Light Rail Alternatives would likely be generated from the operation of light rail, bells, crossover switches, TPSSs, park-and-ride lots, and ROMFs. The following methodology, in accordance with the FTA Guidance Manual, was used to predict project noise levels at sensitive land uses:

L_{eq} and L_{dn} noise levels from fixed guideway sources (light rail cars) and stationary sources (ROMF, park-and-ride lots, TPSS, switches, and bells) are calculated at 50 feet, using the following equations:

(a) Hourly L_{eq} at 50 feet for light rail vehicles:

$L_{eq}(h) = SEL_{ref} + 10 \log (N_{cars}) + 20 \log(S/50) + 10 \log (V) - 35.6$

Where:

SEL ref light rail= 75 dBA

Ncars = number cars per train

V = average hourly volume of traffic, in trains per hour

S = Vehicle speed

Use the following adjustments as applicable

+3 for embedded track on grade

+4 for aerial structure with slab track

(b) Hourly L_{eq} at 50 feet for ROMF

$L_{eq}(h) = SEL_{ref} + 10 \log (N_T/20) - 35.6$

where:

SEL ref = 118 dBA for ROMF

N_T = number of trains/hour entering the facility

(c) Hourly L_{eq} at 50 feet for light rail warning bells:

$L_{eq}(h) = SEL_{ref} - 10 \log (S/50) + 10 \log (V) - 35.6$

Daytime Leq at 50 feet: Leq (day) = Leq(h) using Vd as V

Nighttime Leq at 50 feet: Leq (night) = Leq(h) using Vn as V

L_{dn} at 50 feet : $L_{dn} = 10 \log [(15) * 10^{(Leq(day)/10)} + (9) * 10^{(Leq(night)+10/10)}] - 13.8$

where:

S = train speed, in miles per hour

V = average hourly volume of traffic, in trains per hour

Vd = average hourly daytime volume of traffic, in trains per hour

= number of trains 7AM to 10PM /15 (both directions)

Vn = average hourly nighttime volume of traffic, in trains per hour

= number of trains 10PM to 7AM /9 (both directions)

SEL_{ref} = 80 dBA for all light rail bells

(d) Hourly L_{eq} at 50 feet for Park and Ride Lots:

$L_{eq}(h) = SEL_{ref} + 10 \log (N_A/2000 + N_B/24) – 35.6$

where:

SEL_{ref} = 101 dBA

N_A = Number of cars/hour (Assumed to be total lot capacity/2)

N_B = Number of buses/hour (Peak hour)

(e) Hourly L_{eq} at 50 feet for Crossover Switches Wheel Squeal and TPSS:

$L_{eq}(h) = SEL_{ref} + 10 \log (N) + 10\log (E/3600)- 35.6$

where:

SEL_{ref} Crossover Switches= 100 dBA

SEL_{ref} TPSS= 99 dBA

SEL_{ref} Wheel Squeal = 136 dBA

N = Number of light rail trains per hour

E = Duration of event pass by in seconds

(f) Hourly L_{eq} at 50 feet for diesel buses:

$L_{eq}(h) = SEL_{ref} + 10 \log (V) + C_S\log(S/50)–35.6$

Where:

SEL ref diesel buses= 82 dBA

Volume = peak buses/hour = 8 daytime and 4 nightime

C_S = 15

3.3.2.1 Adjustment for Propagation and Attenuation Characteristics

Once estimates of noise exposure at 50 feet from each source have been determined, then propagation and attenuation characteristics must be taken into account to compute the noise exposure at the receivers of interest, using the following equations:

For fixed guideway sources (light rail):

L_{dn} or L_{eq} = (L_{eq} or L_{dn} @ 50 feet)-10*(LOG (D/50))-((10*G)*(LOG (D/42))) – $A_{shielding}$

For fixed guideway sources (light rail bells):

L_{dn} or L_{eq} = (L_{eq} or L_{dn} @ 50 feet)-10*(LOG (D/50))-((10*G)*(LOG (D/29))) – $A_{shielding}$

For stationary sources:

L_{dn} or L_{eq} = (L_{eq} or L_{dn} @ 50 feet)-20*(LOG (D/50))-((10*G)*(LOG (D/50))) – $A_{shielding}$

where:

D = Distance from source to receiver

G = Ground Factor (hard ground = 0; soft ground = 0.66)

3.3.2.2 Combination of all sources of Ldn or Leq

Once the noise level of each noise source has been determined at 50 feet, and has been adjusted for distance to the receivers, ground attenuation, and shielding, the noise sources are combined using the following equations:

Total L_{eq} from all sources combined for the hour of interest:

L_{eq} (total) = ’10 log [$\sum 10^{Leq/10}$]’ for all sources

Total L_{dn} from all sources combined:

L_{dn} (total) = 10 log [$\sum 10^{Ldn/10}$] for all sources

4. Ground-Borne Noise and Vibration Methodology

4.1 Definition of Ground-Borne Noise and Vibration

Vibration is the transfer of energy resulting from the motion of a mechanical system.

- **Ground-borne vibration** – vibration that is transmitted through the earth that can be perceived.
- **Ground-borne noise** – although not directly a type of vibration, ground-borne noise is the low-pitched, rumbling noise that can result from ground-borne vibration.

"Ground-borne vibration" is the transmission of energy through the earth. It is also quantified using a decibel unit of measure. However, noise and vibration decibels are unrelated. Ground-borne vibration, if strong enough to be perceptible, is sensed as motion of the floors or walls inside a building. The low-pitched, rumbling noise that can result from ground-borne vibration is called "ground-borne noise" and can only occur inside a building. Vibration-sensitive receptors include buildings in which vibration could be perceived by occupants or equipment.

4.1.1 Definition of Transit Ground-Borne Noise and Vibration

In its guidance manual, the FTA establishes criteria for assessing vibration impacts related to light rail transit projects. The extent of ground-borne noise and vibration from light rail operations depends substantially on local geology and structural details of associated buildings. When light rail vehicle (LRV) speeds are moderate (less than 30 miles per hour [mph]), vibration impacts are usually limited to buildings within 50 feet of light rail. When LRV speeds are higher, the zone of ground-borne noise and vibration impacts may extend farther. A significant proportion of complaints about both ground-borne vibration and noise can be attributed to the proximity of track switches where LRVs can cross from one track to another, rough or corrugated track, or wheel flats.

The criteria are based on community reaction to transit-related vibration and the potential for adverse effects on vibration-sensitive activities and processes. The criteria identify intensities of ground-borne vibration and noise that may be considered significant and would thus require Triangle Transit to consider ways of abating and mitigating the impact.

Transit systems can sometimes create ground-borne noise and vibration impacts. In contrast to airborne noise, ground-borne vibration is not a common environmental issue.

Ground-borne noise impacts usually occur for subway (underground) transit operations or in situations where the affected building is specially designed and constructed to be isolated from the exterior ambient noise environment such as a concert hall or recording studio.

The vertical motion due to ground-borne vibration is described in terms of vibration velocity levels, measured in vibration decibels (VdB). The threshold of human perception for vibration is on the order of 60 to 70 VdB. Ground-borne noise, the noise within a building produced by external vibration, is measured in dBA.

The effects of various levels of ground-borne vibration differ among vibration-sensitive activities. The land uses that are most sensitive to vibration include those that conduct precision research and manufacturing, hospitals with highly sensitive equipment, and university research operations. Residential land uses and buildings where people sleep, like hotels and hospitals, are also a concern, more than schools and other institutions.

4.2 Vibration Screening

Identify representative vibration-sensitive receptors that would potentially be adversely affected by the operation of light rail.

Establish screening distances based on the FTA Guidance Manual (widths vary by FTA-defined land use categories).

- Residential land uses - 150 feet on either side of the Light Rail Alternatives.
- Institutional land uses - 100 feet on either side of the Light Rail Alternatives.
- Special uses, such as concert halls and recording studios, which may be particularly sensitive to vibration - 450 feet on each side of the Light Rail Alternatives.

Maps, photographs, and field studies were used to identify noise-sensitive land uses within the appropriate screening distances.

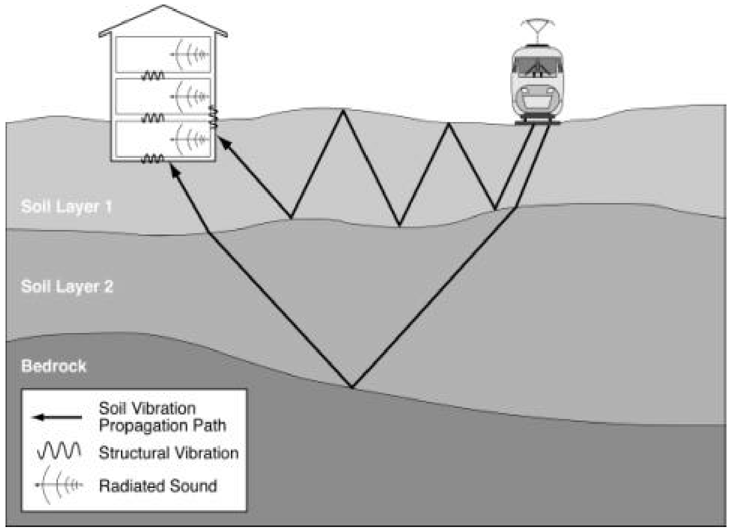
4.3 General Vibration Assessment

- **Estimate the anticipated future project-related vibration levels at each receptor** using generalized ground-borne vibration curves provided in the FTA Guidance Manual.
- **Assess the vibration impacts** by comparing the estimated vibration levels to applicable FTA criteria to identify areas of impact.
- **Identify the possible refinements (mitigation) that would dampen project-related vibration**.

As part of the assessment, two types of noise impacts were evaluated:

- **Ground-borne vibration** – vibration that is transmitted through the earth that can be perceived (Figure 4).
- **Ground-borne noise** – although not directly a type of vibration, ground-borne noise is the low-pitched, rumbling noise that can result from ground-borne vibration.

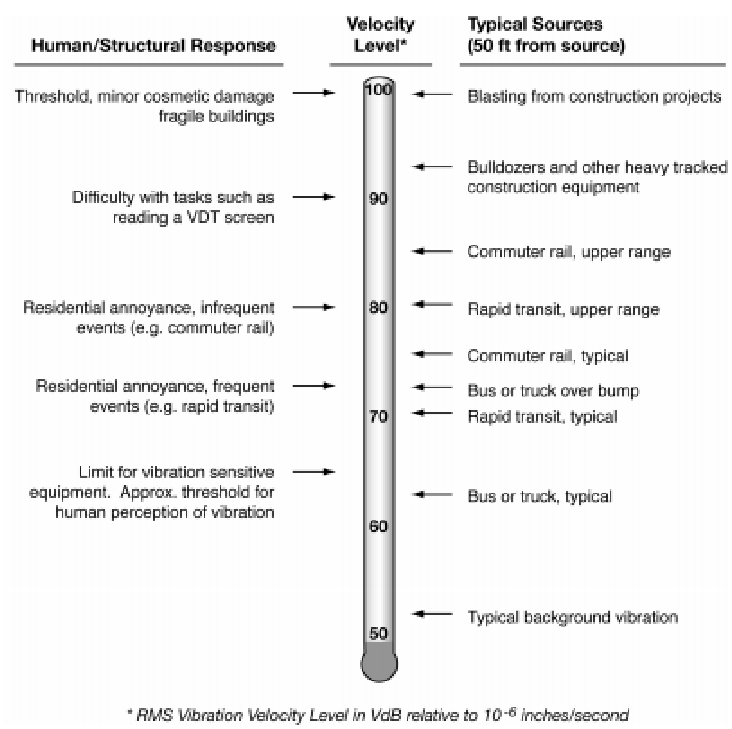
Figure 4: Path of Vibration



Source: FTA Guidance Manual

Figure 5 illustrates typical ground-borne vibration levels for common sources as well as criteria for human and structural responses to ground-borne vibration. As shown, the range of interest is approximately 50 to 100 VdB, from imperceptible background vibration to the threshold of damage. Although the approximate threshold of human perception to vibration is 65 VdB, annoyance is usually not significant unless the vibration exceeds 70 VdB.

Figure 5: Typical Levels of Ground-Borne Vibration



4.3.1 Ground-borne Noise and Vibration Criteria

In its guidance manual, FTA developed criteria for assessing vibration impacts related to light rail projects. The criteria are based on community reaction to transit-related vibration and the potential for adverse effects on vibration-sensitive activities and processes. The criteria identify intensities of ground-borne vibration and noise that may be considered significant and, thus, require consideration of mitigation and abatement measures.

Table 5 contains the FTA criteria used for this project. Where vibration is intermittent (e.g., a transit train pass-by) human annoyance from ground vibration and noise is dependent on the number of vibration events that occur during a typical 24-hour period. The FTA Guidance Manual presents two categories of criteria for infrequent and frequent events, respectively. “Frequent events” is defined as more than 70 vibration events per day. The FTA impact criteria for “frequent events” are 65 VdB, 72 VdB, and 75 VdB for land use categories 1, 2, and 3, respectively. Land use categories 4, 5, and 6 are special cases that are defined in the FTA Guidance Manual, though rarely used. Land use categories are described in the following paragraph.

Table 5: Criteria for Human Annoyance Impact and Interference with use of Vibration-Sensitive Equipment

		Ground-borne Vibration (VdB re 1 micro in/sec)		Ground-borne Noise (dBA re 20 micro Pa)	
Land Use		Events*			
Category	Category Comment	Frequent	Infrequent	Frequent	Infrequent
1	Low interior ambient is essential	65	65	n/a	n/a
2	Residential & sleep	72	80	35	43
3	Institutional & daytime	75	83	40	48
4	Concert hall, TV/Recording Studio **	65	65	25	25
5	Auditorium **	72	80	30	38
6	Theater **	72	80	35	43

Source: FTA Guidance Manual.

Notes: * Frequent is defined as greater than or equal to 70 events per day.

** See section 12.2.2 of FTA Guidance Manual regarding the potential for structural damage to fragile structures if operational during transit events.

As shown in Table 5, some land use activities are more sensitive to vibration than others. For example, certain research and fabrication facilities, television and recording studios, and concert halls are more vibration-sensitive than residences and buildings where people normally sleep, which are more sensitive than institutional land uses with primarily daytime use. At those locations where vibration-sensitive equipment is used, such as hospital and medical facilities and high tech manufacturing and testing sites, there may be the potential for additional or more severe ground vibration impacts from transit operations. The FTA assigns sensitive land uses to the following three categories:

- **Vibration Category 1: High Sensitivity** - Buildings where low ambient vibration is essential for the interior operations in the building. Vibration levels may be below the level of human perception.

- **Vibration Category 2: Residential** - Residences and buildings where people normally sleep. This includes private dwellings, hospitals, and hotels where nighttime sensitivity is assumed to be of utmost importance. It also includes some special uses such as auditoriums or theaters.
- **Vibration Category 3: Institutional** - Land uses with primarily daytime use including schools, churches, other institutions and quiet offices that do not have vibration-sensitive equipment.

It is extremely rare for vibration from train operations to cause any sort of building damage, even minor cosmetic damage. For historic structures that are very close to the right-of-way, the FTA Guidance Manual provides Vibration Damage Criteria (FTA Guidance Manual Table 12-3) of approximately 90 VdB.

5. Affected Environment

5.1 Existing Noise Conditions in the D-O Corridor

The project corridor currently experiences high levels of existing noise typical of suburban and downtown regions. In accordance with the FTA Guidance Manual, a noise screening procedure should be conducted to determine the area of analysis (area of potential effect) based on established distances from transit facilities. Once the area of analysis is determined, individual land uses that are sensitive to noise are targeted for impact analysis.

5.1.1 Noise Screening Procedure

A noise screening procedure was conducted to identify noise-sensitive areas within 350 feet of the centerline of the proposed light rail tracks or from the center of each proposed station, 225 feet from the center of the proposed park-and-ride lots, and within 1,000 feet of the proposed ROMF locations. If intervening buildings existed between the source and the receptor, then a screening distance of 175 feet was used for the light rail tracks and stations, 150 feet from the park-and-ride lots, or 650 feet for the yard and shop locations, as required. Maps, photographs, and field studies were used to identify noise-sensitive land uses within the appropriate screening distances. Sensitive receptors include residences, university buildings and other schools, hospitals, medical facilities, churches, hotels, parks, and golf courses. Tables 6 and 7 identify each noise-sensitive area, the alignment tracking, the applicable FTA noise category of land use, and the distance of the sensitive areas to each noise source. Table 6 lists receptors near the light rail tracks, stations, and park-and-ride lots, and Table 7 lists receptors near ROMFs. Multiple similar land uses that are approximately the same distance from the project have been grouped together. Where two alignment alternatives run close to the same receptor, with different distances, both distances are provided.

Refer to Figures 6 through 20 for the locations of each receptor.

Table 6: Noise-Sensitive Receptors (Light Rail Tracks and Stations with or without Park-and-Ride Lots)

Site # (Figure Reference)	Alignment Alternative	Name/Location of Receptor Sites	Light Rail Station Proximity	FTA Noise Category (Land Use)	Distance from Receptor to Light Rail Tracks (feet)
1	LRA	Branson Street & Hibbard Drive 1	UNC Hospitals	2	200*

Site # (Figure Reference)	Alignment Alternative	Name/Location of Receptor Sites	Light Rail Station Proximity	FTA Noise Category (Land Use)	Distance from Receptor to Light Rail Tracks (feet)
2	LRA	Branson Street & Hibbard Drive 2	UNC Hospitals	2	55*
3	LRA	Branson Street & Hibbard Drive 3	UNC Hospitals	2	65*
4	LRA	Branson Street & Hibbard Drive 4	UNC Hospitals	2	80*
5	LRA	Branson Street & Hibbard Drive 5	UNC Hospitals	2	40*
6	LRA	Branson Street & Hibbard Drive 6	UNC Hospitals	2	130*
7	LRA	Branson Street & Hibbard Drive 7	UNC Hospitals	2	10*
8	LRA	Branson Street & Hibbard Drive 8	UNC Hospitals	2	20*
9	LRA	Mason Farm Road North 1	UNC Hospitals	2	200
10	LRA	UNC Business School	UNC Hospitals	3	250
11	LRA	Mason Farm Road North 2	UNC Hospitals	2	70
12	LRA	Mason Farm Road North	Mason Farm	2	40
13	LRA	Batty Hill Drive	Mason Farm	2	220*
14	LRA	Batty Hill Drive	Mason Farm	2	75*
15	LRA	Batty Hill Drive	Mason Farm	2	150*
16	LRA	East of Fordham Road	Mason Farm	2	270*
17	LRA	Carmichael Street	Mason Farm	2	130*
18	LRA	Aldersgate Methodist Church	Mason Farm	3	120*
19	LRA	NC Botanical Gardens	Mason Farm	1	130*
19A	LRA	NC Botanical Gardens North Trails – Coker Pinetum	Mason Farm	3	20*
20	LRA	Fordham Road South	Mason Farm	2	250*
21	LRA	Glenwood School	Mason Farm	3	200
22	LRA	Condos	Hamilton Road	2	100
23	LRA	Finley Golf Course T Boxes	Hamilton Road	3	50
24	C1, C1A	Meadowmont Lane East	Friday Center	2	180*
25	C1, C1A	Sprunt Street East	Meadowmont	2	230
26	C1, C1A	Cedar Berry Lane	Meadowmont	2	60
27	C1A	Park Bluff Drive	Leigh Village	2	150
27A	C1, C1A	Iron Mountain Road	Leigh Village	2	310/15
27B	C1, C1A	Iron Mountain Road	Leigh Village	2	180/120
27C	C1, C1A	Iron Mountain Road	Leigh Village	2	65/210
27D	C1, C1A	Iron Mountain Road	Leigh Village	2	0/290
28	C1A	Millingport Court	Leigh Village	2	120*

Site # (Figure Reference)	Alignment Alternative	Name/Location of Receptor Sites	Light Rail Station Proximity	FTA Noise Category (Land Use)	Distance from Receptor to Light Rail Tracks (feet)
28A	C1A	Helmsdale Drive	Leigh Village	2	100
29	C2, C2A	Courtyard Chapel Hill	Friday Center	2	190/260
30	C2	Brookberry Circle	Woodmont	2	50
31	C2, C2A	Pearl Lane	Woodmont	2	160/250
32	C2, C2A	Stancell	Woodmont	2	120
33	C2A	Village Crossing	Friday Center	2	280
34	C2, C2A	Woodmont Station South	Woodmont	2	250
35	C2, C2A	Little John Road	Woodmont	2	100
36	C2, C2A	Downing Creek	Woodmont	2	180
37	C2, C2A	George King Road	Woodmont	2	20
37A	C2, C2A	Jordan Game Land	Woodmont	2	100
38	LRA	Hudson Road	Leigh Village	2	80
39	LRA	Crescent Drive South	Leigh Village	2	55
40	LRA	Farrington Road South	Leigh Village	2	320
41	LRA	Farrington Road North	Leigh Village	2	70
42	LRA	Leigh Farm	Leigh Village	2	180
43	LRA	Farrington Road	Leigh Village	2	260
44	LRA	Farrington Road	Leigh Village	2	230
45	LRA	Baker Mill Road	Leigh Village	2	170
46	LRA	Beaumont Drive	Leigh Village	2	210
47	LRA	Crystal Oaks Court	Leigh Village	2	190
48	LRA	Old Coach Road	Leigh Village	2	300
49	LRA	Old Coach Road	Leigh Village	2	150
50	LRA	Old Coach Road	Leigh Village	2	80
51	LRA	Old Chapel Hill Road	Leigh Village	2	315
52	LRA	N. White Oak Drive	Gateway	2	100
53	LRA	N. White Oak Drive	Gateway	2	80
54	LRA	Comfort Inn Univ.	Gateway	2	130*
55	NHC 1, NHC 2	East Sayward Drive	Patterson Place	2	140
56	NHC 1, NHC 2	Northcreek Drive 1	Patterson Place	2	150
57	NHC 1, NHC 2	West Garrett Road	Patterson Place	2	50*
58	NHC 1	North Larchmont Road	Martin Luther King Jr. Parkway	2	140*
59	NHC 1	Lychan Parkway	Martin Luther King Jr. Parkway	2	75*

Site # (Figure Reference)	Alignment Alternative	Name/Location of Receptor Sites	Light Rail Station Proximity	FTA Noise Category (Land Use)	Distance from Receptor to Light Rail Tracks (feet)
60	NHC 1	Melstone Turn	Martin Luther King Jr. Parkway	2	275*
61	NHC 1	University Drive	Martin Luther King Jr. Parkway	2	300
62	NHC LPA	North Sayward Drive	Patterson Place	2	150
63	NHC LPA	South Sayward Drive	Patterson Place	2	180
64	NHC LPA	Southwest Durham Drive 1	Patterson Place	2	150
65	NHC LPA	Hopedale Avenue	Patterson Place	2	310
66	NHC LPA	Garrett Road	Patterson Place	2	250*
66A	NHC LPA	New Hope Creek Trails	Patterson Place	3	20*
67	NHC LPA, NHC 2	Snow Crest Trail 1	Martin Luther King Jr. Parkway	2	50
68	NHC LPA, NHC 2	Snow Crest Trail 2	Martin Luther King Jr. Parkway	2	70
69	NHC LPA, NHC 2	Snow Crest Trail 3	Martin Luther King Jr. Parkway	2	150
70	NHC LPA, NHC 2	Larchmont Road	Martin Luther King Jr. Parkway	2	70
71	LRA	Pickett Road South	South Square	2	50
72	LRA	Pickett Road South	South Square	2	200
73	LRA	Pickett Road South	South Square	2	90
74	LRA	Pickett Road North	South Square	2	60
75	LRA	15/501 West	South Square	2	270
76	LRA	Golf Course Greens	South Square	3	150
77	LRA	VA Medical Center North	Duke/VA Medical Centers	2/3	200
78	LRA	Duke Medical Center South	Duke/VA Medical Centers	2/3	260

Site # (Figure Reference)	Alignment Alternative	Name/Location of Receptor Sites	Light Rail Station Proximity	FTA Noise Category (Land Use)	Distance from Receptor to Light Rail Tracks (feet)
79	LRA	John Hope Franklin Center	Duke/VA Medical Centers	3	130
80	LRA	Anderson Street Apartments	Duke/VA Medical Centers	2	130
81	LRA	St. Joseph's Episcopal Church	Ninth Street	3	325*
81A	LRA	Hilton Garden Inn	Ninth Street	2	250
82	LRA	Powe House - Counseling	Ninth Street	3	100*
82A	LRA	Pettigrew Rehab Center	Ninth Street	3	60*
82B	LRA	W. Pettigrew Dialysis	Ninth Street	3	80*
82C	LRA	Hillcrest Convalescent Center	Ninth Street	2	100*
83	LRA	Duke Center Documentary Studies	Buchanan Boulevard	3	45*
84	LRA	Smith Warehouse	Buchanan Boulevard	3	275
85	LRA	Duke Memorial United Methodist	Durham	3	165
86	LRA	S. Duke Street East Hotel /West Village Apts.	Durham	2	215
87	LRA	Old Bull Bldg Apartments	Durham	2	40
87A	LRA	Durham Performing Arts	Durham	3	245
87B	LRT	Venable Center	Durham	3	30
88	LRA	Avery Boys & Girls Club	Alston Avenue	3	120
89	LRA	Colfax House 1	Alston Avenue	2	160
90	LRA	Colfax House 2	Alston Avenue	2	160
91	LRA	Murphy Street House West	Alston Avenue	2	160
92	LRA	Murphy Street House East	Alston Avenue	2	260

Source: URS, February 2015.

Note: * Distances measured horizontally to elevated light rail alignment. For receptors under elevated track, distances include vertical clearance.

Table 7: Noise-Sensitive Receptors (ROMF)

Site No.	Alternative	Name/Location of Receptor Sites	Land Use Category	Distance to Receptors From Center of ROMF[1] (feet)
42	Farrington	Farrington Road	2	1200
44	Leigh Village	Farrington Road	2	1200
93	Farrington	Leigh Farm Homes	2	880
94	Leigh Village	Farrington Road Houses	2	200
95	Farrington/Leigh Village	Farrington Road North 1	2	920/1200
96	Farrington/Leigh Village	Farrington Road North 2	2	1080/1500
97	Farrington	Farrington Road North	2	800
98	Patterson Place	North Creek Drive Apartments	2	640
99	Cornwallis	Maureen Joy Charter School	3	480
100	Cornwallis	Lerner Jewish Community School	3	400
101	Alston Avenue	W. Bacon Street	2	685

Source: URS May 2015
Notes: [1] Center of ROMF means equal distance between center of Maintenance Shop, Wash Building, and Paint Shop

Figure 6: Noise Impacts

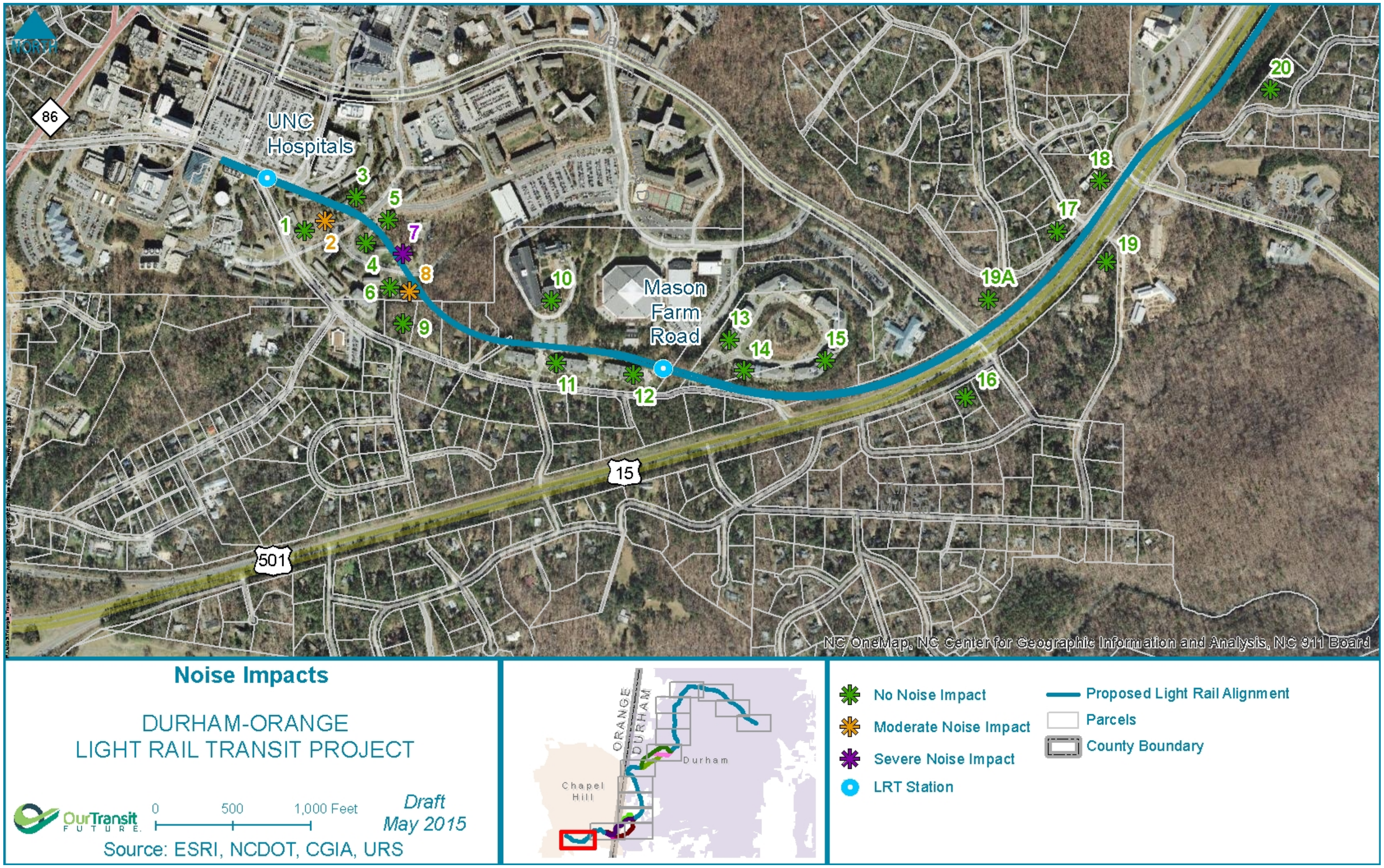


Figure 7: Noise Impacts

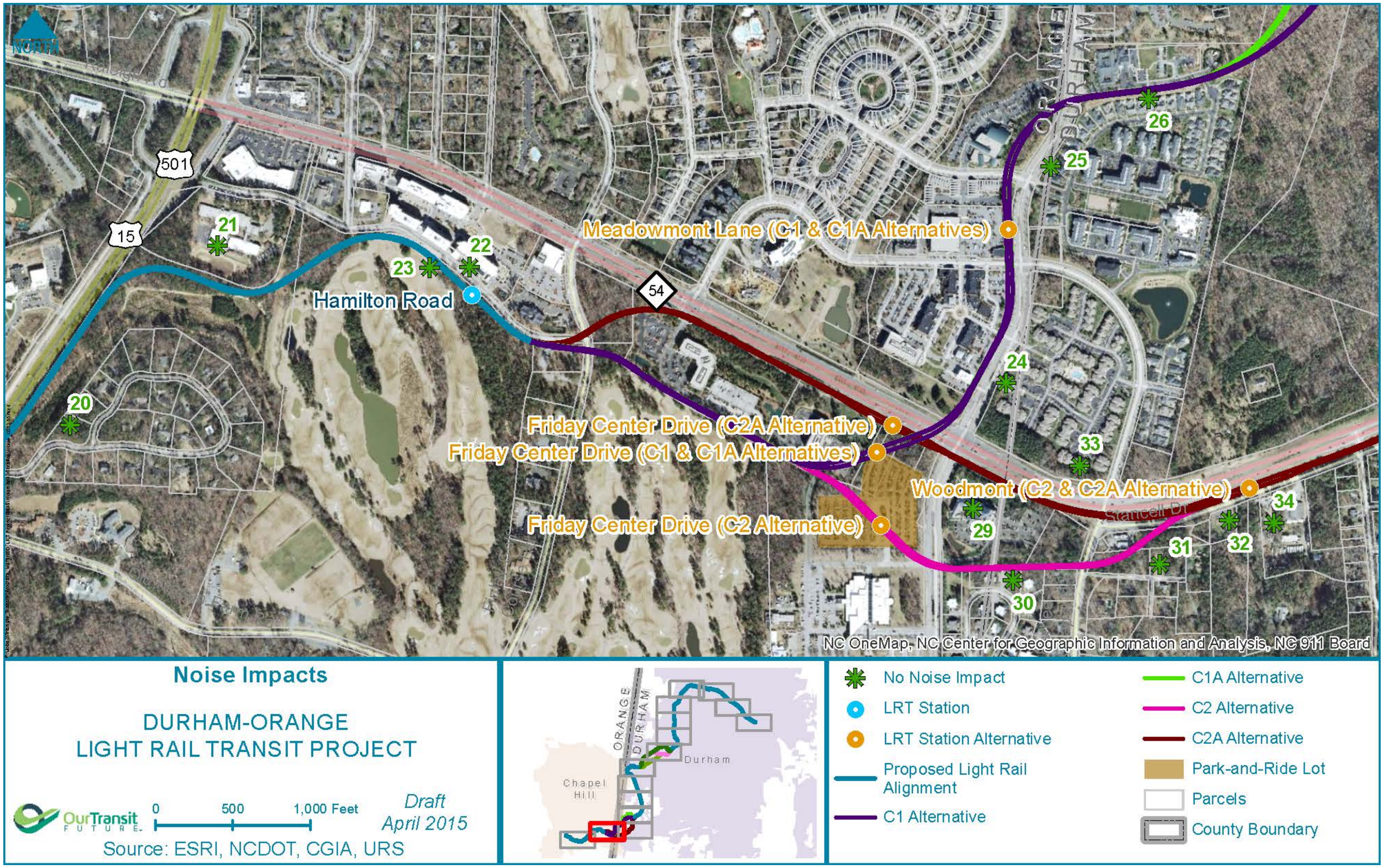


Figure 8: Noise Impacts

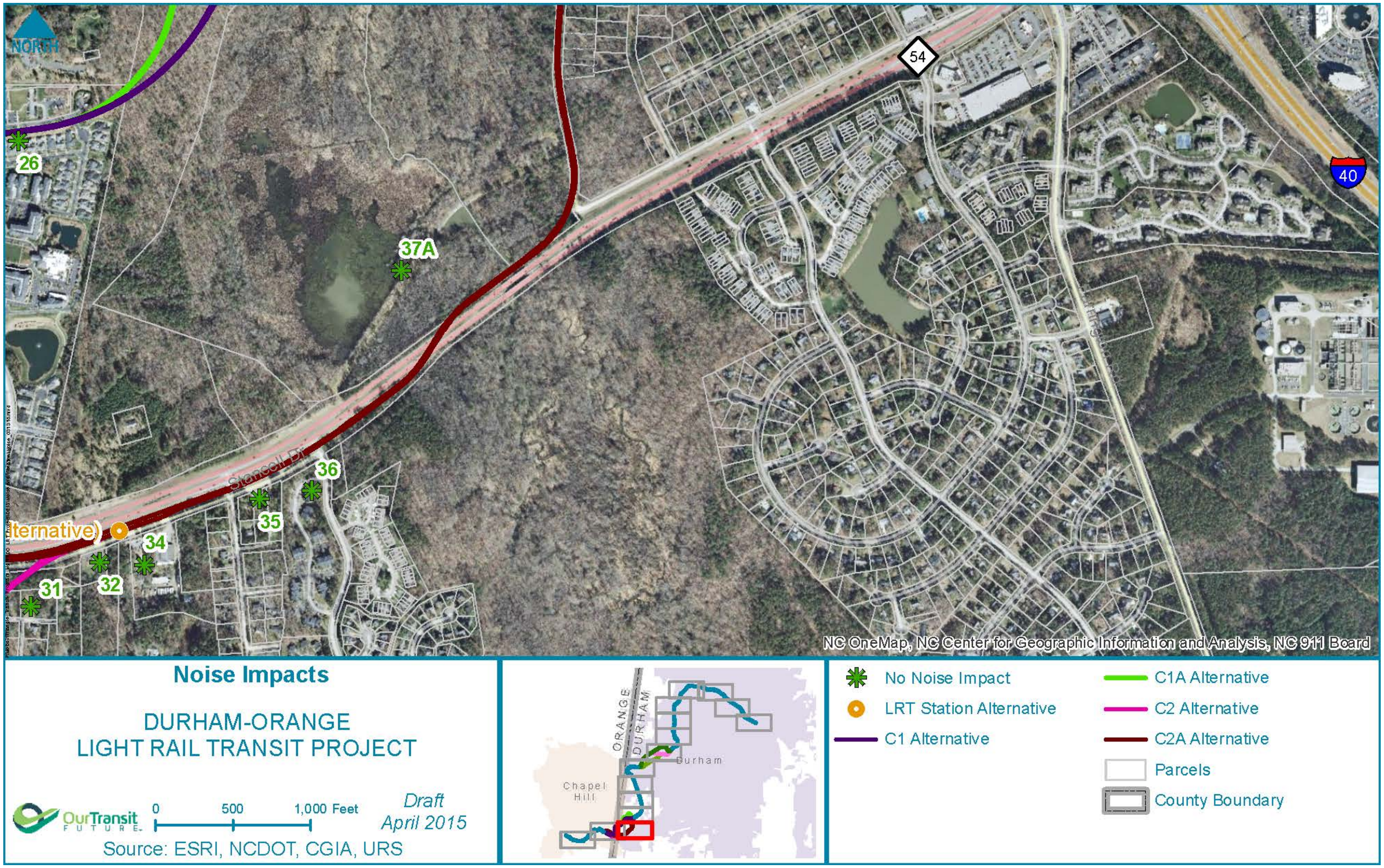


Figure 9: Noise Impacts

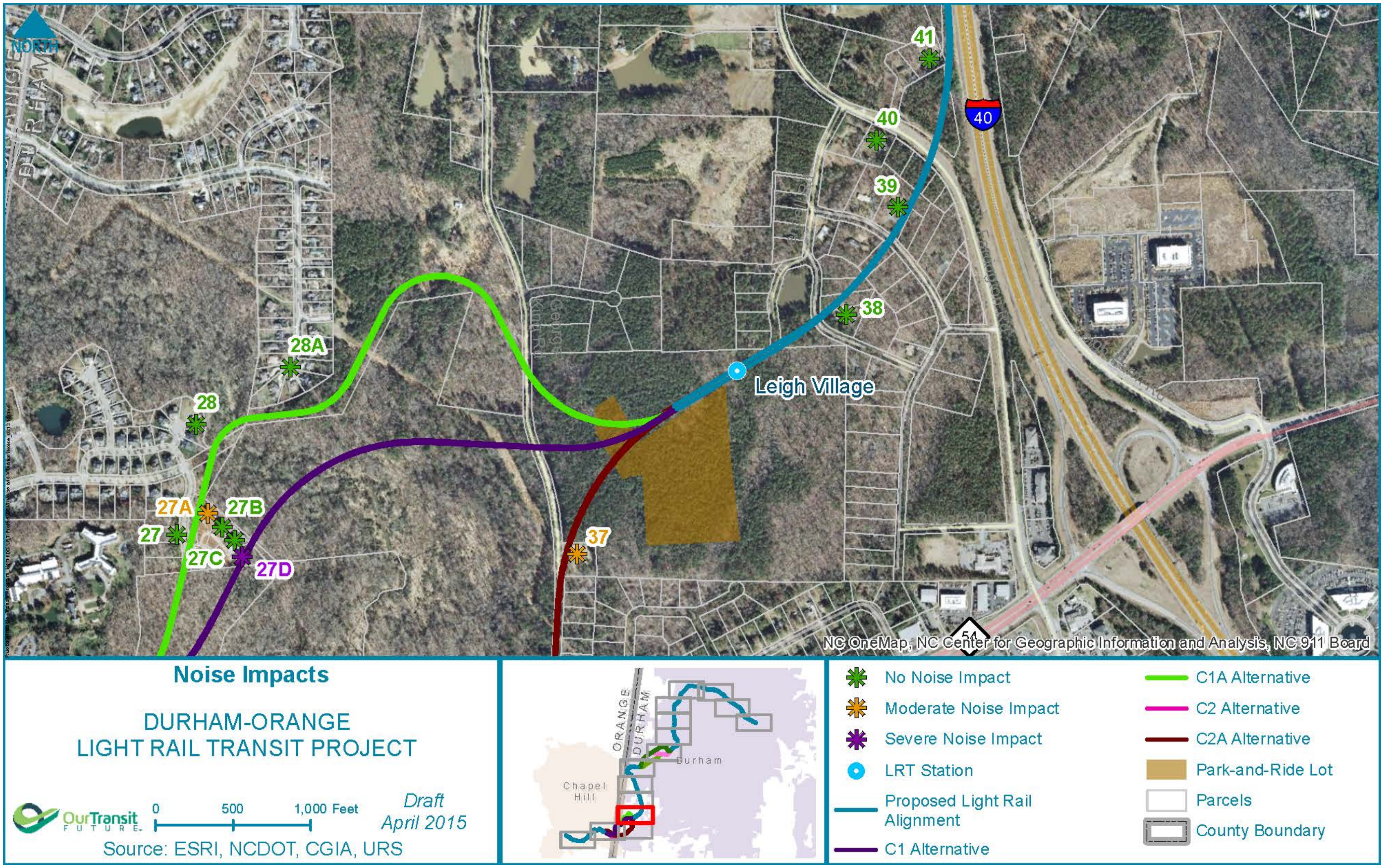


Figure 10: Noise Impacts

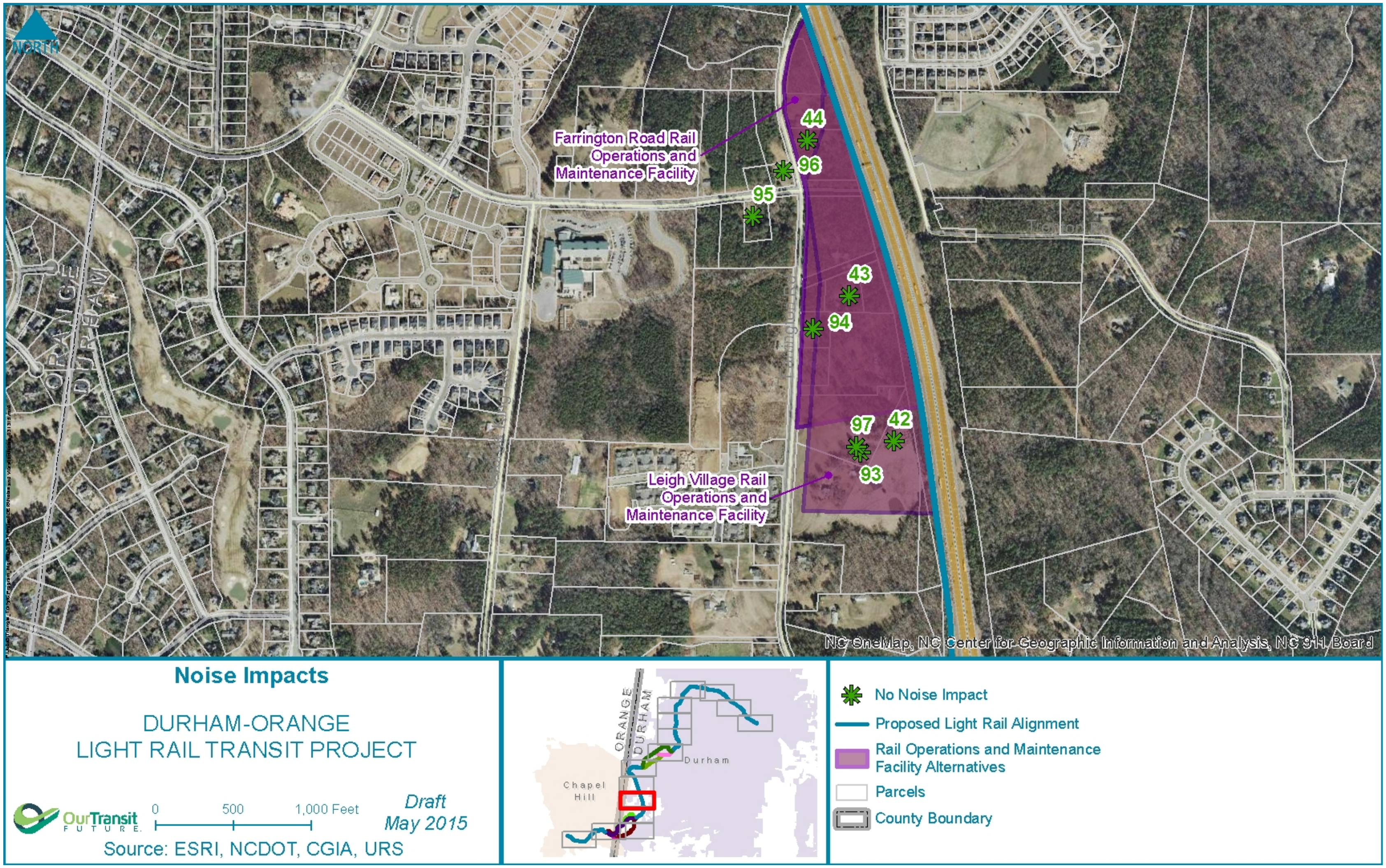


Figure 11: Noise Impacts

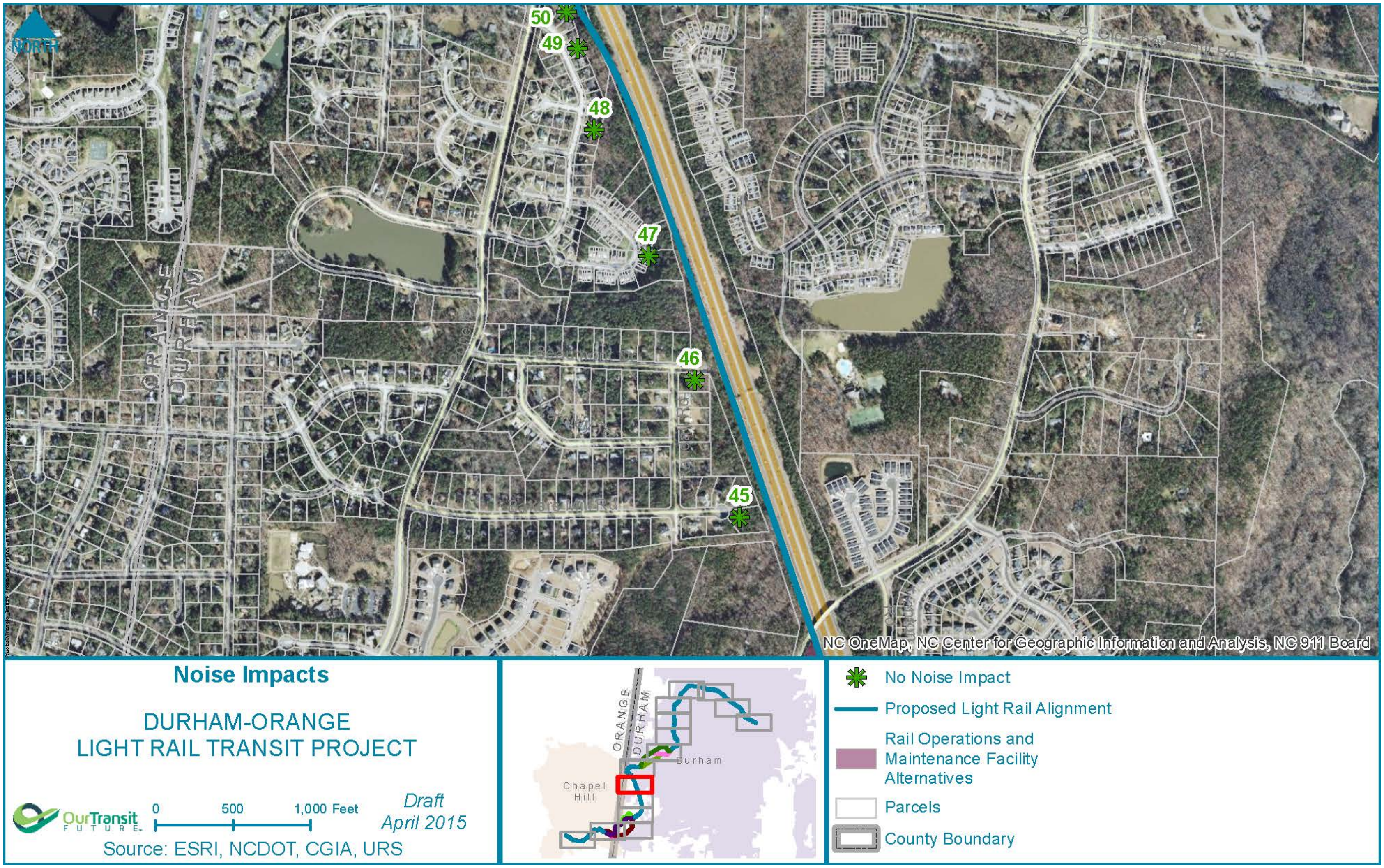


Figure 12: Noise Impacts

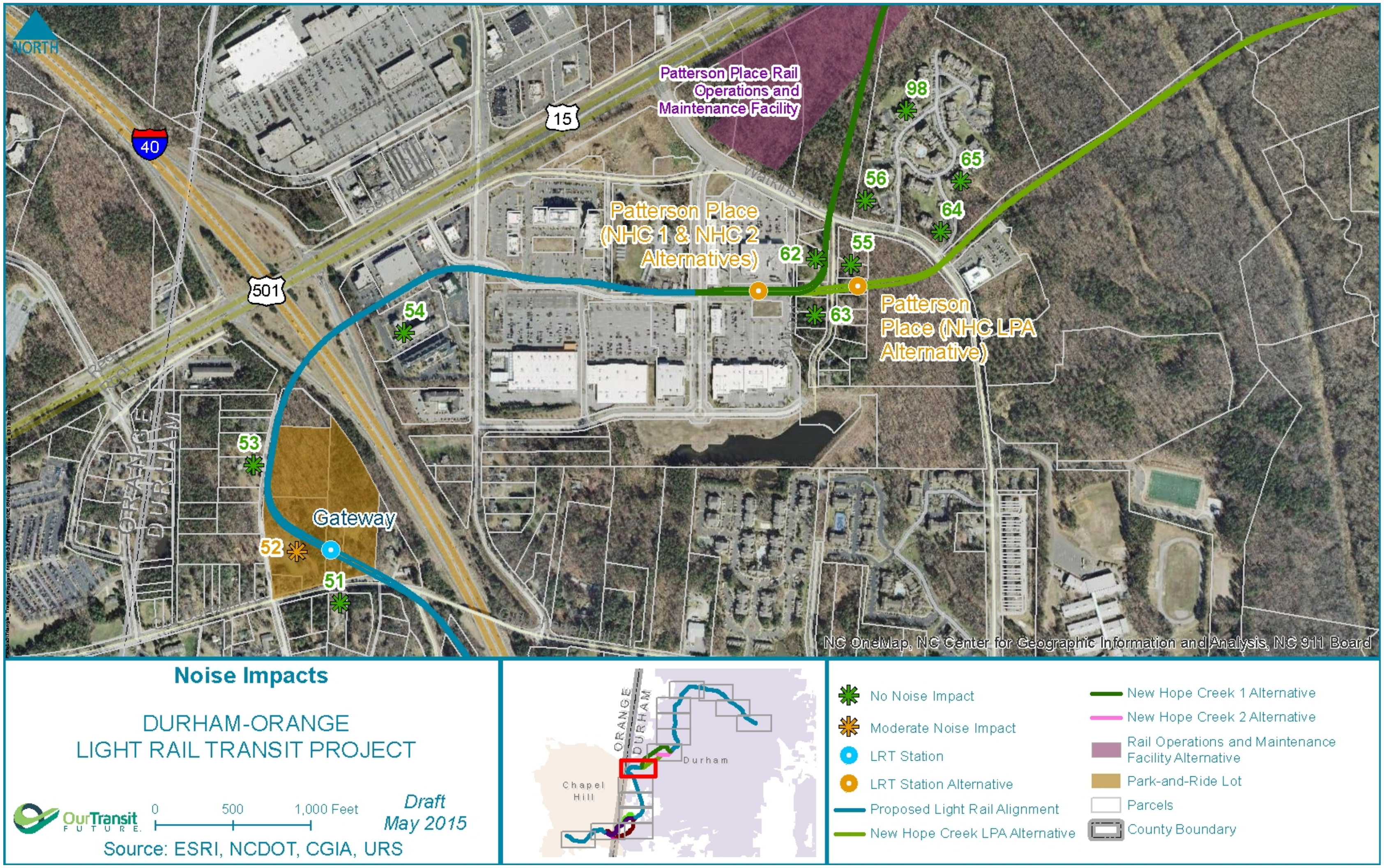


Figure 13: Noise Impacts

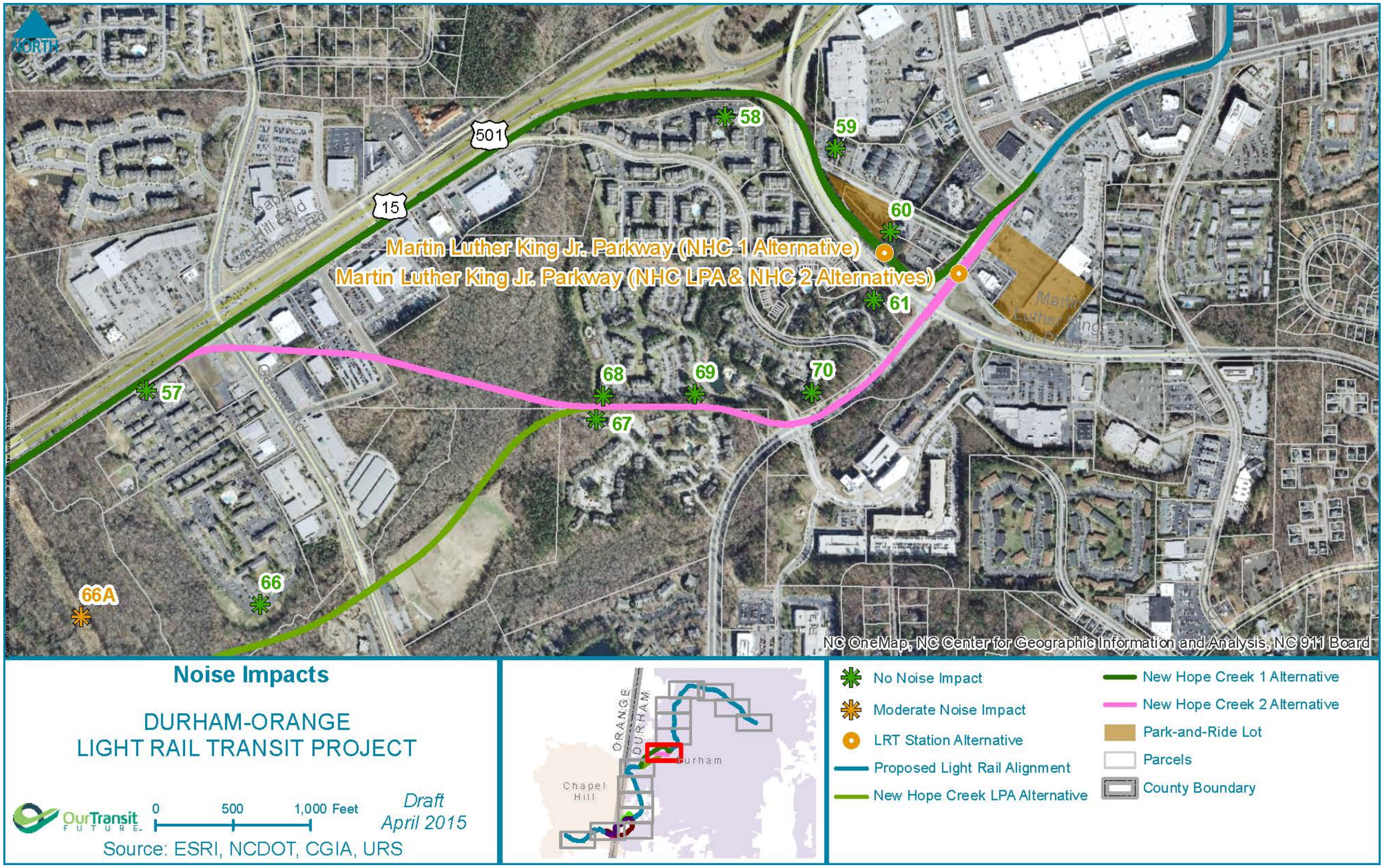


Figure 14: Noise Impacts

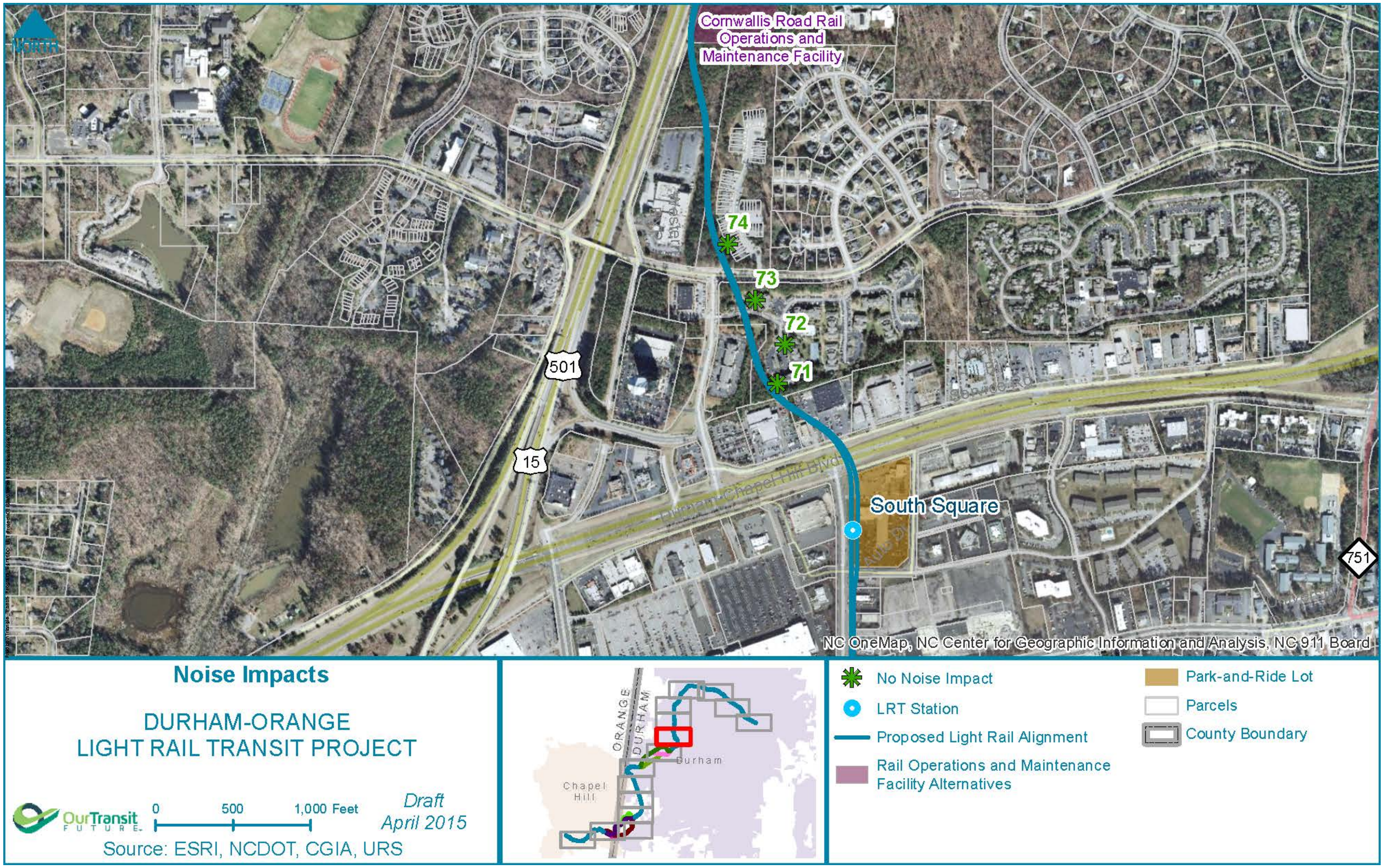


Figure 15: Noise Impacts

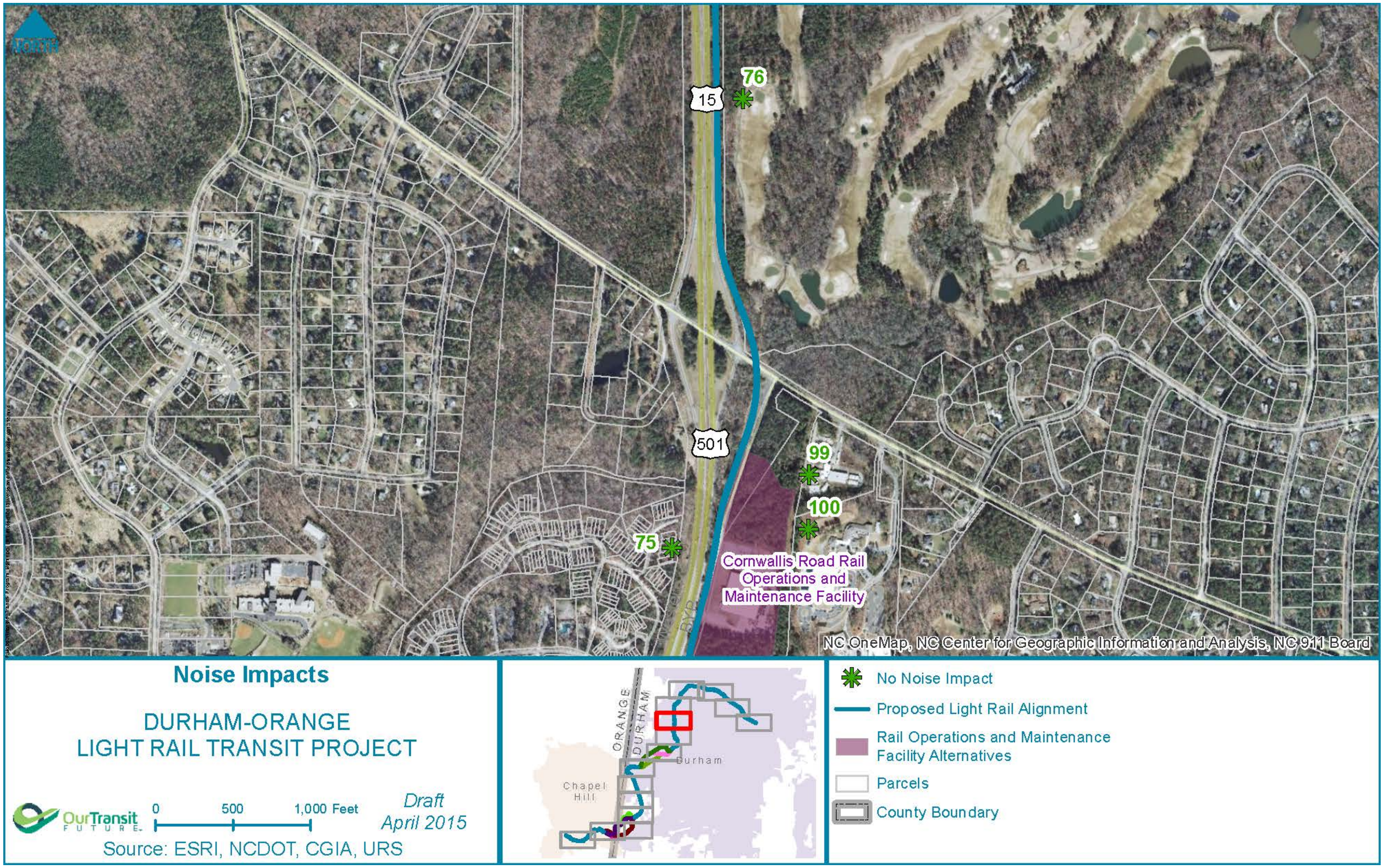


Figure 16: Noise Impacts

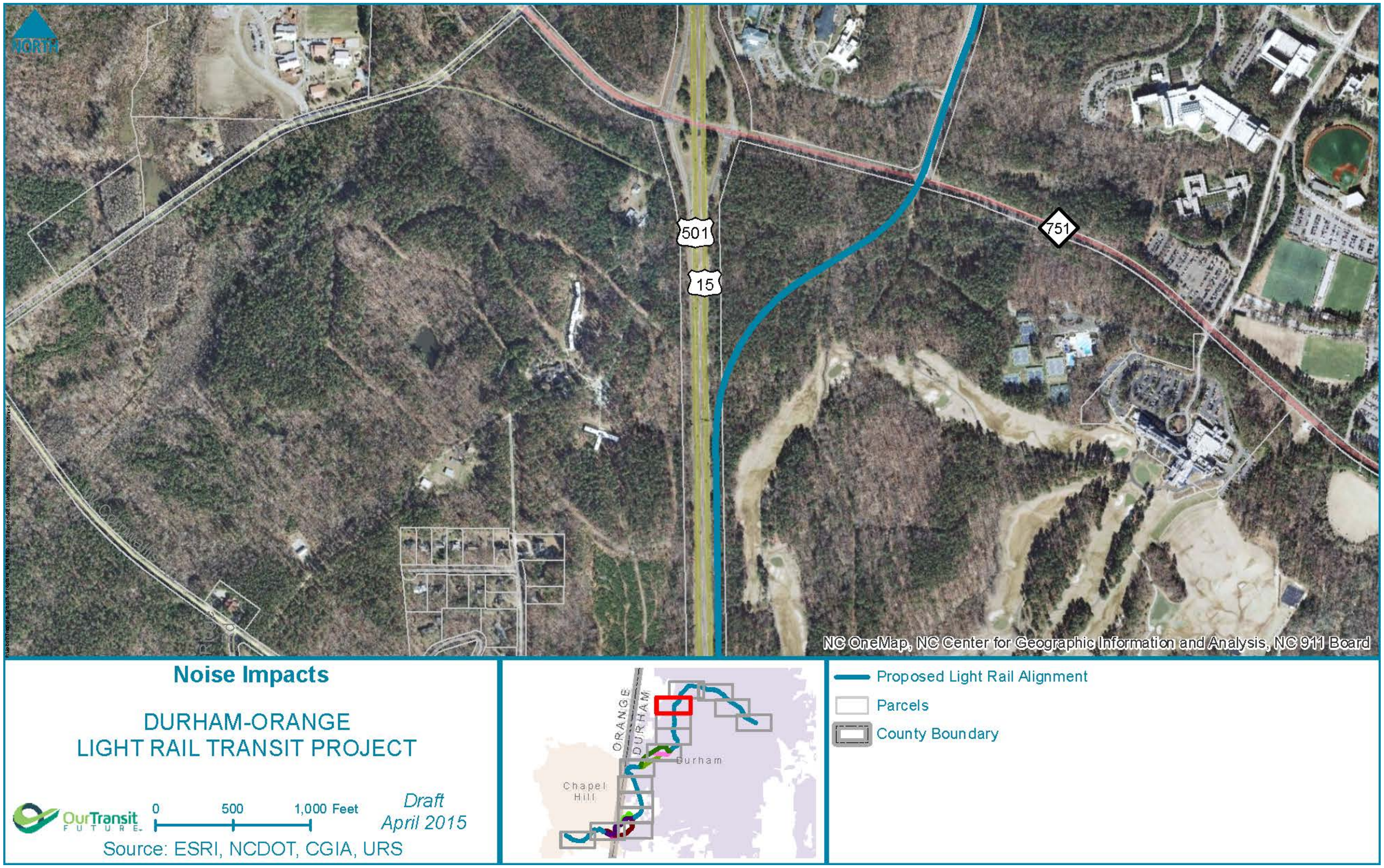


Figure 17: Noise Impacts

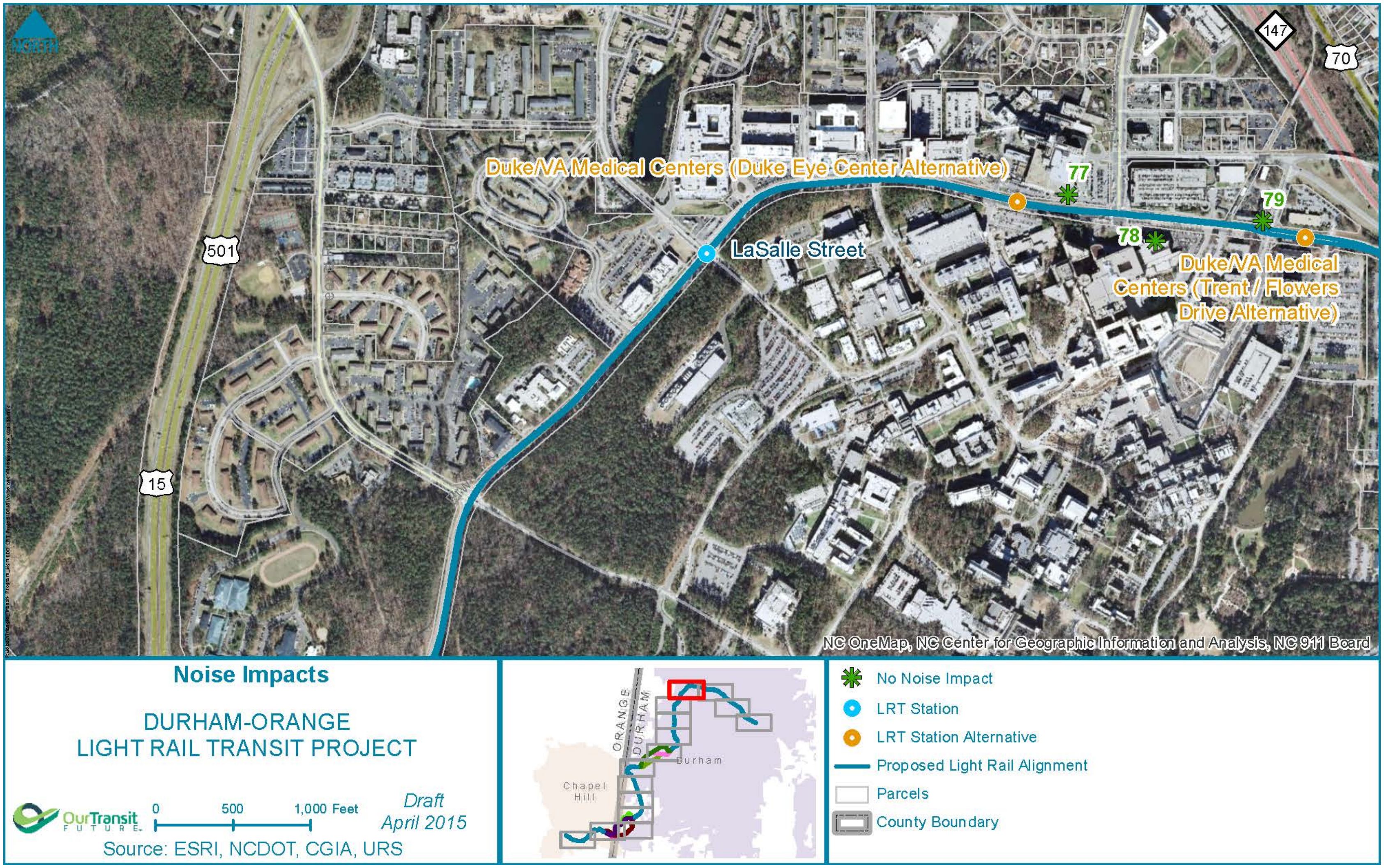


Figure 18: Noise Impacts

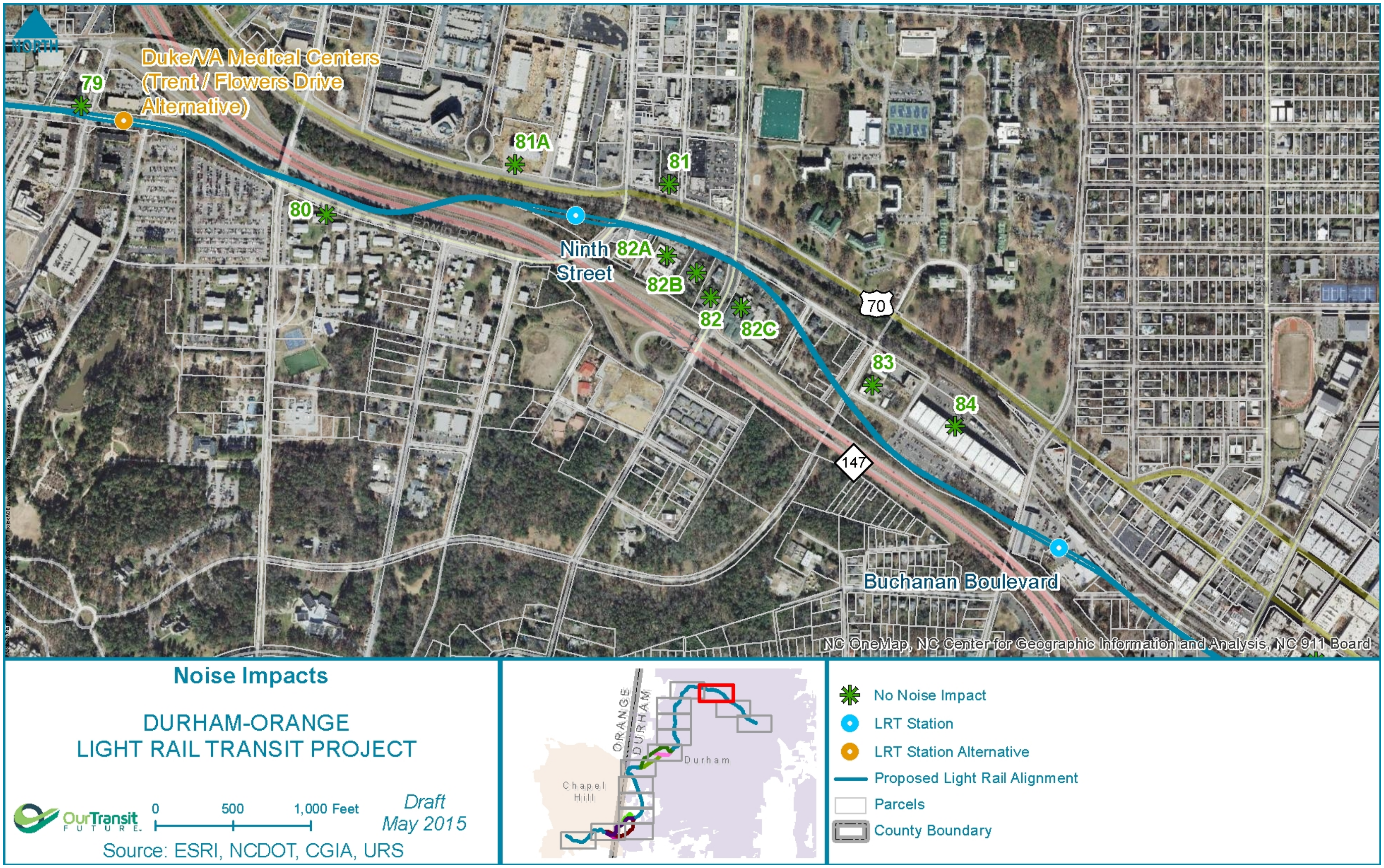


Figure 19: Noise Impacts

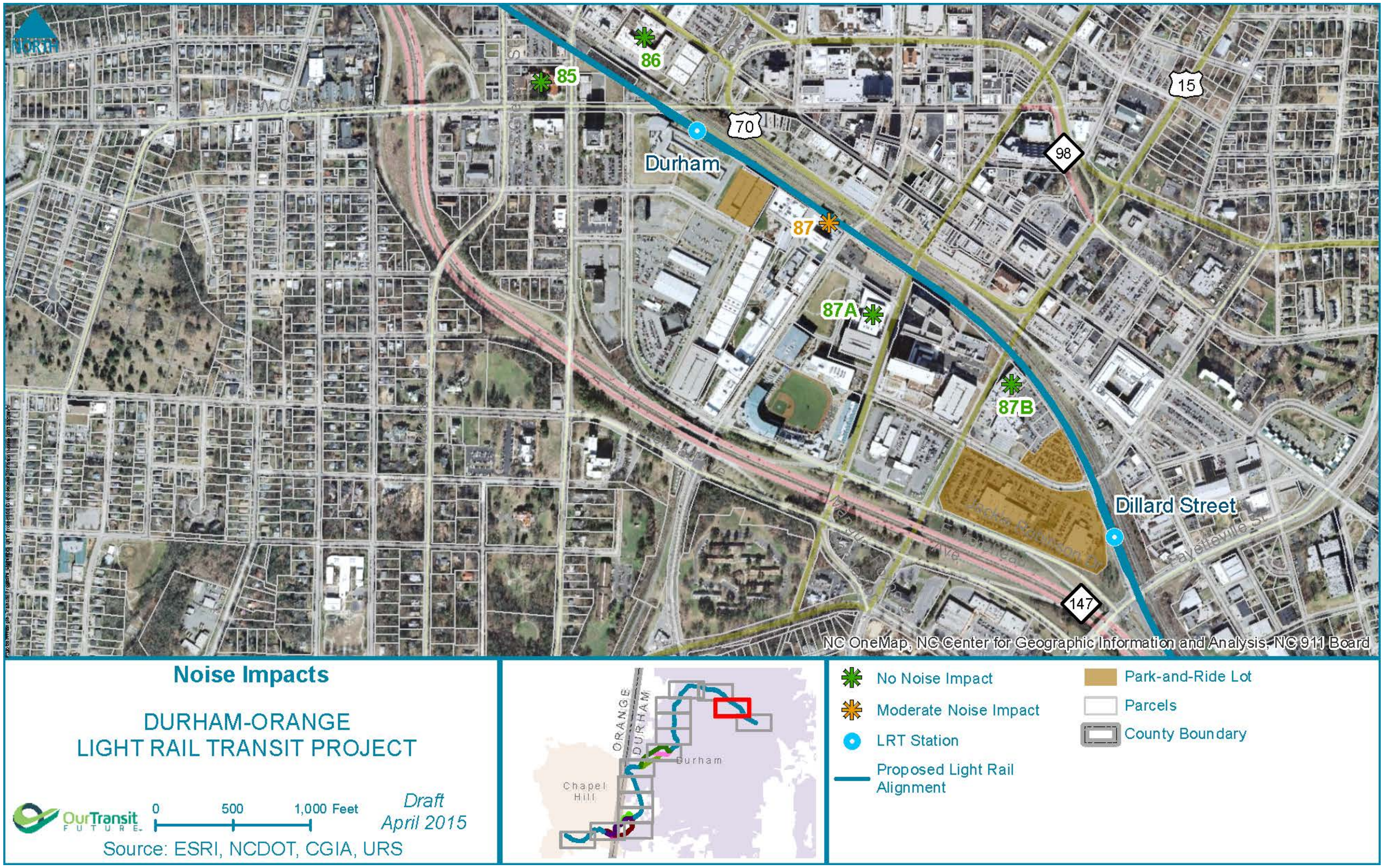
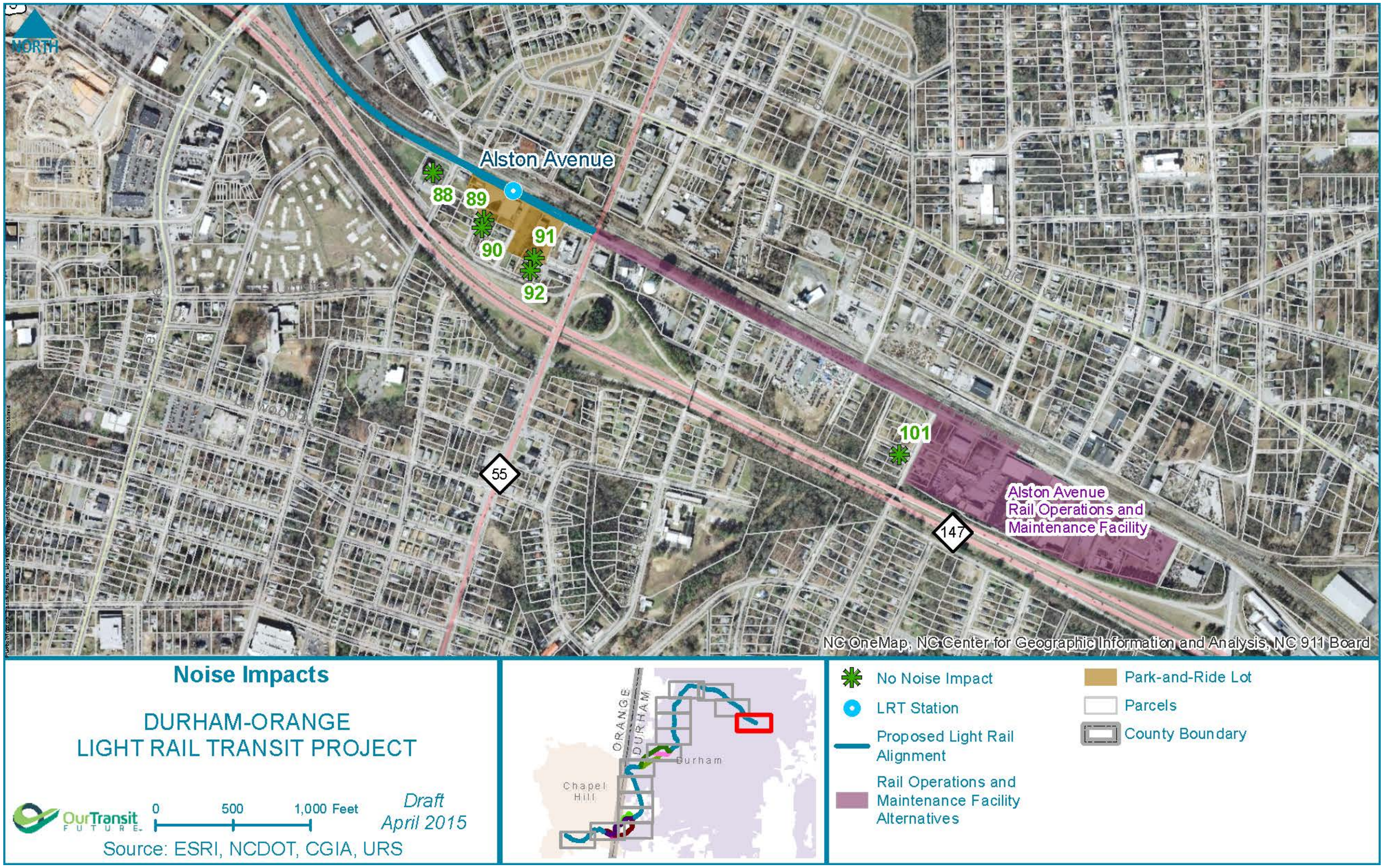


Figure 20: Noise Impacts



5.1.2 Ambient Noise Conditions

Noise monitoring was conducted using a Larson Davis 820 Type I sound level meter. Ambient noise measurements, shown on figures provided in Appendix A, were performed at 24 representative locations near sensitive receptor areas in November 2013. In order to identify the best measurement locations, the corridor was reviewed relative to the location of each of the sensitive receptor areas identified in Tables 6 and 7. The sensitive receptor areas were then analyzed to determine where monitoring locations would represent similar noise characteristics among noise-sensitive receptor areas.

Monitoring was conducted for approximately 20 minute periods at each site during the morning peak hours (6:00 a.m. to 9:00 a.m.), midday (10:00 a.m. to 3:00 p.m.), evening peak hours (3:30 p.m. to 6:30 p.m.), and late night (10:00 p.m. to 2:00 a.m.) periods during the week. This was extrapolated to 1 hour for the L_{eq} and to 24 hours for the L_{dn} equivalents. For the computation of the L_{dn}, the lowest measurement from AM and PM measurements was used in order to ensure a conservative methodology. The monitored existing noise levels are shown in Table 8. Location maps for the monitoring sites are provided in Appendix A. Appendix B provides the noise monitoring field data sheets. Appendix C provides photos of each respective monitoring site.

Table 8: Monitored Existing Noise Levels (dBA)

Monitoring Sites	Peak Hour (L_{eq})				L_{dn}
	AM	Midday	PM	Night	
M1A. N. Mason Farm Road & Hibbard Drive	46	63	46	44	58
M2. N. Mason Farm Road	53	45	48	46	50
M3. Woodbine Drive & Manning Drive	74	73	71	69	74
M4. Glenwood Elementary School	50	52	59	50	55
M5. Finley Golf 17th Hole T Box	53	62	55	50	59
M6. Meadowmont Lane & Green Cedar Lane	57	59	54	49	57
M7. Crescent Drive south of Wendell Road	55	49	56	55	59
M8. Courtyard Chapel Hill –Friday Center Drive	64	59	60	56	61
M9. Stancell Drive & Little John Road	62	64	64	59	64
M10. E. Ephesus Church Road & Farrington Road	63	61	63	59	64
M11. N. White Oak Drive	56	53	55	55	59
M12. Sayward Drive	57	46	48	50	54
M12A. 600’ west of Garrett Road	67	67	66	67	71
M12B. West side Lyckan Parkway	61	59	61	57	62
M12C. North Creek Drive	52	46	47	47	51
M13. Snow Crest Trail	49	50	49	44	50
M14. Tower Boulevard & Picket Road	55	52	51	51	56
M14A. Maureen Joy Charter School	57	51	54	51	56
M14B. Cornwallis Road Golf Course	59	59	57	n/a	59
M14C. Jewish Community Center	52	52	48	49	54
M15. Erwin Road & Trent Road	67	67	70	65	70
M16. Durham Performing Arts Center	66	66	65	61	67
M17. N. Alston Avenue & E. Pettigrew Street	74	72	69	66	72
M17A. Joplin & Bernice Streets	62	61	63	61	65

Source: URS November 2013.

5.2 Existing Ground-Borne Noise and Vibration Conditions in the D-O Corridor

The study area includes urban, suburban, and rural areas, all of which have different, though relatively low levels of existing ground-borne noise and vibration. Vibration levels are greater near roadways with greater volumes of heavy truck and bus traffic and near railroads with frequent freight or transit train services. The FTA Guidance Manual does not evaluate ground-borne noise and vibration impacts as a relationship to existing levels. As such, quantifying existing levels is not required for the impact assessment.

5.2.1 Impact Evaluation Procedure

Vibration impacts for this project are determined using two methods: the Vibration Screening Procedure and the General Vibration Assessment methods contained in the aforementioned FTA Guidance Manual. Using this two-tiered approach, the FTA's Vibration Impact Criteria are used to identify locations where impacts might occur based on existing land use activities.

Ground vibration is generated by the wheel/rail interface and is influenced by wheel/rail roughness, transit vehicle suspension, train speed, track construction, location of switches and crossovers, and the geologic strata underlying the track. The vibration levels likely to be generated by the project are based on data contained in the FTA Guidance Manual, Figure 10-1, Generalized Ground Surface Vibration Curves. Vibration from a passing light rail train moves through the geologic strata into building foundations, causing the building to vibrate. The main concerns are annoyance to building occupants and interference with vibration-sensitive operations/equipment. Any damage from light rail ground vibration, including cosmetic damage to buildings, is highly unlikely.

The FTA vibration propagation data provide an estimate of vibration levels as a function of distance from the tracks. The FTA Screening Procedure distance criteria are shown in Table 9. No adjustments were utilized in the Screening Procedure. The Screening Criteria are very conservative and were used to exclude land uses from further analysis.

Table 9: Distance Criteria for Vibration Screening Procedure

Type of Project	Critical Distance from Track to Structure for Land Use		
	Category 1	Category 2	Category 3
Light Rail Transit	Within 450 feet	Within 150 feet	Within 100 feet

Source: FTA Guidance Manual.

Table 10 lists the potentially affected sites resulting from the Screening Procedure that are evaluated in more detail in the Impacts Assessment in section 6.2. Refer to Figures 21 through 35 for the locations of each receptor.

Table 10: Vibration Receptor Screening Results

Site # (Figure Reference)	Alternative	Name/Location of Receptor Sites	Light Rail Station Proximity	Vibration Land Use Category	Distance from Receptor to Light Rail Tracks (feet)
1A	LRA	UNC Marsico Hall – Sensitive Equipment	UNC Hospitals	1	430
2	LRA	Branson Street & Hibbard Drive 2	UNC Hospitals	2	55*
3	LRA	Branson Street & Hibbard Drive 3	UNC Hospitals	2	65*
4	LRA	Branson Street & Hibbard Drive 4	UNC Hospitals	2	80*
5	LRA	Branson Street & Hibbard Drive 5	UNC Hospitals	2	40*
6	LRA	Branson Street & Hibbard Drive 6	UNC Hospitals	2	130*
7	LRA	Branson Street & Hibbard Drive 7	UNC Hospitals	2	10*
8	LRA	Branson Street & Hibbard Drive 8	UNC Hospitals	2	20*
11	LRA	Mason Farm Road North 2	UNC Hospitals	2	70
12	LRA	Mason Farm Road North	Mason Farm	2	40
14	LRA	Batty Hill Drive	Mason Farm	2	75*
15	LRA	Batty Hill Drive	Mason Farm	2	150*
17	LRA	Carmichael Street	Mason Farm	2	130*
22	LRA	Condos	Hamilton Road	2	100
26	C1, C1A	Cedar Berry Lane	Meadowmont	2	60
27	C1A	Park Bluff Drive	Leigh Village	2	150
27A	C1A	Iron Mountain Road	Leigh Village	2	15
27B	C1A	Iron Mountain Road	Leigh Village	2	120
27C	C1	Iron Mountain Road	Leigh Village	2	65
27D	C1	Iron Mountain Road	Leigh Village	2	1
28	C1A	Millingport Court	Leigh Village	2	120*
28A	C1A	Helmsdale Drive	Leigh Village	2	100*
30	C2	Brookberry Circle	Woodmont	2	50
32	C2, C2A	Stancell	Woodmont	2	120
35	C2, C2A	Little John Road	Woodmont	2	100
37	C2, C2A	George King Road	Woodmont	2	20
38	LRA	Hudson Road	Leigh Village	2	80
39	LRA	Crescent Drive South	Leigh Village	2	55
41	LRA	Farrington Road North	Leigh Village	2	70
49	LRA	Old Coach Road	Leigh Village	2	150

Site # (Figure Reference)	Alternative	Name/Location of Receptor Sites	Light Rail Station Proximity	Vibration Land Use Category	Distance from Receptor to Light Rail Tracks (feet)
50	LRA	Old Coach Road	Leigh Village	2	80
52	LRA	N. White Oak Drive	Gateway	2	100
53	LRA	N. White Oak Drive	Gateway	2	80
54	LRA	Comfort Inn Univ.	Gateway	2	130*
55	NHC 1, NHC 2	East Sayward Drive	Patterson Place	2	140
56	NHC 1, NHC 2	Northcreek Drive 1	Patterson Place	2	150
57	NHC 1, NHC 2	West Garrett Road	Patterson Place	2	50*
58	NHC 1	North Larchmont Road	Martin Luther King Jr. Parkway	2	140*
59	NHC 1	Lychan Parkway	Martin Luther King Jr. Parkway	2	75*
62	NHC LPA	North Sayward Drive	Patterson Place	2	150
64	NHC LPA	Southwest Durham Drive1	Patterson Place	2	150
67	NHC LPA, NHC 2	Snow Crest Trail 1	Martin Luther King Jr. Parkway	2	50
68	NHC LPA, NHC 2	Snow Crest Trail 2	Martin Luther King Jr. Parkway	2	70
69	NHC LPA, NHC 2	Snow Crest Trail 3	Martin Luther King Jr. Parkway	2	150
70	NHC LPA, NHC 2	Larchmont Road	Martin Luther King Jr. Parkway	2	70
71	LRA	Pickett Road South	South Square	2	50
73	LRA	Pickett Road South	South Square	2	90
74	LRA	Pickett Road North	South Square	2	60
77	LRA	VA Medical Center North	Duke/VA Medical Centers	1/2/3	150
78	LRA	Duke Medical Center South	Duke/VA Medical Centers	1/2/3	100

Site # (Figure Reference)	Alternative	Name/Location of Receptor Sites	Light Rail Station Proximity	Vibration Land Use Category	Distance from Receptor to Light Rail Tracks (feet)
80	LRA	Anderson Street Apartments	Duke/VA Medical Centers	2	130
82	LRA	Powe House Counseling	Ninth Street	2	100*
82A		Pettigrew Rehab Center	Ninth Street	3	60*
82B		W. Pettigrew Dialysis	Ninth Street	3	80*
82C	LRA	Hillcrest Convalescent Center	Ninth Street	2	100*
83	LRA	Center for Documentary Studies	Buchanan Boulevard	2	45*
87	LRA	Old Bull Bldg Apartments	Durham	2	40
87A	LRA	Durham Performing Arts	Durham	4	245
87B	LRA	Venable Center	Durham	3	30
88	LRA	Avery Boys & Girls Club	Alston Avenue	3	85

Source: URS May 2015.

Note: * Proximity to elevated tracks.

Figure 21: Vibration Impacts

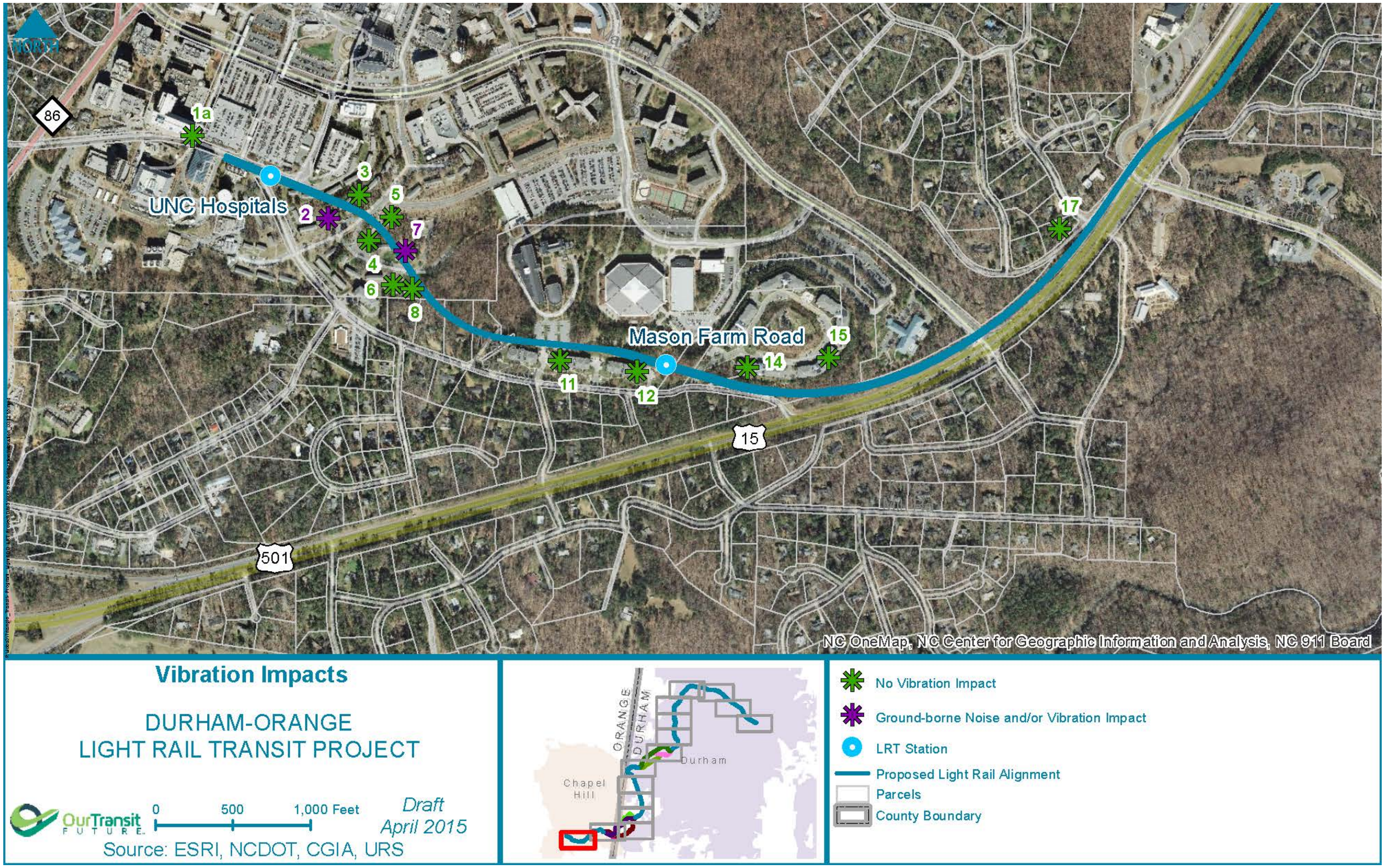


Figure 22: Vibration Impacts

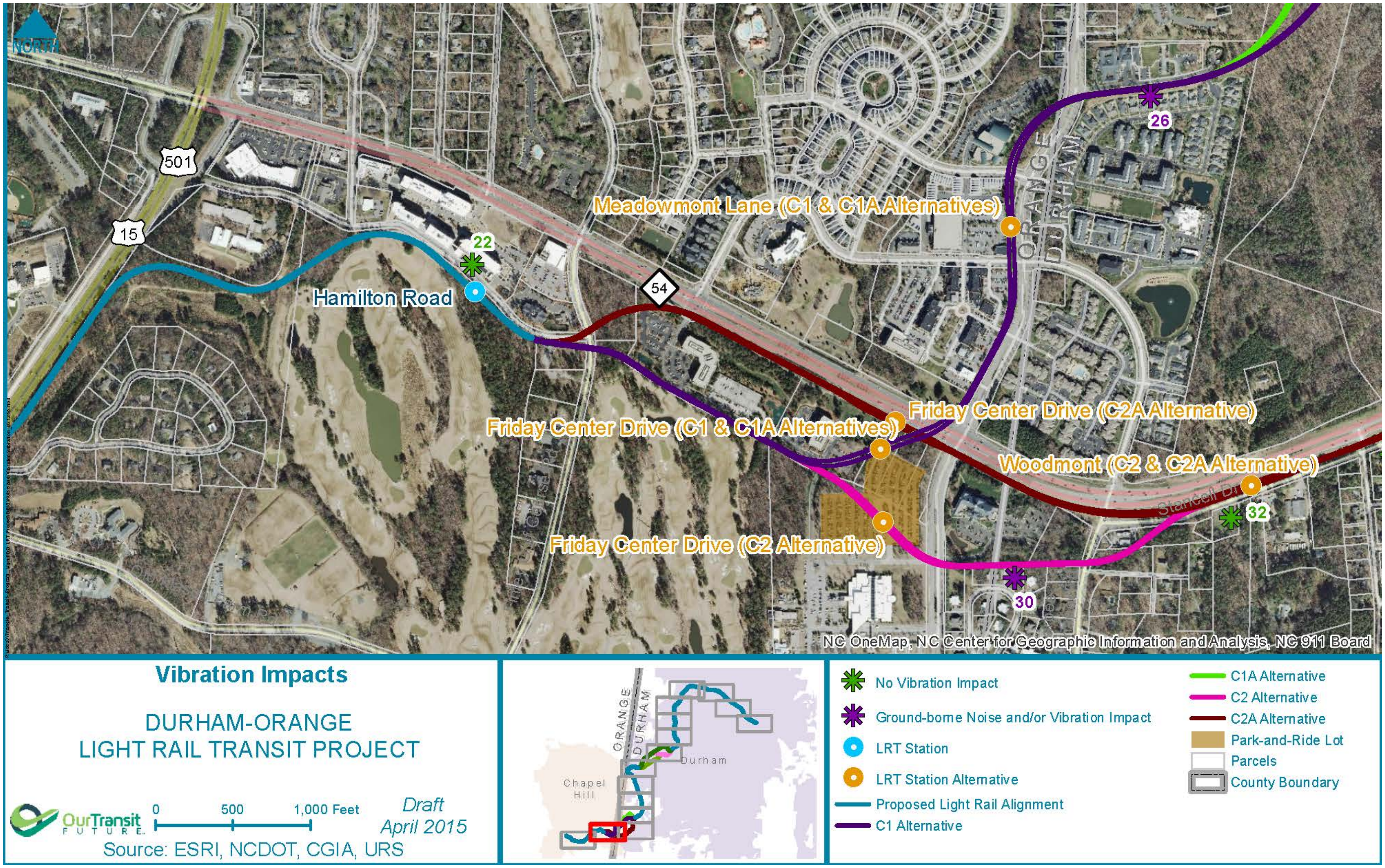


Figure 23: Vibration Impacts

Figure 24: Vibration Impacts

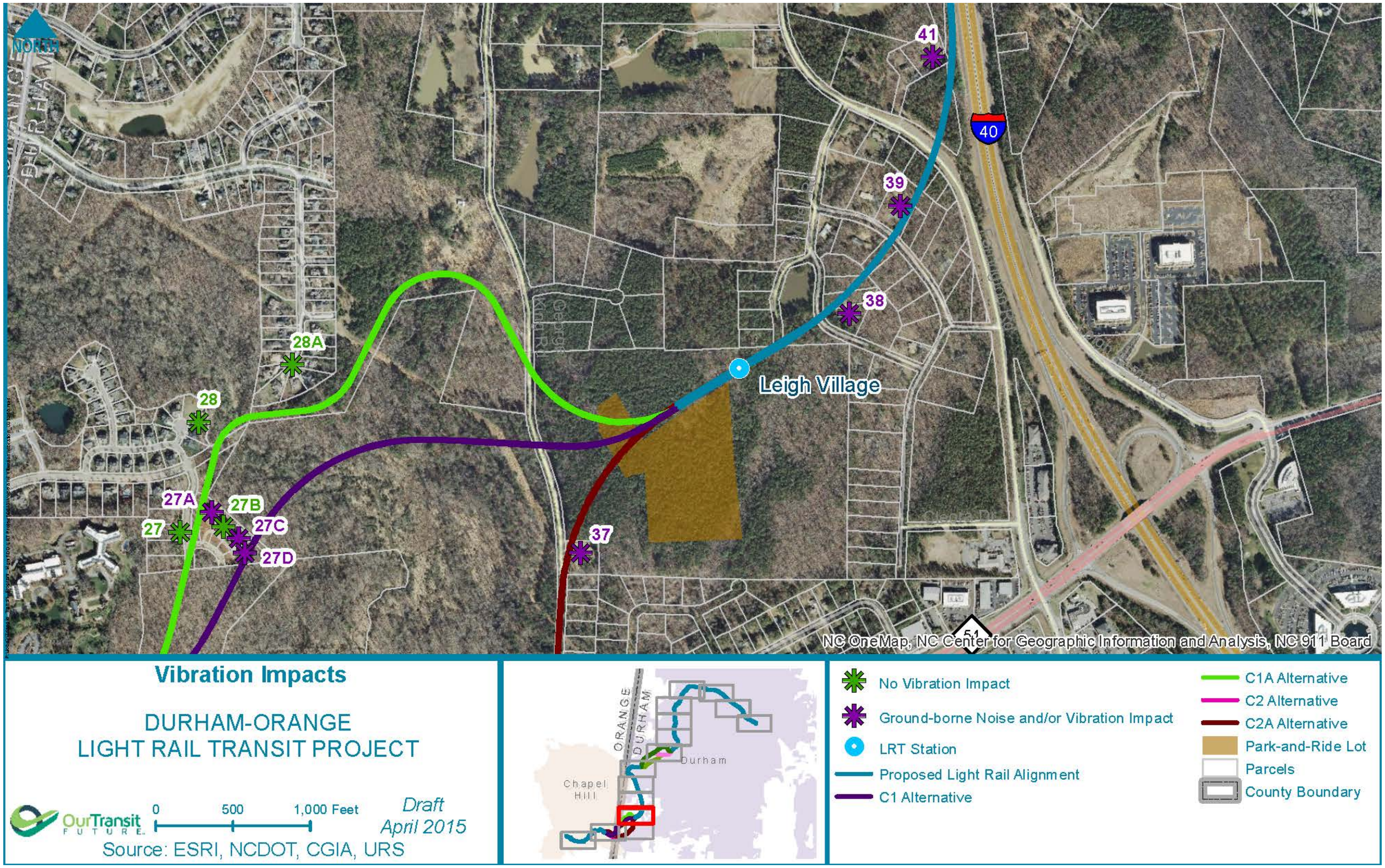


Figure 25: Vibration Impacts

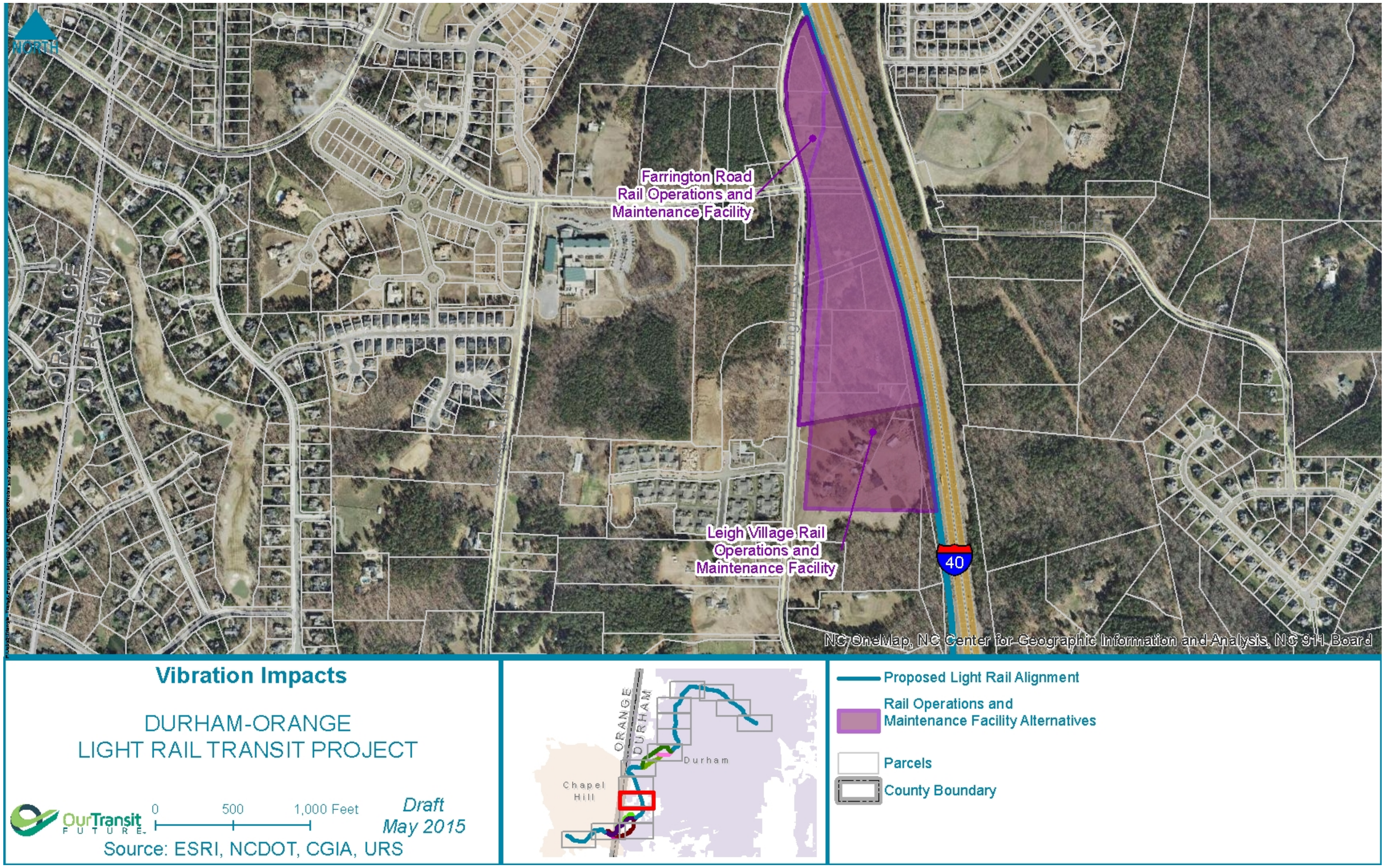


Figure 26: Vibration Impacts

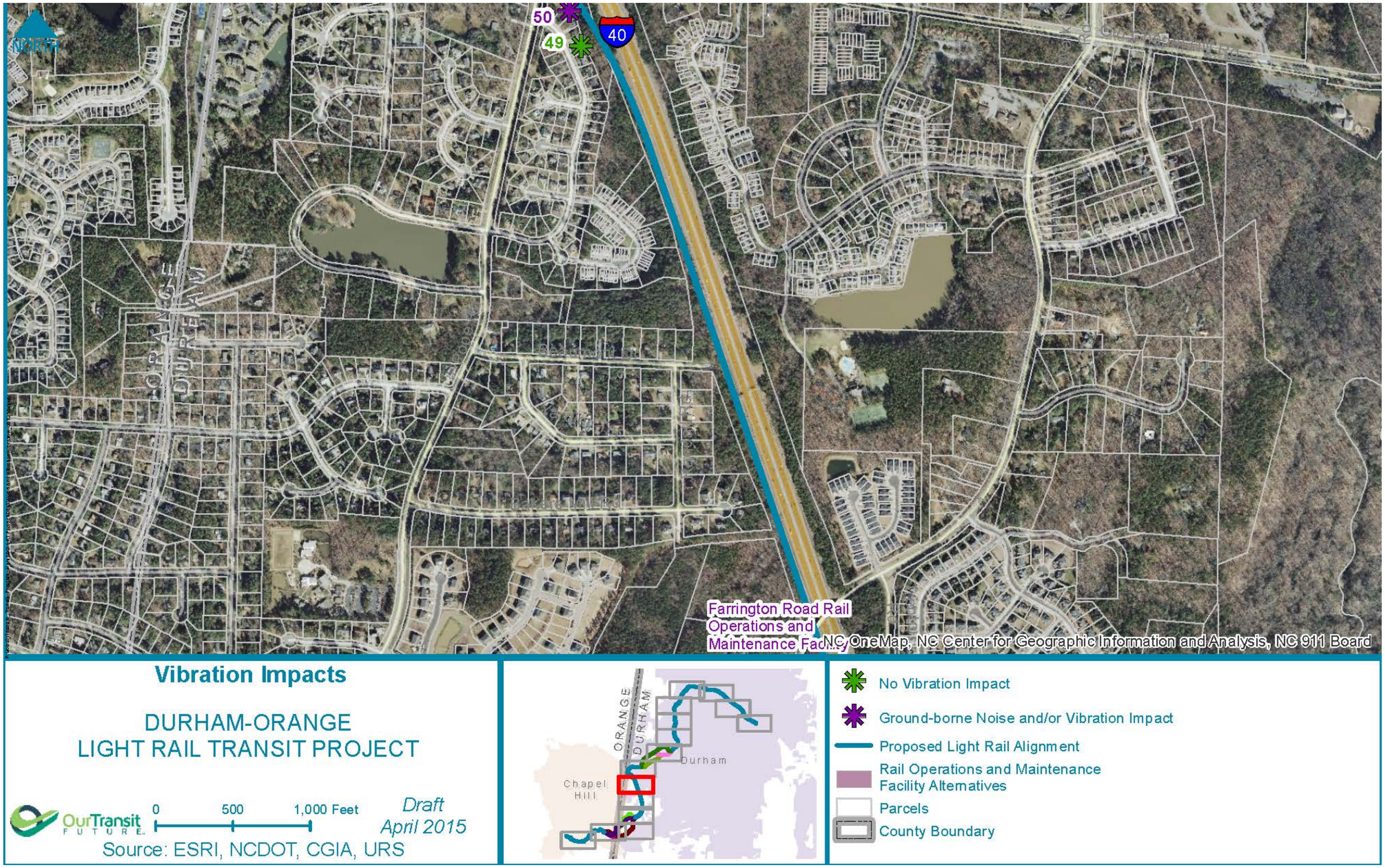


Figure 27: Vibration Impacts

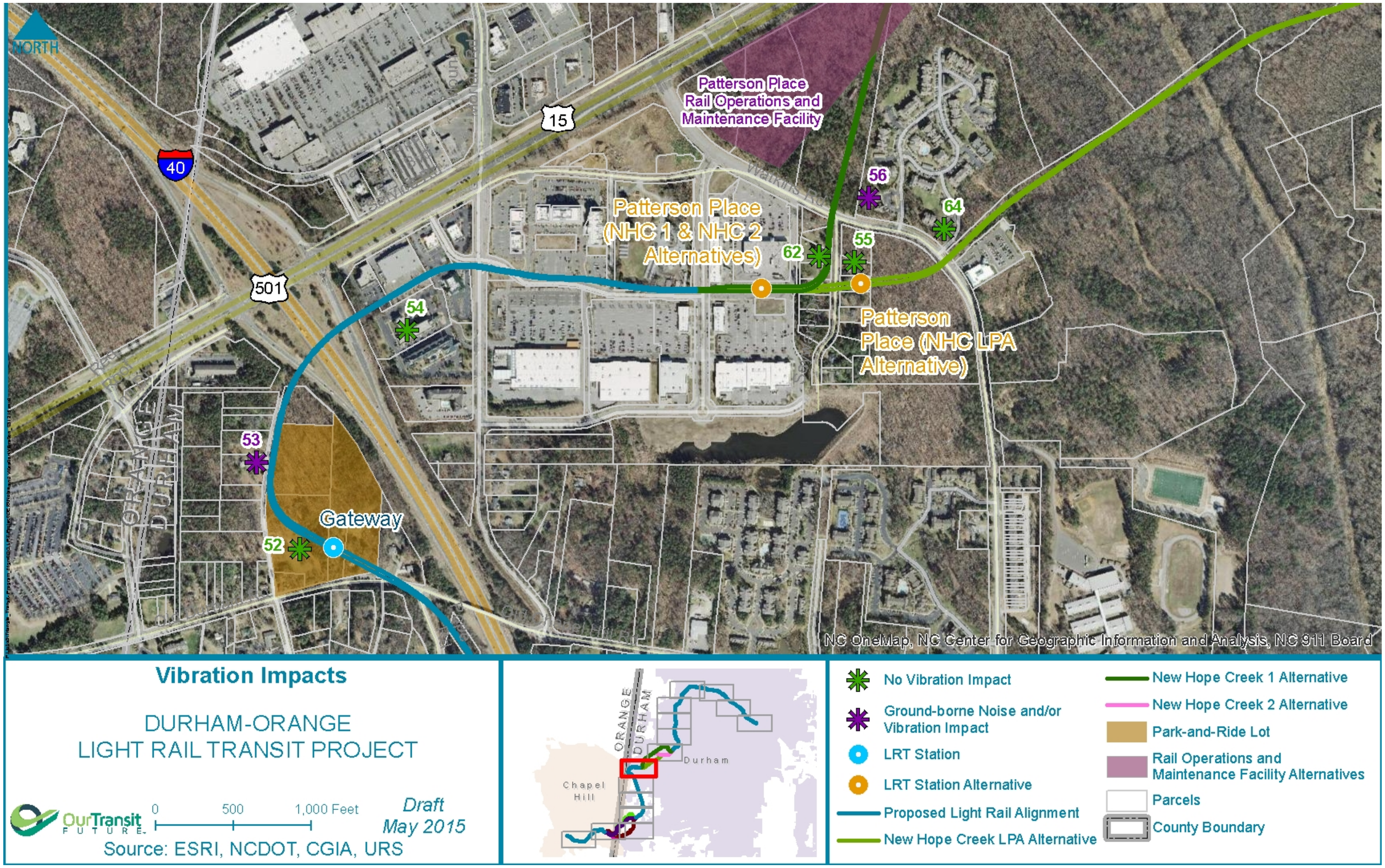


Figure 28: Vibration Impacts

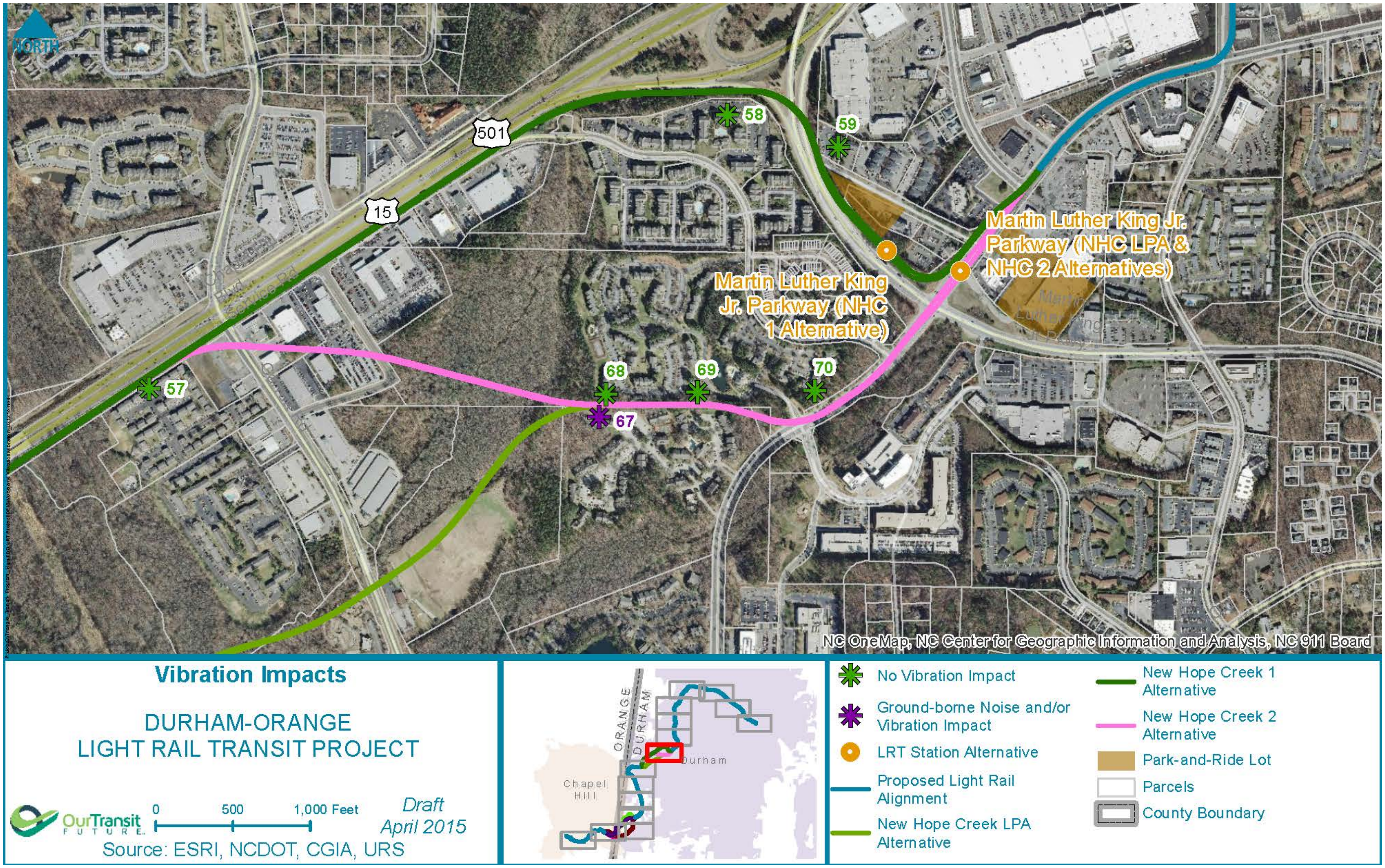


Figure 29: Vibration Impacts

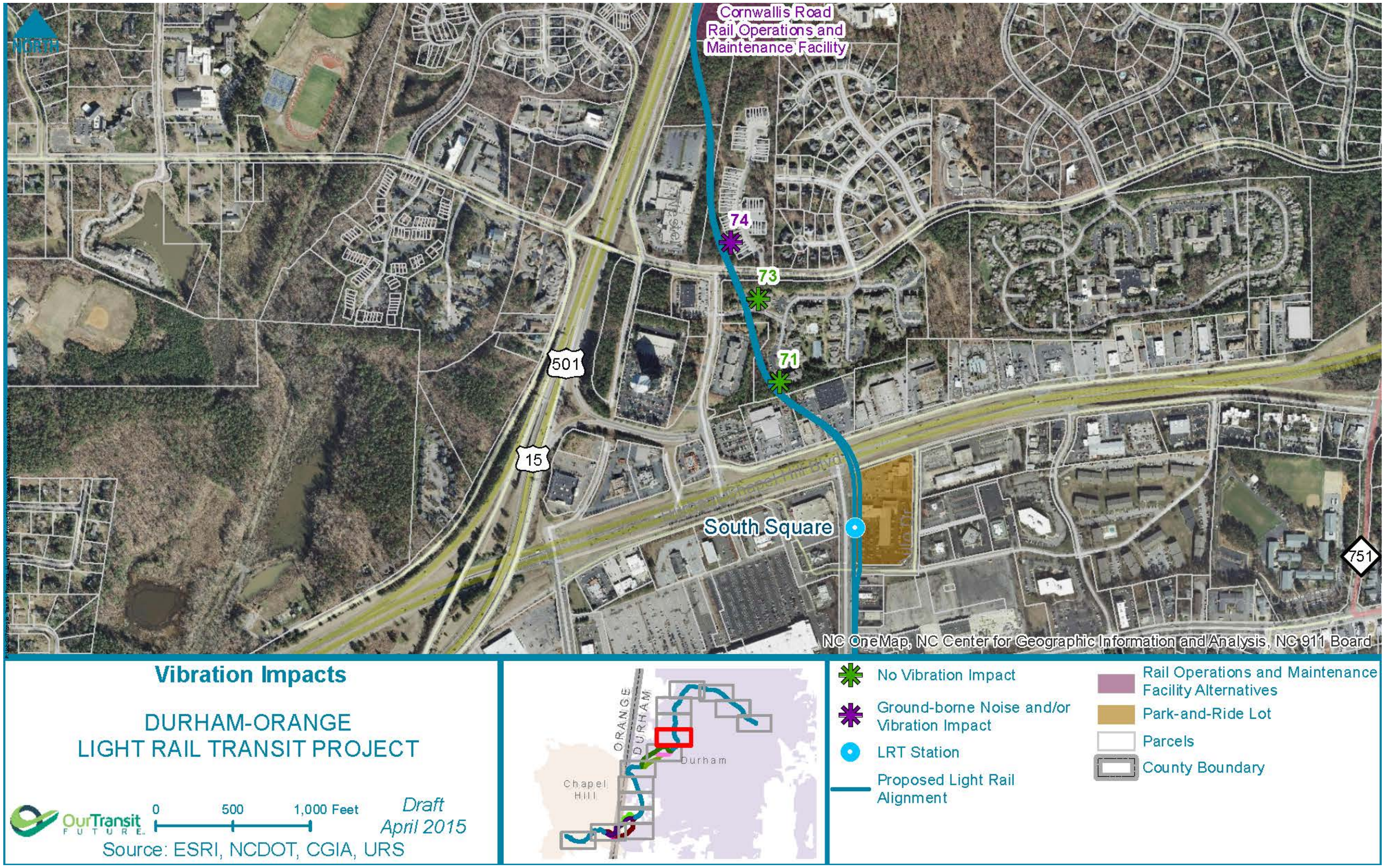


Figure 30: Vibration Impacts

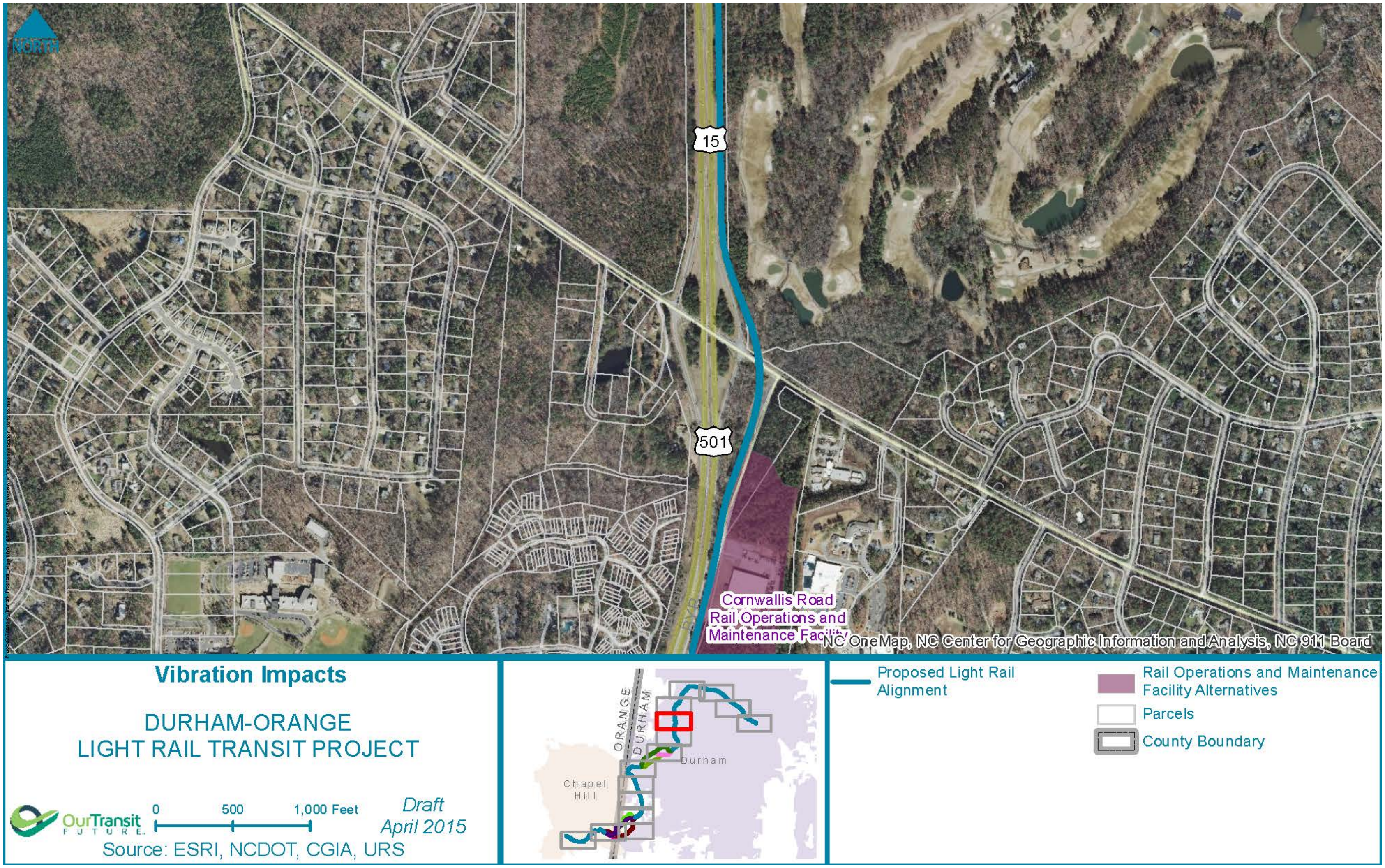


Figure 31: Vibration Impacts

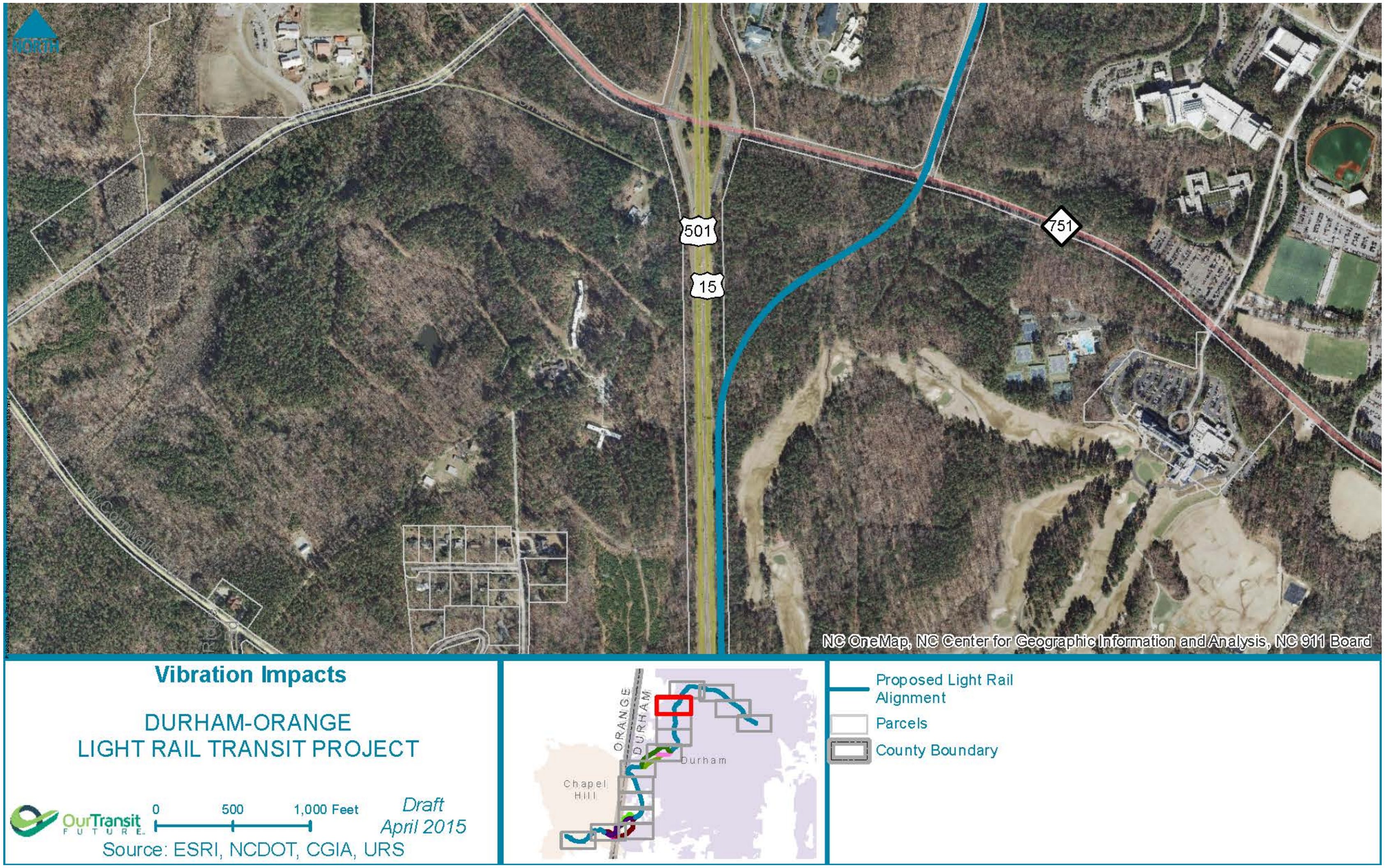


Figure 32: Vibration Impacts

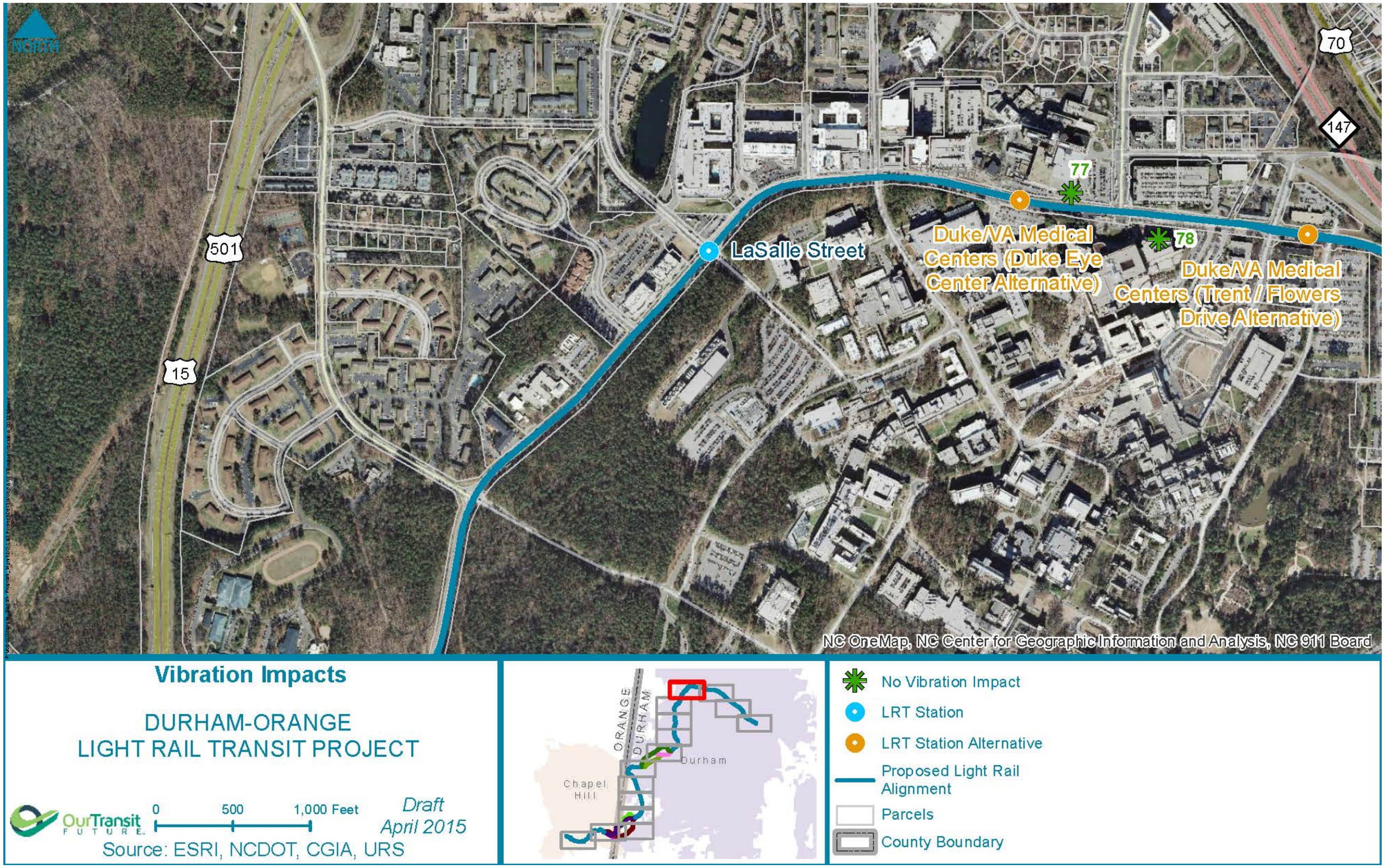


Figure 33: Vibration Impacts

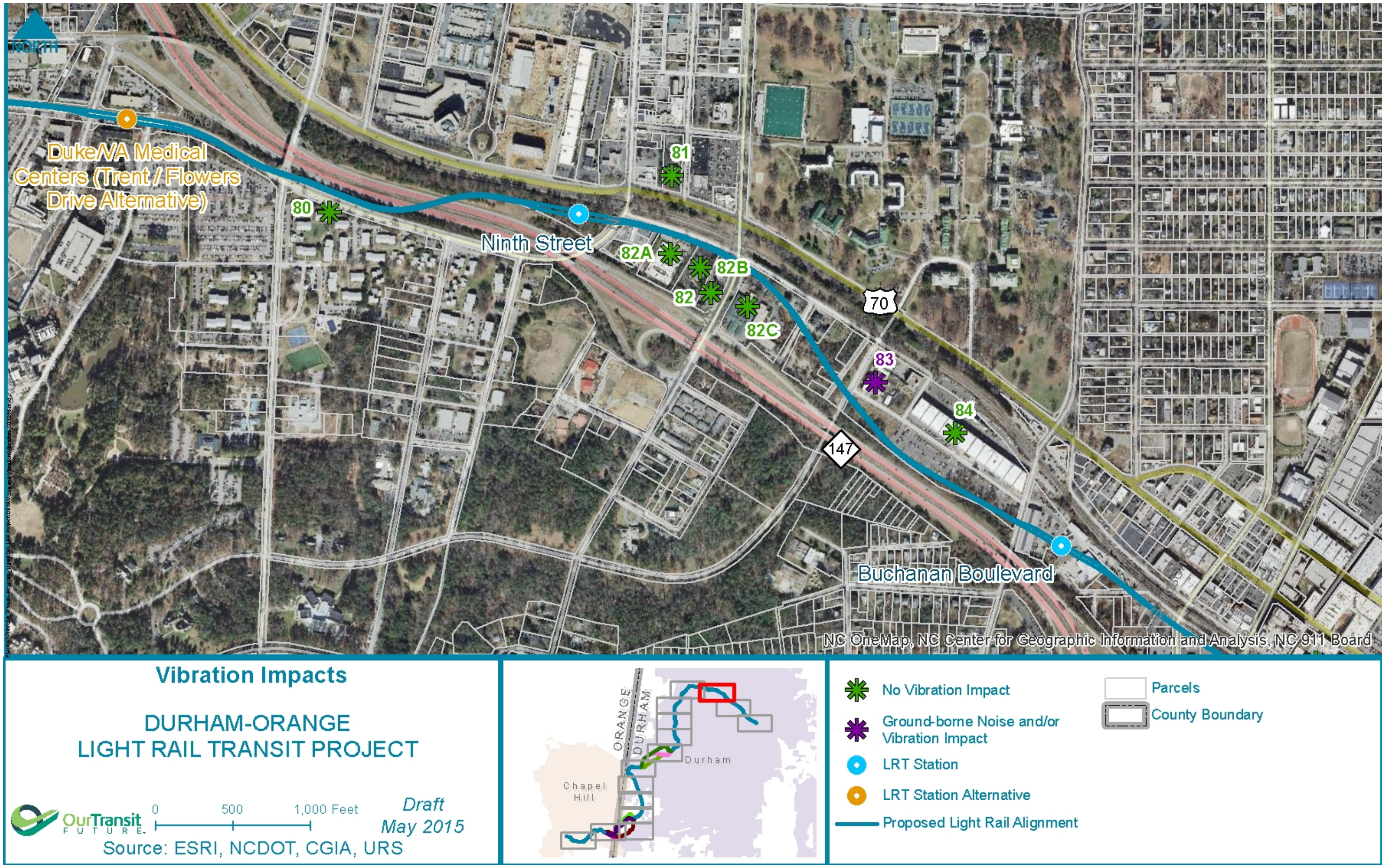


Figure 34: Vibration Impacts

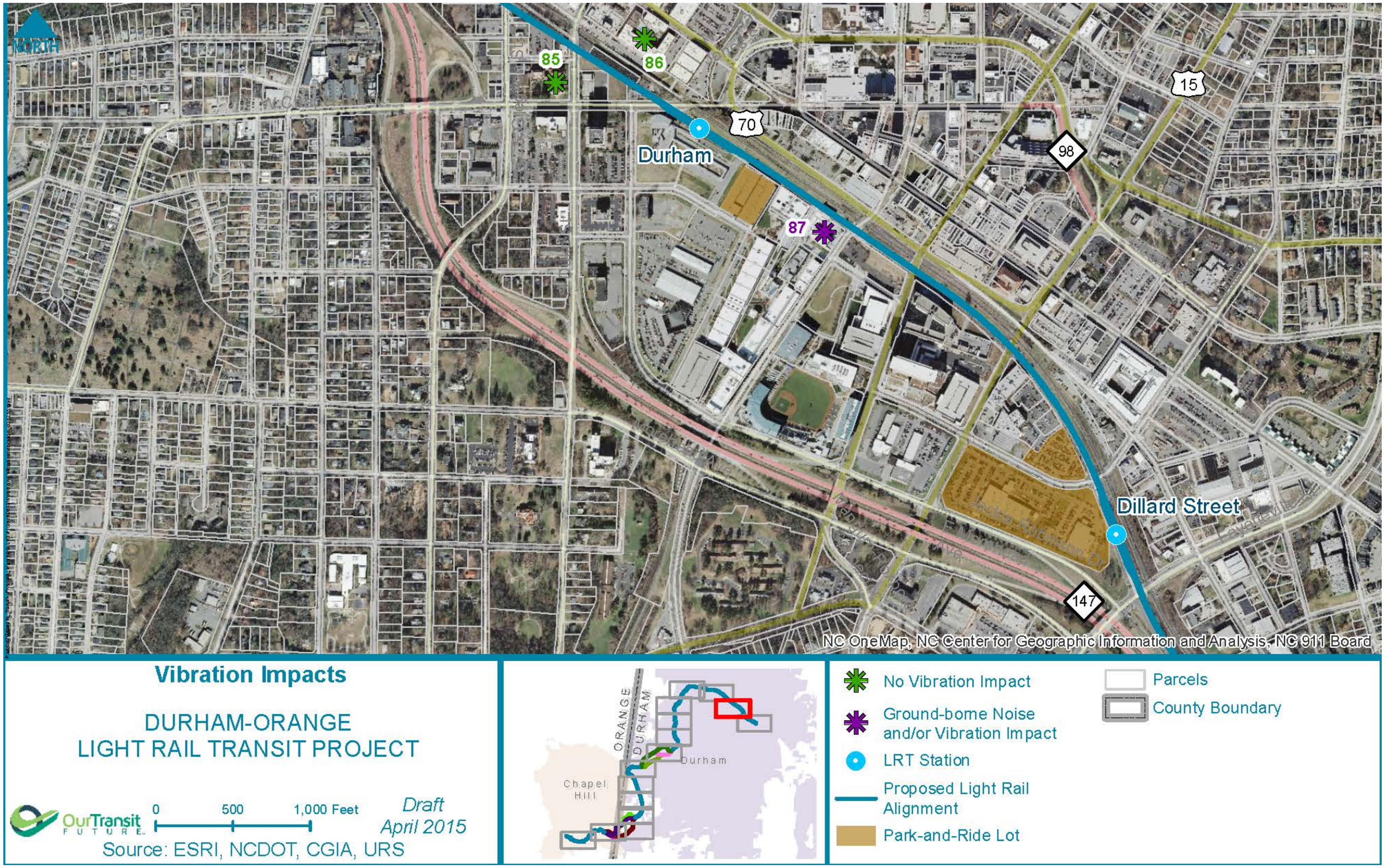
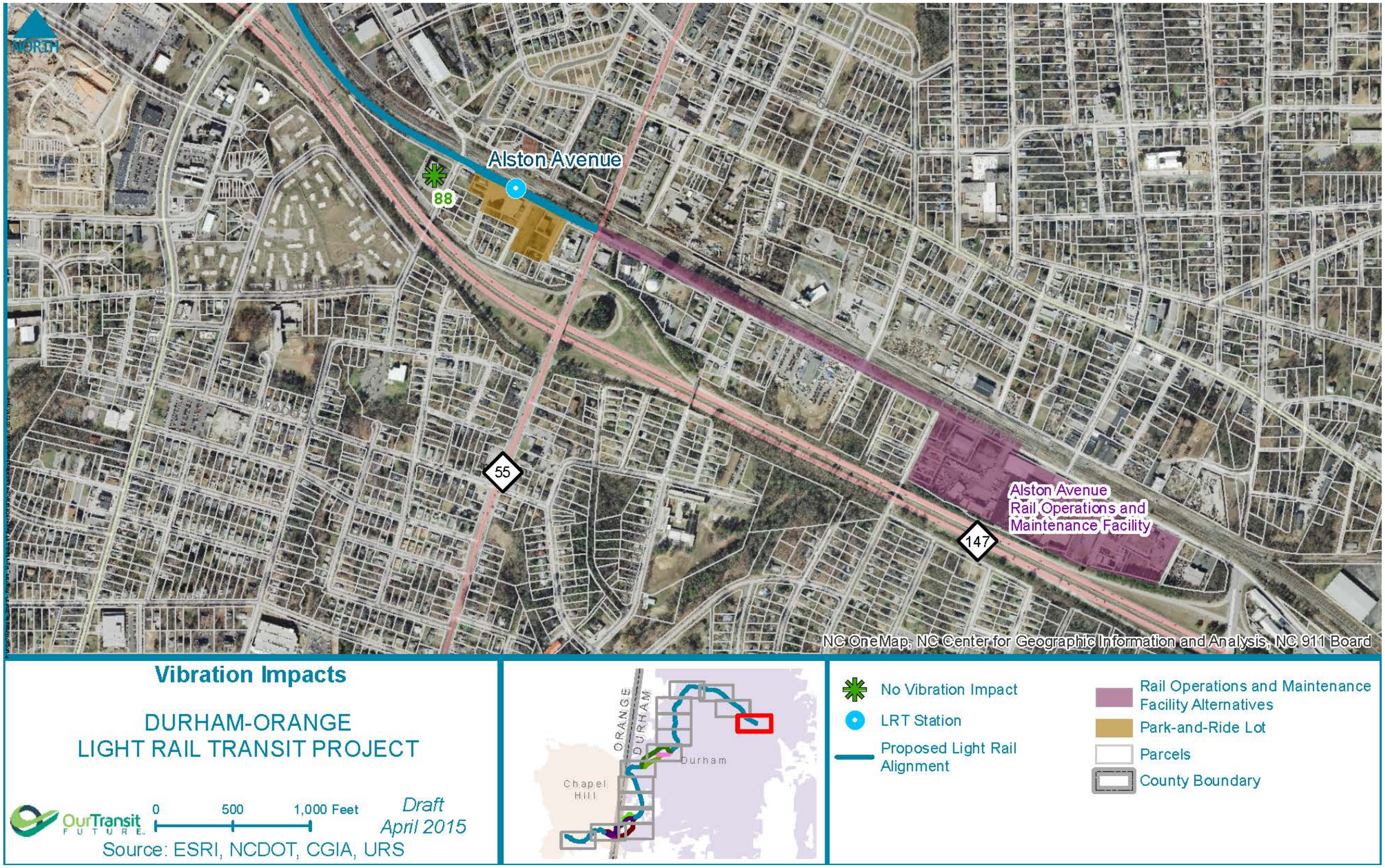


Figure 35: Vibration Impacts



6. Assessment of Effects

6.1 Noise Impacts

6.1.1 No-Build Alternative

The No-Build Alternative would have no effect on noise levels in the area. Changes in traffic volumes and bus operations would not significantly change existing noise levels.

6.1.2 Light Rail Alternatives

The noise assessment includes noise from all possible sources, including light rail, light rail bells, station park-and-ride lots, TPSS, and the ROMF. The assessment includes comparing the project-related noise levels to the existing noise levels in order to determine human reaction to the amount of change. The three possible outcomes to the detailed noise assessment include no impact, moderate impact, and severe impact. The results of the detailed assessment for the Light Rail Alternatives are identified in Tables 11 and 12. Note that, for each noise-sensitive receptor, noise is generated by a combination of light rail vehicle, bell, crossover switches, wheel squeal TPSS, and/or light rail station park-and-ride, with each noise event occurring at different distances from the receptor.

Tables 11 and 12 identify the ambient noise levels, the future project-related noise levels, and whether a moderate impact or severe impact was identified by using the noise impact criteria described above. The moderate impact range indicates that the noise levels at a receptor would be 1 to 5 dBA over the acceptable level, as prescribed by the FTA Guidance Manual. The severe impact range indicates an increase of greater than 5 dBA.

Table 11: Summary of Noise Impacts

Site No.	Alternative	Name/Location of Receptor Sites [1]	Noise Sources	Project Noise (dBA)	Ambient Noise (dBA)	Impact Range[2] (dBA)	Impact	Impact Source
1	LRA	Branson Street & Hibbard Drive 1	LRT, Bell, Switch, TPSS	48	58	57-62	No	
2	LRA	Branson Street & Hibbard Drive 2	LRT, Bell, Switch, TPSS	57	58	57-62	**Moderate**	LRT, Bell
3	LRA	Branson Street & Hibbard Drive 3	LRT, Bell, Switch, TPSS	56	58	57-62	No	
4	LRA	Branson Street & Hibbard Drive 4	LRT, TPSS	50	58	57-62	No	
5	LRA	Branson Street & Hibbard Drive 5	LRT, TPSS	55	58	57-62	No	
6	LRA	Branson Street & Hibbard Drive 6	LRT	46	58	57-62	No	
7	LRA	Branson Street & Hibbard Drive 7	LRT	64	58	57-62	**Severe**	LRT

Site No.	Alternative	Name/Location of Receptor Sites [1]	Noise Sources	Project Noise (dBA)	Ambient Noise (dBA)	Impact Range[2] (dBA)	Impact	Impact Source
8	LRA	Branson Street & Hibbard Drive 8	LRT	61	58	57-62	**Moderate**	LRT
9	LRA	Mason Farm Road North 1	LRT	40	58	57-62	No	
10	LRA	UNC Business School	LRT	36	45	57-63	No	
11	LRA	Mason Farm Road North 2	LRT	45	50	54-59	No	
12	LRA	Mason Farm Road North	LRT, Bell	42	50	54-59	No	
13	LRA	Batty Hill Drive	LRT	44	50	54-59	No	
14	LRA	Batty Hill Drive	LRT	53	50	54-59	No	
15	LRA	Batty Hill Drive	LRT	48	50	54-59	No	
16	LRA	East of Fordham Road	LRT	46	50	54-59	No	
17	LRA	Carmichael Street	LRT, TPSS	49	74	66-72	No	
18	LRA	Aldersgate Methodist Church	LRT, TPSS	45	73	71-76	No	
19	LRA	NC Botanical Gardens	LRT	51	73	66-71	No	
19A	LRA	NC Botanical Gardens North Trails – Coker Pinetum	LRT	65	70[3]	70-74	No	
20	LRA	Fordham Road South	LRT, Wheel Squeal	57	74	66-72	No	
21	LRA	Glenwood School	LRT, Wheel Squeal	51	73	71-76	No	
22	LRA	Condos	LRT, Bell, Bus	52	62	59-64	No	
23	LRA	Finley Golf Course T Boxes	LRT, Bell, Bus, Wheel Squeal	59	62	64-69	No	
24	C1, C1A	Meadowmont Lane East	LRT, Bus, Wheel Squeal	49	57	57-62	No	
25	C1, C1A	Sprunt Street East	LRT, Bell, Bus, Wheel Squeal	55	57	57-62	No	
26	C1, C1A	Cedar Berry Lane	LRT	53	57	57-62	No	

Site No.	Alternative	Name/Location of Receptor Sites [1]	Noise Sources	Project Noise (dBA)	Ambient Noise (dBA)	Impact Range[2] (dBA)	Impact	Impact Source
27	C1A	Park Bluff Drive	LRT	43	57	57-62	No	
27A	C1, C1A	Iron Mountain Road	LRT	38/59	57	57-62	**Moderate**	LRT – C1A
27B	C1, C1A	Iron Mountain Road	LRT	42/44	57	57-62	No	
27C	C1, C1A	Iron Mountain Road	LRT	49/40	57	57-62	No	
27D	C1, C1A	Iron Mountain Road	LRT	80/38	57	57-62	**Severe**	LRT – C1
28	C1A	Millingport Court	LRT	47	57	57-62	No	
28A	C1A	Helmsdale Drive	LRT	44	57	57-62	No	
29	C2, C2A	Courtyard Chapel Hill	LRT, Switch, Wheel Squeal	53	61	59-64	No	
30	C2	Brookberry Circle	LRT, Switch	54	61	59-64	No	
31	C2, C2A	Pearl Lane	LRT	42	61	59-64	No	
32	C2, C2A	Stancell	LRT, Bell	48	61	59-64	No	
33	C2A	Village Crossing	LRT	40	61	59-64	No	
34	C2, C2A	Woodmont Station S	LRT, Bell	43	61	59-64	No	
35	C2, C2A	Little John Road	LRT	45	64	61-65	No	
36	C2, C2A	Downing Creek	LRT	41	64	61-65	No	
37	C2, C2A	George King Road	LRT	60	59	58-63	**Moderate**	LRT
37A	C2, C2A	Jordan Game Land	LRT, Wheel Squeal	54	59	58-63	No	
38	LRA	Hudson Road	LRT, P&R	52	59	58-63	No	
39	LRA	Crescent Drive South	LRT	57	59	58-63	No	
40	LRA	Farrington Road South	LRT	41	59	58-63	No	
41	LRA	Farrington Road North	LRT	52	59	58-63	No	
42	LRA	Leigh Farm	LRT	45	64	61-65	No	
43	LRA	Farrington Road	LRT	42	64	61-65	No	
44	LRA	Farrington Road	LRT	43	64	61-65	No	
45	LRA	Baker Mill Road	LRT	45	64	61-65	No	
46	LRA	Beaumont Drive	LRT	44	64	61-65	No	
47	LRA	Crystal Oaks Court	LRT	44	64	61-65	No	
48	LRA	Old Coach Road	LRT	41	64	61-65	No	

Site No.	Alternative	Name/Location of Receptor Sites [1]	Noise Sources	Project Noise (dBA)	Ambient Noise (dBA)	Impact Range[2] (dBA)	Impact	Impact Source
49	LRA	Old Coach Road	LRT	46	64	61-65	No	
50	LRA	Old Coach Road	LRT, TPSS	49	64	61-65	No	
51	LRA	Old Chapel Hill Road	LRT, Bell, P&R, TPSS	53	59	58-63	No	
52	LRA	N. White Oak Drive	LRT, Bell, P&R, Wheel Squeal	60	59	58-63	**Moderate**	P&R
53	LRA	N. White Oak Drive	LRT, Bell, P&R, Wheel Squeal	56	59	58-63	No	
54	LRA	Comfort Inn Univ.	LRT	46	59	58-63	No	
55	NHC 1, NHC 2	East Sayward Drive	LRT, Bell, Bus	51	54	55-61	No	
56	NHC 1, NHC 2	Northcreek Drive 1	LRT, Switch	48	54	55-61	No	
57	NHC 1, NHC 2	West Garrett Road	LRT	58	71	66-70	No	
58	NHC 1	North Larchmont Road	LRT, Wheel Squeal	52	71	66-70	No	
59	NHC 1	Lychan Parkway	LRT	48	62	59-64	No	
60	NHC 1	Melstone Turn	LRT, Bell, Wheel Squeal	52	62	59-64	No	
61	NHC 1	University Drive	LRT, Bell	42	62	59-64	No	
62	NHC LPA	North Sayward Drive	LRT, Bus, Bell, TPSS	49	54	55-61	No	
63	NHC LPA	South Sayward Drive	LRT, Bell, Bus, TPSS	51	54	55-61	No	
64	NHC LPA	Southwest Durham Drive 1	LRT, Wheel Squeal	51	54	55-61	No	
65	NHC LPA	Hopedal Avenue	LRT	38	54	55-61	No	
66A	NHC LPA	Trails	LRT	65	50[3]	59-64	**Severe**	
66	NHC LPA	Garrett Road	LRT	42	71	66-70	No	
67	NHC LPA, NHC 2	Snow Crest Trail 1	LRT, Wheel Squeal	53	50	54-59	No	
68	NHC LPA, NHC 2	Snow Crest Trail 2	LRT	49	50	54-59	No	

Site No.	Alternative	Name/Location of Receptor Sites [1]	Noise Sources	Project Noise (dBA)	Ambient Noise (dBA)	Impact Range[2] (dBA)	Impact	Impact Source
69	NHC LPA, NHC 2	Snow Crest Trail 3	LRT	42	50	54-59	No	
70	NHC LPA, NHC 2	Larchmont Road	LRT, Bell Wheel Squeal	56	71	66-70	No	
71	LRA	Pickett Road South	LRT, Wheel Squeal	55	56	56-62	No	
72	LRA	Pickett Road South	LRT	39	56	56-62	No	
73	LRA	Pickett Road South	LRT	46	56	56-62	No	
74	LRA	Pickett Road North	LRT, TPSS	51	56	56-62	No	
75	LRA	15/501 West	LRT	40	59	58-63	No	
76	LRA	Golf Course Greens	LRT	46	59	58-63	No	
77	LRA	VA Medical Center North	LRT, Bell, Bus	50	70	65-69	No	
78	LRA	Duke Medical Center South	LRT, Bell, Bus	52	70	65-69	No	
79	LRA	John Hope Franklin Center	LRT, Bell, TPSS	48	67	68-72	No	
80	LRA	Anderson Street Apartments	LRT, Wheel Squeal	51	67	63-67	No	
81	LRA	St. Joseph's Episcopal	LRT, Bell, Bus	47	67	68-72	No	
81A	LRA	Hilton Garden Inn	LRT, Bell	43	67	68-72	No	
82	LRA	Powe House	LRT, Bell	56	67	68-72	No	
82A	LRA	Pettigrew Rehab	LRT, Bell	54	67	68-72	No	
82B	LRA	W. Pettigrew Dialysis	LRT, Bell	52	67	68-72	No	
82C	LRA	Hillcrest Convalescent Ctr.	LRT	53	67	68-72	No	
83	LRA	Duke Ctr. Doc. Studies	LRT	60	67	68-72	No	
84	LRA	Duke Humanities Institute	LRT, Bus	49	67	68-72	No	
85	LRA	Duke Memorial United Methodist	LRT, Bell	52	67	68-72	No	
86	LRA	S. Duke Street East Hotel	LRT, Bell	49	67	63-67	No	
87	LRA	Old Bull Bldg Apartments	LRT, Bell	56	67	63-67	No	

Site No.	Alternative	Name/Location of Receptor Sites [1]	Noise Sources	Project Noise (dBA)	Ambient Noise (dBA)	Impact Range[2] (dBA)	Impact	Impact Source
87A	LRA	Durham Performing Arts	LRT, Bell	44	67	63-67	No	
87B	LRA	Venable Center	LRT, Bell	60	67	63-67	No	
88	LRA	Avery Boys & Girls Club	LRT, Bell, Bell	55	72	71-76	No	
89	LRA	Colfax House 1	Sub Station, P &R, Bell	60	72	66-71	No	
90	LRA	Colfax House 2	P&R	60	72	66-71	No	
91	LRA	Murphy Street House West	P&R	60	72	66-71	No	
92	LRA	Murphy Street House East	P&R	57	72	66-71	No	

Source: URS May 2015.

Notes: 1 Receptor identification is based on land use/development conditions in February 2015.

2 FTA Guidance Manual, Table 3-1, Noise Levels Defining Impact for Transit Projects.

3 Botanical Gardens Trails North at Coker Pinetum and New Hope Creek Trail assessment of existing noise uses FTA Guidance Manual Table 5-7, Estimating Existing Noise Exposure for General Assessment.

Table 12: Summary of Noise Impacts (ROMFs)

Site No.	Alternative	Name/Location of Receptor Sites [1]	Project Noise (dBA)	Ambient Noise (dBA)	Impact Range[2] (dBA)	Impact
42	Farrington	Farrington Road	50	64	61-65	No Impact
44	Leigh Village	Farrington Road	50	64	61-65	No Impact
93	Leigh Village	Leigh Farm Homes	52	64	61-65	No Impact
94	Leigh Village	Farrington Road North	54	64	61-65	No Impact
95	Farrington/Leigh Village	Farrington Road North 1	52	64	61-65	No Impact
96	Farrington/Leigh Village	Farrington Road North 2	51	64	61-65	No Impact
97	Farrington	Farrington Road North	52	64	61-65	No Impact
98	Patterson Place	North Creek Drive Apartments	54	64	61-65	No Impact
99	Cornwallis	Maureen Joy Charter School	55	59	63-68	No Impact
100	Cornwallis	Lerner Jewish Community School	56	59	63-68	No Impact
101	Alston Avenue	W. Bacon Street	53	72	66-71	No Impact

Source: URS May 2015.

Notes: 1 Receptor identification is based on land use/development conditions in November 2013.

2 FTA Guidance Manual, Table 3-1, Noise Levels Defining Impact for Transit Projects.

As listed in Tables 11 and 12 and shown on Figures 6 through 20, the project would result in five moderate impacts and three severe noise impacts. The C1 Alternative would have one severe noise impact; the C1A Alternative would have one moderate noise impact; and the C2 and C2A Alternatives would both have one moderate impact to the same property. The NHC LPA would result in one severe impact to the trails passing below the alignment. The remaining impacts would be along the common segments of the Light Rail Alternatives.

6.1.2.1 Section 4(f) Resources

There are a large number of natural areas with existing and planned trails throughout the Project corridor. All existing trails have been evaluated in the noise analysis. Where trails pass under the proposed alignment, such as the Botanical Gardens trails on the north side of Fordham Boulevard and trails in the New Hope Creek preserve, noise levels from the light rail would impact the serenity of the hiking experience. The analysis of the Botanical Gardens trails assumed the elevated light rail structure would pass over the trails, approximately 20 feet overhead. Due to the close proximity to Fordham Boulevard, noise levels would not result in an impact. The New Hope Creek trail impacts would not occur under the NEPA Preferred Alternative. Other planned trails (Little Creek Trail, Long Branch Creek Trail), which would be located in the vicinity of the proposed alignments, would have the potential to be impacted by transit noise, depending upon the final trail alignments.

There are also a significant number of properties and historic districts within the Project corridor. In general, historic properties that include sensitive land uses that conform to the FTA Manual requirements for noise and/or vibration have been included in the analyses. Other historic properties with industrial or manufacturing land uses are not considered sensitive to noise and vibration. Structural damage to historic buildings is not likely and is detailed in the construction impacts sections of this report.

6.1.3 Noise Impact Mitigation

As noted in the previous section, the Light Rail Alternatives would result in a number of moderate impacts and severe impacts to sensitive land uses adjacent to the proposed light rail alignment. The FTA Guidance Manual states that mitigation must be considered for any site that falls within the impact range and mitigation measures should be employed if they are feasible and prudent. Mitigation measures were explored to eliminate or reduce impacts predicted to occur with the Light Rail Alternatives. The measures examined generally fall into three categories: treatments that reduce noise levels at the source; measures that reduce noise levels along the source-to-receiver propagation path; and treatments that reduce noise levels at the receiver. A description of each measure is provided below.

6.1.3.1 Source Treatments

Vehicle Noise Specifications

Among the most effective noise mitigation treatments is noise control at the outset, during the specification and design of the transit vehicle. Such source treatments apply to all transit modes. By developing and enforcing stringent but achievable noise specifications, the transit property takes a major step in controlling noise everywhere on the system. It is important to ensure that the noise levels quoted in the specifications are achievable with the application of best available technology during the development of the vehicle and reasonable in light of the noise reduction benefits and costs.

Effective enforcement includes significant penalties for non-compliance with the specifications. The noise mitigation achieved by source treatment depends on the quality of installation and maintenance. In the past, transit vehicles have been delivered that did not meet a noise specification, causing complaints from the public and requiring additional noise mitigation measures applied to the wayside.

Wheel Treatments (Rail)

A major source of noise from steel-wheel/steel-rail systems is the wheel/rail interaction, which has three components: roar, impact, and squeal. Roar is the rolling noise caused by small-scale roughness on the wheel tread and rail running surface. Impacts are caused by discontinuities in the running surface of the rail or by a flat spot on the wheels. Squeal occurs when a steel-wheel tread or its flange rubs across the rail, setting up resonant vibrations in the wheel, which cause it to radiate a screeching sound. Various wheel designs and other mitigation measures exist to reduce the noise from each of these three mechanisms. The project specifications will include methods to minimize wheel squeal.

Resilient wheels, which include a rubber flange over the steel wheel, serve to reduce rolling noise, but only slightly. A typical reduction is 2 dB on tangent track. This treatment is more effective in eliminating wheel squeal on tight turns; reductions of 10 to 20 dB for high-frequency squeal noise are typical.

Damped wheels, like resilient wheels, serve to reduce rolling noise, but only slightly. A typical reduction is 2 dB on tangent track. This treatment involves attaching vibration absorbers to standard steel wheels. Damping is effective in eliminating wheel squeal on tight turns; reductions of 5 to 15 dB for high-frequency squeal noise are typical.

Spin-slide control systems, similar to anti-locking brake systems on automobiles, reduce the incidence of wheel flats, a major contributor of impact noise. Trains with smooth wheel treads can be up to 20 dB quieter than those with wheel flats. To be effective, the anti-locking feature should be in operation during all braking phases, including emergency braking. Wheel flats are more likely to occur during emergency braking than during dynamic braking.

Vehicle Treatments

Vehicle noise mitigation measures are applied to the various mechanical systems associated with propulsion, ventilation, and passenger comfort.

Ventilation requirements for vehicle systems are related to the noise generated by a vehicle. Fan noise often remains a major noise source after other mitigation measures have been instituted because of the need to have direct access to cooling air. This applies to heat exchangers for electric traction motors, and air-conditioning systems. Fan-quieting can be accomplished by installation of one of several new designs of quiet, efficient fans. Forced-air cooling on electric traction motors can be quieter than self-cooled motors at operating speeds. The location of the fans on the vehicle can make a significant difference in the noise radiated to the wayside or to patrons on the station platforms.

The vehicle body design can provide shielding and absorption of the noise generated by the vehicle components. Acoustical absorption under the car has been demonstrated to provide up to 5 dB of mitigation for wheel/rail noise and propulsion-system noise. Similarly, vehicle skirts over the wheels can provide more than 5 dB of mitigation. By carrying their own noise barriers, vehicles with these features can provide cost-effective noise reduction.

Guideway Support

The smoothness of the running surface is critical in the mitigation of noise from a moving vehicle. Smooth rail running surfaces for rail systems are required. Roughness of the rail surfaces can be eliminated by resurfacing rails, thereby reducing noise levels by up to 10 dB.

In the case of steel-wheel/steel-rail systems with non-steerable trucks and sharp turns, squeal can be mitigated by installation of rail lubricators. Squeal in such systems can usually be eliminated altogether by designing all turn radii to be greater than 1,000 feet, or 100 times the truck wheelbase, whichever is less.

Operational Restrictions

Two changes in operations that can mitigate noise are the lowering of speed and the reduction of nighttime (10 p.m. to 7 a.m.) operations. Because noise from most transit vehicles depends on speed, a reduction of speed results in lower noise levels. The effect can be considerable. For example, the speed dependency of steel-wheel/steel-rail systems for L_{eq} and L_{dn} results in a 6 dBA reduction for a halving of the speed. Complete elimination of nighttime operations has a strong effect on reducing the L_{dn}, because nighttime noise is increased by 10 dB when calculating L_{dn}. Restrictions on operations are usually not feasible because of service demands, and FTA does not pursue restrictions on operations as a noise reduction measure. However, if early morning idling can be curtailed to the minimum necessary, this can have a measurable effect on L_{dn}.

6.1.3.2 Path Treatments

Sound Barriers

Sound barriers are effective in mitigating noise when they break the line-of-sight between source and receiver. The necessary height of a barrier depends on such factors as the source height and the distance from the source to the barrier. For example, if a barrier is located very close to a light rail train, it need only be 3 to 4 feet above the top of rail to be effective. Barriers close to vehicles can provide noise reductions of 6 to 10 dB. For barriers farther away, such as on the right-of-way line or for trains on the far track, the height must be increased to provide equivalent effectiveness. Otherwise, the effectiveness can drop to 5 dB or less, even if the barrier breaks the line-of-sight. Where the barrier is very close to the transit vehicle or where the vehicles travel between sets of parallel barriers, barrier effectiveness can be increased by as much as 5 dB by applying sound-absorbing material to the inner surface of the barrier.

Similarly, the length of the barrier wall is important to its effectiveness. The barrier must be long enough to screen out a moving train along most of its visible path. This is necessary so that train noise from beyond the ends of the barrier will not severely compromise noise-barrier performance at sensitive locations.

Noise barriers can be made of any outdoor weather-resistant solid material that meets a minimum sound transmission loss requirement. The sound requirements are not particularly strict; they can be met by many commonly available materials, such as 16-gauge steel, 1-inch thick plywood, and any reasonable thickness of concrete. The normal minimum requirement is a surface density of 4 pounds per square foot. To hold up under wind loads, structural requirements are more stringent. Achieving the maximum possible noise reduction requires careful sealing of gaps between barrier panels and between the barrier and the ground or elevated guideway deck.

6.1.3.3 Receiver Treatments

Sound Barriers

In certain cases it may be possible to acquire limited property rights for the construction of sound barriers at the receiver. As discussed above, barriers need to break the line-of-sight between the noise source and the receiver to be effective and are most effective when they are closest to either the source or the receiver.

Building Insulation

In cases where sound barriers are not feasible, such as multi-story buildings, buildings very close to the rights-of-way, or grade crossings, the only practical noise mitigation measure may be to provide sound insulation for the buildings. Effective treatments include caulking and sealing gaps in the building façade, and installation of new doors and windows that are specially designed to meet acoustical transmission-loss requirements. Exterior doors facing the noise source should be replaced with well-gasketed, solid-core wood doors and well-gasketed storm doors. Acoustical windows are usually made of multiple layers of glass with air spaces between to provide noise reduction. Acoustical performance ratings are published in terms of Sound Transmission Class (STC) for these special windows. A minimum STC rating of 39 should be used on any window exposed to the noise source. These treatments are beneficial for heat insulation as well as for sound insulation. As an added consideration for costs, however, acoustical windows are usually non-operable so that central ventilation or air conditioning is needed.

Additional building sound insulation, if needed, can be provided by sealing vents and ventilation openings and relocating them to a side of the building away from the noise source.

6.1.3.4 Proposed Mitigation

Table 13 identifies the six residences and New Hope Creek trails that would be impacted by the project. Sites 2, 7, and 8 (Odum Village) are part of a larger redevelopment area sponsored by UNC. Buildings in Odum Village are planned to be demolished regardless of the D-O LRT Project. Depending on the alternative selected, sites 27A (C1A), 27D (C1), 37 (C2 or C2A), and 52 (common segments of the Light Rail Alternatives) would be purchased as part of the D-O LRT Project right-of-way acquisition. The New Hope Creek Trail would pass underneath the light rail alignment in several spots, resulting in a moderate impact. With the exception of changing the vehicle specifications to further reduce light rail running noise, the only possible mitigation would include the installation of sound barriers adjacent to the elevated tracks, extending the width of the New Hope Creek trail area, which is approximately 3,000 feet between Durham Drive and Garrett Road. While effective, noise barriers are typically only used to protect residential communities, and therefore may be considered cost-prohibitive.

Table 13: Mitigation of Moderate and Severe Noise Impacts

Site No.	Receptor Site	Alternative	Project Noise	Impact Range	Distance Feet to Source	Mitigation[1]
2	Branson Street & Hibbard Drive 2	LRA	57	57-62	55	UNC Acquisition
7	Branson Street & Hibbard Drive 7	LRA	62	57-62	10	UNC Acquisition
8	Branson Street & Hibbard Drive 8	LRA	57	57-62	20	UNC Acquisition
27A	Iron Mountain Road	C1A	59	57-62	15	Project Acquisition
27D	Iron Mountain Road	C1	79	57-62	1	Project Acquisition
37	George King Road	C2, C2A	60	58-63	20	Project Acquisition
52	N. White Oak Drive	LRA	60	58-63	20	Project Acquisition
66A	New Hope Creek Trail	NHC LPA	65	59-64	20	Elevated Track barriers

Source: URS February 2015.

Note: 1 FTA Guidance Manual, Table 6-12, Transit Noise Mitigation Measures.

6.2 Ground-Borne Noise and Vibration Impacts

Vibration impacts for this project were determined using two methods, the vibration screening procedure and the general vibration assessment methods contained in the FTA Guidance Manual. Using this two-tiered approach, the FTA's vibration impact criteria were used to identify locations where impacts might occur based on existing land use activities. Where the general assessment shows the vibration impacts, potential mitigation measures are identified.

As the project study area includes several historic structures, vibration impacts to these structures were also evaluated.

6.2.1 General Vibration Assessment

The general vibration assessment procedure is intended to provide more specific estimates of vibration impacts at sensitive locations by incorporating project-specific information. The basic approach for the general assessment was to define a base curve that related overall ground-borne vibration to distance from the source then applied adjustments to the curve to account for other factors such as vehicle speed and track conditions. Using the base curve, the ground-borne vibration and noise due to the project were then estimated for sensitive land use locations in the corridor. After the forecasts were developed for each location, they were compared to the applicable criteria listed in Table 14 to evaluate the level of impact. The project-specific assumptions for the general vibration assessment, which included train trips or events, speed, soil type, building/foundation type, train characteristics and track characteristics, are described below.

6.2.1.1 Vibration Assessment Inputs

Average Daily Train Trips

The number of average daily train trips as computed from the operations plan resulted in an average of 141 trips per day and included both directions of travel. Because this figure is more than 70 trips per day, the analysis assumed the impact criteria for “frequent” events, as defined in Table 14.

Speed

FTA guidelines call for an adjustment of 6 VdB per doubling (or halving) of speed relative to 50 mph for light rail trains. The speeds used in the vibration analysis are consistent with the operations plan – maximum speed of 55 mph, with lower speeds near stations.

Soil Type

The vibration propagation characteristics used in this analysis were based on the data presented in the FTA Guidance Manual. The ability of the soil to propagate vibration was classified as being either efficient or non-efficient. The classification of propagation was based on FTA guidelines and a brief analysis of the geotechnical data. FTA guidelines state that shallow bedrock (within 30 feet of the surface) is likely to have efficient vibration propagation, and stiff clay soils have sometimes been associated with efficient vibration propagation.

Based on the geotechnical data obtained for this project, soils within the project corridor were determined to be predominantly stiff clay soils with shallow bedrock 20 to 40 feet below the surface. As a result, efficient vibration propagation was assumed for all vibration-sensitive receptors. Efficient vibration propagation would result in higher vibration levels of approximately 10 dB, which would more than double the potential impact zone for ground-borne vibration.

The FTA Guidance Manual states that, while it is known that geologic conditions have a significant effect on vibration levels, it is rarely possible to develop more than a broad-brush understanding of the vibration propagation characteristics for a general assessment. Therefore, if there is reason to suspect efficient propagation conditions, then a detailed analysis during the Engineering phase should be conducted. The detailed analysis would include vibration propagation tests at the areas identified as potentially efficient propagation sites.

The peak frequency of the vibration associated with the generation and estimation of ground-borne noise is related to soil type. FTA guidelines for the general vibration assessment provide three vibration frequency ranges: (1) low (less than 30 Hertz [Hz]), (2) typical (between 30 and 60 Hz), and (3) high (greater than 60 Hz). Low-frequency vibration characteristics can be assumed for non-efficient soils. Typical vibration characteristics can be assumed for efficient soils. Since the vibration analysis assumes efficient soils, the “typical” frequency range was used.

Table 14: General Vibration Assessment Results

Site #	Name/Location of Receptor Site	Alternative	Distance (feet)	Base Curve[1] (VdB)	Adjustments[2]					Vibration VdB	Ground-Borne Noise	Ground-borne Vibration impact?	Ground-borne Noise impact?
					Speed	Elevated Structure	Special Track	Building	Soils (Efficient)				
1A	UNC Marsico Hall	LRA	430	52	-6	0		-13	+10	43	8	No	No
2	Branson Street & Hibbard Drive 2	LRA	55*	73	-6	-10		-7	+10	70	35	No	**Yes**
3	Branson Street & Hibbard Drive 3	LRA	65*	71	-6	-10		-7	+10	68	33	No	No
4	Branson Street & Hibbard Drive 4	LRA	80*	69	-4	-10		-7	+10	58	23	No	No
5	Branson Street & Hibbard Drive 5	LRA	40*	75	-4	-10		-7	+10	64	29	No	No
6	Branson Street & Hibbard Drive 6	LRA	130*	65	-4	-10		-7	+10	54	19	No	No
7	Branson Street & Hibbard Drive 7	LRA	10*	82	-4	-10		-7	+10	71	36	No	**Yes**
8	Branson Street & Hibbard Drive 8	LRA	20*	78	-3	-10		-5	+10	68	33	No	No
11	Mason Farm Road North 2	LRA	70	70	-6			-10	+10	64	29	No	No
12	Mason Farm Road North	LRA	40	75	-10			-10	+10	65	30	No	No
14	Batty Hill Drive	LRA	75*	70	-1	-10		-10	+10	59	24	No	No
15	Batty Hill Drive	LRA	150*	63	-1	-10		-10	+10	52	17	No	No

Site #	Name/Location of Receptor Site	Alternative	Distance (feet)	Base Curve[1] (VdB)	Adjustments[2]					Vibration VdB	Ground-Borne Noise	Ground-borne Vibration impact?	Ground-borne Noise impact?
					Speed	Elevated Structure	Special Track	Building	Soils (Efficient)				
17	Carmichael Street	LRA	130*	65	1	-10		-5	+10	61	26	No	No
22	Condos	LRA	100	67	-8			-13	+10	56	21	No	No
26	Cedar Berry Lane	C1, C1A	60	71	1			-5	+10	77	42	**Yes**	**Yes**
27	Park Bluff Drive	C1A	150	63	-2			-5	+10	66	31	No	No
27A	Iron Mountain Road	C1A	15	80	-2			-5	+10	83	48	**Yes**	**Yes**
27B	Iron Mountain Road	C1A	120	66	-2			-5	+10	69	34	No	No
27C	Iron Mountain Road	C1	65	71	-2			-5	+10	74	39	**Yes**	**Yes**
27D	Iron Mountain Road	C1	1	81	-2			-5	+10	84	49	**Yes**	**Yes**
28	Millingport Court	C1A	120	64	-4	-10		-5	+10	55	20	No	No
28A	Helmsdale Drive	C1A	120	64	-4	-10		-5	+10	55	20	No	No
30	Brookberry Circle	C2	50	73	-1			-5	+10	77	42	**Yes**	**Yes**
32	Stancell	C2, C2A	120	64	-10			-5	+10	59	24	No	No
35	Little John Road	C2, C2A	100	67	-3			-5	+10	69	34	No	No
37	George King Road	C2, C2A	20	78	0			-5	+10	83	48	**Yes**	**Yes**
38	Hudson Road	LRA	80	69	-2			-5	+10	72	37	**Yes**	**Yes**
39	Crescent Drive South	LRA	55	73	0			-5	+10	78	43	**Yes**	**Yes**
41	Farrington Road North	LRA	70	70	1			-5	+10	76	41	**Yes**	**Yes**
49	Old Coach Road	LRA	150	63	1			-5	+10	69	34	No	No

Site #	Name/Location of Receptor Site	Alternative	Distance (feet)	Base Curve[1] (VdB)	Adjustments[2]					Vibration VdB	Ground-Borne Noise	Ground-borne Vibration impact?	Ground-borne Noise impact?
					Speed	Elevated Structure	Special Track	Building	Soils (Efficient)				
50	Old Coach Road	LRA	80	69	-2			-13	+10	72	37	**Yes**	**Yes**
52	N. White Oak Drive	LRA	100	67	-6			-5	+10	66	31	No	No
53	N. White Oak Drive	LRA	80	69	-4			-5	+10	70	35	No	**Yes**
54	Comfort Inn Univ.	LRA	130*	65	-4	-10		-10	+10	48	13	No	No
55	East Sayward Drive	NHC 1, NHC 2	140	64	-6			-10	+10	63	28	No	No
56	Northcreek Drive 1	NHC 1, NHC 2	150	63	1			-10	+10	79	44	**Yes**	**Yes**
57	West Garrett Road	NHC 1, NHC 2	50*	73	1	-10		-7	+10	64	29	No	No
58	North Larchmont Road	NHC 1	140*	64	-6	-10		-5	+10	48	13	No	No
59	Lychan Parkway	NHC 1	75*	70	-6	-10		-10	+10	57	22	No	No
62	North Sayward Drive	NHC LPA	150	63	-6			-10	+10	62	27	No	No
64	Southwest Durham Drive1	NHC LPA	150	63	-2			-10	+10	61	26	No	No
67	Snow Crest Trail 1	NHC LPA, NHC 2	50	73	-2			-10	+10	71	36	No	**Yes**
68	Snow Crest Trail 2	NHC LPA, NHC 2	70	70	-2			-10	+10	68	33	No	No
69	Snow Crest Trail 3	NHC LPA, NHC 2	150	63	-3			-10	+10	60	25	No	No
70	Larchmont Road	NHC LPA, NHC 2	70	70	-6			-7	+10	64	29	No	No

Site #	Name/Location of Receptor Site	Alternative	Distance (feet)	Base Curve[1] (VdB)	Adjustments[2]					Vibration VdB	Ground-Borne Noise	Ground-borne Vibration impact?	Ground-borne Noise impact?
					Speed	Elevated Structure	Special Track	Building	Soils (Efficient)				
71	Pickett Road South	LRA	50	73	-4			-5	+10	69	34	No	No
73	Pickett Road South	LRA	90	68	-3			-10	+10	65	30	No	No
74	Pickett Road North	LRA	60	72	-2			-10	+10	70	35	No	**Yes**
77	VA Med Center	LRA	150	63	-3			-13	+10	57	22	No	No
78	Duke Med Center	LRA	100	67	-3			-13	+10	61	26	No	No
80	Anderson Street Apartments	LRA	130	65	-3			-5	+10	67	32	No	No
82	Powe House	LRA	100	67	-3			-5	+10	69	34	No	No
82A	Pettigrew Rehab Center	LRA	60	72	-3	-10		-7	+10	57	22	No	No
82B	W. Pettigrew Dialysis	LRA	80	69	-3	-10		-7	+10	57	22	No	No
82C	Hillcrest Center	LRA	100	67	-3	-10		-7	+10	57	22	No	No
83	Docum. Studies	LRA	45	74	-2	-10		-7	+10	67	32	No	No
87	Old Bull Dog Apartments	LRA	40	75	-2			-7	+10	76	41	**Yes**	**Yes**
87A	Durham Performing Arts	LRA	245	58	-2			-13	+10	53	18	No	No
87B	Venable Center	LRA	30	58	-2			-2	+10	56	21	No	No
88	Avery Boys & Girls	LRA	120	68	-6		10	-7	+10	73	38	No	No

Source: URS March 2015.

Notes: 1 FTA Guidance Manual, Figure 10-1, Generalized Ground Surface Vibration Curves.

2 FTA Guidance Manual, Table 10-1, Adjustment Factors for Generalized Predictions of Ground-Borne Vibration and Noise.

* Proximity to elevated tracks.

Building/Foundation Type

The FTA Guidance Manual allows for reduction of train vibration levels by 5 VdB, 7 VdB, and 10 VdB for wood-frame construction, one- to two-story commercial construction, and large masonry construction on piles, respectively. A review of field conditions and aerial photography identified the building and foundation types of all sensitive receptors. All single family residential receptors were conservatively assumed to have wood-frame construction. Multifamily apartments are typically brick/masonry structures.

Train and Track Characteristics

The train was assumed to have ”soft” primary suspension with wheels in ”good” condition. No special features/procedures such as floating slab trackbeds or ballast mats were assumed. The track was assumed to be continuously welded and in good condition. Although portions of the track would be elevated or at-grade with embedded track, the track would primarily be at-grade with ballasted trackbed and with stiffly supported ties of low resilience. The FTA Guidance Manual allows for a 10 VdB reduction of train vibration levels when the track is elevated relative to at-grade track.

Crossovers (“frogs”) are specified in the design of the light rail alignment. Frogs and other special trackwork add up to 10 VdB to overall train vibration levels per FTA guidelines. However, FTA qualitatively states that the increase would be less at greater distances from the track. For the purposes of the DEIS, it was assumed that the 10 VdB penalty would not apply for receptors outside of the screening criteria.

6.2.1.2 General Assessment Results

No-Build Alternative

The No-Build Alternative would have no effect on vibration levels in the area. Changes in traffic volumes and bus operations would not change existing vibration levels.

Light Rail Alternatives

The Light Rail Alternatives vibration and ground-borne noise impacts are displayed in Table 15 and are shown on Figures 21 through 35. The vibration and ground-borne noise impact criteria for residential land uses with frequent events is 72 VdB and 35 dBA, respectively. Based on the assumption of efficient propagation soil conditions, the Light Rail Alternatives, across all alignment alternatives, would result in vibration impacts to 13 residential areas and ground-borne noise impacts to 18 residential areas with a relatively even distribution across alignment alternatives.

Table 15: Summary of Vibration and Ground-Borne Noise Impacts

Site No.	Receptor Site	Alignment Alternative	Vibration Impact	Ground-Borne Noise Impact
2	Branson Street & Hibbard Drive 2	LRA	No	Yes
7	Branson Street & Hibbard Drive 7	LRA	No	Yes
26	Cedar Berry Lane	C1, C1A	Yes	Yes
27A	Iron Mountain Road	C1A	Yes	Yes
27C	Iron Mountain Road	C1	Yes	Yes
27D	Iron Mountain Road	C1	Yes	Yes

Site No.	Receptor Site	Alignment Alternative	Vibration Impact	Ground-Borne Noise Impact
30	Brookberry Circle	C2	Yes	Yes
37	George King Road	C2, C2A	Yes	Yes
38	Hudson Road	LRA	Yes	Yes
39	Crescent Drive South	LRA	Yes	Yes
41	Farrington Road North	LRA	Yes	Yes
50	Old Coach Road	LRA	Yes	Yes
53	N. White Oak Drive	LRA	No	Yes
56	Northcreek Drive 1	NHC 1, NHC 2	Yes	Yes
67	Snow Crest Trail 1	NHC LPA, NHC 2	No	Yes
74	Pickett Road North	LRA	No	Yes
83	Ctr. Documentary Studies	LRA	Yes	Yes
87	Old Bull Bldg. Apartments	LRA	Yes	Yes

Source: URS March 2015.

6.2.1.3 Vibration Impacts to Historic Structures

The FTA Guidance Manual, Table 12-3 defines impact criteria for buildings that are extremely susceptible to vibration damage of 90 VdB. Evaluation of the project shows a maximum possible vibration level of 88 VdB with a wooden structure located 10 feet from the tracks and with vehicles traveling at 55 mph. There are no historic structures within 10 feet of the project alignment. As a result, vibration from the operation of the Light Rail Alternatives would not adversely affect historic structures.

6.2.2 Vibration Impact Mitigation

6.2.2.1 Potential Mitigation Options

Options for reductions in the vibration levels fit into one of four categories:, (1) vehicle modifications, (2) changes in the track support system, (3) building modifications, and (4) operational changes. Alternatively, the project may elect to acquire an impacted residence, especially where additional right-of-way impacts result.

Vehicle Specifications

The ideal rail vehicle, with respect to minimizing ground-borne vibration, should have a low unsprung weight, a soft primary suspension, a minimum of metal-to-metal contact between moving parts of the truck, and smooth wheels that are perfectly round. A limit for the vertical resonance frequency of the primary suspension should be included in the specifications for any new vehicle. A vertical resonance frequency of 12 Hz or less is sufficient to control the levels of ground-borne vibration. Some have recommended that transit vehicle specifications require that the vertical resonance frequency be less than 8 Hz.

Special Track Support Systems

When the vibration assessment indicates that vibration levels would be excessive, it is usually the track support system that is changed to reduce the vibration levels. Floating slabs, resiliently supported ties, high-resilience fasteners, and ballast mats have all been used in subways to reduce the levels of ground-borne vibration. To be effective, all of these measures must be optimized for the frequency spectrum of the vibration. Most of these relatively standard procedures have been successfully used on several subway projects. Applications on at-grade and elevated track are less common. This is because vibration problems are less common for at-grade and elevated track; cost of the vibration control measures is a higher percentage of the construction costs of at-grade and elevated track; and exposure to the elements can require significant design modifications.

Each of the major vibration control measures for track support is discussed below.

- **Resilient Fasteners**: Resilient fasteners are used to fasten the rail to concrete track slabs. Standard resilient fasteners are very stiff in the vertical direction, usually in the range of 200,000 pounds per inch, although they do provide vibration reduction compared to some of the rigid fastening systems used on older systems (e.g., wood half-ties embedded in concrete). Special fasteners with vertical stiffness in the range of 30,000 pounds per inch will reduce vibration by as much as 5 to 10 dB at frequencies above 30 to 40 Hz.
- **Ballast Mats**: A ballast mat consists of a rubber or other type of elastomer pad that is placed under the ballast. The mat generally must be placed on a concrete pad to be effective. They will not be as effective if placed directly on the soil or the sub-ballast. Consequently, most ballast mat applications are in subway or elevated structures. Ballast mats can provide 10 to 15 dB attenuation at frequencies above 25 to 30 Hz.
- **Resiliently Supported Ties**: The resiliently supported tie system consists of concrete ties supported by rubber pads. The rails are fastened directly to the concrete ties using standard rail clips. Existing measurement data indicate that resiliently supported ties may be very effective in reducing low-frequency vibration in the 15 to 40 Hz range. This makes them particularly appropriate for transit systems with vibration problems in the 20 to 30 Hz range.
- **Floating Slabs**: Floating slabs can be very effective at controlling ground-borne vibration and noise. They basically consist of a concrete slab supported on resilient elements, usually rubber or a similar elastomer. Floating slabs are effective at frequencies greater than their single-degree-of-freedom vertical resonance frequency.

Building Modifications

In some circumstances, it is practical to modify the impacted building to reduce the vibration levels. Vibration isolation of buildings basically consists of supporting the building foundation on elastomer pads similar to bridge bearing pads. Vibration isolation of buildings is seldom an option for existing buildings; normal applications are possible only for new construction.

Operational Changes

The most obvious operational change is to reduce the vehicle speed. Reducing the train speed by a factor of two will reduce vibration levels approximately 6 VdB. Other operational changes that can be effective in special cases include the following:

- Use the equipment that generates the lowest vibration levels during the nighttime hours when people are most sensitive to vibration and noise.
- Adjust nighttime schedules to minimize movements in the most sensitive hours.

While there are tangible benefits from speed reductions and limits on operations during the most sensitive time periods, these types of measures are usually not practical from the standpoint of service requirements. Furthermore, vibration reduction achieved through operating restrictions requires continuous monitoring and will be negated if vehicle operators do not adhere to established policies. As with the options for noise control, FTA does not recommend limits on operations as a way to reduce vibration impacts.

Property Acquisition

While final designs will be needed to confirm the properties required for acquisition, preliminary designs suggest that the impacted residences 27A and 27D would be acquired for right of way requirements.

6.2.2.2 Mitigation Approach

As discussed in the previous section, all the vibration impacts, with the exception of the house at George King Road (C2 or C2A, designated for acquisition), would result from the inclusion of efficient soil propagation conditions, which increase vibration levels by 10 VdB. As a result, and in accordance with the FTA Guidance Manual, a detailed vibration analysis will be conducted during the Engineering phase to further evaluate geotechnical conditions and the effects of the proposed light rail system on area receptors.

Upon completion of the detailed geotechnical evaluation, vibration-sensitive receptors that are part of the NEPA Preferred Alternative and are not acquired for the project that remain impacted by project vibration will be mitigated through special track support systems.

Special Track Support Systems

When the vibration assessment indicates that vibration levels will be excessive, it is usually the track support system that is changed to reduce the vibration levels. Floating slabs, resiliently supported ties, high-resilience fasteners, and ballast mats can be used to reduce the levels of ground-borne vibration. To be effective, all of these measures must be optimized for the frequency spectrum of the vibration. Most of these relatively standard procedures have been successfully used on transit projects.

6.3 Construction Noise and Vibration Impacts

6.3.1 Construction Noise Impacts

The construction process for the Light Rail Alternatives would involve the use of equipment and vehicle operations that typically result in high noise levels adjacent to the construction sites. Table 16 shows typical construction equipment noise emission levels at 50 feet. The use of especially noisy equipment, such as a rail saw, jack hammer, scrapers, and pneumatic tools, would be common throughout the alignment. Pile drivers, the noisiest type of equipment for light rail projects, may be used in areas where the tracks are on elevated structures, or where the ROMF requires a pile foundation.

Table 16: Typical Construction Equipment Noise Emission Levels at 50 Feet

Equipment Type	Typical Noise Levels at 50 feet from Source
Pile Drivers (Impact)	101
Rail Saw	90
Scraper	89
Truck	88
Jack Hammer	88
Mobile Crane	88
Grader	85
Dozer	85
Tie Inserter	85
Pneumatic Tool	85
Impact Wrench	85

Source: FTA Guidance Manual

Table 17 identifies the acceptable noise levels from construction activities for associated land uses. In order to identify whether the construction activity is likely to impact nearby sensitive receiver areas, the two loudest pieces of equipment, the pile driver and the rail saw, were added together (using decibel addition). These two pieces of equipment, used simultaneously at the same location, would result in the emission of 101 dB of noise at 50 feet from construction. In areas where pile drivers would not be used, the next loudest pieces of equipment (rail saw and jack hammer), if used together simultaneously at the same location, would emit 92 dB of sound at 50 feet from construction. It is likely that noise impacts would occur in residential areas and commercial/industrial areas within 50 feet of the proposed light rail alignment as a result of the construction activities. Due to the linear nature of track construction, these impacts would be intermittent and temporary.

Table 17: Acceptable Construction Noise Levels

Land Use	One hour L_{eq} (dBA)	
	Day	Night
Residential	90	80
Commercial	100	100
Industrial	100	100

Source: FTA Guidance Manual

At this early stage of project development, the extent of the short-term construction impact is indeterminable as the construction plans, which would identify the specific equipment to be used and the locations where the equipment would be used, will not be completed until the Engineering Phase of the project.

Construction Noise Mitigation

During the Engineering Phase of the project, a detailed construction noise assessment will be completed. This detailed assessment will provide property-specific detail that will then be used to develop mitigation plans to keep the noise levels at or below acceptable levels.

Construction activities would be conducted in accordance with applicable state and local requirements, and would be limited to weekday daytime hours (typically from 7 a.m. to 6 p.m.) Noise would be monitored on a regular basis during construction near potentially affected sensitive receptors.

Various means for the control of noise impacts during construction would be considered, including the following:

- Design considerations and project layout, such as noise barriers, minimizing the distance of truck routing, routing trucks away from residential streets, and locating noise-generating equipment as far away from the sensitive noise areas as possible
- Operations sequence, such as avoiding nighttime construction in residential areas
- Alternative methods, such as using drilled piers instead of impact pile driving, specifying quieter equipment in construction specifications, and alternative demolition and pavement breaking techniques

6.3.2 Vibration Impacts from Construction

The construction of the elevated structures may require the drilling of shafts to place the concrete foundations. Vibration sensitive buildings that are adjacent to elevated track sections and are listed and/or eligible for listing on the National Register are primarily concentrated between the Mason Farm Road Station and the Hamilton Road Station in Chapel Hill, and between the Ninth Street Station and Dillard Street Station, in Durham. In Chapel Hill, the closest National Register (eligible) properties include a house on Carmichael Street and the Aldersgate Methodist Church, which are 130 and 120 feet, respectively, from the elevated track. In Durham, the closest National Register property that is adjacent to a proposed elevated track section is the Trinity College Duke Center for Documentary Studies, which is located 45 feet from the alignment.

The closest historic building (Trinity College Duke Center for Documentary Studies) was evaluated for the potential for structural damage from the construction of the elevated structure foundations using a vibratory hammer or caisson drilling methods. Following the methodology in the FTA Guidance Manual, Chapter 12, and assuming the Trinity College building was extremely susceptible to vibration damage, the damage impact limit would be 0.12 inches/second peak particle velocity (PPV). This limit would not be exceeded at the Trinity College building based on the shaft drilling level of 0.089 PPV in Table 12-2 of the FTA Guidance Manual.

While structural damage is the principal concern of vibration impacts from construction activities, it is likely that the construction of the elevated track structures would result in short term impacts to human activities, especially in buildings very close to the work. Residential land uses where human activities may be impacted by vibration include the properties on Batty Hill Drive, which is 75 feet from elevated structures, and West Garrett Rodd, which is 50 feet from elevated structures. The properties next to UNC Hospital Station will be used by UNC for a future development.

Construction Vibration Mitigation

As part of the detailed vibration assessment that will be conducted during the Engineering Phase of the project, construction impacts to historic structures will be further evaluated. Vibration levels will be monitored at sensitive building structures during construction, particularly at buildings adjacent to areas where elevated structure foundations will be constructed. Some of these areas where further evaluation will be conducted, and where monitoring would occur during the Engineering and Construction Phases include the Oak Creek Village apartment complex for alternatives NHC 1 and NHC 2, and at sensitive sites adjacent to the proposed aerial alignment along West Pettigrew Street. These locations would include four local historic landmark houses and the Duke Center for Documentary Studies.

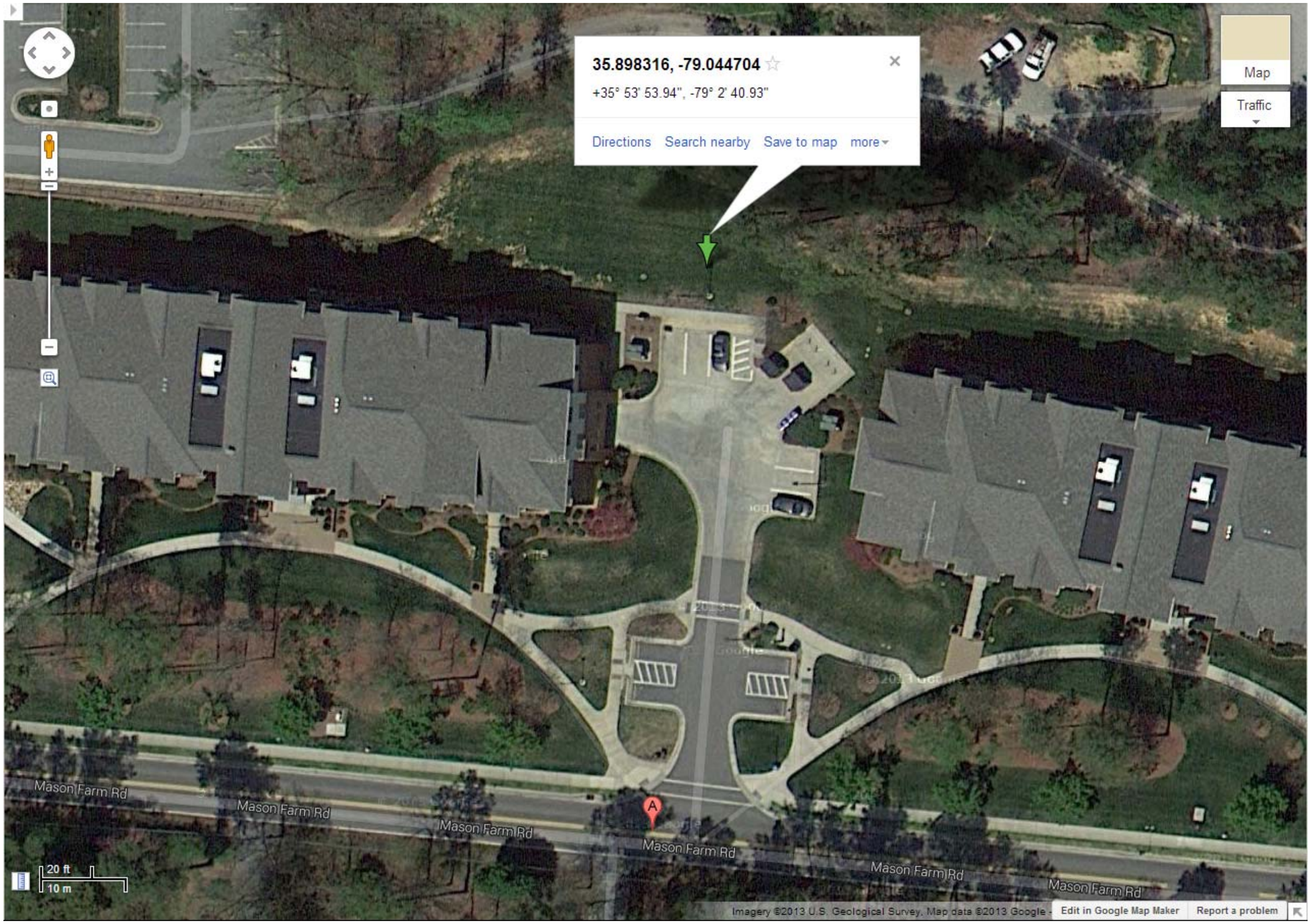
In the event that the monitoring results in impacts beyond acceptable levels, additional site-specific mitigation will be implemented. Where construction of drilled shafts for the foundations for the elevated structures is shown to result in impacts, special foundation installation techniques will be employed to reduce vibration levels.

Appendix A: Noise Monitoring Sites

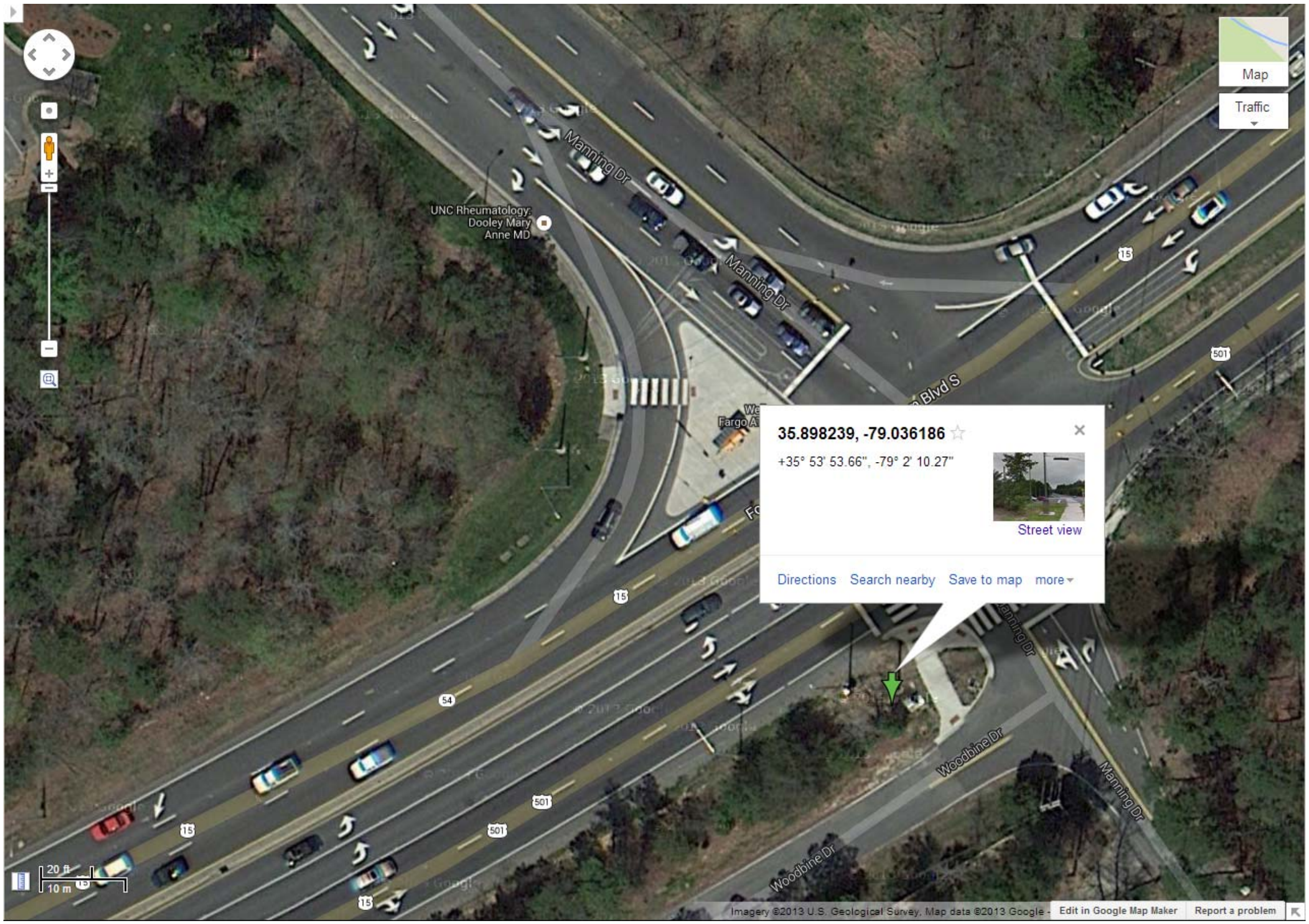
M1A

Odum Village
Odum Community Office
Map
Traffic
35.900015, -79.049178
+35° 54' 0.05", -79° 2' 57.04"
Street view
Directions
Search nearby
Save to map
more
Branson St
Branson St
Branson St
Branson St
Branson St
Branson St
A
20 ft
10 m
Imagery ©2013 U.S. Geological Survey, Map data ©2013 Google
Edit in Google Map Maker
Report a problem

M2

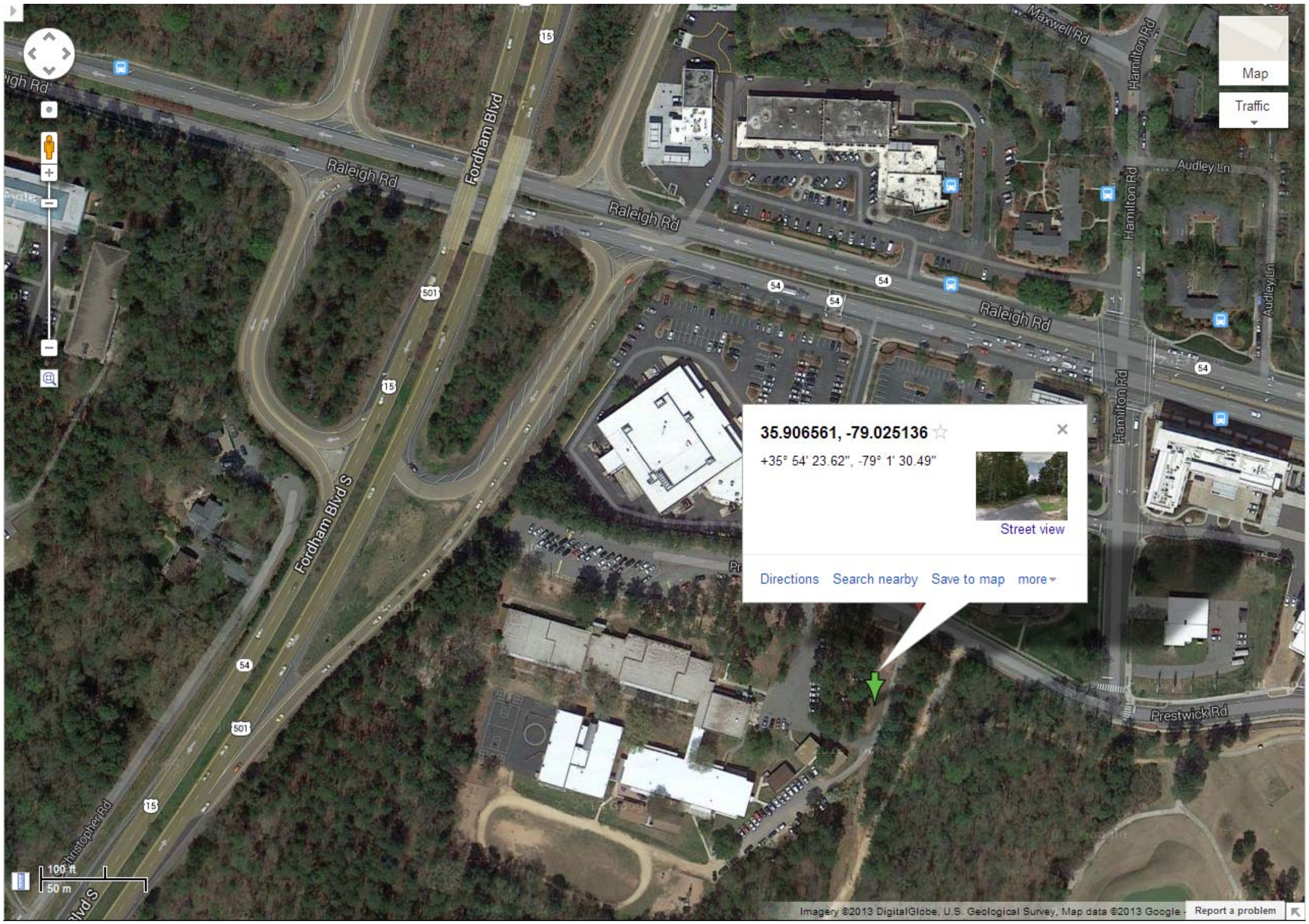

35.898316, -79.044704
+35° 53' 53.94", -79° 2' 40.93"
Directions
Search nearby
Save to map
more
Map
Traffic
Mason Farm Rd
Mason Farm Rd
Mason Farm Rd
Mason Farm Rd
Mason Farm Rd
Mason Farm Rd
A
20 ft
10 m
Imagery ©2013 U.S. Geological Survey, Map data ©2013 Google
Edit in Google Map Maker
Report a problem

M3



Map
Traffic
Manning Dr
UNC Rheumatology: Dooley Mary Anne MD
35.898239, -79.036186
+35° 53' 53.66", -79° 2' 10.27"
Street view
Directions
Search nearby
Save to map
more
Woodbine Dr
Imagery ©2013 U.S. Geological Survey, Map data ©2013 Google
Edit in Google Map Maker
Report a problem
20 ft
10 m

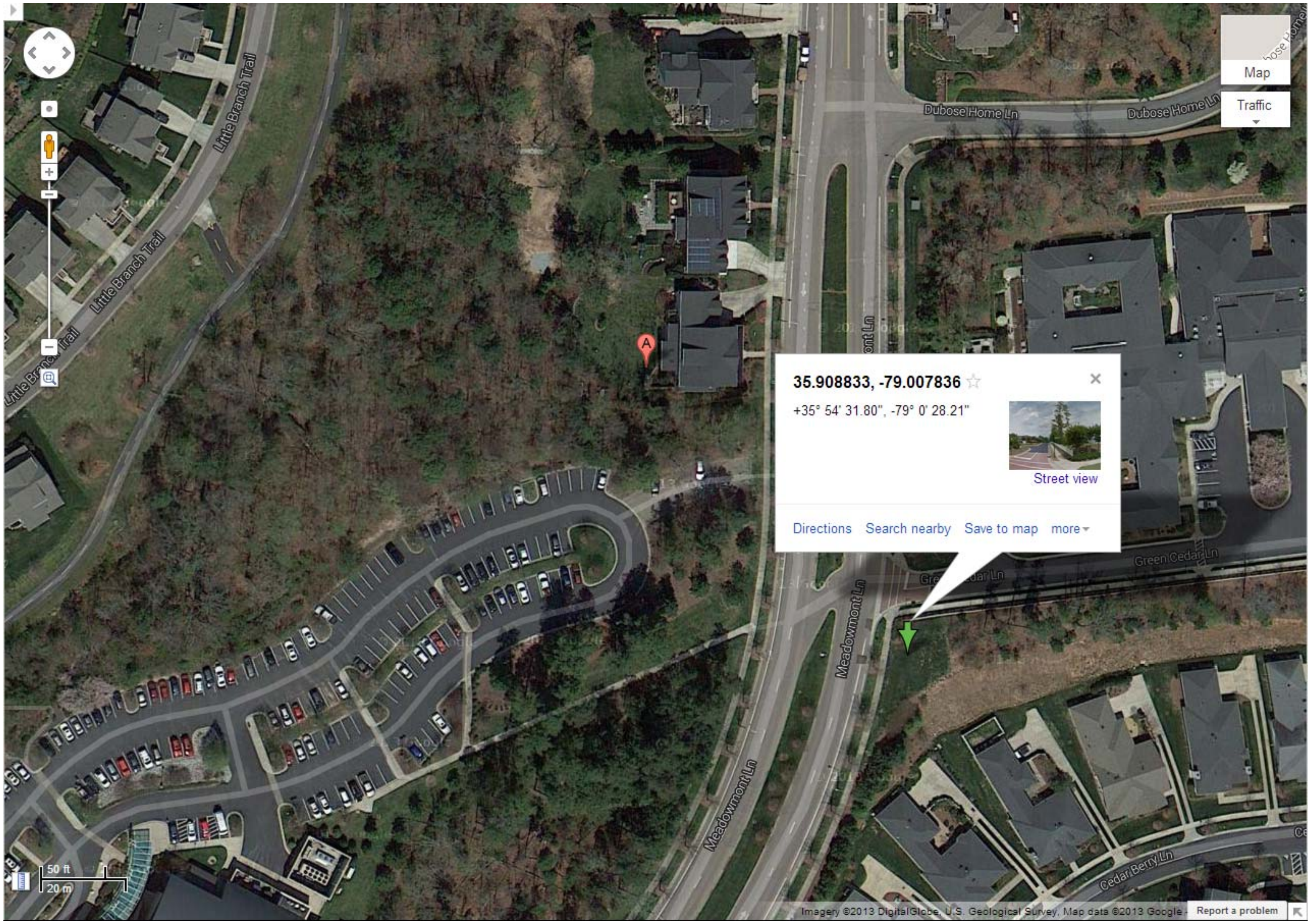
M4


Map
Traffic
Raleigh Rd
Fordham Blvd
Maxwell Rd
Hamilton Rd
Audley Ln
Fordham Blvd S
Prestwick Rd
35.906561, -79.025136
+35° 54' 23.62", -79° 1' 30.49"
Street view
Directions
Search nearby
Save to map
more
100 ft
50 m
Imagery ©2013 DigitalGlobe, U.S. Geological Survey, Map data ©2013 Google
Report a problem

M5

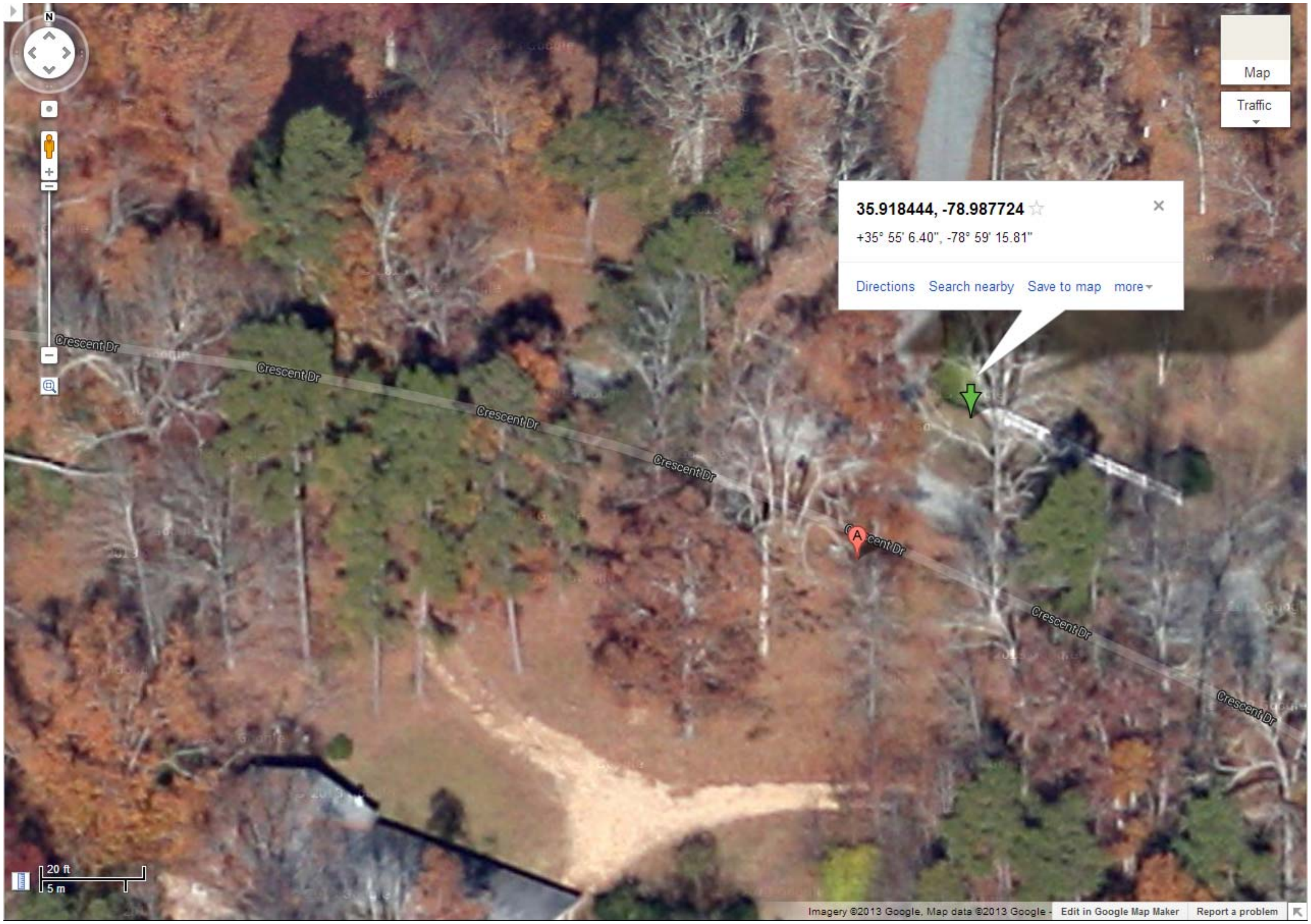

Map
Traffic
Hamilton Rd
Prestwick Rd
Prestwick Rd
Prestwick Rd
Prestwick Rd
Prestwick Rd
Prestwick Rd
Environ Way
35.906075, -79.021997
+35° 54' 21.87", -79° 1' 19.19"
Street view
Directions
Search nearby
Save to map
more
50 ft
20 m
Imagery ©2013 DigitalGlobe, U.S. Geological Survey, Map data ©2013 Google -
Report a problem

M6

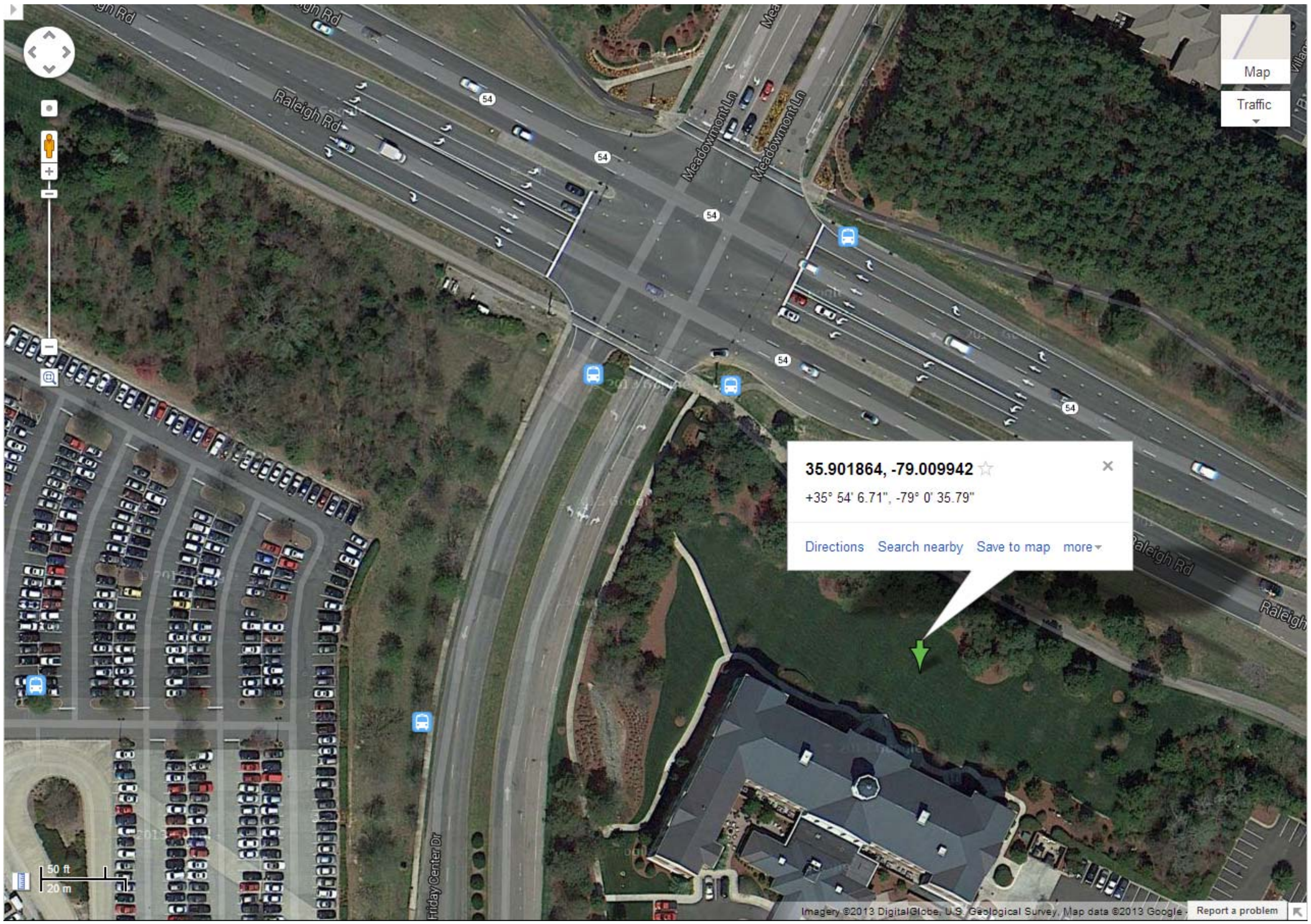


Map
Traffic
Dubose Home Ln
Dubose Home Ln
Little Branch Trail
Little Branch Trail
Little Branch Trail
Meadowmont Ln
Meadowmont Ln
Meadowmont Ln
Green Cedar Ln
Cedar Berry Ln
35.908833, -79.007836
+35° 54' 31.80", -79° 0' 28.21"
Street view
Directions
Search nearby
Save to map
more
50 ft
20 m
Imagery ©2013 DigitalGlobe, U.S. Geological Survey, Map data ©2013 Google
Report a problem

M7

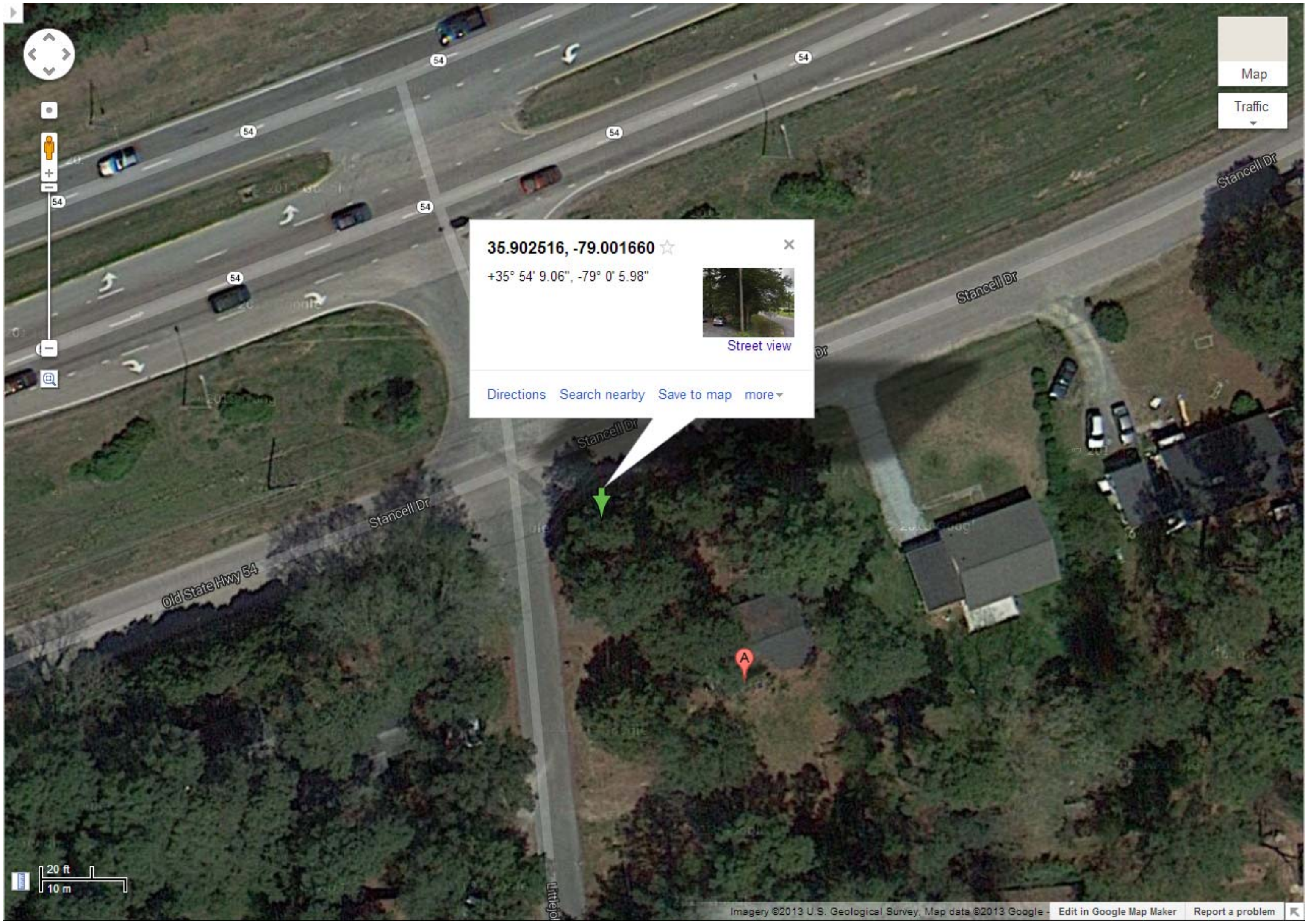

N
Map
Traffic
35.918444, -78.987724
+35° 55' 6.40", -78° 59' 15.81"
Directions
Search nearby
Save to map
more
Crescent Dr
Crescent Dr
Crescent Dr
Crescent Dr
Crescent Dr
Crescent Dr
Crescent Dr
A
20 ft
5 m
Imagery ©2013 Google, Map data ©2013 Google -
Edit in Google Map Maker
Report a problem

M8



Raleigh Rd
Meadowmont Ln
Meadowmont Ln
54
Map
Traffic
35.901864, -79.009942
+35° 54' 6.71", -79° 0' 35.79"
Directions
Search nearby
Save to map
more
Friday Center Dr
50 ft
20 m
Imagery ©2013 DigitalGlobe, U.S. Geological Survey, Map data ©2013 Google
Report a problem

M9

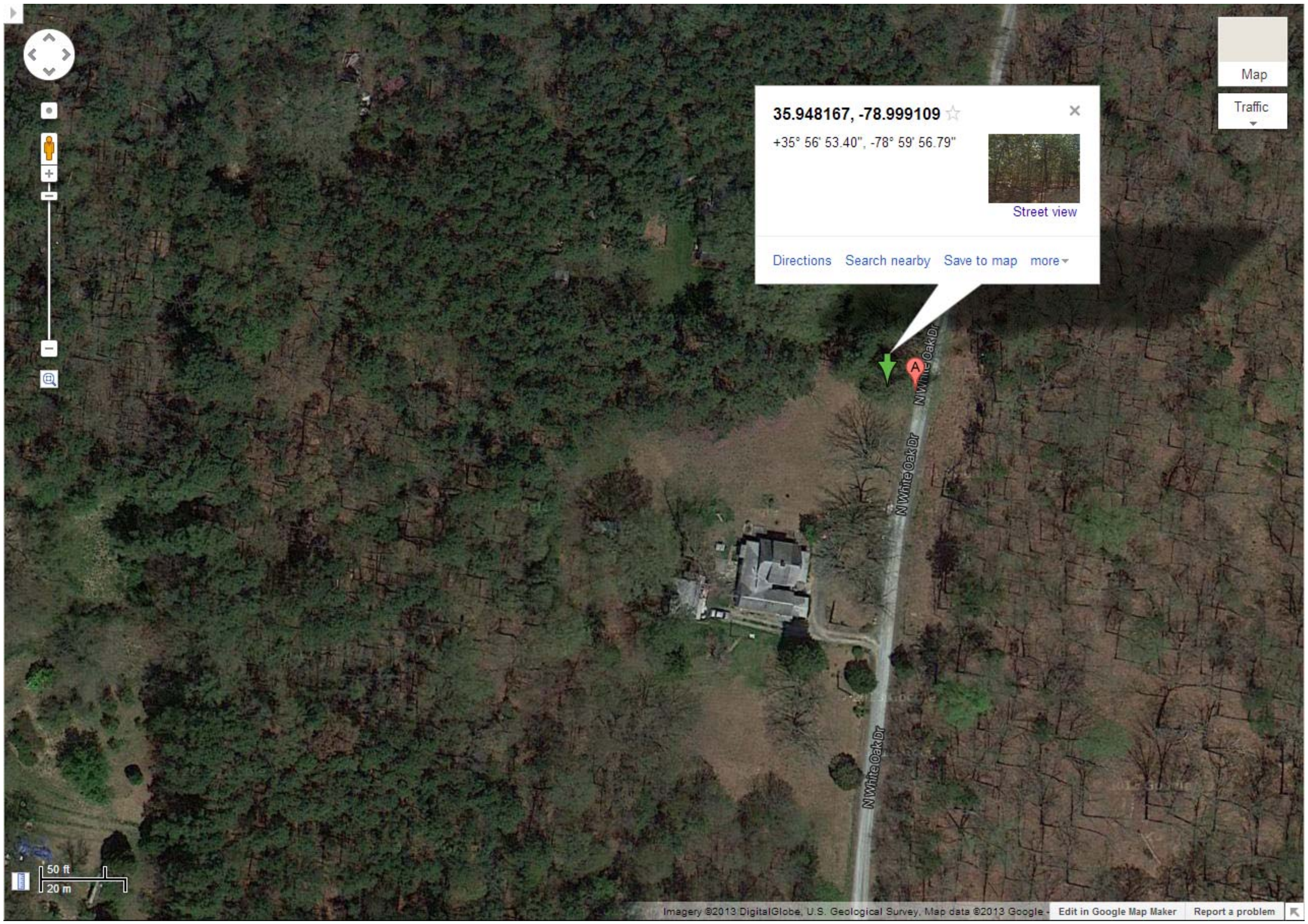


35.902516, -79.001660
+35° 54' 9.06", -79° 0' 5.98"
Street view
Directions
Search nearby
Save to map
more
Map
Traffic
Stancell Dr
Old State Hwy 54
54
20 ft
10 m
Imagery ©2013 U.S. Geological Survey, Map data ©2013 Google
Edit in Google Map Maker
Report a problem

M10

Map
Traffic
35.929805, -78.988907
+35° 55' 47.30", -78° 59' 20.07"
Street view
Directions
Search nearby
Save to map
more
Farrington Rd
Farrington Rd
Farrington Rd
Farrington Rd
Ephesus Church Rd
Ephesus Church Rd
Ephesus Church Rd
Ephesus Church Rd
20 ft
10 m
Imagery ©2013 Google, Map data ©2013 Google
Edit in Google Map Maker
Report a problem

M11



Map
Traffic
35.948167, -78.999109
+35° 56' 53.40", -78° 59' 56.79"
Street view
Directions
Search nearby
Save to map
more
N White Oak Dr
N White Oak Dr
N White Oak Dr
50 ft
20 m
Imagery ©2013 DigitalGlobe, U.S. Geological Survey, Map data ©2013 Google
Edit in Google Map Maker
Report a problem

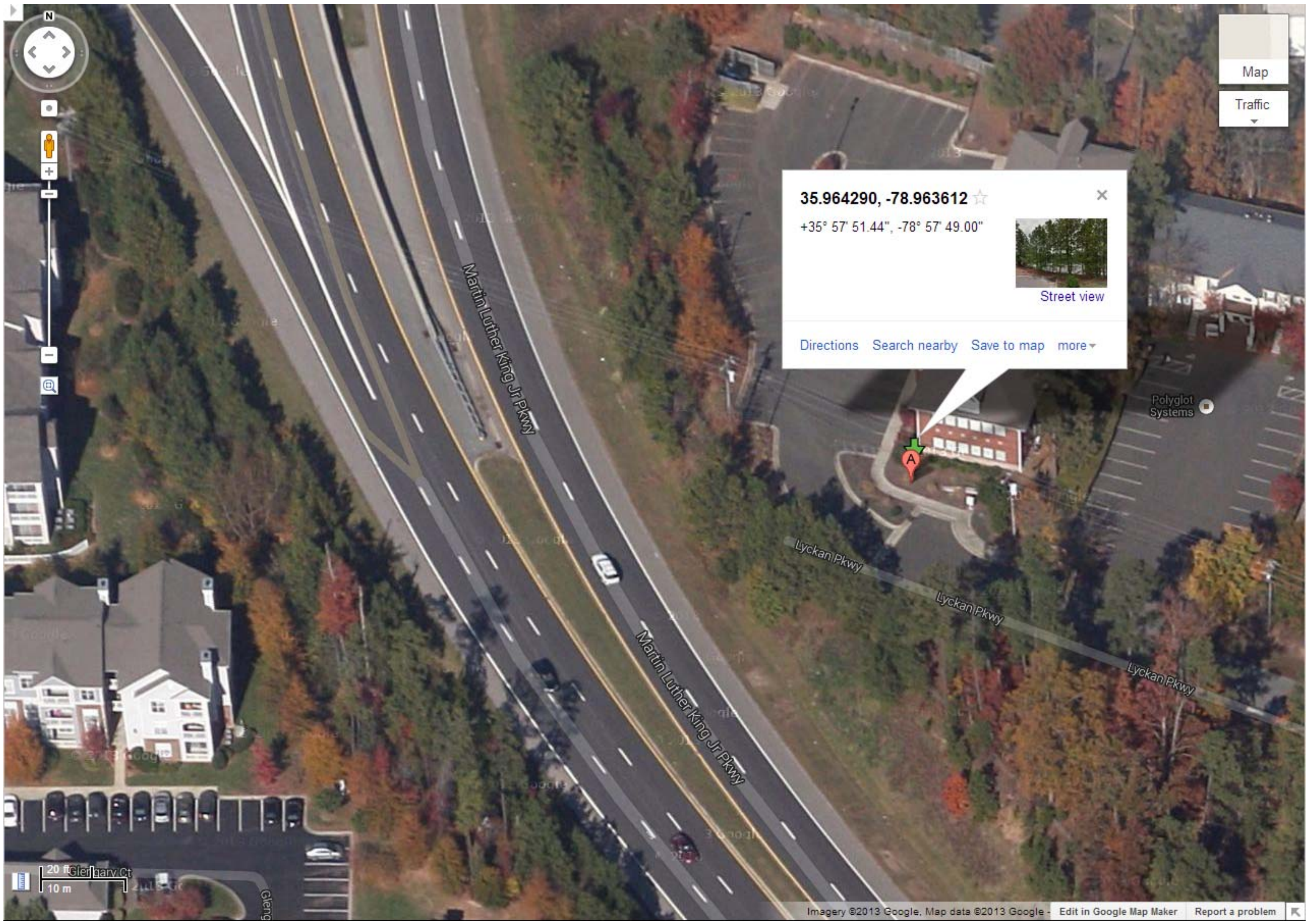
M12


SW Durham Dr
SW Durham Dr
Sayward Dr
Sayward Dr
Map
Traffic
35.950203, -78.986692
+35° 57' 0.73", -78° 59' 12.09"
Street view
Directions
Search nearby
Save to map
more
50 ft
20 m
Imagery ©2013 Google, Map data ©2013 Google
Report a problem

M12A

35.960244, -78.978733
+35° 57' 36.88", -78° 58' 43.44"
Street view
Directions
Search nearby
Save to map
more
Map
Traffic
Durham-Chapel
50 ft
20 m
Imagery ©2013 Google, Map data ©2013 Google
Report a problem

M12B



Map
Traffic
35.964290, -78.963612
+35° 57' 51.44", -78° 57' 49.00"
Street view
Directions
Search nearby
Save to map
more
Martin Luther King Jr Pkwy
Martin Luther King Jr Pkwy
Lyckan Pkwy
Lyckan Pkwy
Lyckan Pkwy
Polyglot Systems
20 ft
10 m
Imagery ©2013 Google, Map data ©2013 Google
Edit in Google Map Maker
Report a problem

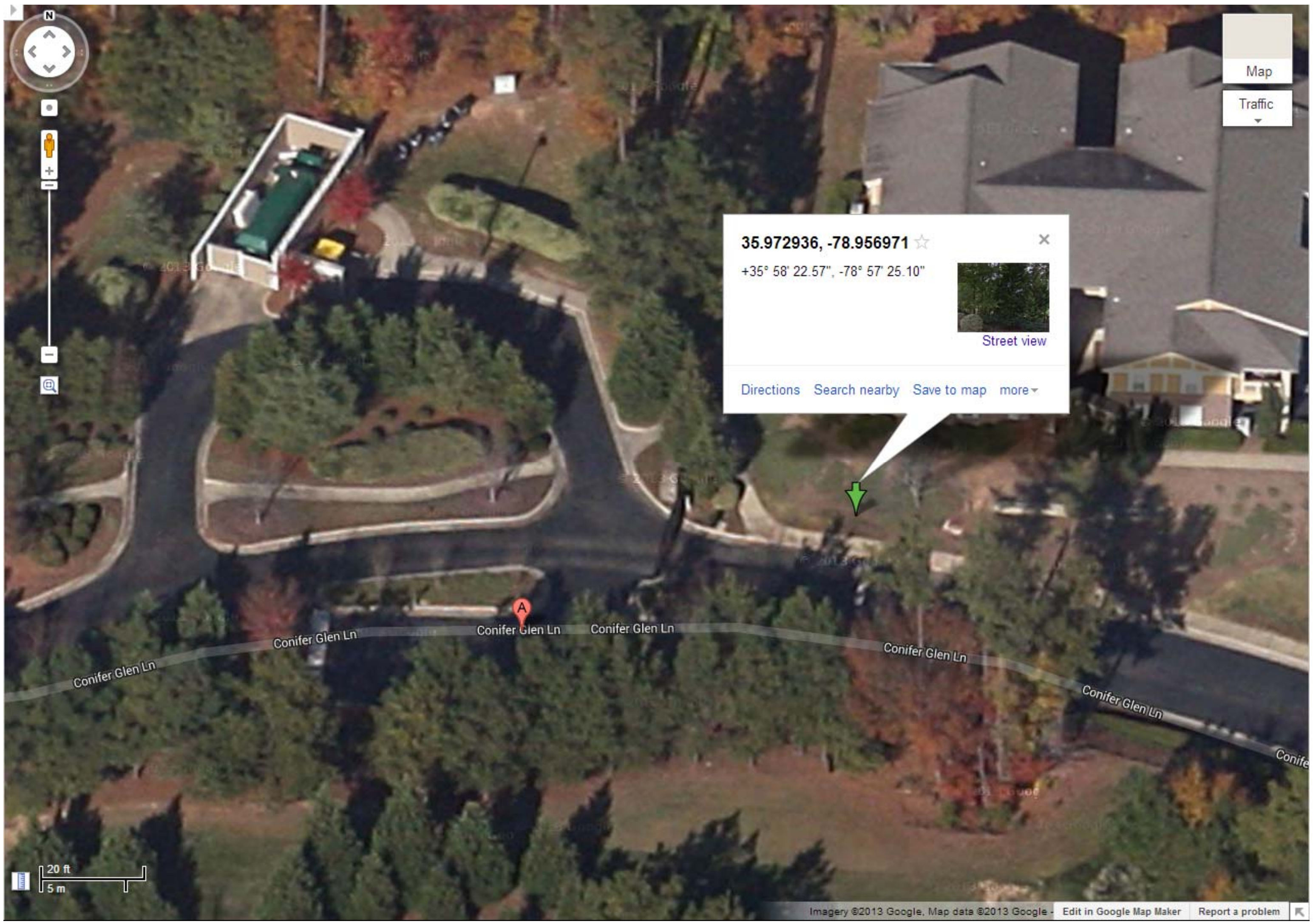
M12C

35.954117, -78.985428
+35° 57' 14.82", -78° 59' 7.54"
Directions
Search nearby
Save to map
more
Map
Traffic
Northcreek Dr
Northcreek Dr
Northcreek Dr
Northcreek Dr
Northcreek Dr
Durham Dr
Durham Dr
50 ft
20 m
Imagery ©2013 Google, Map data ©2013 Google
Report a problem

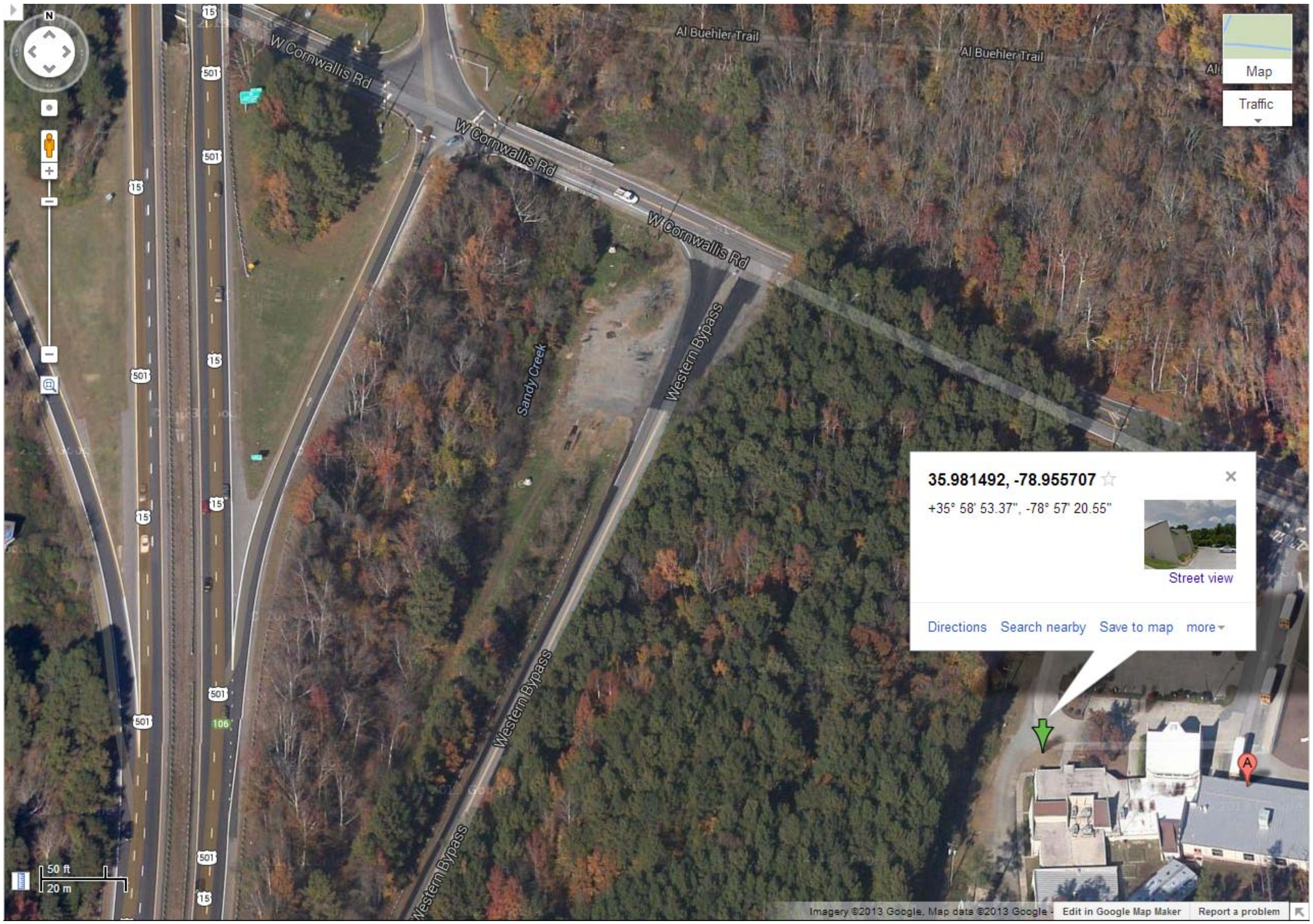
M13


35.960068, -78.967563
+35° 57' 36.24", -78° 58' 3.23"
Street view
Directions
Search nearby
Save to map
more
Map
Traffic
20 ft
10 m
Imagery ©2013 Google, Map data ©2013 Google
Edit in Google Map Maker
Report a problem

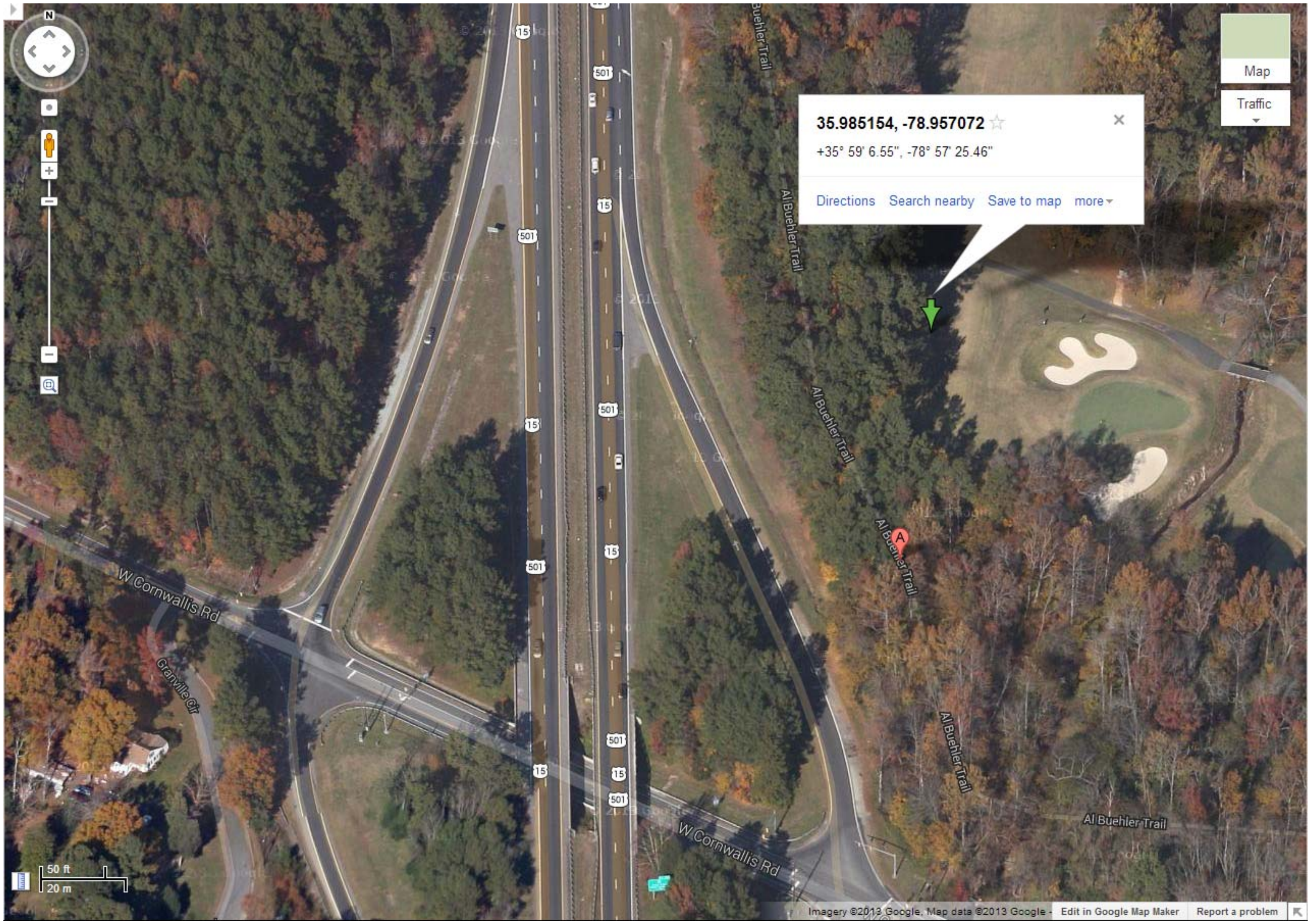
M14


35.972936, -78.956971
+35° 58' 22.57", -78° 57' 25.10"
Street view
Directions
Search nearby
Save to map
more
Map
Traffic
Conifer Glen Ln
Conifer Glen Ln
Conifer Glen Ln
Conifer Glen Ln
Conifer Glen Ln
Conifer Glen Ln
20 ft
5 m
Imagery ©2013 Google, Map data ©2013 Google
Edit in Google Map Maker
Report a problem

M14A


W Cornwallis Rd
Al Buehler Trail
Sandy Creek
Western Bypass
Map
Traffic
35.981492, -78.955707
+35° 58' 53.37", -78° 57' 20.55"
Street view
Directions Search nearby Save to map more
50 ft
20 m
Imagery ©2013 Google, Map data ©2013 Google
Edit in Google Map Maker
Report a problem

M14B



35.985154, -78.957072
+35° 59' 6.55", -78° 57' 25.46"
Directions
Search nearby
Save to map
more
Map
Traffic
W Cornwallis Rd
W Cornwallis Rd
Granville Cir
Al Buehler Trail
Al Buehler Trail
Al Buehler Trail
Al Buehler Trail
Al Buehler Trail
50 ft
20 m
Imagery ©2013 Google, Map data ©2013 Google
Edit in Google Map Maker
Report a problem

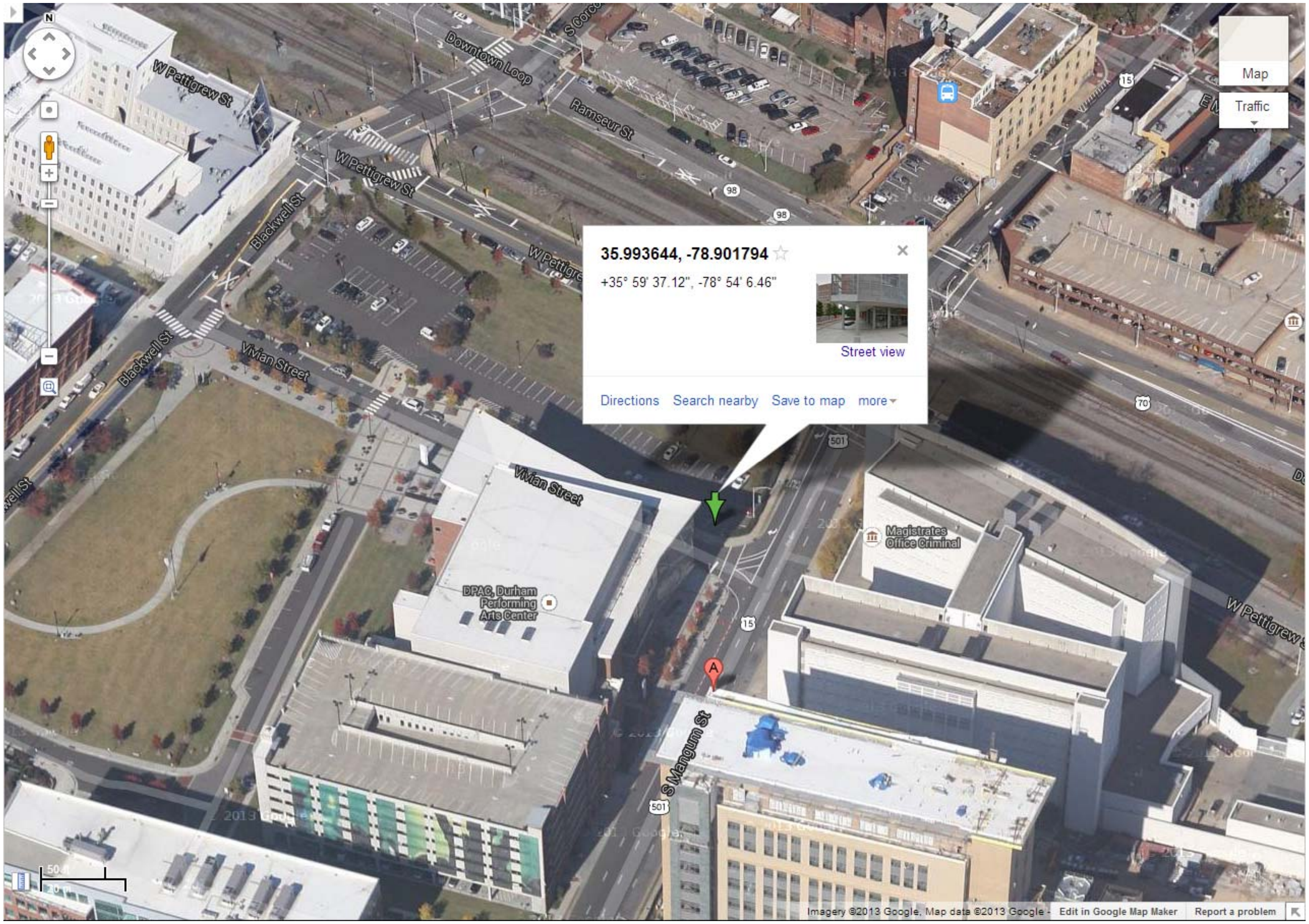
M14C

W Cornwallis Rd
W Cornwallis Rd
W Cornwallis Rd
W Cornwallis Rd
Al Buehler Trail
Al Buehler Trail
Western Bypass
Western Bypass
Western Bypass
Scott Pl
Map
Traffic
35.978855, -78.955857
+35° 58' 43.88", -78° 57' 21.09"
Directions
Search nearby
Save to map
more
100 ft
50 m
Judea Reform Congregation
Imagery ©2013 Google, Map data ©2013 Google
Edit in Google Map Maker
Report a problem

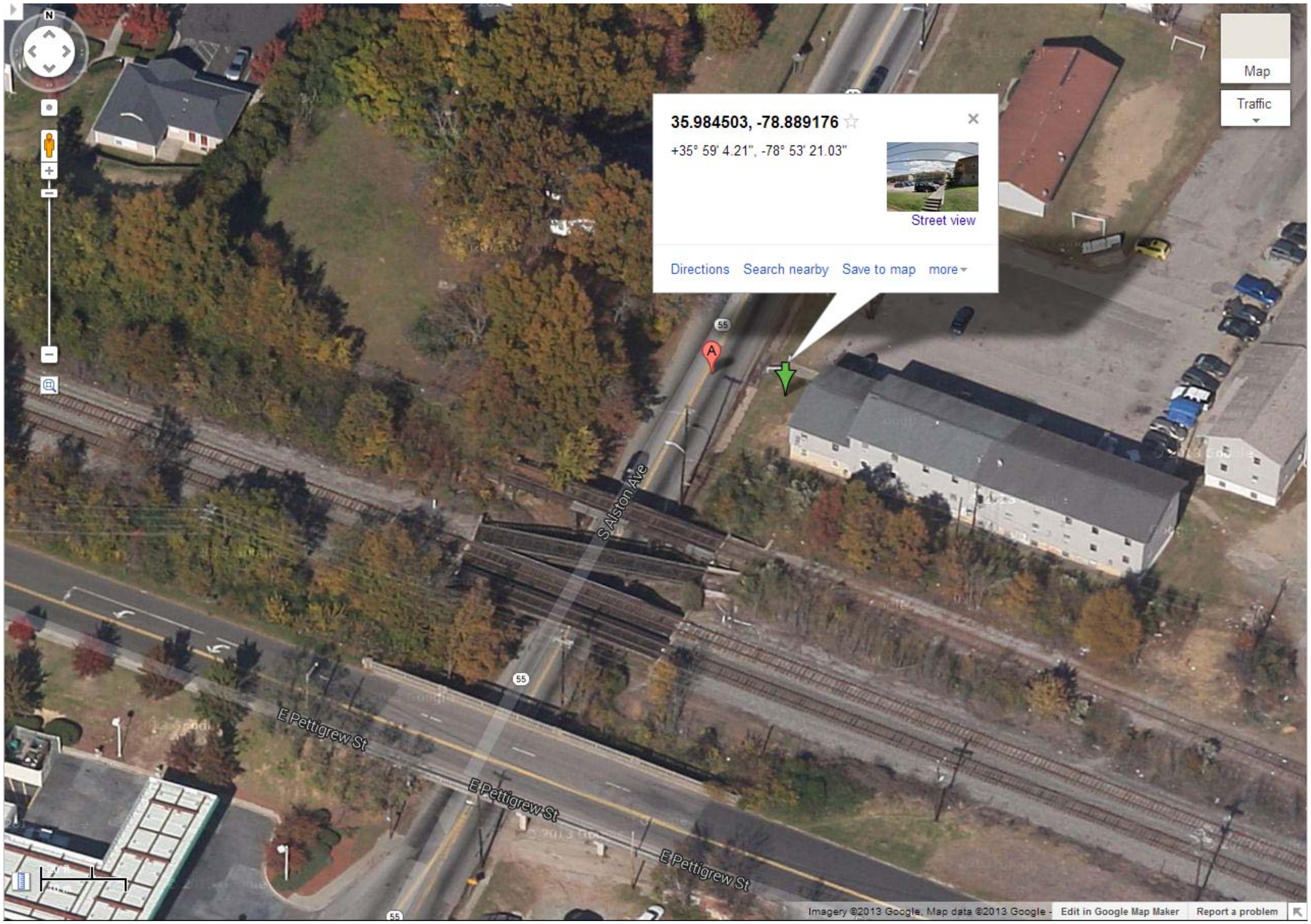
M15


36.007699, -78.933860
+36° 0' 27.72", -78° 56' 1.90"
Street view
Directions
Search nearby
Save to map
more
Elba St
Trent Dr
Erwin Rd
Emergency Dr
Flowers Dr
Map
Traffic
50 ft
20 m
Imagery ©2013 Google, Map data ©2013 Google
Edit in Google Map Maker
Report a problem

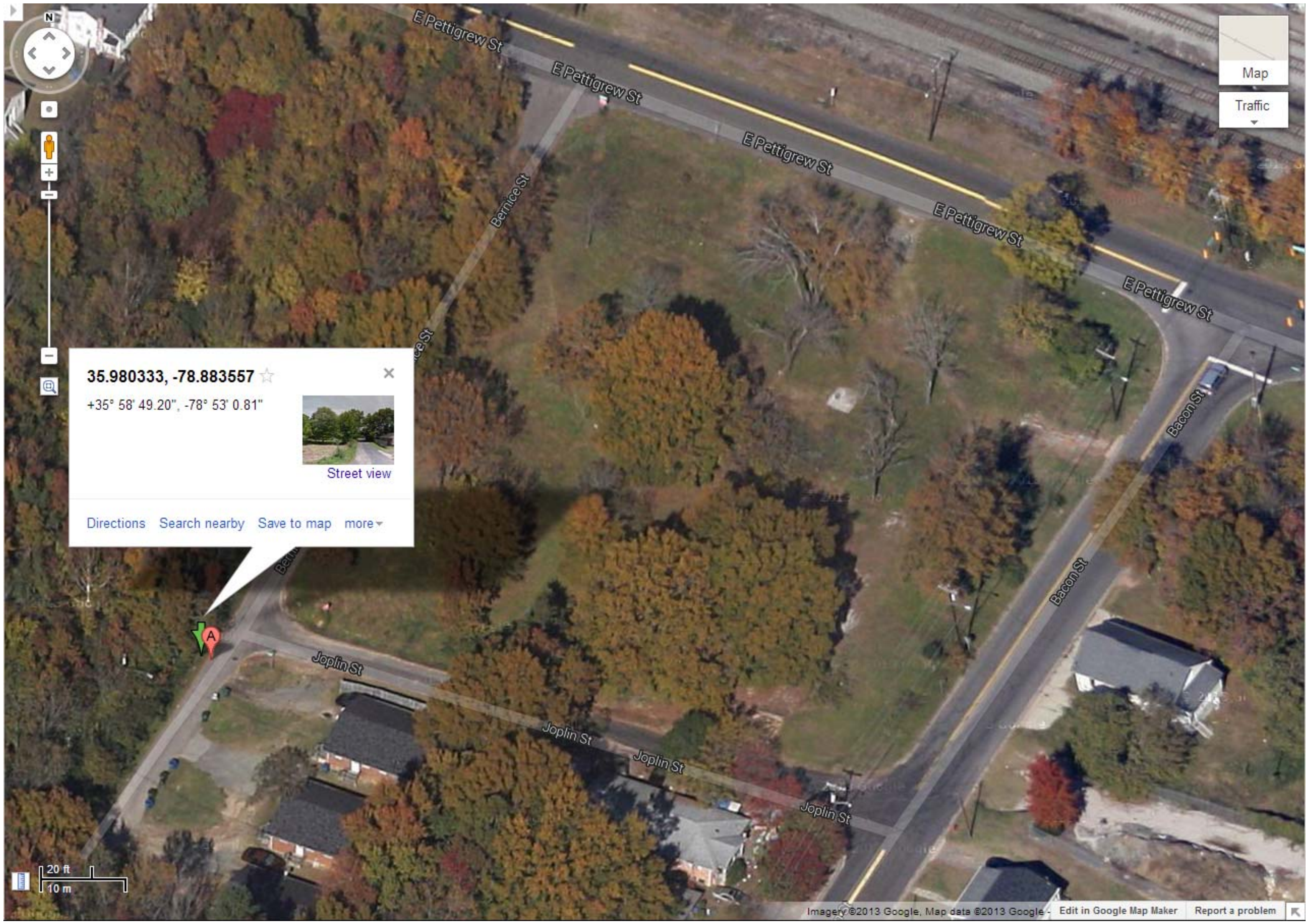
M16


35.993644, -78.901794
+35° 59' 37.12", -78° 54' 6.46"
Street view
Directions
Search nearby
Save to map
more
Map
Traffic
W Pettigrew St
Downtown Loop
Ramseur St
Blackwell St
Vivian Street
DPAC, Durham Performing Arts Center
Magistrates Office Criminal
S Mangum St
Imagery ©2013 Google, Map data ©2013 Google
Edit in Google Map Maker
Report a problem

M17


35.984503, -78.889176
+35° 59' 4.21", -78° 53' 21.03"
Street view
Directions
Search nearby
Save to map
more
Map
Traffic
S Alston Ave
E Pettigrew St
E Pettigrew St
E Pettigrew St
55
Imagery ©2013 Google, Map data ©2013 Google
Edit in Google Map Maker
Report a problem

M17A



E Pettigrew St
E Pettigrew St
E Pettigrew St
E Pettigrew St
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Bernice St
Bacon St
Bacon St
Joplin St
Joplin St
Joplin St
Joplin St
Map
Traffic
35.980333, -78.883557
+35° 58' 49.20", -78° 53' 0.81"
Street view
Directions
Search nearby
Save to map
more
20 ft
10 m
Imagery ©2013 Google, Map data ©2013 Google
Edit in Google Map Maker
Report a problem

Appendix B: Field Noise Measurement Data Form

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS			Project #:	31829240	Date:	11/11/2013	Page	of
Monitoring Location:			M1A - Branson St.			Analyst:	Andrew Bell - #2 Equipment		

Sound Level Meter		Field Calibration			Weather Data			
Model #:	820	Model #:	CAL200		Model #:	SM-28		
Serial #:	1414	Serial #:	3704		Serial #:	3386		
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**		Wind: **Steady**/Gusty/Calm			
Response: **Slow** / Fast / Impl		Pre-Test	114.1	dBA	Precipitation: Yes (explain) / **No**			
Windscreen : **Yes** / No (explain)		Post-Test	114.1	dBA	Avg Wind Speed/Direction:	2.2/NW		
Topo: Flat / **Hilly**		GPS Coordinates (at SLM location)#			Temp (°F):	36	RH (%):	82
Terrain: Hard/Soft/**Mixed**/Snow		+35° 54' 0.05", -79° 2' 57.04"			Bar Psr (Hg):	30.31	Cloud Cover (%):	0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			43.7	41.5	50.5	45.9	42.7	42.1	
1	6:05 AM	6:06 AM	42.2	41.2	43.9	42.9	42.0	41.2	Car doors
2	6:06 AM	6:07 AM	48.1	42.0	52.7	50.9	46.4	42.4	
3	6:07 AM	6:08 AM	45.2	44.0	46.4	46.2	45.2	44.2	
4	6:08 AM	6:09 AM	44.8	43.3	46.4	46.4	44.7	43.4	
5	6:09 AM	6:10 AM	44.5	43.4	46.2	45.7	44.5	43.4	
6	6:10 AM	6:11 AM	44.4	43.5	45.1	44.9	44.4	43.5	
7	6:11 AM	6:12 AM	44.3	43.6	45.2	44.9	44.1	43.6	
8	6:12 AM	6:13 AM	44.3	43.4	45.7	45.0	44.3	43.4	
9	6:13 AM	6:14 AM	44.9	44.0	46.1	45.7	44.8	44.2	
10	6:14 AM	6:15 AM	45.1	43.8	47.2	46.3	44.9	44.2	
11	6:15 AM	6:16 AM	44.6	43.6	45.8	45.4	44.5	43.6	
12	6:16 AM	6:17 AM	48.3	45.3	51.6	50.3	48.0	46.1	
13	6:17 AM	6:18 AM	44.7	43.4	46.6	45.7	44.6	44.0	
14	6:18 AM	6:19 AM	45.0	43.4	47.2	46.0	45.0	43.8	
15	6:19 AM	6:20 AM	45.1	43.9	46.7	45.9	45.0	44.2	
16	6:20 AM	6:21 AM	44.4	43.6	46.4	45.0	44.4	43.6	
17	6:21 AM	6:22 AM	45.1	43.9	49.1	45.9	44.8	44.1	
18	6:22 AM	6:23 AM	44.8	43.6	46.6	45.7	44.6	43.8	
19	6:23 AM	6:24 AM	49.4	44.3	59.1	52.5	45.7	44.4	Vehicle passing
20	6:24 AM	6:25 AM	45.8	44.2	48.1	46.9	45.6	44.4	
21			45.6	43.5	48.9	47.5	45.0	43.5	
22									
23									
24									
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26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date: 11/14/2013	Page of
Monitoring Location:	M17 - Alston Ave. & Pettigrew St.			Analyst:	Andrew Bell - #2 Equipment

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1414	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: **Steady**/Gusty/Calm	
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	113.9 dBA	Avg Wind Speed/Direction:	2/NNW
Topo: Flat / **Hilly**		GPS Coordinates (at SLM location)#		Temp (°F): 25	RH (%): 50
Terrain: Hard/Soft/**Mixed**/Snow		+35° 59' 4.21", -78° 53' 21.03"		Bar Psr (Hg): 30.47	Cloud Cover (%): 15

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			70.4	65.3	74.1	71.9	70.3	66.5	
1	8:13 AM	8:14 AM	71.1	62.2	75.8	72.9	70.8	67.4	
2	8:14 AM	8:15 AM	69.0	58.3	73.2	72.1	69.1	59.1	
3	8:15 AM	8:16 AM	70.9	57.1	75.3	73.8	71.3	59.8	
4	8:16 AM	8:17 AM	72.6	64.8	81.6	74.1	71.8	67.4	
5	8:17 AM	8:18 AM	69.8	62.8	73.6	71.5	69.7	66.8	
6	8:18 AM	8:19 AM	70.5	67.0	75.2	72.8	69.9	67.9	
7	8:19 AM	8:20 AM	71.7	57.5	77.1	74.9	70.9	62.3	
8	8:20 AM	8:21 AM	72.6	66.2	75.4	74.6	72.5	68.5	
9	8:21 AM	8:22 AM	73.8	67.1	77.7	76.2	72.9	70.6	
10	8:22 AM	8:23 AM	80.5	75.7	85.9	82.8	79.6	77.0	Train on southernmost track
11	8:23 AM	8:24 AM	77.6	65.2	82.8	81.1	76.5	69.3	Train on southernmost track
12	8:24 AM	8:25 AM	71.8	64.9	75.4	74.1	71.6	67.0	
13	8:25 AM	8:26 AM	73.4	59.4	82.2	76.0	72.0	65.0	
14	8:26 AM	8:27 AM	71.6	57.5	77.3	75.7	70.5	58.7	
15	8:27 AM	8:28 AM	72.2	59.4	79.8	75.6	71.2	61.9	
16			70.4	59.4	77.4	73.9	69.1	59.8	
17									
18									
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URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	Alston Ave. NB/SB			
Speed (**post**/obs)*	35			
Number of Lanes	2			
Width (**pave**/row)	24'			
1- or 2- way	2			
Grade	0			
Bus Stops	0			
Stoplights	0			
Motorcycles	0			
Automobiles	248			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	6			
Heavy Trucks	2			
Buses	9			
Count duration	10 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments: Multiple school buses passing by.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS			Project #:	31829240	Date:	11/14/2013	Page	of
Monitoring Location:	M17 - Alston Ave. & Pettigrew St.					Analyst:	Andrew Bell - #2 Equipment		

Sound Level Meter		Field Calibration			Weather Data			
Model #:	820	Model #:	CAL200		Model #:	SM-28		
Serial #:	1414	Serial #:	3704		Serial #:	3386		
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**		Wind: **Steady**/Gusty/Calm			
Response: **Slow** / Fast / Impl		Pre-Test	114.1	dBA	Precipitation: Yes (explain) / **No**			
Windscreen : **Yes** / No (explain)		Post-Test	113.9	dBA	Avg Wind Speed/Direction:	4/WSW		
Topo: Flat / **Hilly**		GPS Coordinates (at SLM location)#			Temp (°F):	50	RH (%):	34
Terrain: Hard/Soft/**Mixed**/Snow		+35° 59' 4.21", -78° 53' 21.03"			Bar Psr (Hg):	30.46	Cloud Cover (%):	0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			70.7	49.5	75.1	74.0	70.6	56.2	
1	11:50 AM	11:51 AM	70.1	50.7	79.0	72.9	69.4	52.2	
2	11:51 AM	11:52 AM	69.5	52.2	77.1	72.8	68.3	55.2	
3	11:52 AM	11:53 AM	73.0	60.0	80.9	77.0	70.5	63.1	
4	11:53 AM	11:54 AM	72.6	66.5	78.5	74.4	72.0	69.0	
5	11:54 AM	11:55 AM	70.4	60.1	76.2	73.9	69.2	63.7	
6	11:55 AM	11:56 AM	71.7	58.5	77.0	74.9	70.9	63.7	
7	11:56 AM	11:57 AM	71.1	59.5	75.5	73.8	70.9	61.9	
8	11:57 AM	11:58 AM	68.8	46.7	74.1	71.5	68.9	49.9	
9	11:58 AM	11:59 AM	69.7	48.6	73.6	72.4	70.0	54.9	
10	11:59 AM	12:00 PM	69.9	52.7	74.4	73.0	69.1	59.5	
11	12:06 PM	12:07 PM	69.4	49.7	74.2	73.1	68.5	52.1	
12	12:18 PM	12:19 PM	69.6	52.5	73.5	72.5	69.6	55.6	
13	12:19 PM	12:20 PM	73.9	52.3	84.7	77.5	70.1	55.0	Train on southernmost track
14	12:20 PM	12:21 PM	78.6	55.0	93.8	76.7	70.2	62.3	Train on southernmost track
15	12:21 PM	12:22 PM	68.1	54.5	74.0	70.9	67.7	59.0	
16	12:22 PM	12:23 PM	71.5	58.2	79.0	73.8	70.3	66.0	
17	12:23 PM	12:24 PM	70.6	50.7	74.5	73.0	70.9	55.9	
18	12:24 PM	12:25 PM	69.5	56.6	73.7	72.3	69.3	60.7	
19			68.7	49.5	74.6	73.3	61.2	50.3	
20									
21									
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25									
26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Alston Ave. NB/SB	
Speed (**post**/obs)*	35	
Number of Lanes	2	
Width (**pave**/row)	24'	
1- or 2- way	2	
Grade	0	
Bus Stops	0	
Stoplights	0	
Motorcycles	0	
Automobiles	186	
Medium Trucks	1	
Heavy Trucks	3	
Buses	1	
Count duration	10 min.	

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? **Yes**/No M17-1, M17-2, M17-3

Additional Notes/Comments: Battery change required during middle of measurement.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date:	11/14/2013	Page	of
Monitoring Location:	M17 - Alston Ave. & Pettigrew St.			Analyst:	Andrew Bell - #2 Equipment		

Sound Level Meter		Field Calibration			Weather Data			
Model #:	820	Model #:	CAL200		Model #:	SM-28		
Serial #:	1414	Serial #:	3704		Serial #:	3386		
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**		Wind: **Steady**/Gusty/Calm			
Response: **Slow** / Fast / Impl		Pre-Test	114.1	dBA	Precipitation: Yes (explain) / **No**			
Windscreen : **Yes** / No (explain)		Post-Test	113.9	dBA	Avg Wind Speed/Direction:	8/SW		
Topo: Flat / **Hilly**		GPS Coordinates (at SLM location)#			Temp (°F):	54	RH (%):	24
Terrain: Hard/Soft/**Mixed**/Snow		+35° 59' 4.21", -78° 53' 21.03"			Bar Psr (Hg):	30.37	Cloud Cover (%):	0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			66.9	64.7	68.5	68.1	66.9	65.3	
1	4:17 PM	4:18 PM	66.9	60.8	70.2	68.8	67.0	62.6	
2	4:18 PM	4:19 PM	68.7	63.7	75.5	72.4	66.5	65.1	School bus stopped close by.
3	4:19 PM	4:20 PM	69.0	56.5	74.8	72.9	67.0	57.2	
4	4:20 PM	4:21 PM	68.7	61.6	72.6	71.0	68.5	62.9	
5	4:21 PM	4:22 PM	68.6	57.6	72.8	70.9	68.2	62.2	
6	4:22 PM	4:23 PM	68.2	59.1	71.8	70.8	67.8	62.9	
7	4:23 PM	4:24 PM	70.7	60.5	81.9	72.4	67.8	61.1	
8	4:24 PM	4:25 PM	68.8	61.4	75.3	70.8	68.2	64.5	
9	4:25 PM	4:26 PM	68.8	62.2	75.0	70.6	68.1	66.2	
10	4:26 PM	4:27 PM	69.3	64.5	72.9	71.6	68.9	66.9	
11	4:27 PM	4:28 PM	69.9	56.1	73.4	72.7	69.7	62.4	
12	4:28 PM	4:29 PM	69.5	65.0	72.6	71.4	69.3	66.8	
13	4:29 PM	4:30 PM	70.0	51.7	77.6	72.5	69.4	53.8	
14	4:30 PM	4:31 PM	69.1	58.1	73.1	71.9	69.0	61.3	
15	4:31 PM	4:32 PM	71.9	63.5	82.6	75.0	68.7	65.3	
16			66.9	60.9	73.1	69.5	65.8	61.6	
17									
18									
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27									
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URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Alston Ave. NB/SB	
Speed (**post**/obs)*	35	
Number of Lanes	2	
Width (**pave**/row)	24'	
1- or 2- way	2	
Grade	0	
Bus Stops	0	
Stoplights	0	
Motorcycles	0	
Automobiles	275	
Medium Trucks	1	
Heavy Trucks	3	
Buses	4	
Count duration	10 min.	

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments: Traffic on Alston stopped due to queuing at nearby traffic lights at Main St. and NC 147 WB.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #: 31829240	Date: 11/14/2013	Page	of
Monitoring Location:	M17 - Alston Ave. & Pettigrew St.		Analyst:	Andrew Bell - #2 Equipment	

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1414	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: **Steady**/Gusty/Calm	
Response: **Slow** / Fast / Impl		Pre-Test	113.9 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	113.9 dBA	Avg Wind Speed/Direction:	6/S
Topo: Flat / **Hilly**		GPS Coordinates (at SLM location)#		Temp (°F): 38	RH (%): 50
Terrain: Hard/Soft/**Mixed**/Snow		+35° 59' 4.21", -78° 53' 21.03"		Bar Psr (Hg): 30.34	Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			60.6	51.5	69.3	66.8	54.0	52.2	
1	8:50 PM	8:51 PM	66.2	58.9	71.3	69.8	64.7	60.7	
2	8:51 PM	8:52 PM	64.3	55.8	69.0	68.1	61.8	57.2	
3	8:52 PM	8:53 PM	65.2	57.1	73.5	69.3	61.6	58.1	
4	8:53 PM	8:54 PM	70.9	55.4	81.4	75.1	65.7	58.4	
5	8:54 PM	8:55 PM	63.7	54.9	70.5	67.4	61.7	55.7	
6	8:55 PM	8:56 PM	66.1	56.1	70.8	69.6	64.4	58.9	
7	8:56 PM	8:57 PM	67.5	59.9	75.0	71.6	65.2	60.8	
8	8:57 PM	8:58 PM	68.9	59.2	75.5	73.3	67.4	60.1	
9	8:58 PM	8:59 PM	64.7	50.7	71.5	69.3	62.3	53.0	
10	8:59 PM	9:00 PM	61.5	49.1	69.0	66.3	56.7	49.7	
11	9:00 PM	9:01 PM	63.5	52.2	72.1	67.7	59.5	53.9	
12	9:01 PM	9:02 PM	65.5	53.2	73.9	69.5	61.0	54.4	
13	9:02 PM	9:03 PM	62.0	53.7	71.0	66.2	57.7	54.4	
14	9:03 PM	9:04 PM	67.2	58.1	73.4	70.2	66.0	59.8	
15	9:04 PM	9:05 PM	65.4	55.2	75.8	69.5	60.9	56.6	
16			65.3	52.8	73.3	68.7	63.3	54.8	
17									
18									
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25									
26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Alston Ave. NB/SB		compass	Site Diagram:
Speed (**post**/obs)*	35			
Number of Lanes	2			
Width (**pave**/row)	24'			
1- or 2- way	2			
Grade	0			
Bus Stops	0			
Stoplights	0			
Motorcycles	0			
Automobiles	186			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	1			
Heavy Trucks	2			
Buses	1			
Count duration	10 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date: 11/14/2013	Page of
Monitoring Location:	M16 - Mangum St. & Vivian St.			Analyst:	Andrew Bell - #2 Equipment

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1414	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: Steady/Gusty/**Calm**	
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	113.9 dBA	Avg Wind Speed/Direction:	0
Topo: **Flat** / Hilly		GPS Coordinates (at SLM location)#		Temp (°F): 25	RH (%): 60
Terrain: **Hard**/Soft/Mixed/Snow		+35° 59' 37.12", -78° 54' 6.46"		Bar Psr (Hg): 30.47	Cloud Cover (%): 20

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			63.9	55.4	70.6	69.2	58.8	55.4	
1	7:44 AM	7:45 AM	64.3	57.0	69.2	67.6	62.9	59.0	
2	7:45 AM	7:46 AM	59.1	57.0	68.0	61.3	57.8	57.1	
3	7:46 AM	7:47 AM	68.0	55.1	75.7	72.6	62.1	55.4	
4	7:47 AM	7:48 AM	67.7	55.7	77.1	71.9	62.2	58.2	
5	7:48 AM	7:49 AM	66.0	55.6	71.8	69.7	64.7	56.1	
6	7:49 AM	7:50 AM	64.5	56.7	71.1	68.6	61.7	57.7	
7	7:50 AM	7:51 AM	62.4	56.8	69.6	65.8	59.7	58.0	
8	7:51 AM	7:52 AM	66.9	58.7	71.4	70.5	65.5	59.1	
9	7:52 AM	7:53 AM	65.6	56.3	72.0	70.1	61.9	57.6	
10	7:53 AM	7:54 AM	67.2	55.1	75.6	70.8	60.7	55.4	
11	7:54 AM	7:55 AM	65.0	57.0	71.4	69.6	62.1	57.7	Car started/running 40' from meter
12	7:55 AM	7:56 AM	65.1	56.6	71.5	68.9	63.0	57.5	Car running 40' from meter
13	7:56 AM	7:57 AM	65.9	55.7	72.1	70.7	59.1	55.8	Car running 40' from meter
14	7:57 AM	7:58 AM	66.3	55.9	71.9	70.7	63.6	56.7	Car running 40' from meter
15	7:58 AM	7:59 AM	65.4	55.9	69.6	68.6	65.8	56.4	Car running 40' from meter
16	7:59 AM	8:00 AM	64.3	56.6	70.4	68.5	61.4	57.1	Car running 40' from meter
17	8:00 AM	8:01 AM	62.6	56.7	68.0	66.1	61.1	57.8	Car running 40' from meter
18			69.4	64.5	73.1	71.6	68.7	66.4	
19									
20									
21									
22									
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26									
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29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Mangum St. SB	Vivian St. EB
Speed (**post**/obs)*	25	25
Number of Lanes	3	2
Width (pave/**row**)	50'	22'
1- or 2- way	1	2
Grade	0	0
Bus Stops	0	0
Stoplights	0	0
Motorcycles	0	0
Automobiles	149	3
Medium Trucks	1	0
Heavy Trucks	1	0
Buses	1	0
Count duration	10 min.	10 min.

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments: Some noise generated from other nearby streets (Pettigrew St., Ramseur St.). Sound reflects off nearby buildings: Prison (9 floors), DPAC (5 floors).

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS		Project #:	31829240		Date:	11/14/2013	Page	of
Monitoring Location:		M16 - Mangum St. & Vivian St.				Analyst:	Andrew Bell - #2 Equipment		

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1414	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: **Steady**/Gusty/Calm	
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	113.9 dBA	Avg Wind Speed/Direction:	4/WSW
Topo: **Flat** / Hilly		GPS Coordinates (at SLM location)#		Temp (°F): 49	RH (%): 34
Terrain: **Hard**/Soft/Mixed/Snow		+35° 59' 37.12", -78° 54' 6.46"		Bar Psr (Hg): 30.46	Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			59.2	52.8	65.2	62.6	56.8	53.7	Train gates down on Mangum St. upstream.
1	11:20 AM	11:21 AM	59.2	51.7	66.7	63.5	55.2	52.4	Train gates down on Mangum St. upstream.
2	11:21 AM	11:22 AM	69.3	53.4	80.2	72.6	62.0	54.0	Train / gates down on Mangum St. upstream.
3	11:22 AM	11:23 AM	70.0	52.6	78.9	75.8	64.3	54.9	Train / gates down on Mangum St. upstream.
4	11:23 AM	11:24 AM	60.3	52.7	69.4	64.6	56.5	53.6	Train gates down on Mangum St. upstream.
5	11:24 AM	11:25 AM	61.3	51.3	70.0	66.9	54.6	51.6	Train gates down on Mangum St. upstream.
6	11:25 AM	11:26 AM	63.4	52.7	72.6	67.4	59.4	54.1	Traffic normal until end of session
7	11:26 AM	11:27 AM	63.0	52.3	68.1	67.1	62.1	52.9	
8	11:27 AM	11:28 AM	65.2	56.5	70.0	67.9	64.7	58.5	
9	11:28 AM	11:29 AM	67.5	52.9	78.9	71.3	60.5	53.6	
10	11:29 AM	11:30 AM	63.3	52.6	72.0	67.1	58.9	54.0	
11	11:30 AM	11:31 AM	65.6	54.6	71.9	69.6	62.9	56.4	
12	11:31 AM	11:32 AM	62.3	53.6	68.9	67.2	56.9	54.2	
13	11:32 AM	11:33 AM	65.7	55.1	73.4	69.0	64.0	58.0	
14	11:33 AM	11:34 AM	63.7	52.2	69.6	67.6	60.6	53.2	
15	11:34 AM	11:35 AM	67.9	55.9	75.5	71.4	66.5	57.6	
16	11:35 AM	11:36 AM	64.2	55.7	71.2	69.0	60.6	56.2	
17	11:36 AM	11:37 AM	61.7	52.9	68.7	65.9	60.1	53.8	
18	11:37 AM	11:38 AM	67.2	52.7	75.9	70.0	63.8	54.8	
19	11:38 AM	11:39 AM	68.0	52.9	75.9	71.9	65.1	54.8	
20	11:39 AM	11:40 AM	62.8	52.0	70.9	66.7	59.8	52.7	
21	11:40 AM	11:41 AM	58.7	51.6	65.4	63.3	56.0	52.3	
22			64.0	52.0	68.7	68.1	60.5	53.8	
23									
24									
25									
26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Mangum St. SB	Vivian St. EB
Speed (**post**/obs)*	25	25
Number of Lanes	3	2
Width (pave/**row**)	50'	22'
1- or 2- way	1	2
Grade	0	0
Bus Stops	0	0
Stoplights	0	0
Motorcycles	0	0
Automobiles	104	2
Medium Trucks	3	1
Heavy Trucks	1	2
Buses	2	0
Count duration	10 min.	10 min.

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? **Yes**/No M16-1, M16-2, M16-3

Additional Notes/Comments: Longer measurement taken due to train and gates down. Count was taken after traffic resumed normal operation. Sound reflects off nearby buildings: Prison (9 floors), DPAC (5 floors).

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date:	11/14/2013	Page	of
Monitoring Location:	M16 - Mangum St. & Vivian St.			Analyst:	Andrew Bell - #2 Equipment		

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1414	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: **Steady**/Gusty/Calm	
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	113.9 dBA	Avg Wind Speed/Direction:	8/SW
Topo: **Flat** / Hilly		GPS Coordinates (at SLM location)#		Temp (°F): 52	RH (%): 24
Terrain: **Hard**/Soft/Mixed/Snow		+35° 59' 37.12", -78° 54' 6.46"		Bar Psr (Hg): 30.37	Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			67.6	59.0	73.9	71.8	65.6	59.7	
1	4:44 PM	4:45 PM	65.2	58.4	70.8	69.2	62.7	59.4	
2	4:45 PM	4:46 PM	66.1	56.4	70.6	68.8	66.3	58.5	
3	4:46 PM	4:47 PM	66.0	56.1	71.2	69.4	63.9	57.9	
4	4:47 PM	4:48 PM	65.0	59.6	69.6	66.9	64.5	61.2	
5	4:48 PM	4:49 PM	66.1	56.6	71.6	69.3	65.9	58.7	
6	4:49 PM	4:50 PM	63.6	57.3	68.2	67.0	62.0	58.9	
7	4:50 PM	4:51 PM	63.0	53.9	69.4	66.6	61.7	55.5	
8	4:51 PM	4:52 PM	65.8	59.9	70.9	68.6	64.6	61.0	
9	4:52 PM	4:53 PM	65.4	57.4	70.0	68.2	64.5	59.8	
10	4:53 PM	4:54 PM	66.4	58.9	73.1	69.7	64.9	60.7	
11	4:54 PM	4:55 PM	65.5	57.8	70.7	68.6	64.7	60.4	
12	4:55 PM	4:56 PM	65.0	59.6	68.5	67.2	64.8	61.1	
13	4:56 PM	4:57 PM	67.1	59.2	77.7	70.5	63.6	60.9	
14	4:57 PM	4:58 PM	63.3	57.7	68.2	66.3	62.3	59.2	
15	4:58 PM	4:59 PM	63.5	54.8	68.4	66.1	63.2	57.3	
16	4:59 PM	5:00 PM	62.9	54.1	67.7	66.5	61.6	58.2	
17	5:00 PM	5:01 PM	64.5	54.1	68.1	67.0	64.6	58.4	
18	5:01 PM	5:02 PM	63.1	54.4	67.2	66.2	62.2	56.9	
19	5:02 PM	5:03 PM	62.7	54.0	68.3	66.4	61.0	55.7	
20	5:03 PM	5:04 PM	65.7	59.7	70.8	68.4	65.0	61.2	
21			67.2	59.3	73.5	70.2	65.8	62.2	
22									
23									
24									
25									
26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Mangum St. SB	Vivian St. EB
Speed (**post**/obs)*	25	25
Number of Lanes	3	2
Width (pave/**row**)	50'	22'
1- or 2- way	1	2
Grade	0	0
Bus Stops	0	0
Stoplights	0	0
Motorcycles	1	0
Automobiles	241	8
Medium Trucks	1	0
Heavy Trucks	1	0
Buses	2	0
Count duration	10 min.	10 min.

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments: WB Vivian St. closed due to upcoming play starting at 7:30. Approx. 8 vehicles diverted. Sound reflects off nearby buildings: Prison (9 floors), DPAC (5 floors).

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice FIELD NOISE MEASUREMENT DATA FORM

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date: 11/14/2013	Page of
Monitoring Location:	M16 - Mangum St. & Vivian St.			Analyst:	Andrew Bell - #2 Equipment

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1414	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: **Steady**/Gusty/Calm	
Response: **Slow** / Fast / Impl		Pre-Test	113.9 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	113.9 dBA	Avg Wind Speed/Direction:	6/S
Topo: **Flat** / Hilly		GPS Coordinates (at SLM location)#		Temp (°F): 40	RH (%): 50
Terrain: **Hard**/Soft/Mixed/Snow		+35° 59' 37.12", -78° 54' 6.46"		Bar Psr (Hg): 30.34	Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			62.7	52.3	66.9	65.9	62.3	55.1	
1	8:00 PM	8:01 PM	56.6	50.9	63.5	60.3	54.8	51.4	
2	8:01 PM	8:02 PM	62.6	51.9	67.9	66.7	59.1	52.5	
3	8:02 PM	8:03 PM	59.7	51.8	65.8	63.9	57.5	52.4	
4	8:03 PM	8:04 PM	59.9	52.2	66.6	64.2	56.9	52.8	
5	8:04 PM	8:05 PM	64.3	52.7	72.0	70.1	58.5	53.4	
6	8:05 PM	8:06 PM	59.4	52.6	66.5	64.1	55.4	53.1	
7	8:06 PM	8:07 PM	60.8	51.3	66.3	65.2	55.5	52.0	
8	8:07 PM	8:08 PM	59.2	52.8	64.8	61.9	57.9	53.9	
9	8:08 PM	8:09 PM	59.2	51.0	67.5	64.8	52.6	51.3	
10	8:09 PM	8:10 PM	58.5	51.5	65.7	63.1	54.5	52.1	
11	8:10 PM	8:11 PM	55.0	50.4	62.1	58.4	52.3	50.9	
12	8:11 PM	8:12 PM	60.7	51.2	68.9	64.6	56.0	51.6	
13	8:12 PM	8:13 PM	61.5	51.9	69.0	66.5	56.8	52.3	
14	8:13 PM	8:14 PM	60.1	51.1	66.9	64.9	53.0	51.4	
15	8:14 PM	8:15 PM	58.3	51.9	66.1	64.0	53.9	52.4	
16	8:15 PM	8:16 PM	56.6	51.2	62.0	59.9	54.9	51.8	
17	8:16 PM	8:17 PM	61.3	50.6	71.3	65.7	52.6	50.6	
18	8:17 PM	8:18 PM	63.2	51.8	68.2	66.7	61.7	55.5	
19	8:18 PM	8:19 PM	61.8	53.4	68.6	67.1	58.7	54.3	
20	8:19 PM	8:20 PM	60.3	51.2	66.6	64.8	56.4	51.6	
21			60.6	51.2	69.3	66.2	55.5	51.9	
22									
23									
24									
25									
26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Mangum St. SB	Vivian St. EB
Speed (**post**/obs)*	25	25
Number of Lanes	3	2
Width (pave/**row**)	50'	22'
1- or 2- way	1	2
Grade	0	0
Bus Stops	0	0
Stoplights	0	0
Motorcycles	0	0
Automobiles	66	4
Medium Trucks	0	0
Heavy Trucks	0	0
Buses	2	0
Count duration	10 min.	10 min.

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments: Sound reflects off nearby buildings: Prison (9 floors), DPAC (5 floors).

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice FIELD NOISE MEASUREMENT DATA FORM

Project Name: Triangle Transit DEIS Project #: 31829240 Date: 11/14/2013 Page of

Monitoring Location: Analyst: Andrew Bell - #2 Equipment

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1414	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: **Steady**/Gusty/Calm	
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	113.9 dBA	Avg Wind Speed/Direction:	1/NNW
Topo: **Flat** / Hilly		GPS Coordinates (at SLM location)#		Temp (°F): 25	RH (%): 81
Terrain: Hard/Soft/**Mixed**/Snow		+36° 0' 27.72", -78° 56' 1.90"		Bar Psr (Hg): 30.46	Cloud Cover (%): 16

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			62.7	62.5	62.9	62.9	62.5	62.5	
1	7:09 AM	7:10 AM	66.0	57.0	78.9	67.5	62.5	58.2	
2	7:10 AM	7:11 AM	67.0	58.1	79.1	68.9	63.6	59.2	
3	7:11 AM	7:12 AM	67.2	61.1	70.3	69.7	66.6	61.9	
4	7:12 AM	7:13 AM	70.0	60.8	80.4	73.0	65.6	62.8	
5	7:13 AM	7:14 AM	66.5	59.7	72.1	71.1	63.7	60.5	
6	7:14 AM	7:15 AM	66.3	57.0	75.2	70.1	63.3	57.8	
7	7:15 AM	7:16 AM	64.8	59.9	67.7	66.7	65.2	60.5	
8	7:16 AM	7:17 AM	68.4	56.4	76.5	73.1	65.4	58.9	
9	7:17 AM	7:18 AM	69.9	64.1	77.2	72.8	68.0	65.1	
10	7:18 AM	7:19 AM	65.2	58.7	69.0	68.1	64.8	60.3	
11	7:19 AM	7:20 AM	67.3	61.6	73.3	71.0	65.8	62.9	
12	7:20 AM	7:21 AM	67.4	57.4	76.0	72.6	62.4	58.8	
13	7:21 AM	7:22 AM	66.2	60.6	73.2	68.9	64.8	61.8	
14	7:22 AM	7:23 AM	65.9	58.4	70.1	69.3	65.1	61.2	
15	7:23 AM	7:24 AM	66.3	59.0	72.6	70.0	64.4	60.4	
16	7:24 AM	7:25 AM	67.2	56.6	76.9	71.6	62.4	58.9	
17	7:25 AM	7:26 AM	64.5	59.1	71.1	67.5	62.8	59.8	
18	7:26 AM	7:27 AM	65.7	59.9	69.9	68.2	65.2	61.7	
19	7:27 AM	7:28 AM	71.4	61.7	79.8	75.0	70.0	63.4	
20	7:28 AM	7:29 AM	66.7	59.9	70.8	69.8	65.8	61.2	
21			65.4	57.3	70.1	68.2	63.9	60.0	
22									
23									
24									
25									
26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Erwin Rd. EB/WB	Trent Rd. NB/SB	compass	Site Diagram:
Speed (**post**/obs)*	35	25		
Number of Lanes	5	4		
Width (pave/**row**)	60'	48'		
1- or 2- way	2	2		
Grade	0	0		
Bus Stops	2	2		
Stoplights	1	1		
Motorcycles	0	0		
Automobiles	125	141		See scan of field sheet, and map with aerial and monitor location
Medium Trucks	2	1		
Heavy Trucks	0	1		
Buses	2	4		
Count duration	10 min.	10 min.		

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments: Lots of pedestrians, vehicles still main source of noise.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name: Triangle Transit DEIS	Project #: 31829240	Date: 11/14/2013	Page of
Monitoring Location:		Analyst: Andrew Bell - #2 Equipment	

Sound Level Meter	Field Calibration	Weather Data
Model #: 820	Model #: CAL200	Model #: SM-28
Serial #: 1414	Serial #: 3704	Serial #: 3386
Weighting: **A** / C / Flat	Calibration Level (dBA): 94 / **114**	Wind: **Steady**/Gusty/Calm
Response: **Slow** / Fast / Impl	Pre-Test 114.1 dBA	Precipitation: Yes (explain) / **No**
Windscreen : **Yes** / No (explain)	Post-Test 113.9 dBA	Avg Wind Speed/Direction: 4/SW
Topo: **Flat** / Hilly	GPS Coordinates (at SLM location)#	Temp (°F): 43 RH (%): 45
Terrain: Hard/Soft/**Mixed**/Snow	+36° 0' 27.72", -78° 56' 1.90"	Bar Psr (Hg): 30.47 Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			65.3	64.8	67.8	66.0	65.4	64.8	
1	10:44 AM	10:45 AM	71.6	63.2	79.5	76.1	66.9	64.1	
2	10:45 AM	10:46 AM	67.2	58.0	75.2	71.8	64.2	59.5	
3	10:46 AM	10:47 AM	63.1	58.0	67.7	65.4	63.0	58.8	
4	10:47 AM	10:48 AM	67.0	59.2	75.4	70.1	63.5	60.2	
5	10:48 AM	10:49 AM	63.2	56.8	70.8	66.6	60.6	58.0	
6	10:49 AM	10:50 AM	65.3	57.7	71.3	70.3	63.2	59.2	
7	10:50 AM	10:51 AM	65.8	56.7	73.1	70.2	63.2	58.6	
8	10:51 AM	10:52 AM	63.5	57.5	68.6	65.6	63.1	58.0	
9	10:52 AM	10:53 AM	65.1	58.7	68.7	67.9	64.6	60.8	
10	10:53 AM	10:54 AM	65.0	58.7	69.3	68.2	64.0	60.7	
11	10:54 AM	10:55 AM	67.9	60.5	73.6	71.3	66.8	62.9	
12	10:55 AM	10:56 AM	64.0	58.6	68.6	67.3	62.4	60.0	
13	10:56 AM	10:57 AM	66.9	59.0	76.1	70.9	62.2	59.9	
14	10:57 AM	10:58 AM	64.0	57.6	71.5	67.4	63.0	58.5	
15	10:58 AM	10:59 AM	70.5	63.6	78.8	73.5	67.8	66.1	
16	10:59 AM	11:00 AM	66.5	54.5	73.0	69.9	64.5	58.1	
17	11:00 AM	11:01 AM	62.0	55.7	67.6	65.0	61.1	57.6	
18	11:01 AM	11:02 AM	63.2	57.7	69.7	65.5	62.7	59.1	
19	11:02 AM	11:03 AM	65.5	61.7	69.4	68.4	64.4	62.0	
20	11:03 AM	11:04 AM	72.7	61.6	83.9	77.2	66.9	63.2	
21			66.6	59.9	73.3	70.4	64.9	61.0	
22									
23									
24									
25									
26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Erwin Rd. EB/WB	Trent Rd. NB/SB
Speed (**post**/obs)*	35	25
Number of Lanes	5	4
Width (pave/**row**)	60'	48'
1- or 2- way	2	2
Grade	0	0
Bus Stops	2	2
Stoplights	1	1
Motorcycles	2	0
Automobiles	132	117
Medium Trucks	4	2
Heavy Trucks	2	1
Buses	1	2
Count duration	10 min.	10 min.

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? **Yes**/No M15-1, M15-2, M15-3

Additional Notes/Comments: Lots of pedestrians, some rustling leaves, vehicles still main source of noise.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name: Triangle Transit DEIS		Project #: 31829240	Date: 11/14/2013	Page	of
Monitoring Location:			Analyst: Andrew Bell - #2 Equipment		

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1414	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: **Steady**/Gusty/Calm	
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	113.9 dBA	Avg Wind Speed/Direction:	7/SW
Topo: **Flat** / Hilly		GPS Coordinates (at SLM location)#		Temp (°F): 50	RH (%): 24
Terrain: Hard/Soft/**Mixed**/Snow		+36° 0' 27.72", -78° 56' 1.90"		Bar Psr (Hg): 30.37	Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			66.9	57.7	73.8	70.6	64.7	60.9	
1	5:17 PM	5:18 PM	65.6	57.9	68.9	67.9	65.2	60.5	
2	5:18 PM	5:19 PM	65.2	57.6	72.2	66.8	64.8	60.5	
3	5:19 PM	5:20 PM	64.8	57.3	70.9	67.7	64.5	59.4	
4	5:20 PM	5:21 PM	67.6	59.6	72.1	70.2	68.0	61.1	
5	5:21 PM	5:22 PM	80.7	62.5	91.8	85.7	68.3	64.0	3 Car Horns on Trent near noise meter
6	5:22 PM	5:23 PM	69.8	62.7	80.6	72.0	65.1	63.4	
7	5:23 PM	5:24 PM	67.3	61.4	71.8	70.5	66.6	61.9	
8	5:24 PM	5:25 PM	63.5	59.0	69.3	65.0	63.2	60.3	
9	5:25 PM	5:26 PM	66.8	59.5	72.9	68.7	66.7	63.2	
10	5:26 PM	5:27 PM	64.7	58.6	70.4	68.5	62.7	60.1	
11	5:27 PM	5:28 PM	66.3	62.1	69.5	68.7	65.6	63.3	
12	5:28 PM	5:29 PM	64.4	56.5	68.6	67.5	64.2	56.7	
13	5:29 PM	5:30 PM	64.6	58.0	71.1	67.6	63.2	58.8	
14	5:30 PM	5:31 PM	63.4	58.0	68.1	66.7	62.5	58.9	
15	5:31 PM	5:32 PM	69.5	58.4	79.6	75.0	63.6	59.9	
16	5:32 PM	5:33 PM	65.0	60.5	68.6	67.1	64.6	60.9	
17	5:33 PM	5:34 PM	65.0	56.2	69.5	68.0	64.1	59.3	
18	5:34 PM	5:35 PM	66.3	57.6	72.8	70.8	63.6	59.0	Train in distance
19	5:35 PM	5:36 PM	64.7	56.8	69.8	67.7	64.0	58.7	
20			62.1	56.4	67.3	66.2	60.6	57.4	
21									
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27									
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29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Erwin Rd. EB/WB	Trent Rd. NB/SB
Speed (**post**/obs)*	35	25
Number of Lanes	5	4
Width (pave/**row**)	60'	48'
1- or 2- way	2	2
Grade	0	0
Bus Stops	2	2
Stoplights	1	1
Motorcycles	2	0
Automobiles	252	138
Medium Trucks	2	0
Heavy Trucks	1	0
Buses	4	3
Count duration	10 min.	10 min.

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS			Project #:	31829240	Date:	11/14/2013	Page	of
Monitoring Location:						Analyst:	Andrew Bell - #2 Equipment		

Sound Level Meter		Field Calibration			Weather Data			
Model #:	820	Model #:	CAL200		Model #:	SM-28		
Serial #:	1414	Serial #:	3704		Serial #:	3386		
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**		Wind: **Steady**/Gusty/Calm			
Response: **Slow** / Fast / Impl		Pre-Test	113.9	dBA	Precipitation: Yes (explain) / **No**			
Windscreen : **Yes** / No (explain)		Post-Test	113.9	dBA	Avg Wind Speed/Direction:	4/S		
Topo: **Flat** / Hilly		GPS Coordinates (at SLM location)#			Temp (°F):	36	RH (%):	50
Terrain: Hard/Soft/**Mixed**/Snow		+36° 0' 27.72", -78° 56' 1.90"			Bar Psr (Hg):	30.34	Cloud Cover (%):	0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			64.5	60.2	66.8	66.5	64.1	61.6	
1	9:13 PM	9:14 PM	66.2	56.2	73.6	70.8	62.0	57.5	
2	9:14 PM	9:15 PM	66.0	56.1	73.4	69.8	63.8	58.3	
3	9:15 PM	9:16 PM	65.7	55.3	72.4	70.8	62.9	57.1	
4	9:16 PM	9:17 PM	67.2	59.9	74.9	71.5	63.9	61.0	Train in distance
5	9:17 PM	9:18 PM	64.7	58.7	71.3	68.6	62.7	59.5	
6	9:18 PM	9:19 PM	65.0	54.8	70.9	68.6	63.0	55.9	
7	9:19 PM	9:20 PM	65.9	54.8	71.7	69.7	64.5	58.9	
8	9:20 PM	9:21 PM	63.9	53.7	72.5	66.9	61.4	56.2	
9	9:21 PM	9:22 PM	64.6	57.0	71.9	68.0	61.8	58.3	
10	9:22 PM	9:23 PM	65.1	51.9	72.1	69.1	63.1	53.3	
11	9:23 PM	9:24 PM	65.0	54.6	73.5	67.7	63.6	56.4	
12	9:24 PM	9:25 PM	67.0	53.3	73.1	71.4	64.0	54.7	
13	9:25 PM	9:26 PM	63.8	56.4	70.0	67.0	62.6	58.2	
14	9:26 PM	9:27 PM	64.8	56.8	71.1	67.8	64.0	59.3	
15	9:27 PM	9:28 PM	63.4	57.0	68.1	67.1	61.5	57.7	
16			63.0	55.4	68.9	66.7	61.1	57.0	
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URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Erwin Rd. EB/WB	Trent Rd. NB/SB
Speed (**post**/obs)*	35	25
Number of Lanes	5	4
Width (pave/**row**)	60'	48'
1- or 2- way	2	2
Grade	0	0
Bus Stops	2	2
Stoplights	1	1
Motorcycles	1	0
Automobiles	86	21
Medium Trucks	0	0
Heavy Trucks	0	0
Buses	1	1
Count duration	10 min.	10 min.

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date: 11/12/2013	Page	of
Monitoring Location:	M14C - Jewish Community Center			Analyst:	Andrew Bell - #2 Equipment	

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1414	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: **Steady**/Gusty/Calm	
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	114.1 dBA	Avg Wind Speed/Direction:	2/SSW
Topo: **Flat** / Hilly		GPS Coordinates (at SLM location)#		Temp (°F): 40	RH (%): 81
Terrain: Hard/Soft/**Mixed**/Snow		+35° 58' 43.88", -78° 57' 21.09"		Bar Psr (Hg): 30.06	Cloud Cover (%): 23

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			52.0	51.6	53.0	52.7	51.8	51.6	
1	8:10 AM	8:11 AM	51.8	50.0	54.0	53.4	51.5	50.3	
2	8:11 AM	8:12 AM	51.7	50.4	53.2	52.7	51.6	50.6	
3	8:12 AM	8:13 AM	53.3	51.2	55.9	54.9	52.8	51.4	
4	8:13 AM	8:14 AM	52.4	50.6	55.6	54.6	51.7	50.6	
5	8:14 AM	8:15 AM	52.8	50.2	57.4	54.9	51.7	50.3	
6	8:15 AM	8:16 AM	51.6	50.5	53.5	52.7	51.5	50.5	
7	8:16 AM	8:17 AM	53.3	50.0	62.1	56.7	50.9	50.2	
8	8:17 AM	8:18 AM	50.4	49.6	52.2	51.5	50.3	49.6	
9	8:18 AM	8:19 AM	50.6	49.5	51.9	51.5	50.5	49.6	
10	8:19 AM	8:20 AM	51.4	50.3	54.0	52.8	50.9	50.3	
11	8:20 AM	8:21 AM	49.5	49.0	50.5	50.0	49.5	49.1	
12	8:21 AM	8:22 AM	50.6	49.5	51.9	51.2	50.5	50.0	
13	8:22 AM	8:23 AM	50.3	49.5	52.1	51.1	50.4	49.5	
14	8:23 AM	8:24 AM	52.1	49.0	57.3	54.3	51.3	49.6	
15	8:24 AM	8:25 AM	49.9	48.8	50.9	50.7	49.8	49.1	
16			51.1	49.2	53.2	52.4	51.1	49.7	
17									
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URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Jewish Com. Ctr.		compass	Site Diagram:
Speed (post/**obs**)*	10			
Number of Lanes	2			
Width (**pave**/row)	24'			
1- or 2- way	2			
Grade	0			
Bus Stops	0			
Stoplights	0			
Motorcycles	0			
Automobiles	4			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	0			
Heavy Trucks	0			
Buses	0			
Count duration	15 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments: Birds chirping. US 15-501 can be heard in distance.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice FIELD NOISE MEASUREMENT DATA FORM

Project Name: Triangle Transit DEIS | Project #: 31829240 | Date: 11/12/2013 | Page of

Monitoring Location: M14C - Jewish Community Center | Analyst: Andrew Bell - #2 Equipment

Sound Level Meter	Field Calibration	Weather Data
Model #: 820	Model #: CAL200	Model #: SM-28
Serial #: 1414	Serial #: 3704	Serial #: 3386
Weighting: **A** / C / Flat	Calibration Level (dBA): 94 / **114**	Wind: **Steady**/Gusty/Calm
Response: **Slow** / Fast / Impl	Pre-Test 114.1 dBA	Precipitation: Yes (explain) / **No**
Windscreen : **Yes** / No (explain)	Post-Test 114.1 dBA	Avg Wind Speed/Direction: 6/N
Topo: **Flat** / Hilly	GPS Coordinates (at SLM location)#	Temp (°F): 55 RH (%): 55
Terrain: Hard/Soft/**Mixed**/Snow	+35° 58' 43.88", -78° 57' 21.09"	Bar Psr (Hg): 30.11 Cloud Cover (%): 81

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			52.1	51.0	54.6	53.1	52.1	51.2	
1	11:52 AM	11:53 AM	51.4	49.6	53.6	52.6	51.1	50.0	
2	11:53 AM	11:54 AM	52.3	48.8	58.1	55.8	50.6	49.3	
3	11:54 AM	11:55 AM	52.2	48.9	54.3	53.6	52.3	49.8	
4	11:55 AM	11:56 AM	51.4	49.4	53.5	52.6	51.5	49.8	
5	11:56 AM	11:57 AM	51.1	50.2	51.9	51.8	51.1	50.2	
6	11:57 AM	11:58 AM	49.1	47.7	50.8	50.5	48.8	47.7	
7	11:58 AM	11:59 AM	50.5	48.8	52.7	51.9	50.1	49.2	
8	11:59 AM	12:00 PM	54.3	49.7	62.2	57.4	52.5	51.0	
9	12:00 PM	12:01 PM	54.4	49.4	57.8	56.6	54.5	50.0	
10	12:01 PM	12:02 PM	50.6	48.5	52.9	52.0	50.4	48.9	
11	12:02 PM	12:03 PM	52.8	51.0	58.1	53.9	52.6	51.3	
12	12:03 PM	12:04 PM	52.8	50.1	55.3	54.0	52.8	51.0	
13	12:04 PM	12:05 PM	50.4	48.9	52.0	51.5	50.4	49.3	
14	12:05 PM	12:06 PM	51.1	48.5	53.3	52.8	51.2	48.5	
15	12:06 PM	12:07 PM	52.3	50.0	55.8	53.7	52.2	50.6	
16			50.5	50.1	51.0	50.9	50.5	50.1	
17									
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URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Jewish Com. Ctr.	
Speed (post/**obs**)*	10	
Number of Lanes	2	
Width (**pave**/row)	24'	
1- or 2- way	2	
Grade	0	
Bus Stops	0	
Stoplights	0	
Motorcycles	0	
Automobiles	0	
Medium Trucks	0	
Heavy Trucks	0	
Buses	0	
Count duration	15 min.	

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? **Yes**/No 14C-1, 14C-2, 14C-3

Additional Notes/Comments: Leaves rustling. US 15-501 can be heard in distance.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name: Triangle Transit DEIS Project #: 31829240 Date: 11/13/2013 Page ___ of ___

Monitoring Location: M14C - Jewish Community Center Analyst: Andrew Bell - #2 Equipment

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1414	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: Steady/**Gusty**/Calm	Max 9 mph
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	113.9 dBA	Avg Wind Speed/Direction:	6/NNW
Topo: **Flat** / Hilly		GPS Coordinates (at SLM location)#		Temp (°F): 43	RH (%): 36
Terrain: Hard/Soft/**Mixed**/Snow		+35° 58' 43.88", -78° 57' 21.09"		Bar Psr (Hg): 30.47	Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			52.8	52.6	53.2	53.2	52.6	52.6	
1	4:12 PM	4:13 PM	51.9	49.4	56.7	53.6	51.3	50.0	
2	4:13 PM	4:14 PM	48.5	45.7	51.5	50.7	48.2	46.0	
3	4:14 PM	4:15 PM	46.6	45.7	48.4	47.6	46.6	46.0	
4	4:15 PM	4:16 PM	48.2	46.4	50.1	49.3	47.9	46.6	
5	4:16 PM	4:17 PM	48.6	45.7	51.6	50.6	48.0	46.2	
6	4:17 PM	4:18 PM	48.6	46.5	50.9	50.0	48.3	46.9	
7	4:18 PM	4:19 PM	47.4	43.2	51.6	49.7	47.3	43.4	
8	4:19 PM	4:20 PM	45.8	44.6	49.7	46.2	45.5	44.7	
9	4:20 PM	4:21 PM	47.5	45.1	50.9	49.6	47.0	45.4	Talking to pedestrian approx. 30' from monitor.
10	4:21 PM	4:22 PM	47.0	45.7	49.4	48.3	46.8	46.0	Talking to pedestrian approx. 30' from monitor.
11	4:22 PM	4:23 PM	47.0	45.7	48.8	47.9	47.0	45.9	Talking to pedestrian approx. 30' from monitor.
12	4:23 PM	4:24 PM	50.4	45.4	54.5	52.7	49.8	46.1	Car starting/leaving parking lot
13	4:24 PM	4:25 PM	48.6	45.8	54.3	50.9	47.5	46.2	Truck downshifting on US 15-501
14	4:25 PM	4:26 PM	46.2	45.3	47.2	46.9	46.3	45.3	
15	4:26 PM	4:27 PM	46.7	45.2	51.2	47.8	46.4	45.3	Slamming garage door at Pepsi building to west
16			46.8	46.3	48.4	47.9	46.7	46.3	
17									
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URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Jewish Com. Ctr.	
Speed (post/**obs**)*	10	
Number of Lanes	2	
Width (**pave**/row)	24'	
1- or 2- way	2	
Grade	0	
Bus Stops	0	
Stoplights	0	
Motorcycles	0	
Automobiles	1	
Medium Trucks	0	
Heavy Trucks	0	
Buses	0	
Count duration	15 min.	

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments: Mower in far distance. Leaves rustling. US 15-501 can be heard in distance.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice FIELD NOISE MEASUREMENT DATA FORM

Project Name: Triangle Transit DEIS | Project #: 31829240 | Date: 11/13/2013 | Page ___ of ___

Monitoring Location: M14C - Jewish Community Center | Analyst: Andrew Bell - #2 Equipment

Sound Level Meter		Field Calibration			Weather Data	
Model #:	820	Model #:	CAL200		Model #:	SM-28
Serial #:	1414	Serial #:	3704		Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**		Wind: Steady/Gusty/**Calm**	
Response: **Slow** / Fast / Impl		Pre-Test	114.1	dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	113.9	dBA	Avg Wind Speed/Direction:	0
Topo: **Flat** / Hilly		GPS Coordinates (at SLM location)#			Temp (°F): 29	RH (%): 62
Terrain: Hard/Soft/**Mixed**/Snow		+35° 58' 43.88", -78° 57' 21.09"			Bar Psr (Hg): 30.50	Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			49.0	47.9	49.9	49.8	49.0	48.2	
1	8:00 PM	8:01 PM	49.4	47.2	51.8	50.5	49.4	47.7	
2	8:01 PM	8:02 PM	50.0	48.0	51.8	51.6	50.1	48.3	
3	8:02 PM	8:03 PM	48.5	46.8	50.1	49.4	48.5	47.4	
4	8:03 PM	8:04 PM	48.0	46.5	49.2	48.8	48.0	47.0	
5	8:04 PM	8:05 PM	48.5	47.3	49.9	49.6	48.5	47.4	
6	8:05 PM	8:06 PM	48.8	47.6	50.3	49.8	48.7	48.0	
7	8:06 PM	8:07 PM	49.5	48.5	51.4	50.4	49.4	48.5	
8	8:07 PM	8:08 PM	49.8	49.0	50.6	50.6	49.7	49.1	
9	8:08 PM	8:09 PM	49.5	48.2	51.2	50.4	49.3	48.3	
10	8:09 PM	8:10 PM	48.4	47.6	49.8	49.0	48.5	47.7	
11	8:10 PM	8:11 PM	49.1	47.9	51.1	49.9	49.1	48.2	
12	8:11 PM	8:12 PM	48.4	47.0	50.5	49.4	48.4	47.3	
13	8:12 PM	8:13 PM	49.0	47.9	50.5	49.9	48.8	48.1	
14	8:13 PM	8:14 PM	48.3	47.4	49.6	48.9	48.4	47.4	
15	8:14 PM	8:15 PM	48.7	47.6	50.6	49.8	48.6	47.6	
16			47.9	46.8	49.3	48.8	47.8	47.1	
17									
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URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Jewish Com. Ctr.	
Speed (post/**obs**)*	10	
Number of Lanes	2	
Width (**pave**/row)	24'	
1- or 2- way	2	
Grade	0	
Bus Stops	0	
Stoplights	0	
Motorcycles	0	
Automobiles	0	
Medium Trucks	0	
Heavy Trucks	0	
Buses	0	
Count duration	15 min.	

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments: Very few vehicles parked near monitor / no significant noise created by Community Center.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date:	11/12/2013	Page	of
Monitoring Location:	M14B - Duke Golf Club / Al Buehler Trail			Analyst:	Andrew Bell - #2 Equipment		

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1414	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: **Steady**/Gusty/Calm	
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	114.1 dBA	Avg Wind Speed/Direction:	2/WSW
Topo: Flat / **Hilly**		GPS Coordinates (at SLM location)#		Temp (°F): 41	RH (%): 83
Terrain: Hard/**Soft**/Mixed/Snow		+35° 59' 6.55", -78° 57' 25.46"		Bar Psr (Hg): 30.06	Cloud Cover (%): 75

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			57.1	56.4	57.3	57.3	57.3	57.0	
1	8:38 AM	8:39 AM	58.1	54.8	64.0	60.5	57.1	55.3	
2	8:39 AM	8:40 AM	59.8	56.2	65.8	61.5	59.0	57.2	
3	8:40 AM	8:41 AM	58.6	55.9	62.6	61.0	58.0	56.4	
4	8:41 AM	8:42 AM	58.9	55.4	63.4	62.2	57.3	55.6	
5	8:42 AM	8:43 AM	58.9	55.9	61.9	60.3	58.9	56.7	
6	8:43 AM	8:44 AM	56.8	53.9	59.8	58.5	56.6	54.8	
7	8:44 AM	8:45 AM	58.8	56.3	62.1	60.0	58.7	57.1	
8	8:45 AM	8:46 AM	56.5	51.9	59.2	58.9	55.8	53.6	
9	8:46 AM	8:47 AM	57.1	54.7	58.9	58.2	57.1	56.0	
10	8:47 AM	8:48 AM	57.7	53.6	61.2	59.5	57.6	54.4	
11	8:48 AM	8:49 AM	57.4	54.6	62.0	60.1	56.5	55.1	
12	8:49 AM	8:50 AM	62.0	56.1	70.2	65.6	59.3	56.6	Truck with air brakes on US 15-501
13	8:50 AM	8:51 AM	56.6	53.6	61.6	58.0	56.0	54.3	
14	8:51 AM	8:52 AM	58.2	56.0	61.4	60.0	57.7	56.4	
15	8:52 AM	8:53 AM	58.1	56.5	59.7	59.0	58.2	57.1	Car horn on US 15-501
16			58.8	54.4	63.6	61.9	57.9	56.0	
17									
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URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir				
Speed (post/obs)*				
Number of Lanes				
Width (pave/row)				
1- or 2- way				
Grade				
Bus Stops				
Stoplights				
Motorcycles				
Automobiles				See scan of field sheet, and map with aerial and monitor location
Medium Trucks				
Heavy Trucks				
Buses				
Count duration				

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments: US 15-501 is main source of background noise. Occasional joggers/walkers on trail. No golfe
Some birds chirping.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date:	11/15/2013	Page	of
Monitoring Location:	M14B - Duke Golf Club / Al Buehler Trail			Analyst:	John Burris - #2 Equipment		

Sound Level Meter		Field Calibration			Weather Data			
Model #:	820	Model #:	CAL200		Model #:	SM-28		
Serial #:	1414	Serial #:	3704		Serial #:	3386		
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**		Wind: Steady/Gusty/**Calm**			
Response: **Slow** / Fast / Impl		Pre-Test	113.9	dBA	Precipitation: Yes (explain) / **No**			
Windscreen : **Yes** / No (explain)		Post-Test	113.9	dBA	Avg Wind Speed/Direction:		0	
Topo:	Flat / **Hilly**	GPS Coordinates (at SLM location)#			Temp (°F):	48	RH (%):	73
Terrain:	Hard/**Soft**/Mixed/Snow	+35° 59' 6.55", -78° 57' 25.46"			Bar Psr (Hg):	30.34	Cloud Cover (%):	80

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			59.2	56.8	62.2	61.6	57.8	57	
1	11:22 AM	11:23 AM	59.2	55.5	62.8	61.3	58.8	56.6	
2	11:23 AM	11:24 AM	58.5	55.2	61.3	60.4	58.1	56.2	
3	11:24 AM	11:25 AM	59.2	56.1	62	60.9	59.1	56.6	
4	11:25 AM	11:26 AM	56.9	53.6	60.3	58.7	56.7	54.5	
5	11:26 AM	11:27 AM	57.2	51.6	61.3	59.7	56.9	53	
6	11:27 AM	11:28 AM	59.1	56.5	63.5	60.9	58.4	56.8	
7	11:28 AM	11:29 AM	60.1	54.5	68.4	62.7	58.2	55.4	
8	11:29 AM	11:30 AM	58.9	55.4	63.2	61	58.2	56.2	
9	11:30 AM	11:31 AM	58.2	54.8	60.5	60.3	57.8	56.3	
10	11:31 AM	11:32 AM	59.1	56	64.1	61.2	58.5	56.6	
11	11:32 AM	11:33 AM	59.2	57.4	61.9	60.4	59.2	58.1	
12	11:33 AM	11:34 AM	60.1	56.3	67	63.3	58.4	56.9	
13	11:34 AM	11:35 AM	60.5	57.1	65.8	62.3	59.8	58.2	
14	11:35 AM	11:36 AM	58.7	55.5	60.9	60.5	58.6	56.2	
15	11:36 AM	11:37 AM	59.5	55	63.5	61.9	59.4	56.2	
16			58.1	55.1	60.7	59.6	58.3	55.6	
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URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir				
Speed (post/obs)*				
Number of Lanes				
Width (pave/row)				
1- or 2- way				
Grade				
Bus Stops				
Stoplights				
Motorcycles				
Automobiles				See scan of field sheet, and map with aerial and monitor location
Medium Trucks				
Heavy Trucks				
Buses				
Count duration				

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/No

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date: 11/13/2013	Page of
Monitoring Location:	M14B - Duke Golf Club / Al Buehler Trail			Analyst:	Andrew Bell - #2 Equipment

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1414	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: Steady/**Gusty**/Calm	Max 9 mph
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	113.9 dBA	Avg Wind Speed/Direction:	6/NNW
Topo:	Flat / **Hilly**	GPS Coordinates (at SLM location)#		Temp (°F): 44	RH (%): 35
Terrain:	Hard/**Soft**/Mixed/Snow	+35° 59' 6.55", -78° 57' 25.46"		Bar Psr (Hg): 30.47	Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			58.3	54.5	60.7	60.6	57.6	55.4	
1	3:43 PM	3:44 PM	56.7	52.1	60.0	59.2	56.0	53.6	
2	3:44 PM	3:45 PM	55.9	52.3	60.9	57.9	55.2	52.7	
3	3:45 PM	3:46 PM	58.1	55.7	61.6	59.6	58.1	56.2	
4	3:46 PM	3:47 PM	55.7	51.1	57.0	56.8	56.1	52.7	
5	3:47 PM	3:48 PM	56.4	52.6	59.0	58.6	55.7	53.5	
6	3:48 PM	3:49 PM	56.5	52.9	59.2	58.0	56.5	53.7	
7	3:49 PM	3:50 PM	55.6	52.8	57.6	56.9	56.0	53.5	
8	3:50 PM	3:51 PM	57.8	56.4	61.1	59.2	57.4	56.4	
9	3:51 PM	3:52 PM	55.4	50.2	59.1	58.2	54.9	51.0	
10	3:52 PM	3:53 PM	56.2	54.1	58.8	57.7	55.9	54.6	
11	3:53 PM	3:54 PM	58.5	54.3	63.1	61.1	57.8	55.5	
12	3:54 PM	3:55 PM	54.5	50.6	58.0	56.9	54.2	51.1	
13	3:55 PM	3:56 PM	56.9	54.8	58.9	58.0	56.8	55.5	
14	3:56 PM	3:57 PM	56.4	53.1	59.4	58.0	55.9	54.3	
15	3:57 PM	3:58 PM	57.6	52.6	63.5	60.4	56.5	54.0	
16			56.7	55.6	60.5	57.7	56.6	55.7	
17									
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29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir			compass	Site Diagram:
Speed (post/obs)*				
Number of Lanes				
Width (pave/row)				
1- or 2- way				
Grade				
Bus Stops				
Stoplights				
Motorcycles				
Automobiles				See scan of field sheet, and map with aerial and monitor location
Medium Trucks				
Heavy Trucks				
Buses				
Count duration				

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? **Yes**/No M14B-1, M14B-2, M14B-3

Additional Notes/Comments: US 15-501 is main source of background noise. Occasional joggers/walkers on trail. No golfe

Some birds chirping.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date: 11/12/2013	Page	of
Monitoring Location:	M14A - Vacant School Building			Analyst:	Andrew Bell - #2 Equipment	

Sound Level Meter		Field Calibration		Weather Data			
Model #:	820	Model #:	CAL200	Model #:	SM-28		
Serial #:	1414	Serial #:	3704	Serial #:	3386		
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: **Steady**/Gusty/Calm			
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**			
Windscreen : **Yes** / No (explain)		Post-Test	114.1 dBA	Avg Wind Speed/Direction:	2/WSW		
Topo:	Flat / **Hilly**	GPS Coordinates (at SLM location)#		Temp (°F):	39	RH (%):	81
Terrain:	Hard/Soft/**Mixed**/Snow	+35° 58' 53.37", -78° 57' 20.55"		Bar Psr (Hg):	30.06	Cloud Cover (%):	23

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			57.8	56.4	61.1	59.0	57.5	56.4	
1	7:43 AM	7:44 AM	56.0	55.2	57.4	56.8	55.9	55.2	
2	7:44 AM	7:45 AM	57.3	55.6	58.6	58.0	57.3	56.2	
3	7:45 AM	7:46 AM	56.9	55.2	58.1	57.8	56.7	55.7	
4	7:46 AM	7:47 AM	56.8	55.3	58.0	57.7	56.7	55.7	
5	7:47 AM	7:48 AM	58.5	56.3	65.1	61.0	57.5	56.3	
6	7:48 AM	7:49 AM	57.1	56.3	57.9	57.9	57.3	56.3	
7	7:49 AM	7:50 AM	57.0	55.4	59.8	58.4	56.7	55.8	
8	7:50 AM	7:51 AM	57.5	55.5	59.4	59.0	57.3	55.8	
9	7:51 AM	7:52 AM	56.5	55.5	57.5	57.5	56.5	55.7	
10	7:52 AM	7:53 AM	57.4	55.8	58.4	58.3	57.3	56.2	
11	7:53 AM	7:54 AM	58.3	56.9	60.4	59.9	58.0	57.2	
12	7:54 AM	7:55 AM	56.9	55.5	58.6	57.9	56.8	55.5	
13	7:55 AM	7:56 AM	57.1	55.9	58.2	57.9	57.1	56.2	
14	7:56 AM	7:57 AM	57.7	56.9	59.0	58.5	57.6	57.1	
15	7:57 AM	7:58 AM	57.4	55.6	58.7	58.2	57.3	56.2	
16	7:58 AM	7:59 AM	57.5	55.5	61.8	58.8	57.0	56.0	
17	7:59 AM	8:00 AM	57.8	56.0	59.7	59.1	57.6	56.6	
18	8:00 AM	8:01 AM	56.3	54.8	59.4	57.0	56.1	55.2	
19	8:01 AM	8:02 AM	57.3	55.8	58.4	58.3	57.3	56.1	
20	8:02 AM	8:03 AM	56.7	55.8	57.8	57.5	56.6	56.1	
21			56.1	54.9	58.3	56.9	56.0	55.1	
22									
23									
24									
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26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	School Parking Lot			
Speed (post/**obs**)*	5			
Number of Lanes	-			
Width (pave/row)	-			
1- or 2- way	-			
Grade	-4% to road			
Bus Stops	0			
Stoplights	0			
Motorcycles	0			
Automobiles	1			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	0			
Heavy Trucks	0			
Buses	0			
Count duration	20 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments: Birds chirping. School is for sale. Vacant. US 15-501 is audible in distance.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #: 31829240	Date: 11/15/2013	Page	of
Monitoring Location:	M14A - Vacant School Building		Analyst:	John Burris - #2 Equipment	

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1414	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: Steady/Gusty/**Calm**	
Response: **Slow** / Fast / Impl		Pre-Test	113.9 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	113.9 dBA	Avg Wind Speed/Direction:	0
Topo: Flat / **Hilly**		GPS Coordinates (at SLM location)#		Temp (°F): 44	RH (%): 73
Terrain: Hard/Soft/**Mixed**/Snow		+35° 58' 53.37", -78° 57' 20.55"		Bar Psr (Hg): 30.35	Cloud Cover (%): 75

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			54.0	50.0	57.5	56.0	54.1	50.5	
1	10:51 AM	10:52 AM	52.1	49.3	55.0	54.2	51.5	50.1	
2	10:52 AM	10:53 AM	52.4	48.5	56.0	55.4	51.6	48.8	
3	10:53 AM	10:54 AM	52.8	48.8	55.6	55.2	52.3	50.3	
4	10:54 AM	10:55 AM	52.2	49.6	54.6	54.0	51.9	50.3	
5	10:55 AM	10:56 AM	51.3	49.4	52.6	52.1	51.4	50.1	
6	10:56 AM	10:57 AM	51.6	49.5	53.4	52.7	51.5	50.5	
7	10:57 AM	10:58 AM	51.1	48.7	55.1	52.8	50.6	49.2	
8	10:58 AM	10:59 AM	51.5	49.2	55.4	54.1	50.6	49.5	
9	10:59 AM	11:00 AM	49.7	46.3	52.2	51.7	49.4	46.8	
10	11:00 AM	11:01 AM	52.1	48.6	55.1	54.4	51.4	49.5	
11	11:01 AM	11:02 AM	49.1	46.8	51.7	50.7	49.0	47.1	
12	11:02 AM	11:03 AM	52.0	49.0	55.8	55.2	50.9	49.3	
13	11:03 AM	11:04 AM	52.3	49.2	55.0	53.9	52.3	49.7	
14	11:04 AM	11:05 AM	49.8	47.2	51.9	51.5	49.6	47.7	
15	11:05 AM	11:06 AM	50.9	47.8	52.8	52.5	51.1	48.3	
16	11:06 AM	11:07 AM	50.3	47.2	53.9	52.3	49.9	47.6	
17	11:07 AM	11:08 AM	51.2	48.7	54.6	53.7	50.5	49.2	
18	11:08 AM	11:09 AM	51.1	49.2	53.7	53.0	50.7	49.4	
19	11:09 AM	11:10 AM	51.6	48.3	54.3	53.1	51.6	48.6	
20	11:10 AM	11:11 AM	48.7	46.1	51.4	51.0	48.0	46.5	
21			49.1	46.7	51.1	50.7	48.8	47.0	
22									
23									
24									
25									
26									
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URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	School Parking Lot		compass
Speed (post/**obs**)*	5		
Number of Lanes	-		
Width (pave/row)	-		
1- or 2- way	-		
Grade	-4% to road		
Bus Stops	0		
Stoplights	0		
Motorcycles	0		
Automobiles	0		
Medium Trucks	0		
Heavy Trucks	0		
Buses	0		
Count duration	20 min.		

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/No

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name: Triangle Transit DEIS		Project #: 31829240		Date: 11/13/2013	Page of
Monitoring Location: M14A - Vacant School Building				Analyst: Andrew Bell - #2 Equipment	

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1414	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: **Steady**/Gusty/Calm	
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	113.9 dBA	Avg Wind Speed/Direction:	6/NNW
Topo: Flat / **Hilly**		GPS Coordinates (at SLM location)#		Temp (°F): 43	RH (%): 36
Terrain: Hard/Soft/**Mixed**/Snow		+35° 58' 53.37", -78° 57' 20.55"		Bar Psr (Hg): 30.47	Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			53.3	51.6	55.0	54.2	53.4	52.3	
1	4:34 PM	4:35 PM	53.4	51.8	55.9	55.0	53.0	52.2	
2	4:35 PM	4:36 PM	54.3	52.3	56.0	55.6	54.2	53.0	
3	4:36 PM	4:37 PM	53.7	51.4	55.8	55.2	53.6	51.8	
4	4:37 PM	4:38 PM	53.5	50.4	55.6	55.5	53.1	51.2	
5	4:38 PM	4:39 PM	53.4	50.8	55.6	54.7	53.3	51.7	
6	4:39 PM	4:40 PM	55.1	53.1	57.4	56.0	55.2	54.0	
7	4:40 PM	4:41 PM	54.4	53.2	56.5	55.6	54.1	53.2	
8	4:41 PM	4:42 PM	54.4	51.9	57.7	55.6	54.2	52.6	
9	4:42 PM	4:43 PM	54.4	53.0	56.5	55.7	54.2	53.2	
10	4:43 PM	4:44 PM	51.9	49.0	54.8	53.8	51.4	49.6	
11	4:44 PM	4:45 PM	54.1	51.7	55.8	55.1	54.1	52.5	
12	4:45 PM	4:46 PM	53.2	50.1	55.2	54.5	53.3	51.2	
13	4:46 PM	4:47 PM	56.6	53.3	62.4	59.0	55.7	54.0	
14	4:47 PM	4:48 PM	55.0	53.7	57.4	56.3	54.8	54.1	
15	4:48 PM	4:49 PM	55.0	52.7	58.3	57.4	54.1	53.1	
16	4:49 PM	4:50 PM	54.2	52.3	55.7	55.1	54.2	53.1	
17	4:50 PM	4:51 PM	53.5	51.4	55.4	54.9	53.4	51.8	
18	4:51 PM	4:52 PM	54.3	52.0	56.4	55.8	54.0	52.6	
19	4:52 PM	4:53 PM	54.0	52.2	56.3	55.7	53.6	52.4	
20	4:53 PM	4:54 PM	55.1	52.1	59.0	58.0	54.3	52.6	
21			54.3	50.8	57.0	56.0	54.2	51.6	
22									
23									
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URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	School Parking Lot		compass
Speed (post/**obs**)*	5		
Number of Lanes	-		
Width (pave/row)	-		
1- or 2- way	-		
Grade	-4% to road		
Bus Stops	0		
Stoplights	0		
Motorcycles	0		
Automobiles	1		
Medium Trucks	0		
Heavy Trucks	0		
Buses	0		
Count duration	20 min.		

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? **Yes**/No M14A-1, M14A-2, M14A-3

Additional Notes/Comments: School is for sale. Vacant. US 15-501 is audible in distance.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name: Triangle Transit DEIS	Project #: 31829240	Date: 11/13/2013	Page of
Monitoring Location: M14A - Vacant School Building		Analyst: Andrew Bell - #2 Equipment	

Sound Level Meter	Field Calibration	Weather Data
Model #: 820	Model #: CAL200	Model #: SM-28
Serial #: 1414	Serial #: 3704	Serial #: 3386
Weighting: **A** / C / Flat	Calibration Level (dBA): 94 / **114**	Wind: Steady/Gusty/**Calm**
Response: **Slow** / Fast / Impl	Pre-Test 114.1 dBA	Precipitation: Yes (explain) / **No**
Windscreen : **Yes** / No (explain)	Post-Test 113.9 dBA	Avg Wind Speed/Direction: 0
Topo: Flat / **Hilly**	GPS Coordinates (at SLM location)#	Temp (°F): 29 RH (%): 62
Terrain: Hard/Soft/**Mixed**/Snow	+35° 58' 53.37", -78° 57' 20.55"	Bar Psr (Hg): 30.50 Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			52.3	50.7	56.8	52.9	52.3	51.2	
1	8:23 PM	8:24 PM	49.8	48.7	52.0	50.7	49.6	48.9	
2	8:24 PM	8:25 PM	51.4	49.1	53.4	52.7	51.2	49.7	
3	8:25 PM	8:26 PM	51.0	49.6	53.3	52.9	50.6	49.6	
4	8:26 PM	8:27 PM	51.1	49.3	53.2	52.7	50.6	49.3	
5	8:27 PM	8:28 PM	51.8	51.1	52.9	52.6	51.6	51.1	
6	8:28 PM	8:29 PM	51.0	49.7	53.1	52.5	50.7	49.7	
7	8:29 PM	8:30 PM	52.0	49.2	55.9	53.6	51.7	49.9	
8	8:30 PM	8:31 PM	51.5	48.9	53.9	53.0	51.3	50.0	
9	8:31 PM	8:32 PM	49.7	48.5	50.6	50.6	49.7	48.8	
10	8:32 PM	8:33 PM	50.7	48.5	52.8	52.3	50.4	48.9	
11	8:33 PM	8:34 PM	51.0	47.7	53.7	53.2	50.4	48.0	
12	8:34 PM	8:35 PM	49.6	47.5	53.3	51.7	49.0	47.6	
13	8:35 PM	8:36 PM	51.3	49.0	54.0	53.1	51.1	49.4	
14	8:36 PM	8:37 PM	50.2	48.7	51.4	51.4	50.0	48.9	
15	8:37 PM	8:38 PM	51.6	48.8	54.4	53.6	51.2	49.4	
16			51.7	50.1	54.2	53.7	51.0	50.2	
17									
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29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	School Parking Lot			
Speed (post/**obs**)*	5			
Number of Lanes	-			
Width (pave/row)	-			
1- or 2- way	-			
Grade	-4% to road			
Bus Stops	0			
Stoplights	0			
Motorcycles	0			
Automobiles	0			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	0			
Heavy Trucks	0			
Buses	0			
Count duration	15 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments: School is for sale. Vacant. US 15-501 is audible in distance.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name: Triangle Transit DEIS	Project #: 31829240	Date: 11/12/2013	Page of
Monitoring Location: M14 - Conifer Glen Ln.		Analyst: Andrew Bell - #2 Equipment	

Sound Level Meter	Field Calibration	Weather Data
Model #: 820	Model #: CAL200	Model #: SM-28
Serial #: 1414	Serial #: 3704	Serial #: 3386
Weighting: **A** / C / Flat	Calibration Level (dBA): 94 / **114**	Wind: **Steady**/Gusty/Calm
Response: **Slow** / Fast / Impl	Pre-Test 114.1 dBA	Precipitation: Yes (explain) / **No**
Windscreen : **Yes** / No (explain)	Post-Test 114.1 dBA	Avg Wind Speed/Direction: 2/WSW
Topo: Flat / **Hilly**	GPS Coordinates (at SLM location)#	Temp (°F): 38 RH (%): 83
Terrain: Hard/Soft/**Mixed**/Snow	+35° 58' 22.57", -78° 57' 25.10"	Bar Psr (Hg): 30.06 Cloud Cover (%): 33

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			50.9	49.1	53.0	52.0	50.8	49.5	
1	7:09 AM	7:10 AM	49.9	47.8	52.2	51.0	49.7	48.3	
2	7:10 AM	7:11 AM	50.7	49.1	52.1	51.7	50.6	49.4	
3	7:11 AM	7:12 AM	52.0	50.0	54.3	53.4	51.8	50.5	
4	7:12 AM	7:13 AM	50.7	49.2	52.1	51.6	50.6	49.6	
5	7:13 AM	7:14 AM	50.3	48.1	52.2	51.7	50.1	48.5	
6	7:14 AM	7:15 AM	57.6	48.6	68.8	64.0	50.6	49.2	Car passing / gate opened once
7	7:15 AM	7:16 AM	55.9	48.9	66.4	60.0	52.8	49.2	
8	7:16 AM	7:17 AM	50.3	48.4	52.5	51.7	50.3	48.8	
9	7:17 AM	7:18 AM	51.1	48.8	53.4	52.7	50.8	49.4	
10	7:18 AM	7:19 AM	56.8	48.3	64.5	61.2	53.3	48.7	Car passing / gate opened once
11	7:19 AM	7:20 AM	56.1	48.0	62.5	59.5	54.8	50.3	Car passing / gate opened once
12	7:20 AM	7:21 AM	59.1	48.9	65.0	63.3	57.5	49.7	Gate opened once
13	7:21 AM	7:22 AM	51.4	48.6	57.9	53.0	50.9	50.0	
14	7:22 AM	7:23 AM	49.4	47.9	51.1	50.5	49.4	48.3	
15	7:23 AM	7:24 AM	54.2	48.5	64.1	57.6	50.6	49.3	
16	7:24 AM	7:25 AM	56.9	48.9	65.2	61.4	51.8	49.9	Car passing / gate opened once
17	7:25 AM	7:26 AM	57.1	49.0	64.5	61.6	54.5	51.3	Gate opened twice
18	7:26 AM	7:27 AM	58.5	47.8	67.4	64.1	50.6	48.9	Car passing / gate opened once
19	7:27 AM	7:28 AM	57.4	48.5	64.9	60.3	55.8	50.7	Car passing / gate opened twice
20	7:28 AM	7:29 AM	56.5	49.5	63.3	59.0	56.2	50.8	
21			49.4	47.4	54.4	52.1	48.6	47.4	
22									
23									
24									
25									
26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	Conifer Glen Ln. EB/WB			
Speed (post/**obs**)*	10			
Number of Lanes	2			
Width (**pave**/row)	22'			
1- or 2- way	2			
Grade	0			
Bus Stops	0			
Stoplights	0			
Motorcycles	1			
Automobiles	6			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	0			
Heavy Trucks	0			
Buses	0			
Count duration	20 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments: Traffic from Tower Blvd. audible.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date: 11/12/2013	Page of
Monitoring Location:	M14 - Conifer Glen Ln.			Analyst:	Andrew Bell - #2 Equipment

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1414	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: **Steady**/Gusty/Calm	
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	114.1 dBA	Avg Wind Speed/Direction:	4/NW
Topo:	Flat / **Hilly**	GPS Coordinates (at SLM location)#		Temp (°F): 53	RH (%): 60
Terrain:	Hard/Soft/**Mixed**/Snow	+35° 58' 22.57", -78° 57' 25.10"		Bar Psr (Hg): 30.11	Cloud Cover (%): 78

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			48.8	45.5	52.2	50.9	47.9	46.2	
1	11:25 AM	11:26 AM	52.3	46.1	59.8	56.5	48.4	46.8	
2	11:26 AM	11:27 AM	49.5	46.6	54.1	51.2	49.1	47.1	
3	11:27 AM	11:28 AM	54.6	47.4	62.7	59.0	50.6	48.2	
4	11:28 AM	11:29 AM	47.8	45.7	50.9	49.4	47.4	46.2	
5	11:29 AM	11:30 AM	47.7	46.1	50.1	48.7	47.6	46.5	
6	11:30 AM	11:31 AM	52.2	46.1	61.0	56.6	48.3	46.6	Pedestrian passing by monitor
7	11:31 AM	11:32 AM	48.8	46.9	51.5	50.4	48.5	47.2	
8	11:32 AM	11:33 AM	50.7	46.4	59.2	53.5	48.1	46.5	
9	11:33 AM	11:34 AM	54.8	48.4	59.9	57.7	54.2	49.8	
10	11:34 AM	11:35 AM	54.4	48.4	59.2	56.8	54.1	48.7	
11	11:35 AM	11:36 AM	50.7	45.5	55.6	53.3	50.2	46.8	
12	11:36 AM	11:37 AM	55.4	45.1	64.9	59.5	50.6	45.7	
13	11:37 AM	11:38 AM	51.6	46.6	64.0	52.8	49.4	47.4	
14	11:38 AM	11:39 AM	52.8	47.9	59.2	56.8	50.6	48.5	
15	11:39 AM	11:40 AM	54.1	47.0	64.6	57.8	48.9	47.4	
16	11:40 AM	11:41 AM	50.9	48.0	55.5	52.9	50.3	48.5	
17	11:41 AM	11:42 AM	48.1	45.8	50.9	49.0	48.1	46.9	
18	11:42 AM	11:43 AM	48.1	45.9	51.7	49.0	48.3	46.6	
19	11:43 AM	11:44 AM	50.1	47.5	53.7	52.0	49.8	48.1	
20	11:44 AM	11:45 AM	49.8	45.5	56.6	53.7	47.4	45.9	
21			46.9	46.5	47.1	47.1	46.7	46.5	
22									
23									
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27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	Conifer Glen Ln. EB/WB			
Speed (post/**obs**)*	10			
Number of Lanes	2			
Width (**pave**/row)	22'			
1- or 2- way	2			
Grade	0			
Bus Stops	0			
Stoplights	0			
Motorcycles	1			
Automobiles	6			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	0			
Heavy Trucks	0			
Buses	0			
Count duration	20 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? **Yes**/No M14-1, M14-2, M14-3

Additional Notes/Comments: Gates open. Traffic from Tower Blvd. audible.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS			Project #:	31829240	Date:	11/13/2013	Page	of
Monitoring Location:		M14 - Conifer Glen Ln.				Analyst:	Andrew Bell - #2 Equipment		

Sound Level Meter		Field Calibration			Weather Data			
Model #:	820	Model #:	CAL200		Model #:	SM-28		
Serial #:	1414	Serial #:	3704		Serial #:	3386		
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**		Wind: **Steady**/Gusty/Calm			
Response: **Slow** / Fast / Impl		Pre-Test	114.1	dBA	Precipitation: Yes (explain) / **No**			
Windscreen : **Yes** / No (explain)		Post-Test	113.9	dBA	Avg Wind Speed/Direction:	7/NNW		
Topo:	Flat / **Hilly**	GPS Coordinates (at SLM location)#			Temp (°F):	39	RH (%):	40
Terrain:	Hard/Soft/**Mixed**/Snow	+35° 58' 22.57", -78° 57' 25.10"			Bar Psr (Hg):	30.47	Cloud Cover (%):	0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			57.1	56.2	57.5	57.5	57.2	56.3	
1	5:04 PM	5:05 PM	55.5	45.6	63.6	59.4	52.9	47.7	
2	5:05 PM	5:06 PM	49.1	44.2	56.9	52.8	46.8	44.9	
3	5:06 PM	5:07 PM	49.9	44.5	57.9	53.1	47.6	45.5	
4	5:07 PM	5:08 PM	51.7	46.2	58.9	56.4	48.1	46.6	
5	5:08 PM	5:09 PM	45.7	42.9	48.9	47.4	45.6	43.4	
6	5:09 PM	5:10 PM	51.3	45.4	58.5	54.8	49.5	47.2	
7	5:10 PM	5:11 PM	50.8	45.2	61.0	53.7	47.0	45.4	
8	5:11 PM	5:12 PM	52.2	44.4	61.6	57.4	48.3	45.2	
9	5:12 PM	5:13 PM	56.8	46.6	65.2	61.7	52.2	47.3	
10	5:13 PM	5:14 PM	48.0	45.5	52.0	50.0	47.3	45.8	
11	5:14 PM	5:15 PM	47.3	44.8	52.3	48.8	46.7	45.4	
12	5:15 PM	5:16 PM	54.3	45.6	65.9	57.3	47.6	46.2	
13	5:16 PM	5:17 PM	49.5	44.4	56.2	52.9	47.7	45.0	
14	5:17 PM	5:18 PM	47.0	43.7	51.9	48.4	46.9	44.8	
15	5:18 PM	5:19 PM	49.1	45.2	56.2	52.2	47.0	45.4	
16	5:19 PM	5:20 PM	46.2	43.3	54.9	47.0	45.2	43.4	
17	5:20 PM	5:21 PM	47.2	44.0	49.9	48.9	47.0	44.9	
18	5:21 PM	5:22 PM	47.7	45.2	49.9	49.3	47.5	45.8	
19	5:22 PM	5:23 PM	46.6	44.6	48.4	47.7	46.6	45.3	
20	5:23 PM	5:24 PM	47.0	44.4	50.3	48.5	46.9	45.2	
21			46.6	43.9	51.1	48.5	46.2	44.7	
22									
23									
24									
25									
26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Conifer Glen Ln. EB/WB	
Speed (post/**obs**)*	10	
Number of Lanes	2	
Width (**pave**/row)	22'	
1- or 2- way	2	
Grade	0	
Bus Stops	0	
Stoplights	0	
Motorcycles	0	
Automobiles	13	
Medium Trucks	0	
Heavy Trucks	0	
Buses	0	
Count duration	20 min.	

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments: Gates open. Traffic from Tower Blvd. audible.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date: 11/13/2013	Page of
Monitoring Location:	M14 - Conifer Glen Ln.			Analyst:	Andrew Bell - #2 Equipment

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1414	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: Steady/Gusty/**Calm**	
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	113.9 dBA	Avg Wind Speed/Direction:	0
Topo: Flat / **Hilly**		GPS Coordinates (at SLM location)#		Temp (°F): 29	RH (%): 62
Terrain: Hard/Soft/**Mixed**/Snow		+35° 58' 22.57", -78° 57' 25.10"		Bar Psr (Hg): 30.50	Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			48.8	45.9	56.2	50.6	47.4	46.4	
1	8:47 PM	8:48 PM	48.6	46.4	54.0	50.6	47.5	46.4	
2	8:48 PM	8:49 PM	47.1	46.3	48.7	47.9	47.0	46.3	
3	8:49 PM	8:50 PM	54.0	45.9	61.2	57.6	52.7	46.4	Out gate open once.
4	8:50 PM	8:51 PM	50.9	47.8	56.9	53.9	49.0	48.1	
5	8:51 PM	8:52 PM	47.1	45.8	49.8	48.5	46.8	45.9	
6	8:52 PM	8:53 PM	47.2	45.5	49.3	48.2	47.2	46.1	
7	8:53 PM	8:54 PM	47.4	45.1	49.2	48.7	47.3	46.1	
8	8:54 PM	8:55 PM	46.6	45.0	50.4	47.9	46.1	45.2	
9	8:55 PM	8:56 PM	47.8	44.6	56.0	50.0	46.0	45.1	
10	8:56 PM	8:57 PM	45.0	44.0	46.8	45.8	44.8	44.2	
11	8:57 PM	8:58 PM	49.2	43.6	57.8	53.0	45.9	43.8	
12	8:58 PM	8:59 PM	46.0	44.2	51.2	47.5	45.6	44.3	
13	8:59 PM	9:00 PM	46.5	44.4	50.2	47.7	46.2	45.1	
14	9:00 PM	9:01 PM	52.5	45.7	60.8	58.1	48.1	46.3	
15	9:01 PM	9:02 PM	57.9	44.8	64.8	62.0	53.5	45.9	Out gate open once.
16			54.4	46.0	58.9	56.9	54.2	49.1	
17									
18									
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27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	Conifer Glen Ln. EB/WB			
Speed (post/**obs**)*	10			
Number of Lanes	2			
Width (**pave**/row)	22'			
1- or 2- way	2			
Grade	0			
Bus Stops	0			
Stoplights	0			
Motorcycles	0			
Automobiles	8			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	0			
Heavy Trucks	0			
Buses	0			
Count duration	15 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments: Out gate closed. In gate open. Traffic from Tower Blvd. audible.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date: 11/12/2013	Page	of
Monitoring Location:	M13 - Snow Crest Trail			Analyst:	Andrew Bell - #2 Equipment	

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1414	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: **Steady**/Gusty/Calm	
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	114.1 dBA	Avg Wind Speed/Direction:	2 / WNW
Topo: **Flat** / Hilly		GPS Coordinates (at SLM location)#		Temp (°F): 37	RH (%): 81
Terrain: Hard/Soft/**Mixed**/Snow		+35° 57' 36.24", -78° 58' 3.23"		Bar Psr (Hg): 30.06	Cloud Cover (%): 23

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			46.1	45.3	47.9	46.9	45.9	45.3	
1	6:01 AM	6:02 AM	49.4	45.0	58.2	52.8	46.6	45.4	
2	6:02 AM	6:03 AM	50.6	46.1	59.5	52.9	48.4	46.4	
3	6:03 AM	6:04 AM	46.8	45.2	49.1	48.0	46.5	45.3	
4	6:04 AM	6:05 AM	46.8	45.0	51.1	47.8	46.5	45.4	
5	6:05 AM	6:06 AM	51.1	45.6	58.5	56.3	47.0	46.1	
6	6:06 AM	6:07 AM	47.7	45.4	50.2	49.5	47.6	45.7	
7	6:07 AM	6:08 AM	46.3	44.5	48.4	47.8	46.2	44.7	
8	6:08 AM	6:09 AM	46.2	44.5	49.4	47.9	45.7	44.5	
9	6:09 AM	6:10 AM	46.2	45.1	48.8	47.1	45.9	45.2	
10	6:10 AM	6:11 AM	48.4	46.5	50.0	49.5	48.4	46.8	
11	6:11 AM	6:12 AM	49.0	47.4	50.7	50.2	48.9	47.4	
12	6:12 AM	6:13 AM	50.8	46.4	61.8	48.9	47.6	46.5	
13	6:13 AM	6:14 AM	48.6	45.7	60.3	48.9	46.9	46.0	
14	6:14 AM	6:15 AM	47.9	45.2	50.7	49.8	47.6	45.3	
15	6:15 AM	6:16 AM	48.7	46.6	52.2	50.2	48.3	47.1	
16	6:16 AM	6:17 AM	47.5	45.7	49.8	49.2	47.3	46.0	
17	6:17 AM	6:18 AM	47.6	45.8	52.0	48.8	47.6	46.1	
18	6:18 AM	6:19 AM	48.6	47.2	50.4	49.8	48.4	47.2	
19	6:19 AM	6:20 AM	47.6	46.4	48.8	48.7	47.6	46.4	
20	6:20 AM	6:21 AM	48.7	46.3	53.5	50.3	48.1	46.5	
21			48.5	47.5	50.8	49.5	48.5	47.7	
22									
23									
24									
25									
26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Snow Crest Tr. EB/WB		compass
Speed (post/**obs**)*	10		
Number of Lanes	2		
Width (pave/**row**)	24'		
1- or 2- way	2		
Grade	0		
Bus Stops	none		
Stoplights	none		
Motorcycles	0		
Automobiles	5		
Medium Trucks	0		
Heavy Trucks	0		
Buses	0		
Count duration	20 min.		

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments: Dog walking area close by. US 15-501 can be heard in distance.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name: Triangle Transit DEIS		Project #: 31829240	Date: 11/12/2013	Page	of
Monitoring Location: M13 - Snow Crest Trail			Analyst: Andrew Bell - #2 Equipment		

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1414	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: **Steady**/Gusty/Calm	
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	114.1 dBA	Avg Wind Speed/Direction:	3/NW
Topo: **Flat** / Hilly		GPS Coordinates (at SLM location)#		Temp (°F): 51	RH (%): 62
Terrain: Hard/Soft/**Mixed**/Snow		+35° 57' 36.24", -78° 58' 3.23"		Bar Psr (Hg): 30.10	Cloud Cover (%): 60

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			48.6	46.6	52.6	50.2	48.0	47.1	
1	10:26 AM	10:27 AM	48.7	47.1	50.5	49.8	48.6	47.4	
2	10:27 AM	10:28 AM	49.1	47.1	51.5	50.0	49.0	47.6	
3	10:28 AM	10:29 AM	49.9	47.2	54.0	51.5	49.5	47.8	
4	10:29 AM	10:30 AM	49.2	47.6	51.1	50.5	48.9	48.1	
5	10:30 AM	10:31 AM	48.3	47.2	49.7	49.2	48.2	47.2	
6	10:31 AM	10:32 AM	48.1	46.7	49.7	48.9	48.0	47.1	
7	10:32 AM	10:33 AM	49.4	45.4	57.6	51.7	47.6	46.2	
8	10:33 AM	10:34 AM	53.9	47.9	57.7	56.4	53.6	49.1	Car starting, overhead plane.
9	10:34 AM	10:35 AM	48.3	46.8	49.9	49.2	48.4	47.2	
10	10:35 AM	10:36 AM	50.5	46.4	54.9	53.3	49.0	47.0	
11	10:36 AM	10:37 AM	51.5	46.9	57.8	53.5	50.7	48.4	
12	10:37 AM	10:38 AM	51.5	47.6	58.5	54.9	49.2	48.1	
13	10:38 AM	10:39 AM	49.3	47.7	52.0	50.6	49.3	48.1	
14	10:39 AM	10:40 AM	51.2	49.0	53.0	52.1	51.1	50.2	
15	10:40 AM	10:41 AM	49.9	48.1	52.1	50.9	49.7	48.5	
16	10:41 AM	10:42 AM	51.1	49.1	56.9	52.8	50.2	49.2	
17	10:42 AM	10:43 AM	50.8	48.1	55.1	52.7	50.1	48.9	
18	10:43 AM	10:44 AM	49.3	47.4	51.9	50.4	49.2	48.1	
19	10:44 AM	10:45 AM	50.1	48.4	53.0	51.5	49.7	48.5	
20	10:45 AM	10:46 AM	49.8	47.5	52.4	51.1	49.5	48.0	
21			50.0	49.0	50.7	50.7	50.2	49.1	
22									
23									
24									
25									
26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Snow Crest Tr. EB/WB	
Speed (post/**obs**)*	10	
Number of Lanes	2	
Width (pave/**row**)	24'	
1- or 2- way	2	
Grade	0	
Bus Stops	none	
Stoplights	none	
Motorcycles	0	
Automobiles	4	
Medium Trucks	0	
Heavy Trucks	0	
Buses	0	
Count duration	20 min.	

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? **Yes**/No M13-1, M13-2, M13-3

Additional Notes/Comments: Dog walking area close by. Leaves rustling. US 15-501 can be heard in distance.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS			Project #:	31829240		Date: 11/13/2013		Page of
Monitoring Location:			M13 - Snow Crest Trail				Analyst:		Andrew Bell - #2 Equipment
Sound Level Meter			Field Calibration				Weather Data		
Model #:	820		Model #:	CAL200			Model #:	SM-28	
Serial #:	1414		Serial #:	3704			Serial #:	3386	
Weighting: **A** / C / Flat			Calibration Level (dBA):	94 / **114**			Wind: **Steady**/Gusty/Calm		
Response: **Slow** / Fast / Impl			Pre-Test	114.1	dBA		Precipitation: Yes (explain) / **No**		
Windscreen : **Yes** / No (explain)			Post-Test	113.9	dBA		Avg Wind Speed/Direction:	5/WNW	
Topo: **Flat** / Hilly			GPS Coordinates (at SLM location)#				Temp (°F):	39	RH (%): 30
Terrain: Hard/Soft/**Mixed**/Snow			+35° 57' 36.24", -78° 58' 3.23"				Bar Psr (Hg): 30.47	Cloud Cover (%):	0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			47.8	46.2	52.6	50.2	46.9	46.2	
1	6:04 PM	6:05 PM	50.0	46.7	54.8	53.2	48.5	46.8	
2	6:05 PM	6:06 PM	50.9	48.2	55.0	53.3	50.2	48.4	
3	6:06 PM	6:07 PM	49.7	48.0	53.2	50.9	49.2	48.2	
4	6:07 PM	6:08 PM	49.1	48.1	53.1	49.9	48.8	48.2	
5	6:08 PM	6:09 PM	49.9	48.1	54.2	51.0	49.4	48.3	
6	6:09 PM	6:10 PM	49.3	48.1	53.8	50.6	48.7	48.1	
7	6:10 PM	6:11 PM	50.0	47.5	52.1	51.5	49.8	48.3	
8	6:11 PM	6:12 PM	49.4	47.5	53.8	50.2	49.1	48.1	
9	6:12 PM	6:13 PM	50.2	47.8	53.9	51.7	50.0	48.4	
10	6:13 PM	6:14 PM	45.5	44.0	50.5	46.3	45.3	44.3	
11	6:14 PM	6:15 PM	46.4	45.5	47.6	47.3	46.4	45.5	
12	6:15 PM	6:16 PM	47.6	45.9	49.4	48.9	47.3	46.2	
13	6:16 PM	6:17 PM	46.5	45.5	49.0	47.5	46.5	45.5	
14	6:17 PM	6:18 PM	47.7	44.7	55.0	49.0	46.8	45.5	
15	6:18 PM	6:19 PM	46.3	45.0	48.0	47.0	46.2	45.3	
16	6:19 PM	6:20 PM	47.4	44.3	54.6	50.9	45.4	44.3	
17	6:20 PM	6:21 PM	47.5	44.2	56.1	50.0	45.6	44.4	
18	6:21 PM	6:22 PM	45.6	44.7	46.3	46.2	45.5	45.1	
19			45.8	44.5	47.5	46.8	45.7	45.0	
20									
21									
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25									
26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	Snow Crest Tr. EB/WB			
Speed (post/**obs**)*	10			
Number of Lanes	2			
Width (pave/**row**)	24'			
1- or 2- way	2			
Grade	0			
Bus Stops	none			
Stoplights	none			
Motorcycles	0			
Automobiles	10			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	0			
Heavy Trucks	0			
Buses	0			
Count duration	15 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments: Dog walking area close by. US 15-501 can be heard in distance.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name: Triangle Transit DEIS		Project #: 31829240	Date: 11/13/2013	Page	of
Monitoring Location: M13 - Snow Crest Trail			Analyst: Andrew Bell - #2 Equipment		
Sound Level Meter		Field Calibration	Weather Data		
Model #: 820		Model #: CAL200	Model #: SM-28		
Serial #: 1414		Serial #: 3704	Serial #: 3386		
Weighting: **A** / C / Flat		Calibration Level (dBA): 94 / **114**	Wind: Steady/Gusty/**Calm**		
Response: **Slow** / Fast / Impl		Pre-Test 114.1 dBA	Precipitation: Yes (explain) / **No**		
Windscreen : **Yes** / No (explain)		Post-Test 113.9 dBA	Avg Wind Speed/Direction: 0		
Topo: **Flat** / Hilly		GPS Coordinates (at SLM location)#	Temp (°F): 28	RH (%): 78	
Terrain: Hard/Soft/**Mixed**/Snow		+35° 57' 36.24", -78° 58' 3.23"	Bar Psr (Hg): 30.50	Cloud Cover (%): 0	

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			46.5	41.8	54.1	49.9	44.1	41.8	
1	9:43 PM	9:44 PM	44.6	41.2	53.0	47.3	42.6	41.3	
2	9:44 PM	9:45 PM	43.2	42.1	45.0	44.0	43.2	42.2	
3	9:45 PM	9:46 PM	44.4	42.5	50.8	45.5	43.5	42.5	
4	9:46 PM	9:47 PM	45.1	42.7	50.8	46.4	44.4	43.3	
5	9:47 PM	9:48 PM	43.4	41.7	45.2	44.6	43.3	42.1	
6	9:48 PM	9:49 PM	44.3	42.3	50.3	45.9	43.2	42.3	
7	9:49 PM	9:50 PM	44.9	41.9	50.8	47.5	43.9	42.2	
8	9:50 PM	9:51 PM	42.8	40.7	44.8	44.5	42.6	41.1	
9	9:51 PM	9:52 PM	43.5	41.2	45.9	45.0	43.1	41.4	
10	9:52 PM	9:53 PM	43.0	41.2	44.8	44.5	42.8	41.4	
11	9:53 PM	9:54 PM	42.8	40.2	44.4	43.9	43.0	40.4	
12	9:54 PM	9:55 PM	46.4	41.3	53.7	50.9	44.2	41.7	
13	9:55 PM	9:56 PM	42.1	40.8	43.4	43.1	42.1	41.1	
14	9:56 PM	9:57 PM	45.5	39.4	55.9	49.1	42.0	39.5	
15	9:57 PM	9:58 PM	42.1	39.3	46.4	43.9	42.1	39.6	
16	9:58 PM	9:59 PM	45.4	41.5	51.3	48.5	44.6	41.9	
17	9:59 PM	10:00 PM	42.7	39.7	47.5	45.3	41.9	40.3	
18	10:00 PM	10:01 PM	42.3	40.6	44.5	43.8	42.1	40.7	
19	10:01 PM	10:02 PM	42.3	40.1	44.6	43.8	42.0	40.7	
20	10:02 PM	10:03 PM	43.0	40.4	45.7	44.6	42.7	41.1	
21			44.7	42.9	49.9	46.0	43.7	43.1	
22									
23									
24									
25									
26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Snow Crest Tr. EB/WB		
Speed (post/**obs**)*	10		
Number of Lanes	2		
Width (pave/**row**)	24'		
1- or 2- way	2		
Grade	0		
Bus Stops	none		
Stoplights	none		
Motorcycles	0		
Automobiles	8		
Medium Trucks	0		
Heavy Trucks	0		
Buses	0		
Count duration	20 min.		

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments: Dog walking area close by. US 15-501 can be heard in distance.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date: 11/12/2013	Page of
Monitoring Location:	M12C -Prestonplace Apartments			Analyst:	John Burris - #6 Equipment

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1324	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: Steady/Gusty/**Calm**	
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	114.1 dBA	Avg Wind Speed/Direction:	0
Topo: Flat / **Hilly**		GPS Coordinates (at SLM location)#		Temp (°F): 37	RH (%): 83
Terrain: Hard/Soft/**Mixed**/Snow		+35° 57' 14.82", -78° 59' 07.54"		Bar Psr (Hg): 30.06	Cloud Cover (%): 33

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			52.0	51.7	52.4	52.4	52.2	51.7	
1	7:54 AM	7:55 AM	52.0	51.0	54.9	52.9	51.9	51.2	
2	7:55 AM	7:56 AM	55.6	52.2	60.9	57.5	55.0	53.0	
3	7:56 AM	7:57 AM	53.3	51.1	57.7	55.7	52.5	51.3	
4	7:57 AM	7:58 AM	52.1	51.2	53.5	52.9	52.1	51.2	
5	7:58 AM	7:59 AM	50.9	49.9	51.8	51.7	50.8	50.1	
6	7:59 AM	8:00 AM	52.2	50.7	55.7	53.5	51.9	51.1	
7	8:00 AM	8:01 AM	51.1	50.3	52.3	51.8	51.2	50.3	
8	8:01 AM	8:02 AM	51.3	50.8	52.9	52.0	51.5	50.9	
9	8:02 AM	8:03 AM	51.2	50.5	52.4	51.9	51.2	50.5	
10	8:03 AM	8:04 AM	51.5	51.0	51.9	51.9	51.5	51.1	
11	8:04 AM	8:05 AM	50.7	49.7	51.5	51.5	50.7	50.1	
12	8:05 AM	8:06 AM	50.9	50.4	51.5	51.5	50.7	50.4	
13	8:06 AM	8:07 AM	50.4	49.5	51.2	50.9	50.4	49.7	
14	8:07 AM	8:08 AM	49.5	48.8	50.4	50.1	49.5	49.0	
15	8:08 AM	8:09 AM	50.9	50.0	52.0	51.8	50.9	50.2	
16	8:09 AM	8:10 AM	50.8	49.7	51.9	51.7	50.8	50.1	
17	8:10 AM	8:11 AM	50.5	49.4	52.8	51.5	50.4	49.4	
18	8:11 AM	8:12 AM	50.0	48.9	50.8	50.8	50.1	49.1	
19	8:12 AM	8:13 AM	50.0	48.9	50.8	50.8	50.0	49.2	
20			50.8	50.0	52.0	51.6	50.7	50.1	
21									
22									
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URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	Sayward			
Speed (**post**/obs)*	25/25			
Number of Lanes	2			
Width (pave/**row**)	20'/36'			
1- or 2- way	2/2			
Grade	0			
Bus Stops	0			
Stoplights	0			
Motorcycles	0			
Automobiles	0			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	0			
Heavy Trucks	0			
Buses	0			
Count duration	20 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name: Triangle Transit DEIS	Project #: 31829240	Date: 11/15/2013	Page of
Monitoring Location: M12C -Prestonplace Apartments		Analyst: John Burris - #2 Equipment	

Sound Level Meter	Field Calibration	Weather Data
Model #: 820	Model #: CAL200	Model #: SM-28
Serial #: 1414	Serial #: 3704	Serial #: 3386
Weighting: **A** / C / Flat	Calibration Level (dBA): 94 / **114**	Wind: **Steady**/Gusty/Calm
Response: **Slow** / Fast / Impl	Pre-Test 113.9 dBA	Precipitation: Yes (explain) / **No**
Windscreen : **Yes** / No (explain)	Post-Test 113.9 dBA	Avg Wind Speed/Direction: 1.5
Topo: Flat / **Hilly**	GPS Coordinates (at SLM location)#	Temp (°F): 57 RH (%): 73
Terrain: Hard/Soft/**Mixed**/Snow	+35° 57' 14.82", -78° 59' 07.54"	Bar Psr (Hg): 30.35 Cloud Cover (%): 100

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			46.0	43.7	50.3	48.0	45.4	44.1	
1	12:28 PM	12:29 PM	42.5	40.9	49.9	43.3	42.0	41.2	
2	12:29 PM	12:30 PM	42.2	41.0	44.6	43.4	42.0	41.2	
3	12:30 PM	12:31 PM	46.2	42.0	48.9	47.8	45.9	43.1	
4	12:31 PM	12:32 PM	46.1	44.7	48.2	47.2	45.7	45.0	
5	12:32 PM	12:33 PM	45.7	44.4	47.4	46.8	45.6	44.4	
6	12:33 PM	12:34 PM	45.9	45.3	46.7	46.7	45.7	45.3	
7	12:34 PM	12:35 PM	45.6	45.1	46.1	45.9	45.5	45.1	
8	12:35 PM	12:36 PM	46.3	45.1	51.1	47.4	45.7	45.1	
9	12:36 PM	12:37 PM	45.6	45.1	46.3	45.9	45.5	45.1	
10	12:37 PM	12:38 PM	45.9	45.1	48.6	46.9	45.7	45.1	
11	12:38 PM	12:39 PM	47.3	46.0	50.0	48.8	47.0	46.2	Woman playing with dog at playground
12	12:39 PM	12:40 PM	46.9	46.1	49.3	47.7	46.7	46.1	Woman playing with dog at playground
13	12:40 PM	12:41 PM	47.6	46.2	51.1	48.7	47.4	46.3	Woman playing with dog at playground
14	12:41 PM	12:42 PM	46.9	43.5	51.2	48.4	46.7	44.3	Woman playing with dog at playground
15	12:42 PM	12:43 PM	45.5	44.2	48.5	46.7	45.2	44.2	Woman playing with dog at playground
16	12:43 PM	12:44 PM	44.5	43.3	46.5	45.6	44.4	43.3	Woman playing with dog at playground
17	12:44 PM	12:45 PM	45.4	44.1	50.3	46.6	44.8	44.2	
18	12:45 PM	12:46 PM	45.9	43.9	52.8	48.0	44.7	44.1	
19	12:46 PM	12:47 PM	44.3	43.7	45.3	44.9	44.4	43.7	
20	12:47 PM	12:48 PM	44.4	43.7	44.9	44.9	44.5	44.0	
21			44.2	43.1	46.2	44.9	44.1	43.2	
22									
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URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	Sayward			
Speed (**post**/obs)*	25/25			
Number of Lanes	2			
Width (pave/row)	20'/36'			
1- or 2- way	2/2			
Grade	0			
Bus Stops	0			
Stoplights	0			
Motorcycles	0			
Automobiles	1			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	0			
Heavy Trucks	0			
Buses	0			
Count duration	20 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date:	11/15/2013	Page	of
Monitoring Location:	M12C -Prestonplace Apartments			Analyst:	John Burris - #2 Equipment		

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1414	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: Steady/Gusty/**Calm**	
Response: **Slow** / Fast / Impl		Pre-Test	113.9 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	113.9 dBA	Avg Wind Speed/Direction:	0
Topo:	Flat / **Hilly**	GPS Coordinates (at SLM location)#		Temp (°F): 60	RH (%): 73
Terrain:	Hard/Soft/**Mixed**/Snow	+35° 57' 14.82", -78° 59' 07.54"		Bar Psr (Hg): 30.20	Cloud Cover (%): 100

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			45.9	44.2	49.6	47.4	45.7	44.3	
1	4:09 PM	4:10 PM	51.5	45.7	59.1	55.0	49.7	46.6	
2	4:10 PM	4:11 PM	44.8	43.3	46.3	45.9	44.7	43.4	
3	4:11 PM	4:12 PM	45.5	44.6	46.6	46.4	45.5	44.6	
4	4:12 PM	4:13 PM	45.5	44.9	46.2	46.0	45.5	45.1	
5	4:13 PM	4:14 PM	45.1	44.3	46.8	46.3	44.9	44.3	
6	4:14 PM	4:15 PM	45.3	44.5	46.4	45.9	45.4	44.6	
7	4:15 PM	4:16 PM	44.9	44.0	45.8	45.8	45.0	44.2	
8	4:16 PM	4:17 PM	44.6	43.9	46.0	45.2	44.6	44.1	
9	4:17 PM	4:18 PM	44.1	42.9	46.1	45.5	43.9	43.2	
10	4:18 PM	4:19 PM	41.8	39.6	43.5	43.5	41.8	40.1	
11	4:19 PM	4:20 PM	41.5	40.2	42.9	42.2	41.5	40.9	
12	4:20 PM	4:21 PM	50.4	42.3	57.2	55.3	44.4	42.3	
13	4:21 PM	4:22 PM	51.5	41.9	58.0	56.4	46.5	42.3	
14	4:22 PM	4:23 PM	42.0	41.2	43.6	42.8	41.7	41.2	
15	4:23 PM	4:24 PM	45.1	42.4	54.6	45.9	44.4	43.1	
16	4:24 PM	4:25 PM	47.3	43.1	51.7	50.4	45.2	43.2	
17	4:25 PM	4:26 PM	45.1	43.1	49.7	47.1	44.4	43.3	
18	4:26 PM	4:27 PM	43.4	42.8	44.6	43.9	43.5	42.8	
19	4:27 PM	4:28 PM	43.4	42.5	45.3	44.4	43.2	42.5	
20			47.6	42.6	56.8	52.3	43.9	42.6	
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URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	Sayward			
Speed (**post**/obs)*	25/25			
Number of Lanes	2			
Width (pave/row)	20'/36'			
1- or 2- way	2/2			
Grade	0			
Bus Stops	0			
Stoplights	0			
Motorcycles	0			
Automobiles	0			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	0			
Heavy Trucks	0			
Buses	0			
Count duration	20 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #: 31829240	Date: 11/15/2013	Page	of
Monitoring Location:	M12C -Prestonplace Apartments		Analyst:	John Burris - #2 Equipment	

Sound Level Meter		Field Calibration			Weather Data			
Model #:	820	Model #:	CAL200		Model #:	SM-28		
Serial #:	1414	Serial #:	3704		Serial #:	3386		
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**		Wind: Steady/Gusty/**Calm**			
Response: **Slow** / Fast / Impl		Pre-Test	113.9	dBA	Precipitation: Yes (explain) / **No**			
Windscreen : **Yes** / No (explain)		Post-Test	113.9	dBA	Avg Wind Speed/Direction:	0		
Topo: Flat / **Hilly**		GPS Coordinates (at SLM location)#			Temp (°F):	55	RH (%):	73
Terrain: Hard/Soft/**Mixed**/Snow		+35° 57' 14.82", -78° 59' 07.54"			Bar Psr (Hg):	30.19	Cloud Cover (%):	100

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			46.9	46.3	47.8	47.6	46.7	46.3	
1	7:29 PM	7:30 PM	47.3	46.7	50.5	47.9	47.5	47.0	
2	7:30 PM	7:31 PM	48.0	46.6	50.7	49.8	47.6	46.6	
3	7:31 PM	7:32 PM	48.5	46.8	51.3	49.9	48.3	47.2	
4	7:32 PM	7:33 PM	46.9	46.1	47.8	47.8	46.9	46.2	
5	7:33 PM	7:34 PM	46.8	46.1	47.9	47.6	46.7	46.1	
6	7:34 PM	7:35 PM	47.0	46.3	49.2	47.8	46.9	46.3	
7	7:35 PM	7:36 PM	45.4	44.2	47.4	46.6	45.3	44.2	
8	7:36 PM	7:37 PM	46.3	44.3	48.3	47.8	45.9	44.8	
9	7:37 PM	7:38 PM	47.0	45.6	47.8	47.8	47.2	46.2	
10	7:38 PM	7:39 PM	46.4	45.1	47.8	47.7	45.9	45.2	
11	7:39 PM	7:40 PM	47.5	45.8	48.5	48.5	47.6	46.3	
12	7:40 PM	7:41 PM	47.5	46.5	48.6	48.5	47.2	46.5	
13	7:41 PM	7:42 PM	47.8	46.9	49.4	48.5	47.6	47.1	
14	7:42 PM	7:43 PM	46.8	46.4	47.4	47.4	46.6	46.4	
15	7:43 PM	7:44 PM	48.4	47.2	49.6	48.9	48.3	47.4	
16			47.8	46.9	50.7	48.6	47.6	47.1	
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URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	Sayward			
Speed (**post**/obs)*	25/25			
Number of Lanes	2			
Width (pave/row)	20'/36'			
1- or 2- way	2/2			
Grade	0			
Bus Stops	0			
Stoplights	0			
Motorcycles	0			
Automobiles	0			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	0			
Heavy Trucks	0			
Buses	0			
Count duration	20 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice FIELD NOISE MEASUREMENT DATA FORM

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date: 11/12/2013	Page of
Monitoring Location:	M12B - Lyckan Pkwy.			Analyst:	Andrew Bell - #2 Equipment

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1414	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: **Steady**/Gusty/Calm	
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	114.1 dBA	Avg Wind Speed/Direction:	2/WSW
Topo:	Flat / **Hilly**	GPS Coordinates (at SLM location)#		Temp (°F): 38	RH (%): 81
Terrain:	Hard/Soft/**Mixed**/Snow	+35° 57' 51.44", -78° 57' 49.00"		Bar Psr (Hg): 30.06	Cloud Cover (%): 23

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			60.1	53.2	67.1	63.7	57.8	53.9	
1	6:35 AM	6:36 AM	59.4	53.9	63.1	61.9	58.6	55.0	
2	6:36 AM	6:37 AM	60.0	54.1	63.9	62.7	58.9	56.1	
3	6:37 AM	6:38 AM	60.0	56.7	63.5	61.8	59.5	57.7	
4	6:38 AM	6:39 AM	60.1	54.2	66.2	63.6	58.1	55.1	
5	6:39 AM	6:40 AM	60.1	55.7	63.5	62.6	59.5	56.4	
6	6:40 AM	6:41 AM	62.1	56.8	66.6	64.7	61.5	57.6	
7	6:41 AM	6:42 AM	59.2	55.4	63.2	61.7	58.4	56.2	
8	6:42 AM	6:43 AM	59.6	53.7	63.5	61.8	59.5	54.8	
9	6:43 AM	6:44 AM	61.2	54.8	64.8	63.6	61.2	56.6	
10	6:44 AM	6:45 AM	59.9	53.3	64.0	63.1	59.4	54.4	
11	6:45 AM	6:46 AM	60.8	54.9	63.4	62.9	60.7	56.3	
12	6:46 AM	6:47 AM	61.9	55.6	67.2	64.0	61.3	58.2	
13	6:47 AM	6:48 AM	61.3	57.0	65.7	64.1	60.7	58.0	
14	6:48 AM	6:49 AM	60.1	55.0	62.9	62.3	59.6	56.8	
15	6:49 AM	6:50 AM	62.2	53.2	66.1	64.2	62.2	57.7	
16	6:50 AM	6:51 AM	59.8	52.9	64.4	62.7	59.3	54.4	
17	6:51 AM	6:52 AM	62.1	58.2	65.6	64.6	61.3	58.9	
18	6:52 AM	6:53 AM	62.5	56.5	68.1	66.3	60.7	57.7	
19	6:53 AM	6:54 AM	61.3	54.6	68.3	63.8	59.9	55.7	
20	6:54 AM	6:55 AM	61.1	56.2	64.4	63.3	61.0	56.6	
21			60.9	55.6	65.6	63.0	60.7	57.2	
22									
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29									

URS Acoustics and Noise Control Practice FIELD NOISE MEASUREMENT DATA FORM

			compass	Site Diagram:
Roadway Name/Dir	Lyckan Pkwy. NW/SE			
Speed (post/**obs**)*	15			
Number of Lanes	2			
Width (pave/**row**)	24'			
1- or 2- way	2			
Grade	0			
Bus Stops	0			
Stoplights	0			
Motorcycles	0			
Automobiles	0			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	0			
Heavy Trucks	0			
Buses	0			
Count duration	20 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments: MLK Pkwy. is significant source of noise, although traffic is too sporadic to account for constant noise.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice FIELD NOISE MEASUREMENT DATA FORM

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date: 11/12/2013	Page of
Monitoring Location:	M12B - Lyckan Pkwy.			Analyst:	Andrew Bell - #2 Equipment

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1414	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: **Steady**/Gusty/Calm	
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	114.1 dBA	Avg Wind Speed/Direction:	4/NW
Topo: Flat / **Hilly**		GPS Coordinates (at SLM location)#		Temp (°F): 51	RH (%): 63
Terrain: Hard/Soft/**Mixed**/Snow		+35° 57' 51.44", -78° 57' 49.00"		Bar Psr (Hg): 30.10	Cloud Cover (%): 78

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			59.5	56.2	63.2	61.9	58.5	57.0	
1	10:52 AM	10:53 AM	59.2	56.1	61.9	61.1	59.0	56.8	
2	10:53 AM	10:54 AM	58.0	53.0	62.4	60.6	57.3	54.6	
3	10:54 AM	10:55 AM	59.1	54.6	63.1	61.8	58.4	55.8	
4	10:55 AM	10:56 AM	57.2	50.3	61.4	60.5	55.8	52.3	
5	10:56 AM	10:57 AM	59.7	54.3	64.3	62.2	59.7	55.4	
6	10:57 AM	10:58 AM	57.4	53.0	60.5	59.6	56.9	55.2	
7	10:58 AM	10:59 AM	55.8	49.0	60.9	59.0	53.6	50.7	
8	10:59 AM	11:00 AM	58.2	49.1	62.8	61.2	57.8	51.8	
9	11:00 AM	11:01 AM	59.0	52.9	63.1	62.5	57.8	54.2	
10	11:01 AM	11:02 AM	59.6	53.6	63.1	61.7	59.4	55.8	
11	11:02 AM	11:03 AM	60.0	57.0	63.6	62.2	59.5	57.7	
12	11:03 AM	11:04 AM	58.9	54.4	61.6	60.7	58.8	56.0	
13	11:04 AM	11:05 AM	61.6	53.9	69.5	65.6	58.7	55.0	
14	11:05 AM	11:06 AM	58.3	54.0	61.5	60.2	58.2	55.3	
15	11:06 AM	11:07 AM	57.8	54.5	60.7	59.7	57.3	55.4	
16	11:07 AM	11:08 AM	59.7	52.7	63.5	61.5	59.8	55.6	
17	11:08 AM	11:09 AM	55.4	52.2	61.8	57.1	54.9	52.5	UPS truck arrives
18	11:09 AM	11:10 AM	57.3	49.9	62.2	60.4	56.5	50.7	UPS truck present and running
19	11:10 AM	11:11 AM	59.8	55.4	63.9	61.4	59.5	57.1	UPS truck present and running
20	11:11 AM	11:12 AM	59.8	55.9	64.1	61.3	59.5	58.0	UPS truck present and running
21			60.3	54.8	66.2	63.4	58.9	55.5	
22									
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URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Lyckan Pkwy. NW/SE	MLK Pkwy. NB/SB
Speed (post/**obs**)*	15	55
Number of Lanes	2	5
Width (pave/**row**)	24'	60'
1- or 2- way	2	2
Grade	0	1%
Bus Stops	0	0
Stoplights	0	0
Motorcycles	0	0
Automobiles	4	150
Medium Trucks	1	4
Heavy Trucks	0	1
Buses	0	1
Count duration	20 min.	10 min.

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? **Yes**/No M12B-1, M12B-2, M12B-3

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice FIELD NOISE MEASUREMENT DATA FORM

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date:	11/13/2013	Page	of
Monitoring Location:	M12B - Lyckan Pkwy.			Analyst:	Andrew Bell - #2 Equipment		

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1414	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: **Steady**/Gusty/Calm	
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	113.9 dBA	Avg Wind Speed/Direction:	6/NNW
Topo: Flat / **Hilly**		GPS Coordinates (at SLM location)#		Temp (°F): 39	RH (%): 43
Terrain: Hard/Soft/**Mixed**/Snow		+35° 57' 51.44", -78° 57' 49.00"		Bar Psr (Hg): 30.47	Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			59.9	53.0	64.5	62.6	60.4	53.6	
1	5:33 PM	5:34 PM	61.1	53.9	65.3	64.2	60.1	55.5	
2	5:34 PM	5:35 PM	60.5	54.4	65.2	63.1	59.8	57.0	
3	5:35 PM	5:36 PM	61.7	56.8	64.8	64.1	61.5	58.0	
4	5:36 PM	5:37 PM	59.9	54.3	64.4	63.2	58.8	55.2	
5	5:37 PM	5:38 PM	61.6	57.0	63.7	63.2	61.7	59.3	
6	5:38 PM	5:39 PM	60.8	56.8	63.0	62.6	60.9	57.9	
7	5:39 PM	5:40 PM	59.9	53.9	64.5	62.0	59.7	55.3	
8	5:40 PM	5:41 PM	63.0	59.2	65.8	64.9	62.7	60.5	
9	5:41 PM	5:42 PM	59.7	54.1	63.1	61.8	59.4	56.4	
10	5:42 PM	5:43 PM	60.9	56.1	63.6	62.8	60.7	57.3	
11	5:43 PM	5:44 PM	59.5	54.5	62.6	61.5	59.3	56.4	
12	5:44 PM	5:45 PM	61.5	53.0	64.6	63.6	61.7	54.7	
13	5:45 PM	5:46 PM	60.5	50.8	65.0	63.9	59.3	52.7	
14	5:46 PM	5:47 PM	60.9	55.2	63.7	63.0	61.1	56.3	
15	5:47 PM	5:48 PM	60.0	54.8	64.6	63.4	59.0	55.8	
16	5:48 PM	5:49 PM	59.9	55.4	63.6	62.6	59.4	56.2	
17	5:49 PM	5:50 PM	60.8	55.1	63.4	63.1	61.1	55.8	
18	5:50 PM	5:51 PM	59.6	54.8	62.3	61.5	59.3	56.9	
19	5:51 PM	5:52 PM	61.5	58.8	63.5	62.8	61.4	59.6	
20	5:52 PM	5:53 PM	59.8	54.5	61.9	61.6	60.0	56.0	
21			62.6	58.3	66.4	64.9	62.2	60.0	
22									
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URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Lyckan Pkwy. NW/SE	MLK Pkwy. NB/SB
Speed (post/**obs**)*	15	55
Number of Lanes	2	5
Width (pave/**row**)	24'	60'
1- or 2- way	2	2
Grade	0	1%
Bus Stops	0	0
Stoplights	0	0
Motorcycles	0	0
Automobiles	2	139
Medium Trucks	0	3
Heavy Trucks	0	0
Buses	0	0
Count duration	10 min.	10 min.

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/No

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date: 11/13/2013	Page of
Monitoring Location:	M12B - Lyckan Pkwy.			Analyst:	Andrew Bell - #2 Equipment

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1414	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: Steady/Gusty/**Calm**	
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	113.9 dBA	Avg Wind Speed/Direction:	0
Topo: Flat / **Hilly**		GPS Coordinates (at SLM location)#		Temp (°F): 29	RH (%): 63
Terrain: Hard/Soft/**Mixed**/Snow		+35° 57' 51.44", -78° 57' 49.00"		Bar Psr (Hg): 30.50	Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			57.9	51.7	63.8	61.1	56.7	52.8	
1	9:15 PM	9:16 PM	60.2	50.0	64.9	62.9	59.8	53.2	
2	9:16 PM	9:17 PM	54.7	46.5	60.0	58.0	54.1	47.5	
3	9:17 PM	9:18 PM	52.0	47.2	57.9	55.4	50.4	47.8	
4	9:18 PM	9:19 PM	58.3	52.1	61.4	60.6	57.9	54.4	
5	9:19 PM	9:20 PM	57.3	51.1	60.7	59.8	57.5	51.9	
6	9:20 PM	9:21 PM	56.9	50.1	62.9	60.5	55.4	51.0	
7	9:21 PM	9:22 PM	56.6	47.5	62.9	60.2	54.6	48.4	
8	9:22 PM	9:23 PM	56.8	47.3	61.3	60.3	55.4	50.3	
9	9:23 PM	9:24 PM	56.9	50.6	61.2	59.6	55.9	52.5	
10	9:24 PM	9:25 PM	58.2	51.7	63.2	61.9	56.7	54.0	
11	9:25 PM	9:26 PM	56.7	46.0	62.3	61.3	54.7	46.9	
12	9:26 PM	9:27 PM	55.2	47.0	59.9	59.0	53.7	49.0	
13	9:27 PM	9:28 PM	57.4	45.6	62.4	60.8	56.5	46.8	
14	9:28 PM	9:29 PM	55.7	45.1	58.9	57.9	55.8	47.8	
15	9:29 PM	9:30 PM	55.9	44.6	60.5	59.5	54.2	48.8	
16	9:30 PM	9:31 PM	56.6	49.5	62.5	59.6	55.6	51.0	
17	9:31 PM	9:32 PM	56.9	52.1	60.7	59.1	56.6	53.5	
18	9:32 PM	9:33 PM	55.6	46.3	61.9	59.6	52.0	47.3	
19	9:33 PM	9:34 PM	55.1	47.6	60.6	57.8	54.6	48.5	
20	9:34 PM	9:35 PM	55.9	49.4	60.8	58.8	55.0	50.9	
21			55.8	44.7	61.8	60.4	52.2	45.1	
22									
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28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Lyckan Pkwy. NW/SE	MLK Pkwy. NB/SB
Speed (post/**obs**)*	15	55
Number of Lanes	2	5
Width (pave/**row**)	24'	60'
1- or 2- way	2	2
Grade	0	1%
Bus Stops	0	0
Stoplights	0	0
Motorcycles	0	0
Automobiles	0	109
Medium Trucks	0	1
Heavy Trucks	0	0
Buses	0	0
Count duration	10 min.	10 min.

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/No

Additional Notes/Comments: Businesses in office building closed for the day.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date:	11/12/2013	Page	of
Monitoring Location:	M12A -Oak Creek Village Apartments			Analyst:	John Burris - #6 Equipment		

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1324	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: Steady/Gusty/**Calm**	
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	114.1 dBA	Avg Wind Speed/Direction:	0
Topo: **Flat** / Hilly		GPS Coordinates (at SLM location)#		Temp (°F): 37	RH (%): 83
Terrain: Hard/Soft/**Mixed**/Snow		+35° 57' 36.88", -78° 58' 43.44"		Bar Psr (Hg): 30.06	Cloud Cover (%): 50

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			66.9	59.4	74.0	71.8	64.3	60.5	
1	8:25 AM	8:26 AM	60.3	56.8	62.5	61.9	60.3	57.7	
2	8:26 AM	8:27 AM	65.1	61.4	71.6	66.8	64.5	62.3	
3	8:27 AM	8:28 AM	66.5	60.3	71.8	68.8	65.5	62.3	
4	8:28 AM	8:29 AM	62.9	59.2	67.2	65.2	62.5	60.1	
5	8:29 AM	8:30 AM	65.1	60.3	69.1	68.2	64.4	61.2	
6	8:30 AM	8:31 AM	65.1	61.6	68.4	67.7	64.3	63.1	
7	8:31 AM	8:32 AM	68.5	62.2	75.6	71.9	64.4	62.6	
8	8:32 AM	8:33 AM	66.1	56.6	72.7	70.6	62.8	58.4	
9	8:33 AM	8:34 AM	64.5	58.7	67.3	66.2	64.3	61.8	
10	8:34 AM	8:35 AM	66.4	63.1	72.3	68.1	66.2	63.9	
11	8:35 AM	8:36 AM	62.4	55.9	68.1	65.6	61.3	56.9	
12	8:36 AM	8:37 AM	66.9	63.4	69.7	68.7	66.7	64.4	
13	8:37 AM	8:38 AM	69.5	57.4	77.3	73.8	67.5	59.1	
14	8:38 AM	8:39 AM	60.2	53.9	66.9	62.9	59.3	54.8	
15	8:39 AM	8:40 AM	68.2	65.5	70.7	69.8	67.9	66.4	
16	8:40 AM	8:41 AM	64.9	60.2	67.7	66.8	64.8	61.4	
17	8:41 AM	8:42 AM	69.5	61.0	79.1	72.2	66.1	62.0	
18	8:42 AM	8:43 AM	70.9	62.7	74.8	72.8	71.4	63.8	
19	8:43 AM	8:44 AM	64.2	58.2	68.6	66.8	63.6	59.7	
20			66.5	64.1	72.0	68.5	65.7	64.5	
21									
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URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	US 15-501			
Speed (**post**/obs)*	45/50			
Number of Lanes	9			
Width (pave/**row**)	112'/212'			
1- or 2- way	2/2			
Grade	0			
Bus Stops	0			
Stoplights	1			
Motorcycles	1			
Automobiles	636			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	10			
Heavy Trucks	11			
Buses	4			
Count duration	10 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS		Project #:	31829240	Date:	11/12/2013	Page	of	
Monitoring Location:	M12A -Oak Creek Village Apartments				Analyst:	John Burris - #6 Equipment			

Sound Level Meter		Field Calibration			Weather Data			
Model #:	820	Model #:	CAL200		Model #:	SM-28		
Serial #:	1324	Serial #:	3704		Serial #:	3386		
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**		Wind: **Steady**/Gusty/Calm			
Response: **Slow** / Fast / Impl		Pre-Test	114.1	dBA	Precipitation: Yes (explain) / **No**			
Windscreen : **Yes** / No (explain)		Post-Test	N/A	dBA	Avg Wind Speed/Direction:	2.5		
Topo: **Flat** / Hilly		GPS Coordinates (at SLM location)#			Temp (°F):	50	RH (%):	60
Terrain: Hard/Soft/**Mixed**/Snow		+35° 57' 36.88", -78° 58' 43.44"			Bar Psr (Hg):	30.11	Cloud Cover (%):	0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			65.8	63.7	69.2	68.7	64.7	63.9	
1	11:38 AM	11:39 AM	69.3	65.8	72.9	70.8	68.9	67.4	
2	11:39 AM	11:40 AM	63.1	54.7	68.8	66.0	62.1	56.8	
3	11:40 AM	11:41 AM	66.0	62.5	68.4	67.4	66.3	63.8	
4	11:41 AM	11:42 AM	66.1	61.9	70.0	68.9	64.9	62.8	
5	11:42 AM	11:43 AM	62.4	55.8	67.5	66.3	60.9	57.0	
6	11:43 AM	11:44 AM	68.7	64.9	71.3	70.2	68.7	66.8	
7	11:44 AM	11:45 AM	63.2	57.3	67.6	65.9	62.0	59.4	
8	11:45 AM	11:46 AM	66.1	62.2	68.9	67.9	65.9	63.5	
9	11:46 AM	11:47 AM	63.5	56.0	66.6	65.8	64.0	57.2	
10	11:47 AM	11:48 AM	66.1	58.0	74.0	68.7	65.1	59.7	
11	11:48 AM	11:49 AM	69.0	64.8	72.4	71.1	68.5	66.7	
12	11:49 AM	11:50 AM	60.8	55.1	66.8	62.9	60.3	56.9	
13	11:50 AM	11:51 AM	67.1	61.7	71.2	68.8	66.5	65.0	
14	11:51 AM	11:52 AM	68.9	56.8	75.0	72.6	67.9	59.6	
15	11:52 AM	11:53 AM	65.3	55.1	69.4	68.1	65.1	56.5	
16	11:53 AM	11:54 AM	69.4	63.8	73.1	72.2	68.6	65.7	
17	11:54 AM	11:55 AM	63.9	54.9	68.4	66.7	63.7	57.3	
18	11:55 AM	11:56 AM	68.3	62.6	70.6	70.2	68.4	64.4	
19	11:56 AM	11:57 AM	67.7	54.9	72.1	70.8	67.3	58.2	
20	11:57 AM	11:58 AM	64.8	55.7	68.3	67.4	64.5	58.9	
21									
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27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	US 15-501			
Speed (**post**/obs)*	45/50			
Number of Lanes	9			
Width (pave/row)	112'/212'			
1- or 2- way	2/2			
Grade	0			
Bus Stops	0			
Stoplights	1			
Motorcycles	3			
Automobiles	417			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	5			
Heavy Trucks	10			
Buses	3			
Count duration	10 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice FIELD NOISE MEASUREMENT DATA FORM

Project Name:	Triangle Transit DEIS		Project #:	31829240	Date:	11/15/2013	Page	of
Monitoring Location:	M12A -Oak Creek Village Apartments				Analyst:	John Burris - #2 Equipment		

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1414	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: **Steady**/Gusty/Calm	
Response: **Slow** / Fast / Impl		Pre-Test	113.9 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	113.9 dBA	Avg Wind Speed/Direction:	1.5
Topo:	**Flat** / Hilly	GPS Coordinates (at SLM location)[#]		Temp (°F): 60	RH (%): 73
Terrain:	Hard/Soft/**Mixed**/Snow	+35° 57' 36.88", -78° 58' 43.44"		Bar Psr (Hg): 30.20	Cloud Cover (%): 100

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			61.2	58.6	63.0	62.7	61.0	59.1	
1	3:05 PM	3:06 PM	62.9	55.8	66.5	65.7	62.6	56.8	
2	3:06 PM	3:07 PM	70.7	65.1	76.3	73.4	69.6	66.2	
3	3:07 PM	3:08 PM	61.9	57.6	67.8	64.5	61.3	58.7	
4	3:08 PM	3:09 PM	65.5	55.9	71.7	68.9	65.1	58.0	
5	3:09 PM	3:10 PM	69.5	63.5	73.7	72.3	69.2	65.3	
6	3:10 PM	3:11 PM	63.1	57.9	68.5	66.3	61.8	59.1	
7	3:11 PM	3:12 PM	65.9	60.4	70.1	68.6	64.2	61.8	
8	3:12 PM	3:13 PM	68.0	60.4	73.5	70.7	67.7	61.6	
9	3:13 PM	3:14 PM	59.0	55.7	61.4	60.6	58.9	56.6	
10	3:14 PM	3:15 PM	66.8	60.0	73.7	70.2	65.4	60.4	
11	3:15 PM	3:16 PM	64.5	57.7	68.6	67.5	63.3	58.6	
12	3:16 PM	3:17 PM	60.6	55.3	64.6	63.1	60.1	56.1	
13	3:17 PM	3:18 PM	67.2	61.7	72.9	70.7	65.6	63.1	
14	3:18 PM	3:19 PM	66.4	60.2	69.8	69.2	66.1	61.2	
15	3:19 PM	3:20 PM	62.8	60.3	65.1	64.6	62.5	61.0	
16	3:20 PM	3:21 PM	67.2	63.8	72.0	70.6	66.0	63.8	
17	3:21 PM	3:22 PM	65.5	61.5	69.9	68.5	64.5	62.4	
18	3:22 PM	3:23 PM	61.4	56.7	69.3	63.5	60.6	57.3	
19	3:23 PM	3:24 PM	67.8	61.9	70.5	69.4	68.0	63.8	
20	3:24 PM	3:25 PM	62.7	59.0	66.8	65.6	61.7	59.4	
21			63.0	55.4	68.5	67.1	62.0	56.4	
22									
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29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	US 15-501			
Speed (**post**/obs)*	45/50			
Number of Lanes	9			
Width (pave/row)	112'/212'			
1- or 2- way	2/2			
Grade	0			
Bus Stops	0			
Stoplights	1			
Motorcycles	0			
Automobiles	723			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	6			
Heavy Trucks	11			
Buses	5			
Count duration	10 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name: Triangle Transit DEIS	Project #: 31829240	Date: 11/15/2013	Page of
Monitoring Location: M12A -Oak Creek Village Apartments		Analyst: John Burris - #2 Equipment	

Sound Level Meter	Field Calibration	Weather Data
Model #: 820	Model #: CAL200	Model #: SM-28
Serial #: 1414	Serial #: 3704	Serial #: 3386
Weighting: **A** / C / Flat	Calibration Level (dBA): 94 / **114**	Wind: Steady/Gusty/**Calm**
Response: **Slow** / Fast / Impl	Pre-Test 113.9 dBA	Precipitation: Yes (explain) / **No**
Windscreen : **Yes** / No (explain)	Post-Test 113.9 dBA	Avg Wind Speed/Direction: 0
Topo: **Flat** / Hilly	GPS Coordinates (at SLM location)#	Temp (°F): 54 RH (%): 73
Terrain: Hard/Soft/**Mixed**/Snow	+35° 57' 36.88", -78° 58' 43.44"	Bar Psr (Hg): 30.19 Cloud Cover (%): 100

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			66.4	63.3	69.6	69.5	65.0	63.4	
1	7:55 PM	7:56 PM	69.9	68.2	71.9	70.9	69.8	68.5	
2	7:56 PM	7:57 PM	63.7	57.9	70.8	66.7	62.4	58.7	
3	7:57 PM	7:58 PM	68.0	61.9	71.9	70.3	67.4	63.6	
4	7:58 PM	7:59 PM	66.3	60.2	73.9	70.7	63.5	60.6	
5	7:59 PM	8:00 PM	68.5	58.9	70.7	70.6	69.1	62.9	
6	8:00 PM	8:01 PM	61.9	56.3	68.8	64.8	60.0	57.7	
7	8:01 PM	8:02 PM	68.6	64.1	70.9	70.5	68.6	65.7	
8	8:02 PM	8:03 PM	62.9	58.2	65.6	65.2	62.3	59.7	
9	8:03 PM	8:04 PM	69.2	62.4	73.5	70.8	69.2	63.4	
10	8:04 PM	8:05 PM	64.2	60.0	70.1	68.2	62.4	60.4	
11	8:05 PM	8:06 PM	67.6	63.1	72.5	70.5	65.8	63.8	
12	8:06 PM	8:07 PM	63.8	57.6	69.6	67.1	63.0	59.1	
13	8:07 PM	8:08 PM	67.1	60.2	70.7	69.8	67.1	61.0	
14	8:08 PM	8:09 PM	64.2	57.9	69.6	68.6	60.8	59.1	
15	8:09 PM	8:10 PM	67.2	56.4	73.6	70.0	66.3	58.6	
16	8:10 PM	8:11 PM	63.9	56.4	71.3	68.5	61.7	57.8	
17	8:11 PM	8:12 PM	67.8	59.3	71.3	69.8	68.5	61.3	
18	8:12 PM	8:13 PM	64.3	58.7	69.1	68.6	61.7	59.6	
19	8:13 PM	8:14 PM	67.0	59.0	69.3	68.8	67.0	63.4	
20			67.2	60.4	73.3	70.0	65.5	62.9	
21									
22									
23									
24									
25									
26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass
Roadway Name/Dir	US 15-501		
Speed (**post**/obs)*	45/50		
Number of Lanes	9		
Width (pave/row)	112'/212'		
1- or 2- way	2/2		
Grade	0		
Bus Stops	0		
Stoplights	1		
Motorcycles	0		
Automobiles	454		
Medium Trucks	2		
Heavy Trucks	2		
Buses	1		
Count duration	10 min.		

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name: Triangle Transit DEIS	Project #: 31829240	Date: 11/12/2013	Page of
Monitoring Location: M12 -Sayward Drive		Analyst: John Burris - #6 Equipment	

Sound Level Meter	Field Calibration	Weather Data
Model #: 820	Model #: CAL200	Model #: SM-28
Serial #: 1414	Serial #: 3704	Serial #: 3386
Weighting: **A** / C / Flat	Calibration Level (dBA): 94 / **114**	Wind: Steady/Gusty/**Calm**
Response: **Slow** / Fast / Impl	Pre-Test 114.1 dBA	Precipitation: Yes (explain) / **No**
Windscreen : **Yes** / No (explain)	Post-Test 114.1 dBA	Avg Wind Speed/Direction: 0
Topo: **Flat** / Hilly	GPS Coordinates (at SLM location)#	Temp (°F): 37 RH (%): 83
Terrain: Hard/Soft/**Mixed**/Snow	+35° 57' 00.73", -78° 59' 12.09"	Bar Psr (Hg): 30.06 Cloud Cover (%): 33

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			55.3	54.4	59.2	55.9	55.3	54.4	
1	7:14 AM	7:15 AM	55.6	54.4	56.4	56.2	55.5	55.0	
2	7:15 AM	7:16 AM	55.2	53.8	56.7	55.9	55.2	54.2	
3	7:16 AM	7:17 AM	55.7	54.5	57.4	56.7	55.7	55.0	
4	7:17 AM	7:18 AM	55.4	54.5	56.5	56.0	55.5	55.0	
5	7:18 AM	7:19 AM	55.9	54.7	59.0	56.9	55.8	55.1	
6	7:19 AM	7:20 AM	55.2	54.0	57.5	56.2	54.9	54.2	
7	7:20 AM	7:21 AM	57.9	54.8	66.2	60.2	56.7	55.3	
8	7:21 AM	7:22 AM	56.7	54.1	60.0	57.9	56.4	55.2	
9	7:22 AM	7:23 AM	56.0	54.2	60.3	57.6	55.5	54.4	
10	7:23 AM	7:24 AM	56.1	54.8	58.6	57.0	55.8	55.1	
11	7:24 AM	7:25 AM	57.0	54.7	61.4	58.5	56.7	55.1	
12	7:25 AM	7:26 AM	56.8	55.2	59.7	57.8	56.6	55.6	
13	7:26 AM	7:27 AM	57.2	55.8	59.7	58.6	57.0	55.9	
14	7:27 AM	7:28 AM	56.5	54.6	62.4	57.7	56.2	54.9	
15	7:28 AM	7:29 AM	56.6	54.8	60.1	57.9	56.4	55.2	
16	7:29 AM	7:30 AM	58.9	56.2	65.6	61.5	57.8	56.5	
17	7:30 AM	7:31 AM	56.5	54.7	59.1	58.0	56.1	55.1	
18	7:31 AM	7:32 AM	56.3	55.2	58.6	57.0	56.3	55.3	
19	7:32 AM	7:33 AM	56.7	55.0	59.9	58.3	56.3	55.3	
20	7:33 AM	7:34 AM	56.4	55.0	59.6	57.6	56.2	55.2	
21			55.2	53.8	59.5	56.0	54.9	54.1	
22									
23									
24									
25									
26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	Sayward			
Speed (**post**/obs)*	25/25			
Number of Lanes	2			
Width (pave/**row**)	20'/36'			
1- or 2- way	2/2			
Grade	0			
Bus Stops	0			
Stoplights	0			
Motorcycles	0			
Automobiles	1			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	0			
Heavy Trucks	0			
Buses	0			
Count duration	20 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice FIELD NOISE MEASUREMENT DATA FORM

Project Name:	Triangle Transit DEIS	Project #: 31829240	Date: 11/15/2013	Page	of
Monitoring Location:	M12 -Sayward Drive		Analyst:	John Burris - #2 Equipment	

Sound Level Meter		Field Calibration			Weather Data			
Model #:	820	Model #:	CAL200		Model #:	SM-28		
Serial #:	1324	Serial #:	3704		Serial #:	3386		
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**		Wind: **Steady**/Gusty/Calm			
Response: **Slow** / Fast / Impl		Pre-Test	113.9	dBA	Precipitation: Yes (explain) / **No**			
Windscreen : **Yes** / No (explain)		Post-Test	113.9	dBA	Avg Wind Speed/Direction:	1.5		
Topo: **Flat** / Hilly		GPS Coordinates (at SLM location)#			Temp (°F):	51	RH (%):	73
Terrain: Hard/Soft/**Mixed**/Snow		+35° 57' 00.73", -78° 59' 12.09"			Bar Psr (Hg):	30.35	Cloud Cover (%):	90

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			46.5	44.0	53.9	49.3	44.8	44.1	
1	12:00 PM	12:01 PM	43.0	41.6	45.9	44.6	42.6	41.6	
2	12:01 PM	12:02 PM	42.9	41.7	45.6	43.8	42.8	42.1	
3	12:02 PM	12:03 PM	43.9	42.2	48.0	45.1	43.6	42.4	
4	12:03 PM	12:04 PM	44.0	42.0	45.2	45.0	43.9	42.6	
5	12:04 PM	12:05 PM	42.6	41.1	44.6	43.6	42.5	41.4	
6	12:05 PM	12:06 PM	44.2	42.2	47.5	46.0	44.0	42.3	
7	12:06 PM	12:07 PM	48.5	44.1	54.4	52.9	46.1	44.3	Car
8	12:07 PM	12:08 PM	45.9	43.0	53.3	48.6	44.1	43.2	
9	12:08 PM	12:09 PM	44.2	42.7	46.0	45.5	43.8	43.1	
10	12:09 PM	12:10 PM	47.9	44.5	53.2	50.0	47.2	44.7	
11	12:10 PM	12:11 PM	46.6	43.8	50.4	48.8	46.1	44.2	
12	12:11 PM	12:12 PM	44.6	43.8	45.3	45.1	44.5	44.0	
13	12:12 PM	12:13 PM	45.0	44.1	46.4	45.8	44.8	44.2	
14	12:13 PM	12:14 PM	43.9	42.8	46.9	44.8	43.8	43.1	
15	12:14 PM	12:15 PM	46.5	43.3	52.0	50.4	44.6	43.4	
16	12:15 PM	12:16 PM	50.2	43.4	54.3	52.9	49.5	44.2	Nearby Beeping Construction Equipment
17	12:16 PM	12:17 PM	44.4	43.1	46.4	45.9	43.9	43.2	
18	12:17 PM	12:18 PM	45.3	42.9	49.5	47.1	44.8	43.4	
19	12:18 PM	12:19 PM	43.8	41.9	47.3	45.5	43.4	42.3	
20	12:19 PM	12:20 PM	43.7	42.3	45.4	45.0	43.4	42.3	
21			47.3	43.1	54.0	50.0	46.9	43.5	
22									
23									
24									
25									
26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	Sayward			
Speed (**post**/obs)*	25/25			
Number of Lanes	2			
Width (pave/row)	20'/36'			
1- or 2- way	2/2			
Grade	0			
Bus Stops	0			
Stoplights	0			
Motorcycles	0			
Automobiles	1			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	0			
Heavy Trucks	0			
Buses	0			
Count duration	20 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date:	11/15/2013	Page of
Monitoring Location:	M12 -Sayward Drive			Analyst:	John Burris - #2 Equipment	

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1414	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: **Steady**/Gusty/Calm	
Response: **Slow** / Fast / Impl		Pre-Test	113.9 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	113.9 dBA	Avg Wind Speed/Direction:	1.5
Topo:	**Flat** / Hilly	GPS Coordinates (at SLM location)#		Temp (°F): 60	RH (%): 73
Terrain:	Hard/Soft/**Mixed**/Snow	+35° 57' 00.73", -78° 59' 12.09"		Bar Psr (Hg): 30.20	Cloud Cover (%): 100

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			48.8	47.5	51.6	50.6	48.2	47.5	
1	3:40 PM	3:41 PM	48.1	47.1	49.1	48.8	48.0	47.2	
2	3:41 PM	3:42 PM	47.7	46.4	49.9	48.7	47.5	46.4	
3	3:42 PM	3:43 PM	47.0	46.5	48.1	47.8	47.0	46.5	
4	3:43 PM	3:44 PM	47.0	46.0	48.2	47.8	46.9	46.2	
5	3:44 PM	3:45 PM	49.0	47.0	50.7	50.0	48.9	47.9	
6	3:45 PM	3:46 PM	47.5	46.0	48.6	48.2	47.5	46.5	
7	3:46 PM	3:47 PM	49.9	45.8	53.9	53.1	49.0	46.3	Car
8	3:47 PM	3:48 PM	48.4	46.7	53.4	49.4	48.3	47.3	
9	3:48 PM	3:49 PM	47.8	47.1	49.6	48.7	47.7	47.1	
10	3:49 PM	3:50 PM	48.6	47.2	49.7	49.5	48.5	47.7	
11	3:50 PM	3:51 PM	48.5	47.4	49.8	49.3	48.4	47.4	
12	3:51 PM	3:52 PM	48.1	47.0	50.5	49.6	47.7	47.1	Car
13	3:52 PM	3:53 PM	49.2	46.9	56.3	50.9	48.5	47.3	
14	3:53 PM	3:54 PM	48.1	46.5	50.1	49.4	48.0	46.6	
15	3:54 PM	3:55 PM	47.3	46.4	48.8	48.5	47.4	46.4	
16	3:55 PM	3:56 PM	48.2	46.8	49.5	49.0	48.3	47.2	
17	3:56 PM	3:57 PM	48.1	46.9	50.1	49.6	47.9	47.2	
18	3:57 PM	3:58 PM	47.2	45.9	48.0	47.9	47.3	46.3	
19	3:58 PM	3:59 PM	47.7	46.4	51.4	48.8	47.4	46.4	
20	3:59 PM	4:00 PM	48.8	46.1	55.4	51.7	47.4	46.2	
21			48.1	45.4	57.7	51.3	46.2	45.4	
22									
23									
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25									
26									
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28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	Sayward			
Speed (**post**/obs)*	25/25			
Number of Lanes	2			
Width (pave/row)	20'/36'			
1- or 2- way	2/2			
Grade	0			
Bus Stops	0			
Stoplights	0			
Motorcycles	0			
Automobiles	0			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	0			
Heavy Trucks	0			
Buses	0			
Count duration	20 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice FIELD NOISE MEASUREMENT DATA FORM

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date: 11/15/2013	Page of
Monitoring Location:	M12 -Sayward Drive			Analyst:	John Burris - #2 Equipment

Sound Level Meter		Field Calibration			Weather Data			
Model #:	820	Model #:	CAL200		Model #:	SM-28		
Serial #:	1414	Serial #:	3704		Serial #:	3386		
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**		Wind: Steady/Gusty/**Calm**			
Response: **Slow** / Fast / Impl		Pre-Test	113.9	dBA	Precipitation: Yes (explain) / **No**			
Windscreen : **Yes** / No (explain)		Post-Test	113.9	dBA	Avg Wind Speed/Direction:	0		
Topo:	**Flat** / Hilly	GPS Coordinates (at SLM location)#			Temp (°F):	55	RH (%):	73
Terrain:	Hard/Soft/**Mixed**/Snow	+35° 57' 00.73", -78° 59' 12.09"			Bar Psr (Hg):	30.19	Cloud Cover (%):	100

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			50.3	49.4	53.6	51.4	50.0	49.4	
1	7:07 PM	7:08 PM	50.3	49.1	51.1	50.9	50.4	49.5	
2	7:08 PM	7:09 PM	49.8	49.1	50.6	50.6	49.6	49.1	
3	7:09 PM	7:10 PM	49.8	48.9	51.7	50.7	49.7	49.1	
4	7:10 PM	7:11 PM	49.8	48.1	55.1	50.5	49.4	48.4	
5	7:11 PM	7:12 PM	49.1	47.9	53.0	50.6	48.6	48.1	
6	7:12 PM	7:13 PM	50.6	49.1	52.2	51.4	50.4	49.4	
7	7:13 PM	7:14 PM	50.5	49.8	51.1	50.9	50.5	50.0	
8	7:14 PM	7:15 PM	49.9	49.1	50.8	50.7	49.8	49.2	
9	7:15 PM	7:16 PM	50.7	49.7	53.3	51.7	50.7	50.0	
10	7:16 PM	7:17 PM	51.0	49.6	53.9	52.5	50.7	50.0	
11	7:17 PM	7:18 PM	51.3	49.3	56.2	52.6	50.7	49.8	
12	7:18 PM	7:19 PM	50.8	49.3	51.8	51.7	50.7	49.9	
13	7:19 PM	7:20 PM	50.5	49.3	52.9	51.5	50.4	49.3	
14	7:20 PM	7:21 PM	49.6	48.6	51.5	50.7	49.5	48.6	
15	7:21 PM	7:22 PM	50.1	48.3	54.5	51.3	49.7	48.6	
16	7:22 PM	7:23 PM	50.0	48.8	51.8	50.9	50.1	49.2	
17									
18									
19									
20									
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22									
23									
24									
25									
26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Sayward		
Speed (**post**/obs)*	25/25		
Number of Lanes	2		
Width (pave/row)	20'/36'		
1- or 2- way	2/2		
Grade	0		
Bus Stops	0		
Stoplights	0		
Motorcycles	0		
Automobiles	0		
Medium Trucks	0		
Heavy Trucks	0		
Buses	0		
Count duration	20 min.		

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date:	11/15/2013	Page	of
Monitoring Location:	M11 - White Oak Dr.			Analyst:	John Burris - #2 Equipment		

Sound Level Meter		Field Calibration			Weather Data			
Model #:	820	Model #:	CAL200		Model #:	SM-28		
Serial #:	1414	Serial #:	3704		Serial #:	3386		
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**		Wind: Steady/Gusty/**Calm**			
Response: **Slow** / Fast / Impl		Pre-Test	113.9	dBA	Precipitation: Yes (explain) / **No**			
Windscreen : **Yes** / No (explain)		Post-Test	113.9	dBA	Avg Wind Speed/Direction:	0		
Topo:	**Flat** / Hilly	GPS Coordinates (at SLM location)#			Temp (°F):	35	RH (%):	73
Terrain:	Hard/Soft/**Mixed**/Snow	+35° 56' 53.40", -78° 59' 56.79"			Bar Psr (Hg):	30.35	Cloud Cover (%):	50

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			56.2	52.8	58.2	56.9	56.3	55.2	
1	7:56 AM	7:57 AM	55.6	54.8	56.5	56.5	55.6	55.1	
2	7:57 AM	7:58 AM	55.7	54.8	56.6	56.6	55.7	55.0	
3	7:58 AM	7:59 AM	55.6	54.3	57.1	56.4	55.5	55.0	
4	7:59 AM	8:00 AM	55.7	54.4	56.8	56.7	55.6	54.6	
5	8:00 AM	8:01 AM	54.9	54.0	56.5	55.8	54.8	54.2	
6	8:01 AM	8:02 AM	55.8	53.7	58.2	57.4	55.8	54.2	
7	8:02 AM	8:03 AM	56.8	55.4	58.4	57.8	56.8	55.6	
8	8:03 AM	8:04 AM	56.1	55.1	56.9	56.8	56.0	55.2	
9	8:04 AM	8:05 AM	55.5	54.5	56.4	56.1	55.4	54.5	
10	8:05 AM	8:06 AM	55.5	54.1	56.4	56.4	55.5	54.4	
11	8:06 AM	8:07 AM	55.4	53.5	57.3	56.7	55.2	53.7	
12	8:07 AM	8:08 AM	56.0	54.6	57.5	57.0	55.7	55.1	
13	8:08 AM	8:09 AM	55.5	54.6	57.0	56.2	55.5	54.8	
14	8:09 AM	8:10 AM	54.9	53.7	56.5	56.0	54.6	54.1	
15	8:10 AM	8:11 AM	55.8	55.1	56.7	56.3	55.6	55.1	
16	8:11 AM	8:12 AM	56.1	55.0	57.5	56.9	56.0	55.2	
17	8:12 AM	8:13 AM	55.7	54.2	57.6	56.9	55.5	54.3	
18	8:13 AM	8:14 AM	55.5	53.6	56.7	56.7	55.5	53.7	
19	8:14 AM	8:15 AM	55.5	54.1	56.5	56.5	55.5	54.3	
20			54.6	53.4	58.2	55.5	54.4	53.5	
21									
22									
23									
24									
25									
26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	White Oak Dr. EB/WB			
Speed (**post**/obs)*	25			
Number of Lanes	1			
Width (pave/**row**)	12'			
1- or 2- way	2			
Grade	1%			
Bus Stops	0			
Stoplights	0			
Motorcycles	0			
Automobiles	0			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	0			
Heavy Trucks	0			
Buses	0			
Count duration	20 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/No

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date: 11/11/2013	Page of
Monitoring Location:	M11 - White Oak Dr.			Analyst:	Andrew Bell - #2 Equipment

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1414	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: Steady/Gusty/**Calm**	
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	114.1 dBA	Avg Wind Speed/Direction:	0
Topo: **Flat** / Hilly		GPS Coordinates (at SLM location)#		Temp (°F): 54	RH (%): 53
Terrain: Hard/Soft/**Mixed**/Snow		+35° 56' 53.40", -78° 59' 56.79"		Bar Psr (Hg): 30.35	Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			57.6	55.5	59.7	59.3	57.0	56.0	
1	12:19 PM	12:20 PM	55.5	51.8	59.3	57.0	55.4	53.4	
2	12:20 PM	12:21 PM	55.2	51.8	58.1	56.9	55.1	53.0	
3	12:21 PM	12:22 PM	53.9	50.4	57.1	55.6	53.6	52.0	
4	12:22 PM	12:23 PM	52.4	48.4	55.3	54.6	52.0	49.4	
5	12:23 PM	12:24 PM	53.6	50.6	59.3	56.0	52.1	50.8	
6	12:24 PM	12:25 PM	52.7	49.8	58.1	55.5	51.8	50.2	
7	12:25 PM	12:26 PM	52.4	50.6	54.1	53.6	52.2	51.1	
8	12:26 PM	12:27 PM	51.2	48.0	53.8	53.2	50.6	48.6	
9	12:27 PM	12:28 PM	52.1	50.0	54.4	53.8	51.9	50.3	
10	12:28 PM	12:29 PM	52.8	51.0	55.9	54.5	52.6	51.9	
11	12:29 PM	12:30 PM	52.0	50.4	54.0	53.1	51.9	50.7	
12	12:30 PM	12:31 PM	56.4	51.3	63.5	60.4	54.0	51.6	
13	12:31 PM	12:32 PM	53.6	51.8	55.8	55.3	53.2	52.1	
14	12:32 PM	12:33 PM	52.7	50.0	54.9	54.6	52.1	50.7	
15	12:33 PM	12:34 PM	54.4	50.6	58.8	56.6	54.0	51.5	
16	12:34 PM	12:35 PM	50.9	48.5	55.0	53.1	50.4	49.1	
17	12:35 PM	12:36 PM	52.7	49.4	55.9	54.7	52.4	50.2	
18	12:36 PM	12:37 PM	51.2	49.6	52.7	52.0	51.1	49.9	
19			54.5	50.0	66.9	53.9	51.9	50.8	
20									
21									
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27									
28									
29									

URS Acoustics and Noise Control Practice FIELD NOISE MEASUREMENT DATA FORM

Roadway Name/Dir	White Oak Dr. EB/WB	
Speed (**post**/obs)*	25	
Number of Lanes	1	
Width (pave/**row**)	12'	
1- or 2- way	2	
Grade	1%	
Bus Stops	0	
Stoplights	0	
Motorcycles	0	
Automobiles	0	
Medium Trucks	0	
Heavy Trucks	0	
Buses	0	
Count duration	20 min.	

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? **Yes**/No M11-1, M11-2, M11-3, M11-4

Additional Notes/Comments: I-40 in background creates constant low noise. Few leaves rustling.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date: 11/11/2013	Page	of
Monitoring Location:	M11 - White Oak Dr.			Analyst:	Andrew Bell - #2 Equipment	

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1414	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: **Steady**/Gusty/Calm	
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	114.1 dBA	Avg Wind Speed/Direction:	2/WNW
Topo: **Flat** / Hilly		GPS Coordinates (at SLM location)#		Temp (°F): 61	RH (%): 31
Terrain: Hard/Soft/**Mixed**/Snow		+35° 56' 53.40", -78° 59' 56.79"		Bar Psr (Hg): 30.23	Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			54.4	52.3	59.7	56.4	53.7	52.4	
1	3:50 PM	3:51 PM	55.2	52.8	57.0	56.4	55.3	53.4	
2	3:51 PM	3:52 PM	52.9	50.6	54.7	53.9	52.8	51.6	
3	3:52 PM	3:53 PM	55.3	53.6	57.6	56.3	55.2	54.2	
4	3:53 PM	3:54 PM	54.7	53.1	56.6	55.9	54.6	53.5	
5	3:54 PM	3:55 PM	54.1	52.7	55.9	55.4	53.8	53.1	
6	3:55 PM	3:56 PM	53.7	52.4	54.4	54.4	53.7	52.8	
7	3:56 PM	3:57 PM	53.3	51.5	55.0	54.5	53.3	51.8	
8	3:57 PM	3:58 PM	55.6	53.1	58.7	58.0	54.8	53.4	
9	3:58 PM	3:59 PM	55.1	52.9	58.5	56.9	54.5	53.2	
10	3:59 PM	4:00 PM	55.0	52.7	59.1	56.4	54.7	53.4	
11	4:00 PM	4:01 PM	54.7	52.0	56.1	55.8	55.0	52.7	
12	4:01 PM	4:02 PM	53.4	51.7	55.1	54.3	53.4	52.0	
13	4:02 PM	4:03 PM	53.2	51.3	54.7	54.4	53.2	51.8	
14	4:03 PM	4:04 PM	53.9	51.8	56.7	55.8	53.6	52.4	
15	4:04 PM	4:05 PM	56.6	52.1	65.6	61.0	53.9	52.7	
16	4:05 PM	4:06 PM	54.0	51.8	55.3	55.1	54.1	52.7	
17	4:06 PM	4:07 PM	53.8	51.7	56.5	55.3	53.5	52.2	
18	4:07 PM	4:08 PM	55.5	53.7	58.6	56.9	55.0	54.1	
19	4:08 PM	4:09 PM	53.8	53.1	54.9	54.3	53.6	53.1	
20	4:09 PM	4:10 PM	53.6	50.1	60.1	55.4	53.0	50.7	
21			54.1	52.5	55.8	55.3	53.9	52.6	
22									
23									
24									
25									
26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	White Oak Dr. EB/WB			
Speed (**post**/obs)*	25			
Number of Lanes	1			
Width (pave/**row**)	12'			
1- or 2- way	2			
Grade	1%			
Bus Stops	0			
Stoplights	0			
Motorcycles	0			
Automobiles	0			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	0			
Heavy Trucks	0			
Buses	0			
Count duration	20 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/No

Additional Notes/Comments: I-40 in background creates constant low noise.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice FIELD NOISE MEASUREMENT DATA FORM

Project Name:	Triangle Transit DEIS		Project #:	31829240	Date:	11/11/2013	Page	of
Monitoring Location:	M11 - White Oak Dr.				Analyst:	Andrew Bell - #2 Equipment		

Sound Level Meter		Field Calibration			Weather Data			
Model #:	820	Model #:	CAL200		Model #:	SM-28		
Serial #:	1414	Serial #:	3704		Serial #:	3386		
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**		Wind: **Steady**/Gusty/Calm			
Response: **Slow** / Fast / Impl		Pre-Test	114.1	dBA	Precipitation: Yes (explain) / **No**			
Windscreen : **Yes** / No (explain)		Post-Test	114.1	dBA	Avg Wind Speed/Direction:	3/SSE		
Topo: **Flat** / Hilly		GPS Coordinates (at SLM location)#			Temp (°F):	46	RH (%):	57
Terrain: Hard/Soft/**Mixed**/Snow		+35° 56' 53.40", -78° 59' 56.79"			Bar Psr (Hg):	30.19	Cloud Cover (%):	0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			55.3	52.5	59.8	57.5	54.9	52.6	
1	8:11 PM	8:12 PM	54.0	52.7	55.3	54.9	54.1	53.0	
2	8:12 PM	8:13 PM	53.2	50.8	54.9	54.4	52.9	52.0	
3	8:13 PM	8:14 PM	54.0	50.5	55.5	55.0	54.3	52.1	
4	8:14 PM	8:15 PM	54.0	52.4	56.1	55.1	54.0	52.5	
5	8:15 PM	8:16 PM	55.2	53.1	57.0	56.6	54.8	53.4	
6	8:16 PM	8:17 PM	55.8	54.1	57.1	56.8	55.9	54.4	
7	8:17 PM	8:18 PM	54.9	53.9	55.9	55.7	54.8	54.2	
8	8:18 PM	8:19 PM	55.5	54.1	56.6	56.6	55.4	54.2	
9	8:19 PM	8:20 PM	54.9	53.3	56.0	55.8	55.0	53.5	
10	8:20 PM	8:21 PM	54.6	53.5	56.0	55.7	54.6	53.5	
11	8:21 PM	8:22 PM	54.8	53.6	56.6	55.8	54.7	54.1	
12	8:22 PM	8:23 PM	55.0	53.7	56.5	55.9	54.9	53.7	
13	8:23 PM	8:24 PM	55.2	53.6	56.6	56.4	54.9	54.1	
14	8:24 PM	8:25 PM	55.2	53.3	56.9	56.4	55.0	53.8	
15	8:25 PM	8:26 PM	54.2	52.8	56.2	55.5	54.0	52.8	
16	8:26 PM	8:27 PM	53.7	52.1	55.1	54.7	53.5	52.3	
17	8:27 PM	8:28 PM	54.5	53.0	56.0	55.7	54.3	53.2	
18	8:28 PM	8:29 PM	55.3	53.0	60.5	56.9	54.7	53.4	
19	8:29 PM	8:30 PM	56.2	53.1	61.2	58.8	55.4	54.0	
20	8:30 PM	8:31 PM	55.4	53.0	60.1	58.0	53.9	53.2	
21			53.8	51.6	60.2	54.6	53.3	52.2	
22									
23									
24									
25									
26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass
Roadway Name/Dir	White Oak Dr. EB/WB		
Speed (**post**/obs)*	25		
Number of Lanes	1		
Width (pave/**row**)	12'		
1- or 2- way	2		
Grade	1%		
Bus Stops	0		
Stoplights	0		
Motorcycles	0		
Automobiles	0		
Medium Trucks	0		
Heavy Trucks	0		
Buses	0		
Count duration	20 min.		

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/No

Additional Notes/Comments: I-40 in background creates constant low noise.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date: 11/15/2013	Page of
Monitoring Location:	M10 - Farrington Rd. & Ephesus Church Rd.			Analyst:	John Burris - #2 Equipment

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1414	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: Steady/Gusty/**Calm**	
Response: **Slow** / Fast / Impl		Pre-Test	113.9 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	113.9 dBA	Avg Wind Speed/Direction:	0
Topo: **Flat** / Hilly		GPS Coordinates (at SLM location)#		Temp (°F): 33	RH (%): 73
Terrain: Hard/Soft/**Mixed**/Snow		+35° 55' 47.30", -78° 59' 20.07"		Bar Psr (Hg): 30.35	Cloud Cover (%): 25

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			63.2	61.4	64.2	64.2	63.3	61.6	
1	6:43 AM	6:44 AM	62.5	58.8	65.5	64.3	62.3	59.7	
2	6:44 AM	6:45 AM	61.6	56.7	65.3	64.3	61.3	57.3	
3	6:45 AM	6:46 AM	61.9	58.8	65.0	64.1	61.3	59.3	
4	6:46 AM	6:47 AM	62.4	58.2	66.3	64.7	61.8	58.8	
5	6:47 AM	6:48 AM	64.3	58.7	67.4	66.7	63.8	60.6	
6	6:48 AM	6:49 AM	62.9	59.8	65.3	64.5	62.9	60.7	
7	6:49 AM	6:50 AM	61.6	57.4	65.7	64.0	61.0	58.4	
8	6:50 AM	6:51 AM	63.5	58.0	69.9	66.7	62.2	58.6	
9	6:51 AM	6:52 AM	63.3	59.1	67.8	66.1	62.4	59.7	
10	6:52 AM	6:53 AM	61.5	58.5	65.7	63.8	60.9	58.7	
11	6:53 AM	6:54 AM	62.7	59.5	66.0	64.5	62.3	60.3	
12	6:54 AM	6:55 AM	62.3	58.7	65.2	63.7	62.2	60.1	
13	6:55 AM	6:56 AM	63.0	60.3	67.6	64.6	62.7	60.8	
14	6:56 AM	6:57 AM	62.1	57.4	66.5	64.6	61.6	58.4	
15	6:57 AM	6:58 AM	64.5	60.3	69.2	67.6	63.7	60.8	
16	6:58 AM	6:59 AM	63.9	60.2	67.8	65.7	63.7	61.5	
17	6:59 AM	7:00 AM	61.2	58.5	64.9	63.0	61.0	59.2	
18	7:00 AM	7:01 AM	61.6	58.4	64.8	63.9	61.3	59.2	
19	7:01 AM	7:02 AM	62.2	58.1	64.9	64.3	62.2	58.8	
20	7:02 AM	7:03 AM	63.0	58.7	66.5	65.5	62.3	59.9	
21			64.1	60.9	67.2	65.8	63.8	62.2	
22									
23									
24									
25									
26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Farrington Rd. NB/SB	Ephesus Ch. Rd. EB
Speed (**post**/obs)*	45	35
Number of Lanes	2	2
Width (pave/**row**)	36'	36'
1- or 2- way	2	2
Grade	0	0
Bus Stops	0	0
Stoplights	1	1
Motorcycles	0	0
Automobiles	49	18
Medium Trucks	1	0
Heavy Trucks	2	0
Buses	1	0
Count duration	10 min.	10 min.

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/No

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS		Project #:	31829240	Date:	11/11/2013	Page	of
Monitoring Location:	M10 - Farrington Rd. & Ephesus Church Rd.				Analyst:	Andrew Bell - #2 Equipment		

Sound Level Meter		Field Calibration			Weather Data			
Model #:	820	Model #:	CAL200		Model #:	SM-28		
Serial #:	1414	Serial #:	3704		Serial #:	3386		
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**		Wind: Steady/Gusty/**Calm**			
Response: **Slow** / Fast / Impl		Pre-Test	114.1	dBA	Precipitation: Yes (explain) / **No**			
Windscreen : **Yes** / No (explain)		Post-Test	114.1	dBA	Avg Wind Speed/Direction:	0		
Topo:	**Flat** / Hilly	GPS Coordinates (at SLM location)#			Temp (°F):	50	RH (%):	53
Terrain:	Hard/Soft/**Mixed**/Snow	+35° 55' 47.30", -78° 59' 20.07"			Bar Psr (Hg):	30.35	Cloud Cover (%):	0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			65.0	62.3	68.7	66.4	64.9	63.1	
1	11:07 AM	11:08 AM	61.0	57.7	68.3	62.4	60.5	58.7	
2	11:08 AM	11:09 AM	62.4	58.6	66.7	65.7	61.3	59.4	
3	11:09 AM	11:10 AM	61.6	56.2	65.7	64.4	61.0	56.8	
4	11:10 AM	11:11 AM	60.6	56.8	64.3	62.5	60.3	57.7	
5	11:11 AM	11:12 AM	62.0	57.5	67.0	63.5	61.8	59.1	
6	11:12 AM	11:13 AM	62.3	59.3	66.3	63.9	62.2	59.8	
7	11:13 AM	11:14 AM	61.3	57.1	64.9	63.1	61.2	58.5	
8	11:14 AM	11:15 AM	60.7	58.0	64.1	62.6	60.3	58.5	
9	11:15 AM	11:16 AM	63.7	60.0	67.2	65.3	63.4	61.0	
10	11:16 AM	11:17 AM	61.3	57.6	64.8	64.0	60.2	58.1	
11	11:17 AM	11:18 AM	62.1	56.1	67.2	66.0	60.6	58.0	
12	11:18 AM	11:19 AM	59.1	55.3	62.9	61.0	58.9	55.9	
13	11:19 AM	11:20 AM	61.7	56.8	64.9	63.5	61.5	59.3	
14	11:20 AM	11:21 AM	59.7	53.4	63.0	62.3	59.0	55.4	
15	11:21 AM	11:22 AM	61.4	57.5	66.6	63.6	61.0	58.1	
16	11:22 AM	11:23 AM	61.1	57.8	64.3	63.5	60.6	58.3	
17	11:23 AM	11:24 AM	60.3	56.2	64.9	62.8	59.7	57.8	
18	11:24 AM	11:25 AM	60.9	56.6	65.6	63.6	59.8	58.0	
19	11:25 AM	11:26 AM	60.4	55.6	63.6	62.1	60.0	57.6	
20	11:26 AM	11:27 AM	61.5	58.9	66.9	62.9	60.7	59.3	
21			60.8	57.7	65.6	63.7	59.7	58.2	
22									
23									
24									
25									
26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Farrington Rd. NB/SB	Ephesus Ch. Rd. EB
Speed (**post**/obs)*	45	35
Number of Lanes	2	2
Width (pave/**row**)	36'	36'
1- or 2- way	2	2
Grade	0	0
Bus Stops	0	0
Stoplights	1	1
Motorcycles	0	0
Automobiles	59	24
Medium Trucks	1	0
Heavy Trucks	0	0
Buses	0	0
Count duration	10 min.	10 min.

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? **Yes**/No M10-1, M10-2, M10-3

Additional Notes/Comments: I-40 (about 500' to east) creates constant low humming noise.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name: Triangle Transit DEIS		Project #: 31829240	Date: 11/11/2013	Page	of
Monitoring Location: M10 - Farrington Rd. & Ephesus Church Rd.			Analyst: Andrew Bell - #2 Equipment		

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1414	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: **Steady**/Gusty/Calm	
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	114.1 dBA	Avg Wind Speed/Direction:	2/WNW
Topo: **Flat** / Hilly		GPS Coordinates (at SLM location)#		Temp (°F): 60	RH (%): 31
Terrain: Hard/Soft/**Mixed**/Snow		+35° 55' 47.30", -78° 59' 20.07"		Bar Psr (Hg): 30.23	Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			63.0	60.8	64.4	64.1	63.1	61.7	
1	4:22 PM	4:23 PM	62.9	58.6	67.3	65.4	62.5	59.2	
2	4:23 PM	4:24 PM	62.6	59.1	64.6	63.9	62.7	60.8	
3	4:24 PM	4:25 PM	63.9	62.3	67.1	64.9	63.8	62.7	
4	4:25 PM	4:26 PM	63.6	59.9	67.0	65.1	63.5	61.1	
5	4:26 PM	4:27 PM	63.7	60.9	66.1	65.1	63.5	62.0	
6	4:27 PM	4:28 PM	61.3	57.8	63.6	62.8	61.3	58.8	
7	4:28 PM	4:29 PM	63.4	59.2	68.7	65.5	63.2	60.1	
8	4:29 PM	4:30 PM	63.2	60.4	65.0	64.1	63.3	61.5	
9	4:30 PM	4:31 PM	62.9	59.1	65.7	64.9	62.4	60.5	
10	4:31 PM	4:32 PM	62.0	58.3	65.1	64.2	61.6	59.4	
11	4:32 PM	4:33 PM	63.2	60.9	65.4	64.5	63.1	62.1	
12	4:33 PM	4:34 PM	62.1	59.7	64.7	64.0	61.6	60.1	
13	4:34 PM	4:35 PM	63.7	60.9	66.0	65.3	63.7	61.7	
14	4:35 PM	4:36 PM	63.1	60.3	65.6	64.8	62.9	60.7	
15	4:36 PM	4:37 PM	63.4	61.2	66.4	65.0	62.9	62.0	
16	4:37 PM	4:38 PM	62.5	60.2	65.9	64.0	62.1	60.7	
17	4:38 PM	4:39 PM	63.9	61.3	67.6	66.0	63.2	61.6	
18	4:39 PM	4:40 PM	63.3	61.0	66.4	64.8	63.1	61.4	
19	4:40 PM	4:41 PM	64.1	60.5	66.3	65.8	64.2	61.2	
20	4:41 PM	4:42 PM	64.5	62.3	66.7	65.7	64.4	63.2	
21			63.6	61.8	65.1	64.7	63.5	62.3	
22									
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URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Farrington Rd. NB/SB	Ephesus Ch. Rd. EB
Speed (**post**/obs)*	45	35
Number of Lanes	2	2
Width (pave/**row**)	36'	36'
1- or 2- way	2	2
Grade	0	0
Bus Stops	0	0
Stoplights	1	1
Motorcycles	0	0
Automobiles	133	28
Medium Trucks	1	0
Heavy Trucks	0	0
Buses	0	0
Count duration	10 min.	10 min.

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments: I-40 (about 500' to east) creates constant low humming noise.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name: Triangle Transit DEIS		Project #: 31829240	Date: 11/11/2013	Page	of
Monitoring Location: M10 - Farrington Rd. & Ephesus Church Rd.			Analyst: Andrew Bell - #2 Equipment		

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1414	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: **Steady**/Gusty/Calm	
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	114.1 dBA	Avg Wind Speed/Direction:	3/SSE
Topo: **Flat** / Hilly		GPS Coordinates (at SLM location)#		Temp (°F): 44	RH (%): 53
Terrain: Hard/Soft/**Mixed**/Snow		+35° 55' 47.30", -78° 59' 20.07"		Bar Psr (Hg): 30.19	Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			61.1	54.8	67.6	64.3	59.7	56.2	
1	9:09 PM	9:10 PM	61.5	56.0	67.6	65.4	60.2	56.5	
2	9:10 PM	9:11 PM	59.6	54.8	65.2	61.9	59.0	56.1	
3	9:11 PM	9:12 PM	59.4	56.5	62.2	61.3	59.0	57.2	
4	9:12 PM	9:13 PM	58.4	54.6	62.1	60.7	57.4	55.5	
5	9:13 PM	9:14 PM	60.3	57.4	64.2	62.5	59.8	57.8	
6	9:14 PM	9:15 PM	60.1	56.9	62.6	61.8	59.8	57.8	
7	9:15 PM	9:16 PM	59.9	55.2	66.2	62.9	58.4	55.9	
8	9:16 PM	9:17 PM	58.7	55.0	63.2	61.3	57.7	55.4	
9	9:17 PM	9:18 PM	58.7	54.0	63.1	60.4	59.0	55.0	
10	9:18 PM	9:19 PM	58.2	52.9	63.5	61.2	57.4	54.0	
11	9:19 PM	9:20 PM	59.4	54.9	63.5	61.7	59.2	56.0	
12	9:20 PM	9:21 PM	57.7	54.5	63.1	60.3	56.6	55.0	
13	9:21 PM	9:22 PM	58.8	55.4	63.5	61.0	57.9	56.4	
14	9:22 PM	9:23 PM	59.5	54.9	62.0	61.1	59.4	56.0	
15	9:23 PM	9:24 PM	60.6	56.3	64.1	63.0	59.9	57.4	
16	9:24 PM	9:25 PM	58.7	54.8	63.3	60.7	58.2	56.0	
17	9:25 PM	9:26 PM	56.5	53.3	60.0	58.5	55.9	54.0	
18	9:26 PM	9:27 PM	58.1	53.1	61.0	60.2	57.8	55.1	
19	9:27 PM	9:28 PM	58.7	53.6	63.9	61.9	56.9	54.2	
20	9:28 PM	9:29 PM	58.1	53.8	63.3	60.9	57.0	54.5	
21									
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URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Farrington Rd. NB/SB	Ephesus Ch. Rd. EB
Speed (**post**/obs)*	45	35
Number of Lanes	2	2
Width (pave/**row**)	36'	36'
1- or 2- way	2	2
Grade	0	0
Bus Stops	0	0
Stoplights	1	1
Motorcycles	0	0
Automobiles	39	8
Medium Trucks	0	0
Heavy Trucks	0	0
Buses	0	0
Count duration	10 min.	10 min.

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments: I-40 (about 500' to east) creates constant low humming noise.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date: 11/15/2013	Page of
Monitoring Location:	M9 - NC 54 at Little John Dr.			Analyst:	John Burris - #2 Equipment

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1414	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: Steady/Gusty/**Calm**	
Response: **Slow** / Fast / Impl		Pre-Test	113.9 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	113.9 dBA	Avg Wind Speed/Direction:	0
Topo: **Flat** / Hilly		GPS Coordinates (at SLM location)#		Temp (°F): 33	RH (%): 73
Terrain: Hard/Soft/**Mixed**/Snow		+35° 54' 9.06", -79° 0' 5.98"		Bar Psr (Hg): 30.35	Cloud Cover (%): 25

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			55.9	51.7	62.1	59.5	54.5	52.1	
1	6:05 AM	6:06 AM	60.8	50.7	67.3	63.8	59.6	52.7	
2	6:06 AM	6:07 AM	62.2	48.4	74.5	66.0	56.0	49.4	
3	6:07 AM	6:08 AM	56.7	45.8	66.7	61.3	52.7	46.8	
4	6:08 AM	6:09 AM	58.8	48.8	69.2	61.6	57.2	50.6	
5	6:09 AM	6:10 AM	60.5	51.4	68.5	63.7	58.6	53.5	
6	6:10 AM	6:11 AM	69.7	50.0	81.0	73.9	60.8	52.0	School Bus on Little John
7	6:11 AM	6:12 AM	61.6	53.2	65.2	64.3	61.3	56.3	
8	6:12 AM	6:13 AM	57.8	48.2	65.7	61.7	55.5	49.3	
9	6:13 AM	6:14 AM	64.2	49.6	73.2	68.5	60.4	54.1	
10	6:14 AM	6:15 AM	60.0	49.6	67.8	63.9	58.2	51.0	
11	6:15 AM	6:16 AM	56.4	47.5	64.3	61.0	52.9	48.5	
12	6:16 AM	6:17 AM	57.8	51.5	62.3	61.5	55.5	52.4	
13	6:17 AM	6:18 AM	61.8	52.5	67.9	64.4	61.8	54.4	
14	6:18 AM	6:19 AM	63.0	54.9	71.1	66.2	60.6	56.8	
15	6:19 AM	6:20 AM	59.9	50.5	66.3	63.5	58.1	51.3	
16	6:20 AM	6:21 AM	62.9	49.8	72.0	66.6	59.4	51.0	
17	6:21 AM	6:22 AM	63.0	56.1	69.8	66.4	61.3	57.5	
18	6:22 AM	6:23 AM	58.6	46.8	64.6	62.4	57.6	48.1	
19	6:23 AM	6:24 AM	61.1	52.5	65.5	64.4	60.5	55.0	
20	6:24 AM	6:25 AM	61.0	49.9	68.4	65.0	59.1	52.6	
21			64.3	57.3	71.1	67.7	62.2	59.1	
22									
23									
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29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	NC 54 EB/WB	Little John Rd. NB/SB
Speed (**post**/obs)*	45	25
Number of Lanes	4	2
Width (pave/**row**)	60'	20'
1- or 2- way	2	2
Grade	0	0
Bus Stops	0	0
Stoplights	0	0
Motorcycles	0	0
Automobiles	182	0
Medium Trucks	0	0
Heavy Trucks	1	0
Buses	7	1
Count duration	10 min.	10 min.

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/No

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date:	11/11/2013	Page of
Monitoring Location:	M9 - NC 54 at Little John Dr.			Analyst:	Andrew Bell - #2 Equipment	

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1414	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: Steady/Gusty/**Calm**	
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	114.1 dBA	Avg Wind Speed/Direction:	0
Topo: **Flat** / Hilly		GPS Coordinates (at SLM location)#		Temp (°F): 50	RH (%): 53
Terrain: Hard/Soft/**Mixed**/Snow		+35° 54' 9.06", -79° 0' 5.98"		Bar Psr (Hg): 30.35	Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			65.0	62.7	66.9	66.5	64.9	62.7	
1	10:31 AM	10:32 AM	66.1	55.1	75.4	68.9	64.6	60.0	
2	10:32 AM	10:33 AM	58.9	49.9	64.6	62.4	57.3	52.3	
3	10:33 AM	10:34 AM	69.0	53.1	78.6	72.9	64.9	55.2	
4	10:34 AM	10:35 AM	60.1	52.4	67.1	62.8	59.2	54.6	
5	10:35 AM	10:36 AM	64.9	57.0	72.4	68.4	63.1	58.8	
6	10:36 AM	10:37 AM	65.0	52.8	74.8	69.4	58.1	54.7	
7	10:37 AM	10:38 AM	60.9	52.9	68.0	63.9	59.5	55.4	
8	10:38 AM	10:39 AM	62.7	46.1	71.3	66.1	62.0	49.1	
9	10:39 AM	10:40 AM	60.8	49.1	67.5	64.0	59.7	52.0	
10	10:40 AM	10:41 AM	64.2	44.1	72.2	69.4	62.3	46.6	
11	10:41 AM	10:42 AM	65.8	47.5	76.2	70.8	58.4	48.5	
12	10:42 AM	10:43 AM	65.4	52.6	74.4	68.0	64.1	58.6	
13	10:43 AM	10:44 AM	62.9	49.5	73.0	66.8	59.3	51.7	
14	10:44 AM	10:45 AM	61.9	47.5	70.6	64.0	61.1	49.0	
15	10:45 AM	10:46 AM	64.7	48.7	73.7	68.2	62.4	56.4	
16	10:46 AM	10:47 AM	58.2	45.2	64.1	62.4	55.6	47.2	
17	10:47 AM	10:48 AM	65.1	53.3	74.9	69.9	60.0	54.7	
18	10:48 AM	10:49 AM	60.6	48.9	65.9	62.9	61.0	50.9	
19	10:49 AM	10:50 AM	61.1	54.9	65.0	63.7	60.9	56.2	
20	10:50 AM	10:51 AM	60.9	44.0	67.3	65.2	57.8	45.2	
21			63.2	54.3	69.4	66.1	62.8	56.9	
22									
23									
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27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	NC 54 EB/WB	Little John Rd. NB/SB	compass	Site Diagram:
Speed (**post**/obs)*	45	25		
Number of Lanes	4	2		
Width (pave/**row**)	60'	20'		
1- or 2- way	2	2		
Grade	0	0		
Bus Stops	0	0		
Stoplights	0	0		
Motorcycles	1	0		
Automobiles	401	12		See scan of field sheet, and map with aerial and monitor location
Medium Trucks	8	0		
Heavy Trucks	13	0		
Buses	2	0		
Count duration	10 min.	10 min.		

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? **Yes**/No M9-1, M9-2, M9-3

Additional Notes/Comments: Upstream traffic signals on NC 54 create platooning effect, causing fluctuating 1-min. levels.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date: 11/11/2013	Page of
Monitoring Location:	M9 - NC 54 at Little John Dr.			Analyst:	Andrew Bell - #2 Equipment

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1414	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: **Steady**/Gusty/Calm	
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	114.1 dBA	Avg Wind Speed/Direction:	3/S
Topo:	**Flat** / Hilly	GPS Coordinates (at SLM location)#		Temp (°F): 56	RH (%): 38
Terrain:	Hard/Soft/**Mixed**/Snow	+35° 54' 9.06", -79° 0' 5.98"		Bar Psr (Hg): 30.20	Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			63.3	55.1	66.6	65.1	63.2	60.3	
1	5:32 PM	5:33 PM	65.0	61.1	70.5	67.6	64.1	62.4	
2	5:33 PM	5:34 PM	60.8	54.0	69.0	63.0	59.8	55.1	
3	5:34 PM	5:35 PM	63.7	57.3	65.0	64.7	63.6	62.5	
4	5:35 PM	5:36 PM	62.8	58.7	66.8	64.8	62.3	59.7	
5	5:36 PM	5:37 PM	59.9	51.0	65.3	63.2	58.7	54.3	
6	5:37 PM	5:38 PM	63.2	60.5	65.3	64.7	63.0	61.4	
7	5:38 PM	5:39 PM	61.3	54.5	66.4	63.9	60.2	55.5	
8	5:39 PM	5:40 PM	69.7	58.3	81.6	73.2	65.3	59.7	Loud vehicle on Little John Rd.
9	5:40 PM	5:41 PM	62.5	56.9	67.2	65.1	61.7	59.2	
10	5:41 PM	5:42 PM	62.9	58.3	67.3	65.0	62.2	60.6	
11	5:42 PM	5:43 PM	64.3	61.2	70.4	65.6	63.7	62.0	
12	5:43 PM	5:44 PM	62.9	58.8	68.3	64.8	62.1	59.6	
13	5:44 PM	5:45 PM	65.1	55.4	72.2	68.1	64.5	57.4	
14	5:45 PM	5:46 PM	64.3	58.9	71.7	65.8	63.3	61.2	
15	5:46 PM	5:47 PM	61.4	52.3	65.3	64.5	61.1	53.4	
16	5:47 PM	5:48 PM	64.0	61.4	68.9	66.0	63.4	61.9	
17	5:48 PM	5:49 PM	62.2	59.9	65.8	63.8	61.9	60.4	
18	5:49 PM	5:50 PM	64.7	57.3	70.5	67.7	63.8	59.3	
19	5:50 PM	5:51 PM	62.1	52.0	67.6	65.5	61.8	53.6	
20			61.5	56.3	65.9	63.7	61.2	58.1	
21									
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28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	NC 54 EB/WB	Little John Rd. NB/SB
Speed (**post**/obs)*	45	25
Number of Lanes	4	2
Width (pave/**row**)	60'	20'
1- or 2- way	2	2
Grade	0	0
Bus Stops	0	0
Stoplights	0	0
Motorcycles	0	0
Automobiles	575	22
Medium Trucks	6	1
Heavy Trucks	2	0
Buses	1	0
Count duration	10 min.	10 min.

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments: Upstream traffic signals on NC 54 create platooning effect, causing fluctuating 1-min. levels.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name: Triangle Transit DEIS	Project #: 31829240	Date: 11/11/2013	Page of
Monitoring Location: M9 - NC 54 at Little John Dr.		Analyst: Andrew Bell - #2 Equipment	

Sound Level Meter	Field Calibration	Weather Data
Model #: 820	Model #: CAL200	Model #: SM-28
Serial #: 1414	Serial #: 3704	Serial #: 3386
Weighting: **A** / C / Flat	Calibration Level (dBA): 94 / **114**	Wind: **Steady**/Gusty/Calm
Response: **Slow** / Fast / Impl	Pre-Test 114.1 dBA	Precipitation: Yes (explain) / **No**
Windscreen : **Yes** / No (explain)	Post-Test 114.1 dBA	Avg Wind Speed/Direction: 3/SSE
Topo: **Flat** / Hilly	GPS Coordinates (at SLM location)#	Temp (°F): 43 RH (%): 53
Terrain: Hard/Soft/**Mixed**/Snow	+35° 54' 9.06", -79° 0' 5.98"	Bar Psr (Hg): 30.19 Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			58.5	54.5	61.2	60.4	58.5	54.8	
1	9:37 PM	9:38 PM	61.9	47.5	73.1	67.2	52.7	47.9	
2	9:38 PM	9:39 PM	57.7	50.6	63.7	60.3	56.7	52.2	
3	9:39 PM	9:40 PM	58.6	49.4	65.2	61.7	57.1	51.5	
4	9:40 PM	9:41 PM	57.8	46.2	65.9	61.8	55.7	46.8	
5	9:41 PM	9:42 PM	60.5	46.7	66.6	64.3	59.0	52.5	
6	9:42 PM	9:43 PM	57.9	47.3	64.7	63.3	53.5	48.4	
7	9:43 PM	9:44 PM	58.0	46.2	62.5	61.7	55.4	46.7	
8	9:44 PM	9:45 PM	59.1	47.2	65.9	62.6	58.2	48.9	
9	9:45 PM	9:46 PM	59.9	50.2	65.4	63.0	59.1	52.1	
10	9:46 PM	9:47 PM	57.4	50.5	62.7	61.1	56.5	51.5	
11	9:47 PM	9:48 PM	59.4	47.0	65.0	62.2	59.4	48.3	
12	9:48 PM	9:49 PM	58.2	46.2	65.9	61.9	54.8	47.4	
13	9:49 PM	9:50 PM	58.0	46.5	65.6	61.5	56.3	47.9	
14	9:50 PM	9:51 PM	59.6	48.0	66.8	63.5	58.1	49.6	
15	9:51 PM	9:52 PM	55.7	46.1	65.6	59.2	50.0	46.8	
16	9:52 PM	9:53 PM	59.8	45.6	68.3	63.9	56.6	46.2	
17	9:53 PM	9:54 PM	60.4	52.1	66.5	63.2	59.7	54.5	
18	9:54 PM	9:55 PM	60.6	48.5	67.2	65.6	56.5	49.8	
19	9:55 PM	9:56 PM	60.1	49.9	70.1	63.1	57.4	51.0	
20	9:56 PM	9:57 PM	61.9	50.8	72.7	65.8	56.9	52.7	
21			59.7	48.6	65.7	63.6	56.9	49.5	
22									
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29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	NC 54 EB/WB	Little John Rd. NB/SB
Speed (**post**/obs)*	45	25
Number of Lanes	4	2
Width (pave/**row**)	60'	20'
1- or 2- way	2	2
Grade	0	0
Bus Stops	0	0
Stoplights	0	0
Motorcycles	0	0
Automobiles	185	4
Medium Trucks	0	0
Heavy Trucks	0	0
Buses	0	0
Count duration	10 min.	10 min.

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments: Upstream traffic signals on NC 54 create platooning effect, causing fluctuating 1-min. levels.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date: 11/11/2013	Page of
Monitoring Location:	M8 - NC 54 at Friday Center Drive			Analyst:	John Burris - #6 Equipment

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1324	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: **Steady**/Gusty/Calm	
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	114.1 dBA	Avg Wind Speed/Direction:	2.2/NW
Topo:	**Flat** / Hilly	GPS Coordinates (at SLM location)#		Temp (°F): 36	RH (%): 82
Terrain:	Hard/Soft/**Mixed**/Snow	+35° 54' 6.71", -79° 0' 35.79"		Bar Psr (Hg): 30.31	Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			57.1	53.4	60.5	60.2	56.0	54.3	
1	8:12 AM	8:13 AM	62.1	60.1	64.2	63.5	62.1	60.5	
2	8:13 AM	8:14 AM	59.4	54.4	64.4	62.2	58.8	54.9	
3	8:14 AM	8:15 AM	61.1	56.5	63.5	63.4	60.6	57.5	
4	8:15 AM	8:16 AM	59.8	52.4	63.0	62.2	59.6	54.5	
5	8:16 AM	8:17 AM	60.5	52.1	67.3	64.8	55.0	53.0	
6	8:17 AM	8:18 AM	61.7	57.5	64.6	63.8	62.0	58.9	Train in the Distance
7	8:18 AM	8:19 AM	57.7	52.3	61.8	61.1	55.6	53.3	
8	8:19 AM	8:20 AM	64.6	61.4	67.3	66.3	64.4	62.4	
9	8:20 AM	8:21 AM	59.3	52.0	63.3	62.0	58.7	52.8	
10	8:21 AM	8:22 AM	62.2	53.2	66.4	64.1	62.3	55.2	
11	8:22 AM	8:23 AM	61.6	57.8	63.4	62.8	61.8	58.8	
12	8:23 AM	8:24 AM	59.4	55.1	62.9	62.2	58.6	56.3	
13	8:24 AM	8:25 AM	61.4	57.6	63.5	62.8	61.5	58.6	
14	8:25 AM	8:26 AM	61.2	57.9	64.4	63.0	61.0	58.7	
15	8:26 AM	8:27 AM	63.2	61.5	64.9	64.6	63.0	62.1	
16	8:27 AM	8:28 AM	63.5	60.5	66.4	65.7	63.2	61.3	Mower
17	8:28 AM	8:29 AM	66.4	62.5	71.8	68.1	66.1	63.3	Mower
18	8:29 AM	8:30 AM	65.8	58.8	69.5	68.6	65.2	59.7	Mower
19	8:30 AM	8:31 AM	63.7	58.3	66.7	65.9	63.1	60.1	Mower
20			70.7	64.4	74.8	73.4	70.5	66.2	Mower
21									
22									
23									
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26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	NC 54	
Speed (**post**/obs)*	45	
Number of Lanes	9	
Width (pave/row)	115'/155'	
1- or 2- way	2-Way	
Grade	0	
Bus Stops	1	
Stoplights	1	
Motorcycles	3	
Automobiles	575	
Medium Trucks	4	
Heavy Trucks	3	
Buses	3	
Count duration	10 min.	

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date:	11/11/2013	Page	of
Monitoring Location:	M8 - NC 54 at Friday Center Drive			Analyst:	John Burris - #6 Equipment		

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1324	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: Steady/Gusty/**Calm**	
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	114.1 dBA	Avg Wind Speed/Direction:	0
Topo: **Flat** / Hilly		GPS Coordinates (at SLM location)#		Temp (°F): 50	RH (%): 53
Terrain: Hard/Soft/**Mixed**/Snow		+35° 54' 6.71", -79° 0' 35.79"		Bar Psr (Hg): 30.35	Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			59.7	52.6	64.0	63.0	58.7	53.5	
1	12:17 PM	12:18 PM	55.9	49.8	62.4	60.1	52.9	50.5	
2	12:18 PM	12:19 PM	60.7	48.5	66.0	63.6	61.2	49.5	
3	12:19 PM	12:20 PM	56.8	51.6	61.8	60.0	54.6	52.2	
4	12:20 PM	12:21 PM	58.2	49.7	63.9	62.2	56.9	51.0	
5	12:21 PM	12:22 PM	52.2	45.4	57.6	56.0	51.0	47.3	
6	12:22 PM	12:23 PM	61.3	54.4	67.9	65.6	58.6	55.1	
7	12:23 PM	12:24 PM	56.9	46.1	63.6	61.3	54.2	47.5	
8	12:24 PM	12:25 PM	58.6	47.6	62.0	61.7	58.3	48.2	
9	12:25 PM	12:26 PM	58.4	44.7	65.2	62.4	55.9	45.6	
10	12:26 PM	12:27 PM	61.4	45.2	68.3	65.0	60.5	46.9	
11	12:27 PM	12:28 PM	55.2	48.4	61.5	58.4	53.0	50.6	
12	12:28 PM	12:29 PM	60.4	53.4	65.7	63.9	58.2	56.3	
13	12:29 PM	12:30 PM	59.6	52.6	64.8	63.3	58.3	53.8	
14	12:30 PM	12:31 PM	59.5	51.6	61.4	61.3	59.7	52.7	
15	12:31 PM	12:32 PM	55.4	47.0	59.2	58.8	52.8	48.8	
16	12:32 PM	12:33 PM	59.3	44.3	64.9	64.3	57.0	46.2	
17	12:33 PM	12:34 PM	59.4	48.0	65.7	64.5	55.9	51.6	
18	12:34 PM	12:35 PM	59.2	46.4	65.9	63.6	58.6	47.3	
19	12:35 PM	12:36 PM	55.3	46.4	60.5	59.3	53.6	47.4	
20			60.1	46.9	66.5	64.3	59.2	47.5	
21									
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URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	NC 54			
Speed (**post**/obs)*	45			
Number of Lanes	9			
Width (pave/row)	115'/155'			
1- or 2- way	2-Way			
Grade	0			
Bus Stops	1			
Stoplights	1			
Motorcycles	1			
Automobiles	418			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	3			
Heavy Trucks	16			
Buses	4			
Count duration	10 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? **Yes**/No

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date: 11/11/2013	Page of
Monitoring Location:	M8 - NC 54 at Friday Center Drive			Analyst:	John Burris - #6 Equipment

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1324	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: Steady/Gusty/**Calm**	
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	114.1 dBA	Avg Wind Speed/Direction:	0
Topo: **Flat** / Hilly		GPS Coordinates (at SLM location)#		Temp (°F): 55	RH (%): 31
Terrain: Hard/Soft/**Mixed**/Snow		+35° 54' 6.71", -79° 0' 35.79"		Bar Psr (Hg): 30.20	Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			55.5	52.7	56.9	56.6	55.5	53.3	
1	5:16 PM	5:17 PM	60.2	53.4	63.6	62.6	60.4	54.4	
2	5:17 PM	5:18 PM	62.3	56.6	64.2	63.6	62.5	57.8	
3	5:18 PM	5:19 PM	57.9	50.6	62.8	59.9	57.5	52.2	
4	5:19 PM	5:20 PM	61.7	59.4	66.3	63.0	61.4	59.6	
5	5:20 PM	5:21 PM	56.9	53.1	59.7	59.4	55.7	53.7	
6	5:21 PM	5:22 PM	60.5	55.2	65.1	63.2	59.8	56.9	
7	5:22 PM	5:23 PM	60.0	51.9	62.8	62.0	60.2	54.3	
8	5:23 PM	5:24 PM	56.2	47.8	61.0	58.7	57.1	49.0	
9	5:24 PM	5:25 PM	59.7	57.7	61.5	60.8	59.8	58.4	
10	5:25 PM	5:26 PM	57.3	52.0	64.3	59.9	55.2	52.5	
11	5:26 PM	5:27 PM	60.3	55.5	63.9	62.7	59.8	56.4	
12	5:27 PM	5:28 PM	60.3	53.9	64.9	63.6	58.3	54.7	
13	5:28 PM	5:29 PM	62.3	51.0	73.1	66.2	59.2	52.1	
14	5:29 PM	5:30 PM	63.7	60.6	68.6	65.4	63.4	61.6	
15	5:30 PM	5:31 PM	57.7	54.0	60.7	60.4	56.5	54.8	
16	5:31 PM	5:32 PM	60.5	55.1	63.4	62.7	59.9	56.6	
17	5:32 PM	5:33 PM	63.2	58.1	66.6	65.3	63.3	59.0	
18	5:33 PM	5:34 PM	57.5	54.8	60.0	59.2	57.0	56.0	
19	5:34 PM	5:35 PM	61.9	59.0	68.0	63.4	61.0	60.0	
20			57.9	54.8	60.3	59.7	57.5	56.0	
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URS Acoustics and Noise Control Practice FIELD NOISE MEASUREMENT DATA FORM

Roadway Name/Dir	NC 54	
Speed (**post**/obs)*	45	
Number of Lanes	9	
Width (pave/row)	115'/155'	
1- or 2- way	2-Way	
Grade	0	
Bus Stops	1	
Stoplights	1	
Motorcycles	0	
Automobiles	690	
Medium Trucks	1	
Heavy Trucks	3	
Buses	2	
Count duration	10	

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name: Triangle Transit DEIS	Project #: 31829240	Date: 11/11/2013	Page of
Monitoring Location: M8 - NC 54 at Friday Center Drive		Analyst: John Burris - #6 Equipment	

Sound Level Meter	Field Calibration	Weather Data
Model #: 820	Model #: CAL200	Model #: SM-28
Serial #: 1324	Serial #: 3704	Serial #: 3386
Weighting: **A** / C / Flat	Calibration Level (dBA): 94 / **114**	Wind: Steady/Gusty/**Calm**
Response: **Slow** / Fast / Impl	Pre-Test 114.1 dBA	Precipitation: Yes (explain) / **No**
Windscreen : **Yes** / No (explain)	Post-Test 114.1 dBA	Avg Wind Speed/Direction: 0
Topo: **Flat** / Hilly	GPS Coordinates (at SLM location)#	Temp (°F): 45 RH (%): 57
Terrain: Hard/Soft/**Mixed**/Snow	+35° 54' 6.71", -79° 0' 35.79"	Bar Psr (Hg): 30.19 Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			53.6	51.2	56.5	56.2	52.7	51.3	
1	8:54 PM	8:55 PM	55.7	48.7	61.9	59.6	53.4	49.4	
2	8:55 PM	8:56 PM	55.2	48.7	58.5	57.9	54.8	49.3	
3	8:56 PM	8:57 PM	57.0	49.0	60.7	59.6	57.2	49.8	
4	8:57 PM	8:58 PM	56.5	48.3	59.8	59.1	57.2	49.0	
5	8:58 PM	8:59 PM	55.3	51.5	59.2	58.2	53.6	51.7	
6	8:59 PM	9:00 PM	53.5	49.0	57.2	56.0	52.2	49.7	
7	9:00 PM	9:01 PM	57.3	52.1	60.2	59.7	57.0	53.0	
8	9:01 PM	9:02 PM	56.9	50.2	60.9	60.5	54.1	51.2	
9	9:02 PM	9:03 PM	56.2	49.4	58.9	57.8	56.3	52.2	
10	9:03 PM	9:04 PM	56.1	50.9	60.5	58.5	55.7	52.3	
11	9:04 PM	9:05 PM	53.0	48.3	59.6	56.3	51.6	48.8	
12	9:05 PM	9:06 PM	56.5	50.4	60.1	59.0	55.9	51.6	
13	9:06 PM	9:07 PM	56.0	52.9	58.3	57.4	56.0	54.1	
14	9:07 PM	9:08 PM	56.2	50.9	60.1	58.8	55.7	51.4	
15	9:08 PM	9:09 PM	54.9	48.7	59.9	58.6	52.7	49.7	
16	9:09 PM	9:10 PM	52.2	47.3	57.0	55.4	51.1	47.7	
17	9:10 PM	9:11 PM	55.4	48.3	59.0	58.4	53.9	51.5	
18	9:11 PM	9:12 PM	57.0	50.0	62.0	60.8	54.2	51.0	
19	9:12 PM	9:13 PM	58.5	52.1	62.0	61.1	58.5	52.8	
20			55.9	49.7	60.2	59.6	53.5	49.8	
21									
22									
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25									
26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	NC 54		compass
Speed (**post**/obs)*	45		
Number of Lanes	9		
Width (pave/row)	115'/155'		
1- or 2- way	2-Way		
Grade	0		
Bus Stops	1		
Stoplights	1		
Motorcycles	2		
Automobiles	181		
Medium Trucks	0		
Heavy Trucks	0		
Buses	2		
Count duration	10		

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date: 11/15/2013	Page	of
Monitoring Location:	M7 - Crescent Dr.			Analyst:	John Burris - #2 Equipment	

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1414	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: Steady/Gusty/**Calm**	
Response: **Slow** / Fast / Impl		Pre-Test	113.9 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	113.9 dBA	Avg Wind Speed/Direction:	0
Topo: **Flat** / Hilly		GPS Coordinates (at SLM location)#		Temp (°F): 34	RH (%): 73
Terrain: Hard/Soft/**Mixed**/Snow		+35° 55' 6.40", -78° 59' 15.81"		Bar Psr (Hg): 30.35	Cloud Cover (%): 33

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			55.0	53.8	57.3	56	54.9	53.8	
1	7:20 AM	7:21 AM	55.1	53.7	58.2	57	54.6	53.8	
2	7:21 AM	7:22 AM	54.7	54.1	55.5	55	54.6	54.1	
3	7:22 AM	7:23 AM	54.8	53.7	56.1	55.8	54.8	54.1	
4	7:23 AM	7:24 AM	55.5	54.7	56.3	56	55.5	55	
5	7:24 AM	7:25 AM	55.7	54.8	56.6	56.5	55.6	55.1	
6	7:25 AM	7:26 AM	55.0	54.1	56.4	56	54.8	54.2	
7	7:26 AM	7:27 AM	55.4	54.4	56.2	55.9	55.5	55	
8	7:27 AM	7:28 AM	54.6	54	55.8	55	54.5	54.1	
9	7:28 AM	7:29 AM	55.3	53.8	57.4	56.5	55.4	54.2	
10	7:29 AM	7:30 AM	55.3	54.2	56.3	55.9	55.3	54.4	
11	7:30 AM	7:31 AM	54.4	53.4	55.4	55.3	54.4	53.4	
12	7:31 AM	7:32 AM	54.8	53.9	55.8	55.7	54.7	54.1	
13	7:32 AM	7:33 AM	53.8	51.5	55.8	55.2	54	51.7	
14	7:33 AM	7:34 AM	54.1	52.8	55.6	54.9	54.2	53.1	
15	7:34 AM	7:35 AM	54.9	54	55.9	55.8	54.9	54.2	
16	7:35 AM	7:36 AM	53.7	51.6	55.5	55.1	53.6	52.1	
17	7:36 AM	7:37 AM	54.2	53.1	55.4	54.9	54.2	53.3	
18	7:37 AM	7:38 AM	54.5	53.9	55.4	55	54.5	54	
19	7:38 AM	7:39 AM	54.5	53.7	55.7	55	54.5	53.8	
20	7:39 AM	7:40 AM	54.1	53.1	55.5	54.8	53.9	53.2	
21			54.2	53.3	55	54.9	54.3	53.3	
22									
23									
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27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Crescent Dr.	
Speed (post/**obs**)*	10	
Number of Lanes	1	
Width (pave/**row**)	12'	
1- or 2- way	2	
Grade	0	
Bus Stops	0	
Stoplights	0	
Motorcycles	0	
Automobiles	0	
Medium Trucks	0	
Heavy Trucks	0	
Buses	0	
Count duration	20 min.	

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS		Project #:	31829240	Date:	11/11/2013	Page	of
Monitoring Location:		M7 - Crescent Dr.			Analyst:	Andrew Bell - #2 Equipment		

Sound Level Meter		Field Calibration			Weather Data			
Model #:	820	Model #:	CAL200		Model #:	SM-28		
Serial #:	1414	Serial #:	3704		Serial #:	3386		
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**		Wind: Steady/Gusty/**Calm**			
Response: **Slow** / Fast / Impl		Pre-Test	114.1	dBA	Precipitation: Yes (explain) / **No**			
Windscreen : **Yes** / No (explain)		Post-Test	114.1	dBA	Avg Wind Speed/Direction:	0		
Topo: **Flat** / Hilly		GPS Coordinates (at SLM location)#			Temp (°F):	52	RH (%):	53
Terrain: Hard/Soft/**Mixed**/Snow		+35° 55' 6.40", -78° 59' 15.81"			Bar Psr (Hg):	30.35	Cloud Cover (%):	0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			50.5	48.0	54.9	52.6	50.2	48.6	
1	11:42 AM	11:43 AM	48.9	46.5	50.9	50.4	48.7	46.8	
2	11:43 AM	11:44 AM	49.3	46.0	51.0	50.7	49.5	46.5	
3	11:44 AM	11:45 AM	49.5	48.1	50.7	50.5	49.5	48.4	
4	11:45 AM	11:46 AM	48.6	47.1	50.0	49.7	48.6	47.3	
5	11:46 AM	11:47 AM	49.4	47.3	51.0	50.6	49.5	48.1	
6	11:47 AM	11:48 AM	49.8	47.8	52.3	51.9	49.0	48.1	
7	11:48 AM	11:49 AM	49.1	47.8	51.4	50.4	48.9	47.8	
8	11:49 AM	11:50 AM	48.8	47.3	52.4	49.7	48.5	47.5	
9	11:50 AM	11:51 AM	49.4	48.1	52.4	50.8	49.1	48.2	
10	11:51 AM	11:52 AM	49.6	47.4	50.6	50.6	49.6	48.3	
11	11:52 AM	11:53 AM	49.5	48.1	50.7	50.6	49.4	48.3	
12	11:53 AM	11:54 AM	47.6	46.6	49.0	48.5	47.5	46.6	
13	11:54 AM	11:55 AM	48.0	46.5	49.3	48.9	47.9	47.1	
14	11:55 AM	11:56 AM	50.2	48.0	52.6	52.0	49.7	48.4	
15	11:56 AM	11:57 AM	49.2	47.7	51.5	50.9	48.9	48.1	
16	11:57 AM	11:58 AM	49.5	46.7	56.2	51.7	48.5	47.1	
17	11:58 AM	11:59 AM	48.7	46.7	50.2	49.8	48.4	47.1	
18	11:59 AM	12:00 PM	47.8	46.6	48.9	48.7	47.8	46.6	
19	12:00 PM	12:01 PM	48.6	47.1	49.6	49.6	48.5	47.5	
20	12:01 PM	12:02 PM	48.5	47.1	51.2	49.6	48.4	47.3	
21			52.7	47.4	59.2	56.6	50.1	47.6	
22									
23									
24									
25									
26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	Crescent Dr.			
Speed (post/**obs**)*	10			
Number of Lanes	1			
Width (pave/**row**)	12'			
1- or 2- way	2			
Grade	0			
Bus Stops	0			
Stoplights	0			
Motorcycles	0			
Automobiles	0			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	0			
Heavy Trucks	0			
Buses	0			
Count duration	20 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? **Yes**/No M7-1, M7-2, M7-3

Additional Notes/Comments: I-40 can be heard in distance, which is the main source of noise in calm conditions.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS			Project #:	31829240	Date:	11/11/2013	Page	of
Monitoring Location:		M7 - Crescent Dr.				Analyst:	Andrew Bell - #2 Equipment		

Sound Level Meter		Field Calibration			Weather Data			
Model #:	820	Model #:	CAL200		Model #:	SM-28		
Serial #:	1414	Serial #:	3704		Serial #:	3386		
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**		Wind: **Steady**/Gusty/Calm			
Response: **Slow** / Fast / Impl		Pre-Test	114.1	dBA	Precipitation: Yes (explain) / **No**			
Windscreen : **Yes** / No (explain)		Post-Test	114.1	dBA	Avg Wind Speed/Direction:	2/WNW		
Topo: **Flat** / Hilly		GPS Coordinates (at SLM location)#			Temp (°F):	58	RH (%):	31
Terrain: Hard/Soft/**Mixed**/Snow		+35° 55' 6.40", -78° 59' 15.81"			Bar Psr (Hg):	30.23	Cloud Cover (%):	0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			54.8	53.7	58.4	55.7	54.5	53.7	
1	4:55 PM	4:56 PM	57.7	53.5	64.0	61.6	54.9	53.8	
2	4:56 PM	4:57 PM	56.5	53.5	61.0	59.4	55.1	53.5	
3	4:57 PM	4:58 PM	53.9	53.1	54.5	54.5	53.8	53.2	
4	4:58 PM	4:59 PM	55.2	53.0	61.5	57.6	54.0	53.2	Conversation with homeowner 50+' from monitor
5	4:59 PM	5:00 PM	58.2	52.9	67.4	62.4	53.9	53.2	Conversation with homeowner 50+' from monitor
6	5:00 PM	5:01 PM	55.0	53.6	56.2	55.9	55.1	54.1	Conversation with homeowner 50+' from monitor
7	5:01 PM	5:02 PM	56.4	53.4	63.1	58.6	55.3	53.8	Conversation with homeowner 50+' from monitor
8	5:02 PM	5:03 PM	55.8	53.7	60.6	56.9	55.5	54.2	Conversation with homeowner 50+' from monitor
9	5:03 PM	5:04 PM	57.1	54.0	65.2	59.3	55.7	54.4	Conversation with homeowner 50+' from monitor
10	5:04 PM	5:05 PM	57.9	54.5	66.3	59.7	56.8	55.2	Conversation with homeowner 50+' from monitor
11	5:05 PM	5:06 PM	57.6	54.0	64.8	59.6	56.8	54.6	Conversation with homeowner 50+' from monitor
12	5:06 PM	5:07 PM	56.5	53.8	61.4	57.9	56.0	54.7	
13	5:07 PM	5:08 PM	56.1	52.6	62.3	59.2	54.6	53.2	
14	5:08 PM	5:09 PM	55.9	53.8	58.7	56.9	55.8	55.0	
15	5:09 PM	5:10 PM	58.0	55.0	62.3	61.4	55.8	55.2	Vehicle leaving adjacent driveway
16	5:10 PM	5:11 PM	55.9	55.3	56.4	56.4	55.9	55.3	
17	5:11 PM	5:12 PM	54.2	53.3	55.8	55.2	54.4	53.3	
18	5:12 PM	5:13 PM	54.7	53.2	56.3	56.0	54.6	53.3	
19	5:13 PM	5:14 PM	55.1	53.5	56.6	56.6	54.8	54.0	
20	5:14 PM	5:15 PM	55.1	54.0	56.5	55.9	55.3	54.3	
21	5:15 PM	5:16 PM	55.8	54.5	59.4	56.9	55.7	55.0	
22			55.4	54.5	57.1	55.9	55.4	54.5	
23									
24									
25									
26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	Crescent Dr.			
Speed (post/**obs**)*	10			
Number of Lanes	1			
Width (pave/**row**)	12'			
1- or 2- way	2			
Grade	0			
Bus Stops	0			
Stoplights	0			
Motorcycles	0			
Automobiles	2			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	0			
Heavy Trucks	0			
Buses	0			
Count duration	20 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments: I-40 can be heard in distance, which is the main source of noise in calm conditions.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name: Triangle Transit DEIS	Project #: 31829240	Date: 11/11/2013	Page of
Monitoring Location: M7 - Crescent Dr.		Analyst: Andrew Bell - #2 Equipment	

Sound Level Meter	Field Calibration	Weather Data
Model #: 820	Model #: CAL200	Model #: SM-28
Serial #: 1414	Serial #: 3704	Serial #: 3386
Weighting: **A** / C / Flat	Calibration Level (dBA): 94 / **114**	Wind: **Steady**/Gusty/Calm
Response: **Slow** / Fast / Impl	Pre-Test 114.1 dBA	Precipitation: Yes (explain) / **No**
Windscreen : **Yes** / No (explain)	Post-Test 114.1 dBA	Avg Wind Speed/Direction: 3/SSE
Topo: **Flat** / Hilly	GPS Coordinates (at SLM location)#	Temp (°F): 45 RH (%): 57
Terrain: Hard/Soft/**Mixed**/Snow	+35° 55' 6.40", -78° 59' 15.81"	Bar Psr (Hg): 30.19 Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			53.6	51.0	56.9	54.8	53.5	51.9	
1	8:41 PM	8:42 PM	55.4	53.7	57.3	56.6	55.3	54.1	
2	8:42 PM	8:43 PM	55.0	52.9	57.3	56.3	54.8	53.8	
3	8:43 PM	8:44 PM	55.5	53.5	58.1	56.9	55.5	54.0	
4	8:44 PM	8:45 PM	55.4	53.4	58.9	57.6	54.7	53.9	
5	8:45 PM	8:46 PM	55.9	53.4	58.6	57.5	55.7	54.2	
6	8:46 PM	8:47 PM	56.2	54.6	58.7	57.8	55.8	55.0	
7	8:47 PM	8:48 PM	56.2	54.4	58.7	57.7	55.9	54.6	
8	8:48 PM	8:49 PM	55.4	53.2	57.2	56.7	55.3	54.0	
9	8:49 PM	8:50 PM	55.3	53.6	57.2	56.4	55.2	54.1	
10	8:50 PM	8:51 PM	55.0	53.3	57.2	56.6	54.7	53.6	
11	8:51 PM	8:52 PM	55.9	53.7	58.1	57.5	55.7	54.3	
12	8:52 PM	8:53 PM	54.2	52.9	56.2	55.4	53.9	53.2	
13	8:53 PM	8:54 PM	55.1	53.2	56.4	55.9	55.1	54.0	
14	8:54 PM	8:55 PM	55.7	53.5	58.5	57.4	55.4	54.1	
15	8:55 PM	8:56 PM	55.4	53.4	60.9	56.6	54.9	53.7	
16	8:56 PM	8:57 PM	57.8	52.9	65.9	61.2	56.2	53.7	
17	8:57 PM	8:58 PM	53.5	52.2	54.5	54.3	53.5	52.6	
18	8:58 PM	8:59 PM	54.2	53.1	55.4	54.9	53.9	53.2	
19	8:59 PM	9:00 PM	53.9	52.4	55.1	54.7	53.7	52.6	
20	9:00 PM	9:01 PM	54.4	52.2	55.4	55.0	54.4	53.3	
21			53.1	51.5	58.7	54.0	52.6	51.7	
22									
23									
24									
25									
26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Crescent Dr.	
Speed (post/**obs**)*	10	
Number of Lanes	1	
Width (pave/**row**)	12'	
1- or 2- way	2	
Grade	0	
Bus Stops	0	
Stoplights	0	
Motorcycles	0	
Automobiles	0	
Medium Trucks	0	
Heavy Trucks	0	
Buses	0	
Count duration	20 min.	

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments: I-40 can be heard in distance, which is the main source of noise in calm conditions.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS		Project #:	31829240	Date:	11/11/2013	Page	of
Monitoring Location:	M6 - Meadowmont Lane at Green Cedar Lane				Analyst:	John Burris - #6 Equipment		

Sound Level Meter		Field Calibration			Weather Data			
Model #:	820	Model #:	CAL200		Model #:	SM-28		
Serial #:	1324	Serial #:	3704		Serial #:	3386		
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**		Wind: **Steady**/Gusty/Calm			
Response: **Slow** / Fast / Impl		Pre-Test	114.1	dBA	Precipitation: Yes (explain) / **No**			
Windscreen : **Yes** / No (explain)		Post-Test	114.1	dBA	Avg Wind Speed/Direction:	2.2/NW		
Topo:	Flat / **Hilly**	GPS Coordinates (at SLM location)#			Temp (°F):	36	RH (%):	82
Terrain:	Hard/Soft/**Mixed**/Snow	+35° 54' 31.80", -79° 0' 28.21"			Bar Psr (Hg):	30.31	Cloud Cover (%):	0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			62.3	54.6	66.4	66.4	59.9	54.7	
1	8:41 AM	8:42 AM	58.4	46.5	66.4	63.8	53.7	48.1	
2	8:42 AM	8:43 AM	51.7	45.9	60.0	55.2	48.8	46.4	
3	8:43 AM	8:44 AM	50.5	44.7	57.6	54.8	46.8	45.2	
4	8:44 AM	8:45 AM	49.1	43.7	57.1	52.9	45.7	44.3	
5	8:45 AM	8:46 AM	60.6	44.7	71.9	64.7	52.8	45.5	
6	8:46 AM	8:47 AM	60.9	46.9	72.0	63.7	53.6	47.8	
7	8:47 AM	8:48 AM	57.2	45.9	66.5	60.9	52.3	48.3	
8	8:48 AM	8:49 AM	57.4	46.0	64.5	62.8	52.3	46.6	
9	8:49 AM	8:50 AM	49.3	43.8	59.3	52.6	45.6	44.2	
10	8:50 AM	8:51 AM	51.2	43.0	60.5	56.4	43.9	43.2	
11	8:51 AM	8:52 AM	53.4	43.3	64.0	57.1	47.3	43.4	
12	8:52 AM	8:53 AM	54.3	47.0	61.0	58.4	51.7	47.7	
13	8:53 AM	8:54 AM	63.6	49.0	74.5	66.5	56.9	50.4	
14	8:54 AM	8:55 AM	49.0	46.0	56.3	51.7	47.3	46.3	
15	8:55 AM	8:56 AM	54.7	45.0	64.3	59.6	47.9	45.6	
16	8:56 AM	8:57 AM	52.0	42.3	61.8	57.3	45.6	43.2	
17	8:57 AM	8:58 AM	47.6	42.7	62.4	49.4	43.5	42.7	
18	8:58 AM	8:59 AM	60.7	47.6	66.8	64.6	58.7	50.6	
19	8:59 AM	9:00 AM	51.4	43.6	60.4	55.4	47.2	44.0	
20			49.0	43.9	54.2	52.7	47.4	44.4	
21									
22									
23									
24									
25									
26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Meadowmont Lane	Green Cedar Lane
Speed (**post**/obs)*	25/25	25/25
Number of Lanes	4	2
Width (pave/row)	84'/108'	22'/30'
1- or 2- way	2	2
Grade	0	0
Bus Stops	0	0
Stoplights	0	0
Motorcycles	0	0
Automobiles	30	4
Medium Trucks	2	0
Heavy Trucks	9	0
Buses	0	0
Count duration	20 min.	20 min

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS			Project #:	31829240	Date:	11/11/2013	Page	of
Monitoring Location:	M6 - Meadowmont Lane at Green Cedar Lane					Analyst:	John Burris - #6 Equipment		

Sound Level Meter		Field Calibration			Weather Data			
Model #:	820	Model #:	CAL200		Model #:	SM-28		
Serial #:	1324	Serial #:	3704		Serial #:	3386		
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**		Wind: **Steady**/Gusty/Calm			
Response: **Slow** / Fast / Impl		Pre-Test	114.1	dBA	Precipitation: Yes (explain) / **No**			
Windscreen : **Yes** / No (explain)		Post-Test	114.1	dBA	Avg Wind Speed/Direction:	2.5		
Topo:	Flat / **Hilly**	GPS Coordinates (at SLM location)#			Temp (°F):	50	RH (%):	53
Terrain:	Hard/Soft/**Mixed**/Snow	+35° 54' 31.80", -79° 0' 28.21"			Bar Psr (Hg):	30.35	Cloud Cover (%):	0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			54.3	41.8	62.6	60.2	47.4	42.7	
1	12:51 PM	12:52 PM	67.1	42.8	77.9	71.9	58.0	44.7	
2	12:52 PM	12:53 PM	50.4	41.7	56.3	54.4	47.7	43.4	
3	12:53 PM	12:54 PM	56.1	43.5	65.3	59.7	51.5	46.6	
4	12:54 PM	12:55 PM	63.1	46.9	71.6	69.1	49.8	47.2	
5	12:55 PM	12:56 PM	55.8	46.6	64.4	61.0	50.4	47.3	
6	12:56 PM	12:57 PM	63.2	45.5	73.4	66.9	57.5	47.2	
7	12:57 PM	12:58 PM	50.4	45.6	58.0	54.6	47.5	46.3	
8	12:58 PM	12:59 PM	51.0	43.8	60.2	55.7	45.9	44.3	
9	12:59 PM	1:00 PM	56.6	45.8	64.0	60.8	52.5	48.2	
10	1:00 PM	1:01 PM	64.0	48.7	74.1	67.1	58.4	51.1	
11	1:01 PM	1:02 PM	60.6	39.9	70.3	65.6	50.9	40.5	
12	1:02 PM	1:03 PM	46.0	39.5	53.8	49.6	44.2	40.3	
13	1:03 PM	1:04 PM	45.2	43.1	48.5	47.3	44.7	43.4	
14	1:04 PM	1:05 PM	55.8	46.1	64.6	61.0	51.6	47.6	
15	1:05 PM	1:06 PM	47.7	41.6	56.0	49.8	46.5	42.4	
16	1:06 PM	1:07 PM	60.4	44.7	70.0	64.3	54.5	46.9	
17	1:07 PM	1:08 PM	47.8	43.2	56.4	50.7	45.7	44.1	
18	1:08 PM	1:09 PM	46.1	41.9	49.9	48.3	45.6	43.9	
19	1:09 PM	1:10 PM	48.5	42.1	57.3	51.5	45.6	43.4	
20			49.5	45.0	57.8	53.2	46.7	45.9	
21									
22									
23									
24									
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26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Meadowmont Lane	Green Cedar Lane
Speed (**post**/obs)*	25/25	25/25
Number of Lanes	4	2
Width (pave/row)	84'/108'	22'/30'
1- or 2- way	2	2
Grade	0	0
Bus Stops	0	0
Stoplights	0	0
Motorcycles	0	0
Automobiles	25	4
Medium Trucks	1	0
Heavy Trucks	12	0
Buses	0	0
Count duration	20 min.	20 min.

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date: 11/11/2013	Page of
Monitoring Location:	M6 - Meadowmont Lane at Green Cedar Lane			Analyst:	John Burris - #6 Equipment

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1324	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: **Steady**/Gusty/Calm	
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	114.1 dBA	Avg Wind Speed/Direction:	2.6
Topo: Flat / **Hilly**		GPS Coordinates (at SLM location)#		Temp (°F): 57	RH (%): 31
Terrain: Hard/Soft/**Mixed**/Snow		+35° 54' 31.80", -79° 0' 28.21"		Bar Psr (Hg): 30.20	Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0									
1	5:49 PM	5:50 PM	49.7	46.7	54.8	52.1	48.8	47.2	
2	5:50 PM	5:51 PM	47.6	45.8	52.2	49.4	47.2	46.0	
3	5:51 PM	5:52 PM	48.7	45.8	52.6	51.1	47.9	46.4	
4	5:52 PM	5:53 PM	49.5	46.0	58.7	50.8	46.7	46.1	
5	5:53 PM	5:54 PM	56.0	46.4	66.4	60.6	49.2	46.7	Pedestrian talking to me
6	5:54 PM	5:55 PM	51.9	46.7	60.0	55.8	48.8	47.1	
7	5:55 PM	5:56 PM	56.1	46.5	66.1	59.9	48.9	47.1	
8	5:56 PM	5:57 PM	50.4	46.5	57.6	54.1	48.4	46.8	
9	5:57 PM	5:58 PM	55.6	46.3	65.3	59.9	49.9	46.6	
10	5:58 PM	5:59 PM	54.7	45.6	64.4	58.6	49.6	46.7	
11	5:59 PM	6:00 PM	49.3	48.2	52.0	49.9	49.3	48.3	
12	6:00 PM	6:01 PM	53.3	46.5	63.7	56.9	47.8	46.5	
13	6:01 PM	6:02 PM	53.9	47.6	63.1	57.2	50.5	48.4	
14	6:02 PM	6:03 PM	55.6	49.3	62.8	59.4	52.3	50.0	
15	6:03 PM	6:04 PM	49.9	48.6	53.6	51.1	49.6	48.6	
16	6:04 PM	6:05 PM	55.3	49.3	64.0	58.2	51.9	50.2	
17	6:05 PM	6:06 PM	54.1	48.0	60.3	58.7	51.3	48.8	
18	6:06 PM	6:07 PM	57.6	47.3	65.3	63.5	50.9	47.6	
19	6:07 PM	6:08 PM	57.0	46.7	64.6	62.1	53.5	47.7	
20			47.4	46.3	49.8	48.7	46.9	46.3	
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URS Acoustics and Noise Control Practice FIELD NOISE MEASUREMENT DATA FORM

Roadway Name/Dir	Meadowmont Lane	Green Cedar Lane
Speed (**post**/obs)*	25/25	25/25
Number of Lanes	4	2
Width (pave/row)	84'/108'	22'/30'
1- or 2- way	2	2
Grade	0	0
Bus Stops	0	0
Stoplights	0	0
Motorcycles	0	0
Automobiles	31	2
Medium Trucks	0	0
Heavy Trucks	0	0
Buses	0	0
Count duration	20 min.	20 min.

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name: Triangle Transit DEIS		Project #: 31829240	Date: 11/11/2013	Page	of
Monitoring Location: M6 - Meadowmont Lane at Green Cedar Lane			Analyst: John Burris - #6 Equipment		

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1324	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: Steady/Gusty/**Calm**	
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	114.1 dBA	Avg Wind Speed/Direction:	1
Topo: Flat / **Hilly**		GPS Coordinates (at SLM location)#		Temp (°F): 46	RH (%): 57
Terrain: Hard/Soft/**Mixed**/Snow		+35° 54' 31.80", -79° 0' 28.21"		Bar Psr (Hg): 30.19	Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			52.8	47.3	58.3	56.1	50.7	48.6	
1	9:25 PM	9:26 PM	48.9	44.0	54.6	52.9	46.8	45.1	
2	9:26 PM	9:27 PM	44.9	43.9	46.1	45.8	44.9	44.2	
3	9:27 PM	9:28 PM	45.6	44.0	48.4	47.4	45.3	44.2	
4	9:28 PM	9:29 PM	46.7	44.6	49.6	48.0	46.5	45.2	
5	9:29 PM	9:30 PM	45.9	44.6	47.1	46.8	46.0	44.8	
6	9:30 PM	9:31 PM	45.3	44.5	46.0	45.9	45.4	44.8	
7	9:31 PM	9:32 PM	46.2	45.1	47.4	47.4	46.2	45.2	
8	9:32 PM	9:33 PM	46.4	45.0	47.6	47.2	46.4	45.4	
9	9:33 PM	9:34 PM	47.9	45.6	54.6	49.8	46.5	45.6	
10	9:34 PM	9:35 PM	46.4	45.1	47.5	47.0	46.3	45.3	
11	9:35 PM	9:36 PM	52.9	45.2	62.6	56.9	47.6	45.7	
12	9:36 PM	9:37 PM	46.0	44.2	47.5	47.2	45.8	44.4	
13	9:37 PM	9:38 PM	48.3	45.0	50.2	49.7	47.9	46.4	
14	9:38 PM	9:39 PM	55.7	47.1	64.1	61.0	50.2	47.5	
15	9:39 PM	9:40 PM	47.3	45.7	49.4	47.9	47.3	46.2	
16	9:40 PM	9:41 PM	46.9	44.9	48.3	47.9	46.9	45.6	
17	9:41 PM	9:42 PM	47.4	45.3	48.8	48.4	47.3	45.9	
18	9:42 PM	9:43 PM	54.3	45.3	64.7	58.4	46.8	45.4	
19	9:43 PM	9:44 PM	46.2	44.8	47.3	46.9	46.3	45.2	
20	9:44 PM	9:45 PM	48.0	45.2	52.0	50.5	46.9	45.5	
21			47.3	45.4	50.0	49.6	46.4	45.4	
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URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Meadowmont Lane	Green Cedar Lane
Speed (**post**/obs)*	25/25	25/25
Number of Lanes	4	2
Width (pave/row)	84'/108'	22'/30'
1- or 2- way	2	2
Grade	0	0
Bus Stops	0	0
Stoplights	0	0
Motorcycles	0	0
Automobiles	5	3
Medium Trucks	0	0
Heavy Trucks	0	0
Buses	0	0
Count duration	20 min.	20 min.

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS			Project #:	31829240	Date:	11/12/2013	Page	of
Monitoring Location:			M5 -Prestwick Road			Analyst:	John Burris - #6 Equipment		

Sound Level Meter		Field Calibration			Weather Data			
Model #:	820	Model #:	CAL200		Model #:	SM-28		
Serial #:	1324	Serial #:	3704		Serial #:	3386		
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**		Wind: Steady/Gusty/**Calm**			
Response: **Slow** / Fast / Impl		Pre-Test	114.1	dBA	Precipitation: Yes (explain) / **No**			
Windscreen : **Yes** / No (explain)		Post-Test	114.1	dBA	Avg Wind Speed/Direction:	0		
Topo:	**Flat** / Hilly	GPS Coordinates (at SLM location)#			Temp (°F):	37	RH (%):	83
Terrain:	Hard/Soft/**Mixed**/Snow	+35° 54' 21.87", -79° 1' 19.19"			Bar Psr (Hg):	30.06	Cloud Cover (%):	0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			51.0	50.6	51.7	51.7	50.8	50.6	
1	6:29 AM	6:30 AM	51.0	50.1	52.4	51.8	51.1	50.2	
2	6:30 AM	6:31 AM	51.6	50.6	52.7	52.6	51.5	50.6	
3	6:31 AM	6:32 AM	52.1	50.4	53.3	52.9	52.1	51.1	
4	6:32 AM	6:33 AM	50.7	49.2	51.9	51.7	50.6	49.6	
5	6:33 AM	6:34 AM	51.0	49.7	53.5	53.2	50.6	49.7	
6	6:34 AM	6:35 AM	53.7	51.0	60.1	57.3	52.1	51.2	Car
7	6:35 AM	6:36 AM	55.4	51.9	63.4	58.4	52.9	52.1	Car
8	6:36 AM	6:37 AM	52.6	50.9	55.5	54.1	52.4	51.2	
9	6:37 AM	6:38 AM	53.1	50.7	55.2	54.7	52.8	51.2	
10	6:38 AM	6:39 AM	51.8	50.9	53.3	52.8	51.7	50.9	
11	6:39 AM	6:40 AM	52.7	51.3	53.7	53.7	52.7	51.4	
12	6:40 AM	6:41 AM	52.7	51.7	53.7	53.7	52.7	51.8	
13	6:41 AM	6:42 AM	52.1	50.6	54.1	53.2	52.0	51.0	
14	6:42 AM	6:43 AM	51.6	50.6	52.6	52.5	51.6	50.7	
15	6:43 AM	6:44 AM	51.2	49.8	52.6	52.4	51.3	50.2	
16	6:44 AM	6:45 AM	53.2	50.6	58.1	55.3	52.6	51.2	Car
17	6:45 AM	6:46 AM	53.3	51.9	54.3	53.9	53.3	52.3	
18	6:46 AM	6:47 AM	52.2	51.1	52.9	52.9	52.4	51.5	
19	6:47 AM	6:48 AM	54.0	51.0	61.5	56.5	52.2	51.2	Car
20	6:48 AM	6:49 AM	52.7	51.4	53.7	53.7	52.7	51.6	
21			51.9	50.8	54.9	53.4	51.6	50.8	
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URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	Prestwick Road			
Speed (**post**/obs)*	25/25			
Number of Lanes	2			
Width (pave/**row**)	24'/50'			
1- or 2- way	2/2			
Grade	0			
Bus Stops	0			
Stoplights	0			
Motorcycles	0			
Automobiles	4			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	0			
Heavy Trucks	0			
Buses	0			
Count duration	20 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name: Triangle Transit DEIS	Project #: 31829240	Date: 11/12/2013	Page of
Monitoring Location: M5 -Prestwick Road		Analyst: John Burris - #6 Equipment	

Sound Level Meter	Field Calibration	Weather Data
Model #: 820	Model #: CAL200	Model #: SM-28
Serial #: 1324	Serial #: 3704	Serial #: 3386
Weighting: **A** / C / Flat	Calibration Level (dBA): 94 / **114**	Wind: Steady/**Gusty**/Calm
Response: **Slow** / Fast / Impl	Pre-Test 114.1 dBA	Precipitation: Yes (explain) / **No**
Windscreen : **Yes** / No (explain)	Post-Test 114.1 dBA	Avg Wind Speed/Direction: 5.1
Topo: **Flat** / Hilly	GPS Coordinates (at SLM location)#	Temp (°F): 47 RH (%): 60
Terrain: Hard/Soft/**Mixed**/Snow	+35° 54' 21.87", -79° 1' 19.19"	Bar Psr (Hg): 30.11 Cloud Cover (%): 100

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			52.6	51.3	53.5	53.5	52.7	51.4	
1	10:58 AM	10:59 AM	55.3	46.5	62.9	60.0	51.9	47.7	
2	10:59 AM	11:00 AM	49.8	46.0	56.0	52.4	48.6	46.7	Truck unloading
3	11:00 AM	11:01 AM	52.3	45.6	64.8	55.4	49.2	47.0	Truck unloading
4	11:01 AM	11:02 AM	49.2	44.9	56.6	51.8	48.4	45.4	Truck unloading
5	11:02 AM	11:03 AM	50.4	46.3	58.5	54.8	47.5	46.5	Truck unloading
6	11:03 AM	11:04 AM	59.9	47.5	69.4	63.8	53.5	48.7	
7	11:04 AM	11:05 AM	60.3	47.4	67.6	65.1	51.4	47.7	
8	11:05 AM	11:06 AM	50.5	46.3	57.5	53.0	48.5	46.8	
9	11:06 AM	11:07 AM	53.1	47.6	61.6	55.7	51.3	48.8	
10	11:07 AM	11:08 AM	55.3	50.6	63.5	57.7	54.0	51.2	
11	11:08 AM	11:09 AM	54.3	47.8	61.5	58.1	49.8	48.0	
12	11:09 AM	11:10 AM	49.6	47.5	55.0	51.6	48.7	47.5	
13	11:10 AM	11:11 AM	53.0	47.4	60.8	57.8	49.3	47.4	
14	11:11 AM	11:12 AM	48.3	46.2	54.8	49.8	47.7	46.5	
15	11:12 AM	11:13 AM	52.3	46.3	62.2	55.6	48.5	46.3	
16	11:13 AM	11:14 AM	56.7	48.4	64.9	61.7	52.7	49.1	
17	11:14 AM	11:15 AM	74.5	52.4	87.2	77.4	62.3	58.4	
18	11:15 AM	11:16 AM	56.0	45.7	66.9	59.9	47.6	46.1	
19	11:16 AM	11:17 AM	53.2	47.2	66.2	55.1	49.1	47.4	Golf cart; golfers yell at mic
20	11:17 AM	11:18 AM	51.9	47.7	62.0	53.7	49.4	48.1	
21			61.5	48.2	77.7	63.0	50.4	48.6	
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URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	Prestwick Road			
Speed (**post**/obs)*	25/25			
Number of Lanes	2			
Width (pave/row)	24'/50'			
1- or 2- way	2/2			
Grade	0			
Bus Stops	0			
Stoplights	0			
Motorcycles	2			
Automobiles	16			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	2			
Heavy Trucks	3			
Buses	0			
Count duration	20 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS			Project #:	31829240	Date:	11/15/2013	Page	of
Monitoring Location:			M5 -Prestwick Road			Analyst:	John Burris - #2 Equipment		

Sound Level Meter		Field Calibration			Weather Data			
Model #:	820	Model #:	CAL200		Model #:	SM-28		
Serial #:	1324	Serial #:	3704		Serial #:	3386		
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**		Wind: Steady/Gusty/**Calm**			
Response: **Slow** / Fast / Impl		Pre-Test	113.9	dBA	Precipitation: Yes (explain) / **No**			
Windscreen : **Yes** / No (explain)		Post-Test	113.9	dBA	Avg Wind Speed/Direction:	0		
Topo:	**Flat** / Hilly	GPS Coordinates (at SLM location)#			Temp (℉):	60	RH (%):	73
Terrain:	Hard/Soft/**Mixed**/Snow	+35° 54' 21.87", -79° 1' 19.19"			Bar Psr (Hg):	30.20	Cloud Cover (%):	100

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			51.2	48.9	56.4	53.7	50.1	49.1	
1	5:15 PM	5:16 PM	53.2	48.4	61.0	57.0	50.9	49.3	
2	5:16 PM	5:17 PM	54.7	48.2	61.0	59.1	52.2	48.7	
3	5:17 PM	5:18 PM	56.2	49.4	62.5	58.9	54.8	50.7	
4	5:18 PM	5:19 PM	50.5	47.7	56.5	52.9	49.3	48.2	
5	5:19 PM	5:20 PM	52.1	47.5	57.5	54.9	51.1	48.1	
6	5:20 PM	5:21 PM	56.0	48.1	71.5	55.0	51.4	48.8	
7	5:21 PM	5:22 PM	51.4	47.7	55.7	53.5	50.9	48.3	
8	5:22 PM	5:23 PM	52.1	47.8	60.3	55.6	48.8	48.1	
9	5:23 PM	5:24 PM	47.6	46.2	49.1	48.7	47.5	46.3	
10	5:24 PM	5:25 PM	51.2	47.3	58.1	53.6	49.8	48.1	
11	5:25 PM	5:26 PM	52.2	46.4	59.4	55.4	50.4	46.6	
12	5:26 PM	5:27 PM	50.5	46.3	55.9	53.9	49.0	46.6	
13	5:27 PM	5:28 PM	50.3	48.4	54.5	52.1	49.7	48.9	
14	5:28 PM	5:29 PM	50.3	46.5	55.9	53.1	49.2	47.2	
15	5:29 PM	5:30 PM	51.8	46.9	57.2	55.6	50.3	47.6	
16	5:30 PM	5:31 PM	52.8	47.1	60.4	56.9	49.6	48.0	
17	5:31 PM	5:32 PM	48.2	47.1	50.8	49.0	48.3	47.3	
18	5:32 PM	5:33 PM	48.6	47.3	49.9	49.3	48.5	48.0	
19	5:33 PM	5:34 PM	51.6	47.0	56.3	53.7	51.7	47.7	
20	5:34 PM	5:35 PM	64.0	50.2	69.4	68.7	57.1	50.7	Helicopter
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URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	Prestwick Road			
Speed (**post**/obs)*	25/25			
Number of Lanes	2			
Width (pave/row)	24'/50'			
1- or 2- way	2/2			
Grade	0			
Bus Stops	0			
Stoplights	0			
Motorcycles	0			
Automobiles	37			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	0			
Heavy Trucks	0			
Buses	0			
Count duration	20 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name: Triangle Transit DEIS	Project #: 31829240	Date: 11/15/2013	Page of
Monitoring Location: M5 -Prestwick Road		Analyst: John Burris - #2 Equipment	

Sound Level Meter	Field Calibration	Weather Data
Model #: 820	Model #: CAL200	Model #: SM-28
Serial #: 1324	Serial #: 3704	Serial #: 3386
Weighting: **A** / C / Flat	Calibration Level (dBA): 94 / **114**	Wind: Steady/Gusty/**Calm**
Response: **Slow** / Fast / Impl	Pre-Test 113.9 dBA	Precipitation: Yes (explain) / **No**
Windscreen : **Yes** / No (explain)	Post-Test 113.9 dBA	Avg Wind Speed/Direction: 0
Topo: **Flat** / Hilly	GPS Coordinates (at SLM location)#	Temp (°F): 52 RH (%): 73
Terrain: Hard/Soft/**Mixed**/Snow	+35° 54' 21.87", -79° 1' 19.19"	Bar Psr (Hg): 30.19 Cloud Cover (%): 100

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			49.9	48.4	53.0	51.0	49.9	48.5	
1	8:55 PM	8:56 PM	48.1	47.1	50.6	49.0	48.0	47.2	
2	8:56 PM	8:57 PM	48.9	47.5	52.6	50.4	48.6	47.6	
3	8:57 PM	8:58 PM	49.3	47.7	51.6	50.8	48.8	47.9	
4	8:58 PM	8:59 PM	48.2	47.5	49.3	48.9	48.2	47.5	
5	8:59 PM	9:00 PM	47.5	46.4	49.5	48.3	47.4	46.4	
6	9:00 PM	9:01 PM	48.3	46.6	54.2	49.5	47.5	46.6	
7	9:01 PM	9:02 PM	47.5	46.6	49.3	48.2	47.4	46.6	
8	9:02 PM	9:03 PM	51.1	47.2	58.5	55.1	48.6	47.3	
9	9:03 PM	9:04 PM	52.7	47.8	60.3	55.6	51.3	48.4	
10	9:04 PM	9:05 PM	47.9	46.9	49.7	48.8	47.8	47.1	
11	9:05 PM	9:06 PM	49.1	47.2	54.8	50.8	48.4	47.3	
12	9:06 PM	9:07 PM	50.5	47.2	57.9	53.4	49.2	47.5	
13	9:07 PM	9:08 PM	47.5	46.5	50.4	48.2	47.5	47.0	
14	9:08 PM	9:09 PM	50.1	47.3	55.9	53.0	48.6	47.3	
15	9:09 PM	9:10 PM	50.0	46.9	58.4	52.9	48.0	47.2	
16	9:10 PM	9:11 PM	48.2	46.7	51.4	49.0	48.0	47.1	
17	9:11 PM	9:12 PM	48.0	46.5	52.0	48.9	47.7	47.1	
18	9:12 PM	9:13 PM	51.5	46.3	64.0	54.2	48.6	47.0	
19	9:13 PM	9:14 PM	50.4	46.1	62.1	51.8	48.5	46.6	
20			53.4	46.5	63.5	54.8	47.9	47.0	
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URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	Prestwick Road			
Speed (**post**/obs)*	25/25			
Number of Lanes	2			
Width (pave/row)	24'/50'			
1- or 2- way	2/2			
Grade	0			
Bus Stops	0			
Stoplights	0			
Motorcycles	0			
Automobiles	8			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	1			
Heavy Trucks	0			
Buses	0			
Count duration	20 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice FIELD NOISE MEASUREMENT DATA FORM

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date: 11/12/2013	Page of
Monitoring Location:	M4 -Glenwood Elementary School			Analyst:	John Burris - #6 Equipment

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1324	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: Steady/Gusty/**Calm**	
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	114.1 dBA	Avg Wind Speed/Direction:	0
Topo:	Flat / **Hilly**	GPS Coordinates (at SLM location)#		Temp (°F): 37	RH (%): 83
Terrain:	Hard/Soft/**Mixed**/Snow	+35° 54' 23.62", -79° 1' 30.49"		Bar Psr (Hg): 30.06	Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0									
1	6:01 AM	6:02 AM	49.8	47.2	55.7	51.4	49.3	47.5	
2	6:02 AM	6:03 AM	48.1	46.8	51.1	49.0	47.8	47.1	
3	6:03 AM	6:04 AM	47.6	45.5	50.5	49.6	46.9	46.1	
4	6:04 AM	6:05 AM	48.2	47.0	49.4	48.9	48.2	47.3	
5	6:05 AM	6:06 AM	47.7	46.4	49.5	48.8	47.7	46.4	
6	6:06 AM	6:07 AM	48.1	45.2	49.8	49.5	48.0	45.8	
7	6:07 AM	6:08 AM	49.0	45.6	50.9	50.5	49.2	46.4	
8	6:08 AM	6:09 AM	50.2	46.4	54.0	52.9	48.4	46.5	
9	6:09 AM	6:10 AM	48.7	46.7	53.9	51.4	47.9	47.0	
10	6:10 AM	6:11 AM	50.3	46.9	54.0	52.7	49.5	48.1	
11	6:11 AM	6:12 AM	52.0	48.6	55.4	54.6	50.4	48.8	
12	6:12 AM	6:13 AM	49.4	46.5	53.5	51.6	48.8	46.5	
13	6:13 AM	6:14 AM	51.2	48.3	53.7	52.9	50.6	48.5	
14	6:14 AM	6:15 AM	48.4	47.2	49.8	49.5	48.3	47.3	
15	6:15 AM	6:16 AM	49.2	47.4	51.4	50.4	49.1	48.1	
16	6:16 AM	6:17 AM	49.3	48.2	50.4	50.3	49.3	48.3	
17	6:17 AM	6:18 AM	49.3	47.9	50.5	50.1	49.3	48.3	
18	6:18 AM	6:19 AM	51.2	49.1	56.3	52.8	50.7	49.6	
19	6:19 AM	6:20 AM	49.8	48.0	53.2	51.3	49.5	48.4	
20	6:20 AM	6:21 AM	49.9	48.7	51.1	50.8	49.9	49.0	
21			50.3	49.0	52.4	51.5	50.1	49.2	
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URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	Glenwood Elementary Entrance			
Speed (**post**/obs)*	10			
Number of Lanes	2			
Width (pave/row)	20'/24'			
1- or 2- way	2/2			
Grade	0			
Bus Stops	0			
Stoplights	0			
Motorcycles	0			
Automobiles	0			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	0			
Heavy Trucks	0			
Buses	0			
Count duration	20 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS			Project #:	31829240		Date: 11/12/2013	Page	of
Monitoring Location:		M4 -Glenwood Elementary School					Analyst:	John Burris - #6 Equipment	

Sound Level Meter		Field Calibration			Weather Data			
Model #:	820	Model #:	CAL200		Model #:	SM-28		
Serial #:	1324	Serial #:	3704		Serial #:	3386		
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**		Wind: Steady/**Gusty**/Calm			
Response: **Slow** / Fast / Impl		Pre-Test	114.1	dBA	Precipitation: Yes (explain) / **No**			
Windscreen : **Yes** / No (explain)		Post-Test	114.1	dBA	Avg Wind Speed/Direction:	4.7		
Topo: Flat / **Hilly**		GPS Coordinates (at SLM location)#			Temp (°F):	46	RH (%):	60
Terrain: Hard/Soft/**Mixed**/Snow		+35° 54' 23.62", -79° 1' 30.49"			Bar Psr (Hg):	30.11	Cloud Cover (%):	100

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			50.6	48.4	55.0	52.5	49.7	48.6	
1	10:31 AM	10:32 AM	53.6	46.7	64.5	55.2	49.6	47.2	Car
2	10:32 AM	10:33 AM	51.8	48.4	62.9	52.6	50.7	49.2	
3	10:33 AM	10:34 AM	50.4	47.9	55.7	51.7	50.2	48.5	
4	10:34 AM	10:35 AM	51.6	47.3	55.8	53.9	50.9	48.8	
5	10:35 AM	10:36 AM	52.1	48.3	55.5	53.8	52.3	48.8	
6	10:36 AM	10:37 AM	49.9	48.1	52.5	52.1	49.5	48.4	
7	10:37 AM	10:38 AM	51.1	49.3	53.3	52.5	50.9	50.0	
8	10:38 AM	10:39 AM	50.7	48.9	54.5	52.5	50.1	49.2	
9	10:39 AM	10:40 AM	50.7	47.8	55.1	53.2	49.6	48.2	
10	10:40 AM	10:41 AM	50.5	49.1	52.6	51.7	50.5	49.4	
11	10:41 AM	10:42 AM	49.4	47.9	51.1	50.7	49.4	48.3	
12	10:42 AM	10:43 AM	51.9	49.0	54.7	53.6	51.5	50.2	
13	10:43 AM	10:44 AM	54.4	50.6	59.5	56.7	52.9	51.0	
14	10:44 AM	10:45 AM	52.7	48.5	58.6	55.0	51.4	49.0	
15	10:45 AM	10:46 AM	51.7	49.7	54.0	52.8	51.5	50.2	
16	10:46 AM	10:47 AM	52.2	49.0	58.1	53.3	51.8	49.8	
17	10:47 AM	10:48 AM	52.1	49.5	55.2	53.6	51.8	50.3	Car
18	10:48 AM	10:49 AM	53.5	48.6	61.5	56.7	50.8	49.1	
19	10:49 AM	10:50 AM	52.6	49.7	55.5	53.9	52.4	51.1	
20	10:50 AM	10:51 AM	53.6	50.3	60.6	55.6	52.4	51.0	
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URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	Glenwood Elementary Entrance			
Speed (**post**/obs)*	10			
Number of Lanes	2			
Width (pave/row)	20'/24'			
1- or 2- way	2/2			
Grade	0			
Bus Stops	0			
Stoplights	0			
Motorcycles	0			
Automobiles	2			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	0			
Heavy Trucks	0			
Buses	0			
Count duration	20 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS			Project #:	31829240		Date: 11/15/2013		Page of
Monitoring Location:			M4 -Glenwood Elementary School				Analyst:		John Burris - #2 Equipment

Sound Level Meter		Field Calibration			Weather Data			
Model #:	820	Model #:	CAL200		Model #:	SM-28		
Serial #:	1324	Serial #:	3704		Serial #:	3386		
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**		Wind: Steady/Gusty/**Calm**			
Response: **Slow** / Fast / Impl		Pre-Test	113.9	dBA	Precipitation: Yes (explain) / **No**			
Windscreen : **Yes** / No (explain)		Post-Test	113.9	dBA	Avg Wind Speed/Direction:	0		
Topo:	Flat / **Hilly**	GPS Coordinates (at SLM location)#			Temp (°F):	58	RH (%):	73
Terrain:	Hard/Soft/**Mixed**/Snow	+35° 54' 23.62", -79° 1' 30.49"			Bar Psr (Hg):	30.20	Cloud Cover (%):	100

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			50.9	45.7	56.7	53.7	50.2	46.4	
1	4:49 PM	4:50 PM	51.7	49.7	56.6	52.9	51.5	50.3	
2	4:50 PM	4:51 PM	50.1	48.8	52.0	51.3	49.9	49.1	
3	4:51 PM	4:52 PM	49.4	48.6	51.8	50.0	49.2	48.6	
4	4:52 PM	4:53 PM	52.4	50.6	60.5	54.1	51.7	51.1	
5	4:53 PM	4:54 PM	71.8	45.9	84.8	72.8	57.9	51.2	Bus
6	4:54 PM	4:55 PM	51.3	45.6	60.8	53.2	48.8	46.4	
7	4:55 PM	4:56 PM	49.2	46.2	52.2	50.9	49.0	46.8	
8	4:56 PM	4:57 PM	49.0	45.3	53.7	51.0	48.5	46.1	
9	4:57 PM	4:58 PM	48.7	47.1	51.4	49.8	48.7	47.7	
10	4:58 PM	4:59 PM	48.9	45.5	53.9	51.0	48.4	46.3	
11	4:59 PM	5:00 PM	47.7	45.9	49.0	48.8	47.7	46.7	
12	5:00 PM	5:01 PM	48.1	46.9	49.0	48.9	48.1	47.2	
13	5:01 PM	5:02 PM	48.8	45.5	54.5	51.4	47.9	46.2	
14	5:02 PM	5:03 PM	49.3	47.0	51.0	50.2	49.3	48.1	
15	5:03 PM	5:04 PM	49.3	46.2	55.2	52.3	47.8	46.6	
16	5:04 PM	5:05 PM	48.4	47.0	50.3	49.5	48.3	47.3	
17	5:05 PM	5:06 PM	49.3	47.4	53.8	50.8	48.8	47.6	
18	5:06 PM	5:07 PM	49.4	46.3	55.3	52.4	47.8	46.3	
19	5:07 PM	5:08 PM	49.6	47.8	51.9	50.9	49.4	48.2	
20	5:08 PM	5:09 PM	47.6	45.8	49.7	48.9	47.5	46.3	
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URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Glenwood Elementary Entrance		compass
Speed (**post**/obs)*	10		
Number of Lanes	2		
Width (pave/row)	20'/24'		
1- or 2- way	2/2		
Grade	0		
Bus Stops	0		
Stoplights	0		
Motorcycles	0		
Automobiles	0		
Medium Trucks	0		
Heavy Trucks	0		
Buses	1		
Count duration	20 min.		

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date:	11/15/2013	Page of
Monitoring Location:	M4 -Glenwood Elementary School			Analyst:	John Burris - #2 Equipment	

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1324	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: Steady/Gusty/**Calm**	
Response: **Slow** / Fast / Impl		Pre-Test	113.9 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	113.9 dBA	Avg Wind Speed/Direction:	0
Topo:	Flat / **Hilly**	GPS Coordinates (at SLM location)#		Temp (°F): 52	RH (%): 73
Terrain:	Hard/Soft/**Mixed**/Snow	+35° 54' 23.62", -79° 1' 30.49"		Bar Psr (Hg): 30.19	Cloud Cover (%): 100

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			56.0	55.6	56.3	56.3	56.2	55.6	
1	8:33 PM	8:34 PM	52.1	44.8	61.8	56.9	47.4	45.6	
2	8:34 PM	8:35 PM	47.9	46.5	50.6	49.3	47.6	46.5	
3	8:35 PM	8:36 PM	47.5	46.1	49.8	48.4	47.5	46.5	
4	8:36 PM	8:37 PM	47.3	46.1	49.2	48.6	47.0	46.2	
5	8:37 PM	8:38 PM	47.5	46.6	48.7	48.2	47.5	47.0	
6	8:38 PM	8:39 PM	47.7	46.7	49.1	48.7	47.6	46.9	
7	8:39 PM	8:40 PM	52.3	46.9	57.2	54.9	51.5	47.8	
8	8:40 PM	8:41 PM	48.1	46.9	50.4	49.1	48.1	47.2	
9	8:41 PM	8:42 PM	48.5	47.7	49.9	49.5	48.5	47.7	
10	8:42 PM	8:43 PM	50.9	47.4	54.5	53.5	49.7	47.9	
11	8:43 PM	8:44 PM	51.6	47.1	58.5	55.2	48.8	47.3	
12	8:44 PM	8:45 PM	49.5	47.5	55.4	51.6	48.8	47.6	
13	8:45 PM	8:46 PM	50.4	47.1	55.9	53.2	48.7	47.4	
14	8:46 PM	8:47 PM	48.8	46.1	53.7	50.6	48.1	46.5	
15	8:47 PM	8:48 PM	49.5	46.6	54.1	52.5	48.5	46.9	
16			48.7	46.1	52.4	50.5	48.5	46.4	
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URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Glenwood Elementary Entrance	
Speed (**post**/obs)*	10	
Number of Lanes	2	
Width (pave/row)	20'/24'	
1- or 2- way	2/2	
Grade	0	
Bus Stops	0	
Stoplights	0	
Motorcycles	0	
Automobiles	0	
Medium Trucks	0	
Heavy Trucks	0	
Buses	0	
Count duration	15 min.	

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date:	11/11/2013	Page	of
Monitoring Location:	M3 - US 15/501 at Manning Dr.			Analyst:	Andrew Bell - #2 Equipment		

Sound Level Meter		Field Calibration			Weather Data		
Model #:	820	Model #:	CAL200		Model #:	SM-28	
Serial #:	1414	Serial #:	3704		Serial #:	3386	
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**		Wind: **Steady**/Gusty/Calm		
Response: **Slow** / Fast / Impl		Pre-Test	114.1	dBA	Precipitation: Yes (explain) / **No**		
Windscreen : **Yes** / No (explain)		Post-Test	114.1	dBA	Avg Wind Speed/Direction:	2.2/NW	
Topo:	**Flat** / Hilly	GPS Coordinates (at SLM location)#			Temp (°F):	36	RH (%): 82
Terrain:	Hard/Soft/**Mixed**/Snow	+35° 53' 53.66", -79° 2' 10.27"			Bar Psr (Hg):	30.31	Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			73.7	66.3	76.4	76.2	73.6	70.1	
1	7:23 AM	7:24 AM	72.8	62.6	79.0	77.5	68.8	64.9	
2	7:24 AM	7:25 AM	74.0	68.4	77.5	76.3	73.9	68.7	
3	7:25 AM	7:26 AM	77.0	71.7	85.2	79.0	75.1	73.1	
4	7:26 AM	7:27 AM	72.2	67.3	77.4	74.8	71.4	68.3	
5	7:27 AM	7:28 AM	74.1	63.8	79.5	76.6	73.9	67.2	
6	7:28 AM	7:29 AM	75.2	68.4	78.2	77.5	75.0	71.5	
7	7:29 AM	7:30 AM	72.4	62.6	77.0	76.0	71.0	63.4	
8	7:30 AM	7:31 AM	70.7	60.1	75.1	74.3	68.1	61.1	
9	7:31 AM	7:32 AM	76.2	70.8	79.2	77.8	76.1	73.9	
10	7:32 AM	7:33 AM	73.9	60.9	80.0	77.7	71.3	63.1	
11	7:33 AM	7:34 AM	70.1	61.4	73.3	72.5	71.0	62.9	
12	7:34 AM	7:35 AM	74.5	71.5	81.6	76.0	73.8	72.3	
13	7:35 AM	7:36 AM	73.6	56.7	80.1	78.2	70.8	57.6	
14	7:36 AM	7:37 AM	71.0	59.7	76.1	73.5	71.1	61.9	
15	7:37 AM	7:38 AM	75.7	71.6	81.7	77.0	75.5	72.6	
16	7:38 AM	7:39 AM	73.4	63.6	83.6	76.8	69.0	64.1	
17	7:39 AM	7:40 AM	72.9	63.9	78.6	76.5	71.8	64.7	
18	7:40 AM	7:41 AM	75.2	68.0	80.0	77.7	75.0	70.4	
19	7:41 AM	7:42 AM	73.6	60.8	79.3	77.6	71.6	61.5	
20	7:42 AM	7:43 AM	73.2	63.4	78.9	76.0	72.6	64.7	
21			75.4	69.8	79.0	78.2	75.2	71.2	
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URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	US 15-501/Manning Dr.			
Speed (**post**/obs)*	45/35			
Number of Lanes	6/5			
Width (pave/**row**)	84'/72'			
1- or 2- way	2/2			
Grade	0			
Bus Stops	0			
Stoplights	1			
Motorcycles	0			
Automobiles	547			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	3			
Heavy Trucks	4			
Buses	6			
Count duration	10 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date: 11/11/2013	Page of
Monitoring Location:	M3 - US 15/501 at Manning Dr.			Analyst:	John Burris - #6 Equipment

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1324	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: **Steady**/Gusty/Calm	
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	114.1 dBA	Avg Wind Speed/Direction:	2.5
Topo: **Flat** / Hilly		GPS Coordinates (at SLM location)#		Temp (°F): 50	RH (%): 53
Terrain: Hard/Soft/**Mixed**/Snow		+35° 53' 53.66", -79° 2' 10.27"		Bar Psr (Hg): 30.35	Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			73.2	67.4	76.5	74.9	73.1	69.9	
1	11:37 AM	11:38 AM	72.7	59.6	82.9	77.2	67.2	60.3	
2	11:38 AM	11:39 AM	75.9	72.6	80.8	77.7	75.4	73.4	
3	11:39 AM	11:40 AM	71.7	62.0	78.3	76.8	66.7	63.3	
4	11:40 AM	11:41 AM	72.2	68.8	77.4	73.8	72.2	69.4	
5	11:41 AM	11:42 AM	71.7	59.5	80.4	76.4	64.4	60.4	
6	11:42 AM	11:43 AM	70.5	57.6	74.6	72.6	70.6	61.2	
7	11:43 AM	11:44 AM	71.1	62.0	75.9	74.3	71.1	63.3	
8	11:44 AM	11:45 AM	70.5	59.0	75.0	73.8	70.6	60.1	
9	11:45 AM	11:46 AM	72.1	55.8	79.6	75.7	69.7	57.8	
10	11:46 AM	11:47 AM	70.0	60.7	75.7	72.7	69.7	61.9	
11	11:47 AM	11:48 AM	73.8	61.2	76.7	75.9	74.1	64.9	
12	11:48 AM	11:49 AM	72.0	61.3	80.0	74.1	69.6	67.2	
13	11:49 AM	11:50 AM	73.5	63.8	78.9	76.6	73.1	68.9	
14	11:50 AM	11:51 AM	62.4	57.3	66.6	64.7	62.0	59.1	
15	11:51 AM	11:52 AM	72.7	66.6	77.6	75.2	72.1	68.8	
16	11:52 AM	11:53 AM	68.1	59.7	77.0	71.4	63.3	60.5	
17	11:53 AM	11:54 AM	75.0	66.3	82.5	77.5	74.0	69.3	
18	11:54 AM	11:55 AM	71.7	60.3	77.0	76.1	69.2	61.6	
19	11:55 AM	11:56 AM	75.3	65.8	82.3	78.0	72.9	69.1	
20	11:56 AM	11:57 AM	72.8	63.6	80.2	75.4	71.8	66.2	
21			69.0	68.9	69.1	69.1	69.1	69.0	
22									
23									
24									
25									
26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	US 15-501/Manning Dr.			
Speed (**post**/obs)*	45/35			
Number of Lanes	6/5			
Width (pave/row)	84'/72'			
1- or 2- way	2			
Grade	0			
Bus Stops	0			
Stoplights	1			
Motorcycles	0			
Automobiles	526			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	5			
Heavy Trucks	12			
Buses	2			
Count duration	10 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name: Triangle Transit DEIS	Project #: 31829240	Date: 11/11/2013	Page of
Monitoring Location: M3 - US 15/501 at Manning Dr.		Analyst: John Burris - #6 Equipment	

Sound Level Meter	Field Calibration	Weather Data
Model #: 820	Model #: CAL200	Model #: SM-28
Serial #: 1324	Serial #: 3704	Serial #: 3386
Weighting: **A** / C / Flat	Calibration Level (dBA): 94 / **114**	Wind: **Steady**/Gusty/Calm
Response: **Slow** / Fast / Impl	Pre-Test 114.1 dBA	Precipitation: Yes (explain) / **No**
Windscreen : **Yes** / No (explain)	Post-Test 114.1 dBA	Avg Wind Speed/Direction: 2.6
Topo: **Flat** / Hilly	GPS Coordinates (at SLM location)#	Temp (°F): 57 RH (%): 31
Terrain: Hard/Soft/**Mixed**/Snow	+35° 53' 53.66", -79° 2' 10.27"	Bar Psr (Hg): 30.20 Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			75.4	74.2	77.2	77.2	74.8	74.2	
1	4:41 PM	4:42 PM	72.3	62.0	80.6	77.0	66.3	62.4	
2	4:42 PM	4:43 PM	69.4	58.0	73.2	72.2	70.3	60.1	
3	4:43 PM	4:44 PM	75.4	70.5	80.6	77.5	74.7	72.0	
4	4:44 PM	4:45 PM	72.8	65.7	78.6	76.0	71.1	67.0	
5	4:45 PM	4:46 PM	77.5	69.9	90.0	80.9	71.7	70.4	
6	4:46 PM	4:47 PM	69.4	64.1	72.8	71.9	69.1	65.3	
7	4:47 PM	4:48 PM	67.9	58.9	73.8	73.1	63.4	60.1	
8	4:48 PM	4:49 PM	65.7	59.8	68.4	67.8	66.4	61.2	
9	4:49 PM	4:50 PM	71.5	65.4	80.0	74.5	69.5	66.6	
10	4:50 PM	4:51 PM	67.7	61.0	74.4	72.7	63.4	61.8	
11	4:51 PM	4:52 PM	69.9	57.6	79.3	73.5	67.1	58.6	
12	4:52 PM	4:53 PM	70.2	65.0	78.1	71.9	69.0	66.6	
13	4:53 PM	4:54 PM	67.9	62.4	74.7	72.7	63.6	62.4	
14	4:54 PM	4:55 PM	70.5	63.2	79.7	74.5	66.7	65.0	
15	4:55 PM	4:56 PM	67.6	64.8	71.2	69.5	67.4	65.2	
16	4:56 PM	4:57 PM	66.6	61.1	73.1	70.9	63.4	62.0	
17	4:57 PM	4:58 PM	68.4	60.3	73.9	71.2	68.1	61.9	
18	4:58 PM	4:59 PM	71.4	65.4	79.7	73.7	70.4	66.5	
19	4:59 PM	5:00 PM	68.1	56.8	76.3	73.6	62.0	59.1	
20	5:00 PM	5:01 PM	69.4	61.5	76.7	73.3	66.1	61.8	
21			69.7	67.8	72.5	71.4	69.3	68.2	
22									
23									
24									
25									
26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	US 15-501/Manning Dr.			
Speed (**post**/obs)*	45/35			
Number of Lanes	6/5			
Width (pave/row)	84'/72'			
1- or 2- way	2			
Grade	0			
Bus Stops	0			
Stoplights	1			
Motorcycles	1			
Automobiles	738			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	6			
Heavy Trucks	7			
Buses	5			
Count duration	10 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS		Project #:	31829240		Date:	11/11/2013	Page	of
Monitoring Location:	M3 - US 15/501 at Manning Dr.					Analyst:	John Burris - #6 Equipment		

Sound Level Meter		Field Calibration			Weather Data			
Model #:	820	Model #:	CAL200		Model #:	SM-28		
Serial #:	1324	Serial #:	3704		Serial #:	3386		
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**		Wind: Steady/Gusty/**Calm**			
Response: **Slow** / Fast / Impl		Pre-Test	114.1	dBA	Precipitation: Yes (explain) / **No**			
Windscreen : **Yes** / No (explain)		Post-Test	114.1	dBA	Avg Wind Speed/Direction:	1		
Topo: **Flat** / Hilly		GPS Coordinates (at SLM location)#			Temp (°F):	46	RH (%):	57
Terrain: Hard/Soft/**Mixed**/Snow		+35° 53' 53.66", -79° 2' 10.27"			Bar Psr (Hg):	30.19	Cloud Cover (%):	0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			70.2	59.6	75.9	74.2	67.9	60.3	
1	8:21 PM	8:22 PM	71.0	60.6	75.4	73.9	70.1	67.3	
2	8:22 PM	8:23 PM	65.3	58.2	71.7	69.5	62.3	59.4	
3	8:23 PM	8:24 PM	71.4	60.2	76.7	73.7	71.4	61.2	
4	8:24 PM	8:25 PM	66.7	57.1	73.2	70.8	62.3	59.1	
5	8:25 PM	8:26 PM	68.5	57.1	72.5	71.2	67.8	65.1	
6	8:26 PM	8:27 PM	68.4	59.3	76.0	72.6	63.9	60.2	
7	8:27 PM	8:28 PM	69.3	60.0	73.6	72.4	68.7	61.6	
8	8:28 PM	8:29 PM	68.7	62.1	73.7	71.5	68.2	63.8	
9	8:29 PM	8:30 PM	66.5	59.0	70.9	69.1	65.7	62.2	
10	8:30 PM	8:31 PM	68.2	59.1	73.8	71.4	67.3	60.7	
11	8:31 PM	8:32 PM	68.8	58.8	76.4	71.8	67.4	59.9	
12	8:32 PM	8:33 PM	73.1	66.7	77.9	75.7	72.3	68.7	Helicopter
13	8:33 PM	8:34 PM	70.0	60.8	77.6	73.8	68.1	61.7	
14	8:34 PM	8:35 PM	69.6	61.6	76.5	72.7	67.8	62.9	
15	8:35 PM	8:36 PM	67.7	59.8	73.5	71.3	66.5	61.0	
16	8:36 PM	8:37 PM	66.1	59.0	72.3	70.6	63.8	60.3	
17	8:37 PM	8:38 PM	66.6	56.0	74.2	70.5	64.6	57.7	
18	8:38 PM	8:39 PM	73.8	64.0	81.5	76.6	72.4	67.6	
19	8:39 PM	8:40 PM	69.5	57.6	75.1	72.3	68.8	59.6	
20			65.9	57.5	72.6	70.2	63.2	60.3	
21									
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27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	US 15-501/Manning Dr.			
Speed (**post**/obs)*	45/35			
Number of Lanes	6/5			
Width (pave/row)	84'/72'			
1- or 2- way	2			
Grade	0			
Bus Stops	0			
Stoplights	1			
Motorcycles	1			
Automobiles	279			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	0			
Heavy Trucks	1			
Buses	3			
Count duration	10 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS			Project #:	31829240			Date: 11/11/2013	Page of
Monitoring Location:			M2 - Mason Farm Rd.					Analyst:	Andrew Bell - #2 Equipment

Sound Level Meter		Field Calibration			Weather Data		
Model #:	820	Model #:	CAL200		Model #:	SM-28	
Serial #:	1414	Serial #:	3704		Serial #:	3386	
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**		Wind: **Steady**/Gusty/Calm		
Response: **Slow** / Fast / Impl		Pre-Test	114.1	dBA	Precipitation: Yes (explain) / **No**		
Windscreen : **Yes** / No (explain)		Post-Test	114.1	dBA	Avg Wind Speed/Direction:	2.2/NW	
Topo:	Flat / **Hilly**	GPS Coordinates (at SLM location)#			Temp (°F):	36	RH (%): 82
Terrain:	Hard/Soft/**Mixed**/Snow	+35° 53' 53.94", -79° 2' 40.93"			Bar Psr (Hg): 30.31	Cloud Cover (%):	0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			49.6	47.7	51.2	50.7	49.6	48.3	
1	6:43 AM	6:44 AM	49.5	48.5	54.2	50.5	49.4	48.5	
2	6:44 AM	6:45 AM	58.5	49.4	67.3	61.7	54.0	49.5	Car doors
3	6:45 AM	6:46 AM	60.1	49.9	67.3	66.1	54.8	50.9	Vehicle on Dean Smith Center Service Road
4	6:46 AM	6:47 AM	49.8	49.2	50.6	50.6	49.7	49.2	
5	6:47 AM	6:48 AM	50.0	49.3	51.6	50.8	49.9	49.3	
6	6:48 AM	6:49 AM	49.9	49.0	50.7	50.7	49.9	49.2	
7	6:49 AM	6:50 AM	50.0	49.1	52.2	50.9	49.8	49.2	
8	6:50 AM	6:51 AM	50.0	49.4	51.1	50.8	49.9	49.4	
9	6:51 AM	6:52 AM	50.2	48.7	53.1	51.4	50.2	48.9	
10	6:52 AM	6:53 AM	50.1	49.1	53.4	51.3	49.7	49.1	
11	6:53 AM	6:54 AM	51.2	49.5	54.3	52.3	50.9	50.1	
12	6:54 AM	6:55 AM	50.9	49.7	52.9	51.9	50.8	50.1	
13	6:55 AM	6:56 AM	50.6	49.2	52.0	51.7	50.5	49.4	
14	6:56 AM	6:57 AM	49.4	48.4	50.6	50.3	49.4	48.4	
15	6:57 AM	6:58 AM	49.7	49.1	50.4	50.0	49.5	49.1	
16	6:58 AM	6:59 AM	50.0	49.5	51.0	50.7	49.8	49.5	
17	6:59 AM	7:00 AM	50.7	49.3	53.2	52.3	50.2	49.3	
18	7:00 AM	7:01 AM	53.5	50.2	56.7	55.7	52.9	51.2	Vehicle passing
19	7:01 AM	7:02 AM	50.6	49.2	52.4	51.8	50.4	49.3	
20	7:02 AM	7:03 AM	49.1	48.0	50.6	49.9	48.9	48.2	
21			49.3	48.4	52.5	50.2	49.1	48.4	
22									
23									
24									
25									
26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	Apartment DW NB/SB			
Speed (post/**obs**)*	10			
Number of Lanes	2			
Width (pave/**row**)	24'			
1- or 2- way	2			
Grade	0			
Bus Stops	0			
Stoplights	0			
Motorcycles	0			
Automobiles	1			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	0			
Heavy Trucks	0			
Buses	0			
Count duration	20 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments: Traffic audible from Dean Smith Center service road audible - early morning maintenance cre

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice FIELD NOISE MEASUREMENT DATA FORM

Project Name:	Triangle Transit DEIS			Project #:	31829240	Date:	11/11/2013	Page	of
Monitoring Location:		M2 - Mason Farm Rd.				Analyst:	John Burris - #6 Equipment		

Sound Level Meter		Field Calibration			Weather Data			
Model #:	820	Model #:	CAL200		Model #:	SM-28		
Serial #:	1324	Serial #:	3704		Serial #:	3386		
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**		Wind: **Steady**/Gusty/Calm			
Response: **Slow** / Fast / Impl		Pre-Test	114.1	dBA	Precipitation: Yes (explain) / **No**			
Windscreen : **Yes** / No (explain)		Post-Test	114.1	dBA	Avg Wind Speed/Direction:	2.2		
Topo:	Flat / **Hilly**	GPS Coordinates (at SLM location)#			Temp (°F):	50	RH (%):	53
Terrain:	Hard/Soft/**Mixed**/Snow	+35° 53' 53.94", -79° 2' 40.93"			Bar Psr (Hg):	30.35	Cloud Cover (%):	0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			45.4	44.1	48.2	47.1	44.9	44.2	
1	11:05 AM	11:06 AM	44.9	43.4	47.1	46.0	44.6	43.7	
2	11:06 AM	11:07 AM	45.3	43.1	46.7	46.0	45.4	44.1	
3	11:07 AM	11:08 AM	43.9	42.2	49.5	44.8	43.6	42.5	
4	11:08 AM	11:09 AM	43.7	42.8	44.5	44.5	43.7	43.1	
5	11:09 AM	11:10 AM	44.1	43.0	46.0	44.9	44.1	43.2	
6	11:10 AM	11:11 AM	45.4	43.5	50.9	48.1	44.5	43.5	
7	11:11 AM	11:12 AM	46.8	44.1	53.9	49.1	45.5	44.3	Car
8	11:12 AM	11:13 AM	44.6	43.9	45.4	45.2	44.6	44.1	
9	11:13 AM	11:14 AM	45.0	43.9	48.4	45.9	44.8	44.1	
10	11:14 AM	11:15 AM	45.1	44.3	46.6	45.9	45.1	44.3	
11	11:15 AM	11:16 AM	46.0	44.6	48.3	46.9	45.8	45.1	
12	11:16 AM	11:17 AM	45.1	42.7	50.1	46.6	44.7	43.4	
13	11:17 AM	11:18 AM	45.3	43.7	47.7	46.3	45.2	44.2	
14	11:18 AM	11:19 AM	46.3	44.5	49.1	48.0	45.9	44.7	
15	11:19 AM	11:20 AM	46.1	45.1	50.3	46.9	45.8	45.2	Car
16	11:20 AM	11:21 AM	44.5	42.6	47.5	46.6	43.8	42.6	
17	11:21 AM	11:22 AM	46.2	42.7	52.2	48.6	45.0	43.4	Car
18	11:22 AM	11:23 AM	45.1	44.2	48.0	45.8	44.9	44.2	
19	11:23 AM	11:24 AM	46.4	43.5	51.6	48.9	44.8	43.5	
20			45.7	44.1	50.1	47.0	45.4	44.3	
21									
22									
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27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	Apartment DW NB/SB			
Speed (post/**obs**)*	10			
Number of Lanes	2			
Width (pave/**row**)	24'			
1- or 2- way	2			
Grade	0			
Bus Stops	0			
Stoplights	0			
Motorcycles	0			
Automobiles	3			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	0			
Heavy Trucks	0			
Buses	0			
Count duration	20 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/No

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date:	11/11/2013	Page	of
Monitoring Location:	M2 - Mason Farm Rd.			Analyst:	John Burris - #6 Equipment		

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1324	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: **Steady**/Gusty/Calm	
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	114.1 dBA	Avg Wind Speed/Direction:	2.5
Topo: Flat / **Hilly**		GPS Coordinates (at SLM location)#		Temp (°F): 57	RH (%): 31
Terrain: Hard/Soft/**Mixed**/Snow		+35° 53' 53.94", -79° 2' 40.93"		Bar Psr (Hg): 30.20	Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			46.0	44.1	48.5	47.7	45.6	44.3	
1	4:03 PM	4:04 PM	51.4	43.8	60.6	53.9	46.1	44.1	Helicopter
2	4:04 PM	4:05 PM	54.6	45.1	63.6	59.8	49.4	45.8	Helicopter
3	4:05 PM	4:06 PM	46.4	44.7	49.8	47.9	46.3	44.7	
4	4:06 PM	4:07 PM	47.3	43.8	54.4	50.0	45.4	44.2	
5	4:07 PM	4:08 PM	47.7	44.4	54.0	50.3	45.8	45.0	
6	4:08 PM	4:09 PM	45.5	41.9	49.3	47.4	44.9	42.6	
7	4:09 PM	4:10 PM	44.5	42.1	49.6	47.3	43.1	42.2	
8	4:10 PM	4:11 PM	44.4	42.0	46.9	45.8	44.3	42.6	
9	4:11 PM	4:12 PM	44.8	43.2	47.4	46.2	44.7	43.3	
10	4:12 PM	4:13 PM	44.6	42.3	48.9	46.7	43.9	42.4	
11	4:13 PM	4:14 PM	45.4	44.4	47.4	46.6	45.2	44.4	Car
12	4:14 PM	4:15 PM	46.5	43.9	51.0	48.6	46.1	44.5	
13	4:15 PM	4:16 PM	43.7	41.6	49.0	45.3	43.2	42.1	
14	4:16 PM	4:17 PM	46.2	44.4	48.6	47.8	45.8	44.4	
15	4:17 PM	4:18 PM	49.4	44.5	53.0	52.2	48.6	44.6	
16	4:18 PM	4:19 PM	46.0	43.7	49.1	47.0	45.7	44.4	
17	4:19 PM	4:20 PM	44.9	44.3	47.3	45.6	44.6	44.3	
18	4:20 PM	4:21 PM	45.1	42.8	47.4	45.9	45.3	43.5	
19	4:21 PM	4:22 PM	44.0	42.3	48.2	45.3	43.6	42.7	
20	4:22 PM	4:23 PM	44.7	43.0	48.7	46.2	44.4	43.3	
21			45.8	43.8	49.9	48.1	45.2	44.1	
22									
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26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Apartment DW NB/SB		compass
Speed (post/**obs**)*	10		
Number of Lanes	2		
Width (pave/**row**)	24'		
1- or 2- way	2		
Grade	0		
Bus Stops	0		
Stoplights	0		
Motorcycles	0		
Automobiles	1		
Medium Trucks	0		
Heavy Trucks	0		
Buses	0		
Count duration	20 min.		

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/No

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS			Project #:	31829240	Date: 11/11/2013		Page	of
Monitoring Location:			M2 - Mason Farm Rd.			Analyst:		John Burris - #6 Equipment	

Sound Level Meter		Field Calibration			Weather Data			
Model #:	820	Model #:	CAL200		Model #:	SM-28		
Serial #:	1324	Serial #:	3704		Serial #:	3386		
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**		Wind: Steady/Gusty/**Calm**			
Response: **Slow** / Fast / Impl		Pre-Test	114.1	dBA	Precipitation: Yes (explain) / **No**			
Windscreen : **Yes** / No (explain)		Post-Test	114.1	dBA	Avg Wind Speed/Direction:	1		
Topo: Flat / **Hilly**		GPS Coordinates (at SLM location)#			Temp (°F):	47	RH (%):	57
Terrain: Hard/Soft/**Mixed**/Snow		+35° 53' 53.94", -79° 2' 40.93"			Bar Psr (Hg):	30.19	Cloud Cover (%):	0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			45.6	44.7	48.4	46.7	45.5	44.7	
1	7:53 PM	7:54 PM	44.7	43.4	46.5	45.7	44.6	43.6	
2	7:54 PM	7:55 PM	45.4	43.1	48.9	47.9	44.5	43.3	
3	7:55 PM	7:56 PM	50.2	44.8	60.0	54.3	48.1	45.3	Car
4	7:56 PM	7:57 PM	44.5	43.6	46.1	45.0	44.4	43.6	
5	7:57 PM	7:58 PM	44.8	43.5	47.6	46.2	44.5	43.5	
6	7:58 PM	7:59 PM	46.2	43.7	47.9	47.5	46.2	45.0	
7	7:59 PM	8:00 PM	44.2	42.6	45.9	45.7	43.8	42.6	
8	8:00 PM	8:01 PM	43.5	42.6	45.0	44.4	43.3	42.6	
9	8:01 PM	8:02 PM	45.7	44.1	48.3	46.8	45.6	44.4	
10	8:02 PM	8:03 PM	45.2	43.0	48.3	47.3	44.6	43.3	
11	8:03 PM	8:04 PM	44.1	43.1	45.8	45.0	43.8	43.2	
12	8:04 PM	8:05 PM	44.5	43.3	45.5	45.2	44.5	44.0	
13	8:05 PM	8:06 PM	45.1	43.4	51.2	46.0	44.6	43.8	
14	8:06 PM	8:07 PM	46.1	44.4	48.8	47.3	46.0	44.8	
15	8:07 PM	8:08 PM	45.2	43.7	46.7	46.4	44.9	44.0	
16	8:08 PM	8:09 PM	44.5	43.7	45.9	45.5	44.6	44.0	
17	8:09 PM	8:10 PM	45.6	44.4	48.3	46.9	45.3	44.4	Car
18	8:10 PM	8:11 PM	46.7	45.2	48.0	47.6	46.6	45.8	
19	8:11 PM	8:12 PM	46.1	45.3	49.4	47.0	45.8	45.3	
20	8:12 PM	8:13 PM	46.8	45.7	49.3	47.7	46.6	46.0	
21			46.5	45.4	48.0	47.2	46.5	45.7	
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URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Apartment DW NB/SB	
Speed (post/**obs**)*	10	
Number of Lanes	2	
Width (pave/**row**)	24'	
1- or 2- way	2	
Grade	0	
Bus Stops	0	
Stoplights	0	
Motorcycles	0	
Automobiles	2	
Medium Trucks	0	
Heavy Trucks	0	
Buses	0	
Count duration	20 min.	

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/No

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS		Project #:	31829240		Date: 11/14/2013		Page	of
Monitoring Location:		M17A - Bernice St. & Joplin St.				Analyst:	Andrew Bell - #2 Equipment		

Sound Level Meter		Field Calibration			Weather Data			
Model #:	820	Model #:	CAL200		Model #:	SM-28		
Serial #:	1414	Serial #:	3704		Serial #:	3386		
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**		Wind: **Steady**/Gusty/Calm			
Response: **Slow** / Fast / Impl		Pre-Test	114.1	dBA	Precipitation: Yes (explain) / **No**			
Windscreen : **Yes** / No (explain)		Post-Test	113.9	dBA	Avg Wind Speed/Direction:	1/N		
Topo:	Flat / **Hilly**	GPS Coordinates (at SLM location)#			Temp (°F):	30	RH (%):	75
Terrain:	Hard/Soft/**Mixed**/Snow	+35° 58' 49.20", -78° 53' 0.81"			Bar Psr (Hg):	30.47	Cloud Cover (%):	8

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			64.1	62.8	65.5	65.4	63.8	63.1	Dog barking
1	8:42 AM	8:43 AM	62.9	61.2	65.2	64.0	62.7	61.8	
2	8:43 AM	8:44 AM	63.0	60.4	64.9	64.6	62.8	61.3	
3	8:44 AM	8:45 AM	63.5	60.9	65.3	64.8	63.5	61.9	
4	8:45 AM	8:46 AM	63.3	61.2	66.8	64.8	62.8	61.8	
5	8:46 AM	8:47 AM	61.3	59.9	62.7	62.3	61.1	60.2	
6	8:47 AM	8:48 AM	62.1	60.2	64.3	63.3	61.9	60.7	
7	8:48 AM	8:49 AM	60.9	58.9	63.5	61.9	60.7	59.8	
8	8:49 AM	8:50 AM	61.3	58.4	63.9	62.9	61.3	59.9	
9	8:50 AM	8:51 AM	62.0	60.5	64.0	63.1	61.9	61.0	
10	8:51 AM	8:52 AM	62.1	60.4	64.7	63.0	61.9	61.1	
11	8:52 AM	8:53 AM	61.5	60.0	64.0	62.0	61.5	60.6	
12	8:53 AM	8:54 AM	61.5	60.0	63.5	62.8	61.4	60.3	
13	8:54 AM	8:55 AM	62.3	61.3	64.8	63.5	62.3	61.3	
14	8:55 AM	8:56 AM	62.7	61.9	64.0	63.6	62.6	62.1	
15	8:56 AM	8:57 AM	61.7	59.0	63.3	62.7	61.7	61.1	
16			59.2	57.5	61.9	60.6	59.0	57.8	
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URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Bernice St. / Joplin St.		compass	Site Diagram:
Speed (post/**obs**)*	15			
Number of Lanes	1			
Width (**pave**/row)	14'			
1- or 2- way	2			
Grade	2%			
Bus Stops	0			
Stoplights	0			
Motorcycles	0			
Automobiles	0			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	0			
Heavy Trucks	0			
Buses	0			
Count duration	10 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments: NC 147 primary noise source.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date: 11/14/2013	Page of
Monitoring Location:	M17A - Bernice St. & Joplin St.			Analyst:	Andrew Bell - #2 Equipment

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1414	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: **Steady**/Gusty/Calm	
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	113.9 dBA	Avg Wind Speed/Direction:	4/WSW
Topo: Flat / **Hilly**		GPS Coordinates (at SLM location)#		Temp (°F): 50	RH (%): 34
Terrain: Hard/Soft/**Mixed**/Snow		+35° 58' 49.20", -78° 53' 0.81"		Bar Psr (Hg): 30.47	Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			59.4	58.9	59.7	59.7	59.5	59.1	
1	12:32 PM	12:33 PM	60.1	57.4	62.5	61.6	60.0	58.3	
2	12:33 PM	12:34 PM	61.6	59.0	64.0	63.5	60.9	59.5	
3	12:34 PM	12:35 PM	60.6	56.8	63.9	62.4	60.5	58.3	
4	12:35 PM	12:36 PM	60.7	56.2	66.3	62.2	60.4	57.0	
5	12:36 PM	12:37 PM	60.8	55.9	63.7	62.4	60.8	57.7	
6	12:37 PM	12:38 PM	59.9	56.1	62.0	61.5	59.8	58.1	
7	12:38 PM	12:39 PM	60.9	58.0	64.5	62.7	60.5	58.6	
8	12:39 PM	12:40 PM	61.0	56.5	64.4	63.7	60.3	58.1	
9	12:40 PM	12:41 PM	60.4	56.7	62.8	62.4	60.3	57.3	
10	12:41 PM	12:42 PM	60.4	57.6	63.5	61.9	60.2	58.3	
11	12:42 PM	12:43 PM	60.2	55.0	62.3	61.8	60.1	57.0	
12	12:43 PM	12:44 PM	61.0	58.3	63.9	62.3	60.9	59.0	
13	12:44 PM	12:45 PM	63.4	60.4	67.2	65.0	63.1	61.3	
14	12:45 PM	12:46 PM	61.7	58.2	64.4	63.5	61.4	59.2	
15	12:46 PM	12:47 PM	62.7	59.5	65.4	64.5	62.6	60.4	
16			61.2	57.5	65.1	63.4	60.8	58.3	
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URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	Bernice St. / Joplin St.			
Speed (post/**obs**)*	15			
Number of Lanes	1			
Width (**pave**/row)	14'			
1- or 2- way	2			
Grade	2%			
Bus Stops	0			
Stoplights	0			
Motorcycles	0			
Automobiles	1			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	0			
Heavy Trucks	0			
Buses	0			
Count duration	10 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? **Yes**/No M17A-1, M17A-2, M17A-3

Additional Notes/Comments: NC 147 primary noise source.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name: Triangle Transit DEIS	Project #: 31829240	Date: 11/14/2013	Page of
Monitoring Location: M17A - Bernice St. & Joplin St.		Analyst: Andrew Bell - #2 Equipment	

Sound Level Meter	Field Calibration	Weather Data
Model #: 820	Model #: CAL200	Model #: SM-28
Serial #: 1414	Serial #: 3704	Serial #: 3386
Weighting: **A** / C / Flat	Calibration Level (dBA): 94 / **114**	Wind: **Steady**/Gusty/Calm
Response: **Slow** / Fast / Impl	Pre-Test 114.1 dBA	Precipitation: Yes (explain) / **No**
Windscreen : **Yes** / No (explain)	Post-Test 113.9 dBA	Avg Wind Speed/Direction: 4/WSW
Topo: Flat / **Hilly**	GPS Coordinates (at SLM location)#	Temp (°F): 50 RH (%): 34
Terrain: Hard/Soft/**Mixed**/Snow	+35° 58' 49.20", -78° 53' 0.81"	Bar Psr (Hg): 30.47 Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			63.6	57.2	71	67.1	62.1	58.1	Talking with homeowner aprox. 40' from meter
1	3:55 PM	3:56 PM	63.2	57.9	66.9	65.5	62.8	59.2	Talking with homeowner aprox. 40' from meter
2	3:56 PM	3:57 PM	63.0	60	65.4	64.5	62.9	61	
3	3:57 PM	3:58 PM	62.3	58.2	64.3	63.7	62.1	60.2	
4	3:58 PM	3:59 PM	62.0	59.3	64.4	63.8	61.7	59.8	
5	3:59 PM	4:00 PM	62.7	56.3	66.2	65.1	62.5	57.6	
6	4:00 PM	4:01 PM	63.9	59.8	66.3	65	64	62.1	
7	4:01 PM	4:02 PM	61.9	59	65	64	61.4	59.5	
8	4:02 PM	4:03 PM	63.6	60.1	70.6	64.8	63	61.1	
9	4:03 PM	4:04 PM	62.6	58.5	66.3	64.6	62.3	59.8	
10	4:04 PM	4:05 PM	62.8	59.2	65.1	64.6	62.7	60.1	
11	4:05 PM	4:06 PM	63.8	61.3	67.9	65.6	63.3	62	
12	4:06 PM	4:07 PM	63.1	59.4	65.5	64.7	62.8	61.1	
13	4:07 PM	4:08 PM	62.3	58.9	64.9	64.2	61.9	60.1	
14	4:08 PM	4:09 PM	62.3	59.2	64.4	63.6	62.3	60.3	
15	4:09 PM	4:10 PM	61.5	59.5	63.5	62.8	61.5	59.7	
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URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	Bernice St. / Joplin St.			
Speed (post/**obs**)*	15			
Number of Lanes	1			
Width (**pave**/row)	14'			
1- or 2- way	2			
Grade	2%			
Bus Stops	0			
Stoplights	0			
Motorcycles	0			
Automobiles	3			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	0			
Heavy Trucks	0			
Buses	0			
Count duration	15 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments: NC 147 primary noise source.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date: 11/14/2013	Page of
Monitoring Location:	M17A - Bernice St. & Joplin St.			Analyst:	Andrew Bell - #2 Equipment

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1414	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: **Steady**/Gusty/Calm	
Response: **Slow** / Fast / Impl		Pre-Test	113.9 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	113.9 dBA	Avg Wind Speed/Direction:	6/S
Topo: Flat / **Hilly**		GPS Coordinates (at SLM location)#		Temp (°F): 38	RH (%): 50
Terrain: Hard/Soft/**Mixed**/Snow		+35° 58' 49.20", -78° 53' 0.81"		Bar Psr (Hg): 30.34	Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			57.8	56.0	61.1	59.8	57.3	56.2	
1	8:32 PM	8:33 PM	56.5	52.5	65.8	57.3	55.5	53.4	
2	8:33 PM	8:34 PM	60.9	52.5	68.5	66.2	54.7	53.0	
3	8:34 PM	8:35 PM	62.1	56.1	70.5	64.9	59.4	56.6	
4	8:35 PM	8:36 PM	57.1	51.3	65.8	59.0	54.7	52.8	
5	8:36 PM	8:37 PM	60.0	52.6	66.1	63.1	58.7	54.5	
6	8:37 PM	8:38 PM	58.3	53.2	63.3	61.3	56.9	54.1	
7	8:38 PM	8:39 PM	61.7	54.2	72.1	63.0	58.7	55.3	
8	8:39 PM	8:40 PM	58.0	53.6	62.9	60.2	57.5	54.4	
9	8:40 PM	8:41 PM	61.9	54.8	69.3	64.6	59.5	56.1	
10	8:41 PM	8:42 PM	59.8	54.9	66.9	62.3	57.8	55.5	
11	8:42 PM	8:43 PM	60.6	49.4	68.7	64.8	55.4	50.4	
12	8:43 PM	8:44 PM	58.9	53.4	64.0	62.4	57.4	54.3	
13	8:44 PM	8:45 PM	58.8	53.2	63.8	62.1	58.0	53.8	
14	8:45 PM	8:46 PM	67.1	55.2	79.4	71.1	62.1	57.2	Truck downshifting on NC 147
15	8:46 PM	8:47 PM	60.5	53.4	67.3	63.9	58.6	55.5	
16			57.9	49.6	69.3	58.6	54.4	51.9	
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URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Bernice St. / Joplin St.	
Speed (post/**obs**)*	15	
Number of Lanes	1	
Width (**pave**/row)	14'	
1- or 2- way	2	
Grade	2%	
Bus Stops	0	
Stoplights	0	
Motorcycles	0	
Automobiles	1	
Medium Trucks	0	
Heavy Trucks	0	
Buses	0	
Count duration	15 min.	

compass

Site Diagram:

See scan of field sheet, and map with aerial and monitor location

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments: NC 147 primary noise source. Higher truck volume and lower passenger car volume on NC 147 causing more varied 1-minute readings.

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	Branson St. EB/WB			
Speed (post/**obs**)*	15			
Number of Lanes	2			
Width (pave/**row**)	20'			
1- or 2- way	2			
Grade	+4% WB			
Bus Stops	none			
Stoplights	none			
Motorcycles	0			
Automobiles	1			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	0			
Heavy Trucks	0			
Buses	0			
Count duration	20 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/**No**

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name: Triangle Transit DEIS		Project #: 31829240	Date: 11/11/2013	Page	of
Monitoring Location: M1A - Branson St.			Analyst: John Burris - #6 Equipment		

Sound Level Meter		Field Calibration		Weather Data	
Model #:	820	Model #:	CAL200	Model #:	SM-28
Serial #:	1324	Serial #:	3704	Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**	Wind: Steady/Gusty/**Calm**	
Response: **Slow** / Fast / Impl		Pre-Test	114.1 dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	114.1 dBA	Avg Wind Speed/Direction:	0
Topo: Flat / **Hilly**		GPS Coordinates (at SLM location)#		Temp (°F): 50	RH (%): 53
Terrain: Hard/Soft/**Mixed**/Snow		+35° 54' 0.05", -79° 2' 57.04"		Bar Psr (Hg): 30.35	Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			40.6	37.3	43.2	42.7	40.2	37.6	
1	10:33 AM	10:34 AM	38.8	36.7	44.7	40.4	38.0	37.0	
2	10:34 AM	10:35 AM	37.6	36.9	38.6	38.2	37.6	37.1	
3	10:35 AM	10:36 AM	37.3	36.4	39.1	38.0	37.3	36.4	
4	10:36 AM	10:37 AM	38.3	37.1	41.1	39.1	38.3	37.3	
5	10:37 AM	10:38 AM	69.8	40.6	81.8	73.5	50.9	41.4	UNC Hospital Helicopter
6	10:38 AM	10:39 AM	73.4	50.2	80.5	77.8	65.7	53.8	UNC Hospital Helicopter
7	10:39 AM	10:40 AM	45.5	38.3	51.5	49.8	43.2	38.4	
8	10:40 AM	10:41 AM	38.9	37.4	40.6	39.9	38.8	37.4	
9	10:41 AM	10:42 AM	50.0	37.7	62.0	54.2	39.4	38.1	Car
10	10:42 AM	10:43 AM	41.7	37.5	50.5	44.0	39.4	38.1	
11	10:43 AM	10:44 AM	48.7	38.9	58.5	53.0	43.4	40.9	Car
12	10:44 AM	10:45 AM	46.7	36.9	57.4	51.5	39.2	37.4	
13	10:45 AM	10:46 AM	54.0	36.4	65.4	58.7	37.9	36.6	Car
14	10:46 AM	10:47 AM	42.8	37.7	53.8	46.1	39.7	38.2	
15	10:47 AM	10:48 AM	42.1	37.9	54.8	42.9	39.2	38.2	Car
16	10:48 AM	10:49 AM	50.9	41.8	64.6	51.6	44.1	42.3	
17	10:49 AM	10:50 AM	54.7	43.2	62.3	60.1	48.4	43.9	Nearby Garbage Truck
18	10:50 AM	10:51 AM	52.8	44.8	63.6	55.5	48.9	45.8	Nearby Garbage Truck
19	10:51 AM	10:52 AM	51.4	45.1	62.3	55.3	47.9	45.8	Nearby Garbage Truck
20	10:52 AM	10:53 AM	65.0	51.8	74.8	70.0	59.2	53.9	Nearby Garbage Truck
21			54.0	53.6	54.6	54.6	53.9	53.6	
22									
23									
24									
25									
26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Roadway Name/Dir	Branson St. EB/WB		compass	Site Diagram:
Speed (post/**obs**)*	15			
Number of Lanes	2			
Width (pave/**row**)	20'			
1- or 2- way	2			
Grade	+4% WB			
Bus Stops	none			
Stoplights	none			
Motorcycles	0			
Automobiles	4			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	0			
Heavy Trucks	1			
Buses	0			
Count duration	20 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/No

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date: 11/11/2013	Page	of
Monitoring Location:	M1A - Branson St.			Analyst:	John Burris - #6 Equipment	

Sound Level Meter		Field Calibration			Weather Data			
Model #:	820	Model #:	CAL200		Model #:	SM-28		
Serial #:	1324	Serial #:	3704		Serial #:	3386		
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**		Wind: **Steady**/Gusty/Calm			
Response: **Slow** / Fast / Impl		Pre-Test	114.1	dBA	Precipitation: Yes (explain) / **No**			
Windscreen : **Yes** / No (explain)		Post-Test	114.1	dBA	Avg Wind Speed/Direction:	3		
Topo: Flat / **Hilly**		GPS Coordinates (at SLM location)#			Temp (°F):	57	RH (%):	31
Terrain: Hard/Soft/**Mixed**/Snow		+35° 54' 0.05", -79° 2' 57.04"			Bar Psr (Hg):	30.20	Cloud Cover (%):	0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			41.8	38.4	47.4	44.0	41.2	39.2	
1	3:34 PM	3:35 PM	48.7	41.9	57.1	53.5	44.6	43.0	Med. Truck
2	3:35 PM	3:36 PM	52.3	43.0	61.1	55.2	50.5	43.7	Car
3	3:36 PM	3:37 PM	50.4	47.0	53.0	52.3	50.3	47.5	Helicopter in the Distance
4	3:37 PM	3:38 PM	45.7	38.2	57.6	49.1	40.7	38.8	
5	3:38 PM	3:39 PM	38.6	37.8	41.6	39.0	38.5	38.0	
6	3:39 PM	3:40 PM	40.5	39.2	43.1	41.6	40.4	39.3	
7	3:40 PM	3:41 PM	41.3	39.1	45.2	43.0	40.8	39.5	
8	3:41 PM	3:42 PM	40.7	39.2	45.2	41.9	40.5	39.6	
9	3:42 PM	3:43 PM	41.1	39.4	44.2	42.6	41.0	39.5	
10	3:43 PM	3:44 PM	41.0	39.2	43.2	42.5	40.8	39.8	
11	3:44 PM	3:45 PM	41.4	38.6	48.9	42.8	40.6	39.2	
12	3:45 PM	3:46 PM	44.9	38.2	56.3	48.2	40.8	38.5	
13	3:46 PM	3:47 PM	45.6	37.5	56.3	49.2	38.8	37.8	Car
14	3:47 PM	3:48 PM	39.0	37.6	43.5	39.9	38.8	38.0	
15	3:48 PM	3:49 PM	39.5	37.6	42.5	40.7	39.5	38.3	
16	3:49 PM	3:50 PM	40.8	39.2	43.4	42.2	40.6	39.4	
17	3:50 PM	3:51 PM	41.2	39.0	45.6	43.2	40.7	39.3	
18	3:51 PM	3:52 PM	46.5	39.2	58.5	48.9	43.0	40.5	
19	3:52 PM	3:53 PM	49.6	38.5	58.9	53.9	44.2	38.6	2 Cars
20			42.7	37.9	48.9	46.6	39.9	38.3	Car
21									
22									
23									
24									
25									
26									
27									
28									
29									

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	Branson St. EB/WB			
Speed (post/**obs**)*	15			
Number of Lanes	2			
Width (pave/**row**)	20'			
1- or 2- way	2			
Grade	+4% WB			
Bus Stops	none			
Stoplights	none			
Motorcycles	0			
Automobiles	5			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	1			
Heavy Trucks	0			
Buses	0			
Count duration	20 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/No

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

Project Name:	Triangle Transit DEIS	Project #:	31829240	Date: 11/11/2013	Page of
Monitoring Location:	M1A - Branson St.			Analyst:	John Burris - #6 Equipment

Sound Level Meter		Field Calibration			Weather Data	
Model #:	820	Model #:	CAL200		Model #:	SM-28
Serial #:	1324	Serial #:	3704		Serial #:	3386
Weighting: **A** / C / Flat		Calibration Level (dBA):	94 / **114**		Wind: Steady/Gusty/**Calm**	
Response: **Slow** / Fast / Impl		Pre-Test	114.1	dBA	Precipitation: Yes (explain) / **No**	
Windscreen : **Yes** / No (explain)		Post-Test	114.1	dBA	Avg Wind Speed/Direction:	0
Topo:	Flat / **Hilly**	GPS Coordinates (at SLM location)#			Temp (°F): 48	RH (%): 57
Terrain:	Hard/Soft/**Mixed**/Snow	+35° 54' 0.05", -79° 2' 57.04"			Bar Psr (Hg): 30.19	Cloud Cover (%): 0

ID	Start Time	Stop Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}	Notes/Events
0			42.6	41.3	43.9	43.7	42.5	41.3	
1	7:24 PM	7:25 PM	43.0	41.3	47.6	44.5	42.6	41.5	
2	7:25 PM	7:26 PM	43.9	41.9	48.3	45.5	43.4	42.3	
3	7:26 PM	7:27 PM	42.6	41.2	45.5	43.7	42.5	41.4	
4	7:27 PM	7:28 PM	46.6	42.9	54.3	50.4	44.5	43.4	
5	7:28 PM	7:29 PM	44.6	41.4	49.4	45.8	44.8	42.6	
6	7:29 PM	7:30 PM	42.2	41.5	43.0	42.8	42.3	41.5	
7	7:30 PM	7:31 PM	46.1	40.7	55.8	49.4	41.8	41.0	Car
8	7:31 PM	7:32 PM	42.8	41.9	44.3	43.6	42.6	42.1	
9	7:32 PM	7:33 PM	44.7	42.1	47.3	46.4	44.5	42.5	Car
10	7:33 PM	7:34 PM	47.2	41.1	56.3	51.2	42.7	41.7	
11	7:34 PM	7:35 PM	41.9	40.9	42.9	42.8	42.0	41.2	Car
12	7:35 PM	7:36 PM	44.9	40.8	51.9	49.4	42.3	41.2	
13	7:36 PM	7:37 PM	42.5	40.6	52.1	42.9	41.7	41.0	
14	7:37 PM	7:38 PM	41.7	40.8	44.3	42.6	41.6	41.0	
15	7:38 PM	7:39 PM	41.2	40.4	42.4	41.9	41.3	40.4	
16	7:39 PM	7:40 PM	40.7	40.0	41.6	41.6	40.6	40.1	
17	7:40 PM	7:41 PM	41.8	40.4	44.5	43.1	41.5	40.4	
18	7:41 PM	7:42 PM	45.7	41.0	53.0	50.4	42.7	41.4	
19	7:42 PM	7:43 PM	41.0	40.0	42.0	41.8	41.0	40.2	
20	7:43 PM	7:44 PM	41.3	40.5	42.5	41.9	41.3	40.5	
21			44.0	41.5	50.4	46.4	42.9	41.5	
22									
23									
24									
25									
26									
27									
28									
29									

URS ANCP, Field Noise Measurement Form, Vers. 1.2 111109

URS Acoustics and Noise Control Practice **FIELD NOISE MEASUREMENT DATA FORM**

			compass	Site Diagram:
Roadway Name/Dir	Branson St. EB/WB			
Speed (post/**obs**)*	15			
Number of Lanes	2			
Width (pave/**row**)	20'			
1- or 2- way	2			
Grade	+4% WB			
Bus Stops	none			
Stoplights	none			
Motorcycles	0			
Automobiles	3			See scan of field sheet, and map with aerial and monitor location
Medium Trucks	0			
Heavy Trucks	0			
Buses	0			
Count duration	20 min.			

- note coordinate system * - Speed estimated by Radar / Driving / Observation

Photos Taken? Yes/No

Additional Notes/Comments:

Other Noise Sources: distant: aircraft/roadway traffic/trains/landscaping/rustling leaves/children playing/dogs barking/birds vocalizing/Insects

Additional Notes and Sketches on Reverse

Appendix C: Monitoring Site Photos

M1A

M2

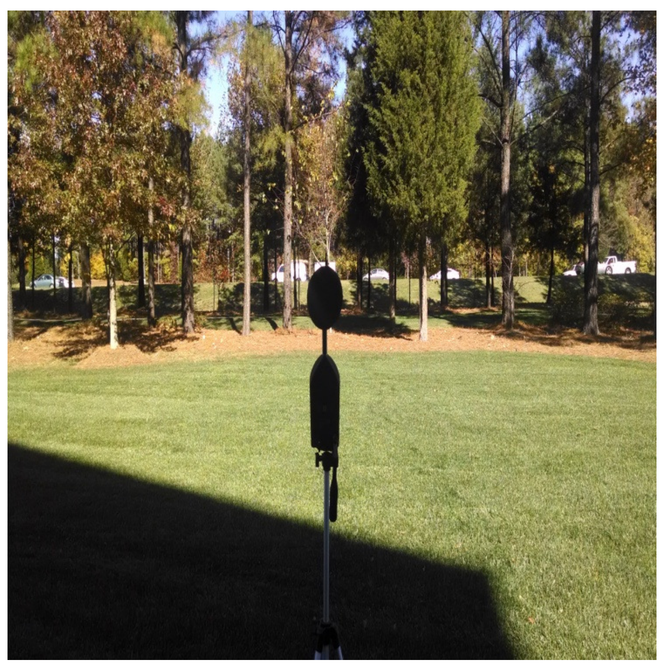
M3

M4

M5

M6

M7



M8

M9

M10

M11

M12

M12A

M12B

M12C

M13

M14

M14A

M14B

M14C


M15


M16


M17


M17A