Appendix J:
Air Quality and Noise

Environmental Studies

Air Quality

Environmental Studies Request

Project Information

Route: State Route (SR) 162 Extension (Pellissippi Parkway)

Termini: From SR-33 to SR-73 (US-321)

County: Blount

PIN: 101423.00

Request

Request Type: Environmental Study Reevaluation

Project Plans: Right-of-Way Field Review

Date of Plans: 09/09/2022

Location: FTP

Link: https://tncloud.tn.gov/owncloud/index.php/s/H8A1M8oj87rz0MO
Password: tdot

Certification

Requestor: Katie McKeel

Title: Environmental Planner

Signature: Katherine McKeel

Digitally signed by Katherine McKeel
Date: 2022.10.24 14:16:48 -05'00'

Environmental Study

Technical Section

Section: Air and Noise

Study Results

AIR QUALITY

The Tennessee Department of Transportation (TDOT) proposes to extend the existing Pellissippi Parkway (SR-162) from SR-33 to US-321/SR-73 in the cities of Alcoa and Maryville and in unincorporated Blount County. The project area of the proposed extension is approximately 4.9 miles. This report documents the air quality impacts of the selected alternative.

The air quality evaluation was conducted per TDOT's Tennessee Environmental Procedures Manual (TDOT, 2011). The purposes of this analysis are to address the transportation conformity requirements for the project, the potential Mobile Source Air Toxics (MSATs) effects, the relationship of this project to global climate change, construction air quality, and indirect and cumulative effects.

Project-Level Transportation Conformity
Blount County is classified as an attainment area for all criteria pollutants except 8-hour ozone and particulate matter PM2.5, for which it is classified as a maintenance area.

The proposed project is included in the Long Range Regional Mobility Plan 2045 as project 09-232 and in the Knoxville Region 2023-2026 Transportation Improvement Program (TIP) as TIP number 23-2014-025. The project is described in the TIP as "construct a new four-lane road from Old Knoxville Highway (SR- 33) to SR-73 (US-321)." This project description and termini are consistent with the selected alternative Therefore, the selected alternative is in conformity with the State Implementation Plan (SIP).

The project has been classified as "not of air quality concern" in regard to PM2.5 by the Knoxville Interagency Consultation (IAC) group, which includes TDOT, FHWA, EPA, and TDEC.

Mobile Source Air Toxics (MSATs)
The project is a "Project with Low Potential Mobile Source Air Toxic (MSAT) Effects" per FHWA's "Updated Interim Guidance on Air Toxic Analysis in NEPA Documents" and is not predicted to create any adverse MSAT effects.

Greenhouse Gas Emissions (Climate Change)
The greenhouse gas emissions evaluation concluded that the project is not predicted to have adverse climate change effects.

Construction-Related Air Quality
Construction-related effects of the project would be limited to short-term increased fugitive dust and mobile-source emissions during construction. These construction-related impacts will be mitigated through the implementation of Best Management Practices, which are included in TDOT's Standard Specifications for Road and Bridge

Construction. A PM2.5 monitoring station is approximately 2.71 miles west of the project limit near the Maryville Academy. Construction activity may generate temporary increases in PM2.5 emissions in the project area. However, given the distance and direction of prevailing winds, the project is not anticipated to substantially or permanently affect the monitor.

Indirect and Cumulative Effects
The forecasted traffic volumes for most projects typically account for any redistribution of traffic that would occur as a result of the project. Therefore, the air quality analysis addresses any indirect traffic-related air quality effects that might occur. Additionally, the forecast traffic volumes include expected traffic growth and other planned and programmed projects in the area. As a result, the air quality analysis addresses the traffic-related cumulative air quality effects of the project.

Commitments

Did the study of this project result in any environmental commitments? **No**

Additional Information

Is there any additional information or material included with this study? **No**

Type: Air Quality Technical Report

Certification

Responder: Chasity L. Stinson

Title: TESS Advanced, TDOT Environmental Division

Signature: Chasity L. Stinson

Digitally signed by Chasity L. Stinson
Date: 2023.12.15 11:12:52 -06'00'

Air Quality Technical Report

SR-162 Extension (Pellissippi Parkway) from SR-33 to SR-73 (US-321) (IA)
Blount County, Tennessee

Based on Right-of-Way Plans dated September 9, 2022

PIN Number: 101423.00
Federal Project Number: HPP/NH-162(7)
State Project Number: 05097-1233-14

TN TDOT Department of Transportation

December 2023

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EXECUTIVE SUMMARY

The Tennessee Department of Transportation (TDOT) proposes to extend the existing Pellissippi Parkway (SR-162) from SR-33 to US-321/SR-73 in the cities of Alcoa and Maryville and in unincorporated Blount County. The project area of the proposed extension is approximately 4.9 miles. This report documents the air quality impacts of the selected alternative.

The air quality evaluation was conducted per TDOT's *Tennessee Environmental Procedures Manual* (TDOT, 2011). The purposes of this analysis are to address the transportation conformity requirements for the project, the potential Mobile Source Air Toxics (MSATs) effects, the relationship of this project to global climate change, construction air quality, and indirect and cumulative effects.

Blount County is classified as an attainment area for all criteria pollutants except 8-hour ozone (O3) and particulate matter $PM_{2.5}$, for which it is classified as a maintenance area.

The proposed project is included in the *Long Range Regional Mobility Plan 2045* as project 09-232 and in the *Knoxville Region 2023-2026 Transportation Improvement Program* (TIP) as TIP number 23-2014-025. The project is described in the TIP as "construct a new four-lane road from Old Knoxville Highway (SR- 33) to SR-73 (US-321)." This project description and termini are consistent with the selected alternative Therefore, the selected alternative is in conformity with the State Implementation Plan (SIP).

The project has been classified as "not of air quality concern" in regard to $PM_{2.5}$. by the Knoxville Interagency Consultation (IAC) group, which includes FHWA, EPA, and TDEC.

The project is a "Project with Low Potential Mobile Source Air Toxic (MSAT) Effects" per FHWA's "*Updated Interim Guidance on Air Toxic Analysis in NEPA Documents"* and is not predicted to create any adverse MSAT effects.

The greenhouse gas emissions evaluation concluded that the project is not predicted to have adverse climate change effects.

Construction-related effects of the project would be limited to short-term increased fugitive dust and mobile-source emissions during construction. These construction-related impacts will be mitigated through the implementation of Best Management Practices, which are included in TDOT's *Standard Specifications for Road and Bridge Construction*. A $PM_{2.5}$ monitoring station is approximately 2.71 miles west of the project limit near the Maryville Academy. Construction activity may generate temporary increases in $PM_{2.5}$ emissions in the project area. However, given the distance and direction of prevailing winds, the project is not anticipated to substantially or permanently affect the monitor.

Finally, the project is not anticipated to have any adverse indirect or cumulative effects.

1.0 INTRODUCTION

This report summarizes the results of an analysis of the potential air quality effects of the SR-162 extension. The project area is illustrated on the plans coversheet as shown in Appendix A.

2.0 AIR QUALITY EVALUATION

The evaluation was conducted per TDOT's *Tennessee Environmental Procedures Manual* (TDOT 2011).

The purpose of this analysis is to address the transportation conformity requirements for the project, the potential Mobile Source Air Toxics (MSAT) effects, the relationship of this project to greenhouse gas emission, construction air quality, and indirect and cumulative effects.

2.1 National Ambient Air Quality Standards (NAAQS)

The United States Environmental Protection Agency (EPA) has established allowable concentrations and exposure limits called the National Ambient Air Quality Standards (NAAQS) for various "criteria" pollutants. These pollutants include carbon monoxide (CO), nitrogen oxides (NO_x), ozone (O_3), particulate matter (PM_{10} and $PM_{2.5}$), sulfur oxides (SO_x), and lead (Pb).

Per the Clean Air Act Amendments of 1990 (CAAA of 1990), EPA identified areas that did not meet the NAAQS for the criteria pollutants and designated them as "nonattainment" areas. Once a nonattainment area meets the NAAQS, it is redesignated as a "maintenance" area.

The project is in the Blount County ozone and $PM_{2.5}$ maintenance areas.

2.2 Transportation Conformity

Transportation conformity is a process required of Metropolitan Planning Organizations (MPOs) under the CAAA of 1990. CAAA requires that transportation plans, programs, and

projects in nonattainment or maintenance areas that are funded or approved by the FHWA conform to the State Implementation Plan (SIP), which represents the state's plan to either achieve or maintain the NAAQS for a particular pollutant.

Projects conform to the SIP if they are included in a fiscally constrained and conforming Long Range Transportation Plan (LRTP) or Transportation Improvement Program (TIP). The project is located in the ozone and $PM_{2.5}$ maintenance areas . This project is included in the TIP as project 23-2014-025. The project is described in the TIP as "construct a new four-lane road from Old Knoxville Highway (SR- 33) to SR-73 (US-321).". The project description and termini are consistent with the proposed project. Therefore, the project conforms to the SIP. A copy of the TIP project sheet is provided in Appendix B.

2.2.1 $PM_{2.5}$ Hot-Spot Analysis

TDOT completed a $PM_{2.5}$ Hot-Spot Determination for the project that concluded that the project remains as "not a project of air quality concern." TDOT submitted this determination to the Knoxville Area Interagency Consultation (IAC) group on November 22, 2023 along with updated traffic projections. The IAC members concurred with TDOT's determination on the following dates: FHWA December 5, 2023; EPA December 6, 2023; and TDEC December 1, 2023. The $PM_{2.5}$ Hot-Spot Determination, IAC concurrence responses, and $PM_{2.5}$ clearance record are provided in Appendix C.

In conclusion, the No-Build and Selected Alternative are not predicted to cause new violations or contribute to existing violations of the NAAQS.

2.3 Mobile Source Air Toxics

On February 3, 2006, the FHWA released "*Interim Guidance on Air Toxic Analysis in NEPA Documents."* This guidance was superseded on September 30, 2009, December 6, 2012, October 16, 2016 and most recently on January 23, 2023 by FHWA's "*Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents."* (FHWA 2023). The purpose of FHWA's guidance is to advise on when and how to analyze Mobile Source Air Toxics (MSAT) in the NEPA process for highways. This guidance is interim, because MSAT science is still evolving. As the science progresses, FHWA will continue to revise and update the guidance.

The qualitative analysis presented below provides a basis for identifying and comparing the potential differences among MSAT emissions, if any, from the no-build and selected alternative . The assessment is derived in part from a study conducted by the FHWA entitled *"A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives"* (Claggett, 2006). Appendix D provides additional information regarding MSAT.

FHWA's Interim Guidance groups projects into the following categories:

- Exempt Projects and Projects with no Meaningful Potential MSAT Effects;
- Projects with Low Potential MSAT Effects; and
- Projects with Higher Potential MSAT Effects.

FHWA's Updated Interim Guidance provides examples of "Projects with Low Potential MSAT Effects." These projects include minor widening projects and new interchanges, such as those that replace a signalized intersection on a surface street, where design year traffic projections are less than 140,000 to 150,000 average annual daily traffic (AADT), or where the project is located in highly populated areas.

The Selected Alternative includes the extension of SR-162 from SR-33 to SR-73. The highest projected design year 2046 AADT on segments of SR-162 is 36,120 vehicles per day and substantially lower than the FHWA criterion. Additionally, the project is located in a sparsely populated and rural area. Therefore, the project meets the criteria for a "Project with Low Potential MSAT Effects."

For both the Build and Selected Alternatives, the amount of MSAT emitted would be proportional to the vehicle miles traveled, or VMT, assuming that other variables such as fleet mix are the same for each alternative. The VMT for the No-Build and Build Alternatives was determined for the affected roadway network by the link-by-link VMT analysis as provided in Appendix E. Therefore, it is expected that the project will cause a decrease in overall MSAT emissions.

The project may also reduce emissions by increasing speeds; according to EPA's MOVES3 model, emissions of all the priority MSAT decrease as speed increases. Travel speeds for the Build Alternative are expected to be higher than for the No-Build Alternative

In sum, reduced MSAT emissions are expected in the immediate project area under the Selected Alternative in the design year, relative to the No-Build Alternative. The reductions are due to the reduced VMT associated with more direct routing and EPA's MSAT reduction programs. Additionally, EPA's vehicle and fuel regulations coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region wide MSAT levels to be significantly lower than today.

Substantial construction related MSAT emissions are not anticipated for this project as construction is not planned to occur over an extended building period. However, construction activity may generate temporary increases in MSAT emissions in the project area.

2.4 Greenhouse Gas Emissions

Climate change is an important national and global concern. While the earth has gone through many natural and historical climate changes, there is general agreement that the earth's climate is currently changing at an accelerated rate and will continue to do so for the foreseeable future. Anthropogenic (human-caused) greenhouse gas (GHG) emissions contribute to this rapid change. Carbon dioxide (CO_2) makes up the largest component of these GHG emissions. Other prominent transportation GHGs include methane (CH_4) and nitrous oxide (N_2O).

Many GHGs occur naturally. Water vapor is the most abundant GHG and makes up approximately two-thirds of the natural greenhouse effect. However, the burning of fossil fuels and other human activities are adding to the concentration of GHGs in the atmosphere. Many GHGs remain in the atmosphere for time periods ranging from decades to centuries. GHGs trap heat in the earth's atmosphere. Because atmospheric concentration of GHGs continues to climb, our planet will continue to experience climate-related phenomena. For example, warmer global temperatures can cause changes in precipitation and sea levels.

A considerable body of scientific literature exists addressing the sources of GHG emissions and their adverse effects on climate, including reports from the Intergovernmental Panel on Climate Change, the US National Academy of Sciences, and EPA and other Federal agencies. GHGs are different from other air pollutants evaluated in Federal environmental

reviews because their impacts are not localized or regional due to their rapid dispersion into the global atmosphere, which is characteristic of these gases. The affected environment for CO_2 and other GHG emissions is the entire planet. In addition, from a quantitative perspective, global climate change is the cumulative result of numerous and varied emissions sources (in terms of both absolute numbers and types), each of which makes a relatively small addition to global atmospheric GHG concentrations.

The transportation sector was responsible for approximately 27 percent of all anthropogenic GHG emissions in the U.S. in 2020 as calculated from EPA data (USEPA, April 2022). The majority of transportation GHG emissions are the result of fossil fuel combustion. CO_2 makes up the largest component of these GHG emissions. U.S. CO_2 emissions from the consumption of energy accounted for about 14 percent of worldwide energy consumption CO_2 emissions in 2020 as calculated from U.S. Energy Information Administration data (USEPA, April 2022). U.S. transportation CO_2 emissions accounted for about 15 percent of worldwide CO_2 emissions in 2019 (IEA, 2021) (USEPA, April 2022). Within the U.S., fossil fuel combustion accounted for 92.1 percent of CO2 emissions in 2020. Transportation was the largest emitter of CO_2 in 2020 followed by electric power generation (USEPA, April 2022). Transportation activities accounted for 36.2 percent of U.S. CO_2 emissions from fossil fuel combustion in 2020, with the largest contributors being passenger vehicles (38.5 percent), followed by freight trucks (26.3 percent) and light-duty trucks (18.9 percent) (USEPA, April 2022).

2.4.1 Emissions Standards

EPA has established emissions standards for motor vehicles, including the recently adopted final rulemaking (Docket ID No. EPA-HQ-OAR-2021-0208, Federal Register Vol. 86, No. 248 published on December 30, 2021) to address revised 2023 and later model year light-duty vehicle GHG emissions standards. The EPA is revising the GHG emissions standards to be more stringent in response to the January 20, 2021 Executive Order 13990 “Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis”, wherein the EPA was directed to consider whether the propose suspending, revising, or rescinding the standard previously revised under the “The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks” promulgated in April 2020. EPA has revised the GHG standards to be more stringent that the SAFE rule standards in each model year from 2023 through 2026. EPA has also included

temporary targeted flexibilities to address the lead time of the final standards and to incentivize the production of vehicles with zero and near-zero emissions technology. In addition, EPA has made technical amendments to clarify and streamline regulations. This final rule became effective on February 28, 2022. This action affects companies that manufacture or sell passenger automobiles (passenger cars) and nonpassenger automobiles (light trucks) as defined in 49 CFR part 523.

2.4.2 Quantitative Projected Emissions and Potential Effects of Proposed Action

While the contribution of GHGs from transportation in the U.S. is a large component of U.S. GHG emissions, the GHG contributions become quite small as the scale of analysis is reduced. Using CO_2 because of its predominant role in GHG emissions, Appendix F presents the relationship between current and projected Tennessee highway CO_2 emissions and total global CO_2 emissions, as well as information on the scale of the project relative to statewide travel activity.

The values for Tennessee in Appendix F were derived from EPA's Motor Vehicle Emissions Simulator (MOVES3) model (USEPA, January 2021) and global CO_2 estimates and projections from the Energy Information Administration (EIA). EPA's MOVES model can be used to estimate vehicle exhaust emissions of CO_2 and other GHGs. CO_2 is frequently used as an indicator of overall transportation GHG emissions because the quantity of these emissions is much larger than that of all other transportation GHGs combined, and because CO_2 accounts for 90-95% of the overall climate impact from transportation sources. MOVES includes estimates of both emissions rates and VMT, and these were used to estimate the Tennessee statewide highway emissions in Appendix F.

CO_2 emissions from motor vehicles in the entire state of Tennessee are projected to contribute less than one half of one percent of global emissions in 2026 (0.103%) (Appendix F). These emissions are projected to contribute an even smaller fraction (0.087%) in Design Year 2046. Vehicle miles traveled (VMT) in the project study area in Design Year 2046 represents less than 0.01% of total Tennessee travel activity, and the project itself would decrease annual VMT in the project area by 42.8%. (Note that the project study area includes travel on many other roadways in addition to the proposed project.) As a result, for the Selected Alternative, FHWA estimates that the proposed project could result in a potential decrease in Tennessee's share of global emissions in 2046 from 0.103% to

0.087%. This change in global emissions is well within the range of uncertainty associated with future emissions estimates.

MOVES projections suggest that Tennessee motor vehicle CO_2 emissions may decrease by 4% between 2026 and 2046; this is likely due to EPA's GHG emissions standards and tighter fuel economy standards.

Under NEPA, detailed environmental analysis should be focused on issues that are significant and meaningful to decision-making (CEQ, 2023). NEPA reviews should quantify proposed actions' GHG emissions, place GHG emissions in appropriate context, disclose relevant GHG emissions and relevant climate impacts, and identify alternatives and mitigation measures to avoid or reduce GHG emissions. CEQ encourages agencies to mitigate GHG emissions associated with their proposed actions to the greatest extent possible, consistent with national, science-based GHG reduction policies established to avoid the worst impacts of climate change.

FHWA has concluded, based on the nature of GHG emissions and the potential GHG impacts of the proposed action, as shown in Appendix F that the GHG emissions from the proposed action will not result in "reasonably foreseeable significant adverse impacts on the human environment" (40 CFR 1502.22(b)). The GHG emissions from the project Build Alternatives will not play a meaningful role in a determination of the environmentally preferable alternative or the selection of the Preferred Alternative. More detailed information on GHG emissions *"is not essential to a reasoned choice among reasonable alternatives"* (40 CFR 1502.22(a)) or to making a decision in the best overall public interest based on a balanced consideration of transportation, economic, social, and environmental needs and impacts (23 CFR 771.105(b)). For these reasons, no alternatives-level GHG analysis has been performed for this project.

The context in which the emissions from the proposed project will occur, together with the expected GHG emissions contribution from the project, illustrate why the project's GHG emissions will not be a substantial factor in the decision-making.

2.4.3 Incomplete or Unavailable Information

Additionally, when an agency is evaluating reasonably foreseeable significant adverse effects on the human environment in an environmental impact statement and there is incomplete or unavailable information, the agency is required make clear that such information is lacking (40 CFR 1502.22). The methodologies for forecasting GHG emissions from transportation projects continue to evolve and the data provided should be considered in light of the constraints affecting the currently available methodologies. As previously stated, tools such as EPA's MOVES model can be used to estimate vehicle exhaust emissions of CO_2 and other GHGs. However, only rudimentary information is available regarding the GHG emissions impacts of highway construction and maintenance. Estimation of GHG emissions from vehicle exhaust is subject to the same types of uncertainty affecting other types of air quality analysis, including imprecise information about current and future estimates of vehicle miles traveled, vehicle travel speeds, and the effectiveness of vehicle emissions control technology. Finally, there presently is no scientific methodology that can identify causal connections between individual source emissions and specific climate impacts at a particular location.

2.4.4 Mitigation for Global GHG Emissions

To help address the global issue of climate change, USDOT is committed to reducing GHG emissions from vehicles traveling on our nation's highways. USDOT and EPA are working together to reduce these emissions by substantially improving vehicle efficiency and shifting toward lower carbon intensive fuels. The agencies have jointly established new, more stringent fuel economy and first ever GHG emissions standards for model year 2012-2025 cars and light trucks, with an ultimate fuel economy standard of 55.2 miles per gallon for cars and 40.4 miles per gallon for light trucks by model year 2025 (NHTSA, 2020). On September 15, 2011, the agencies jointly published the first ever fuel economy and GHG emissions standards for heavy-duty trucks and buses (NHTSA, 2011). On April 1, 2022, the USDOT announced newer fuel economy standards for industrial fleet. The new Corporate Average Fuel Economy standards require an industry-wide fleet average of approximately 49 mpg for passenger cars and light trucks in model year 2026, the strongest cost savings and fuel efficiency standards to date. The new standards will increase fuel efficiency 8% annually for model years 2024-2025 and 10% annually for model year 2026. They will also

increase the estimated fleetwide average by nearly 10 miles per gallon for model year 2026, relative to model year 2021.

More information on Corporate Average Fuel Economy can be found from the National Highway Traffic Safety Administration. Increasing use of technological innovations that can improve fuel economy, such as gasoline- and diesel-electric hybrid vehicles and electric vehicles, will improve air quality and reduce CO_2 emissions in future years.

Consistent with its view that broad-scale efforts hold the greatest promise for meaningfully addressing the global climate change problem, FHWA is engaged in developing strategies to reduce transportation's contribution to GHGs—particularly CO_2 emissions—and to assess the risks to transportation systems and services from climate change. To assist States and MPOs in performing GHG analyses, FHWA has developed a *Handbook for Estimating Transportation GHG Emissions for Integration into the Planning Process (FHWA-HEP-13-026)* (FHWA, 2013). The Handbook presents methodologies reflecting good practices for the evaluation of GHG emissions at the transportation program level and will demonstrate how such evaluation may be integrated into the transportation planning process. FHWA has also developed a tool for use at the statewide level to model a large number of GHG reduction scenarios and alternatives for use in transportation planning, climate action plans, scenario planning exercises, and in meeting state GHG reduction targets and goals. To assist states and MPOs in assessing climate change vulnerabilities to their transportation networks, FHWA has developed a vulnerability and risk assessment conceptual model and has piloted it in several locations (FHWA-HEP-18-020) (FHWA, 2017).

While GHG impacts should be given consideration to a decision on the environmentally preferable alternative or to a choice among alternatives, the potential change in GHG emissions is small in the context of the affected environment. Additionally, this assessment enables agencies to better understand and address the effects of climate change on vulnerable communities, thereby responding to environmental justice concerns and promoting resilience and adaptation. As outlined above, FHWA is working to develop strategies to reduce transportation's contribution to GHGs—particularly CO_2 emissions—and to assess the risks to transportation systems and services from climate change. FHWA will continue to pursue these efforts as productive steps to address this important issue.

2.5 Construction Air Quality

Construction activities will generate intermittent and temporary construction-related pollutant emissions and dust.

TDOT's construction specifications (TDOT, 2021) will apply to this project. Construction procedures should be governed by the *Standard Specifications for Road and Bridge Construction* as issued by TDOT and as amended by the most recent applicable supplements. All construction equipment shall be maintained, repaired, and adjusted to keep it in full satisfactory condition.

Additionally, there are no air quality monitoring stations close to the project. The closest station is a $PM_{2.5}$ system near Maryville Academy approximately 2.71miles west of the project.

2.6 Indirect and Cumulative Effects

The forecasted traffic volumes for most projects typically account for any redistribution of traffic that would occur as a result of the project. Therefore, the air quality analysis addresses any indirect traffic-related air quality effects that might occur. Additionally, the forecast traffic volumes include expected traffic growth and other planned and programmed projects in the area. As a result, the air quality analysis addresses the traffic-related cumulative air quality effects of the project.

3.0 CONCLUSIONS

The air quality evaluation was conducted per TDOT's *Tennessee Environmental Procedures Manual* (TDOT, 2011). The purposes of this analysis are to address the transportation conformity requirements for the project, the potential Mobile Source Air Toxics (MSATs) effects, the relationship of this project to global climate change, construction air quality, and indirect and cumulative effects.

Blount County is classified as an attainment area for all criteria pollutants except 8-hour ozone (O3) and particulate matter $PM_{2.5}$, for which it is classified as a maintenance area.

The proposed project is included in the *Long Range Regional Mobility Plan 2040* as project 09-232 and in the *Knoxville Region 2023-2026 Transportation Improvement Program* (TIP) as TIP number 23-2014-025. The project is described in the TIP as "construct a new four-lane road from Old Knoxville Highway (SR- 33) to SR-73 (US-321)." This project description and termini are consistent with the selected alternative Therefore, the selected alternative is in conformity with the State Implementation Plan (SIP).

The project has been classified as "not of air quality concern" in regard to $PM_{2.5}$. by the Knoxville Interagency Consultation (IAC) group, which includes FHWA, EPA, and TDEC.

The project is a "Project with Low Potential Mobile Source Air Toxic (MSAT) Effects" per FHWA's "*Updated Interim Guidance on Air Toxic Analysis in NEPA Documents"* and is not predicted to create any adverse MSAT effects.

The greenhouse gas emissions evaluation concluded that the project is not predicted to have adverse climate change effects.

Construction-related effects of the project would be limited to short-term increased fugitive dust and mobile-source emissions during construction. These construction-related impacts will be mitigated through the implementation of Best Management Practices, which are included in TDOT's *Standard Specifications for Road and Bridge Construction*. A $PM_{2.5}$ monitoring station is approximately 2.71 miles west of the project limit near the Maryville Academy. Construction activity may generate temporary increases in $PM_{2.5}$ emissions in the project area. However, given the distance and direction of prevailing winds, the project is not anticipated to substantially affect the monitor.

Finally, the project is not anticipated to have any adverse indirect or cumulative effects.

4.0 REFERENCES

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APPENDICES

Appendix A
Project Plans Coversheet and Typical Sections

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING

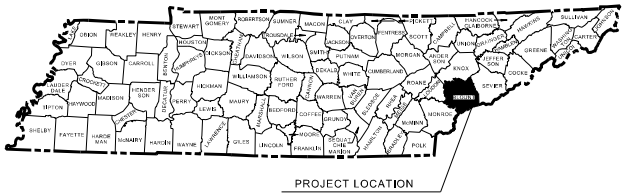
DOES THIS PROJECT QUALIFY FOR UTILITY CHAPTER 86	(YES)	NO
WORK ZONE SIGNIFICANCE DETERMINATION		
SIGNIFICANT	YES	NO

TENN.	YEAR	SHEET NO.
	2022	1
FED. AID PROJ. NO.	HPP/NH - 162(7)	
STATE PROJ. NO.	05097-1233-14	

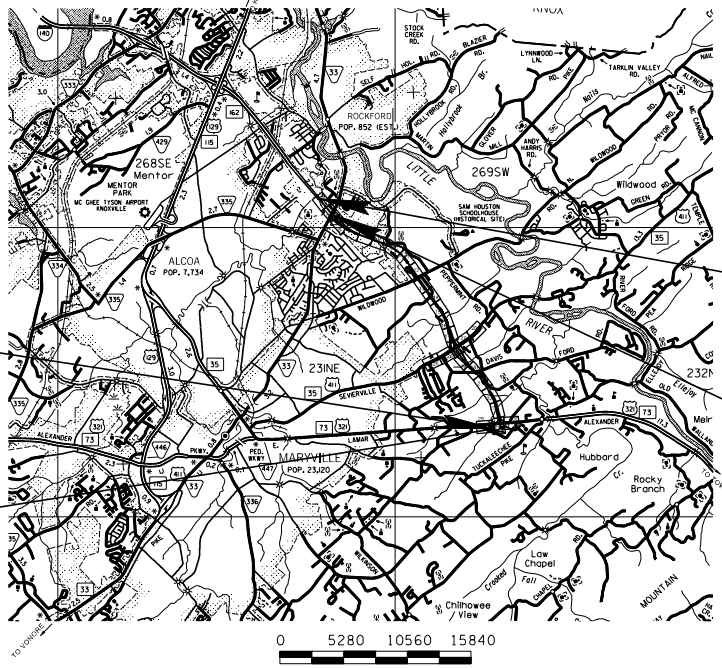
BLOUNT COUNTY

SR - 162 EXT, (PELLISSIPPI PARKWAY)
FROM SR - 33 TO SR - 73 (US - 321)

RIGHT-OF-WAY
GRADE, DRAIN, BASE, BRIDGE, PAVE, RETAINING WALL, SIGN & SIGNALS



STATE HIGHWAY NO. 162 F.A.H.S. NO.



NO EXCLUSIONS
ROAD CLOSURE

R.O.W. FIELD REVIEW

05097-1233-14
BEGIN PROJECT NO. HPP/NH - 162(7) CONST.
STA. 100+00.00
N 543775.1364 E 2578227.6700

05097-1233-14
BEGIN PROJECT NO. HPP/NH - 162(7) R.O.W.
STA. 116+84.00
N 542459.2818 E 2579278.2480

05097-1233-14
END PROJECT NO. HPP/NH - 162(7) CONSTRUCTION
STA. 359+03.56
N 524678.1792 E 2592697.0271

05097-1233-14
END PROJECT NO. HPP/NH - 162(7) R.O.W.
STA. 359+03.56
N 524678.1792 E 2592697.0271

SEALED BY

APPROVED: Paul D. Degges
PAUL D. DEGGES, CHIEF ENGINEER

DATE:

APPROVED: Joseph Galbato III
JOSEPH GALBATO, III, COMMISSIONER

R.O.W. INDEX OF SHEETS

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SPECIAL NOTES

PROPOSALS MAY BE REJECTED BY THE COMMISSIONER IF ANY OF THE UNIT PRICES CONTAINED THEREIN ARE OBVIOUSLY UNBALANCED, EITHER EXCESSIVE OR BELOW THE REASONABLE COST ANALYSIS VALUE.

THIS PROJECT TO BE CONSTRUCTED UNDER THE STANDARD SPECIFICATIONS OF THE TENNESSEE DEPARTMENT OF TRANSPORTATION DATED JANUARY 1, 2021 AND ADDITIONAL SPECIFICATIONS AND SPECIAL PROVISIONS CONTAINED IN THE PLANS AND IN THE PROPOSAL CONTRACT.

TDOT C.E. MANAGER 1: STACY WEAVER, P.E.
DESIGNED BY : CDM SMITH
DESIGNER : KASSIE HOLMES, P.E. CHECKED BY DAN HIDEN, P.E.; JEFF MIZE, P.E.
P.E. NO. 05097-1233-14 (DESIGN)
PIN NO. 101423.00

R.O.W. LENGTH	4.587 MILES
ROADWAY LENGTH	4.906 MILES
BRIDGE LENGTH	MILES
BOX BRIDGE LENGTH	MILES
BOX BRIDGE LENGTH	MILES ▲
PROJECT LENGTH	4.906 MILES

▲ Not included in the project length. (Non Riding Surface)

SURVEY 08-13-2018	TRAFFIC DATA	
	ADT (2022)	15,770
	ADT (2042)	29,540
	DHV (2020)	3,542
	D	52 - 48
	T (ADT)	3 %
	T (DHV)	2 %
	V	70 MPH

COORDINATE VALUES ARE TENNESSEESTATE PLANE NAD/83 (CORS96) AND ARE DATUM ADJUSTED BY THE FACTOR OF 1.00009, AND ARE TIED TO THE GEODETIC REFERENCE NETWORK. ALL ELEVATIONS ARE REFERENCED TO THE NAVD 1988 USING THE GEOID 12B MODEL, OBTAINED ON 05-07-18.

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:
DIVISION ADMINISTRATOR DATE

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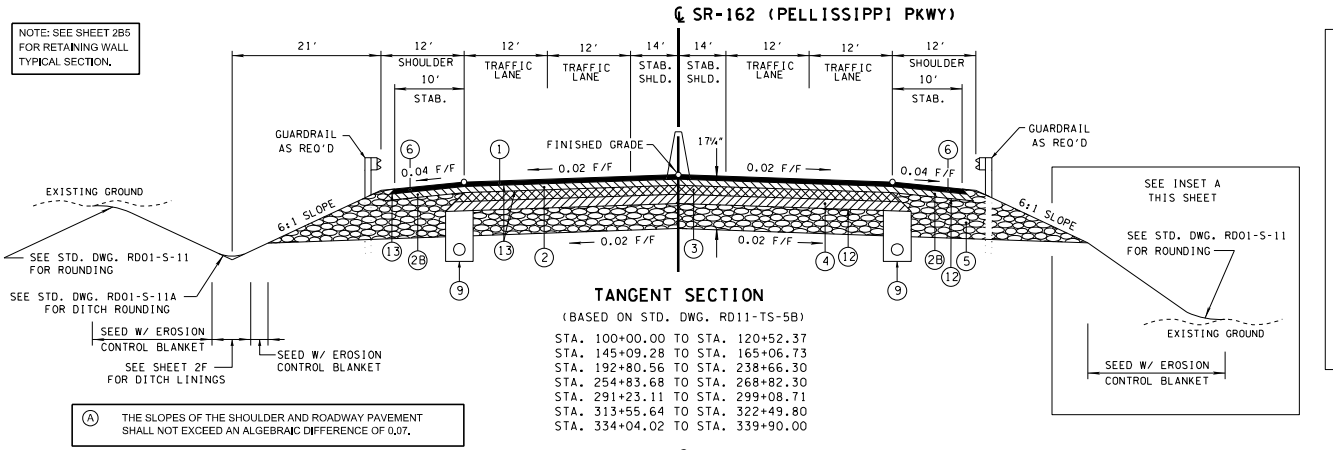
TYPE	YEAR	PROJECT NO.	SHEET NO.
R.O.W.	2022	HPP/NH - 162(7)	2B

SR - 162 BLOUNT COUNTY

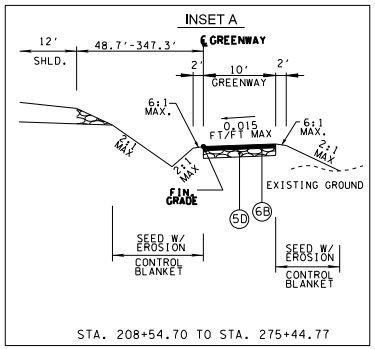
NOTE: SEE SHEET 2B5 FOR RETAINING WALL TYPICAL SECTION.



TANGENT SECTION

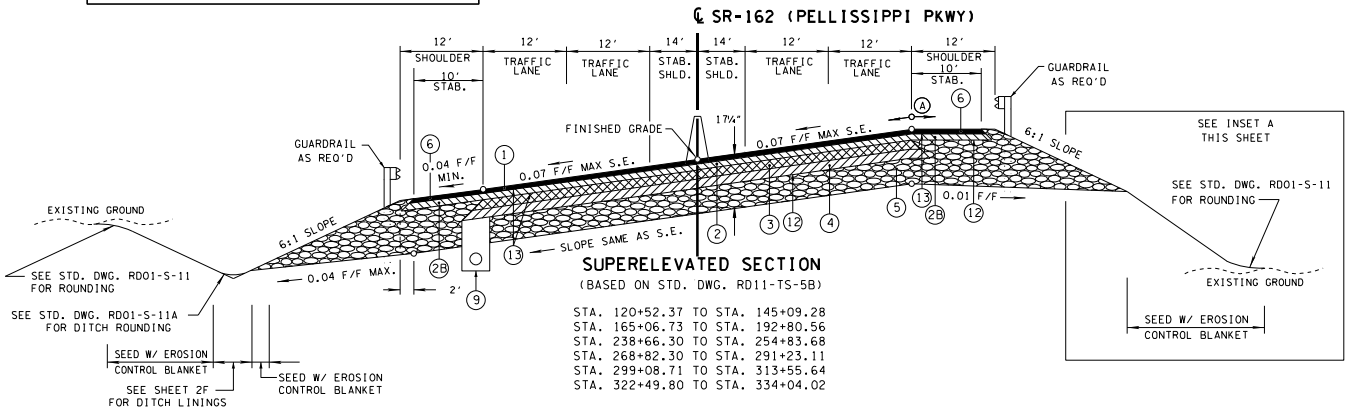
(BASED ON STD. DWG. RD11-TS-5B)

STA. 100+00.00 TO STA. 120+52.37
STA. 145+09.28 TO STA. 165+06.73
STA. 192+80.56 TO STA. 238+66.30
STA. 254+83.68 TO STA. 268+82.30
STA. 291+23.11 TO STA. 299+08.71
STA. 313+55.64 TO STA. 322+49.80
STA. 334+04.02 TO STA. 339+90.00



STA. 208+54.70 TO STA. 275+44.77

Ⓐ THE SLOPES OF THE SHOULDER AND ROADWAY PAVEMENT SHALL NOT EXCEED AN ALGEBRAIC DIFFERENCE OF 0.07.



SUPERELEVATED SECTION

(BASED ON STD. DWG. RD11-TS-5B)

STA. 120+52.37 TO STA. 145+09.28
STA. 165+06.73 TO STA. 192+80.56
STA. 238+66.30 TO STA. 254+83.68
STA. 268+82.30 TO STA. 291+23.11
STA. 299+08.71 TO STA. 313+55.64
STA. 322+49.80 TO STA. 334+04.02

R.O.W. FIELD REVIEW

PROPOSED PAVEMENT SCHEDULE

(1) BITUMINOUS SURFACING (ROADWAY) @ 1-1/4" THICK (APPROX. 132.5 LBS/Sq Yd)
411-03.10 ASPHALT CONCRETE SURFACE MIX (PG76-22) (BPMB-HM) GRADING D

(1A) BITUMINOUS SURFACING (ROADWAY) @ 1-1/4" THICK (APPROX. 132.5 LBS/Sq Yd)
411-02.10 ASPHALT CONCRETE SURFACE MIX (PG70-22) (BPMB-HM) GRADING D

(1B) BITUMINOUS SURFACING (ROADWAY) @ 1-1/4" THICK (APPROX. 132.5 LBS/Sq Yd)
411-01.10 ASPHALT CONCRETE SURFACE MIX (PG64-22) (BPMB-HM) GRADING D

(2) BITUMINOUS BINDER (ROADWAY) @ 2" THICK (APPROX. 226 LBS/Sq Yd)
307-03.08 ASPHALT CONCRETE MIX (PG76-22) (BPMB-HM) GRADING B-M2

(2A) BITUMINOUS BINDER (ROADWAY) @ 2" THICK (APPROX. 226 LBS/Sq Yd)
307-02.08 ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING B-M2

(2B) BITUMINOUS BINDER (SHOULDER) @ 2" THICK (APPROX. 226 LBS/Sq Yd)
307-01.08 ASPHALT CONCRETE MIX (PG64-22) (BPMB-HM) GRADING B-M2

(3) BITUMINOUS BASE (ROADWAY) @ 3" THICK (APPROX. 345 LBS/Sq Yd)
307-03.01 ASPHALT CONCRETE MIX (PG76-22) (BPMB-HM) GRADING A

(3A) BITUMINOUS BASE (ROADWAY) @ 3" THICK (APPROX. 345 LBS/Sq Yd)
307-02.01 ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING A

(4) BITUMINOUS BASE (ROADWAY) @ 3" THICK (APPROX. 270 LBS/Sq Yd)
307-01.22 ASPHALT CONCRETE MIX (PG76-22) (BPMB-HM) GRADING A-S

(4A) BITUMINOUS BASE (ROADWAY) @ 3" THICK (APPROX. 270 LBS/Sq Yd)
307-01.21 ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING A-S

(5) MINERAL AGGREGATE BASE - 8" DEPTH (ROADWAY) (FULL DEPTH UNDER SHOULDERS)
303-01 MINERAL AGGREGATE, TYPE "A" BASE GRADING D

(5A) MINERAL AGGREGATE BASE - 6" DEPTH (ROADWAY) (FULL DEPTH UNDER SHOULDERS)
303-01 MINERAL AGGREGATE, TYPE "A" BASE GRADING D

(5D) MINERAL AGGREGATE BASE - 4" DEPTH (GREENWAY)
303-01 MINERAL AGGREGATE, TYPE "A" BASE GRADING D

(6) BITUMINOUS SURFACING (SHOULDER) @ 1-1/4" THICK (APPROX. 132.5 LBS/Sq Yd)
411-01.07 ASPHALT CONCRETE MIX (PG64-22) GRADING E SHOULDER

(6A) BITUMINOUS SURFACING (SHOULDER) @ 1-1/2" THICK (APPROX. 159 LBS/Sq Yd)
411-01.07 ASPHALT CONCRETE MIX (PG64-22) GRADING E SHOULDER

(6B) BITUMINOUS SURFACING (SHOULDER) @ 2" THICK (APPROX. 212 LBS/Sq Yd)
411-01.07 ASPHALT CONCRETE MIX (PG64-22) GRADING E SHOULDER

(7) CONCRETE SURFACING COURSE PORTLAND CEMENT CONCRETE SURFACING @ 10" THICK THICK ON ROADWAYS
501-01.03 PORTLAND CEMENT CONCRETE PAVEMENT (PLAIN) 10"

(8) BITUMINOUS BINDER COURSE TREATED PERMEABLE BASE @ 4" THICK UNDER ROADWAY
313-03 TREATED PERMEABLE BASE

(9) UNDERDRAIN
710-02 AGGREGATE UNDERDRAIN W/PIPE

(10) TYPE 6-30 NONMOUNTABLE CONCRETE COMBINED CURB & GUTTER
702-03 CONCRETE COMBINED CURB & GUTTER (D=9") SEE STD. DWG. RP-VC-10

(10A) TYPE 6-30 NONMOUNTABLE CONCRETE COMBINED CURB & GUTTER
702-03 CONCRETE COMBINED CURB & GUTTER (D=6") SEE STD. DWG. RP-VC-11

(10B) TYPE 6-33 SLOPING CONCRETE CURB & GUTTER
702-03 CONCRETE COMBINED CURB & GUTTER (D=9") SEE STD. DWG. RP-SC-1

(11) CONCRETE CURB
702-01 CONCRETE CURB 6" DETACHED (MOUNTABLE) TYPE B (STD. DWG. RP-SC-1)

(12) PRIME COAT
402-01 BITUMINOUS MATERIAL FOR PRIME COAT (TC) (RATE 0.02-0.35 GAL/YD)
402-02 AGGREGATE FPR COVER MATERIAL (PC)(RATE 8-12 LB/YD)

(13) TACK COAT
403-01 BITUMINOUS MATERIAL FOR TACK COAT (TC) (RATE 0.07 GAL/YD)

(14) SIDEWALK
701-01.01 CONCRETE SIDEWALK (4")

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STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TYPICAL SECTIONS AND PAVEMENT SCHEDULE

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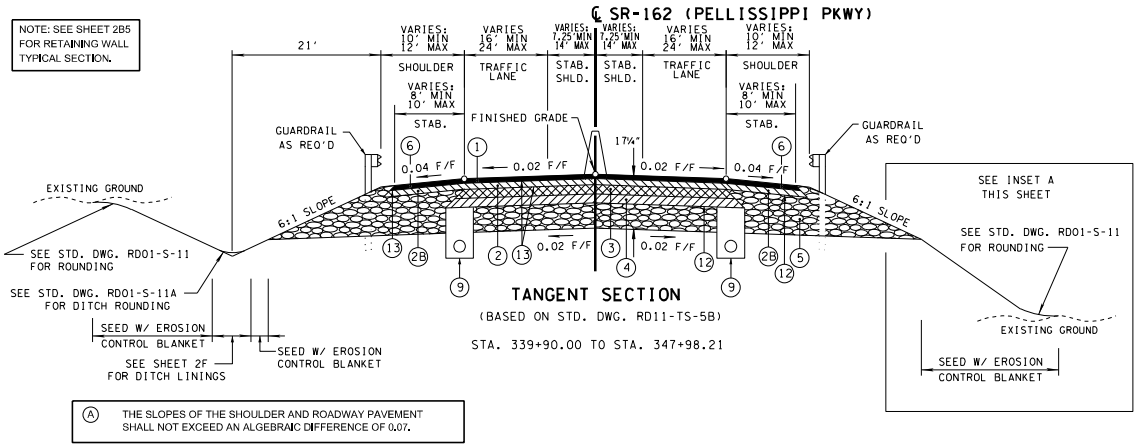
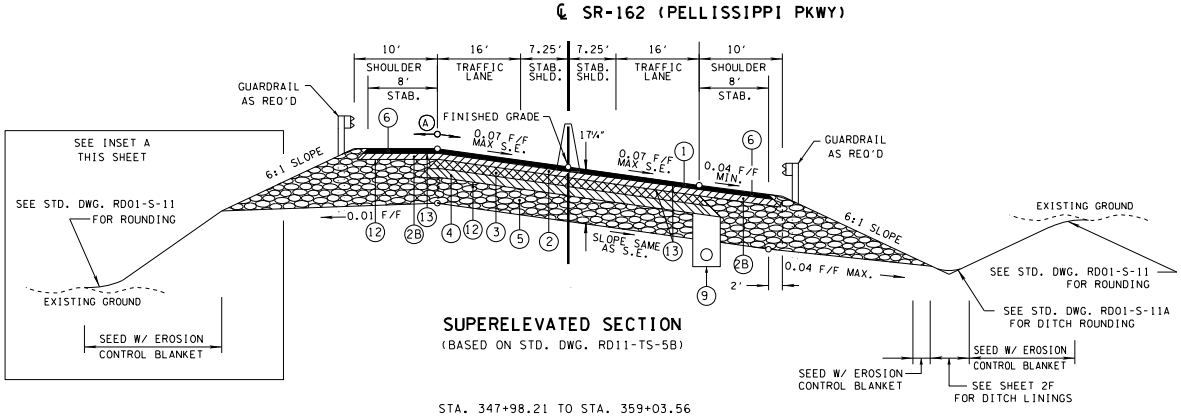
TYPE	YEAR	PROJECT NO.	SHEET NO.
R.O.W.	2022	HPP/NH - 162(7)	2B1

SR - 162 BLOUNT COUNTY

NOTE: SEE SHEET 2B5 FOR RETAINING WALL TYPICAL SECTION.



Ⓐ THE SLOPES OF THE SHOULDER AND ROADWAY PAVEMENT SHALL NOT EXCEED AN ALGEBRAIC DIFFERENCE OF 0.07.



R.O.W. FIELD REVIEW

SEALED BY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TYPICAL SECTIONS

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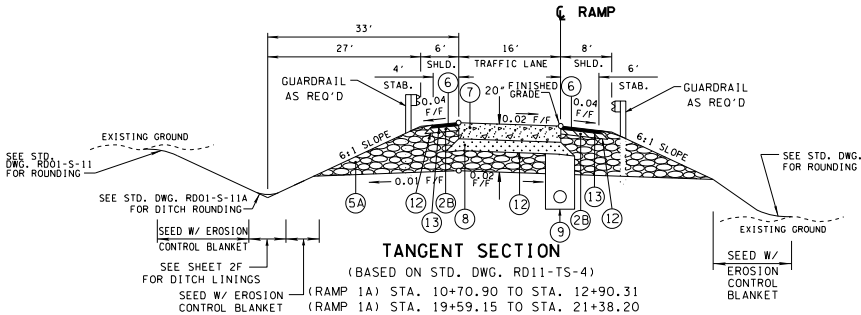
TYPE	YEAR	PROJECT NO.	SHEET NO.
R.O.W.	2022	HPP/NH - 162(7)	2B2

SR - 162 BLOUNT COUNTY

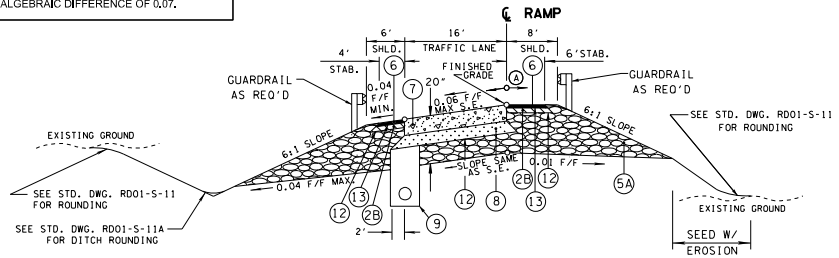
(A) THE SLOPES OF THE SHOULDER AND ROADWAY PAVEMENT SHALL NOT EXCEED AN ALGEBRAIC DIFFERENCE OF 0.07.



TANGENT SECTION

(BASED ON STD. DWG. RD11-TS-4)

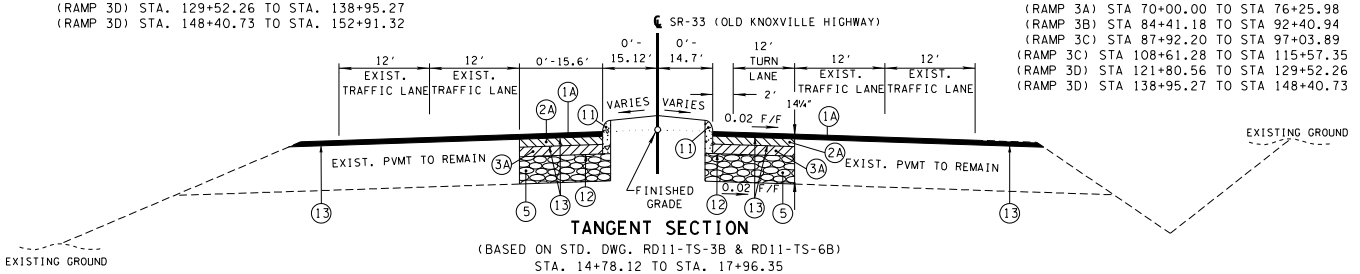
(RAMP 1A) STA. 10+70.90 TO STA. 12+90.31
(RAMP 1A) STA. 19+59.15 TO STA. 21+38.20
(RAMP 2A) STA. 42+29.92 TO STA. 46+94.44
(RAMP 2B) STA. 40+00.00 TO STA. 44+16.37
(RAMP 2C) STA. 50+95.60 TO STA. 52+71.08
(RAMP 2C) STA. 59+75.42 TO STA. 72+42.17
(RAMP 2D) STA. 60+00.00 TO STA. 64+63.00
(RAMP 2D) STA. 70+51.52 TO STA. 82+71.04
(RAMP 3C) STA. 85+00.00 TO STA. 87+92.20
(RAMP 3C) STA. 97+03.89 TO STA.108+61.28
(RAMP 3D) STA. 129+52.26 TO STA. 138+95.27
(RAMP 3D) STA. 148+40.73 TO STA. 152+91.32



SUPERELEVATED SECTION

(BASED ON STD. DWG. RD11-TS-4)

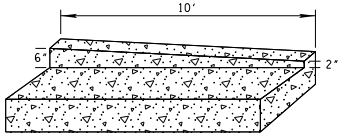
(RAMP 1A) STA. 10+43.90 TO STA. 10+70.90
(RAMP 1A) STA. 12+90.31 TO STA. 19+59.15
(RAMP 1A) STA. 21+38.20 TO STA. 29+25.65
(RAMP 1B) STA. 20+00.00 TO STA. 47+59.91
(RAMP 2A) STA. 30+30.00 TO STA. 42+29.92
(RAMP 2B) STA. 44+16.37 TO STA. 58+15.15
(RAMP 2C) STA. 50+30.00 TO STA. 50+95.60
(RAMP 2C) STA. 52+71.08 TO STA. 59+75.42
(RAMP 2C) STA. 72+42.17 TO STA. 77+59.22
(RAMP 2D) STA. 64+63.00 TO STA. 70+51.52
(RAMP 2D) STA. 82+71.04 TO STA. 83+28.57
(RAMP 3A) STA 70+00.00 TO STA 76+25.98
(RAMP 3B) STA 84+41.18 TO STA 92+40.94
(RAMP 3C) STA 87+92.20 TO STA 97+03.89
(RAMP 3C) STA 108+61.28 TO STA 115+57.35
(RAMP 3D) STA 121+80.56 TO STA 129+52.26
(RAMP 3D) STA 138+95.27 TO STA 148+40.73



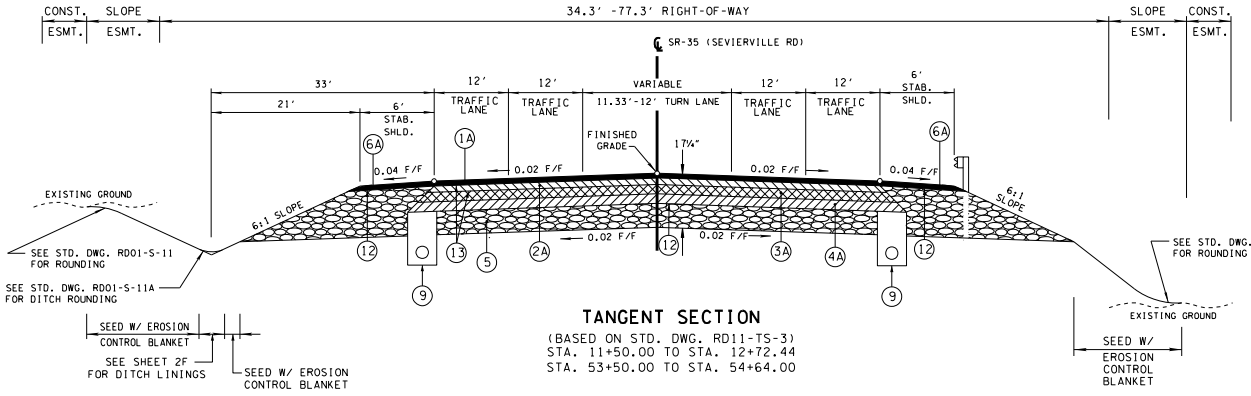
TANGENT SECTION

(BASED ON STD. DWG. RD11-TS-3B & RD11-TS-6B)
STA. 14+78.12 TO STA. 17+96.35

R.O.W. FIELD REVIEW



CURB TRANSITION DETAIL



TANGENT SECTION

(BASED ON STD. DWG. RD11-TS-3)
STA. 11+50.00 TO STA. 12+72.44
STA. 53+50.00 TO STA. 54+64.00

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STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TYPICAL SECTIONS

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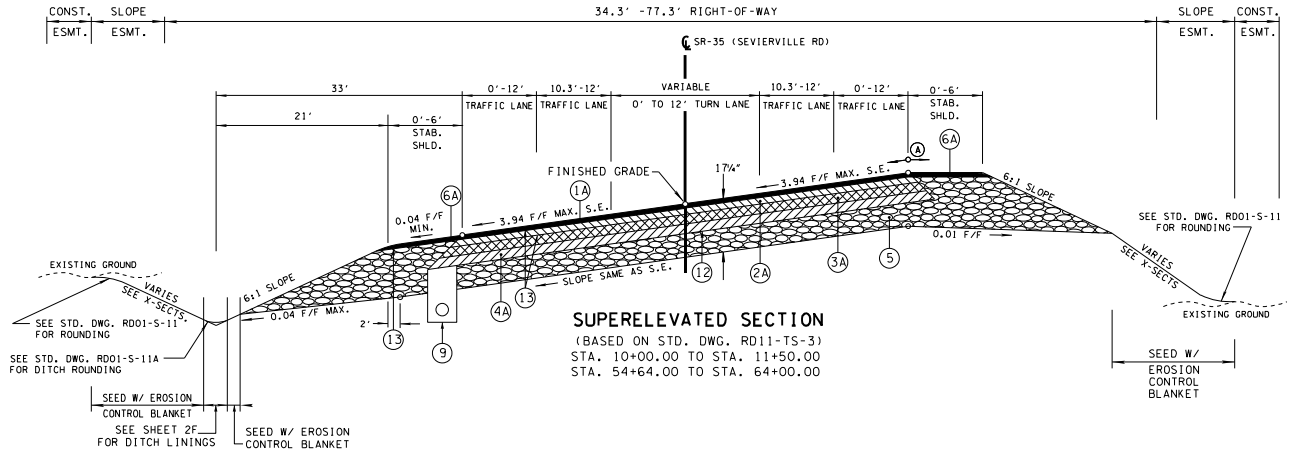
TYPE	YEAR	PROJECT NO.	SHEET NO.
R.O.W.	2022	HPP/NH - 162(7)	2B3

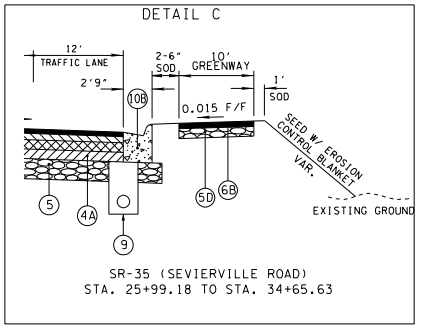
SR - 162 BLOUNT COUNTY



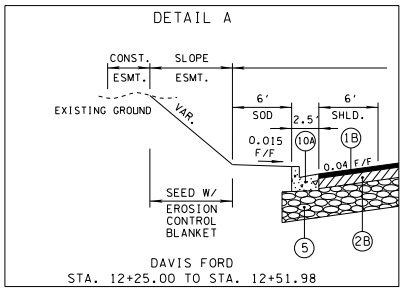
SUPERELEVATED SECTION

(BASED ON STD. DWG. RD11-TS-3)
STA. 10+00.00 TO STA. 11+50.00
STA. 54+64.00 TO STA. 64+00.00

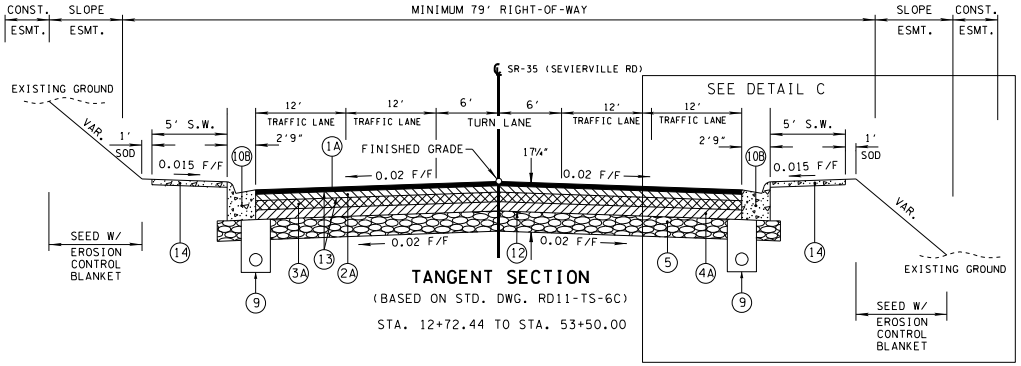
Ⓐ THE SLOPES OF THE SHOULDER AND ROADWAY PAVEMENT SHALL NOT EXCEED AN ALGEBRAIC DIFFERENCE OF 0.07.



SR-35 (SEVIERVILLE ROAD)
STA. 25+99.18 TO STA. 34+65.63

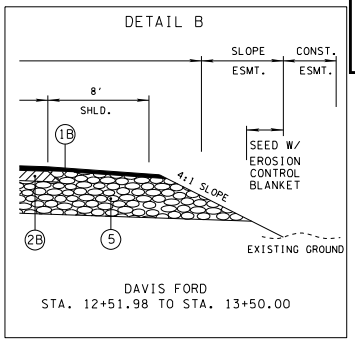


DAVIS FORD
STA. 12+25.00 TO STA. 12+51.98



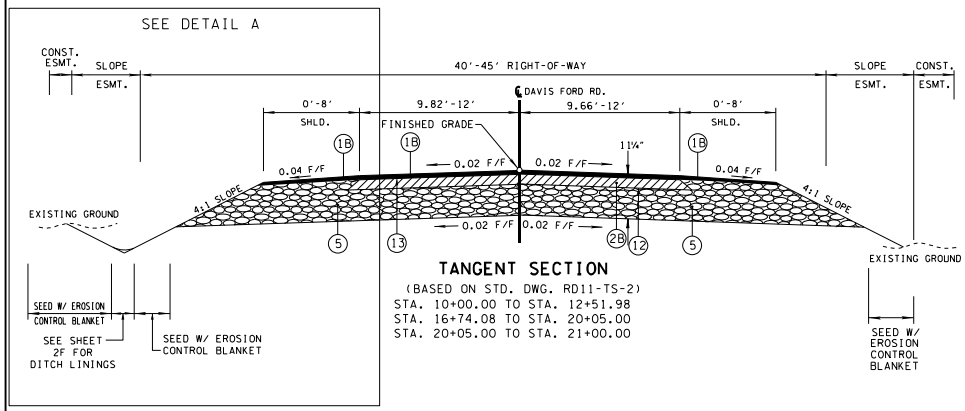
TANGENT SECTION

(BASED ON STD. DWG. RD11-TS-6C)
STA. 12+72.44 TO STA. 53+50.00



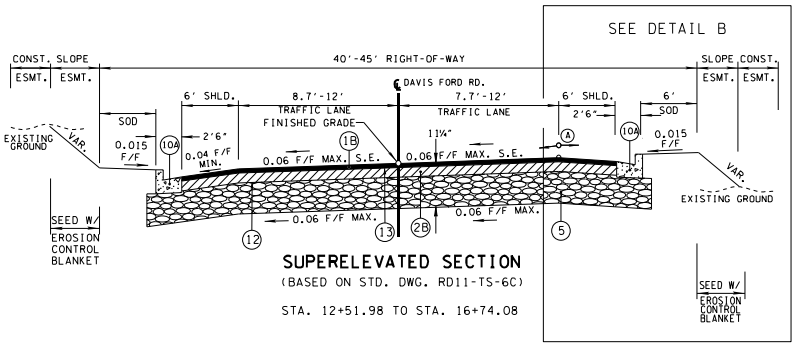
DAVIS FORD
STA. 12+51.98 TO STA. 13+50.00

R.O.W. FIELD REVIEW



TANGENT SECTION

(BASED ON STD. DWG. RD11-TS-2)
STA. 10+00.00 TO STA. 12+51.98
STA. 16+74.08 TO STA. 20+05.00
STA. 20+05.00 TO STA. 21+00.00



SUPERELEVATED SECTION

(BASED ON STD. DWG. RD11-TS-6C)
STA. 12+51.98 TO STA. 16+74.08

SEALED BY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TYPICAL SECTIONS

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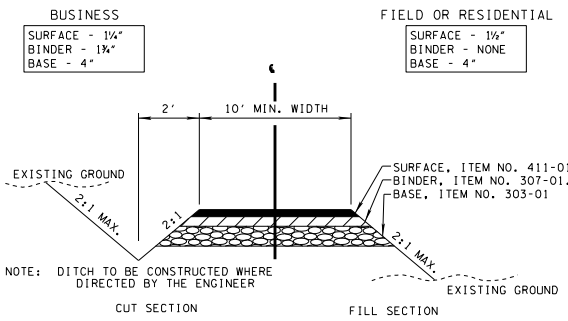
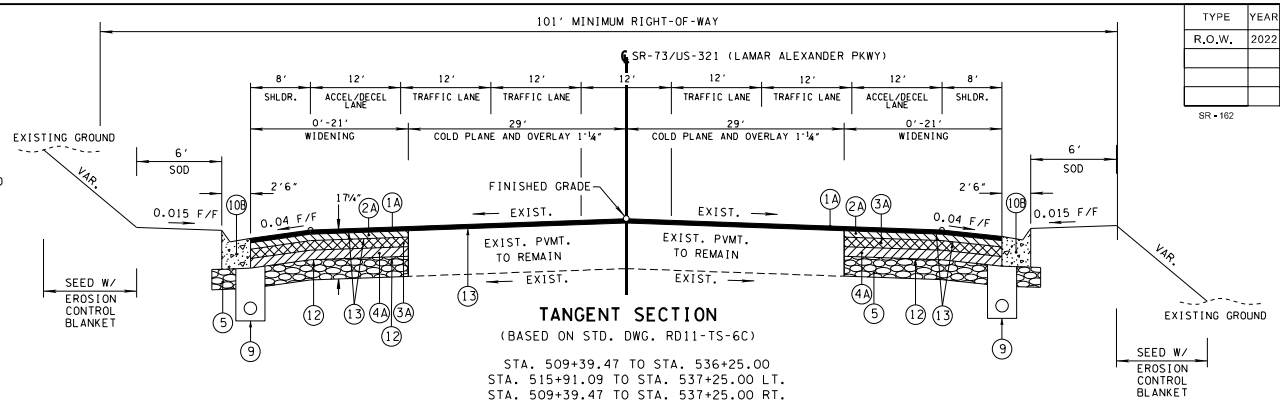
TYPE	YEAR	PROJECT NO.	SHEET NO.
R.O.W.	2022	HPP/NH - 162(7)	2B4

SR - 162 BLOUNT COUNTY



TYPICAL SECTION

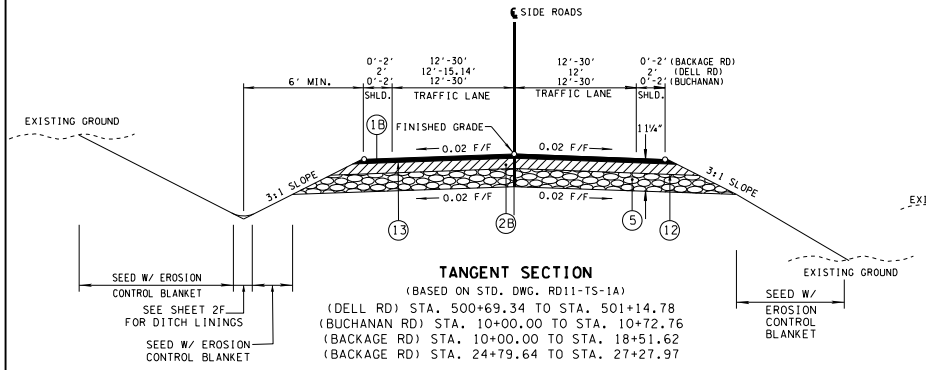
PRIVATE DRIVE TO BUSINESS, FIELD, OR RESIDENTIAL PROPERTY



TANGENT SECTION

(BASED ON STD. DWG. RD11-TS-6C)

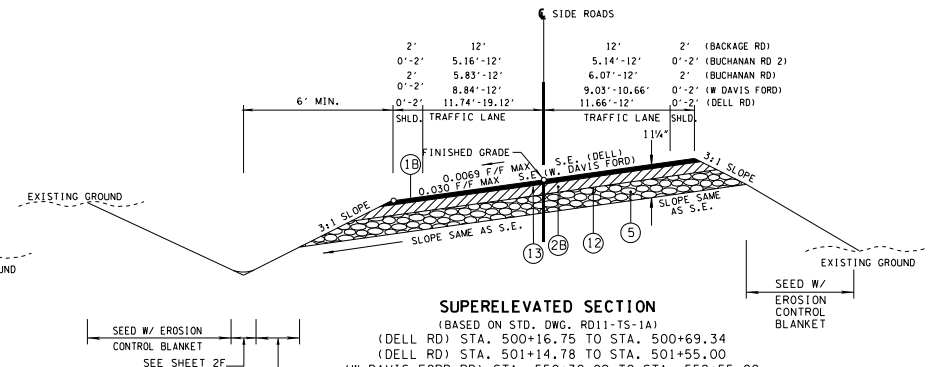
STA. 509+39.47 TO STA. 536+25.00
STA. 515+91.09 TO STA. 537+25.00 LT.
STA. 509+39.47 TO STA. 537+25.00 RT.



TANGENT SECTION

(BASED ON STD. DWG. RD11-TS-1A)

(DELL RD) STA. 500+69.34 TO STA. 501+14.78
(BUCHANAN RD) STA. 10+00.00 TO STA. 10+72.76
(BACKAGE RD) STA. 10+00.00 TO STA. 18+51.62
(BACKAGE RD) STA. 24+79.64 TO STA. 27+27.97

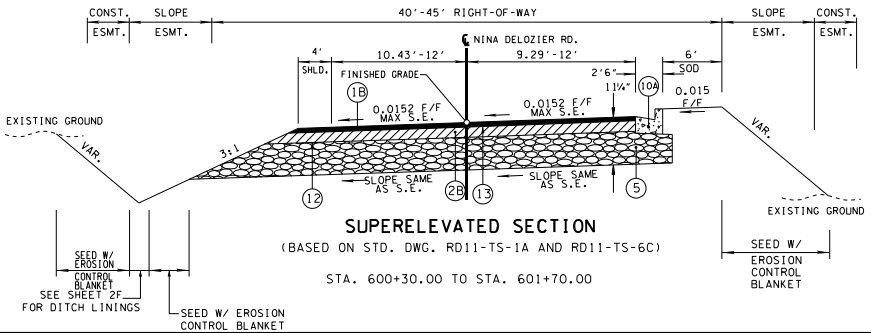


SUPERELEVATED SECTION

(BASED ON STD. DWG. RD11-TS-1A)

(DELL RD) STA. 500+16.75 TO STA. 500+69.34
(DELL RD) STA. 501+14.78 TO STA. 501+55.00
(W.DAVIS FORD RD) STA. 550+30.09 TO STA. 552+55.00
(BUCHANAN RD) STA. 10+72.76 TO STA. 24+50.00
(W. DAVIS FORD) STA. 551+37.38 TO STA. 525+55 LEFT
(W. DAVIS FORD) STA. 551+60.00 TO STA. 525+55 RIGHT
(BUCHANAN RD 2) STA. 30+80.00 TO STA. 33+20.00
(BACKAGE RD) STA. 18+51.62 TO STA. 24+79.64
(BACKAGE RD) STA. 27+27.97 TO STA. 28+54.92

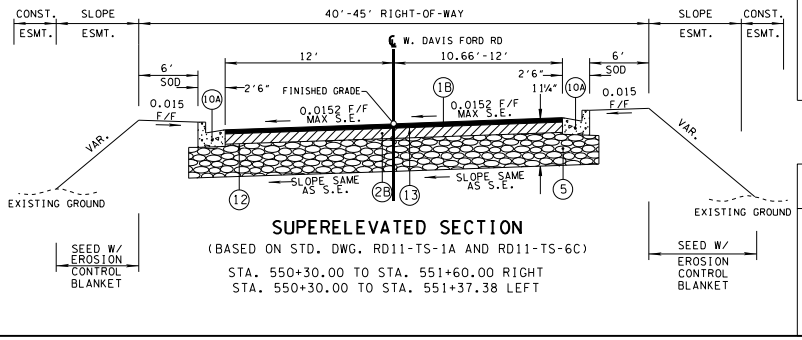
R.O.W. FIELD REVIEW



SUPERELEVATED SECTION

(BASED ON STD. DWG. RD11-TS-1A AND RD11-TS-6C)

STA. 600+30.00 TO STA. 601+70.00



SUPERELEVATED SECTION

(BASED ON STD. DWG. RD11-TS-1A AND RD11-TS-6C)

STA. 550+30.00 TO STA. 551+60.00 RIGHT
STA. 550+30.00 TO STA. 551+37.38 LEFT

SEALED BY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TYPICAL SECTIONS

9/9/2022 4:10:17 PM
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Appendix B
TIP Project Sheet

KNOXVILLE REGIONAL

July 7, 2023

Tennessee Department of Transportation
James K. Polk Building, Suite 1800
505 Deaderick Street
Nashville, TN 37243-0349

SUBJECT: Amendment to project 23-2014-025 (Pellissippi Pkwy. (SR-162) Extension)

Dear TDOT,

The Knoxville Regional TPO requests concurrence by TDOT to amend the FY 2023-2026 TIP concerning the following project:

Amendment 23-2014-025 (Pellissippi Pkwy. (SR-162) Extension) - Amend project to revise the project descriptive elements, increase programmed Right of Way funding and total project cost. The project length is increased to 4.9 miles and the termini description is revised to "(Pellissippi Parkway) from near SR-33 to SR-73 (US-321) (IA)". ROW phase costs in FY 2023 are revised to include $20,709,838 ($16,567,870 federal NHPP/$4,141,968,000 state). This amendment adds $20,709,838 ($16,567,870 federal NHPP/$4,141,968,000 state) to the project and the TIP. The total project cost is increased to a corrected $184,200,000.

This amendment has been incorporated into our FY 2023-2026 TIP. The project pages, expenditure summary sheets, air quality conformity summary, air quality conformity determination approval (FHWA), resolution, planning process self-certification and other pertinent information are included. If you have any questions, please contact me at (865) 215-3825.

Sincerely,

C. Luebke

Craig Luebke, AICP
Senior Transportation Planner

eSTIP Project Report

ORIGINAL

ID	PIN #	Length in Miles	Lead Agency
23-2014-025	101423.00	4.50	TDOT

County:

Blount

Route

SR-162EXT

Total Project Cost

$114,700,000.00

Project Name:

Pellissippi Pkwy. (SR-162) Extension

Termini

(Pellissippi Parkway), From SR-33 to SR-73 (US-321) (IA)

Project Description

Construct new 4 lane

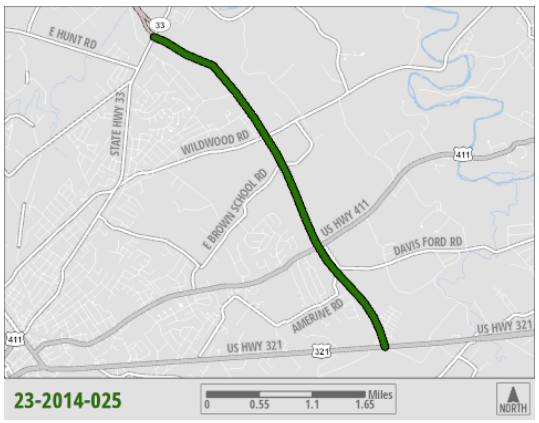
Long Range Plan #

09-232

Conformity Status

Non-Exempt

FY	Phase	Fund Code	Total Funds	Federal Funds	State Funds	Local Funds
2023	ROW	HPP	$9,090,162	$7,272,130	$1,818,032	$0
		Total	$9,090,162	$7,272,130	$1,818,032	$0



eSTIP Project Report

AMENDED

ID	PIN #	Length in Miles	Lead Agency
23-2014-025	101423.00	4.90	TDOT

County:

Blount

Route

SR-162EXT

Total Project Cost

$184,200,000.00

Project Name:

Pellissippi Pkwy. (SR-162) Extension

Termini

(Pellissippi Parkway), From near SR-33 to SR-73 (US-321) (IA)

Project Description

Construct new 4 lane

Long Range Plan #

09-232

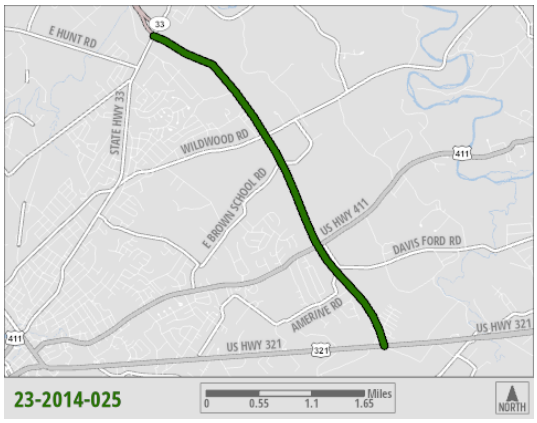
Conformity Status

Non-Exempt

FY	Phase	Fund Code	Total Funds	Federal Funds	State Funds	Local Funds
2023	ROW	HPP	$9,090,162	$7,272,130	$1,818,032	$0
2023	ROW	NHPP	$20,709,838	$16,567,870	$4,141,968	$0
		Total	$29,800,000	$23,840,000	$5,960,000	$0

Comments:

Amend project to revise the project descriptive elements, increase programmed Right of Way funding and total project cost. The project length is increased to 4.9 miles and the termini description is revised to "(Pellissippi Parkway) from near SR-33 to SR-73 (US-321) (IA)". ROW phase costs in FY 2023 are revised to include $20,709,838 ($16,567,870 federal NHPP/$4,141,968 state). This amendment adds $20,709,838 ($16,567,870 federal NHPP/ $4,141,968 state) to the project and the TIP. The total project cost is increased to a corrected $184,200,000.



eSTIP

eSTIP Fiscal Constraints Report for STIP Period 2023
Knoxville MPO

ORIGINAL

Fund Code	Fiscal Year	Budget Total	Programmed Funds	Federal Funding	State Funding	Local Funding	Federal Carryover	Remaining Balance
CMAQ	2023	$18,140,511	$18,140,511	$18,060,458	$0	$80,053	$0	$0
CMAQ	2024	$8,570,478	$8,570,478	$8,023,236	$0	$547,242	$0	$0
CMAQ	2025	$2,692,360	$2,692,360	$2,692,360	$0	$0	$0	$0
CRP	2023	$3,713,388	$3,095,000	$3,094,388	$0	$619,000	$1,530,360	$618,388
CRP	2024	$2,439,425	$1,113,000	$2,216,825	$0	$222,600	$618,388	$1,326,425
CRP	2025	$2,960,027	$0	$2,960,027	$0	$0	$1,326,425	$2,960,027
CRP	2026	$5,104,568	$2,375,000	$4,629,568	$0	$475,000	$2,960,027	$2,729,568
HIP	2023	$1,539,845	$1,539,845	$1,231,876	$0	$307,969	$0	$0
HPP	2023	$9,228,762	$9,228,762	$7,410,730	$1,818,032	$0	$0	$0
HSIP	2023	$4,000,000	$4,000,000	$3,600,000	$400,000	$0	$0	$0
HSIP	2024	$500,000	$500,000	$450,000	$50,000	$0	$0	$0
HSIP	2025	$250,000	$250,000	$225,000	$25,000	$0	$0	$0
HSIP	2026	$250,000	$250,000	$225,000	$25,000	$0	$0	$0
HSIP-R	2023	$10,000	$10,000	$9,000	$1,000	$0	$0	$0
HSIP-R	2024	$10,000	$10,000	$9,000	$1,000	$0	$0	$0
HSIP-R	2025	$10,000	$10,000	$9,000	$1,000	$0	$0	$0
HSIP-R	2026	$10,000	$10,000	$9,000	$1,000	$0	$0	$0
L-STBG	2023	$66,935,782	$26,465,003	$61,670,559	$782,000	$4,483,223	$48,659,355	$40,470,779
L-STBG	2024	$62,167,529	$41,996,500	$53,768,229	$335,400	$8,063,900	$40,470,779	$20,171,029
L-STBG	2025	$36,756,923	$14,979,500	$33,761,023	$0	$2,995,900	$20,171,029	$21,777,423
L-STBG	2026	$42,819,447	$35,765,250	$35,666,397	$1,741,950	$5,411,100	$21,777,423	$7,054,197
L-STBG-TA	2023	$4,024,488	$3,000,000	$3,424,488	$0	$600,000	$1,866,097	$1,024,488
L-STBG-TA	2024	$3,260,164	$3,215,000	$2,617,164	$0	$643,000	$1,024,488	$45,164
L-STBG-TA	2025	$1,932,878	$1,300,000	$1,672,878	$0	$260,000	$45,164	$632,878
L-STBG-TA	2026	$2,796,402	$2,500,000	$2,296,402	$0	$500,000	$632,878	$296,402
LOCAL	2023	$9,145,222	$9,145,222	$0	$0	$9,145,222	$0	$0
LOCAL	2025	$15,300,000	$15,300,000	$0	$0	$15,300,000	$0	$0
MMAG	2023	$1,285,000	$1,285,000	$0	$950,000	$335,000	$0	$0
MMAG	2026	$762,000	$762,000	$0	$723,900	$38,100	$0	$0
NHPP	2023	$237,849,822	$237,849,822	$190,279,858	$47,569,964	$0	$0	$0
NHPP	2024	$37,561,600	$37,561,600	$30,049,280	$7,512,320	$0	$0	$0
NHPP	2025	$15,152,000	$15,152,000	$12,121,600	$3,030,400	$0	$0	$0
NHPP	2026	$12,008,400	$12,008,400	$9,606,720	$2,401,680	$0	$0	$0
PHSIP	2023	$0	$0	$0	$0	$0	$0	$0
PHSIP	2024	$304,152	$304,152	$304,152	$0	$0	$0	$0

eSTIP

eSTIP Fiscal Constraints Report for STIP Period 2023
Knoxville MPO

ORIGINAL

Fund Code	Fiscal Year	Budget Total	Programmed Funds	Federal Funding	State Funding	Local Funding	Federal Carryover	Remaining Balance
PHSIP	2025	$0	$0	$0	$0	$0	$0	$0
PHSIP	2026	$0	$0	$0	$0	$0	$0	$0
S-STBG-TA	2023	$2,331,436	$2,331,436	$1,865,149	$0	$466,287	$0	$0
S-STBG-TA	2025	$1,302,693	$1,302,693	$1,042,154	$0	$260,539	$0	$0
SECTION 5307	2023	$10,657,041	$10,657,041	$8,525,633	$1,065,704	$1,065,704	$0	$0
SECTION 5307	2024	$10,891,497	$10,891,497	$8,713,197	$1,089,150	$1,089,150	$0	$0
SECTION 5307	2025	$11,131,109	$11,131,109	$8,904,887	$1,113,111	$1,113,111	$0	$0
SECTION 5307	2026	$11,375,993	$11,375,993	$9,100,795	$1,137,599	$1,137,599	$0	$0
SECTION 5310	2023	$1,074,456	$1,074,456	$859,564	$107,446	$107,446	$0	$0
SECTION 5310	2024	$1,098,092	$1,098,092	$878,474	$109,809	$109,809	$0	$0
SECTION 5310	2025	$1,122,251	$1,122,251	$897,801	$112,225	$112,225	$0	$0
SECTION 5310	2026	$1,146,940	$1,146,940	$917,552	$114,694	$114,694	$0	$0
SECTION 5339	2023	$878,320	$878,320	$702,656	$87,832	$87,832	$0	$0
SECTION 5339	2024	$897,642	$897,642	$718,114	$89,764	$89,764	$0	$0
SECTION 5339	2025	$917,391	$917,391	$733,913	$91,739	$91,739	$0	$0
SECTION 5339	2026	$937,573	$937,573	$750,059	$93,757	$93,757	$0	$0
STBG	2023	$33,332,343	$33,332,343	$26,665,874	$5,327,256	$1,339,213	$0	$0
STBG	2024	$15,469,245	$15,469,245	$12,375,396	$3,093,849	$0	$0	$0
STBG	2025	$5,068,140	$5,068,140	$4,054,512	$1,013,628	$0	$0	$0
STBG	2026	$1,267,035	$1,267,035	$1,013,628	$253,407	$0	$0	$0

eSTIP

eSTIP Fiscal Constraints Report for STIP Period 2023
Knoxville MPO

AMENDED

Fund Code	Fiscal Year	Budget Total	Programmed Funds	Federal Funding	State Funding	Local Funding	Federal Carryover	Remaining Balance
CMAQ	2023	$18,140,511	$18,140,511	$18,060,458	$0	$80,053	$0	$0
CMAQ	2024	$8,570,478	$8,570,478	$8,023,236	$0	$547,242	$0	$0
CMAQ	2025	$2,692,360	$2,692,360	$2,692,360	$0	$0	$0	$0
CRP	2023	$3,713,388	$3,095,000	$3,094,388	$0	$619,000	$1,530,360	$618,388
CRP	2024	$2,439,425	$1,113,000	$2,216,825	$0	$222,600	$618,388	$1,326,425
CRP	2025	$2,960,027	$0	$2,960,027	$0	$0	$1,326,425	$2,960,027
CRP	2026	$5,104,568	$2,375,000	$4,629,568	$0	$475,000	$2,960,027	$2,729,568
HIP	2023	$1,539,845	$1,539,845	$1,231,876	$0	$307,969	$0	$0
HPP	2023	$9,228,762	$9,228,762	$7,410,730	$1,818,032	$0	$0	$0
HSIP	2023	$4,000,000	$4,000,000	$3,600,000	$400,000	$0	$0	$0
HSIP	2024	$500,000	$500,000	$450,000	$50,000	$0	$0	$0
HSIP	2025	$250,000	$250,000	$225,000	$25,000	$0	$0	$0
HSIP	2026	$250,000	$250,000	$225,000	$25,000	$0	$0	$0
HSIP-R	2023	$10,000	$10,000	$9,000	$1,000	$0	$0	$0
HSIP-R	2024	$10,000	$10,000	$9,000	$1,000	$0	$0	$0
HSIP-R	2025	$10,000	$10,000	$9,000	$1,000	$0	$0	$0
HSIP-R	2026	$10,000	$10,000	$9,000	$1,000	$0	$0	$0
L-STBG	2023	$66,935,782	$26,465,003	$61,670,559	$782,000	$4,483,223	$48,659,355	$40,470,779
L-STBG	2024	$62,167,529	$41,996,500	$53,768,229	$335,400	$8,063,900	$40,470,779	$20,171,029
L-STBG	2025	$36,756,923	$14,979,500	$33,761,023	$0	$2,995,900	$20,171,029	$21,777,423
L-STBG	2026	$42,819,447	$35,765,250	$35,666,397	$1,741,950	$5,411,100	$21,777,423	$7,054,197
L-STBG-TA	2023	$4,024,488	$3,000,000	$3,424,488	$0	$600,000	$1,866,097	$1,024,488
L-STBG-TA	2024	$3,260,164	$3,215,000	$2,617,164	$0	$643,000	$1,024,488	$45,164
L-STBG-TA	2025	$1,932,878	$1,300,000	$1,672,878	$0	$260,000	$45,164	$632,878
L-STBG-TA	2026	$2,796,402	$2,500,000	$2,296,402	$0	$500,000	$632,878	$296,402
LOCAL	2023	$9,145,222	$9,145,222	$0	$0	$9,145,222	$0	$0
LOCAL	2025	$15,300,000	$15,300,000	$0	$0	$15,300,000	$0	$0
MMAG	2023	$1,285,000	$1,285,000	$0	$950,000	$335,000	$0	$0
MMAG	2026	$762,000	$762,000	$0	$723,900	$38,100	$0	$0
NHPP	2023	$258,559,660	$258,559,660	$206,847,728	$51,711,932	$0	$0	$0
NHPP	2024	$37,561,600	$37,561,600	$30,049,280	$7,512,320	$0	$0	$0
NHPP	2025	$15,152,000	$15,152,000	$12,121,600	$3,030,400	$0	$0	$0
NHPP	2026	$12,008,400	$12,008,400	$9,606,720	$2,401,680	$0	$0	$0
PHSIP	2023	$0	$0	$0	$0	$0	$0	$0
PHSIP	2024	$304,152	$304,152	$304,152	$0	$0	$0	$0

eSTIP

eSTIP Fiscal Constraints Report for STIP Period 2023
Knoxville MPO

AMENDED

Fund Code	Fiscal Year	Budget Total	Programmed Funds	Federal Funding	State Funding	Local Funding	Federal Carryover	Remaining Balance
PHSIP	2025	$0	$0	$0	$0	$0	$0	$0
PHSIP	2026	$0	$0	$0	$0	$0	$0	$0
S-STBG-TA	2023	$2,331,436	$2,331,436	$1,865,149	$0	$466,287	$0	$0
S-STBG-TA	2025	$1,302,693	$1,302,693	$1,042,154	$0	$260,539	$0	$0
SECTION 5307	2023	$10,657,041	$10,657,041	$8,525,633	$1,065,704	$1,065,704	$0	$0
SECTION 5307	2024	$10,891,497	$10,891,497	$8,713,197	$1,089,150	$1,089,150	$0	$0
SECTION 5307	2025	$11,131,109	$11,131,109	$8,904,887	$1,113,111	$1,113,111	$0	$0
SECTION 5307	2026	$11,375,993	$11,375,993	$9,100,795	$1,137,599	$1,137,599	$0	$0
SECTION 5310	2023	$1,074,456	$1,074,456	$859,564	$107,446	$107,446	$0	$0
SECTION 5310	2024	$1,098,092	$1,098,092	$878,474	$109,809	$109,809	$0	$0
SECTION 5310	2025	$1,122,251	$1,122,251	$897,801	$112,225	$112,225	$0	$0
SECTION 5310	2026	$1,146,940	$1,146,940	$917,552	$114,694	$114,694	$0	$0
SECTION 5339	2023	$878,320	$878,320	$702,656	$87,832	$87,832	$0	$0
SECTION 5339	2024	$897,642	$897,642	$718,114	$89,764	$89,764	$0	$0
SECTION 5339	2025	$917,391	$917,391	$733,913	$91,739	$91,739	$0	$0
SECTION 5339	2026	$937,573	$937,573	$750,059	$93,757	$93,757	$0	$0
STBG	2023	$33,332,343	$33,332,343	$26,665,874	$5,327,256	$1,339,213	$0	$0
STBG	2024	$15,469,245	$15,469,245	$12,375,396	$3,093,849	$0	$0	$0
STBG	2025	$5,068,140	$5,068,140	$4,054,512	$1,013,628	$0	$0	$0
STBG	2026	$1,267,035	$1,267,035	$1,013,628	$253,407	$0	$0	$0

NOTE: Fiscal Constraints Report run on 4/12/23 and reflects:
FY 2023: NHPP: +$20,709,838 (Federal: +$16,567,870 State: +$4,141,968)

KNOXVILLE REGIONAL

TRANSPORTATION IMPROVEMENT PROGRAM
Transportation Conformity Summary Report

Project Amendments:

On July April 26, 2023, the Knoxville Regional TPO Executive Board voted to approve the following amendment to the Knoxville Regional FY 2020 – 2023 Transportation Improvement Program (TIP).

TIP #	LRTP #	Project Name	Conformity Status
23-2014-025	09-232	Pellissippi Pkwy. (SR-162) Extension	Non-Exempt
23-2020-005	10-260	Foothills Mall Dr. Extension Ph. 2	Non-Exempt

Air Quality Conformity Status:

This amendment was subject to a conformity finding. An air quality conformity demonstration report was used to demonstrate conformity for the project and is included with this packet.

Metropolitan Transportation Planning Process Certification:

The Knoxville TPO Planning Process certification is included and certifies that every four years the transportation planning process addresses the major issues in the metropolitan planning area and is conducted in accordance with all applicable requirements.

Resolution:

The adopting resolution for these projects and air quality conformity determination is included.

Public Participation:

Public participation processes were in accordance with the Knoxville TPO's federally approved Public Participation Plan. Two public hearings were held on April 11, 2023 at the TPO Technical Committee Meeting, followed by April 26, 2023 at the TPO Executive Board meeting. No public comments were received.

Interagency Consultation:

The Knoxville Air Quality Interagency Consultation (IAC) group was consulted on a 29-day IAC review from February 24, 2023 until March 24, 2023 regarding review of the draft conformity determination report. IAC email correspondence regarding the amendment is included.

U.S. Department of Transportation
Federal Highway Administration

Tennessee Division

404 BNA Drive, Suite 508
Nashville, Tennessee 37217
Phone (615) 781-5770

July 5, 2023

In Reply Refer To:
HPD-TN

Mr. Matt Meservy
Director, Long Range Planning Division
Tennessee Department of Transportation
James K. Polk Building, Suite 900
Nashville, TN 37243

Subject: Air Quality Conformity Determination for Knoxville, TN

Dear Mr. Meservy:

The Federal Highway Administration (FHWA) Tennessee Division and Federal Transit Administration (FTA) Region IV Office, in coordination with the Environmental Protection Agency (EPA) Region IV Office, have reviewed the Air Quality Conformity Determination adopted by the Knoxville Regional Transportation Planning Organization (KRTPO) Executive Board on April 26, 2023.

The Air Quality Conformity Determination covers the Knoxville, TN maintenance area for the 2008 8-hour ozone and the 2006 Daily $PM_{2.5}$ National Ambient Air Quality Standards (NAAQS) and addresses the planned transportation improvements from the amended Fiscal Year (FY) 2023–2026 Transportation Improvement Program (TIP).

Based on our review, we find the documents conform to the ozone and $PM_{2.5}$ NAAQS for Knoxville, Tennessee.

If you have any questions regarding this determination, please contact me at (615) 781-5777.

Sincerely,

ZACHARY TYLER COLEMAN

Digitally signed by ZACHARY TYLER COLEMAN
Date: 2023.07.05 09:14:41 -05'00'

Zachary Coleman
Transportation Planning Specialist
FHWA TN Division

cc: Mayor Terry Frank, Executive Board Chair, Knoxville Regional TPO
Mr. Sean Santalla, Program Development Team Leader, FHWA TN Division
Mr. Andres Ramirez, General Engineer, FTA Region IV
Ms. Dianna Myers, Environmental Scientist, EPA Region IV
Mr. Stacy Morrison, OCT Planning Manager, TDOT
Mr. Troy Ebbert, OCT Region 1 Planning Supervisor, TDOT

Mr. Jeff Welch, Director, Knoxville Regional TPO
Mr. Craig Luebke, Senior Transportation Planner, Knoxville Regional TPO
Mr. Mike Conger, Senior Transportation Engineer, Knoxville Regional TPO
Mr. Marc Corrigan, Environmental Consultant, TDEC

A RESOLUTION BY THE EXECUTIVE BOARD
OF THE KNOXVILLE REGIONAL
TRANSPORTATION PLANNING ORGANIZATION (TPO)
AMENDING THE FY 2023-2026 TRANSPORTATION IMPROVEMENT PROGRAM

WHEREAS, the FY 2023-2026 Knoxville Regional Transportation Improvement Program was adopted on October 26, 2022; and

WHEREAS, in accordance with requirements of the U.S. Department of Transportation, the elements of the transportation planning process are to receive final approval from the Executive Board of the local Metropolitan Planning Organization; and

WHEREAS, the Transportation Improvement Program must be updated as needed; and

WHEREAS, the proposed project amendments were reviewed with the Knoxville-Area Air Quality Interagency Consultation Group with respect to air quality conformity requirements and are either exempt from, or were demonstrated to conform with the federal transportation air quality conformity regulations from the Clean Air Act; and

WHEREAS, a short conformity determination report was prepared for the air quality non-exempt project amendments which concluded that air quality conformity was demonstrated by relying on a previous regional emissions analysis; and

WHEREAS, the Knoxville Regional Transportation Planning Organization Technical Committee recommends approval of the Resolution, and

NOW, THEREFORE, BE IT RESOLVED BY THE KNOXVILLE REGIONAL TRANSPORTATION PLANNING ORGANIZATION EXECUTIVE BOARD;

That the FY 2023-2026 Transportation Improvement Program be amended to include the following changes and that the Tennessee Department of Transportation include these amendments into the State Transportation Improvement Program:

Attachment #4D: Draft Amendment 23-2014-025 (Pellissippi Pkwy. (SR-162) Extension) - Amend project to revise the project descriptive elements, increase programmed Right of Way funding and total project cost. The project length is increased to 4.9 miles and the termini description is revised to "(Pellissippi Parkway) from "near" SR-33 to SR-73 (US-321) (IA)". ROW phase costs in FY 2023 are revised to include $20,709,838 ($16,567,870 federal NHPP/$4,141,968 state). This amendment adds $20,709,838 ($16,567,870 federal NHPP/$4,141,968 state) to the project and the TIP. The total project cost is increased to a corrected $184,200,000.

Attachment #4E: Draft Amendment 23-2020-005 (Foothills Mall Dr. Extension Ph. 2) - Amend project to revise the project termini, description and length. Project termini are revised from "Foch St. to McCammon Ave." to "Foch St. to near Bessemer St.". The project length is increased to 0.76 miles and the project description is revised to "Construct new 2-lane road with turn lanes where needed from Foch St. to McCammon Ave., at Celtic Rd. and Reconstruct McCammon Ave. to an improved 2-lane

roadway with curb & gutter to tie in with previous improvements near the Bessemer St. intersection. Project includes a multi-use path on one side throughout". No funding changes are included with this amendment and the total project cost is unchanged.

April 26, 2023
Date

Mayor Terry Frank
Anderson County
TPO Executive Board Chair

Jeffrey A. Welch, AICP
Director
Knoxville Regional TPO

METROPOLITAN TRANSPORTATION PLANNING
PROCESS CERTIFICATION

In accordance with 23 CFR 450.336, the Knoxville Regional Transportation Planning Organization and the Tennessee Department of Transportation hereby certify that the metropolitan transportation planning process is addressing major issues facing the Knoxville, TN urbanized area, and is being carried out in accordance with the following requirements:

I. 23 U.S.C. 134 and 135, 49 U.S.C. 5303 and 5304 (Highways and Transit).

II. Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000 d-1) and 49 CFR part 21.

III. 49 U.S.C. 5332, prohibiting discrimination on the basis of race, color, creed, national origin, sex, or age in employment or business opportunity.

IV. 49 CFR part 26 regarding the involvement of disadvantaged business enterprises in USDOT-funded projects.

V. 23 CFR part 230, regarding the implementation of an equal employment opportunity program on Federal and Federal-aid highway construction contracts.

VI. Provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq) and 49 CFR parts 27, 37, and 38.

VII. In nonattainment and maintenance areas, sections 174 and 176 (c) and (d) of the Clean Air Act, as amended, 42 U.S.C. 7504, 7506 (c) and (d), and 40 CFR part 93.

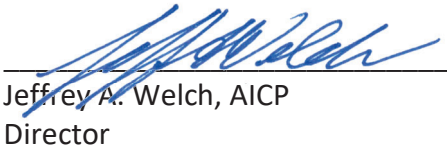
VIII. The Older Americans Act, as amended (42 U.S.C. 6101), prohibiting discrimination on the basis of age in programs or activities receiving Federal financial assistance.

IX. Section 324 of Title 23 U.S.C. regarding the prohibition of discrimination based on gender.

X. Section 504 of the Rehabilitation Act of 1973 (29 U.S.C. 794) and 49 CFR part 27 regarding discrimination against individuals with disabilities.

April 26, 2023
Date

Mayor Terry Frank
Anderson County
Knoxville Regional TPO Executive Board Chair



Jeffrey A. Welch, AICP
Director
Knoxville Regional TPO

STATEWIDE TRANSPORTATION PLANNING PROCESS CERTIFICATION

In accordance with 23 CFR 450.220, the Tennessee Department of Transportation hereby certifies that its statewide transportation planning process is addressing major issues facing the State, and is being carried out in accordance with the following requirements:

I. 23 U.S.C. 134 and 135, 49 USC 5303 and 5304 (Highways and Transit).

II. Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000 d-1) and 49 CFR part 21.

III. 49 U.S.C. 5332, prohibiting discrimination on the basis of race, color, creed, national origin, sex, or age in employment or business opportunity.

IV. Section 1101 (b) of the FAST-ACT (Pub. L 114-357) and 49 CFR part 26 regarding the involvement of disadvantaged business enterprises in USDOT-funded projects.

V. 23 CFR part 230, regarding the implementation of an equal employment opportunity program on Federal and Federal-aid highway construction projects.

VI. Provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq) and 49 CFR parts 27, 37, and 38.

VII. In states containing nonattainment and maintenance areas, sections 174 and 176 (c) and (d) of the Clean Air Act, as amended, 42 U.S.C. 7504, 7506 (c) and (d), and 40 CFR part 93.

VIII. The Older Americans Act, as amended (42 U.S.C. 6101), prohibiting discrimination on the basis of age in programs or activities receiving Federal financial assistance.

IX. Section 324 of Title 23 U.S.C. regarding the prohibition of discrimination based on gender.

X. Section 504 of the Rehabilitation Act of 1973 (29 U.S.C. 794) and 49 CFR part 27 regarding discrimination against individuals with disabilities.

Ronnie Porter **Date:** July 14, 2023

Ronnie Porter
Director, TDOT Program Development & Administration Division

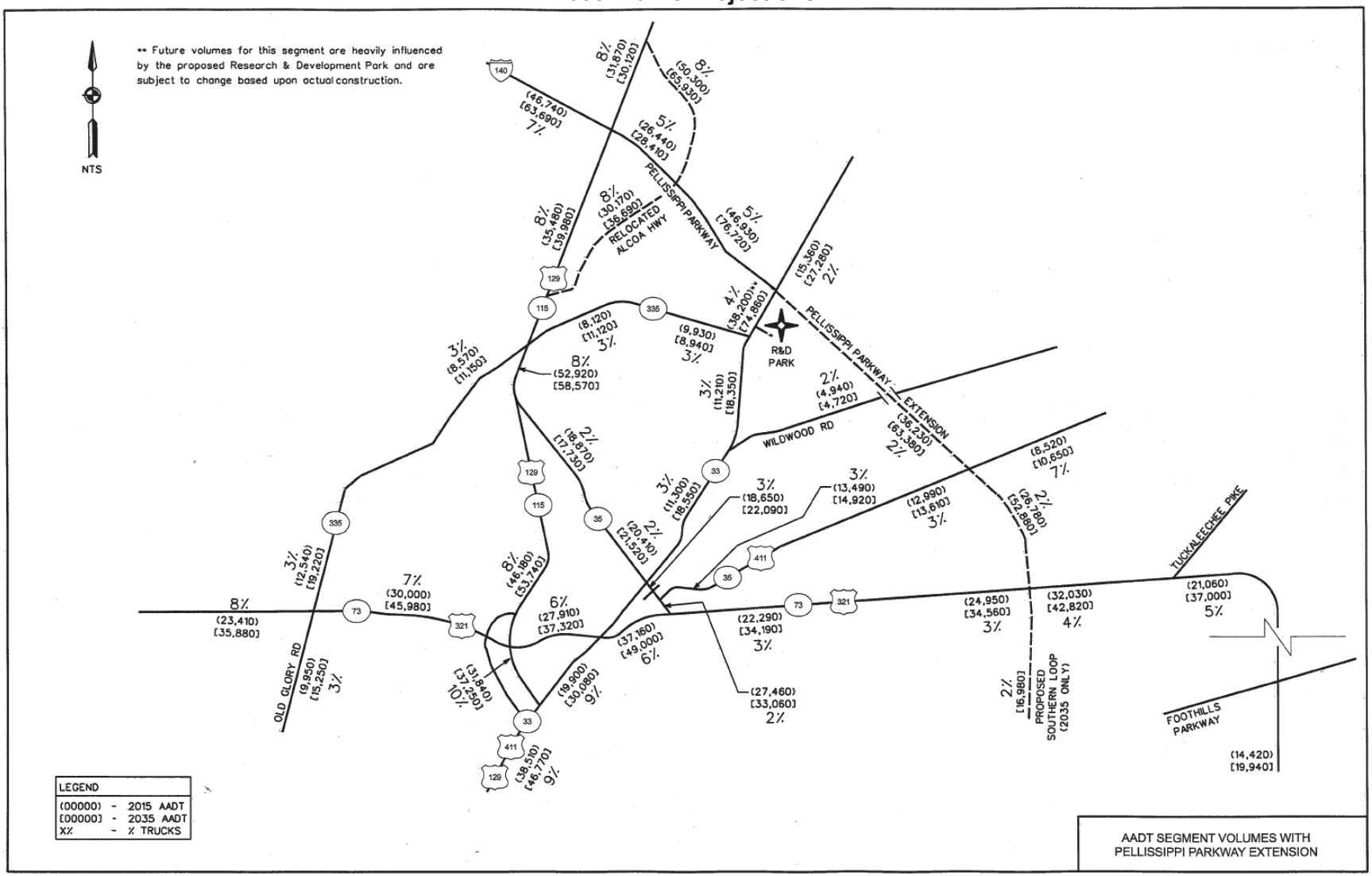
Appendix C
$PM_{2.5}$ Hot-Spot Concurrence Information

Blount County
Pellissippi Parkway Extension
PIN 101423.00
PM2.5 CONCURRENCE INFORMATION

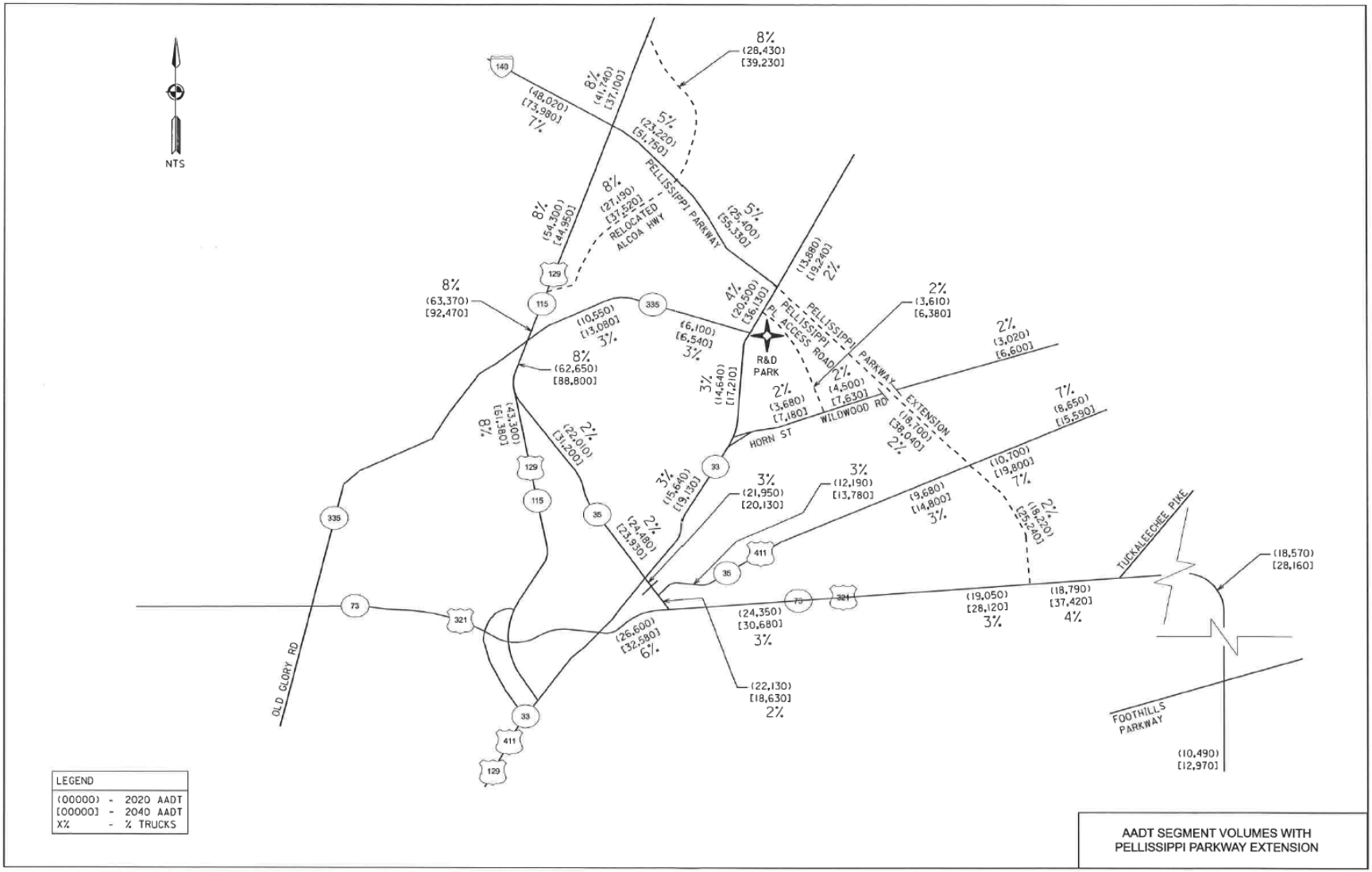
November 2023

Traffic Projections

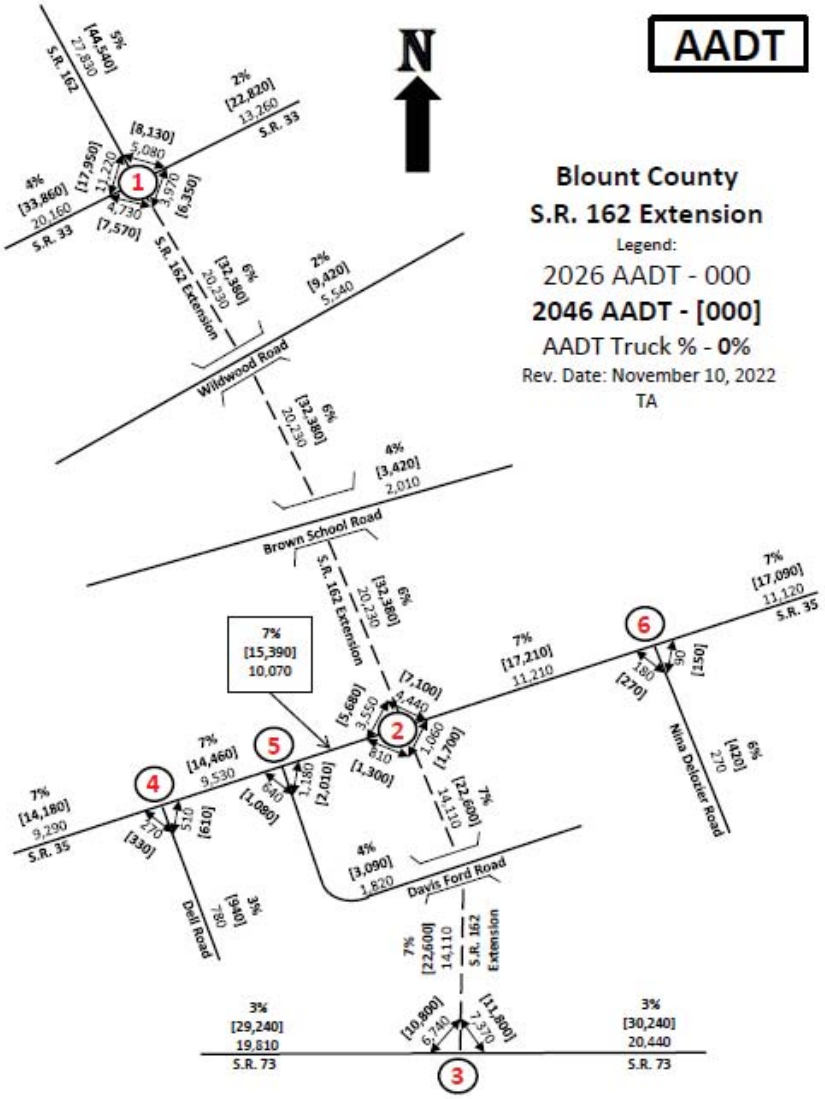
2035 Traffic Projections



2040 Traffic Projections



Current 2046 Traffic Projections



TENNESSEE DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION

PROJECT NO.: HPP/NH-162(7) : 05097-1233-14 ROUTE: S.R. 162 EXTENSION
COUNTY: BLOUNT CITY:
PROJECT PIN NUMBER: 101423.00
PROJECT DESCRIPTION: FROM S.R. 33 TO S.R. 73.

[1] S.R. 162 AVERAGE TRAFFIC DATA.

DIVISION REQUESTING:

MAINTENANCE	☐	PAVEMENT DESIGN	☐
S.T.I.D.	☐	STRUCTURES	☐
PROG. DEVELOPMENT & ADM.	☐	SURVEY & ROADWAY DESIGN	☒
PUBLIC TRANS. & AERO.	☐	TRAFFIC SIGNAL DESIGN	☐
		OTHER	☐

YEAR PROJECT PROGRAMMED FOR CONSTRUCTION: 2026
PROJECTED LETTING DATE: 2026

TRAFFIC ASSIGNMENT:

BASE YEAR		DESIGN YEAR					DESIGN ROADWAY % TRUCKS		DESIGN AVERAGE DAILY LOADS	
AADT	YEAR	AADT	DHV	%	YEAR	DIR.DIST.	DHV	AADT	FLEX	RIGID
20,720	2026	33,170	4,183	12	2046	55-45	4	6	573	848

REQUESTED BY: NAME STACY WEAVER DATE 11/4/22
DIVISION REGION I PROJECT DEVELOPMENT
ADDRESS 7345 REGION LANE
KNOXVILLE TN 37914

REVIEWED BY: RANDY BOGUSKIE Randy Boguskie DATE 11/14/2022
TRANSPORTATION MANAGER 1
SUITE 1000, JAMES K. POLK BUILDING

APPROVED BY: TONY ARMSTRONG Tony Armstrong DATE 11/14/2022
TRANSPORTATION MANAGER 2
SUITE 1000, JAMES K. POLK BUILDING

COMMENTS:

AFTER DISCUSSIONS WITH MIKE CONGER FROM THE KNOXVILLE TPO, THE PREVIOUS TRAFFIC DATA [5/11/2022] WAS REVISED. THE REVISED TRAFFIC DATA IS BASED ON THE REDUCTION OF THE TRAFFIC VOLUMES SHOWN IN THE UPDATED KNOXVILLE TPO COMPTER ASSIGNMENT MODEL. THE DESIGN YEAR GROWTH RATE WAS REDUCED FROM 5% PER YEAR TO 3% PER YEAR, THERFORE REDUCING THE TRAFFIC DATA. ALL SIDE ROAD DHV PERCENTAGES WERE ALSO REDUCED FROM 14% & 15% TO 10% AND 11%. AADT's, DHV's AND ADL's ARE INCLUDED.

Cc: MIKE CONGER, KNOXVILLE TPO

DHV'S ARE NOT REQUIRED FOR SIDE ROADS LESS THAN 1000 AADT.

NOTE: FOR BRIDGE REPLACEMENT PROJECTS, ADLs ARE NOT REQUIRED FOR ADTs OF 1000 OR LESS AND PERCENTAGE OF TRUCKS OF 7% OR LESS.
SEE ATTACHMENTS FOR TURNING MOVEMENTS AND/OR OTHER DETAILS. (REV. 6/9/21)

TENNESSEE DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENT DIVISION

PROJECT NO.: HPP/NH-162(7) : 05097-1233-14 ROUTE NO.: S.R. 162 Extension
COUNTY: BLOUNT CITY:
PROJECT DESCRIPTION: FROM S.R. 33 TO S.R. 73

FAP Urban

Pavement Structural Design

Calculation of Equivalent Daily 18 Kip Single Axle Loads

Type Vehicle		ADT (No. Counted)	Flexible 18-kip Factor	Flexible ADL	Rigid 18-kip Factor	Rigid ADL
Pass. cars and motorcycles (1-2)		19,131	0.001	19	0.001	19
Pick-up, Panel, Van (3)		6,196	0.004	25	0.004	25
Sing. Unit	Buses (4)	12	0.300	4	0.300	4
	2-axle, 6-tire (5)	196	0.260	51	0.260	51
	3-axle or more (6-7)	274	1.000	274	1.500	411
Comb.	4-axle (8)	370	0.640	237	0.800	296
	5-axle or more (9-13)	766	1.200	919	1.900	1,455
Totals (2046 AADT)		26,945		1,528		2,261

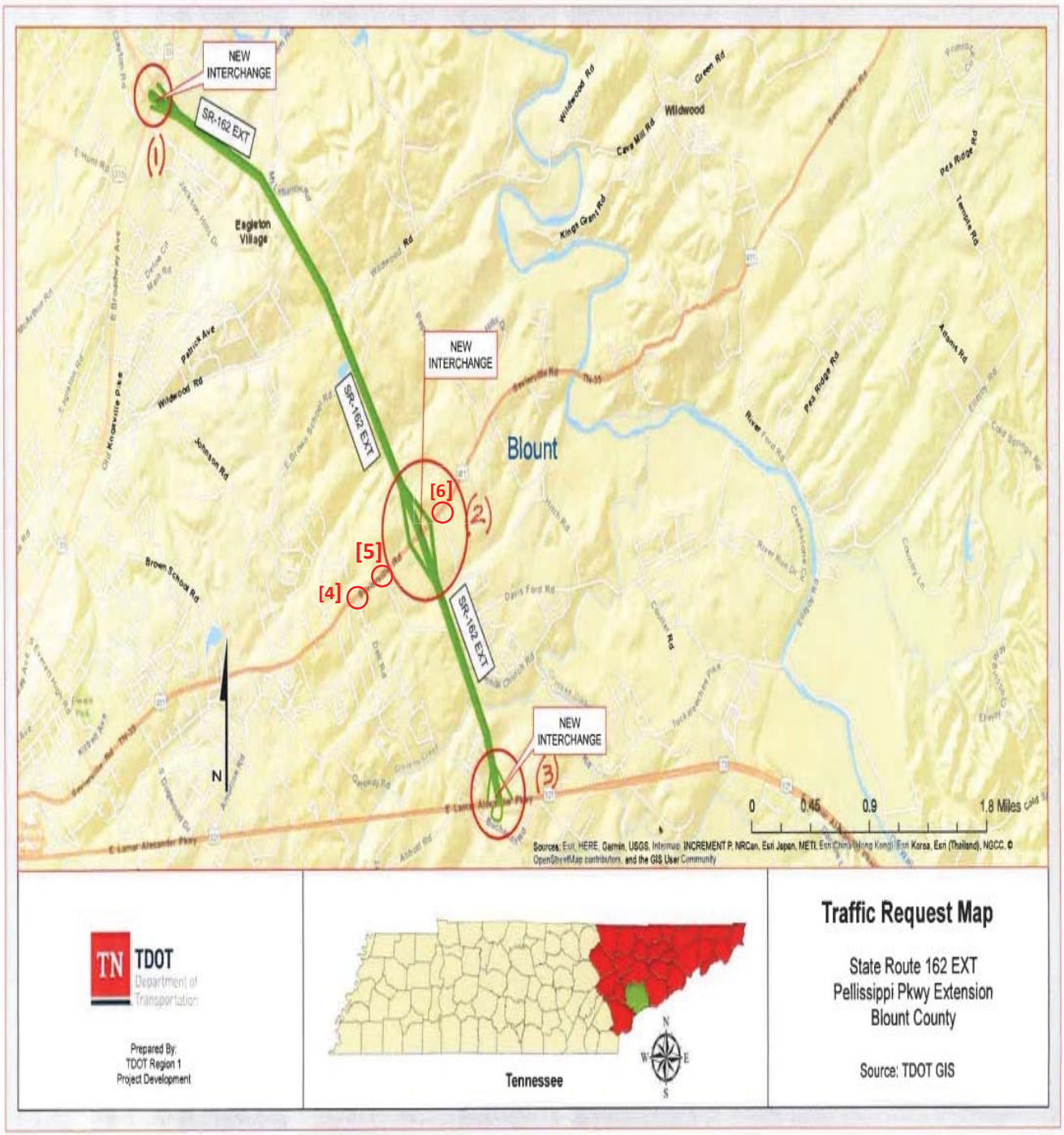
Suggested Percentages of Trucks in Design Lane

5,000 or less ADT	95%
5,000 - 10,000 ADT	90%
10,000 - 15,000 ADT	85%
15,000 - 20,000 ADT	80%
20,000 - 30,000 ADT	75%
30,000 - 40,000 ADT	70%
40,000 Plus	60%

No. of Lanes: 4
% Trucks in Design Lane: 75%
ADL in Design Lane:

FLEX:	0.5	X	0.75	X	1528.5	=	573
RIGID:	0.5	X	0.75	X	2260.9	=	848

ADL Calculations By: TONY ARMSTRONG Date: 11/10/2022
Reviewed By: Randy Boguskie Date: 11/14/2022
[REV. 7/1/14]


NEW INTERCHANGE
SR-162 EXT
(1)
Eagleton Village
Wildwood Rd
Green Rd
Wildwood
Cave Mill Rd
Kings Grant Rd
Pea Ridge Rd
Tennessee Rd
Adams Rd
Patrick Ave
Johnson Rd
Old Knoxville Pike
E Broadway Ave
E Hunt Rd
Jackson Hills Cir
Dixie Ct
Main Rd
Mc Arthur Rd
E Lamar Alexander Pkwy
Brown School Rd
Davis Ford Rd
River Ford Rd
Creekstone Cir
Ridge Rd
Cold Springs Rd
Country Ln
Creekstone Rd
Davis Rd
Quarry Rd
Quarry Creek
Alcoa Rd
Dogwood Dr
Jackson Rd
Fern Ave
Elvert
Blount
NEW INTERCHANGE
SR-162 EXT
(2)
[6]
[5]
[4]
NEW INTERCHANGE
(3)
N
0
0.45
0.9
1.8 Miles
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community
TN TDOT Department of Transportation
Prepared By:
TDOT Region 1
Project Development
Tennessee
N
W
E
S
Traffic Request Map
State Route 162 EXT
Pellissippi Pkwy Extension
Blount County
Source: TDOT GIS

IAC Concurrence Records

Chasity L. Stinson

From: Jarvis, Simone (she/her/hers) <Jarvis.Simone@epa.gov>
Sent: Wednesday, December 6, 2023 8:41 AM
To: Chasity L. Stinson; Amy Brooks - Knox Planning ; Febres, Andres; Andres Ramirez; brian.rivera@knoxcounty.org; Chris McPhilamy; Coby Webster; craig.luebke@knoxplanning.org; Myers, Dianna (she/her/hers); Elizabeth Orr; Holly Peterson ; Spann, Jane; Jim Renfro; Ortiz Borrero, Josue; Julia Walker; Walther, Katherine; Sheckler, Kelly A.; Benjamin, Lynorae; Marc Corrigan; Murphy, Melanie (FHWA); Sherman, Michael (FTA); Mike.Conger; Mohammad Molla; Rich DesGroseilliers; Monteith, Richard; Wong, Richard; LaRocca, Sarah; Santalla, Sean (FHWA); Teresa Cantrell; Troy J. Ebbert; Zachary Coleman
Subject: [EXTERNAL] RE: Project-Level Transportation Conformity, Knoxville PM2.5 Non-Exempt Project List, November 2023

***** This is an EXTERNAL email. Please exercise caution. DO NOT open attachments or click links from unknown senders or unexpected email - STS-Security. *****

Hi Chasity,

EPA Region 4 has reviewed and concurs with TDOT's determination that the project remains classified as a project that is not of air quality concern.

Thank you,

Simone Jarvis
Life Scientist
US EPA Region 4 | Air & Radiation Division
Air Regulatory Management Section
Phone: 404-562-8393
E-mail: jarvis.simone@epa.gov

From: Chasity L. Stinson <Chasity.L.Stinson@tn.gov>
Sent: Wednesday, November 22, 2023 8:39 AM
To: Amy Brooks - Knox Planning <amy.brooks@knoxplanning.org>; Febres, Andres <febres-martinez.andres@epa.gov>; Andres Ramirez <andres.ramirez@dot.gov>; brian.rivera@knoxcounty.org; Chris McPhilamy <Chris.McPhilamy@tn.gov>; Coby Webster <coby.webster@knoxcounty.org>; craig.luebke@knoxplanning.org; Myers, Dianna (she/her/hers) <Myers.Dianna@epa.gov>; Elizabeth Orr <Elizabeth.Orr@dot.gov>; Holly Peterson <Holly.Peterson@dot.gov>; Spann, Jane <Spann.Jane@epa.gov>; Jim Renfro <jim_renfro@nps.gov>; Ortiz Borrero, Josue <OrtizBorrero.Josue@epa.gov>; Julia Walker <Julia.Walker@dot.gov>; Walther, Katherine <Walther.Katherine@epa.gov>; Sheckler, Kelly A. <Sheckler.Kelly@epa.gov>; Benjamin, Lynorae <benjamin.lynorae@epa.gov>; marc.corrigan@tn.gov; Murphy, Melanie (FHWA) <melanie.murphy@dot.gov>; Sherman, Michael (FTA) <michael.sherman@dot.gov>; Mike.Conger <mike.conger@knoxtpo.org>; Mohammad Molla <Mohammad.Molla@tn.gov>; Rich DesGroseilliers <richd@mymorristown.com>; Monteith, Richard <Monteith.Richard@epa.gov>; Wong, Richard <Wong.Richard@epa.gov>; LaRocca, Sarah <Larocca.Sarah@epa.gov>; Santalla, Sean (FHWA) <sean.santalla@dot.gov>; Jarvis, Simone (she/her/hers) <Jarvis.Simone@epa.gov>; Teresa Cantrell <teresa_cantrell@nps.gov>; Troy J. Ebbert <Troy.J.Ebbert@tn.gov>; Zachary Coleman <Zachary.Coleman@dot.gov>
Subject: Project-Level Transportation Conformity, Knoxville PM2.5 Non-Exempt Project List, November 2023

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Hello Knoxville Area IAC -

TDOT has determined that the following project remains to be classified as NON-EXEMPT from Transportation Conformity. Traffic projections have been updated over time, resulting in reductions. Therefore, TDOT requests your concurrence with our recommendation that this project remains classified as a project that is NOT OF AIR QUALITY CONCERN.

County	PIN	Description
Blount	101423.00	(Pellissippi Parkway), From near SR-33 to SR-73 (US-321)

Additional details are provided in the attached informational packet which includes the PM2.5 Hot-Spot Analysis, traffic projections (Design Years 2035, 2040, and 2046), and IAC concurrence request records. TDOT requests your concurrence with our recommendation.

Please respond no later than close of business (4:30 central time) on **DECEMBER 8, 2023.** If TDOT does not receive a response to the contrary then TDOT will assume that you concur.

Thank you,

Chasity Stinson | TDOT Advanced Environmental Studies Specialist
Tennessee Department of Transportation (TDOT) | Environmental Division
Technical Studies Office, Hazardous Materials/Air and Noise Section
James K. Polk Building, 9th Floor
505 Deadrick St, Suite 900, Nashville, TN 37243
Phone: 615-532-9948
Email: chasity.l.stinson@tn.gov

Chasity L. Stinson

From: Coleman, Zachary (FHWA) <zachary.coleman@dot.gov>
Sent: Tuesday, December 5, 2023 9:12 AM
To: Chasity L. Stinson; Amy Brooks - Knox Planning ; Andres Febres; Ramirez, Andres (FTA); Brian Rivera (Brian.Rivera@knoxcounty.org); Chris McPhilamy; Coby Webster; craig.luebke@knoxplanning.org; Dianna Myers; Orr, Parris (FTA); Liles, Holly (FRA); Jane Spann; Jim Renfro; Josue Ortiz; Walker, Julia (FTA); Katherine Walther; Kelly Sheckler; Lynorae Benjamin; Marc Corrigan; Murphy, Melanie (FHWA); Sherman, Michael (FTA); Mike.Conger; Mohammad Molla; Rich DesGroseilliers; Richard Monteith; Richard Wong; Sarah Larocca; Santalla, Sean (FHWA); Simone Jarvis; teresa_cantrell nps.gov; Troy J. Ebbert
Subject: [EXTERNAL] RE: Project-Level Transportation Conformity, Knoxville PM2.5 Non-Exempt Project List, November 2023

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Green category

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Good morning Chasity,

FHWA concurs with TDOT's recommendation that the project remains classified as not of air quality concern.

Best,
Zack

Zachary Coleman
Transportation Planning Specialist
FHWA Tennessee Division
404 BNA Drive, Bldg. 200, Ste. 508
Nashville, TN 37217
Office: (615) 781-5777
Cell: (629) 401-9189

From: Chasity L. Stinson <Chasity.L.Stinson@tn.gov>
Sent: Wednesday, November 22, 2023 7:39 AM
To: Amy Brooks - Knox Planning <amy.brooks@knoxplanning.org>; Andres Febres <febres-martinez.andres@epa.gov>; Ramirez, Andres (FTA) <andres.ramirez@dot.gov>; Brian Rivera (Brian.Rivera@knoxcounty.org) <Brian.Rivera@knoxcounty.org>; Chris McPhilamy <Chris.McPhilamy@tn.gov>; Coby Webster <Coby.Webster@knoxcounty.org>; craig.luebke@knoxplanning.org; Dianna Myers <Myers.Dianna@epa.gov>; Orr, Parris (FTA) <Elizabeth.Orr@dot.gov>; Liles, Holly (FRA) <holly.liles@dot.gov>; Jane Spann <Spann.Jane@epamail.epa.gov>; Jim Renfro <jim_renfro@nps.gov>; Josue Ortiz <OrtizBorrero.Josue@epa.gov>; Walker, Julia (FTA) <julia.walker@dot.gov>; Katherine Walther <Walther.Katherine@epa.gov>; Kelly Sheckler

<Sheckler.Kelly@epa.gov>; Lynorae Benjamin <benjamin.lynorae@epamail.epa.gov>; Marc Corrigan <Marc.Corrigan@tn.gov>; Murphy, Melanie (FHWA) <melanie.murphy@dot.gov>; Sherman, Michael (FTA) <michael.sherman@dot.gov>; Mike.Conger <mike.conger@knoxtpo.org>; Mohammad Molla <Mohammad.Molla@tn.gov>; richd mymorristown.com <richd@mymorristown.com>; Richard Monteith <Monteith.Richard@epa.gov>; Richard Wong <Wong.Richard@epa.gov>; Sarah Larocca <Larocca.Sarah@epa.gov>; Santalla, Sean (FHWA) <sean.santalla@dot.gov>; Simone Jarvis <Jarvis.Simone@epa.gov>; teresa_cantrell nps.gov <teresa_cantrell@nps.gov>; Troy J. Ebbert <Troy.J.Ebbert@tn.gov>; Coleman, Zachary (FHWA) <zachary.coleman@dot.gov>
Subject: Project-Level Transportation Conformity, Knoxville PM2.5 Non-Exempt Project List, November 2023

CAUTION: This email originated from outside of the Department of Transportation (DOT). Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Hello Knoxville Area IAC -

TDOT has determined that the following project remains to be classified as NON-EXEMPT from Transportation Conformity. Traffic projections have been updated over time, resulting in reductions. Therefore, TDOT requests your concurrence with our recommendation that this project remains classified as a project that is NOT OF AIR QUALITY CONCERN.

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Additional details are provided in the attached informational packet which includes the PM2.5 Hot-Spot Analysis, traffic projections (Design Years 2035, 2040, and 2046), and IAC concurrence request records. TDOT requests your concurrence with our recommendation.

Please respond no later than close of business (4:30 central time) on **DECEMBER 8, 2023.** If TDOT does not receive a response to the contrary then TDOT will assume that you concur.

Thank you,

Chasity Stinson | TDOT Advanced Environmental Studies Specialist
Tennessee Department of Transportation (TDOT) | Environmental Division
Technical Studies Office, Hazardous Materials/Air and Noise Section
James K. Polk Building, 9th Floor
505 Deadrick St, Suite 900, Nashville, TN 37243
Phone: 615-532-9948
Email: chasity.l.stinson@tn.gov

Chasity L. Stinson

From: Marc Corrigan
Sent: Friday, December 1, 2023 10:13 AM
To: Chasity L. Stinson; Amy Brooks - Knox Planning ; Andres Febres; Andres Ramirez; Brian Rivera (Brian.Rivera@knoxcounty.org); Chris McPhilamy; Coby Webster; craig.luebke@knoxplanning.org; Dianna Myers; Elizabeth Orr; Holly Peterson ; Jane Spann; Jim Renfro; Josue Ortiz; Julia Walker; Katherine Walther; Kelly Sheckler; Lynorae Benjamin; Murphy, Melanie (FHWA); Sherman, Michael (FTA); Mike.Conger; Mohammad Molla; Rich DesGroseilliers; Richard Monteith; Richard Wong; Sarah Larocca; Santalla, Sean (FHWA); Simone Jarvis; Teresa Cantrell; Troy J. Ebbert; Zachary Coleman
Subject: RE: Project-Level Transportation Conformity, Knoxville PM2.5 Non-Exempt Project List, November 2023

Categories: Green category

Chasity,

After reviewing the revised information, TDEC APC agrees with TDOT's determination that the project remains a project not of air quality concern.

Marc

From: Chasity L. Stinson <Chasity.L.Stinson@tn.gov>
Sent: Wednesday, November 22, 2023 7:39 AM
To: Amy Brooks - Knox Planning <amy.brooks@knoxplanning.org>; Andres Febres <febres-martinez.andres@epa.gov>; Andres Ramirez <andres.ramirez@dot.gov>; Brian Rivera (Brian.Rivera@knoxcounty.org) <Brian.Rivera@knoxcounty.org>; Chris McPhilamy <Chris.McPhilamy@tn.gov>; Coby Webster <Coby.Webster@knoxcounty.org>; craig.luebke@knoxplanning.org; Dianna Myers <Myers.Dianna@epa.gov>; Elizabeth Orr <Elizabeth.Orr@dot.gov>; Holly Peterson <Holly.Peterson@dot.gov>; Jane Spann <Spann.Jane@epamail.epa.gov>; Jim Renfro <jim_renfro@nps.gov>; Josue Ortiz <OrtizBorrero.Josue@epa.gov>; Julia Walker <Julia.Walker@dot.gov>; Katherine Walther <Walther.Katherine@epa.gov>; Kelly Sheckler <Sheckler.Kelly@epa.gov>; Lynorae Benjamin <benjamin.lynorae@epamail.epa.gov>; Marc Corrigan <Marc.Corrigan@tn.gov>; Murphy, Melanie (FHWA) <melanie.murphy@dot.gov>; Sherman, Michael (FTA) <michael.sherman@dot.gov>; Mike.Conger <mike.conger@knoxtpo.org>; Mohammad Molla <Mohammad.Molla@tn.gov>; Rich DesGroseilliers <richd@mymorristown.com>; Richard Monteith <Monteith.Richard@epa.gov>; Richard Wong <Wong.Richard@epa.gov>; Sarah Larocca <Larocca.Sarah@epa.gov>; Santalla, Sean (FHWA) <sean.santalla@dot.gov>; Simone Jarvis <Jarvis.Simone@epa.gov>; Teresa Cantrell <teresa_cantrell@nps.gov>; Troy J. Ebbert <Troy.J.Ebbert@tn.gov>; Zachary Coleman <Zachary.Coleman@dot.gov>
Subject: Project-Level Transportation Conformity, Knoxville PM2.5 Non-Exempt Project List, November 2023

Hello Knoxville Area IAC -

TDOT has determined that the following project remains to be classified as NON-EXEMPT from Transportation Conformity. Traffic projections have been updated over time, resulting in reductions. Therefore, TDOT requests your concurrence with our recommendation that this project remains classified as a project that is NOT OF AIR QUALITY CONCERN.

County	PIN	Description

Blount	101423.00	(Pellissippi Parkway), From near SR-33 to SR-73 (US-321)

Additional details are provided in the attached informational packet which includes the PM2.5 Hot-Spot Analysis, traffic projections (Design Years 2035, 2040, and 2046), and IAC concurrence request records. TDOT requests your concurrence with our recommendation.

Please respond no later than close of business (4:30 central time) on **DECEMBER 8, 2023.** If TDOT does not receive a response to the contrary then TDOT will assume that you concur.

Thank you,

Chasity Stinson | TDOT Advanced Environmental Studies Specialist
Tennessee Department of Transportation (TDOT) | Environmental Division
Technical Studies Office, Hazardous Materials/Air and Noise Section
James K. Polk Building, 9th Floor
505 Deadrick St, Suite 900, Nashville, TN 37243
Phone: 615-532-9948
Email: chasity.l.stinson@tn.gov

From: Darlene Reiter
To: Margaret Slater; Skinner, Nancy T.
Subject: FW: Updated Traffic Projections, Pellissippi Parkway Extension, Blount County
Date: Thursday, January 30, 2014 1:26:48 PM
Attachments: IAC-PM2.5-Determination-PellissippiPrkwy-101423.00-010709.pdf
Current and Previous Traffic Projections for Pellissippi Parkway Extension.pdf

FYI.

From: Darlene Reiter
Sent: Thursday, January 30, 2014 1:26 PM
To: Alan Jones; Angela Midgett; Cantrell, Teresa; Conger, Mike; Davis, Corbin; Jim Ozment; Lynne Liddington; Marc Corrigan; Martin, Elizabeth; Renfro, Jim; Rich DesGroseilliers ; Robert Rock; Ronnie Porter; scott.allen@dot.gov; Sheckler, Kelly; Smith, Dianna; Steve McDaniel; Theresa Claxton ; Welch, Jeff
Subject: Updated Traffic Projections, Pellissippi Parkway Extension, Blount County

Good Afternoon Knoxville IAC –

Per the discussion at the end of our call on Monday, I have attached the updated traffic projections for the Pellissippi Parkway (SR 162) Extension in Blount County for your records. As discussed, a $PM_{2.5}$ Hot-Spot Determination was prepared for the project in January 2009, and the IAC concurred that the project was "Not of Air Quality Concern." The Determination and concurrence responses are attached.

As shown, the updated Design Year 2040 projections are much lower than the previous Design Year 2035 projections used for the $PM_{2.5}$ Hot-Spot Determination. The projected percentage of trucks remains the same. As a result, the IAC agreed that the previous Determination remains valid.

Thank you for your guidance on this matter.

Darlene

Darlene Reiter, Ph.D., P.E.
TDOT Environmental Division Consultant
(615) 574-8102

From: Marc Corrigan
To: McAdoo, Mark
Date: 1/9/2009 10:51 AM
Subject: Re: PM 2.5 Determination for Pellissippi Parkway Project (PIN# 101423.00)

Mark,

Based on the information provided, and no new information is provided from other IAC participants, I concur with TDOT's determination.

Marc

>>> Mark McAdoo 12:17 PM 1/8/09 >>>
Marc -
In response to your question, our consultant informs me "the rows in the table were shaded just to make the truck changes in volume stand out from the no-build to the build scenario. We thought that this important with regard to impacts as it shows that most of the volumes decrease in the build scenario."

TDOT requests your concurrence with our recommendation that this project be classified as NOT OF AIR QUALITY CONCERN. Please respond no later than close of business (4:30 central time) on**January 20, 2009**. If TDOT does not receive a response to the contrary within 10 business days of this email then TDOT will assume that you concur with our recommended determination.

Thanks,

Mark

TDOT - Environmental Division
615-741-6834

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>>> Marc Corrigan 1/8/2009 8:28 AM >>>
Mark,

What is the significance of the of the shaded rows in the tables?

Marc

>>> Mark McAdoo 8:53 AM 1/7/09 >>>
Knoxville Area IAC -
This project was previously submitted to the IAC for concurrence. However, on December 19, 2008, Kelly Sheckler (EPA) left a voice message with me requesting us to revise the determination and resubmit. EPA requested truck numbers (not percentages) for the build and no build in the design year.

Our consultant for this project has made those revisions and TDOT is now resubmitting the determination that this project be classified as NOT OF AIR QUALITY CONCERN to the IAC for concurrence. Details are provided in the attached document.

TDOT requests your concurrence with our recommendation that this project be classified as NOT OF AIR QUALITY CONCERN. Please respond no later than close of business (4:30 central time) on January 20, 2009. If TDOT does not receive a response to the contrary within 10 business days of this email then TDOT will assume that you concur with our recommended determination.

Happy New Year,

Mark

TDOT - Environmental Division
615-741-6834

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From: <Sheckler.Kelly@epamail.epa.gov>
To: "Mark McAdoo" <Mark.McAdoo@state.tn.us>
Date: 1/13/2009 11:48 AM
Subject: Re: PM 2.5 Determination for Pellissippi Parkway Project (PIN# 101423.00)- (1 project)
Attachments: PM2 5HotSpotDeterminationQA-Pellissippi- 1-6-08 final.doc

CC: <Smith.Dianna@epamail.epa.gov>

Mark- thank you for providing the updated material. Based upon what you have provided in the write-up, EPA concurs that this projects is not of air quality concern per the Transportation conformity provisions.

Kelly Sheckler
US Environmental Protection Agency- Region 4
Diesel Collaborative and Transportation Outreach Liaison
61 Foryths Street
Atlanta, Georgia 30303
(404) 562-9222
Sheckler.Kelly@epa.gov

"Mark McAdoo" <Mark.McAdoo@state.tn.us> 01/07/2009 09:53 AM

To <asmcdaniel@aqm.co.knox.tn.us>, <laliddington@aqm.co.knox.tn.us>, "Abigail Rivera" <Abigail.Rivera@dot.gov>, "Jeffery Anoka" <Jeffery.Anoka@dot.gov>, Lynorae Benjamin/R4/USEPA/US@EPA, Kelly Sheckler/R4/USEPA/US@EPA, Dianna Smith/R4/USEPA/US@EPA, Amanetta Wood/R4/USEPA/US@EPA, <Cecilia.Crenshaw@fhwa.dot.gov>, "Charles Oneill" <Charles.Oneill@fhwa.dot.gov>, <LeighAnn.Tribble@fhwa.dot.gov>, <Michael.Roberts@fhwa.dot.gov>, "Tameka Macon" <Tameka.Macon@fhwa.dot.gov>, "Vic Otero" <Victor.Otero@fhwa.dot.gov>, <Jeff.Welch@knoxtrans.org>, <Mike.Conger@knoxtrans.org>, <Shannon.Tolliver@knoxtrans.org>, <richd@mymorristown.com>, <jim_renfro@nps.gov>, <liana_reilly@nps.gov>, <teresa_cantrell@nps.gov>, "Alan Jones" <Alan.Jones@state.tn.us>, "Angela Midgett" <Angela.Midgett@state.tn.us>, "Marc Corrigan"

<Marc.Corrigan@state.tn.us>,
"Mark McAdoo"
<Mark.McAdoo@state.tn.us>,
"Robert Rock"
<Robert.Rock@state.tn.us>,
"Ronnie Porter"
<Ronnie.Porter@state.tn.us>

cc

"Nancy T. Skinner"
<SkinnerN@pbworld.com>, "Jim
Ozment" <Jim.Ozment@state.tn.us>,
"Tom Love" <Tom.Love@state.tn.us>

Subject

PM 2.5 Determination for
Pellissippi Parkway Project (PIN#
101423.00)

Knoxville Area IAC -
This project was previously submitted to the IAC for concurrence. However, on December 19, 2008, Kelly Sheckler (EPA) left a voice message with me requesting us to revise the determination and resubmit. EPA requested truck numbers (not percentages) for the build and no build in the design year.

Our consultant for this project has made those revisions and TDOT is now resubmitting the determination that this project be classified as NOT OF AIR QUALITY CONCERN to the IAC for concurrence. Details are provided in the attached document.

TDOT requests your concurrence with our recommendation that this project be classified as NOT OF AIR QUALITY CONCERN. Please respond no later than close of business (4:30 central time) on January 20, 2009. If TDOT does not receive a response to the contrary within 10 business days of this email then TDOT will assume that you concur with our recommended determination.

Happy New Year,

Mark

TDOT - Environmental Division
615-741-6834

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From: <Victor.Otero@dot.gov>
To: <Mark.McAdoo@state.tn.us>, <asmcdaniel@aqm.co.knox.tn.us>, <laliddington...
Date: 1/13/2009 12:58 PM
Subject: RE: PM 2.5 Determination for Pellissippi Parkway Project (PIN#101423.00)- (1 project)

CC: <SkinnerN@pbworld.com>, <Jim.Ozment@state.tn.us>, <Tom.Love@state.tn.us>

FHWA concurs that the Pellissippi Parkway Project (PIN#101423.00)- (1 project is not of air quality concern. Should you require additional information, please contact me at 615.781.5761

Thank you

Victor Otero
FHWA TN DIVISION

-----Original Message-----
From: Mark McAdoo [mailto:Mark.McAdoo@state.tn.us]
Sent: Tuesday, January 13, 2009 12:11 PM
To: asmcdaniel@aqm.co.knox.tn.us; laliddington@aqm.co.knox.tn.us; Rivera, Abigail <FTA>; Anoka, Jeffery <FTA>; Benjamin.Lynorae@epa.gov; Sheckler.Kelly@epa.gov; smith.dianna@epa.gov; Wood.Amanetta@epa.gov; Crenshaw, Cecilia <FHWA>; Oneill, Charles <FHWA>; Tribble, Leigh Ann <FHWA>; Roberts, Michael <FHWA>; Macon, Tameka <FHWA>; Otero, Victor <FHWA>; Jeff.Welch@knoxtrans.org; Mike.Conger@knoxtrans.org; Shannon.Tolliver@knoxtrans.org; richd@mymorristown.com; jim_renfro@nps.gov; liana_reilly@nps.gov; teresa_cantrell@nps.gov; Alan Jones; Angela Midgett; Marc Corrigan; Mark McAdoo; Robert Rock; Ronnie Porter
Cc: Nancy T. Skinner; Jim Ozment; Tom Love
Subject: Re: PM 2.5 Determination for Pellissippi Parkway Project (PIN#101423.00)- (1 project)

Kelly -
Thank you for providing concurrence from EPA. I hope FHWA and the other IAC members can provide concurrence by January 20th.

Mark

TDOT - Environmental Division
615-741-6834

If you want your budget in the black - think green!

>>> <Sheckler.Kelly@epamail.epa.gov> 1/13/2009 11:48 AM >>>
Mark- thank you for providing the updated material. Based upon what you have provided in the write-up, EPA concurs that this projects is not of air quality concern per the Transportation conformity provisions.

Kelly Sheckler
US Environmental Protection Agency- Region 4

From: Mark McAdoo [Mark.McAdoo@state.tn.us]
Sent: Monday, December 01, 2008 10:22 AM
To: asmcdaniel@aqm.co.knox.tn.us; laliddington@aqm.co.knox.tn.us; Abigail Rivera; Jeffery Anoka; Benjamin.Lynorae@epa.gov; Sheckler.Kelly@epa.gov; smith.dianna@epa.gov; Wood.Amanetta@epa.gov; Cecilia.Crenshaw@fhwa.dot.gov; LeighAnn.Tribble@fhwa.dot.gov; Michael.Roberts@fhwa.dot.gov; Tameka Macon; tony.dittmeier@fta.dot.gov; Jeff.Welch@knoxtrans.org; Mike.Conger@knoxtrans.org; Shannon.Tolliver@knoxtrans.org; richd@mymorristown.com; jim_renfro@nps.gov; liana_reilly@nps.gov; teresa_cantrell@nps.gov; Alan Jones; Angela Midgett; Marc Corrigan; Robert Rock; Ronnie Porter
Cc: Skinner, Nancy T.; Tom Love
Subject: Pellissippi Parkway (PIN# 101423.00)

Attachments: PM2 5HotSpotDeterminationQA-Pellissippi-R.doc

Knoxville Area IAC -

TDOT recommends that the following project be classified as NOT OF AIR QUALITY CONCERN for PM 2.5 Transportation Conformity:

PIN# 101423.00 - Knox County Pellissippi Parkway

More details are provided in the attached document.

TDOT requests your concurrence with our recommendation that this project is NOT OF AIR QUALITY CONCERN. Please respond to this e-mail no later than close of business (4:30 central time) on December 15, 2008. If TDOT does not receive a response to the contrary by December 15, 2008 then TDOT will assume that you concur with our recommended determination.

Mark

TDOT - Environmental Division
615-741-6834

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PM2.5 Hot-Spot Analysis

Project Name: Pellissippi Parkway (SR-33 to US 321)
Project Number: 05097-1226-04; LRTP # 70; TIP # 101423.00
Location: Pellissippi Parkway from SR 33 to US 321/SR 73 in the cities of Alcoa and Maryville and in unincorporated Blount County

Statement of Purpose and Legal Requirements

Section 176(c) of the Clean Air Act, as amended, requires that transportation agencies, such as the Tennessee Department of Transportation (TDOT), demonstrate that all proposed transportation projects that are located in nonattainment or maintenance areas, and using federal money, are consistent with the air quality goals found in the State Implementation Plan (SIP) and the corresponding Transportation Improvement Program (TIP) or other conforming plan.

The process to ensure this consistency is called Transportation Conformity. Conformity to the SIP means that transportation activities will not cause new violations of the National Ambient Air Quality Standards (NAAQS), will not worsen existing violations, and will not delay attainment of the NAAQS.

Project-level conformity is required by Title 40 Code of Federal Regulations (CFR) Part 93, more commonly known as the Transportation Conformity Rule. When evaluating project-level conformity for $PM_{2.5}$, the process is called a $PM_{2.5}$ Hot Spot Determination.

The Transportation Conformity Rule instructs the U.S. Department of Transportation (DOT) to ensure that all proposed transportation projects are in conformity before releasing federal funds for the project. To accomplish this, the FHWA and/or FTA require that all proposed transportation projects in a nonattainment or maintenance area be classified as: 1) Exempt, 2) Project Not of Air Quality Concern, or 3) Project of Air Quality Concern.

In §93.126 and §93.128, the Transportation Conformity Rule establishes a list of transportation projects that are categorically exempt from a project-level conformity determination. For nonexempt projects in nonattainment areas, TDOT must determine if the project has the potential to adversely impact air quality and FHWA and/or FTA must make the same determination.

This proposed transportation project is located in a jurisdiction currently classified as nonattainment for the $PM_{2.5}$ NAAQS by the U.S. Environmental Protection Agency. This proposed project is not classified as exempt. Therefore, TDOT is presenting the following $PM_{2.5}$ Hot Spot Determination to the Interagency Consultation (IAC) group to demonstrate this project is not of air quality concern and that it does conform to the SIP.

Project Description

Pellissippi Parkway (State Route (SR) 162) is a major northwest/southeast route connecting Interstate 40 (I-40)/I-75 and SR 33 in Knox and Blount Counties, Tennessee.

Pellissippi Parkway (designated as I-140) between I-40/I-75 and SR 33 was designed and built in four sections between 1987 and 2005. The section of Pellissippi Parkway between SR 33 and US 321/SR 73 is the remaining undeveloped portion of the parkway that was identified in the State's 1986 Urgent Highway Needs Plan. TDOT proposes to extend the existing Pellissippi Parkway from SR 33 to US 321/SR 73 in the cities of Alcoa and Maryville and in unincorporated Blount County. The total length of the proposed extension is approximately 4.5 miles.

The project is proposed by TDOT to:

- Provide travel options for motorists to the existing radial roadway network;
- Enhance regional transportation system linkages;
- Assist in achieving acceptable traffic flows (level of service) on the transportation network; and
- Enhance roadway safety on the roadway network, including the Maryville core.

In April 2006, TDOT initiated an Environmental Impact Statement (EIS) for the project with the publication of a formal Notice of Intent (NOI) to prepare an EIS in the Federal Register. Public and agency scoping was conducted in 2006. At that time, TDOT asked the public to provide input on the purpose and need for the project and to identify potential alternatives for consideration in the Draft EIS. Additional public meetings were held in November 2007 and February 2008 to gather public input on the refined purpose and need and potential project corridors and alternatives. An initial range of alternatives and corridors were developed as a result of public input and input from local and regional agencies, including the Knoxville Regional Transportation Planning Organization (TPO). The alternatives and corridors were refined, and TDOT has determined that three build alternatives will be carried forward, refined and evaluated in the DEIS. Alternative A and C would extend the existing Pellissippi Parkway as a four-lane divided highway in one of two alignments, while Alternative D would be an upgraded two-lane network of existing roads to serve as a two-lane connection between SR 33 and US 321.

$PM_{2.5}$ Hot Spot Determination Questions and Answers

1. **Is this project in a conforming Plan/TIP?** Yes. This project is included in the Knoxville Regional Transportation Planning Organization's (Knoxville-TPO) Transportation Improvement Program (TIP) for FY 2008 – 2011. The proposed project has been found to be consistent with the Knoxville/Knox County Metropolitan Planning Organization's 2005-2030 Long Range Transportation Plan (LRTP) and will not be in conflict with the long-range planning activities of any other local or regional planning authority. The project is included in a conforming plan and program in accordance with 40 CFR §93.115

2. **Is the project on a new or expanded highway or expressway that serves a significant volume of diesel truck traffic, such as a facility with greater than 125,000 annual average daily traffic (AADT) and 8% or more of such AADT is diesel truck traffic?** The project is a new highway but does not serve a significant volume of diesel truck traffic. Based on the projections presented in the Traffic Operations Technical Report for this project, the highest AADT on any of the roadway links along the affected Pellissippi corridor (i.e., from the proposed Relocated Alcoa Highway to East Broadway/Old Knoxville Highway [SR 33]) is 76,720 in the design year of 2035; and the highest truck percentage (from Topside Road to Alcoa Highway [SR 115/US 129/MP]) is 7.0 percent. Using the example, a significant volume of diesel truck traffic would be 10,000 trucks (8% of 125,000). The highest number of trucks on the affected corridor would be 4,458 in the year 2035.

   While a few sections of the existing roadways in the project area would have 8, 9, or 10 % truck traffic in 2035, the percentages on these roadways are estimated to be the same as future No Build truck percentages on these roadways, and the projected AADT on these roadways are all less than 60,000. The highest volume of truck traffic is 5,274 vehicles on the Relocated Alcoa Highway.

   Tables 1 and 2 at the end of this documentation show these values along with the rest of the diesel truck volumes for the No Build as well as the Build Scenario for 2015 and 2035. Tables 3 and 4 list truck volumes for the Pellissippi Parkway extension (between SR 33 and SR 73/US 321). Table 3 lists values for the Build Alternatives A/C (extension of the parkway) while Table 4 lists values for Build Alternative D (upgrade of existing 2-lane roadway network). As shown on these tables, the diesel truck percentages are low and the actual volumes represent only a small portion of the expected traffic.

3. **Does the project construct new exit ramps or other highway facility improvements that connect a highway or expressway to a major freight, bus, or intermodal terminal?** No. While new interchanges would be created with the proposed alternatives, none of these would connect to or affect a major freight, bus, or intermodal facility.

4. **Does the project expand an existing highway or other facility that already has a congested intersection (Operates at LOS D, E, or F) and will this project result in a significant increase in the number of diesel trucks?** No. While several of the affected intersections would operate at LOS D, E, or F in 2035 with the proposed alternatives, the LOS of these intersections would be approximately the same (or better) than under the future No Build alternative. In addition, the number of diesel trucks on the affected roadway links is not projected to significantly increase with any of the project alternatives.

5. **Does the highway project involve a significant increase in the number of diesel transit buses and/or diesel trucks?** No. The traffic projections are primarily a function of population growth and land use. Based on the projections presented in the Traffic Operations Technical Report for this project, the highest AADT on any of the roadway links along the affected Pellissippi corridor (i.e., from the proposed Relocated Alcoa Highway to East Broadway/Old Knoxville Highway [SR 33]) is 76,720; and the highest truck percentage (from Topside Road to Alcoa Highway [SR 115/US 129/MP]) is 7.0 percent. The truck percentages on the other roadway segments range from 2 to 10 percent. The highest actual volume of diesel trucks on the affected corridor is 4,458 representing 7.0 percent of the AADT. For the rest of the roadway segments, the majority of them have a reduction in truck volumes as a result of the build alternative with a few experiencing an increase of no more than 1,700 diesel trucks (SR 33 between Hunt Road and Williams Mill Road with an AADT of 74,860). Tables 1 and 2 include a column illustrating the differences between the No Build and build alternatives. The changes resulting from the build alternatives do not cause a significant increase in the number of diesel trucks and buses.

6. **Will this project cause or worsen an existing violation?** No. Any increase in emissions due to overall growth in Tennessee's traffic volumes is expected to be offset by decreases associated with the project's operational improvements and decreases in overall mobile source emission trends. In addition, background concentrations will decrease as stationary source emissions would continue to decrease via on-going reduction measures and measures that will be implemented in the near future. A similar conclusion is supported by scientific journal articles cited in the final hot-spot analysis rule.

   The March 2006 Transportation Conformity Guidance for Qualitative Hot-Spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas issued jointly by the U.S. Environmental Protection Agency and the U.S. Department of Transportation provide examples of projects that are not of localized air quality concern. More specifically, Appendix A of the Guidance states that projects that are not an air quality concern include "any new or expanded highway project that primarily services gasoline vehicle traffic (i.e., does not involve a significant number or increase in the number of diesel vehicles), including such projects involving congested intersections operating at Level-of-Service D, E, or F."

The nearest PM monitoring station is located at 2007 Sequoyah Avenue in Maryville. This monitor is more than three miles from this proposed project and will not likely be impacted by the project.

Conclusion

TDOT's $PM_{2.5}$ hot spot determination is that this project is **NOT A PROJECT OF AIR QUALITY CONERN**, as determined in accordance with 40 CFR §93.123(b)(1), and that this project is in conformity with the SIP. Therefore, it is assumed that the Clean Air Act and 40 CFR §93.116 requirements are met without a qualitative hot spot analysis once FHWA provides concurrence or and the IAC comment period expires without additional information provided by the IAC to cause objection from FHWA.

Table 1: Comparison of Diesel Truck Numbers for the No-Build and Build Scenarios (2015)

Route	Section	Begin Milepoint	End Milepoint	2015 No-Build ADT	2015 Build ADT	2015 No-Build % Trucks and Buses	2015 Build % Trucks and Buses	2015 No-Build # Diesel Trucks	2015 Build # Diesel Trucks	Change in Volume (Build - No-Build)
Wildwood Road	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 0.000	End of Study Area MP 4.740	5,580	4,940	2.0%	2.0%	112	99	-13
Pellissippi Parkway	1	Topside Rd MP 0.810	Alcoa Hwy (SR 115/US 129) MP 2.240	43,560	46,740	7.0%	7.0%	3049	3272	223
	2	Alcoa Hwy (SR 115/US 129) MP 2.240	Relocated Alcoa Highway MP 3.240	25,880	26,440	5.0%	5.0%	1294	1322	28
	3	Relocated Alcoa Highway MP 3.240	E. Broadway/Old Knoxville Hwy (SR 33) MP 4.710	34,420	46,930	5.0%	5.0%	1721	2347	626
Lamar Alexander Parkway (SR 73 / US 321)	1	Beginning of Study Area MP 8.250	Alcoa Hwy (SR 115/US 129) MP 10.570	30,500	30,000	7.0%	7.0%	2135	2100	-35
	2	Alcoa Hwy (SR 115/US 129) MP 10.570	E. Broadway/Old Knoxville Hwy (SR 33) MP 11.650	29,090	27,910	7.0%	6.0%	2036	1675	-362
	3	E. Broadway/Old Knoxville Hwy (SR 33) MP 11.650	Jones Ave MP 12.526	37,720	37,160	7.0%	6.0%	2640	2230	-411
	4	Jones Ave MP 12.520	Merritt Rd MP 13.980	27,240	22,290	4.0%	3.0%	1090	669	-421
	5	Merritt Rd MP 13.980	Tuckaleechee Pk MP 17.020	24,080	24,950	4.0%	3.0%	963	749	-215
	6	Tuckaleechee Pk MP 17.020	MP 19.020	18,720	32,030	5.0%	4.0%	936	1281	345
	7	MP 19.020	Melrose Station Rd MP 20.020	18,720	21,060	5.0%	5.0%	936	1053	117
Hall Road (SR 35)	1	Alcoa Hwy (SR 115/US 129) MP 0.000	Bessemer St MP 1.520	23,220	18,870	2.0%	2.0%	464	377	-87
	2	Bessemer St MP 1.520	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	27,460	20,410	2.0%	2.0%	549	408	-141
Washington Street (SR 35)	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	US 411 (SR 35) MP 2.820	24,450	18,650	3.0%	3.0%	734	560	-174
	2	US 411 (SR 35) MP 0.000	Lamar Alexander Pkwy (SR 73/US 321) MP 0.160	24,620	27,460	2.0%	2.0%	492	549	57

Table 1: Comparison of Diesel Truck Numbers for the No-Build and Build Scenarios (2015) (cont.)

Route	Section	Begin Milepoint	End Milepoint	2015 No-Build ADT	2015 Build ADT	2015 No-Build % Trucks and Buses	2015 Build % Trucks and Buses	2015 No-Build # Diesel Trucks	2015 Build # Diesel Trucks	Change in Volume (Build - No-Build)
US 411 (SR 35)	1	Washington St (SR 35) MP 2.320	Westfield Dr MP 4.510	13,510	13,490	3.0%	3.0%	417	405	-13
	2	Westfield Dr MP 4.510	Near Peppermint Rd 6.510	10,660	12,950	4.0%	3.0%	426	390	-37
	3	Near Peppermint Rd 6.510	End of Study Area 7.930	6,950	8,520	7.0%	7.0%	487	596	110
E. Broadway / Old Knoxville Highway (SR 33)	1	Beginning of Study Area MP 7.854	Montgomery Lane MP 10.201	38,510	38,510	9.0%	9.0%	3502	3466	-36
	2	Montgomery Lane MP 10.201	Hall Rd MP 12.340	19,720	19,900	9.0%	9.0%	1775	1791	16
	3	Hall Rd MP 12.340	Wildwood Rd MP 14.206	13,170	11,300	2.0%	3.0%	263	339	76
	4	Wildwood Rd MP 14.206	Hunt Rd MP 15.470	13,330	11,210	2.0%	3.0%	267	336	70
	5	Hunt Rd MP 15.470	William Mill Rd MP 17.420	34,350	38,200	2.0%	4.0%	687	1528	841
	6	William Mill Rd MP 17.420	County Line MP20.640	15,350	15,360	2.0%	2.0%	307	307	0
Alcoa Highway (SR 115 / US 129)	1	Broadway Ave MP 10.450	Lamar Alexander Pkwy (SR 73/US 321) MP 11.340	32,550	31,840	10.0%	10.0%	3255	3184	-71
	2	Lamar Alexander Pkwy (SR 73/US 321) MP 11.340	Hall Rd (SR 35) MP 14.280	47,740	46,180	10.0%	8.0%	4774	3694	-1080
	3	Hall Rd (SR 35) MP 14.280	Hunt Rd MP 15.020	56,100	52,920	8.0%	8.0%	4488	4234	-254
	4	Hunt Rd MP 15.020	Pellissippi Pky MP 17.660	31,570	35,430	8.0%	8.0%	2526	2833	313
	5	Pellissippi Pky MP 17.660	County Line MP20.400	22,670	31,870	8.0%	8.0%	1814	2550	736
Relocated Alcoa Highway	1	Alcoa Highway (SR 115 / US 129)	Pellissippi Pky	37,100	30,170	8.0%	8.0%	2968	2414	-554
	2	Pellissippi Pky	Alcoa Highway (SR 115 / US 129)	50,500	50,300	8.0%	8.0%	4072	4024	-48

Table 2: Comparison of Diesel Truck Numbers for the No-Build and Build Scenarios (2035)

Route	Section	Begin Milepoint	End Milepoint	2035 No-Build ADT	2035 Build ADT	2035 No-Build % Trucks and Buses	2035 Build % Trucks and Buses	2035 No-Build # Diesel Trucks	2035 Build # Diesel Trucks	Change in Volume (Build - No-Build)
Wildwood Road	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 0.000	End of Study Area MP 4.740	6,250	4,720	2.0%	2.0%	125	94	-31
Pellissippi Parkway	1	Topside Rd MP 0.810	Alcoa Hwy (SR 115/US 129) MP 2.240	62,310	63,690	7.0%	7.0%	4362	4458	97
	2	Alcoa Hwy (SR 115/US 129) MP 2.240	Relocated Alcoa Highway MP 3.240	39,240	28,410	5.0%	5.0%	1962	1421	-542
	3	Relocated Alcoa Highway MP 3.240	E. Broadway/Old Knoxville Hwy (SR 33) MP 4.710	60,080	76,720	5.0%	5.0%	3004	3836	832
Lamar Alexander Parkway (SR 73 / US 321)	1	Beginning of Study Area MP 8.250	Alcoa Hwy (SR 115/US 129) MP 10.570	45,270	45,980	7.0%	7.0%	3169	3219	50
	2	Alcoa Hwy (SR 115/US 129) MP 10.570	E. Broadway/Old Knoxville Hwy (SR 33) MP 11.650	37,430	37,320	7.0%	6.0%	2620	2239	-381
	3	E. Broadway/Old Knoxville Hwy (SR 33) MP 11.650	Jones Ave MP 12.526	48,380	49,000	7.0%	6.0%	3387	2940	-447
	4	Jones Ave MP 12.520	Merritt Rd MP 13.980	38,610	34,190	4.0%	3.0%	1544	1026	-519
	5	Merritt Rd MP 13.980	Tuckaleechee Pk MP 17.020	41,200	34,560	4.0%	3.0%	1648	1037	-611
	6	Tuckaleechee Pk MP 17.020	MP 19.020	32,620	42,820	5.0%	4.0%	1631	1713	82
	7	MP 19.020	Melrose Station Rd MP 20.020	32,620	37,000	5.0%	5.0%	1631	1850	219
Hall Road (SR 35)	1	Alcoa Hwy (SR 115/US 129) MP 0.000	Bessemer St MP 1.520	23,220	17,730	2.0%	2.0%	464	355	-110
	2	Bessemer St MP 1.520	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	27,460	21,520	2.0%	2.0%	549	430	-119
Washington Street (SR 35)	1	E. Broadway/Old Knoxville Hwy (SR 33) MP 2.590	US 411 (SR 35) MP 2.820	25,990	22,090	3.0%	3.0%	780	663	-117
	2	US 411 (SR 35) MP 0.000	Lamar Alexander Pkwy (SR 73/US 321) MP 0.160	37,890	33,060	2.0%	2.0%	758	661	-97

Table 2: Comparison of Diesel Truck Numbers for the No-Build and Build Scenarios (2035) (cont.)

Route	Section	Begin Milepoint	End Milepoint	2035 No-Build ADT	2035 Build ADT	2035 No-Build % Trucks and Buses	2035 Build % Trucks and Buses	2035 No-Build # Diesel Trucks	2035 Build # Diesel Trucks	Change in Volume (Build - No-Build)
US 411 (SR 35)	1	Washington St (SR 35) MP 2.820	Westfield Dr MP 4.510	16,910	14,920	3.0%	3.0%	507	448	-60
	2	Westfield Dr MP 4.510	Near Peppermint Rd 6.510	14,240	13,610	4.0%	3.0%	570	408	-161
	3	Near Peppermint Rd 6.510	End of Study Area 7.930	9,670	10,650	7.0%	7.0%	677	746	69
E. Broadway / Old Knoxville Highway (SR 33)	1	Beginning of Study Area MP 7.854	Montgomery Lane MP 10.201	46,950	46,770	9.0%	9.0%	4225	4209	-20
	2	Montgomery Lane MP 10.201	Hall Rd MP 12.340	30,940	30,080	9.0%	9.0%	2785	2707	-77
	3	Hall Rd MP 12.340	Wildwood Rd MP 14.206	25,060	18,550	2.0%	3.0%	501	557	55
	4	Wildwood Rd MP 14.206	Hunt Rd MP 15.470	24,310	18,350	2.0%	3.0%	486	551	64
	5	Hunt Rd MP 15.470	William Mill Rd MP 17.420	65,850	74,360	2.0%	4.0%	1317	2994	1677
	6	William Mill Rd MP 17.420	County Line MP 20.640	31,770	27,280	2.0%	2.0%	635	546	-90
Alcoa Highway (SR 115 / US 129)	1	Broadway Ave MP 10.450	Lamar Alexander Pkwy (SR 73/US 321) MP 11.340	37,280	37,250	10.0%	10.0%	3728	3725	-3
	2	Lamar Alexander Pkwy (SR 73/US 321) MP 11.340	Hall Rd (SR 35) MP 14.280	47,740	53,740	10.0%	8.0%	4774	4299	-475
	3	Hall Rd (SR 35) MP 14.280	Hunt Rd MP 15.020	61,120	58,570	8.0%	8.0%	4890	4686	-204
	4	Hunt Rd MP 15.020	Pellissippi Pky MP 17.660	40,280	39,930	8.0%	8.0%	3222	3193	-24
	5	Pellissippi Pky MP 17.660	County Line MP 20.400	26,060	30,120	8.0%	8.0%	2085	2410	325
Relocated Alcoa Highway	1	Alcoa Highway (SR 115 / US 129)	Pellissippi Pky	38,430	36,650	8.0%	8.0%	3074	2932	-139
	2	Pellissippi Pky	Alcoa Highway (SR 115 / US 129)	62,590	65,930	8.0%	8.0%	5007	5274	267

Table 3: Diesel Truck Volumes for Build Alternatives A/C

Begin Milepoint	End Milepoint	2015 ADT	2015 % Trucks and Buses	2015 # Diesel Trucks	2035 ADT	2035 % Trucks and Buses	2035 # Diesel Trucks
E. Broadway/Old Knoxville Hwy (SR 33)	US 411 (SR 35)	36,230	2.0%	725	63,380	2.0%	1268
US 411 (SR 35)	Lamar Alexander Pkwy (SR 73/US 321)	26,780	2.0%	536	52,880	2.0%	1058

Table 4: Diesel Truck Volumes for Build Alternative D

Begin Milepoint	End Milepoint	2015 ADT	2015 % Trucks and Buses	2015 # Diesel Trucks	2035 ADT	2035 % Trucks and Buses	2035 # Diesel Trucks
E. Broadway/Old Knoxville Hwy (SR 33)	US 411 (SR 35)	16,970	5.0%	849	22,390	5.0%	1120
US 411 (SR 35)	Lamar Alexander Pkwy (SR 73/US 321)	12,270	5.0%	614	17,240	5.0%	862

Appendix D
MSAT Background Information

MOBILE SOURCE AIR TOXICS (MSAT)

Background

Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments (CAAA) of 1990, whereby Congress mandated that the U.S. Environmental Protection Agency (EPA) regulate 188 air toxics, also known as hazardous air pollutants. The EPA assessed this expansive list in its rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007), and identified a group of 93 compounds emitted from mobile sources that are part of EPA's Integrated Risk Information System (IRIS).11F1 In addition, EPA identified nine compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers or contributors and non-cancer hazard contributors from the 2011 National Air Toxics Assessment (NATA).12F2 These are *1,3-butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter (diesel PM), ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter.* While FHWA considers these the priority mobile source air toxics, the list is subject to change and may be adjusted in consideration of future EPA rules.

Motor Vehicle Emissions Simulator (MOVES)

According to EPA, MOVES3 is a major revision to MOVES2014 and improves upon it in many respects. MOVES3 includes new data, new emissions standards, and new functional improvements and features. It incorporates substantial new data for emissions, fleet, and activity developed since the release of MOVES2014. These new emissions data are for light- and heavy-duty vehicles, exhaust and evaporative emissions, and fuel effects. MOVES3 also adds updated vehicle sales, population, age distribution, and vehicle miles travelled (VMT) data. MOVES3 incorporates the effects of three new Federal emissions standard rules not included in MOVES2014. These new standards are all expected to impact MSAT emissions and include Tier 3 emissions and fuel standards starting in 2017 (79 FR 60344), heavy-duty greenhouse gas regulations that phase in during model years 2014-2018 (79 FR 60344), and the second phase of light duty greenhouse gas regulations that phase in during model years 2017-2025 (79 FR 60344). In the November 2020 EPA issued MOVES3 Mobile Source Emissions Model Questions and Answers 4 EPA states that for on-road emissions, MOVES3

updated heavy-duty (HD) diesel and compressed natural gas (CNG) emission running rates and updated HD gasoline emission rates. They updated light-duty (LD) emission rates for hydrocarbon (HC), carbon monoxide (CO) and nitrogen oxide (NOx) and updated light-duty (LD) particulate matter rates, incorporating new data on Gasoline Direct Injection (GDI) vehicles.

Using EPA's MOVES3 model, as shown in Figure 1, FHWA estimates that even if VMT increases by 31 percent from 2020 to 2060 as forecast, a combined reduction of 76 percent in the total annual emissions for the priority MSAT is projected for the same time period.

Diesel PM is the dominant component of MSAT emissions, making up 36 to 56 percent of all priority MSAT pollutants by mass, depending on calendar year. Users of MOVES3 will notice some differences in emissions compared with MOVES2014. MOVES3 is based on updated data on some emissions and pollutant processes compared to MOVES2014, and also reflects the latest Federal emissions standards in place at the time of its release. In addition, MOVES3 emissions forecasts are based on slightly higher VMT projections than MOVES2014, consistent with nationwide VMT trends.

MSAT Research

Air toxics analysis is a continuing area of research. While much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. In particular, the tools and techniques for assessing project-specific health outcomes as a result of lifetime MSAT exposure remain limited. These limitations impede the ability to evaluate how potential public health risks posed by MSAT exposure should be factored into project-level decision-making within the context of NEPA.

Nonetheless, air toxics concerns continue to arise on highway projects during the NEPA process. Even as the science emerges, the public and other agencies expect FHWA to address MSAT impacts in its environmental documents. The FHWA, EPA, the Health Effects Institute, and others have funded and conducted research studies to try to more clearly define potential risks from MSAT emissions associated with highway projects. The FHWA will continue to monitor the developing research in this field.

NEPA Context

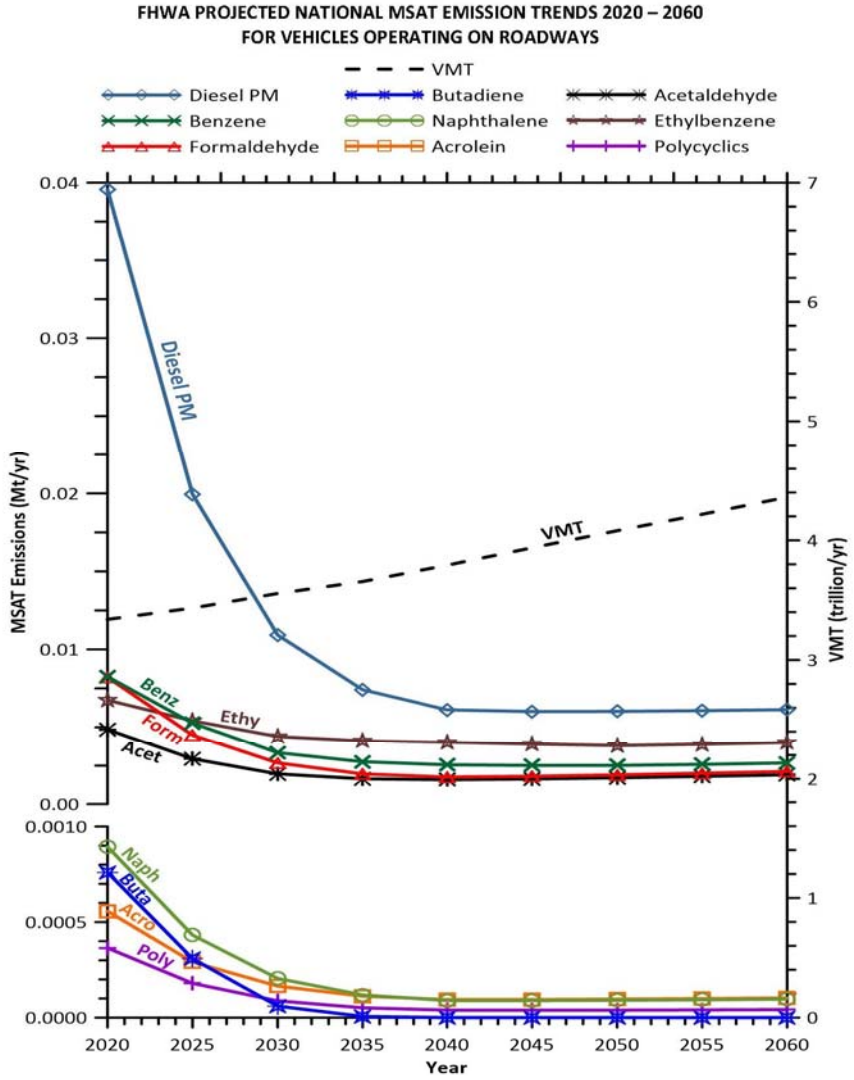
The NEPA requires, to the fullest extent possible, that the policies, regulations, and laws of the Federal Government be interpreted and administered per its environmental protection goals, and that Federal agencies use an interdisciplinary approach in planning and decision-making for any action that adversely impacts the environment (42 U.S.C. 4332). In addition to evaluating the potential environmental effects, FHWA must also take into account the need for safe and efficient transportation in reaching a decision that is in the best overall public interest (23 U.S.C. 109(h)). The FHWA policies and procedures for implementing NEPA are contained in regulation at 23 CFR Part 771.

Incomplete or Unavailable Information for Project-Specific MSAT Health Impacts Analysis

In FHWA's view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in mobile source air toxic (MSAT) emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

Figure 1
FHWA PROJECTED NATIONAL MSAT EMISSION TRENDS 2020 - 2060
FOR VEHICLES OPERATING ON ROADWAYS
USING EPA's MOVES3 MODEL

3



Note: Trends for specific locations may be different, depending on locally derived information representing vehicle-miles travelled, vehicle speeds, vehicle mix, fuels, emission control programs, meteorology, and other factors.
Source: EPA MOVES3 model runs conducted by FHWA, March 2021.

The Environmental Protection Agency (EPA) is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the Clean Air Act and its amendments and have specific statutory obligations for hazardous air pollutants and MSAT. The EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. They maintain the Integrated Risk Information System (IRIS), which is "a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects" (EPA, https://www.epa.gov/iris/). Each report contains assessments of non-cancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute (HEI). Several HEI studies are summarized in Appendix D of FHWA's Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents. Among the adverse health effects linked to MSAT compounds at high exposures are: cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations (HEI Special Report 16, https://www.healtheffects.org/publication/mobile-source-air-toxics-critical-review-literature-exposure-and-health-effects) or in the future as vehicle emissions substantially decrease.

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then a final determination of health impacts – each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame since such information is unavailable.

It is particularly difficult to reliably forecast 70-year lifetime MSAT concentrations and exposure near roadways to determine the portion of time that people are exposed at a

specific location and to establish the extent attributable to a proposed action, especially given that some of the information needed is unavailable.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI (Special Report 16, https://www.healtheffects.org/publication/mobile-source-air-toxics-criticalreview-literature-exposure-and-health-effects). As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. The EPA states that concerning diesel engine exhaust, "[t]he absence of adequate data to develop a sufficiently confident dose-response relationship from the epidemiologic studies has prevented the estimation of inhalation carcinogenic risk (https://www.epa.gov/iris)."

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by the EPA as provided by the Clean Air Act to determine whether more stringent controls are required to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires EPA to determine an "acceptable" level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld EPA's approach to addressing risk in its two-step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than deemed acceptable (https://www.cadc.uscourts.gov/internet/opinions.nsf/284E23FFE079CD59852578000050C9DA/$file/07-1053-1120274.pdf).

Because of the limitations in the methodologies for forecasting health impacts described, any predicted difference in health impacts between alternatives is likely to be much smaller

than the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision-makers, who would need to weigh this information against project benefits, such as reducing traffic congestion, accident rates, and fatalities plus improved access for emergency response, that are better suited for quantitative analysis.

Appendix E
MSATs VMT Calculations

Design Year 2046 VMT Projections

Design Year VMT Projections, Affected Roadway Network					
Project:	***SR-162***				
County	***Blount***				
PIN:	***101423.00***				
Design Year:	***2046***				
Road	***From***	***To***	***AADT***	***Length (miles)***	***VMT***
		No-Build Alternative			
Wildwood Road	SR-33	Peppermint Rd.	8,050	2.55	20,528
	Peppermint Rd.	Sam Houston School Rd	6,420	0.11	706
	Sam Houston School Rd.	End of Study Area	4,820	2.09	10,074
Pellissippi Parkway	Topside Rd.	SR-115	39,500	1.43	56,485
	SR-115	SR-33	31,220	2.73	85,231
	SR-33	SR-35			0
	SR-35	SR-73			0
Lamar Alexander Parkway (SR-73)	SR-33	Jones Ave.	20,170	0.87	17,548
	Jones Ave.	Tuckaleechee Pk.	59,780	1.46	87,279
	Tuckaleechee Pk.	Melrose Station Rd.	20,810	2.98	62,014
SR-35	SR-115	SR-33	49,180	2.44	119,999
	SR-33	Sevierville Rd.	22,500	0.24	5,400
	Sevierville Rd.	SR-73	23,240	0.44	10,226
E. Broadway (SR-33)	Hall Rd.	Wildwood Rd.	23,990	1.87	44,861
	Wildwood Rd.	SR-335	12,820	1.28	16,410
	SR-335	Pellissippi Pkwy	22,780	0.45	10,251
	Pellissippi Pkwy	Sam Houston School Rd	14,230	0.45	6,404
	Sam Houston School Rd	County Line	9,350	4.29	40,112
Alcoa Hwy (SR-115)	SR-73	SR-35	44,280	2.95	130,626
	SR-35	SR-335	65,640	0.67	43,979
	SR-335	Pellissippi Pkwy	64,450	2.67	172,082
	Pellissippi Pkwy	County Line	48,880	2.74	133,931
Sam Houston School Rd.	SR-33	Wildwood Rd.	12,520	2.65	33,178
Peppermint Rd.	Wildwood Rd.	Sevierville Rd.	8,140	1.10	8,954
Hitch Rd.	Sevierville Rd.	Davis Ford Rd.	4,040	1.20	4,848
Helton Rd.	Davis Ford Rd.	Lamar Alexander Pkwy	680	0.88	598
				Total	***277,850***
		Build Alternative			
Sam Houston School Rd.	SR-33	Wildwood Rd.	36,120	2.65	95,718
Peppermint Rd.	Wildwood Rd.	Sevierville Rd.	34,380	1.10	37,818
Hitch Rd.	Sevierville Rd.	Davis Ford Rd.	11,800	1.20	14,160
Helton Rd.	Davis Ford Rd.	Lamar Alexander Pkwy	12,760	0.88	11,229
				Total (miles per day)	***158,925***
				Change (miles per day)	***-118,925***
				Change (%)	***-42.8%***

TENNESSEE DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION

PROJECT NO.: HPP/NH-162(7) : 05097-1233-14 ROUTE: S.R. 162 EXTENSION [ALT. 'D']
COUNTY: BLOUNT CITY: MARYVILLE
PROJECT PIN NUMBER: 101423.00
PROJECT DESCRIPTION: FROM S.R. 33 TO S.R. 73.

ALTERNATE 'D' TRAFFIC DATA

DIVISION REQUESTING:

MAINTENANCE	☐	PAVEMENT DESIGN	☐
S.T.I.D.	☐	STRUCTURES	☐
PROG. DEVELOPMENT & ADM.	☐	SURVEY & ROADWAY DESIGN	☐
PUBLIC TRANS. & AERO.	☐	TRAFFIC SIGNAL DESIGN	☐
		OTHER ENVIRONMENTAL	☒

YEAR PROJECT PROGRAMMED FOR CONSTRUCTION: 2026
PROJECTED LETTING DATE: 2026

TRAFFIC ASSIGNMENT:

BASE YEAR		[SEE ATTACHMENTS] DESIGN YEAR					DESIGN ROADWAY % TRUCKS		DESIGN AVERAGE DAILY LOADS	
AADT	YEAR	AADT	DHV	%	YEAR	DIR.DIST.	DHV	AADT	FLEX	RIGID
	2026				2046					

REQUESTED BY: NAME ERICK HUNT-HAWKINS DATE 5/19/23
DIVISION ENVIRONMENTAL
ADDRESS 900 J. K. POLK BUILDING
NASHVILLE TN 37246

REVIEWED BY: RANDY BOGUSKIE Randy Boguskie DATE 7/27/2023
TRANSPORTATION MANAGER 1
SUITE 1000, JAMES K. POLK BUILDING

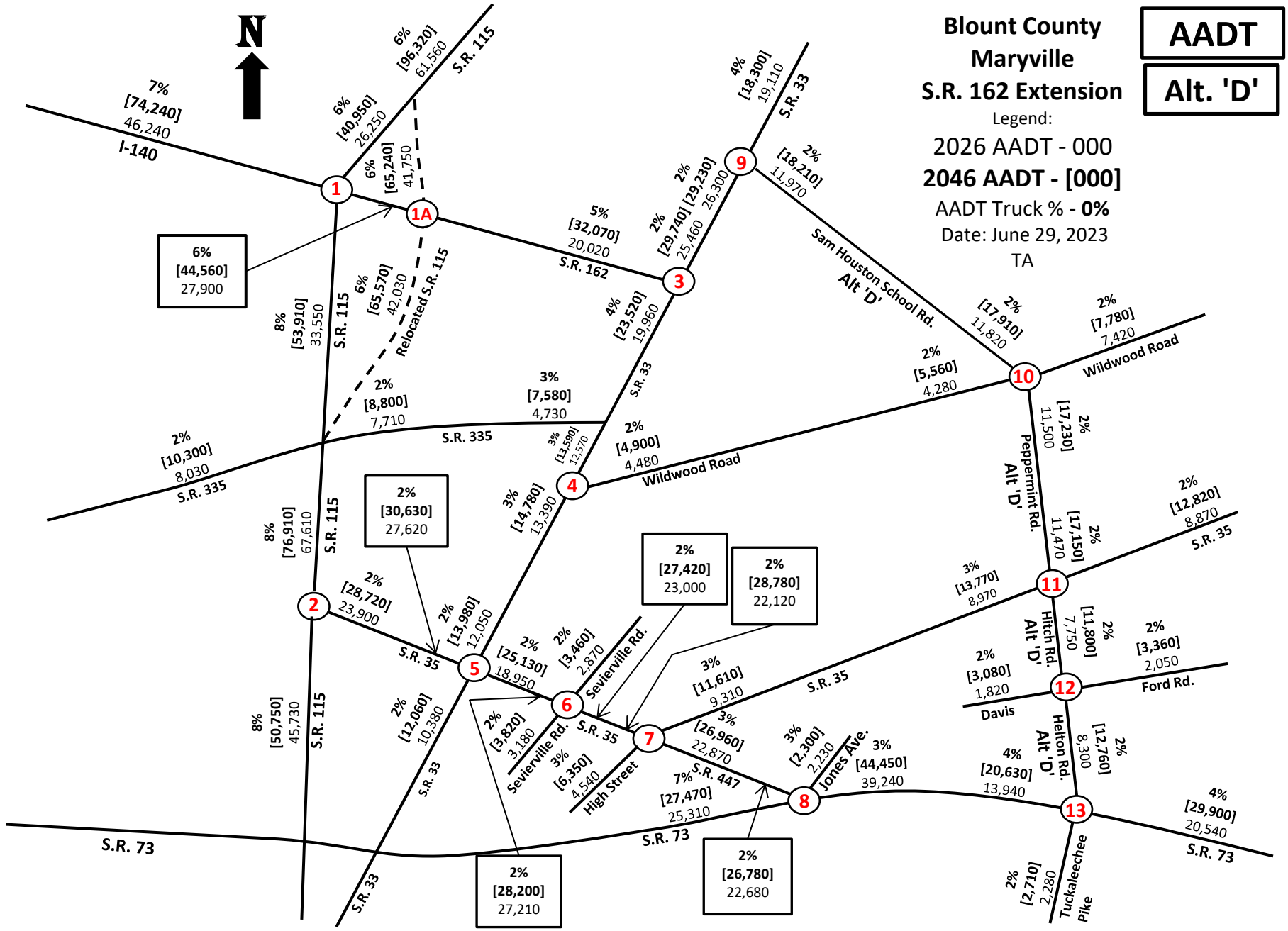
APPROVED BY: TONY ARMSTRONG Tony Armstrong DATE 7/27/2023
TRANSPORTATION MANAGER 2
SUITE 1000, JAMES K. POLK BUILDING

COMMENTS:

THIS TRAFFIC UPDATES THE PREVIOUS TRAFFIC FORECAST STUDY PREPARED BY SAIN ASSOCIATES DATED 2/25/2016 AND IS BASED ON 2022 CYCLE COUNTS. THE DESIGN YEAR TRAFFIC IS BASED ON MODEL RUNS FROM THE KNOXVILLE TPO. THIS TRAFFIC INCLUDES AADT's AND BOTH YEAR DHV's FOR ALTERNATE 'D'.

DHV'S ARE NOT REQUIRED FOR SIDE ROADS LESS THAN 1000 AADT.

NOTE: FOR BRIDGE REPLACEMENT PROJECTS, ADLs ARE NOT REQUIRED FOR ADTs OF 1000 OR LESS AND PERCENTAGE OF TRUCKS OF 7% OR LESS.
SEE ATTACHMENTS FOR TURNING MOVEMENTS AND/OR OTHER DETAILS. (REV. 6/9/21)


N
Blount County
Maryville
S.R. 162 Extension
Legend:
2026 AADT - 000
2046 AADT - [000]
AADT Truck % - 0%
Date: June 29, 2023
TA
AADT
Alt. 'D'
I-140
S.R. 115
S.R. 33
S.R. 162
S.R. 335
S.R. 35
S.R. 73
S.R. 447
Relocated S.R. 115
Sam Houston School Rd. Alt 'D'
Wildwood Road
Peppermint Rd. Alt 'D'
Hitch Rd. Alt 'D'
Helton Rd. Alt 'D'
Sevierville Rd.
High Street
Jones Ave.
Davis
Ford Rd.
Tuckaleechee Pike
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Appendix F
MOVES Greenhouse Gas Emissions Estimates

MOVES Greenhouse Gas Emissions Estimates

Year	CO_2 Emissions, MMT			Million Vehicle Miles of Travel (VMT)			
	Global	Tennessee Motor Vehicles	Tennessee Contribution to Global Total	Tennessee Statewide	Project Study Area	Change Due to Project	Change in Statewide VMT Due to Project
2026	36,991.9	38.0	0.103%	83,899	---	---	---
2046	41,912.2	36.4	0.087%	96,185	0.00	0.00	0.00%

Table notes: MMT = million metric tons. Global emissions estimates are interpolated from International Energy Outlook 2019. Tennessee emissions and statewide VMT estimates are from MOVES3.

Environmental Studies

Noise

Environmental Studies Request

Project Information

Route: State Route (SR) 162 Extension (Pellissippi Parkway)

Termini: From SR-33 to SR-73 (US-321)

County: Blount

PIN: 101423.00

Request

Request Type: Environmental Study Reevaluation

Project Plans: Right-of-Way Field Review

Date of Plans: 09/09/2022

Location: FTP

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Certification

Requestor: Katie McKeel

Title: Environmental Planner

Signature: Katherine McKeel

Digitally signed by Katherine McKeel
Date: 2022.10.24 14:16:48 -05'00'

Technical Section

Section: Air and Noise

Study Results

NOISE

The SR–162 EXT (Pellissippi Parkway), from SR-33 to SR-73 (US-321) (IA) project is a Type I project in accordance with the Federal Highway Administration (FHWA) noise regulation, Procedures for Abatement of Highway Traffic and Construction Noise, 23 CFR 772 because the project is on new location. The project requires a noise study to identify noise impacts and to evaluate noise abatement for those impacts. The noise study was conducted in accordance with the Tennessee Department of Transportation's Policy on Highway Traffic Noise Abatement (TDOT's noise policy) and the FHWA noise regulation.

Noise Impacts
The study determined that the project will create traffic noise impacts. A total of 66 properties are predicted to be impacted. The impacted land uses include Activity Category B (residential) land uses and Activity Category C (Clayton's Disc Golf, Clayton Road/Pellissippi Place benches, basketball court at Pro Nova Solutions, and outdoor playground and bench areas at Maryville Seventh Day Adventist Church and school).

Noise Abatement Evaluation
Noise abatement was evaluated to mitigate the predicted noise impacts in accordance with TDOT's noise policy. Consideration for noise abatement measures was given to all impacted receptors. TDOT Policy requires identification whether it is "likely" or "unlikely" that noise barriers will be installed for each noise sensitive area identified. "Likely" does not mean a firm commitment. Any subsequent project design changes may require a reevaluation of this preliminary noise barrier proposal. The final decision to construct the proposed noise barrier will not be made until completion of the project design, utility evaluation, and polling of all benefited and adjacent property owners and residents.

Statement of Likelihood
Noise abatement was considered for impacted receptors in seven NAAs including NAA-3, NAA- 6, NAA-8, NAA-9, NAA-11, NAA-14, and NAA-15. One traffic noise abatement measure assessed in this noise technical report, NW 15, preliminarily meets TDOT Policy feasibility and reasonableness criteria and is considered likely to be installed for the SR-162 Extension project. The likely noise barrier will protect impacted receptors in the Kensington Place Mobile Home Park (NAA-15) on the south side of the proposed SR-162 Extension and north of E. Lamar Alexandar Parkway (US 321). Four preliminary configurations of barriers/barrier systems were evaluated and the results are presented within the Noise Technical Report (December 2023).

Construction Noise
Construction activities will generate intermittent and temporary noise above existing ambient noise levels. The noise levels resulting from construction activities will depend on the types of equipment utilized, the duration of the activities, and the distances between construction activities and nearby land uses. However, the noise increases will be temporary and will not constitute a noise impact as defined by the FHWA noise regulation and TDOT's noise

policy.

Indirect and Cumulative Effects
The noise analysis is for the design year 2046 and includes projected traffic volumes for the project as well as well as forecasted background traffic growth and other planned and programmed projects in the area. As a result, the noise impacts predicted for the noise analysis represent both direct and cumulative noise impacts.

Undeveloped Land
Undeveloped tracts of land are adjacent to SR-162 and SR-73. TDOT encourages the local governments with jurisdiction over these lands, as well as potential developers of these lands, to practice noise-compatibility planning to avoid future noise impacts. Highway traffic noise should be reduced through a program of shared responsibility. Local governments should use their power to regulate land development in such a way that noise-sensitive land uses are either prohibited from being located adjacent to a highway or that the developments are planned, designed and constructed in such a way that noise impacts are minimized.

Commitments

Did the study of this project result in any environmental commitments? **Yes**

TDOT Design and Structures will evaluate the engineering feasibility issues associated with a potential noise barrier for the Kensington Place Mobile Home Community and make a final determination regarding inclusion of a barrier in the plans during final design. However, changes to the project plans could affect noise impact and abatement conclusions. Therefore, TDOT will make final determinations regarding the construction of noise barriers using the construction plans for the project. Should barriers remain feasible and reasonable by established criteria, TDOT will also consider the viewpoints of the benefited residents and property owners before making final reasonableness determinations per TDOT's noise policy

Additional Information

Is there any additional information or material included with this study? **Yes**

Type: Noise Technical Report

Location: Email Attachment

Certification

Responder: Chasity L. Stinson

Title: TESS Advanced, TDOT Environmental Division

Signature: Chasity L. Stinson

Digitally signed by Chasity L. Stinson
Date: 2023.12.15 11:00:38 -06'00'

Noise Technical Report

SR-162 Extension (Pellissippi Parkway) from SR-33 to SR-73 (US-321) (IA)
Blount County, Tennessee

PIN Number: 101423.00
Federal Project Number: HPP/NH-162(7)
State Project Number: 05097-1233-14

Submitted to:

TN TDOT Department of Transportation

Prepared by:

Stantec Consulting Services, Inc.

Stantec

December 2023

Project Plans
Right of Way Plans
Year: 2022
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EXECUTIVE SUMMARY

The SR–162 EXT (Pellissippi Parkway), from SR-33 to SR-73 (US-321) (IA) project is a Type I project in accordance with the Federal Highway Administration (FHWA) noise regulation, *Procedures for Abatement of Highway Traffic and Construction Noise*, *23 CFR 772* because the project is on new location. The project requires a noise study to identify noise impacts and to evaluate noise abatement for those impacts. The noise study was conducted in accordance with the Tennessee Department of Transportation's *Policy on Highway Traffic Noise Abatement* (TDOT's noise policy) and the FHWA noise regulation.

The study determined that the project will create traffic noise impacts. A total of 66 properties are predicted to be impacted. The impacted land uses include Activity Category B (residential) land uses and Activity Category C (Clayton's Disc Golf, Clayton Road/Pellissippi Place benches, basketball court at Pro Nova Solutions, and outdoor playground and bench areas at Maryville Seventh Day Adventist Church and school).

Noise abatement was evaluated to mitigate the predicted noise impacts in accordance with TDOT's noise policy. Consideration for noise abatement measures was given to all impacted receptors. TDOT Policy requires identification whether it is "likely" or "unlikely" that noise barriers will be installed for each noise sensitive area identified. "Likely" does not mean a firm commitment. Any subsequent project design changes may require a reevaluation of this preliminary noise barrier proposal. The final decision to construct the proposed noise barrier will not be made until completion of the project design, utility evaluation, and polling of all benefited and adjacent property owners and residents.

Noise abatement was considered for impacted receptors in seven NAAs including NAA-3, NAA-6, NAA-8, NAA-9, NAA-11, NAA-14, and NAA-15. One traffic noise abatement measure assessed in this noise technical report, NW 15, preliminarily meets TDOT Policy feasibility and reasonableness criteria and is considered likely to be installed for the SR-162 Extension project. The likely noise barrier will protect impacted receptors in the Kensington Place Mobile Home Park (NAA-15) on the south side of the proposed SR-162 Extension and north of E. Lamar Alexandar Parkway (US 321). Four preliminary configurations of barriers/ barrier system were evaluated, and the results are shown below.

ES.1 Likely Noise Barrier Summary

Noise Wall Analysis	Noise Analysis Summary			Abatement Analysis Summary				
	Impacts	Benefits		Length (ft)	Area (ft^2)	Area / Benefit (ft^2)	Allowed Area / Benefit (ft^2)	Preliminarily Feasible & Reasonable
		Total Benefits	≥7 dB(A)					
NW 15 Opt. 1	22	28	13	1,200	21,600	771	1,900	Yes
NW 15 Opt. 2	22	40	19	1,500	29,998	750	1,900	Yes
NW 15 Opt. 3	22	42	7	2,820[1]	25,921[2]	617	1,900	Yes
NW 15 Opt. 4	22	62	25	3,240[3]	36,721[4]	592	1,900	Yes

1. Total length of noise walls for option 3. Noise Wall 15 = 1,500 ft and Noise Wall 15.1 = 1,320 ft.
2. Total area of noise walls for option 3. Noise Wall 15 = 17,999 ft^2 and Noise Wall 15.1 = 7,922 ft^2.
3. Total length of noise walls for option 4. Noise Wall 15 = 1,800 ft and Noise Wall 15.1 = 1,440 ft.
4. Total area of noise walls for option 4. Noise Wall 15 = 25,200 ft^2 and Noise Wall 15.1 = 11,521 ft^2.

Construction activities may generate intermittent and temporary noise above existing noise levels. The noise levels resulting from construction activities will depend on the types of equipment utilized, the duration of the activities, and the distances between construction activities and nearby land uses. However, the noise increases will be temporary and will not constitute a noise impact as defined by TDOT's noise policy.

Some tracts of undeveloped land exist in the project area. TDOT encourages the local governments with jurisdiction over these lands, as well as potential developers, to practice noise compatibility planning to avoid future noise impacts. The "Information for Local Officials" section of this report provides additional information on noise levels for undeveloped lands, noise compatibility planning.

1.0 INTRODUCTION

The project involves extending and constructing a new section of Pellissippi Parkway [State Route (SR) 162] in Blount County, Tennessee. The project begins at the current terminus of Pellissippi Parkway/Interstate 140 (I-140) and extends for 4.9 miles from SR-33 (Old Knoxville Highway) to US 321/SR-73 (Lamar Alexander Parkway) in Blount County. The project is Type I in accordance with the Federal Highway Administration (FHWA) noise regulation, *Procedures for Abatement of Highway Traffic and Construction Noise*, *23 CFR 772* (FHWA, 2010), because the project is on new location, therefore a noise study is required. This report documents the results of the noise analysis. Figure 1.1 shows the project location and limits. Project plans and the proposed typical cross-section(s) are included in Appendix A.

2.0 NOISE EVALUATION

This study has been prepared in accordance with the FHWA noise regulation, the Tennessee Department of Transportation's (TDOT) *Policy on Highway Traffic Noise Abatement* (TDOT, 2011a) (TDOT's noise policy), and includes the following tasks:

- Identification of noise-sensitive land uses. Identification of existing land uses in the project area that are sensitive to highway traffic noise.
- Determination of existing noise levels. Measurement of existing noise levels at sensitive land uses to characterize the existing noise environment in the project area.
- Determination of future noise levels. Prediction of future, design year, worst-hour noise levels for the No-Build and Build Alternatives.
- Determination of traffic noise impacts. Determination of noise impacts based on the increase in existing noise levels and design year noise levels.
- Noise abatement evaluation. Evaluation of noise abatement for areas determined to be impacted by the project.
- Discussion of construction noise.
- Information for local officials.

Each of these analysis steps is discussed below following a discussion of TDOT's criteria for determining noise impacts.

2.1 Criteria for Determining Impacts

2.1.1 Traffic Noise Terminology

Traffic noise levels are expressed in terms of the hourly, A-weighted equivalent sound level in decibels (dBA). A sound level represents the level of the rapid air pressure fluctuations caused by sources (such as traffic) that are heard as noise. A decibel is a unit that relates the sound pressure of a noise to the faintest sound the young human ear can hear.

The A-weighting refers to the amplification or attenuation of the different frequencies of the sound (subjectively, the pitch) to correspond to the way the human ear "hears" these

frequencies. When the sound level exceeds the mid-60 dBA range, outdoor conversation in normal tones at a distance of three feet becomes difficult. Common indoor and outdoor sound levels are shown on Figure 2.

A 9-10 dB increase in sound level is typically judged by the listener to be twice as loud as the original sound while a 9-10 dB reduction is judged to be half as loud Doubling the number of sources (i.e. vehicles) will increase the hourly equivalent sound level by approximately 3 dB, which is usually the smallest change in hourly equivalent A-weighted traffic noise levels that people can detect without specifically listening for the change.

Because most environmental noise fluctuates from moment to moment, it is standard practice to condense data into a single level called the equivalent sound level (L_{eq}). The L_{eq} is a steady sound level that would contain the same amount of sound energy as the actual time-varying sound evaluated over the same time-period. The L_{eq} averages the louder and quieter moments, but gives much more weight to the louder moments in the averaging. For traffic noise assessment purposes, L_{eq} is typically evaluated over the worst one-hour period and is defined as L_{eq} (1h).

The term *insertion loss* is generally used to describe the reduction in L_{eq} (1h) at a location after a noise barrier is constructed. For example, if the L_{eq} (1h) at a residence before a barrier is constructed is 75 dBA and the L_{eq} (1h) after a barrier constructed is 65 dBA, then the insertion loss would be 10 dB.

2.1.2 Noise Abatement Criteria

Noise impact is determined by comparing future project noise levels to a set of Noise Abatement Criteria (NAC) for a land use category, and to existing noise levels. The FHWA noise regulation and TDOT's noise policy state that traffic noise impacts require consideration of abatement when worst-hour noise levels approach or exceed the NAC listed in Table 1. TDOT's noise policy defines "approach" as one decibel below the NAC, or 66 dBA for Category B and C land uses. The FHWA noise regulation and TDOT's noise policy also define impacts to occur if there is a substantial increase in existing noise levels. TDOT's criteria to define a substantial noise increase is shown in Table 2.

2.2 Noise-Sensitive Land Uses

Review of available electronic mapping revealed noise-sensitive land uses in Activity Categories B, C, and D that might be affected by the project. Additionally, there are non-noise sensitive land uses in Activity Categories F and G within the project area. There are no Activity Category E noise-sensitive land uses in the project area.

The NAC for Activity Category B will apply to residential land uses. Noise impacts will be identified and noise abatement will be considered if design year noise levels are 66 dBA or higher or if the project causes a substantial increase in existing noise levels.

The NAC for Activity Category C will apply to the outdoor playground area of the Clark's Grove Cumberland Presbyterian Church, Claytons Disc Golf Course and greenway, the walkways and benches at Pellissippi Place (a business park), Rio Revolution Church – Maryville, soccer fields,

picnic area and playground and the Maryville Seventh-Day Adventist Church playground. Noise impacts will be identified and noise abatement will be considered if design year noise levels are 66 dBA or higher or if the project causes a substantial increase in existing noise levels.

Category D land uses have been identified within the project limits at the Rio Revolution Church – Maryville and the Morningstar Baptist Church. Although a review of the facilities revealed that there are exterior uses, however they are some distance from the buildings, therefore, these places of worship were also evaluated for interior noise impacts to be conservative. Noise impacts will be identified and noise abatement will be considered if interior design year sound levels are 51 dBA or higher, or if there is a substantial increase in existing sound levels. The Building Noise Reduction Factors found in Table 5 will be used to determine interior noise levels.

Category F land uses have been identified within the project limits. The Category F land uses consist of scattered barns and out-buildings throughout the project area, Opie's Auto Restore, Foster's Auto Body Shop and Hardscape Specialists on US 321 (Lamar Alexander Parkway). These land uses are not noise-sensitive, do not have an NAC (Table 1), and therefore have not been included in the noise study.

Category G undeveloped lands have been identified within the project limits. Undeveloped lands are not noise-sensitive, do not have a NAC (Table 1), and have not been included in the noise study. However, noise impacts could occur in the future if noise-sensitive land uses are constructed near the proposed SR–162 Extension (Pellissippi Parkway). A discussion of future noise levels and the need for noise-compatible land use planning is provided in Section 2.8.

2.3 Existing Noise Levels

Noise measurements were conducted at several noise-sensitive land uses in the project area on May 22nd – May 24th, 2023 between various times from 9:35 am until 4:32 pm and a 24-hour measurement at the Kensington Place Mobile Home Park from 4:32 pm on May 22nd, 2023 to 4:32 pm on May 23rd, 2023. A listing of measurement locations and noise level data is provided in Table 3. Measurement locations are shown on Figures 3.1 – 3.9. Noise measurement data sheets and site photographs are provided in Appendix B.

Short-term 20 minute noise measurements at all locations were conducted at one-minute intervals. Background noise (i.e. dog barking, sirens, etc.) during these measurements was noted, and the corresponding one-minute measurement intervals were eliminated. Noise levels vary throughout the day depending on the proximity of noise-sensitive land uses to local roads and to other noise sources. Noise levels can also vary with environmental changes, including shifts in wind speed and direction and changes in the vertical temperature profile. As a result, the short-term measurement data provides only a snapshot of the existing noise environment at each measurement location.

To gain an understanding of the change in noise levels throughout the day, a reference microphone was used to collect noise level data throughout the measurement period. The reference microphone was located near Kensington Place Mobile Home Park (see Figure 3.7).

Ambient noise measurements were performed on May 22nd – May 23rd, 2023. Due to difficulties in accessing some properties that were shown in the work plan, adjustments were made in the field as needed to the locations for measurements. The noise measurement locations (NMLs) are shown on the figures and the field data sheets. Short-term measurements were taken at 12 noise measurement locations (NML) for a 20-minute duration. Eight measurement locations were used for validation. Four short-term measurements were taken for a 20-minute duration to record ambient sound only. One 24-hour long term measurement was taken at NML-10 to record ambient sound levels.

The long-term data at this reference site was used to develop adjustments that were applied to measurements conducted during off-peak periods to arrive at worst-hour noise levels. The reference location is listed in Table 3 and shown on Figure 3. Reference location data sheets are also included in Appendix B.

2.4 Future Noise Levels

Tennessee Department of Transportation Strategic Transportation Investments Division developed traffic projections for the project for the design year 2046. Projected traffic volumes for the "design hour" represents the theoretical worst traffic condition. Design hour traffic projections were used for the noise analysis since they represent the highest number of vehicles expected to travel on the proposed SR–162 Extension (Pellissippi Parkway), SR-35, SR-162 Southbound Ramps, SR-162 Northbound Ramps, SR-33, SR-73, Dell Road, Davis Ford Road, Nina Dozier Road, Wildwood Road, and Brown School Road in a given hour and would, therefore, represent the worst noise hour. Design year traffic projections are included in Appendix C.

2.4.1 No-Build Alternative

Noise levels for the No-Build Alternative can be reasonably estimated by evaluating existing and future traffic volumes on the proposed SR–162 Extension (Pellissippi Parkway), SR-35, SR-162 Southbound Ramps, SR-162 Northbound Ramps, SR-33, SR-73, Dell Road, Davis Ford Road, Nina Dozier Road, Wildwood Road, and Brown School Road. Doubling traffic on a roadway results in a 3 dB increase in the noise level at a given location assuming all other conditions remain the same. Design year 2046 traffic volumes on the proposed SR–162 Extension (Pellissippi Parkway), SR-35, SR-162 Southbound Ramps, SR-162 Northbound Ramps, SR-33, SR-73, Dell Road, Davis Ford Road, Nina Dozier Road, Wildwood Road, and Brown School Road are predicted to be approximately 49% higher than existing volumes. This increase in traffic would increase noise levels at nearby residences by approximately 1.73 dB, as calculated below, and rounded to 2 dB. As a result, existing noise levels were increased by 2 dB to arrive at design year 2046 noise levels for the No-Build Alternative as shown in Table E.1 in Appendix E.

Increase in sound level = 10 log (1+4.9/10) = 1.73 dB
where: N = Percent increase in traffic between existing and design year

2.4.2 Build Alternative

Noise modeling of the Build Alternative was completed using TNM 2.5 in accordance with TDOT's guidelines. The TNM calculated design hour noise levels in year 2046 for the noise-sensitive land uses in the project area.

The predicted design year noise levels for the modeled receivers are summarized in Table 4 and discussed in the following section. The TNM quality control checklist and plan views showing all modeled TNM objects and the location of the modeled roadways and receivers are included in Appendix D. Predicted noise levels at each modeled receiver are included in Appendix E.

2.5 Noise Impacts

A noise-sensitive land use is impacted if the predicted worst hour noise level approaches or exceeds the NAC or the project substantially increases existing noise levels. Design year noise levels for the Build Alternative are predicted to be 0 – 28 dB greater than existing noise levels. Fifteen of the increases are based on the NAC, 55 are due to substantial increases and four are due to both criteria and are not counted twice. The total number of impacted receptors is 66. Table 4 shows impacts for each NAA and the associated land use. Predicted noise levels at each modeled receiver are included in Appendix E.

2.6 Noise Abatement Evaluation

Abatement is evaluated when impacts are predicted to occur. Noise barriers were evaluated at seven locations to reduce noise levels for impacted land uses. These locations were at NAA-3, NAA-6, NAA-8, NAA-9, NAA-11, NAA-14, and NAA-15. For noise barriers to be included in a project, they must be determined to be both feasible and reasonable in accordance with TDOT's noise policy as discussed below.

2.6.1 Noise Barrier Feasibility

Feasibility means that the construction of a barrier would not be anticipated to pose any major design, construction, maintenance, or safety problems, and the noise barriers will provide a noise reduction (insertion loss) of 5 dB in design year highway traffic noise levels for the majority of the impacted first-row receptors.

TNM was used to assess whether each noise barrier could be designed that would provide a minimum 5 dB insertion loss at the majority of impacted first-row receptors. As shown in Table 6, all analyzed walls achieved the criteria for feasibility. Therefore, a noise barrier or a system of barriers for the residences is acoustically feasible. However, feasibility alone does not dictate whether a noise barrier will be built. Each noise barrier must also pass a "reasonableness" test as described below.

Based on the Right of Way plans, no major design, construction, maintenance, or safety problems associated with the construction of noise barriers for the impacted Activity Category B land uses at the Kensington Place Mobile Home Park are noted. However, noise barrier design

or construction issues could arise during final noise barrier design. TDOT will assess these issues later in the final design process.

2.6.2 Noise Barrier Reasonableness

For a noise barrier to be reasonable, the following conditions must be met:

1. TDOT's noise reduction design goal must be achieved;
2. The required noise barrier area per benefited residence must be less than or equal to the allowable area per benefited residence; and,
3. The benefited residents and/or property owners must support the construction of the noise barrier.

Noise Barrier Design

The noise barriers were designed to meet the noise reduction design goal while also minimizing the barrier area per benefited residence so that the designed barrier is the one that is most likely to be reasonable in accordance with TDOT's noise policy.

Noise Reduction Design Goal

To be reasonable, the barrier must provide at least 7 dB noise reduction at 60% or more of the first-row benefited receptors. The noise reduction design goal analysis for each barrier is provided in Table 7.

Noise Barrier Area Per Benefited Residence

The designed noise barrier area per benefited residence must be less than or equal to the allowable noise barrier area per benefited residence. The allowable barrier area per benefited residence is calculated using the following equation:

Base Allowance	1,500 square feet
+ Previous Type I Widening Allowance	0 square feet
+ Design Year Noise Levels Allowance	0 square feet
+ Noise Level Increase Allowance	400 square feet
+ Noise Compatible Planning Allowance	0 square feet
= Total Allowable Area per Benefited Residence	1,900 square feet

The value for each allowance type is selected based on the criteria outlined in Table 8. The calculation of allowable area for each barrier is shown in Table 9. The resulting allowable area per benefited residence is 1,900 square feet.

The predicted design year noise levels and insertion losses for each of the modeled residences, the preliminary noise barrier design table, and the barrier locations are included in Appendix F. The insertion loss for each modeled receiver was used to determine the total number of benefited residences. Benefited residences receive 5 dB or more of insertion loss due to construction of the barrier.

The noise barrier reasonableness analysis is summarized in Table 10. The calculated area per benefited residence is more than the allowable area per benefited residence for: NAA-3, NAA-6, NAA-8, NAA-9, NAA-11, and NAA-14.

Therefore, a noise barrier for these areas are not reasonable in accordance with TDOT's noise policy.

The calculated area per benefited residence is less than the allowable area per benefited residence for NW 15, at NAA-15, north of US 321 along the shoulder of southbound SR-162. Therefore, a noise barrier for this area is reasonable in accordance with TDOT's noise policy.

Viewpoints of Benefited Residents and Property Owners
TDOT's noise policy and procedures require that the views of the benefited property owners and residents be considered in making final noise abatement decisions.

2.6.3 Statement of Likelihood

A noise barrier is likely to be included in the project plans at the following location:

Near the Kensington Place Mobile Home Park (NAA-15) on the south side of the proposed SR-162 Extension and north of E. Lamar Alexandar Parkway (US 321).

However, changes made during the final design process for the project could affect conclusions regarding noise impacts and abatement. Therefore, final noise abatement decisions will be made during the final design process.

2.7 Construction Noise

Construction activities will generate intermittent and temporary noise above existing ambient noise levels. The noise levels resulting from construction activities will depend on the types of equipment utilized, the duration of the activities, and the distances between construction activities and nearby land uses. However, the noise increases will be temporary and will not constitute a noise impact as defined by the FHWA noise regulation and TDOT's noise policy.

2.8 Information for Local Officials

Undeveloped tracts of land are adjacent to SR-162 and SR-73. TDOT encourages the local governments with jurisdiction over these lands, as well as potential developers of these lands, to practice noise compatibility planning to avoid future noise impacts. The following language is included in TDOT's noise policy:

> *"Highway traffic noise should be reduced through a program of shared responsibility. Local governments should use their power to regulate land development in such a way that noise-sensitive land uses are either prohibited*

from being located adjacent to a highway or that the developments are planned, designed and constructed in such a way that noise impacts are minimized."

FHWA developed two guidance documents on noise compatible land use planning: *The Audible Landscape: A Manual for Highway Noise and Land Use* (FHWA, 1974) and *Entering the Quiet Zone: Noise Compatibility Land Use Planning* (FHWA, 2002).

Design year noise levels for areas along SR-162 and SR-73 where vacant and possibly developable lands exist are listed in Table 11. Noise predictions were made at distances of 50 to 400 feet in 50 foot increments from the edge of the nearest lane of travel for the design year 2046. Distances where the noise levels will approach or exceed the NAC of 66 dBA vary by location. Refer to Table 11 for distances. Noise-sensitive land uses should not be constructed in these areas unless noise mitigation measures are provided.

The values in Table 11 do not represent predicted levels at every location at the indicted distance from the roadway. Noise levels will vary with changes in terrain and will be affected by the shielding of objects such as buildings. This information is being included to make local officials and planners aware of anticipated highway noise levels so that future development will be compatible with these levels.

Finally, TDOT has constructed Type II or "retrofit" noise barriers along existing highways. To be eligible for a Type II noise barrier, an area must meet the following criteria:

- The neighborhood must be located along a limited-access roadway.
- The neighborhood must be primarily residential.
- The majority (more than 50%) of residences in the neighborhood near the highway pre-dated the initial highway construction.
- A noise barrier for the neighborhood must not have been previously determined to be not reasonable or not feasible as part of a new highway construction or through-lane widening study (Type I project).
- Existing noise levels measured in the neighborhood must be above 66 dBA.
- A barrier must be feasible to construct and will provide substantial noise reduction.
- A barrier must be reasonable (barrier area per benefited residence) in accordance with TDOT's noise policy. A residence is considered "benefited" if the noise barrier will reduce the traffic noise by at least 5 dB.

2.9 Meteorological (Weather) Effects on Noise Levels

Noise levels from highways or other sources are louder or quieter during certain times of the day or year. Changes in weather conditions are often the cause of these higher or lower noise levels. The effects on a community depend on the distance to highways and the frequency and duration of certain weather conditions.

Louder noise levels will be more common in areas where the wind typically blows from a highway toward a community (downwind) than in locations where the wind blows from the

community toward the highway (upwind). Downwind conditions cause sound waves to bend back toward the earth and increase sound levels.

When the air above the ground is warmer than the air near the ground, a *temperature inversion* occurs that causes sound waves to bend back toward the earth and increase noise levels. Temperature inversions often occur at night when the weather is clear and winds are calm.

Changes in weather conditions also affect how well a noise barrier performs. Temperature inversions and downwind conditions can increase noise levels in neighborhoods protected by a noise barrier, while temperature lapses and upwind conditions can further reduce noise levels in neighborhoods protected by a noise barrier.

2.10 Indirect and Cumulative Effects

The noise analysis is for the design year 2046 and includes projected traffic volumes for the project as well as well as forecasted background traffic growth and other planned and programmed projects in the area. As a result, the noise impacts predicted for the noise analysis represent both direct and cumulative noise impacts.

The SR-162 Extension project could cause a redistribution of traffic on the surrounding roadway network and affect development and land use patterns in the project area. These situations could result in higher traffic volumes at locations near roadways beyond the project limits. However, as described earlier, a doubling of the traffic volume is required to increase the hourly equivalent sound level by 3 dB, which is usually the smallest change in sound levels that people can detect without specifically listening for the change. Traffic volumes are not anticipated to double as a result of the redistribution of traffic or changes in development, so any increases in noise levels beyond the project limits would be small.

3.0 *CONCLUSIONS*

Traffic noise and temporary construction noise can be a consequence of transportation projects, especially in areas near high-volume and high-speed existing steady-state traffic noise sources. This Noise Technical Report utilized computer models created with the FHWA TNM v2.5, validated to field-collected traffic noise measurement data, to predict future noise levels and define impacted receptors along the proposed SR-162 Extension project.

For Design Year 2046 traffic volumes, the Build condition is predicted to create 66 traffic noise impacts.

Consideration for noise abatement measures was given to all impacted receptors. TDOT Policy requires identification whether it is “likely” or “unlikely” that noise barriers will be installed for each noise sensitive area identified. “Likely” does not mean a firm commitment. The final decision on feasibility and reasonableness of noise abatement shall be made upon completion of project design, and the public involvement process. ***One traffic noise abatement measure assessed in this noise technical report, NW 15, preliminarily meets TDOT’s Policy feasibility and reasonableness criteria and is considered likely to be installed for the SR–162 EXT (Pellissippi Parkway), from SR-33 to SR-73 (US-321) (IA) project.***

Construction activities will generate intermittent and temporary noise above existing ambient noise levels. The noise levels resulting from construction activities will depend on the types of equipment utilized, the duration of the activities, and the distances between construction activities and nearby land uses. However, the noise increases will be temporary and will not constitute a noise impact as defined by the FHWA noise regulation and TDOT's noise policy.

Undeveloped tracts of land are adjacent to NB and SB SR-162 and WB SR-73. TDOT encourages the local governments with jurisdiction over these lands, as well as potential developers of these lands, to practice noise compatibility planning to avoid future noise impacts.

The noise analysis is for the design year 2046 and includes projected traffic volumes for the project as well as forecasted background traffic growth and other planned and programmed projects in the area. As a result, the noise impacts predicted for the noise analysis represent both direct and cumulative noise impacts.

4.0 REFERENCES

Federal Highway Administration, November 1974, The Audible Landscape: A Manual for Highway Noise and Land Use.

Federal Highway Administration, May 2002, Entering the Quiet Zone: Noise Compatibility Land Use Planning.

Federal Highway Administration, July 2010, Procedures for Abatement of Highway Traffic and Construction Noise, 23 CFR 772.

Tennessee Department of Transportation, April 2010, TDOT Guidelines for Noise Modeling Using FHWA's Traffic Noise Model.

Tennessee Department of Transportation, July 13, 2011, Policy on Highway Traffic Noise Abatement.

TABLES

Table 1
FHWA Noise Abatement Criteria

Activity Category	L_{Aeq}(1h) dBA	Evaluation Location	Activity Description
A	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B(1)	67	Exterior	Residential.
C(1)	67	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structure, radio stations, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structure, radio studios, recording studios, schools, and television studios.
E(1)	72	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D, or F.
F	−−−	−−−	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	−−−	−−−	Undeveloped lands that are not permitted.

(1) Includes undeveloped lands permitted for this activity category.

Table 2
Substantial Noise Level Increase

Existing Noise Level (dBA) [(1)]	Predicted Design Year Noise Level Increase (dB) [(2)]
42 or less	15 or more
43	14 or more
44	13 or more
45	12 or more
46	11 or more
47 or more	10 or more

(1) Worst-hour noise level from the combination of natural and mechanical sources and human activity.
(2) Predicted design year noise level minus existing noise level.

Table 3
Existing Noise Levels at Measurement Locations

Setup	NAA	Land Use/ Activity Category	Roadway Noise Source(s)[1]	Start / Stop Time	Measured L_{eq} (dB(A))
1	Near NAA-2	Place of Worship/C	Old Knoxville Hwy SR-33	5/23/23 9:35am – 9:55am	56.1
2	NAA-3	Benches at Industrial Park/C	Old Knoxville Hwy SR-33	5/24/23 10:53am – 11:13am	46.6
3	Near NAA-4	Residential/B	None	5/23/23 10:09am – 10:29am	42.0
4	Near NAA-5	Residential/B	Mt. Lebanon Road	5/24/23 11:32am – 11:52am	41.5
5	NAA-8	Residential/B	Wildwood Road	5/23/23 10:41am – 11:01am	57.3
6	NAA-10	Residential/B	Sevierville Road, SR-35	5/23/23 12:28pm – 12:48pm	56.3
7	Near NAAs 11 and 12	Residential/B	Davis Ford Road	5/23/23 3:05pm – 3:25pm	45.6
8	NAA-14	Residential/B	Davis Ford Road, Centennial Church Road, Nina Dozier Road	5/23/23 12:20pm – 12:40pm	52.0
9	NAA-14	Residential/B	None	5/24/23 12:07pm – 12:27pm	38.3
10	NAA-15	Residential/B (Reference Microphone)	US 321	5/22/23-5/23/23 4:32pm – 4:32pm	52.3[2]
11	Near NAA-15	Residential/B	US 321	5/23/23 2:21pm – 2:41pm	66.1
12	NAA-16	Residential/B	US 321	5/23/23 1:48pm – 2:08pm	65.9
13	NAA-22	Place of Worship/C	Sevierville Road, US 411	5/23/23 11:46am – 12:06pm	55.2

1. For each Setup, noise meters were located at logical locations for the assessment of existing highway traffic noise.
2. A 24-hour reference meter was in place to obtain ambient background readings. The worst hour, using a rolling calculation, was on March 23, 2023, from 11:28 am – 12:28 pm at 52.3 dB(A).

Table 4
Traffic Noise Impact Determination Analysis Summary
Design Year 2046, Build Alternative

Note: See Appendix E for complete results for all receptors in each NAA.

Description	Impacted Receptors Approaching or Exceeding FHWA NAC[1]							Substantial Noise Level Increase[2]	Impacts Due to Both Criteria[3]	Total Impacts per 23 CFR 772[4]
	A	B	C	D	E	F	G			
NAA-1	0	0	0	0	0	0	0	0	0	0
NAA-2	0	0	0	0	0	0	0	0	0	0
NAA-3	0	0	0	0	0	0	0	4	0	4
NAA-4	0	2	0	0	0	0	0	2	2	2
NAA-5	0	0	0	0	0	0	0	1	0	1
NAA-6	0	0	0	0	0	0	0	5	0	5
NAA-7	0	0	0	0	0	0	0	1	0	1
NAA-8	0	0	0	0	0	0	0	4	0	4
NAA-9	0	0	0	0	0	0	0	4	0	4
NAA-10	0	2	0	0	0	0	0	0	0	2
NAA-11	0	1	0	0	0	0	0	4	1	4
NAA-12	0	0	0	0	0	0	0	1	0	1
NAA-13	0	0	0	0	0	0	0	0	0	0
NAA-14	0	0	0	0	0	0	0	7	0	7
NAA-15	0	1	0	0	0	0	0	22	1	22
NAA-16	0	0	0	0	0	0	0	0	0	0
NAA-17	0	1	0	0	0	0	0	0	0	1
NAA-18	0	0	0	0	0	0	0	0	0	0
NAA-19	0	0	0	0	0	0	0	0	0	0
NAA-20	0	4	1	0	0	0	0	0	0	5
NAA-21	0	3	0	0	0	0	0	0	0	3
NAA-22	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**14**	1	**0**	**0**	**0**	**0**	**55**	**4**	**66**

1 Predicted traffic noise level impact due to approaching or exceeding NAC (refer to Table 3).
2 Predicted "substantial increase" traffic noise level impact.
3 Predicted traffic noise level impact due to exceeding NAC and "substantial increase" in build-condition noise levels.
4 The total number of predicted impacts is not duplicated if receptors are predicted to be impacted by more than one criterion

Table 5: Building Noise Reduction Factors

Building Type	Window Condition	Noise Reduction Due to Exterior of the Structure
All	Open	10 dB(A)
Light Frame	Ordinary Sash (closed)	20 dB(A)
	Storm Windows	25 dB(A)
Masonry	Single Glazed	25 dB(A)
	Double Glazed	35 dB(A)

Source: FHWA

Table 6
5 dB Noise Reduction for Majority of Impacted First-Row Receptors Feasibility Analysis

Noise Barrier Description	First-Row Impacted Receptors			5 dB Noise Reduction for Majority of Impacted First-Row Receptors Met?
	Total	Receiving 5 dB Reduction	Percent	
NW 3	4	4	100	Yes
NW 6	5	5	100	Yes
NW 8	4	4	100	Yes
NW 9	3	2	67	Yes
NW11	4	3	75	Yes
NW 14	7	7	100	Yes
NW 15 Option 1	7	4	57	Yes
NW 15 Option 2	7	5	71	Yes
NW 15 Option 3	7	5	71	Yes
NW 15 Option 4	7	7	100	Yes

Table 7
Noise Reduction Design Goal Analysis

Noise Barrier Description	First-Row Benefited Receptors			Noise Reduction Design Goal Met?
	Total	Receiving 7 dB IL	Percent	
NW 3	1	0	0	No
NW 6	7	1	14	No
NW 8	4	0	0	No
NW 9	3	0	0	No
NW11	3	1	33	No
NW 14	7	0	0	No
NW 15 Option 1	4	3	75	Yes
NW 15 Option 2	5	3	60	Yes
NW 15 Option 3	5	3	60	Yes
NW 15 Option 4	7	5	71	Yes

Table 8
Reasonableness Allowances

Allowance Type	Criteria	Allowance in square feet
Base Allowance	Residences pre-date the highway(1) or the project is on a new alignment.	1,500
	Residences post-date the highway(2) but were constructed before September 16, 2005. (3)	750
	Residences were constructed after September 16, 2005.(3)	250
Previous Type I Widening Allowance(4)	Residences pre-date a Type I widening project on the adjacent highway.	200
Design Year Noise Levels Allowance(5)	69 dBA or less	0
	70 – 74 dBA	100
	75 dBA or more	200
Noise Level Increase Allowance(6)(7)	0 – 4 dB	0
	5 – 9 dB	200
	10 or more dB	400
Noise Compatible Planning Allowance	The local government of the jurisdiction in which the project will be constructed has no policies to require that noise be considered in the land development process.	0
	The local government of the jurisdiction in which the project will be constructed has adopted official and enforceable policies to require that noise be considered as an integral component of the land development process.	100

(1) The majority (more than 50%) of residences existed before the original highway construction.
(2) The majority (more than 50%) of residences were constructed after the original highway construction.
(3) TDOT's previous noise policy became effective on September 16, 2005. FHWA's approval of this policy was contingent upon TDOT's completion of a public outreach program to 1) notify local jurisdictions of the changes in TDOT's new noise policy and 2) encourage them to consider noise compatible land use planning when noise-sensitive land uses are proposed adjacent to TDOT's highways. As a result, development that occurs after this date receives less consideration in the reasonableness analysis.
(4) The majority (more than 50%) of residences existed before the most recent Type I project that added through traffic lanes.
(5) Based on an average of the impacted first–row receivers' levels (design year noise levels for Type I projects and existing noise levels for Type II projects).
(6) An average of the increases from existing noise levels to design year noise levels for the Build Alternative at the impacted first-row receivers
(7) Not applicable for Type II projects.

Table 9
Reasonableness Allowance for Impacted Activity Category B and C Land Uses in Project Area

Allowance Type	Criteria	Allowance in square feet
Base Allowance	Residences pre-date the highway or the project is on a new alignment.	1,500
Noise Level Increase Allowance	10 or more dBA	400
	Total Allowance	1,900[1]

1. Allowance applies to all NAAs.

Table 10
Noise Barrier Design Results and Reasonableness Analysis

Noise Wall Analysis	Noise Analysis Summary			Abatement Analysis Summary				
	Impacts	Benefits		Length (ft)	Area (ft^2)	Area / Benefit (ft^2)	Allowed Area / Benefit (ft^2)	Prelim. Feasible & Reasonable
		Total Benefits	≥7 dB(A)					
NW 3	4	7	0	2,640	38,765	5,538	1,900	No
NW 6	5	7	1	2,280	52,683	7,526	1,900	No
NW 8	4	4	0	3,260	45,992	11,498	1,900	No
NW 9	4	3	0	1,909	27,418	9,139	1,900	No
NW 11	5	3	1	600	7,650	2,550	1,900	No
NW 14	7	7	0	1,440	22,321	3,189	1,900	No
NW 15 Opt. 1	22	28	13	1,200	21,600	771	1,900	Yes
NW 15 Opt. 2	22	40	19	1,500	29,998	750	1,900	Yes
NW 15 Opt. 3	22	42	7	2,820[1]	25,921[2]	617	1,900	Yes
NW 15 Opt. 4	22	62	25	3,240[3]	36,721[4]	592	1,900	Yes

5. Total length of noise walls for option 3. Noise Wall 15 = 1,500 ft and Noise Wall 15.1 = 1,320 ft.
6. Total area of noise walls for option 3. Noise Wall 15 = 17,999 ft^2 and Noise Wall 15.1 = 7,922 ft^2.
7. Total length of noise walls for option 4. Noise Wall 15 = 1,800 ft and Noise Wall 15.1 = 1,440 ft.
8. Total area of noise walls for option 4. Noise Wall 15 = 25,200 ft^2 and Noise Wall 15.1 = 11,521 ft^2.

Table 11
Design Year 2046 Noise Levels for Undeveloped Lands

Location	71 dB(A)(2) in feet	66 dB(A)(2) in feet
from the EOP of NB SR-162 across from NAA-3	< 50	117
from the EOP of SB SR-162 west of NAA-7	70	164
from the EOP of NB SR-162 north of NAA-10	66	168
from the EOP of SB SR-162 across from NAA-14	< 50	178
from the EOP of WB SR-73 west of NAA-15	63	130

(1) Perpendicular distance to the edge of nearest lane of travel.
(2) At-grade situation.

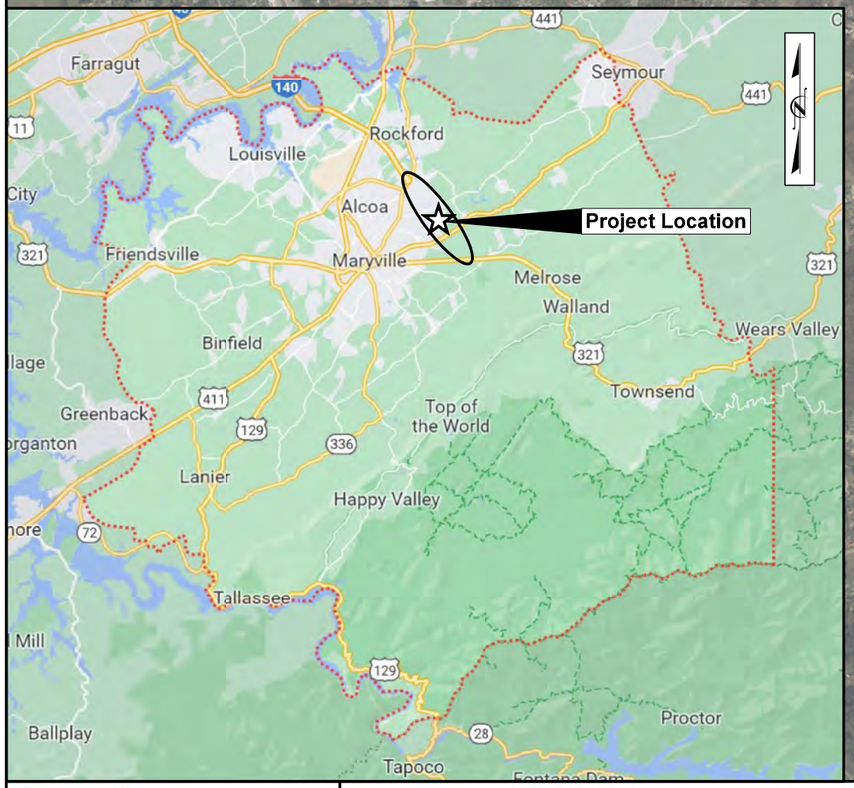
FIGURES

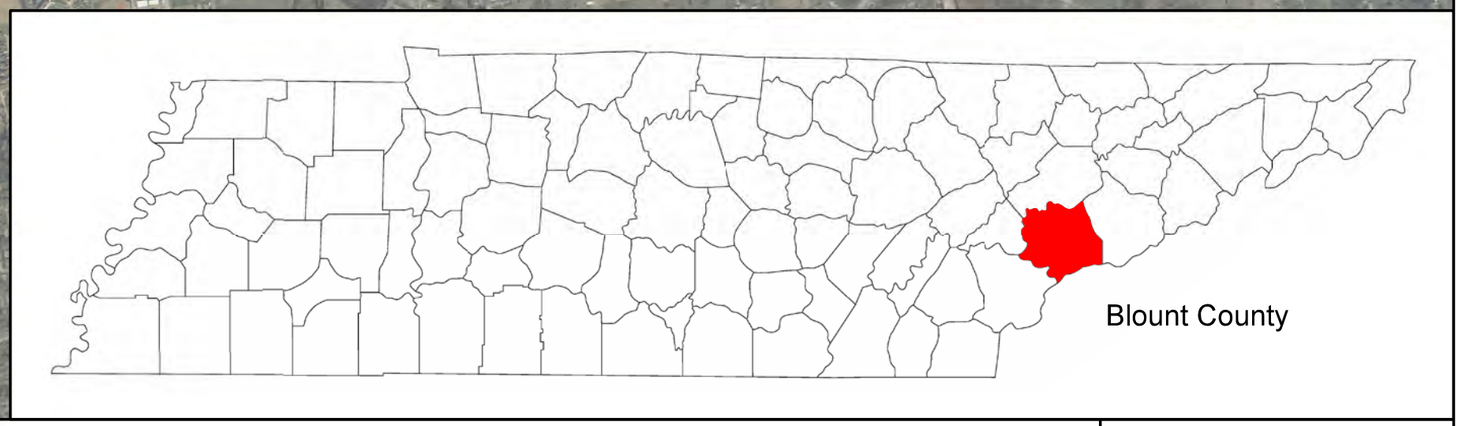
Figure 3.1
Figure 3.2
Figure 3.3
Figure 3.4
Figure 3.5
Figure 3.6
Figure 3.7
Figure 3.8
Figure 3.9

NAA-1
NAA-2
NAA-3
NAA-4
NAA-5
NAA-6
NAA-7
NAA-8
NAA-9
NAA-10
NAA-11
NAA-12
NAA-13
NAA-14
NAA-15
NAA-16
NAA-17
NAA-18
NAA-19
NAA-20
NAA-21
NAA-22

Old Knoxville Hwy
Wildwood Rd
INTERSTATE 140
411
321

Scale
800 400 0 800 1600



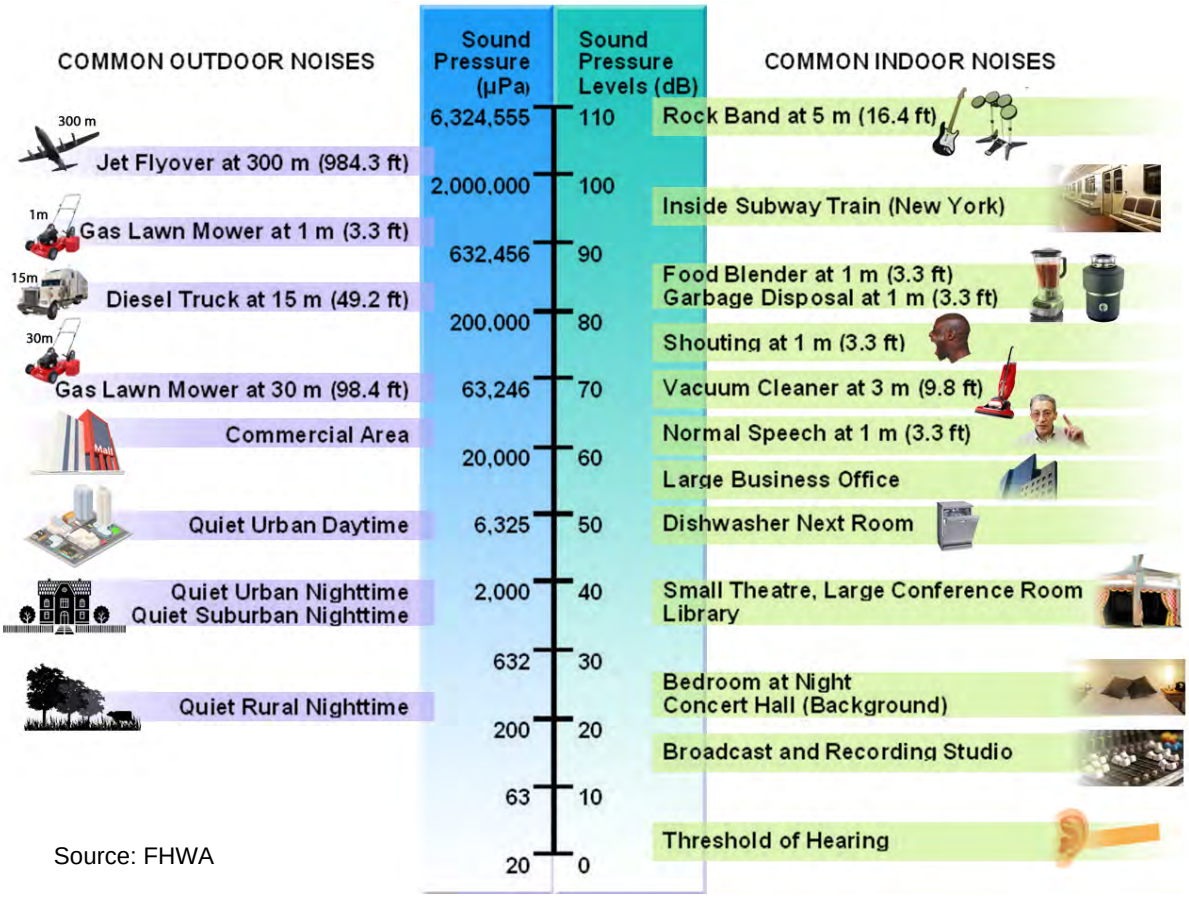


TN TDOT Department of Transportation

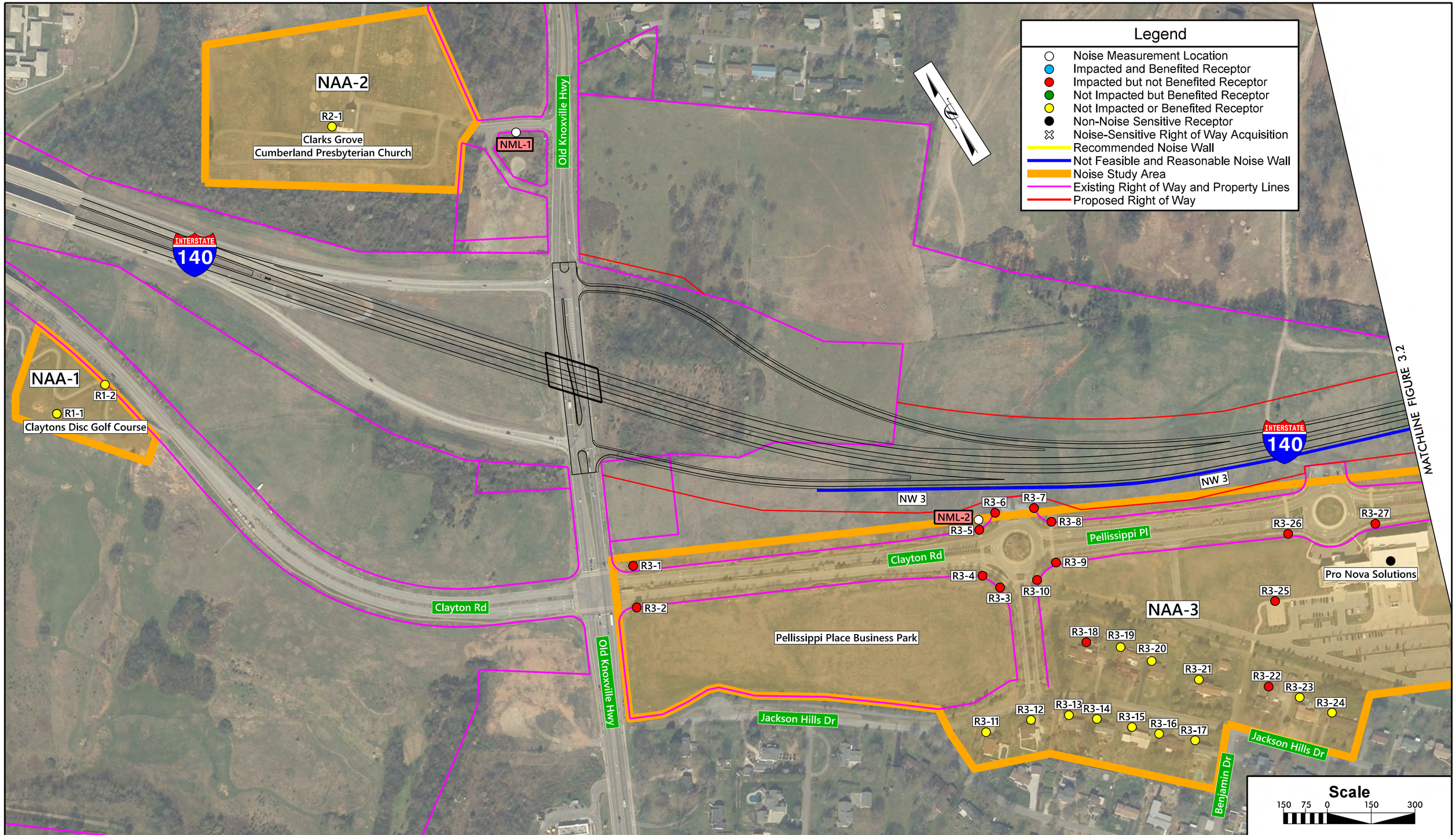
SR - 162 Extension, (Pellissippi Parkway)
From SR - 33 to SR - 73 (US -321)
Blount County, Tennessee

Vicinity Map
Figure 1.1

Figure 2
Common Sound Levels



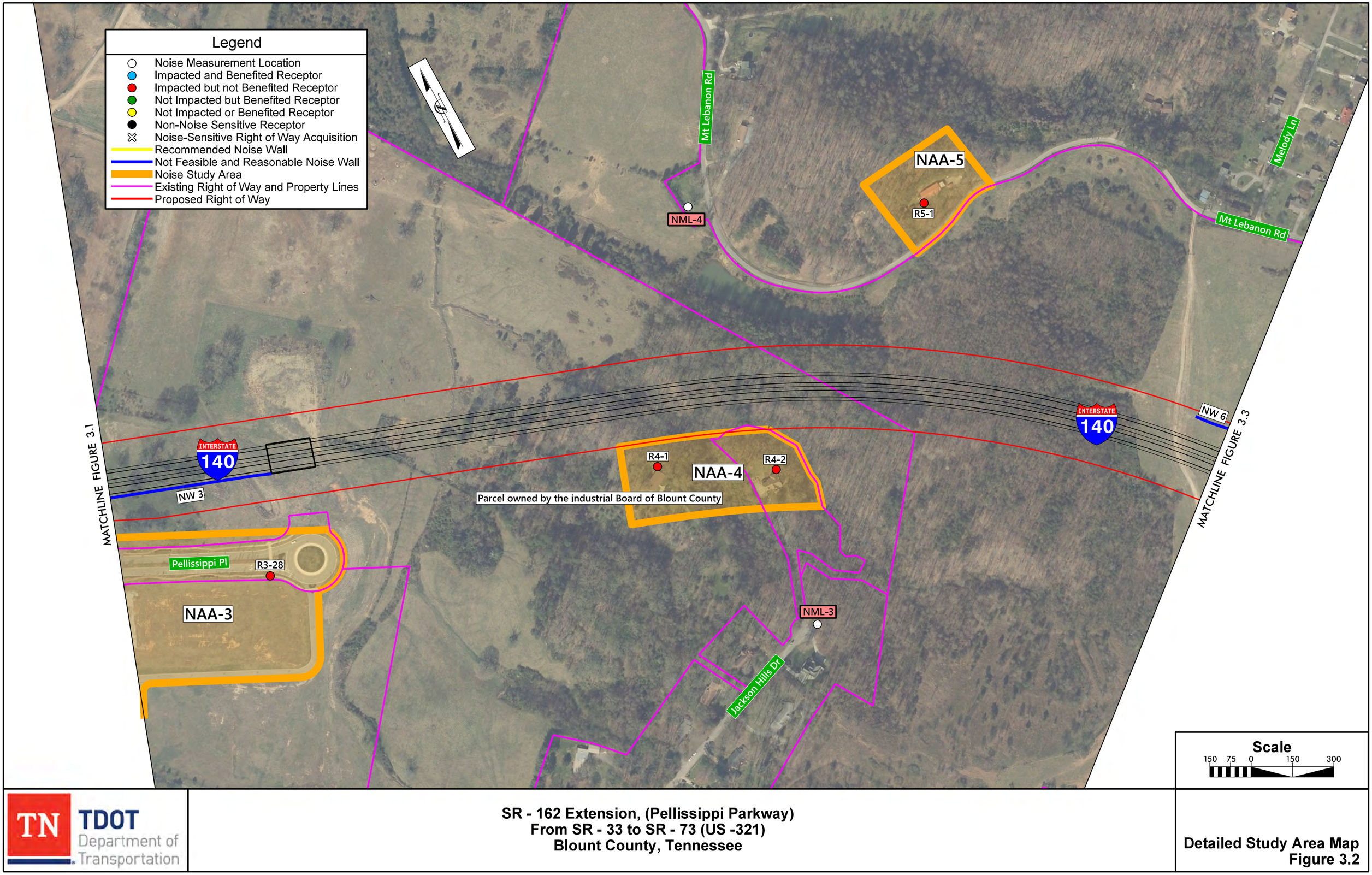
Source: FHWA



TN TDOT Department of Transportation

SR - 162 Extension, (Pellissippi Parkway)
From SR - 33 to SR - 73 (US -321)
Blount County, Tennessee

Detailed Study Area Map
Figure 3.1

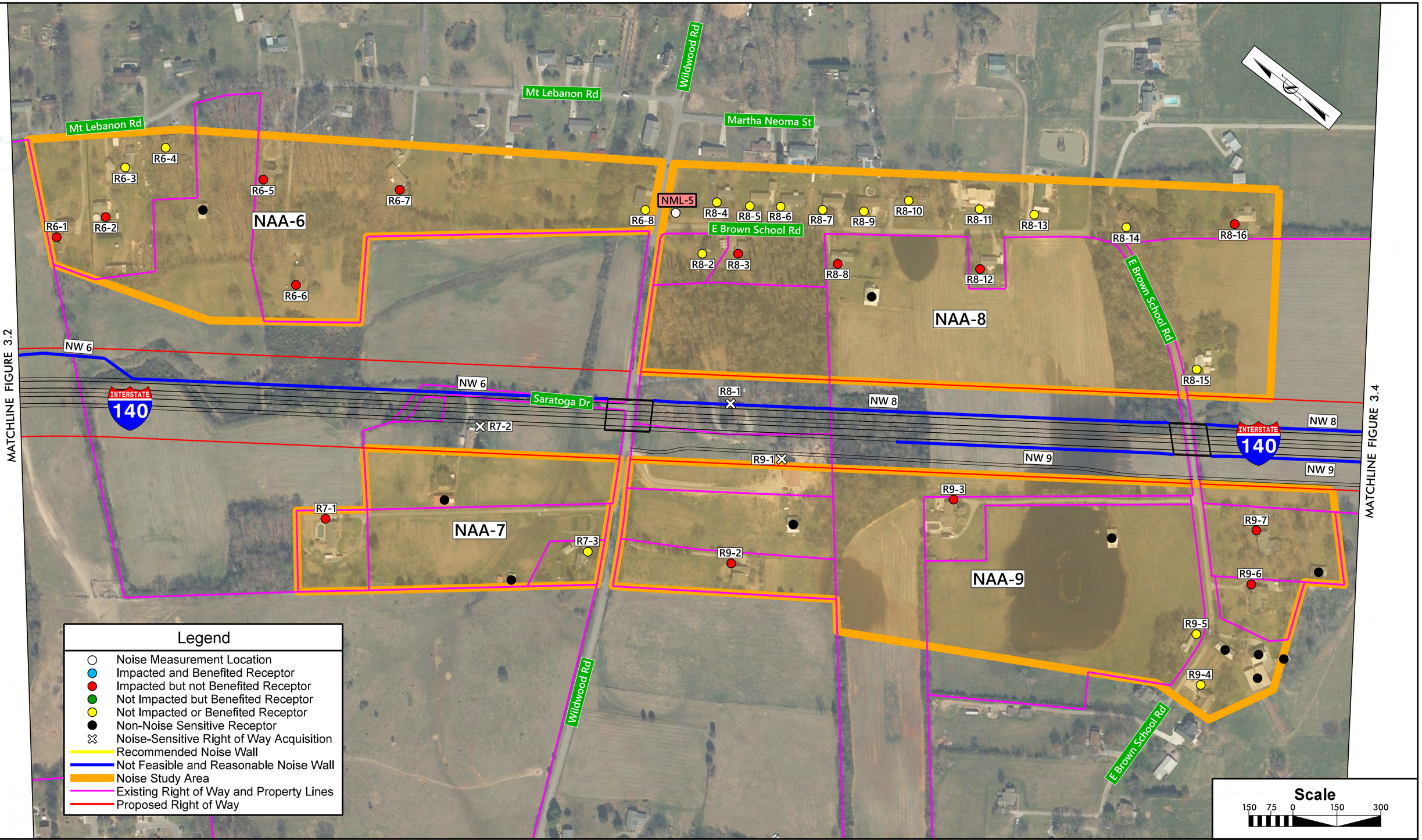


Scale
150 75 0 150 300

TN TDOT Department of Transportation

SR - 162 Extension, (Pellissippi Parkway)
From SR - 33 to SR - 73 (US -321)
Blount County, Tennessee

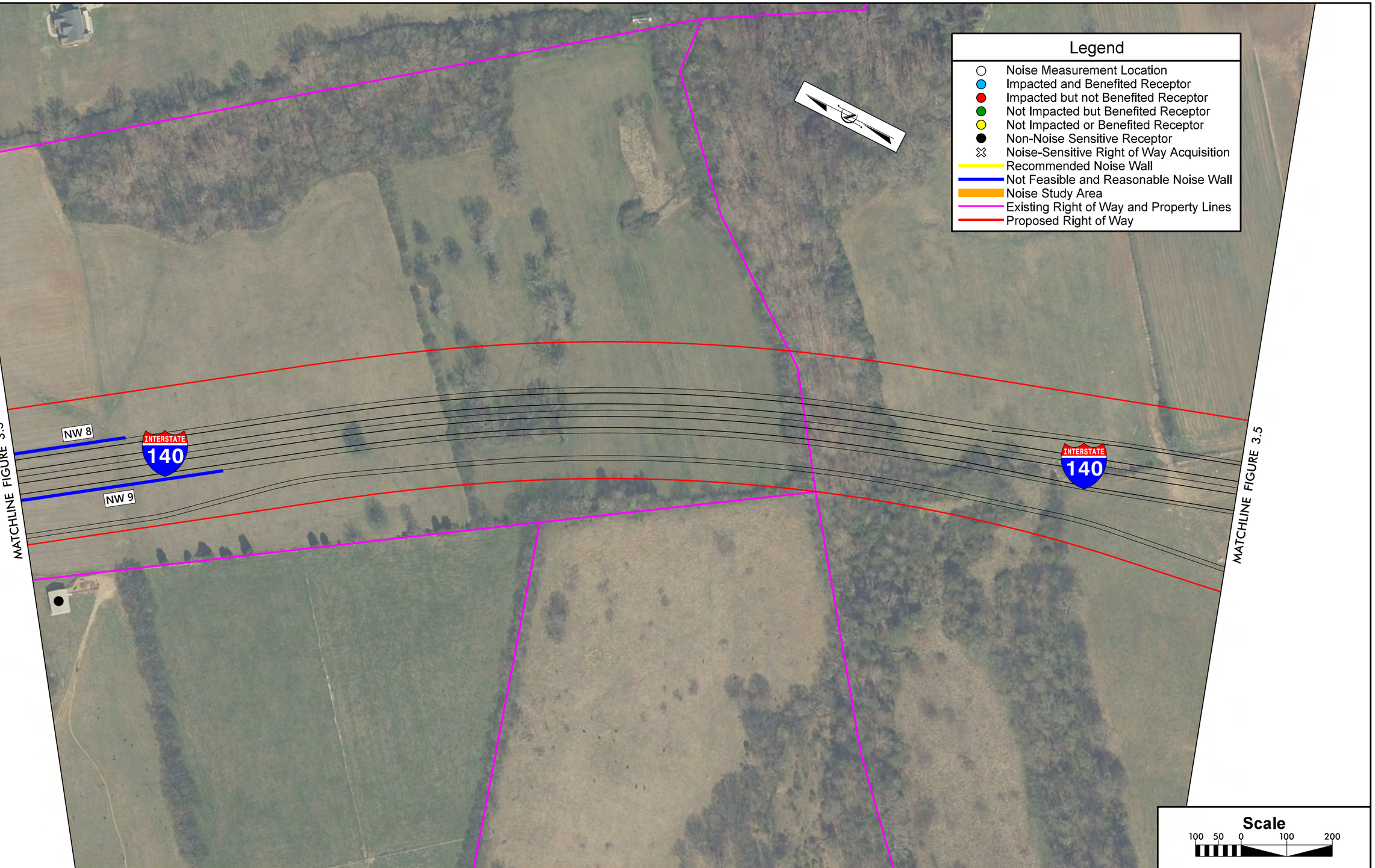
Detailed Study Area Map
Figure 3.2



TN TDOT Department of Transportation

SR - 162 Extension, (Pellissippi Parkway)
From SR - 33 to SR - 73 (US -321)
Blount County, Tennessee

Detailed Study Area Map
Figure 3.3



TN TDOT Department of Transportation

SR - 162 Extension, (Pellissippi Parkway)
From SR - 33 to SR - 73 (US -321)
Blount County, Tennessee

Detailed Study Area Map
Figure 3.4

MATCHLINE FIGURE 3.9

MATCHLINE FIGURE 3.4

MATCHLINE FIGURE 3.6

MATCHLINE FIGURE 3.8

411

NAA-10

Sevierville Rd

R10-3

R10-2

NML-6

R10-1

INTERSTATE 140

INTERSTATE 140

411

Legend

- Noise Measurement Location
- Impacted and Benefited Receptor
- Impacted but not Benefited Receptor
- Not Impacted but Benefited Receptor
- Not Impacted or Benefited Receptor
- Non-Noise Sensitive Receptor
- Noise-Sensitive Right of Way Acquisition
- Recommended Noise Wall
- Not Feasible and Reasonable Noise Wall
- Noise Study Area
- Existing Right of Way and Property Lines
- Proposed Right of Way

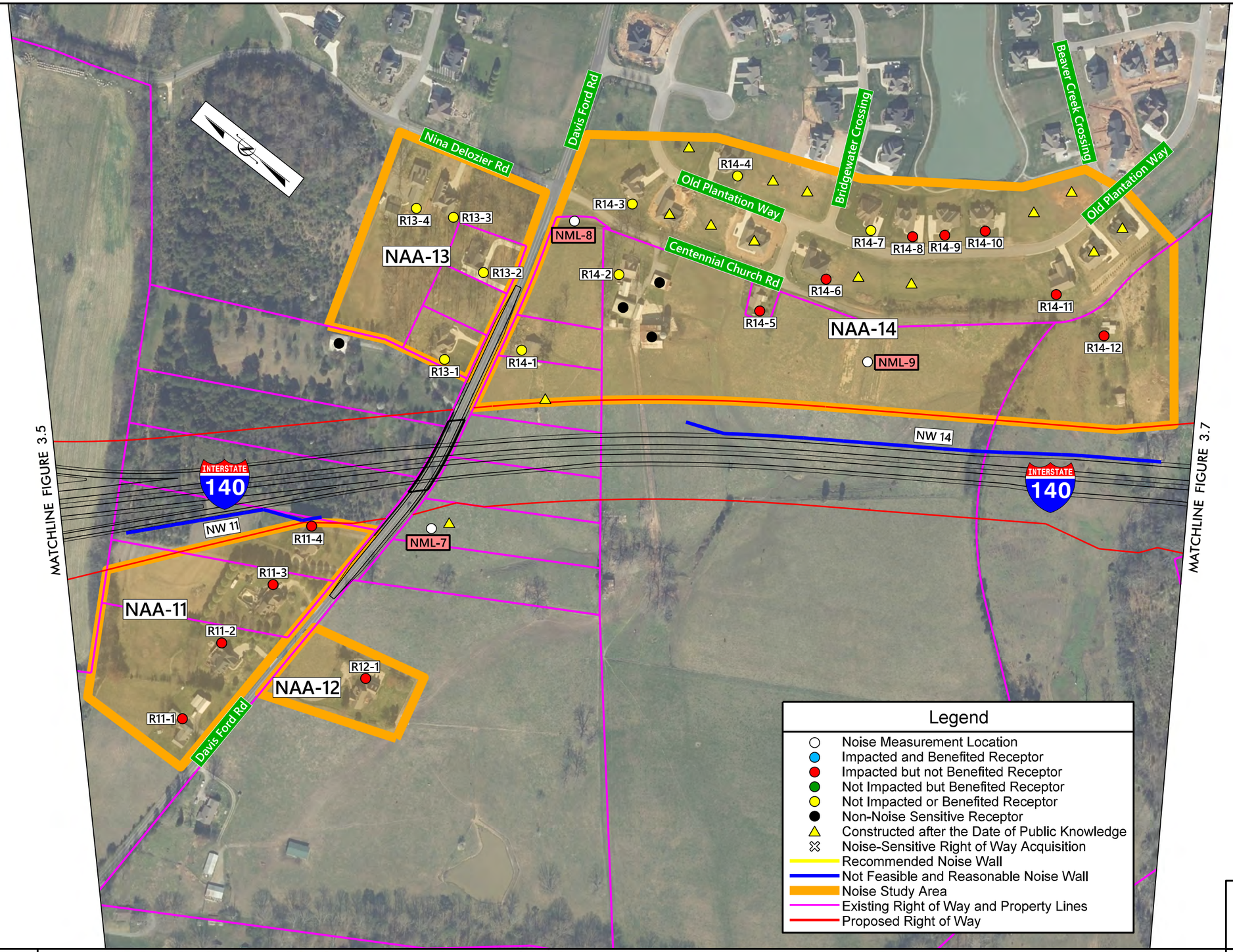
Scale

100 50 0 100 200

TN TDOT Department of Transportation

SR - 162 Extension, (Pellissippi Parkway)
From SR - 33 to SR - 73 (US -321)
Blount County, Tennessee

Detailed Study Area Map
Figure 3.5



TN TDOT Department of Transportation

SR - 162 Extension, (Pellissippi Parkway)
From SR - 33 to SR - 73 (US -321)
Blount County, Tennessee

Detailed Study Area Map
Figure 3.6

MATCHLINE FIGURE 3.6

Begin Noise Wall 15
NW 15 Sta. 10+00.00 =
RAMP3C Sta. 92+10.39
13.50' RT

NW 15 (Height 18')

NW 15 Opt. 1

NML-10

Rhododendron Dr

R15-1 to R15-8

R15-9 to R15-16

Hepatica Dr

R15-17 to R15-25

R15-26 to R15-34

Azalea Dr

R15-35 to R15-46

R15-47 to R15-58

Mistletoe Dr

R15-59 to R15-69

R15-70 to R15-79

Rhododendron Dr

R15-80 to R15-88

Teaberry Dr

Dewberry Dr

Silverbell Dr

R15-89 to R15-97

R15-98 to R15-107

R15-108 to R15-113

Dewberry Dr

NAA-15

Kensington Place
Mobile Home Park

R15-114
R15-115
R15-116
R15-117
R15-118
R15-119
R15-120
R15-121
R15-122
R15-123
R15-124
R15-125
R15-126
R15-127
R15-128
R15-129
R15-130
R15-131
R15-132
R15-133

Perry Peyton Dr

INTERSTATE 140

NW 15 (Height 18')

End Noise Wall 15
NW 15 Sta. 22+00.00 =
RAMP3C Sta. 104+13.05
13.50' RT

Playground
Picnic Area
Soccer Fields
R16-1
R16-2
R16-3
R16-4
R16-5
R16-6
R16-7
R16-8

NAA-16

RIO Revolution Church - Maryville

NML-12

John Helton Rd

E Lamar Alexander Pkwy

Hubbard School Rd

321

R19-3

Buchanan Rd

NAA-19

R19-1
R19-2

Hardscape Specialist

Foster's Auto Body Maryville

Morning Star Baptist Church

R18-1

NAA-18

Opies's auto restore

Buchanan Rd

321

NML-11

E Lamar Alexander Pkwy

NAA-17

R17-1

Legend

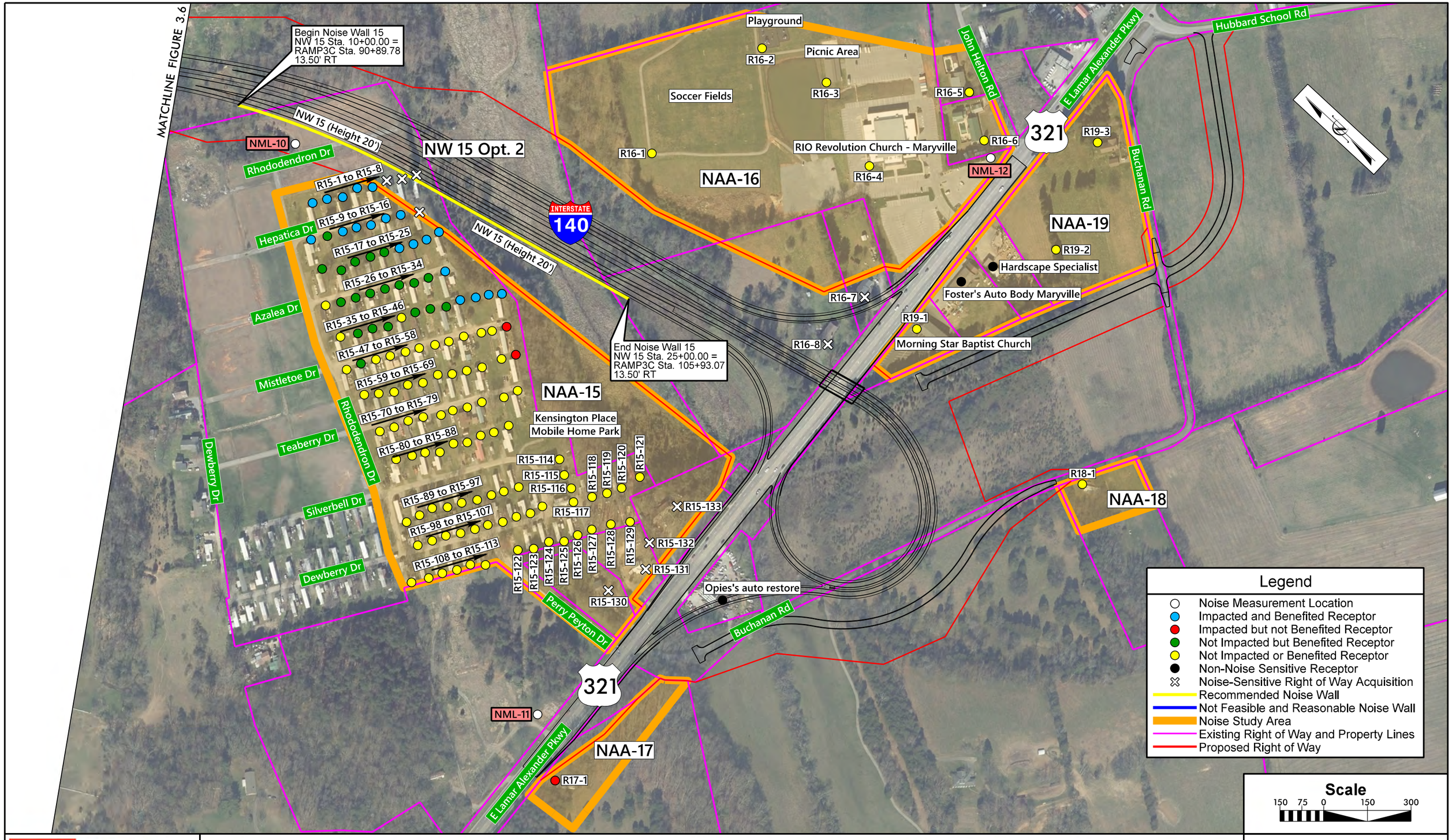
- Noise Measurement Location
- Impacted and Benefited Receptor
- Impacted but not Benefited Receptor
- Not Impacted but Benefited Receptor
- Not Impacted or Benefited Receptor
- Non-Noise Sensitive Receptor
- Noise-Sensitive Right of Way Acquisition
- Recommended Noise Wall
- Not Feasible and Reasonable Noise Wall
- Noise Study Area
- Existing Right of Way and Property Lines
- Proposed Right of Way

Scale
150 75 0 150 300

TN TDOT Department of Transportation

SR - 162 Extension, (Pellissippi Parkway)
From SR - 33 to SR - 73 (US -321)
Blount County, Tennessee

Detailed Study Area Map
Noise Wall 15 Opt. 1
Figure 3.7



TN TDOT Department of Transportation

SR - 162 Extension, (Pellissippi Parkway)
From SR - 33 to SR - 73 (US -321)
Blount County, Tennessee

Detailed Study Area Map
Noise Wall 15 Opt. 2
Figure 3.7a

MATCHLINE FIGURE 3.6

Begin Noise Wall 15
NW 15 Sta. 10+00.00 =
RAMP3C Sta. 90+89.78
13.50' RT

Begin Noise Wall 15.1
NW 15.1 Sta. 10+00.00 =
SR-162 Sta. 331+96.94
51.24' RT

NW 15 (Height 12')

NW 15.1 (Height 6')

NW 15 Opt. 3

NML-10

Rhododendron Dr

R15-1 to R15-8

R15-9 to R15-16

Hepatica Dr

R15-17 to R15-25

R15-26 to R15-34

Azalea Dr

R15-35 to R15-46

R15-47 to R15-58

Mistletoe Dr

R15-59 to R15-69

R15-70 to R15-79

Rhododendron Dr

R15-80 to R15-88

Teaberry Dr

Dewberry Dr

R15-89 to R15-97

Silverbell Dr

R15-98 to R15-107

R15-108 to R15-113

Dewberry Dr

R15-114

R15-115

R15-116

R15-117

R15-118

R15-119

R15-120

R15-121

R15-122

R15-123

R15-124

R15-125

R15-126

R15-127

R15-128

R15-129

R15-130

R15-131

R15-132

R15-133

Perry Peyton Dr

End Noise Wall 15
NW 15 Sta. 25+00.00 =
RAMP3C Sta. 105+93.07
13.50' RT

End Noise Wall 15.1
NW 15.1 Sta. 23+20.00 =
SR-162 Sta. 345+18.10
36.75' RT

NAA-15

Kensington Place
Mobile Home Park

INTERSTATE
140

NML-11

321

E Lamar Alexander Pkwy

NAA-17

R17-1

Playground

R16-2

Picnic Area

R16-3

Soccer Fields

R16-1

NAA-16

R16-4

RIO Revolution Church - Maryville

R16-5

John Helton Rd

E Lamar Alexander Pkwy

Hubbard School Rd

R16-6

321

R19-3

NML-12

Buchanan Rd

NAA-19

R19-2

Hardscape Specialist

Foster's Auto Body Maryville

R16-7

R19-1

Morning Star Baptist Church

R16-8

Opies's auto restore

Buchanan Rd

R18-1

NAA-18

Legend

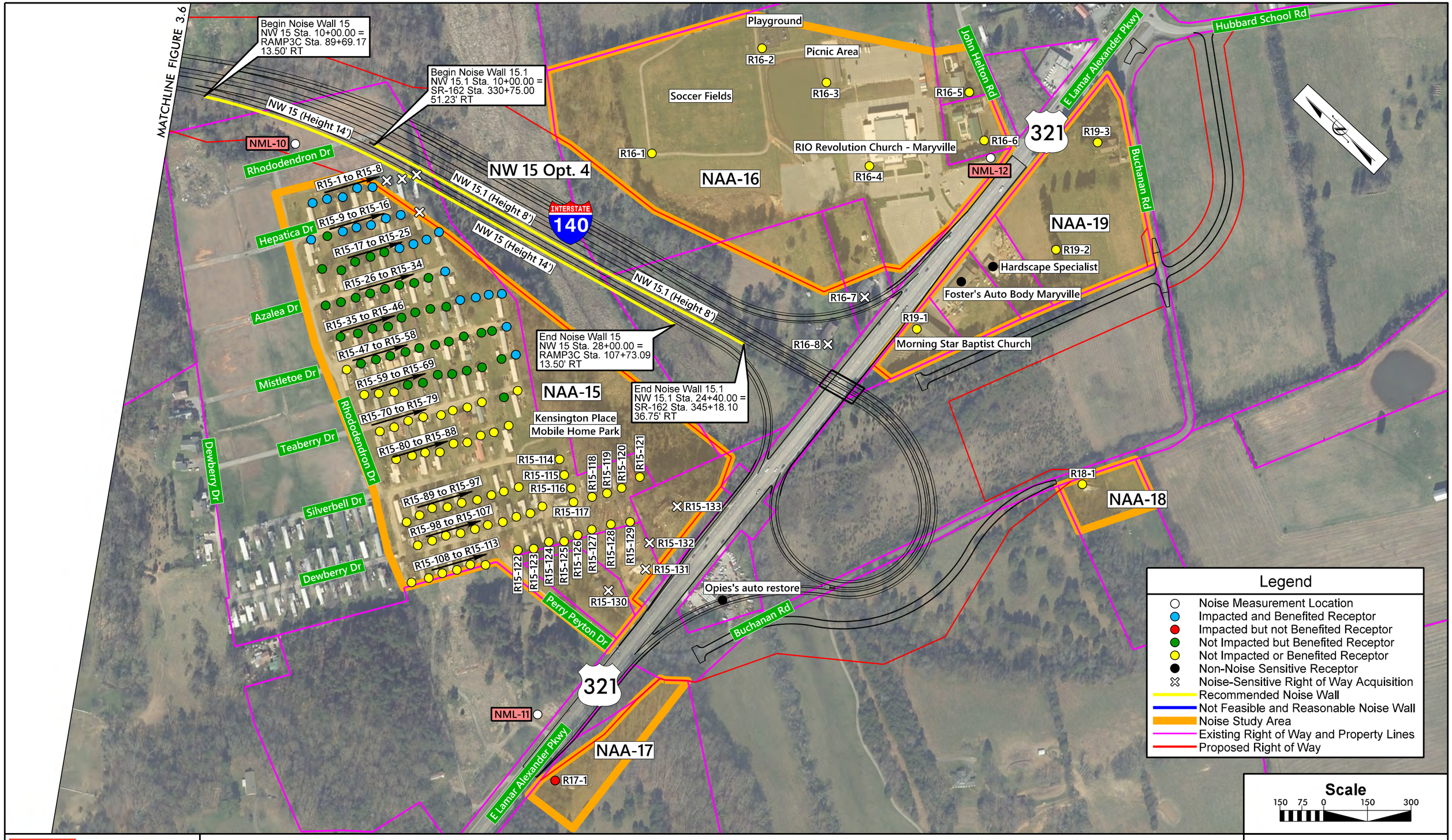
- Noise Measurement Location
- Impacted and Benefited Receptor
- Impacted but not Benefited Receptor
- Not Impacted but Benefited Receptor
- Not Impacted or Benefited Receptor
- Non-Noise Sensitive Receptor
- Noise-Sensitive Right of Way Acquisition
- Recommended Noise Wall
- Not Feasible and Reasonable Noise Wall
- Noise Study Area
- Existing Right of Way and Property Lines
- Proposed Right of Way

Scale
150 75 0 150 300

TN TDOT Department of Transportation

SR - 162 Extension, (Pellissippi Parkway)
From SR - 33 to SR - 73 (US -321)
Blount County, Tennessee

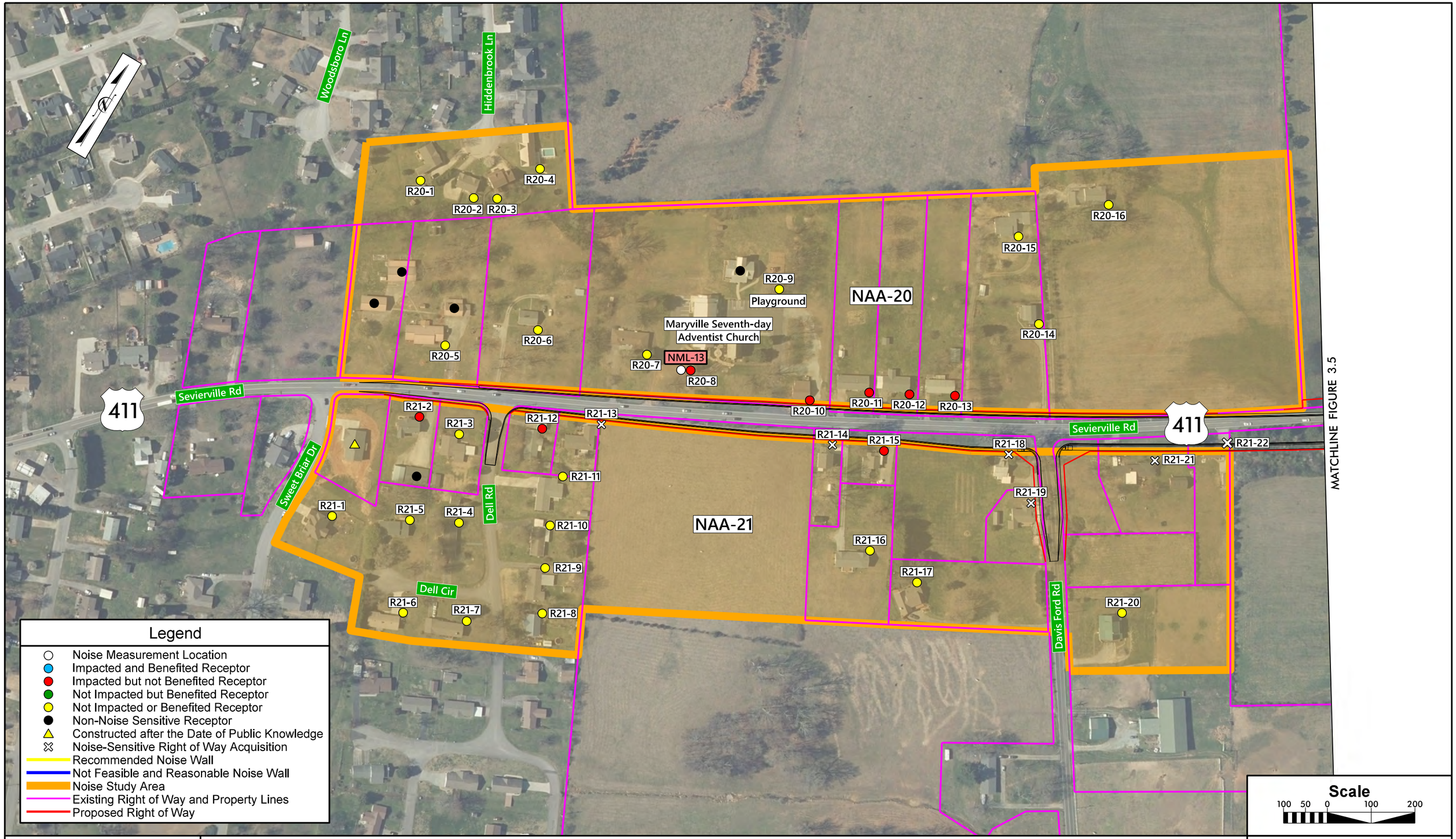
Detailed Study Area Map
Noise Wall 15 Opt. 3
Figure 3.7b



TN TDOT Department of Transportation

SR - 162 Extension, (Pellissippi Parkway)
From SR - 33 to SR - 73 (US -321)
Blount County, Tennessee

Detailed Study Area Map
Noise Wall 15 Opt. 4
Figure 3.7c

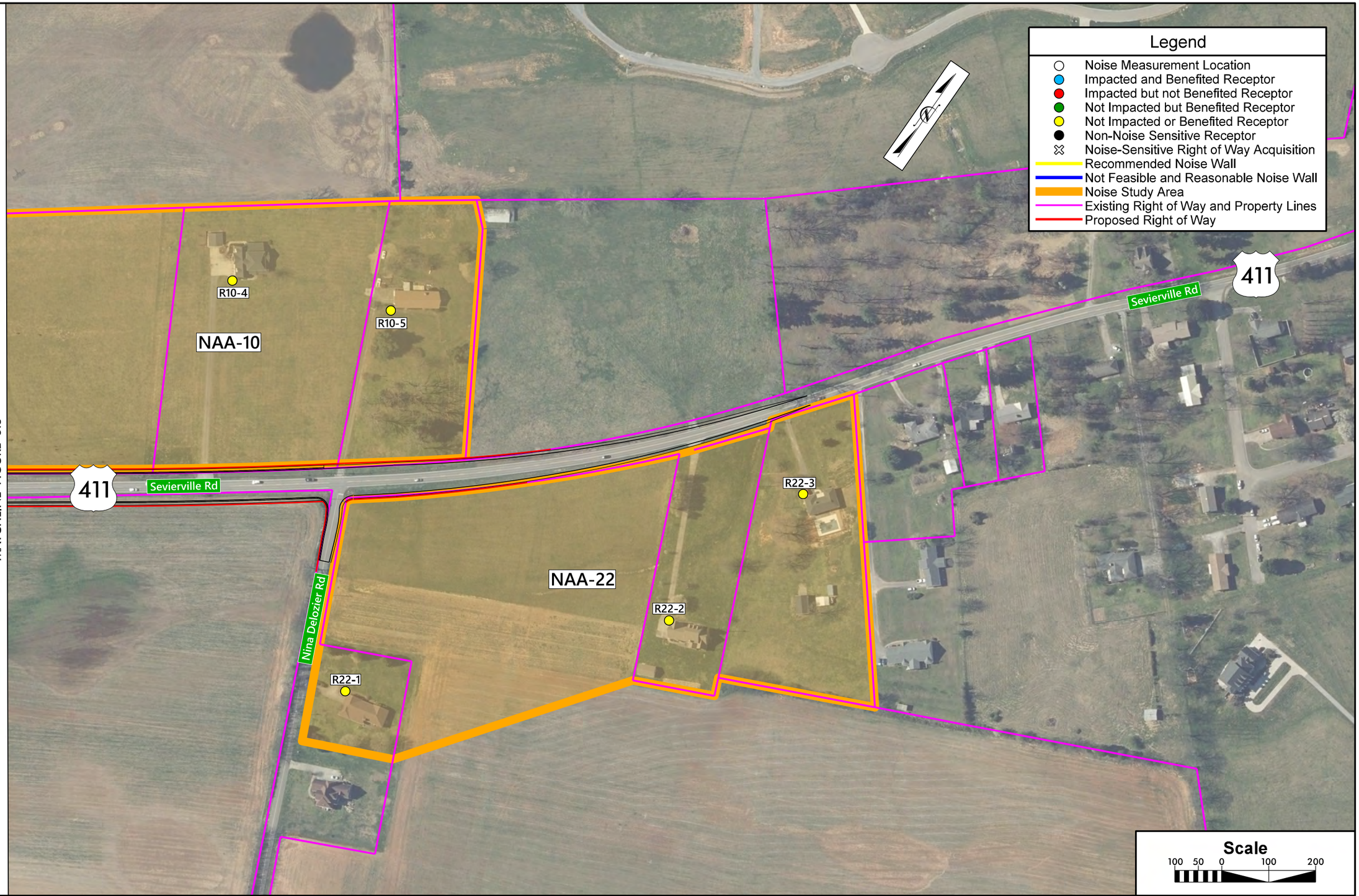


TN TDOT Department of Transportation

SR - 162 Extension, (Pellissippi Parkway)
From SR - 33 to SR - 73 (US -321)
Blount County, Tennessee

Detailed Study Area Map
Figure 3.8

MATCHLINE FIGURE 3.5



TN TDOT Department of Transportation

SR - 162 Extension, (Pellissippi Parkway)
From SR - 33 to SR - 73 (US -321)
Blount County, Tennessee

Detailed Study Area Map
Figure 3.9

APPENDICES

Appendix A

Cover Sheet of Project Plans and Typical Cross-Sections

R.O.W. INDEX OF SHEETS

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TYPICAL SECTIONS AND PAVEMENT SCHEDULE	2B – 2B5
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TABULATED QUANTITIES	2F, 2F1 - 2F4
DETAIL SHEETS	2G – 2G11
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PROPOSED LAYOUT(S)	4B - 31B
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STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING

DOES THIS PROJECT QUALIFY FOR UTILITY CHAPTER 86	(YES)	NO
WORK ZONE SIGNIFICANCE DETERMINATION		
SIGNIFICANT	YES	NO

TENN.	YEAR	SHEET NO.
	2022	1
FED. AID PROJ. NO.	HPP/NH - 162(7)	
STATE PROJ. NO.	05097-1233-14	

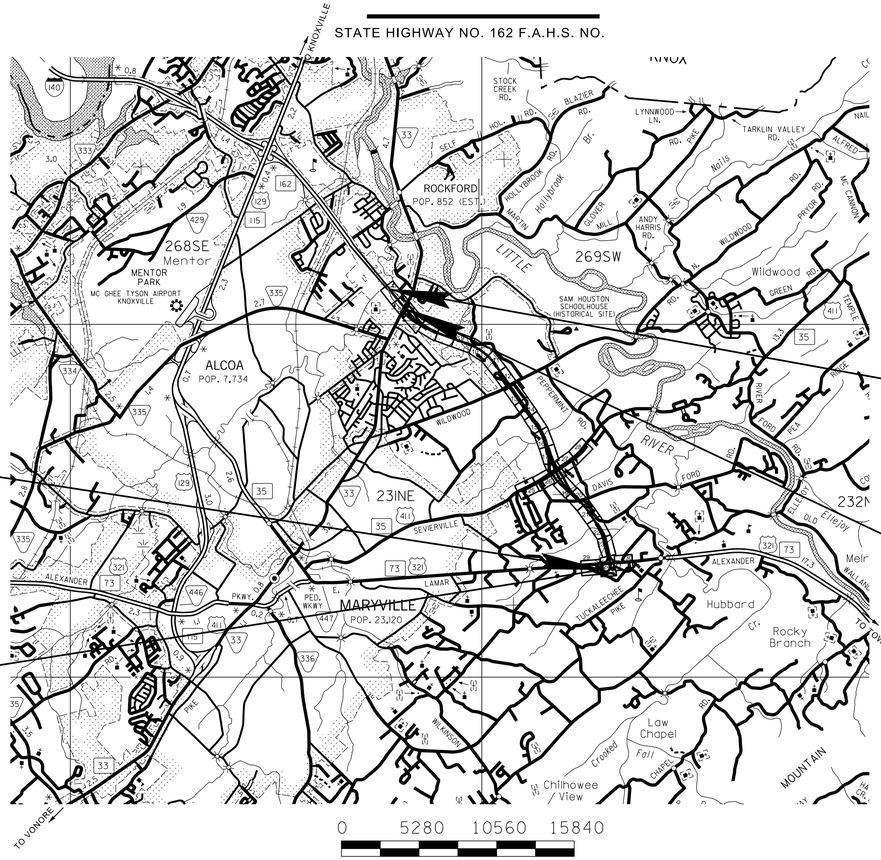
BLOUNT COUNTY

SR - 162 EXT, (PELLISSIPPI PARKWAY)
FROM SR - 33 TO SR - 73 (US - 321)

RIGHT-OF-WAY

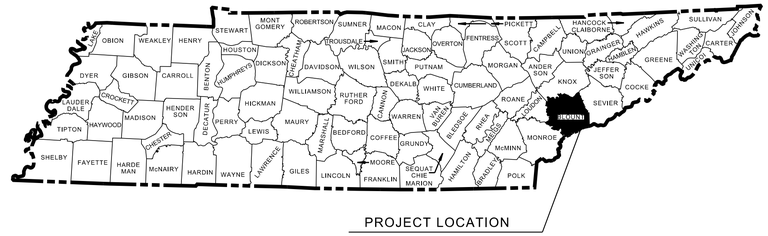
GRADE, DRAIN, BASE, BRIDGE, PAVE, RETAINING WALL, SIGN & SIGNALS

STATE HIGHWAY NO. 162 F.A.H.S. NO.



0 5280 10560 15840

SCALE: 1"= 5,280'



N

NO EXCLUSIONS
ROAD CLOSURE

R.O.W. FIELD REVIEW

05097-1233-14
BEGIN PROJECT NO. HPP/NH - 162(7) CONST.
STA. 100+00.00
N 543775.1364 E 2578227.6700

05097-1233-14
BEGIN PROJECT NO. HPP/NH - 162(7) R.O.W.
STA. 116+84.00
N 542459.2818 E 2579278.2480

05097-1233-14
END PROJECT NO. HPP/NH - 162(7) CONSTRUCTION
STA. 359+03.56
N 524678.1792 E 2592697.0271

05097-1233-14
END PROJECT NO. HPP/NH - 162(7) R.O.W.
STA. 359+03.56
N 524678.1792 E 2592697.0271

SEALED BY

APPROVED: Paul D. Degges
PAUL D. DEGGES, CHIEF ENGINEER

DATE:

APPROVED:
JOSEPH GALBATO, III, COMMISSIONER

SPECIAL NOTES

PROPOSALS MAY BE REJECTED BY THE COMMISSIONER IF ANY OF THE UNIT PRICES CONTAINED THEREIN ARE OBVIOUSLY UNBALANCED, EITHER EXCESSIVE OR BELOW THE REASONABLE COST ANALYSIS VALUE.

THIS PROJECT TO BE CONSTRUCTED UNDER THE STANDARD SPECIFICATIONS OF THE TENNESSEE DEPARTMENT OF TRANSPORTATION DATED JANUARY 1, 2021 AND ADDITIONAL SPECIFICATIONS AND SPECIAL PROVISIONS CONTAINED IN THE PLANS AND IN THE PROPOSAL CONTRACT.

TDOT C.E. MANAGER 1: STACY WEAVER, P.E.
DESIGNED BY : CDM SMITH
DESIGNER : KASSIE HOLMES, P.E. CHECKED BY DAN HIDEN, P.E.; JEFF MIZE, P.E.
P.E. NO. 05097-1233-14 (DESIGN)
PIN NO. 101423.00

R.O.W. LENGTH	4.587 MILES
ROADWAY LENGTH	4.906 MILES
BRIDGE LENGTH	MILES
BOX BRIDGE LENGTH	MILES
BOX BRIDGE LENGTH	MILES ▲
PROJECT LENGTH	4.906 MILES

▲ Not included in the project length. (Non Riding Surface)

SURVEY 08-13-2018	TRAFFIC DATA	
	ADT (2022)	15,770
	ADT (2042)	29,540
	DHV (2020)	3,542
	D	52 - 48
	T (ADT)	3 %
	T (DHV)	2 %
	V	70 MPH

COORDINATE VALUES ARE TENNESSEESTATE PLANE NAD/83 (CORS96) AND ARE DATUM ADJUSTED BY THE FACTOR OF 1.00009, AND ARE TIED TO THE GEODETIC REFERENCE NETWORK. ALL ELEVATIONS ARE REFERENCED TO THE NAVD 1988 USING THE GEOID 12B MODEL, OBTAINED ON 05-07-18.

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:
DIVISION ADMINISTRATOR DATE

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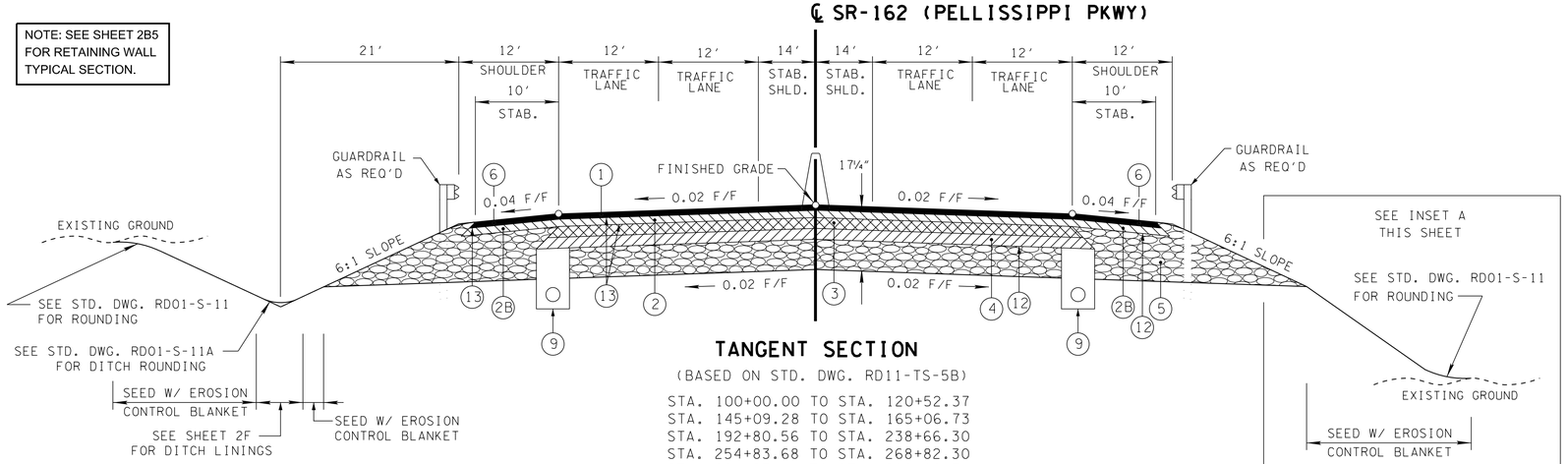
TYPE	YEAR	PROJECT NO.	SHEET NO.
R.O.W.	2022	HPP/NH - 162(7)	2B

SR - 162 BLOUNT COUNTY

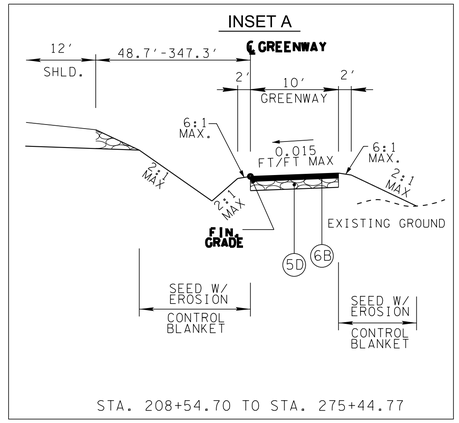
NOTE: SEE SHEET 2B5 FOR RETAINING WALL TYPICAL SECTION.



TANGENT SECTION

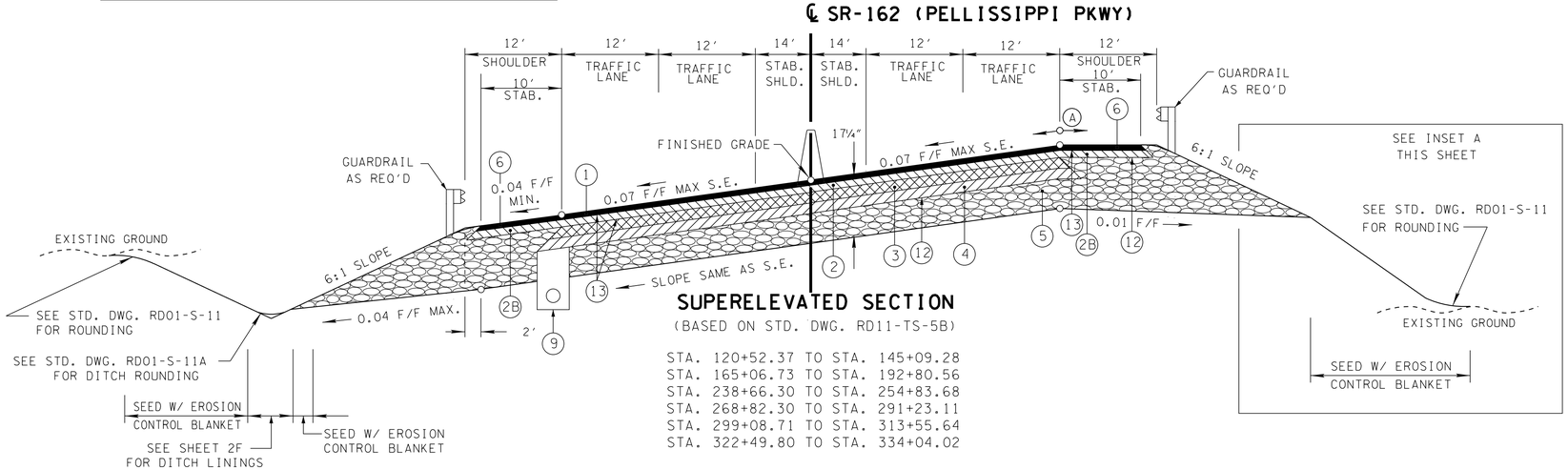
(BASED ON STD. DWG. RD11-TS-5B)

STA. 100+00.00 TO STA. 120+52.37
STA. 145+09.28 TO STA. 165+06.73
STA. 192+80.56 TO STA. 238+66.30
STA. 254+83.68 TO STA. 268+82.30
STA. 291+23.11 TO STA. 299+08.71
STA. 313+55.64 TO STA. 322+49.80
STA. 334+04.02 TO STA. 339+90.00



STA. 208+54.70 TO STA. 275+44.77

(A) THE SLOPES OF THE SHOULDER AND ROADWAY PAVEMENT SHALL NOT EXCEED AN ALGEBRAIC DIFFERENCE OF 0.07.



SUPERELEVATED SECTION

(BASED ON STD. DWG. RD11-TS-5B)

STA. 120+52.37 TO STA. 145+09.28
STA. 165+06.73 TO STA. 192+80.56
STA. 238+66.30 TO STA. 254+83.68
STA. 268+82.30 TO STA. 291+23.11
STA. 299+08.71 TO STA. 313+55.64
STA. 322+49.80 TO STA. 334+04.02

PROPOSED PAVEMENT SCHEDULE

(1) BITUMINOUS SURFACING (ROADWAY) @ 1-1/4" THICK (APPROX. 132.5 LBS/Sq Yd)
411-03.10 ASPHALT CONCRETE SURFACE MIX (PG76-22) (BPMB-HM) GRADING D

(1A) BITUMINOUS SURFACING (ROADWAY) @ 1-1/4" THICK (APPROX. 132.5 LBS/Sq Yd)
411-02.10 ASPHALT CONCRETE SURFACE MIX (PG70-22) (BPMB-HM) GRADING D

(1B) BITUMINOUS SURFACING (ROADWAY) @ 1-1/4" THICK (APPROX. 132.5 LBS/Sq Yd)
411-01.10 ASPHALT CONCRETE SURFACE MIX (PG64-22) (BPMB-HM) GRADING D

(2) BITUMINOUS BINDER (ROADWAY) @ 2" THICK (APPROX. 226 LBS/Sq Yd)
307-03.08 ASPHALT CONCRETE MIX (PG76-22) (BPMB-HM) GRADING B-M2

(2A) BITUMINOUS BINDER (ROADWAY) @ 2" THICK (APPROX. 226 LBS/Sq Yd)
307-02.08 ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING B-M2

(2B) BITUMINOUS BINDER (SHOULDER) @ 2" THICK (APPROX. 226 LBS/Sq Yd)
307-01.08 ASPHALT CONCRETE MIX (PG64-22) (BPMB-HM) GRADING B-M2

(3) BITUMINOUS BASE (ROADWAY) @ 3" THICK (APPROX. 345 LBS/Sq Yd)
307-03.01 ASPHALT CONCRETE MIX (PG76-22) (BPMB-HM) GRADING A

(3A) BITUMINOUS BASE (ROADWAY) @ 3" THICK (APPROX. 345 LBS/Sq Yd)
307-02.01 ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING A

(4) BITUMINOUS BASE (ROADWAY) @ 3" THICK (APPROX. 270 LBS/Sq Yd)
307-01.22 ASPHALT CONCRETE MIX (PG76-22) (BPMB-HM) GRADING A-S

(4A) BITUMINOUS BASE (ROADWAY) @ 3" THICK (APPROX. 270 LBS/Sq Yd)
307-01.21 ASPHALT CONCRETE MIX (PG70-22) (BPMB-HM) GRADING A-S

(5) MINERAL AGGREGATE BASE - 8" DEPTH (ROADWAY) (FULL DEPTH UNDER SHOULDERS)
303-01 MINERAL AGGREGATE, TYPE "A" BASE GRADING D

(5A) MINERAL AGGREGATE BASE - 6" DEPTH (ROADWAY) (FULL DEPTH UNDER SHOULDERS)
303-01 MINERAL AGGREGATE, TYPE "A" BASE GRADING D

(5D) MINERAL AGGREGATE BASE - 4" DEPTH (GREENWAY)
303-01 MINERAL AGGREGATE, TYPE "A" BASE GRADING D

(6) BITUMINOUS SURFACING (SHOULDER) @ 1-1/4" THICK (APPROX. 132.5 LBS/Sq Yd)
411-01.07 ASPHALT CONCRETE MIX (PG64-22) GRADING E SHOULDER

(6A) BITUMINOUS SURFACING (SHOULDER) @ 1-1/2" THICK (APPROX. 159 LBS/Sq Yd)
411-01.07 ASPHALT CONCRETE MIX (PG64-22) GRADING E SHOULDER

(6B) BITUMINOUS SURFACING (SHOULDER) @ 2" THICK (APPROX. 212 LBS/Sq Yd)
411-01.07 ASPHALT CONCRETE MIX (PG64-22) GRADING E SHOULDER

(7) CONCRETE SURFACING COURSE PORTLAND CEMENT CONCRETE SURFACING @ 10" THICK THICK ON ROADWAYS
501-01.03 PORTLAND CEMENT CONCRETE PAVEMENT (PLAIN) 10"

(8) BITUMINOUS BINDER COURSE TREATED PERMEABLE BASE @ 4" THICK UNDER ROADWAY
313-03 TREATED PERMEABLE BASE

(9) UNDERDRAIN
710-02 AGGREGATE UNDERDRAIN W/PIPE

(10) TYPE 6-30 NONMOUNTABLE CONCRETE COMBINED CURB & GUTTER
702-03 CONCRETE COMBINED CURB & GUTTER (D=9") SEE STD. DWG. RP-VC-10

(10A) TYPE 6-30 NONMOUNTABLE CONCRETE COMBINED CURB & GUTTER
702-03 CONCRETE COMBINED CURB & GUTTER (D=6") SEE STD. DWG. RP-VC-11

(10B) TYPE 6-33 SLOPING CONCRETE CURB & GUTTER
702-03 CONCRETE COMBINED CURB & GUTTER (D=9") SEE STD. DWG. RP-SC-1

(11) CONCRETE CURB
702-01 CONCRETE CURB 6" DETACHED (MOUNTABLE) TYPE B (STD. DWG. RP-SC-1)

(12) PRIME COAT
402-01 BITUMINOUS MATERIAL FOR PRIME COAT (TC) (RATE 0.02-0.35 GAL/YD)
402-02 AGGREGATE FPR COVER MATERIAL (PC)(RATE 8-12 LB/YD)

(13) TACK COAT
403-01 BITUMINOUS MATERIAL FOR TACK COAT (TC) (RATE 0.07 GAL/YD)

(14) SIDEWALK
701-01.01 CONCRETE SIDEWALK (4")

R.O.W. FIELD REVIEW

SEALED BY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TYPICAL SECTIONS AND PAVEMENT SCHEDULE

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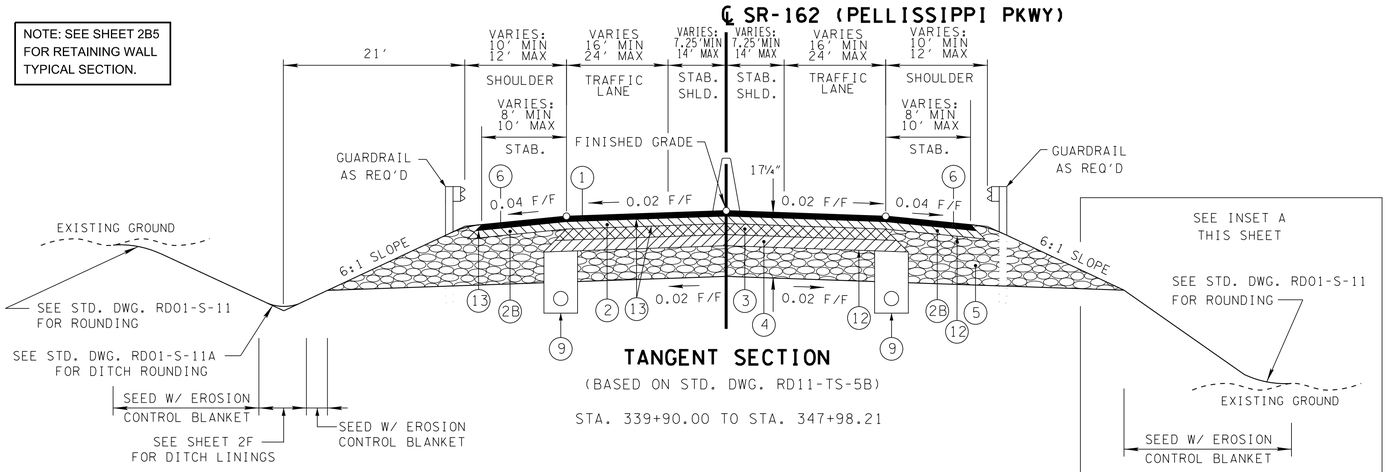
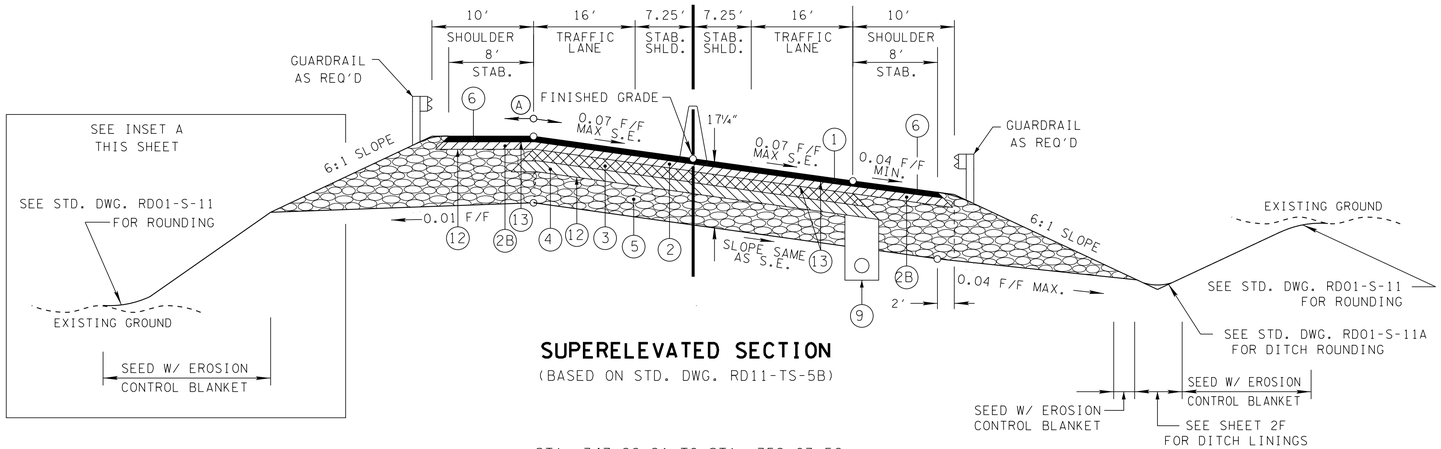
TYPE	YEAR	PROJECT NO.	SHEET NO.
R.O.W.	2022	HPP/NH - 162(7)	2B1

SR - 162 BLOUNT COUNTY

NOTE: SEE SHEET 2B5 FOR RETAINING WALL TYPICAL SECTION.



Ⓐ THE SLOPES OF THE SHOULDER AND ROADWAY PAVEMENT SHALL NOT EXCEED AN ALGEBRAIC DIFFERENCE OF 0.07.



R.O.W. FIELD REVIEW

SEALED BY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TYPICAL SECTIONS

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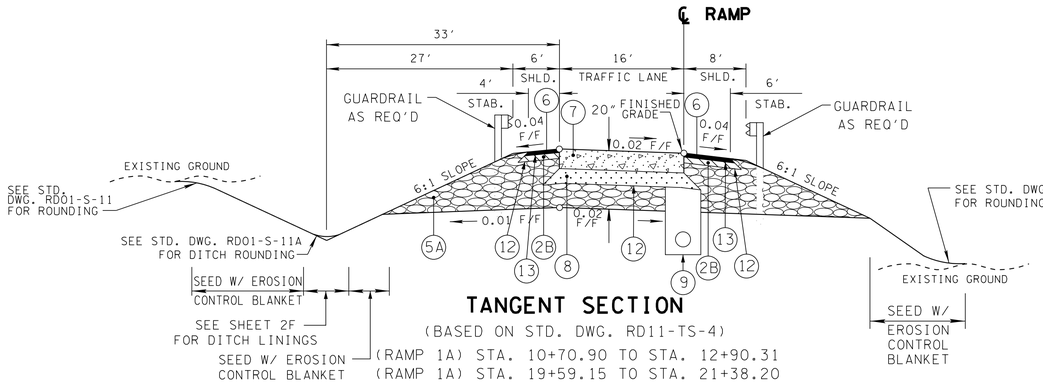
TYPE	YEAR	PROJECT NO.	SHEET NO.
R.O.W.	2022	HPP/NH - 162(7)	2B2

SR - 162 BLOUNT COUNTY

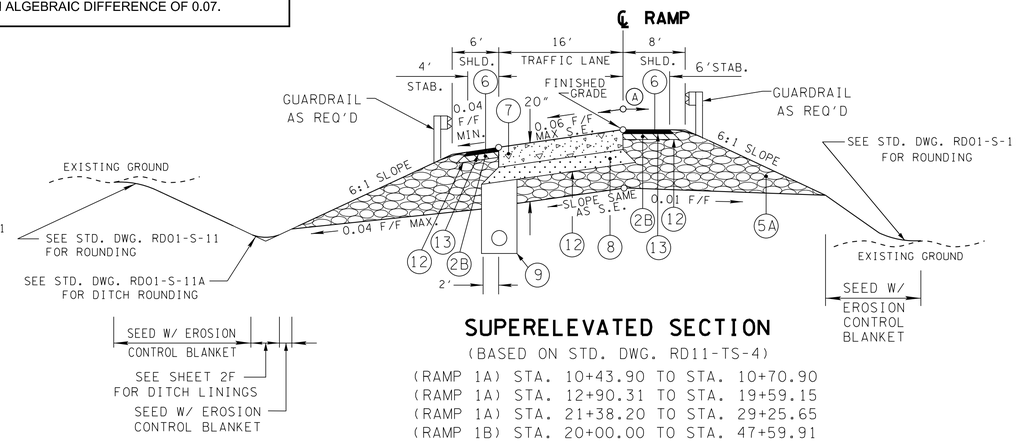
(A) THE SLOPES OF THE SHOULDER AND ROADWAY PAVEMENT SHALL NOT EXCEED AN ALGEBRAIC DIFFERENCE OF 0.07.



TANGENT SECTION

(BASED ON STD. DWG. RD11-TS-4)

(RAMP 1A) STA. 10+70.90 TO STA. 12+90.31
(RAMP 1A) STA. 19+59.15 TO STA. 21+38.20
(RAMP 2A) STA. 42+29.92 TO STA. 46+94.44
(RAMP 2B) STA. 40+00.00 TO STA. 44+16.37
(RAMP 2C) STA. 50+95.60 TO STA. 52+71.08
(RAMP 2C) STA. 59+75.42 TO STA. 72+42.17
(RAMP 2D) STA. 60+00.00 TO STA. 64+63.00
(RAMP 2D) STA. 70+51.52 TO STA. 82+71.04
(RAMP 3C) STA. 85+00.00 TO STA. 87+92.20
(RAMP 3C) STA. 97+03.89 TO STA.108+61.28
(RAMP 3D) STA. 129+52.26 TO STA. 138+95.27
(RAMP 3D) STA. 148+40.73 TO STA. 152+91.32

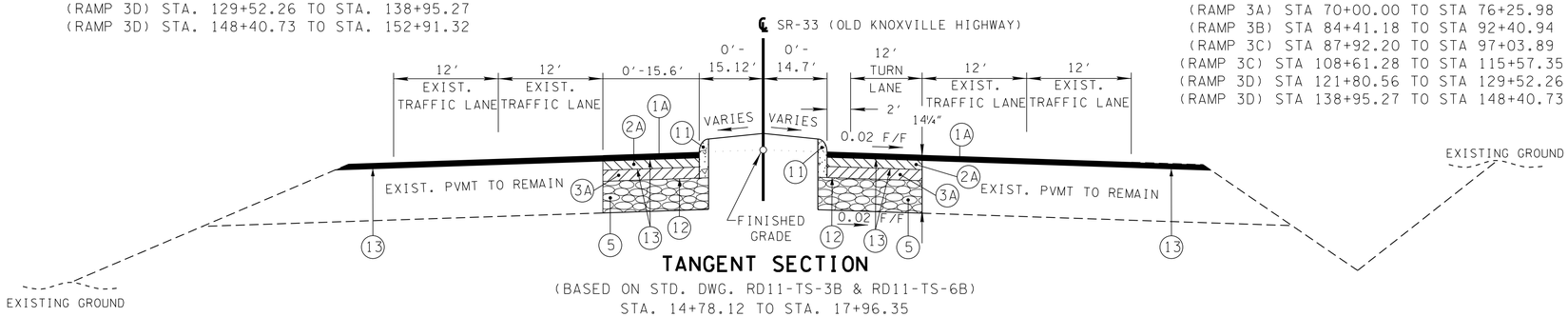


SUPERELEVATED SECTION

(BASED ON STD. DWG. RD11-TS-4)

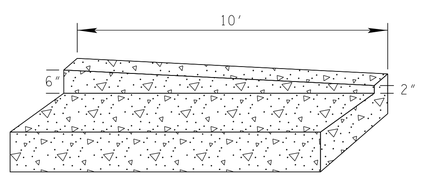
(RAMP 1A) STA. 10+43.90 TO STA. 10+70.90
(RAMP 1A) STA. 12+90.31 TO STA. 19+59.15
(RAMP 1A) STA. 21+38.20 TO STA. 29+25.65
(RAMP 1B) STA. 20+00.00 TO STA. 47+59.91
(RAMP 2A) STA. 30+30.00 TO STA. 42+29.92
(RAMP 2B) STA. 44+16.37 TO STA. 58+15.15
(RAMP 2C) STA. 50+30.00 TO STA. 50+95.60
(RAMP 2C) STA. 52+71.08 TO STA. 59+75.42
(RAMP 2C) STA. 72+42.17 TO STA. 77+59.22
(RAMP 2D) STA. 64+63.00 TO STA. 70+51.52
(RAMP 2D) STA. 82+71.04 TO STA. 83+28.57
(RAMP 3A) STA 70+00.00 TO STA 76+25.98
(RAMP 3B) STA 84+41.18 TO STA 92+40.94
(RAMP 3C) STA 87+92.20 TO STA 97+03.89
(RAMP 3C) STA 108+61.28 TO STA 115+57.35
(RAMP 3D) STA 121+80.56 TO STA 129+52.26
(RAMP 3D) STA 138+95.27 TO STA 148+40.73

R.O.W. FIELD REVIEW

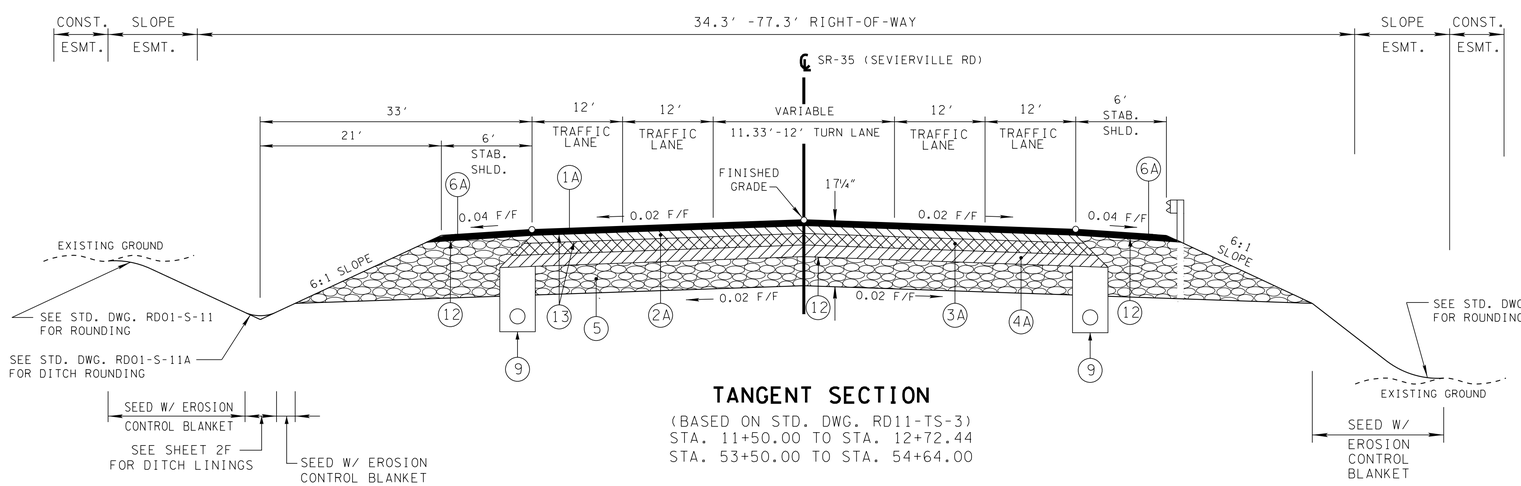


TANGENT SECTION

(BASED ON STD. DWG. RD11-TS-3B & RD11-TS-6B)
STA. 14+78.12 TO STA. 17+96.35



CURB TRANSITION DETAIL



TANGENT SECTION

(BASED ON STD. DWG. RD11-TS-3)
STA. 11+50.00 TO STA. 12+72.44
STA. 53+50.00 TO STA. 54+64.00

SEALED BY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TYPICAL SECTIONS

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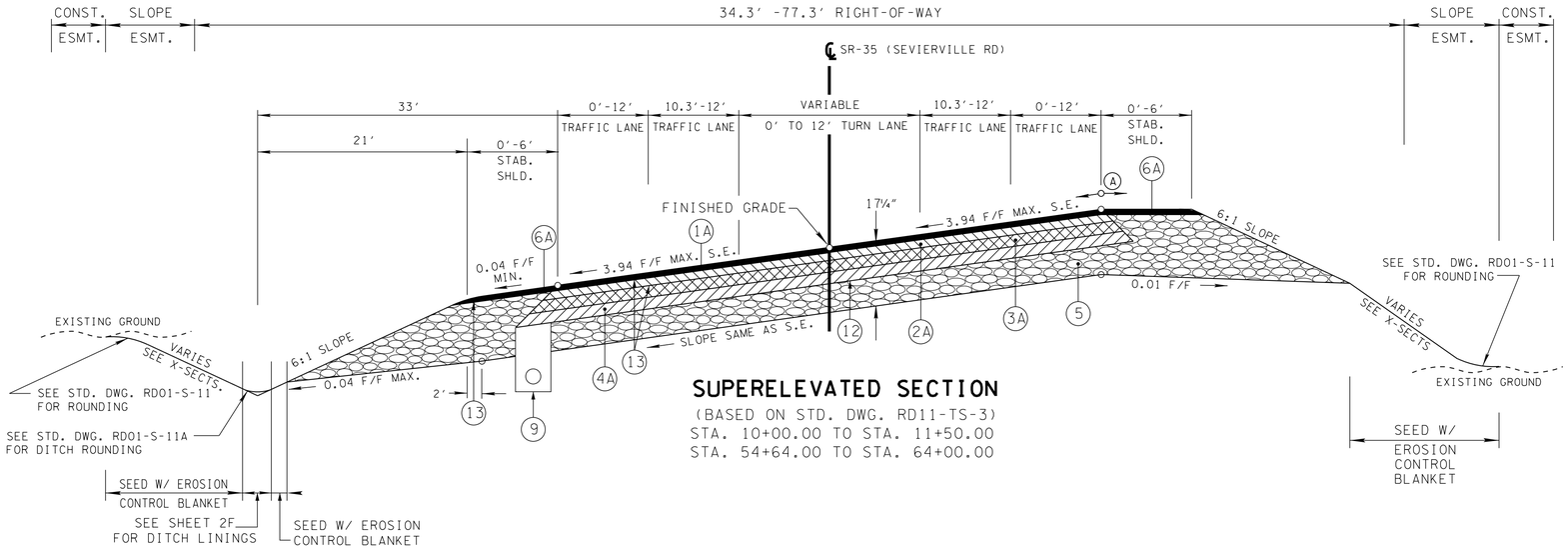
TYPE	YEAR	PROJECT NO.	SHEET NO.
R.O.W.	2022	HPP/NH - 162(7)	2B3

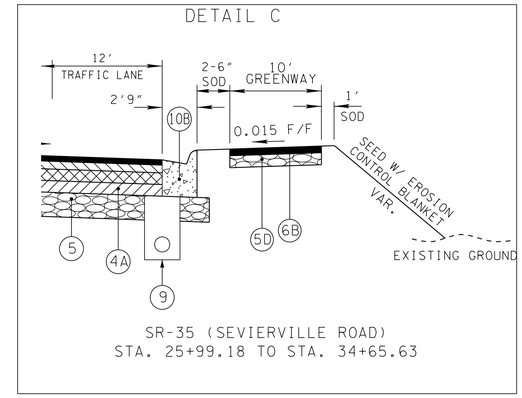
SR - 162 BLOUNT COUNTY



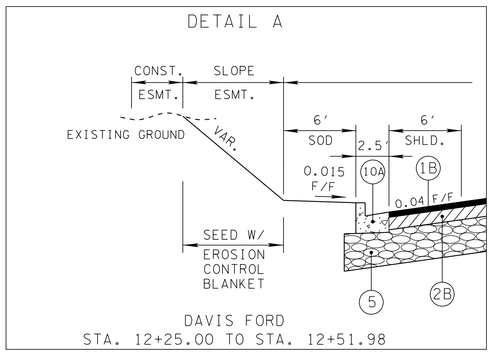
SUPERELEVATED SECTION

(BASED ON STD. DWG. RD11-TS-3)
STA. 10+00.00 TO STA. 11+50.00
STA. 54+64.00 TO STA. 64+00.00

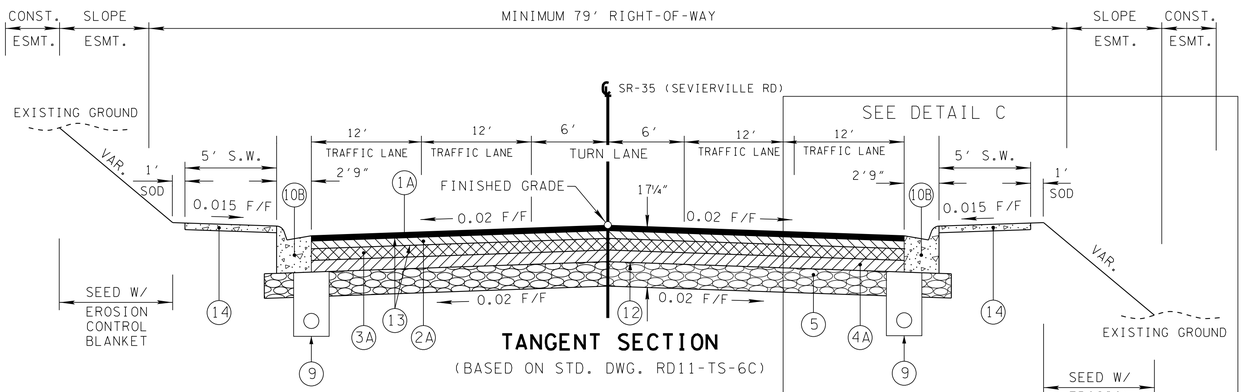
Ⓐ THE SLOPES OF THE SHOULDER AND ROADWAY PAVEMENT SHALL NOT EXCEED AN ALGEBRAIC DIFFERENCE OF 0.07.



SR-35 (SEVIERVILLE ROAD)
STA. 25+99.18 TO STA. 34+65.63



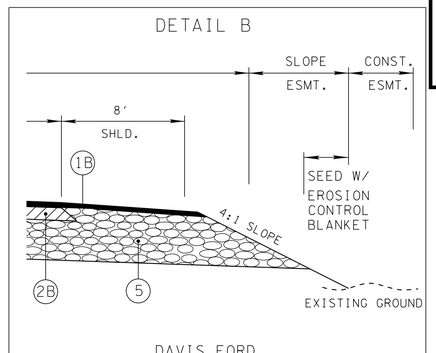
DAVIS FORD
STA. 12+25.00 TO STA. 12+51.98



TANGENT SECTION

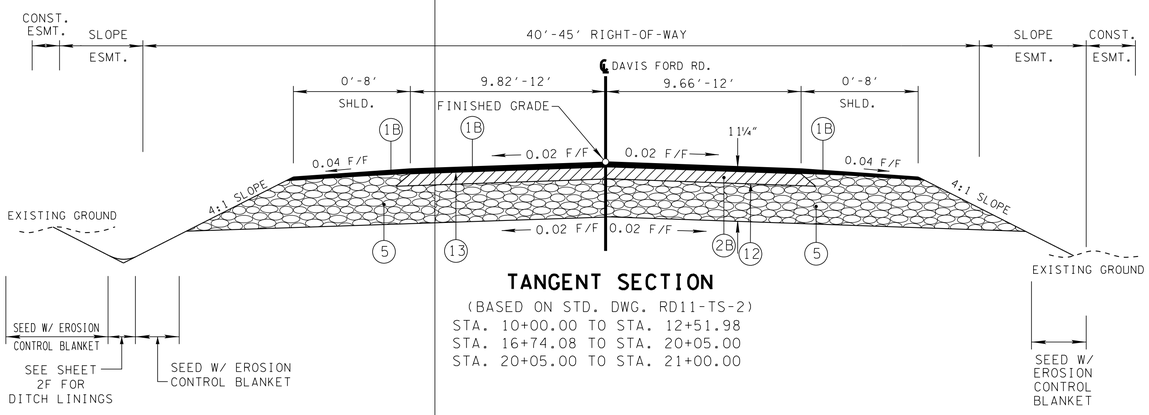
(BASED ON STD. DWG. RD11-TS-6C)
STA. 12+72.44 TO STA. 53+50.00

SEE DETAIL C



DAVIS FORD
STA. 12+51.98 TO STA. 13+50.00

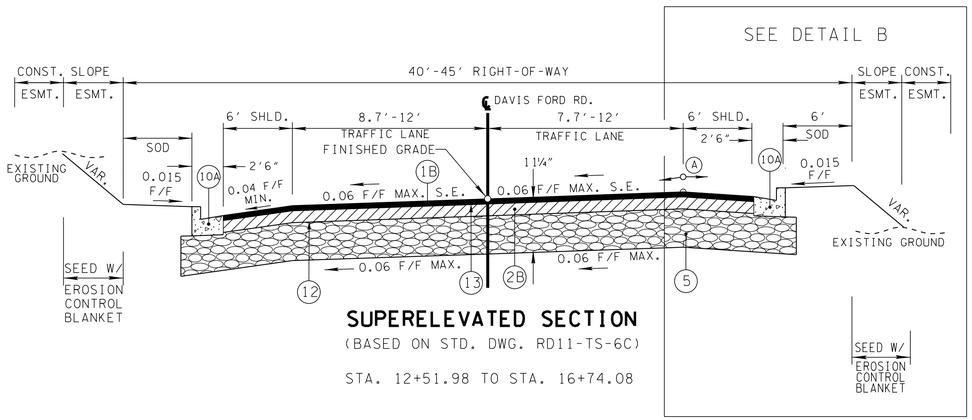
SEE DETAIL A



TANGENT SECTION

(BASED ON STD. DWG. RD11-TS-2)
STA. 10+00.00 TO STA. 12+51.98
STA. 16+74.08 TO STA. 20+05.00
STA. 20+05.00 TO STA. 21+00.00

SEE DETAIL B



SUPERELEVATED SECTION

(BASED ON STD. DWG. RD11-TS-6C)

STA. 12+51.98 TO STA. 16+74.08

R.O.W. FIELD REVIEW

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STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TYPICAL SECTIONS

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TYPE	YEAR	PROJECT NO.	SHEET NO.
R.O.W.	2022	HPP/NH - 162(7)	2B4

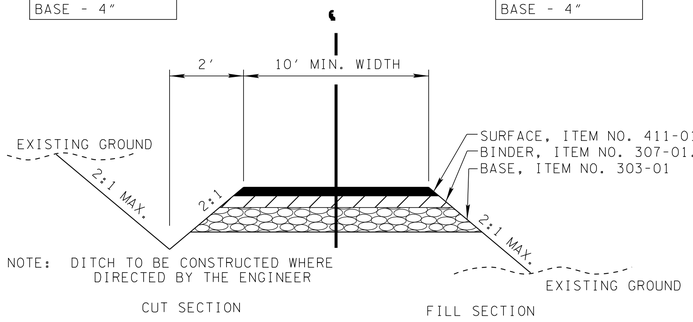
SR - 162 BLOUNT COUNTY

BUSINESS

SURFACE - 1¼"
BINDER - 1¾"
BASE - 4"

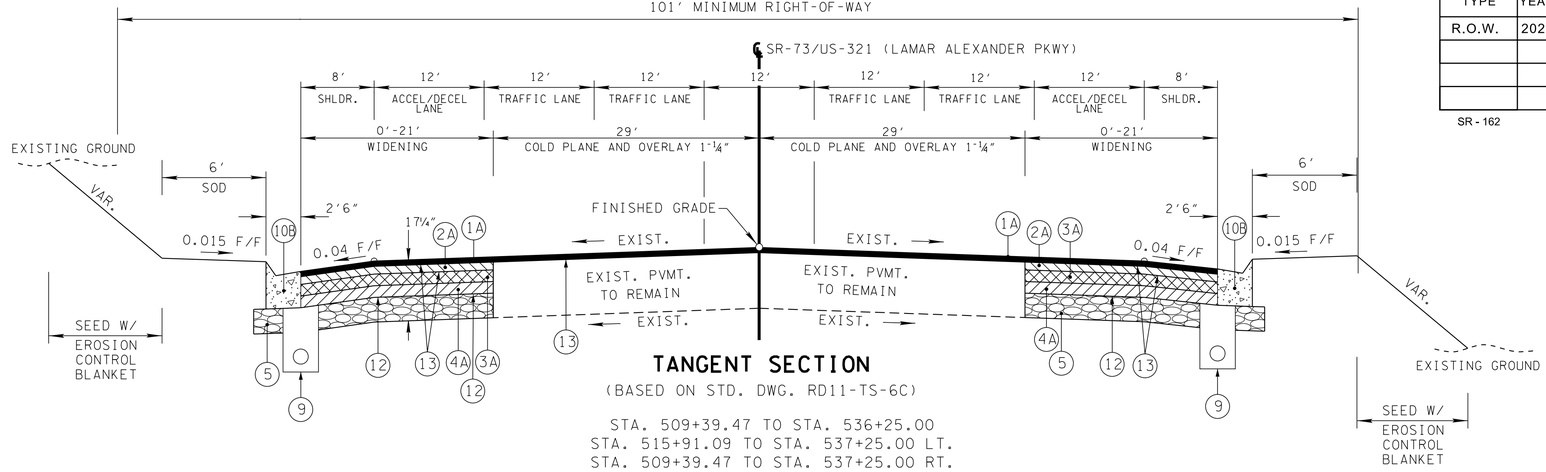
FIELD OR RESIDENTIAL

SURFACE - 1½"
BINDER - NONE
BASE - 4"



TYPICAL SECTION

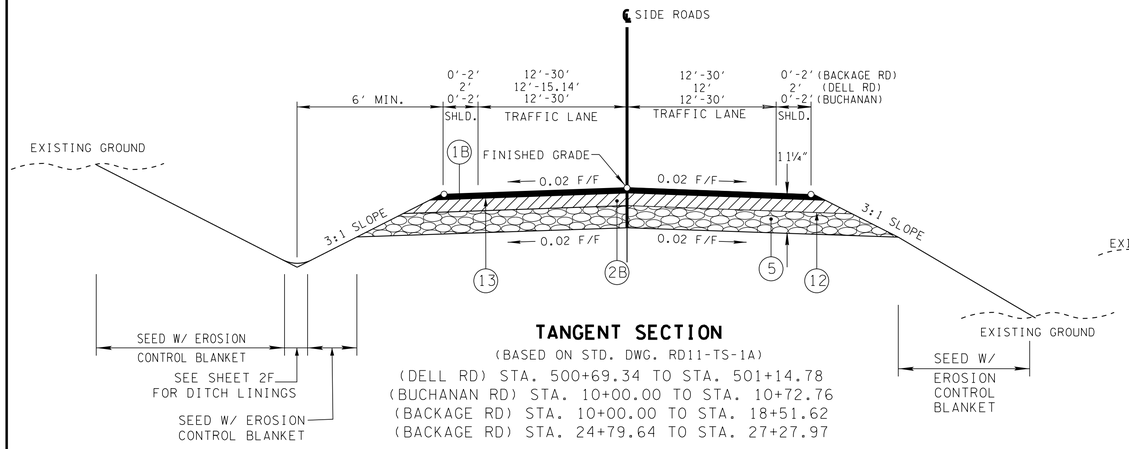
PRIVATE DRIVE TO BUSINESS,
FIELD, OR RESIDENTIAL PROPERTY



TANGENT SECTION

(BASED ON STD. DWG. RD11-TS-6C)

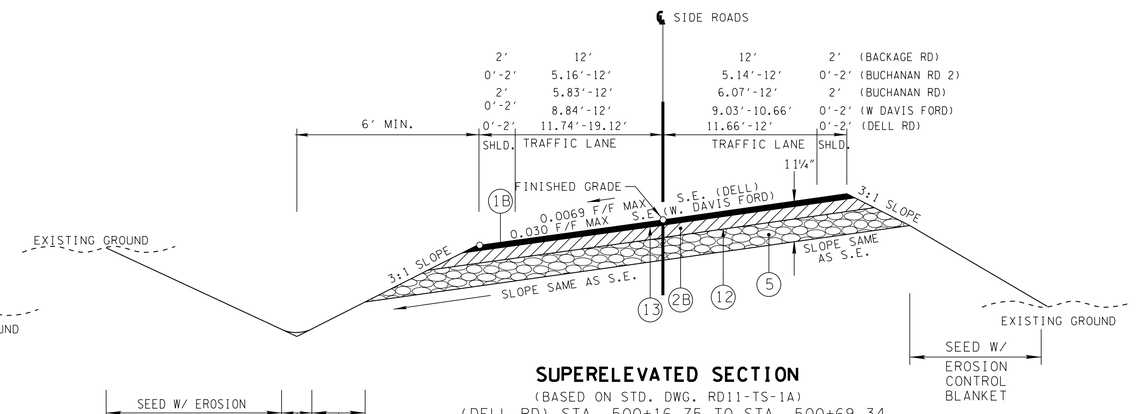
STA. 509+39.47 TO STA. 536+25.00
STA. 515+91.09 TO STA. 537+25.00 LT.
STA. 509+39.47 TO STA. 537+25.00 RT.



TANGENT SECTION

(BASED ON STD. DWG. RD11-TS-1A)

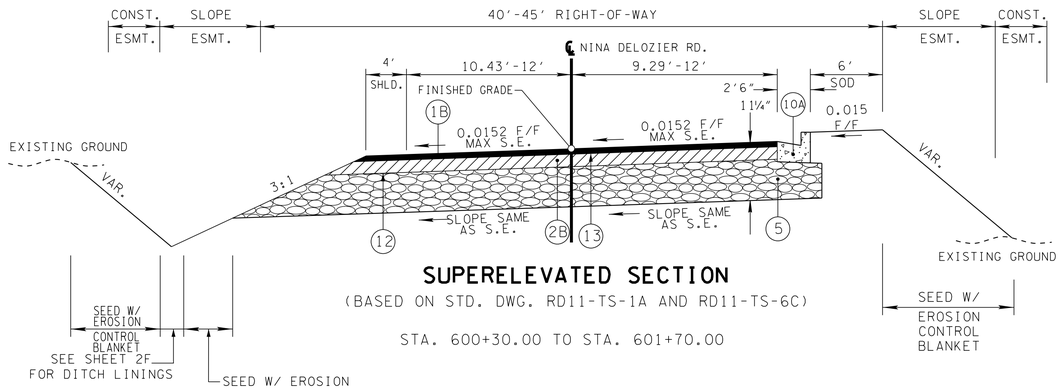
(DELL RD) STA. 500+69.34 TO STA. 501+14.78
(BUCHANAN RD) STA. 10+00.00 TO STA. 10+72.76
(BACKAGE RD) STA. 10+00.00 TO STA. 18+51.62
(BACKAGE RD) STA. 24+79.64 TO STA. 27+27.97



SUPERELEVATED SECTION

(BASED ON STD. DWG. RD11-TS-1A)

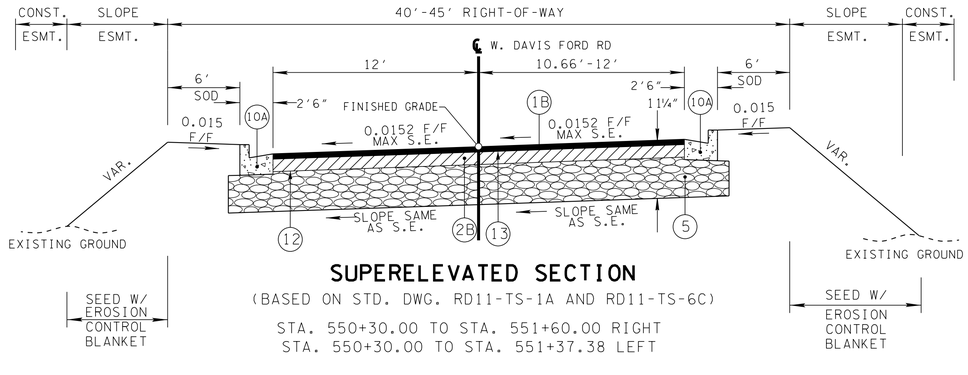
(DELL RD) STA. 500+16.75 TO STA. 500+69.34
(DELL RD) STA. 501+14.78 TO STA. 501+55.00
(W.DAVIS FORD RD) STA. 550+30.09 TO STA. 552+55.00
(BUCHANAN RD) STA. 10+72.76 TO STA. 24+50.00
(W. DAVIS FORD) STA. 551+37.38 TO STA. 525+55 LEFT
(W. DAVIS FORD) STA. 551+60.00 TO STA. 525+55 RIGHT
(BUCHANAN RD 2) STA. 30+80.00 TO STA. 33+20.00
(BACKAGE RD) STA. 18+51.62 TO STA. 24+79.64
(BACKAGE RD) STA. 27+27.97 TO STA. 28+54.92



SUPERELEVATED SECTION

(BASED ON STD. DWG. RD11-TS-1A AND RD11-TS-6C)

STA. 600+30.00 TO STA. 601+70.00



SUPERELEVATED SECTION

(BASED ON STD. DWG. RD11-TS-1A AND RD11-TS-6C)

STA. 550+30.00 TO STA. 551+60.00 RIGHT
STA. 550+30.00 TO STA. 551+37.38 LEFT

R.O.W.
FIELD
REVIEW

SEALED BY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TYPICAL
SECTIONS

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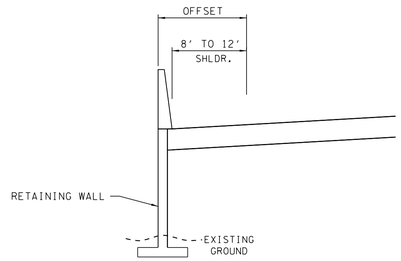


RETAINING WALL DETAIL

(SEE PROPOSED LAYOUT FOR ADDITIONAL WALL DETAILS)

RETAINING WALL NO. 2

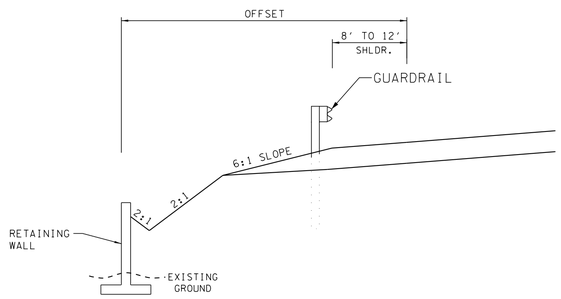
STA. 30+93.77 TO STA. 32+15.54, RAMP 1-B
(OFFSET 9'-6" RT.)

RETAINING WALL NO. 3

STA. 164+50.00 TO STA. 165+50.00, SR-162 (PELL. PKWY)
(OFFSET 51'-6" LT.)

RETAINING WALL NO. 4

STA. 166+75.00 TO STA. 167+50.00, SR-162 (PELL. PKWY)
(OFFSET 51'-6" RT.)



RETAINING WALL DETAIL

(SEE PROPOSED LAYOUT FOR ADDITIONAL WALL DETAILS)

RETAINING WALL NO. 3

STA. 158+85.00 TO STA. 163+50.00, SR-162 (PELL. PKWY)
(OFFSET 130' LT.)
STA. 163+50.00 TO STA. 164+50.00, SR-162 (PELL. PKWY)
(OFFSET VARIES: 130' LT. TO 51'-6" LT.)
STA. 165+50.00 TO STA. 167+02.00, SR-162 (PELL. PKWY)
(OFFSET VARIES: 51'-6" LT. TO 130.52' LT.)

RETAINING WALL NO. 4

STA. 166+75.00 TO STA 166+75.00, SR-162 (PELL. PKWY)
(OFFSET VARIES: 107.9' RT. TO 51'-6" RT.)
STA. 167+50.00 TO STA. 169+00.00, SR-162 (PELL. PKWY)
(OFFSET VARIES: 51'-6" RT. TO 119.91' RT.)
STA. 169+00.00 TO STA. 172+35.00, SR-162 (PELL. PKWY)
(OFFSET VARIES: 119.91" RT. TO 120' RT.)

RETAINING WALL NO. 5

STA. 174+20.00 TO STA 176+66.18, SR-162 (PELL. PKWY)
(OFFSET 130' LT.)

RETAINING WALL NO. 7

STA. 204+31.70 TO STA 208+00.00, SR-162 (PELL. PKWY)
(OFFSET 130' LT.)

RETAINING WALL NO. 8

STA. 204+27.19 TO STA 208+00.00, SR-162 (PELL. PKWY)
(OFFSET 130' RT.)

RETAINING WALL NO. 9

STA. 244+24.30 TO STA 251+35.79, SR-162 (PELL. PKWY)
(OFFSET VARIES: 130' LT. TO 130.34' LT.)

RETAINING WALL NO. 10

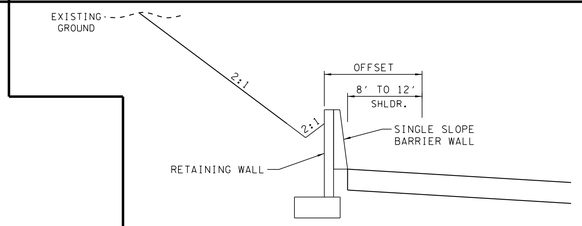
STA. 245+41.00 TO STA 252+24.95, SR-162 (PELL. PKWY)
(OFFSET VARIES: 130' RT. TO 130.69' RT.)

RETAINING WALL NO. 11

STA. 66+38.37 TO STA. 77+44.86, RAMP 2D
(OFFSET VARIES: 88.46' RT. TO 43.28' RT.)

RETAINING WALL NO. 12

STA. 61+50.21 TO STA. 67+77.85, RAMP 2C
(OFFSET VARIES: 73.81' RT. TO 77.23' RT.)



RETAINING WALL DETAIL

(SEE PROPOSED LAYOUT FOR ADDITIONAL WALL DETAILS)

RETAINING WALL NO. 1

STA. 41+80.00 TO STA. 44+00.00, RAMP 1-B
(OFFSET 10'-6" RT.)

RETAINING WALL NO. 6

STA. 178+25.00 TO STA. 183+75.00, SR-162 (PELL. PKWY)
(OFFSET 52'-6" RT.)

RETAINING WALL NO. 13

STA. 72+82.76 TO STA. 77+59.22, RAMP 2C
(OFFSET 10'-6" RT.)

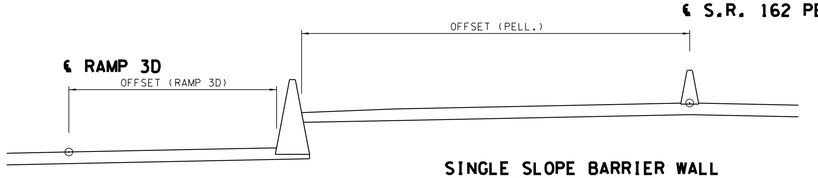
RETAINING WALL NO. 13

STA. 297+81.41 TO STA. 302+75.01, SR-162 (PELL. PKWY)
(OFFSET VARIES: 69.46' RT. TO 60.47' RT.)

TYPE	YEAR	PROJECT NO.	SHEET NO.
R.O.W.	2022	HPP/NH - 162(7)	2B5

SR - 162 BLOUNT COUNTY

R.O.W.
FIELD
REVIEW



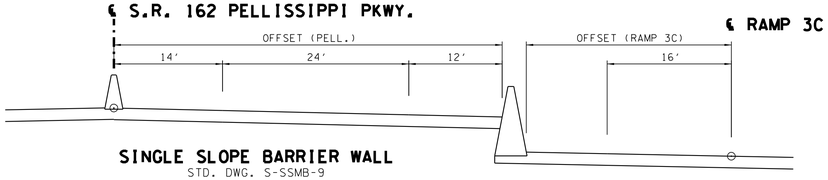
SINGLE SLOPE BARRIER WALL

STD. DWG. S-SSMB-9

(SEE PROPOSED LAYOUT FOR ADDITIONAL WALL DETAILS)

RETAINING WALL NO. X

STA. 137+68.28 TO STA. 140+70.78 RAMP 3D = STA. 332+00.00 TO STA. 335+00.00 SR-162 (PELL. PKWY)
OFFSET 24' LT. (OFFSET 50' LT.)



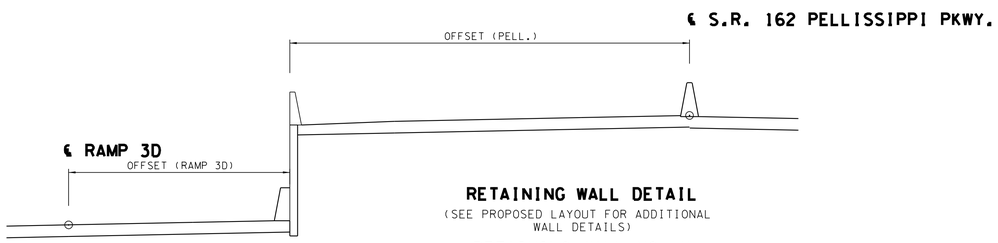
SINGLE SLOPE BARRIER WALL

STD. DWG. S-SSMB-9

(SEE PROPOSED LAYOUT FOR ADDITIONAL WALL DETAILS)

RETAINING WALL NO. X

STA. 331+50.00 TO STA. 332+50.00 SR-162 (PELL. PKWY) = STA. 96+46.79 TO STA. 97+45.38 RAMP 3C
OFFSET 50' RT. OFFSET 24' LT.

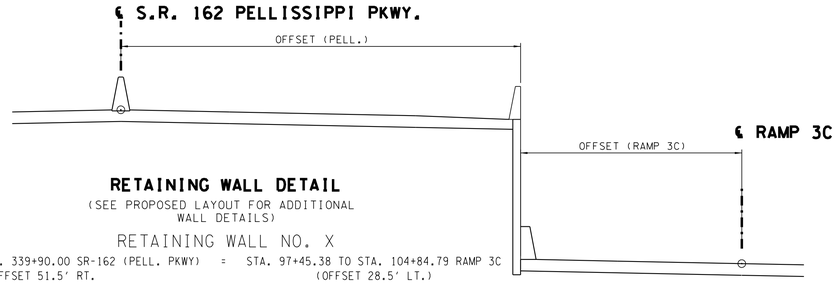


RETAINING WALL DETAIL

(SEE PROPOSED LAYOUT FOR ADDITIONAL WALL DETAILS)

RETAINING WALL NO. X

STA. 132+78.28 TO STA. 137+68.28 RAMP 3D = STA. 335+00.00 TO STA. 339+90.00 SR-162 (PELL. PKWY)
(OFFSET 28.5' LT.) (OFFSET 51.5' LT.)
STA. 131+18.28 TO STA. 132+787.28 STA. 339+90.00 TO STA. 341+50.00 SR-162 (PELL. PKWY)
OFFSET VARIES: 35.32' TO 28.5' LT. (OFFSET VARIES: 51.5' TO 44.68' LT.)

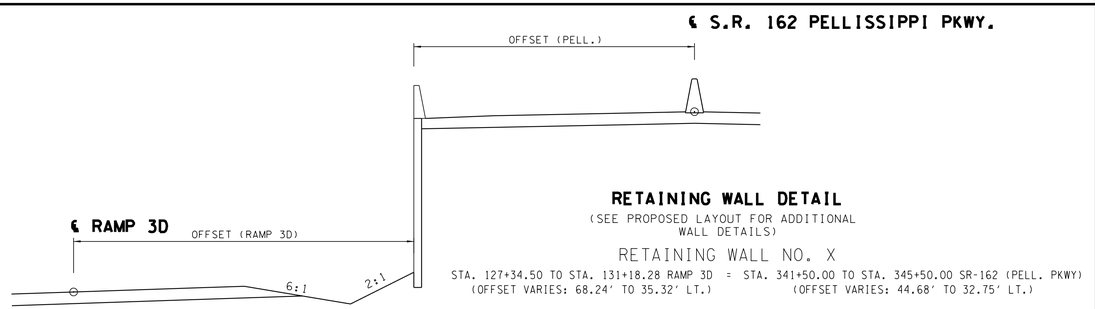


RETAINING WALL DETAIL

(SEE PROPOSED LAYOUT FOR ADDITIONAL WALL DETAILS)

RETAINING WALL NO. X

STA. 332+50.00 TO STA. 339+90.00 SR-162 (PELL. PKWY) = STA. 97+45.38 TO STA. 104+84.79 RAMP 3C
OFFSET 51.5' RT. (OFFSET 28.5' LT.)
STA. 339+90.00 TO STA. 342+50.00 SR-162 (PELL. PKWY) = STA. 104+84.79 TO STA. 107+44.77 RAMP 3C
OFFSET VARIES: 40.42 TO 51.5' RT. (OFFSET VARIES: 28.5' TO 39.58' LT.)

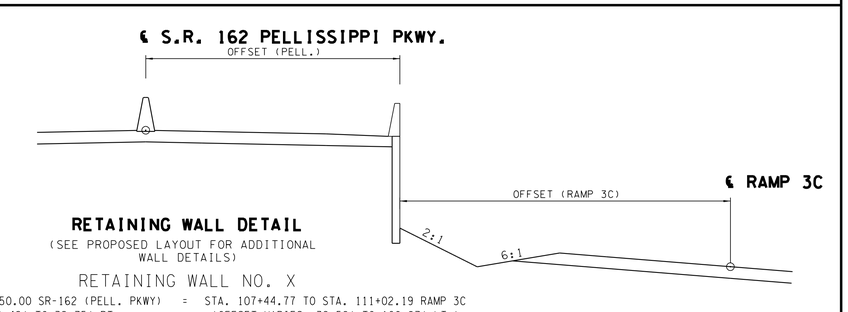


RETAINING WALL DETAIL

(SEE PROPOSED LAYOUT FOR ADDITIONAL WALL DETAILS)

RETAINING WALL NO. X

STA. 127+34.50 TO STA. 131+18.28 RAMP 3D = STA. 341+50.00 TO STA. 345+50.00 SR-162 (PELL. PKWY)
(OFFSET VARIES: 68.24' TO 35.32' LT.) (OFFSET VARIES: 44.68' TO 32.75' LT.)



RETAINING WALL DETAIL

(SEE PROPOSED LAYOUT FOR ADDITIONAL WALL DETAILS)

RETAINING WALL NO. X

STA. 342+50.00 TO STA. 346+50.00 SR-162 (PELL. PKWY) = STA. 107+44.77 TO STA. 111+02.19 RAMP 3C
OFFSET VARIES: 40.42' TO 32.75' RT. (OFFSET VARIES: 39.58' TO 100.87' LT.)

SEALED BY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

TYPICAL
SECTIONS

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Appendix B

Noise Measurement Data Sheets, Meter Calibration Certificates and Validation Memo with Photographs

Stantec

NOISE MEASUREMENT DATA SHEET

NML- 1 (F)
NML- _____ (M)
NML- _____ (B)

PROJECT: SR 162
OPERATOR(S): REX COOPER, MARY MARTIN
NOISE METER FILE #'S: Front (F) 001 Middle (M) _____ Back (B) _____
NOISE METER SERIAL #'S: Front (F) 01021297 Middle (M) _____ Back (B) _____
CALIBRATION: 114.0 RESPONSE: FAST / (SLOW) WEIGHTING: (A) / C / LIN.
SITE DESCRIPTION: FACING OLD KNOXVILLE HWY SR 33
POSTED SPEED LIMIT: 40 mph (Primary Rd) _____ mph (Secondary Rd)
AVERAGE MEASURED SPEED LIMIT: 45 mph (Primary Rd) _____ mph (Secondary Rd)
MAJOR NOISE SOURCES: OLD KNOXVILLE HWY SR 33

SAMPLE PERIOD:
DATE: 5/23/23
BEGIN: 9:35
END: 9:55

Leq (A) NOISE LEVEL		
NML- 1	56.1	dB(A)
NML- _____	_____	dB(A)
NML- _____	_____	dB(A)

TNM	Δ	Val?
57.0	0.9	✓

TRAFFIC DATA				
ROADWAY	SR 33	SR 33		
DIRECTION	NB	SB		
AUTO	94	87		
M-TRUCK	1	2		
H-TRUCK	2	5		
BUS	0	0		
MC	0	2		

WEATHER DATA	
TEMPERATURE (°F)	67°
RELATIVE HUMIDITY (%)	68
DEW POINT (°F)	67
WIND SPEED (MPH)	5
WIND DIRECTION	N
CLOUD COVER	PARTLY CLOUDY

INDICATE NORTH

Stantec

NOISE MEASUREMENT DATA SHEET

NML- 2 (F)
NML- _____ (M)
NML- _____ (B)

PROJECT: SR 162
OPERATOR(S): REX COOPER MARY MARTIN
NOISE METER FILE #'S: Front (F) 010 Middle (M) _____ Back (B) _____
NOISE METER SERIAL #'S: Front (F) 01021297 Middle (M) _____ Back (B) _____
CALIBRATION: 114.00 RESPONSE: FAST / (SLOW) WEIGHTING: (A) / C / LIN.
SITE DESCRIPTION: NEAR BENCH @ ROUNDABOUT
POSTED SPEED LIMIT: _____ mph (Primary Rd) _____ mph (Secondary Rd)
AVERAGE MEASURED SPEED LIMIT: _____ mph (Primary Rd) _____ mph (Secondary Rd)
MAJOR NOISE SOURCES: OLD KNOXVILLE HWY

SAMPLE PERIOD:
DATE: 5/24/23
BEGIN: 10:53
END: 11:13

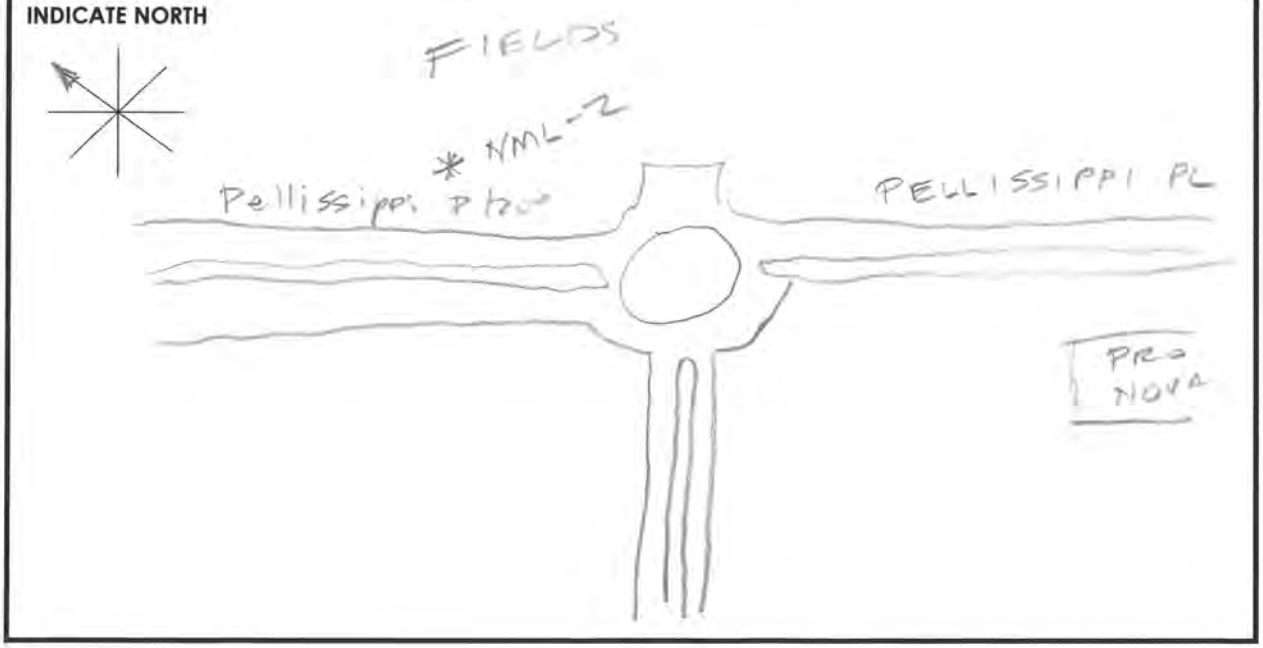
Leq (A) NOISE LEVEL		
NML- 2	46.6	dB(A)
NML- _____	_____	dB(A)
NML- _____	_____	dB(A)

TNM	Δ	Val?

TRAFFIC DATA				
ROADWAY				
DIRECTION		AMBIENT		
AUTO				
M-TRUCK				
H-TRUCK				
BUS		OPLY		
MC				

WEATHER DATA	
TEMPERATURE (°F)	69°
RELATIVE HUMIDITY (%)	58%
DEW POINT (°F)	54°
WIND SPEED (MPH)	4
WIND DIRECTION	N
CLOUD COVER	CLEAR

INDICATE NORTH



Stantec

NOISE MEASUREMENT DATA SHEET

NML- 3 (F)
NML- _____ (M)
NML- _____ (B)

PROJECT: SR 162
OPERATOR(S): REX COOPER MARY MARTIN
NOISE METER FILE #'S: Front (F) 002 Middle (M) _____ Back (B) _____
NOISE METER SERIAL #'S: Front (F) 01021297 Middle (M) _____ Back (B) _____
CALIBRATION: 114 RESPONSE: FAST / (SLOW) WEIGHTING: (A) / C / LIN.
SITE DESCRIPTION: CUL-DE-SAC @ END OF JACKSON HILLS DR
POSTED SPEED LIMIT: _____ mph (Primary Rd) _____ mph (Secondary Rd)
AVERAGE MEASURED SPEED LIMIT: _____ mph (Primary Rd) _____ mph (Secondary Rd)
MAJOR NOISE SOURCES: NONE

SAMPLE PERIOD:
DATE: 5/23/23
BEGIN: 10:09
END: 10:29

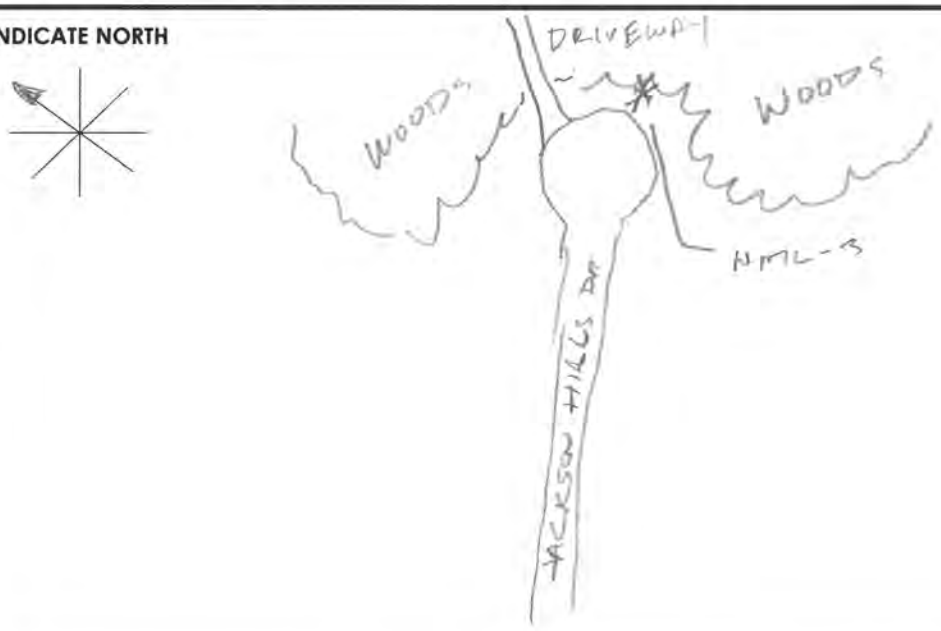
Leq (A) NOISE LEVEL		
NML-	3	42.0 dB(A)
NML-		dB(A)
NML-		dB(A)

TNM	Δ	Val?

TRAFFIC DATA				
ROADWAY				
DIRECTION		AMBIENT		
AUTO		ONLY		
M-TRUCK				
H-TRUCK				
BUS				
MC				

WEATHER DATA	
TEMPERATURE (°F)	68°
RELATIVE HUMIDITY (%)	67
DEW POINT (°F)	57
WIND SPEED (MPH)	3
WIND DIRECTION	N
CLOUD COVER	PARTLY

INDICATE NORTH



Plane @ 10:16-10:17

Stantec

NOISE MEASUREMENT DATA SHEET

NML- 4 (F)
NML- _____ (M)
NML- _____ (B)

PROJECT: SR 162
OPERATOR(S): REX COOPER MARY MARTIN
NOISE METER FILE #'S: Front (F) 011 Middle (M) _____ Back (B) _____
NOISE METER SERIAL #'S: Front (F) 01021297 Middle (M) _____ Back (B) _____
CALIBRATION: 114.0 RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.
SITE DESCRIPTION: MT LEBANON ROAD CLEARING
POSTED SPEED LIMIT: _____ mph (Primary Rd) _____ mph (Secondary Rd)
AVERAGE MEASURED SPEED LIMIT: _____ mph (Primary Rd) _____ mph (Secondary Rd)
MAJOR NOISE SOURCES: MT. LEBANON RD.

SAMPLE PERIOD:
DATE: 5/24/23
BEGIN: 11:32
END: 11:52

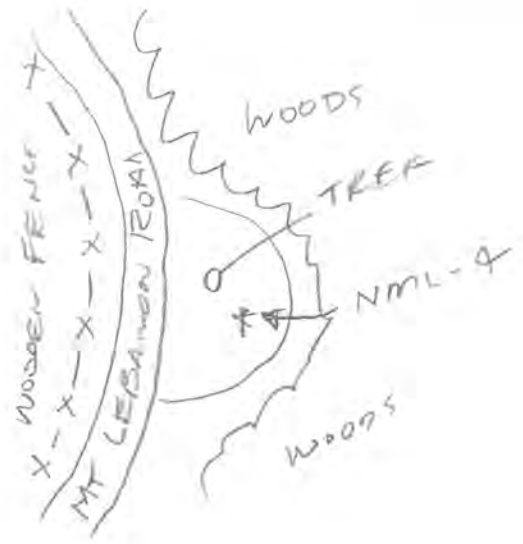
Leq (A) NOISE LEVEL		
NML-	4	41.5 dB(A)
NML-		dB(A)
NML-		dB(A)

TNM	Δ	Val?

TRAFFIC DATA				
ROADWAY				
DIRECTION		AMBIENT		
AUTO				
M-TRUCK				
H-TRUCK				
BUS		ONLY		
MC				

WEATHER DATA	
TEMPERATURE (°F)	72°
RELATIVE HUMIDITY (%)	54%
DEW POINT (°F)	54°
WIND SPEED (MPH)	4
WIND DIRECTION	NNE
CLOUD COVER	CLEAR

INDICATE NORTH



DOG BARKING 11:32
11:46
11:48

Stantec

NOISE MEASUREMENT DATA SHEET

NML- 5 (F)
NML- _____ (M)
NML- _____ (B)

PROJECT: SR 162
OPERATOR(S): REX COOPER MARY MARTIN
NOISE METER FILE #'S: Front (F) 003 Middle (M) _____ Back (B) _____
NOISE METER SERIAL #'S: Front (F) 01021297 Middle (M) _____ Back (B) _____
CALIBRATION: 114.0 RESPONSE: FAST / (SLOW) WEIGHTING: (A) / C / LIN.
SITE DESCRIPTION: CORNER OF WILDWOOD RD & E. BROWN SCHOOL RD
POSTED SPEED LIMIT: 35 mph (Primary Rd) 35 mph (Secondary Rd)
AVERAGE MEASURED SPEED LIMIT: 40 mph (Primary Rd) 35 mph (Secondary Rd)
MAJOR NOISE SOURCES: Wildwood Rd.

SAMPLE PERIOD:
DATE: 5/23/23
BEGIN: 10:41
END: 11:01

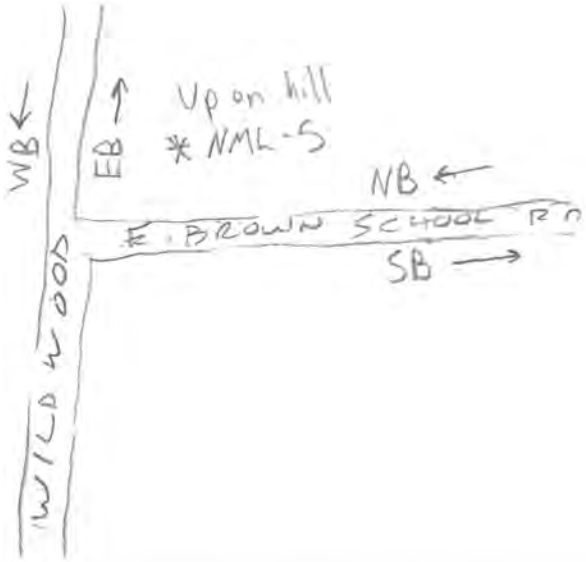
Leq (A) NOISE LEVEL		
NML- 5	57.3	dB(A)
NML-		dB(A)
NML-		dB(A)

TNM	Δ	Val?
57.8	0.5	✓

TRAFFIC DATA				
ROADWAY	WILDWOOD	WILDWOOD	Brown	Brown
DIRECTION	EB	WB	SB	NB
AUTO	25	31	3	6
M-TRUCK	Ø	Ø	Ø	Ø
H-TRUCK	1	Ø	Ø	Ø
BUS	Ø	Ø	Ø	Ø
MC	Ø	Ø	Ø	Ø

WEATHER DATA	
TEMPERATURE (°F)	70°
RELATIVE HUMIDITY (%)	63
DEW POINT (°F)	57
WIND SPEED (MPH)	5
WIND DIRECTION	N
CLOUD COVER	PARTLY

INDICATE NORTH



NML- 6 (F)
NML- _____ (M)
NML- _____ (B)

Stantec **NOISE MEASUREMENT DATA SHEET**

PROJECT: SR 162
OPERATOR(S): REX COOPER MARY MARTIN
NOISE METER FILE #'S: Front (F) 005 Middle (M) _____ Back (B) _____
NOISE METER SERIAL #'S: Front (F) 0102297 Middle (M) _____ Back (B) _____
CALIBRATION: 114.0 RESPONSE: FAST / (SLOW) WEIGHTING: (A) / C / LIN.
SITE DESCRIPTION: Residence along Sevierville Rd.
POSTED SPEED LIMIT: 45 mph (Primary Rd) _____ mph (Secondary Rd)
AVERAGE MEASURED SPEED LIMIT: 45 mph (Primary Rd) _____ mph (Secondary Rd)
MAJOR NOISE SOURCES: Sevierville Rd SR35

SAMPLE PERIOD:
DATE: 5/23/23
BEGIN: 12:28
END: 12:48

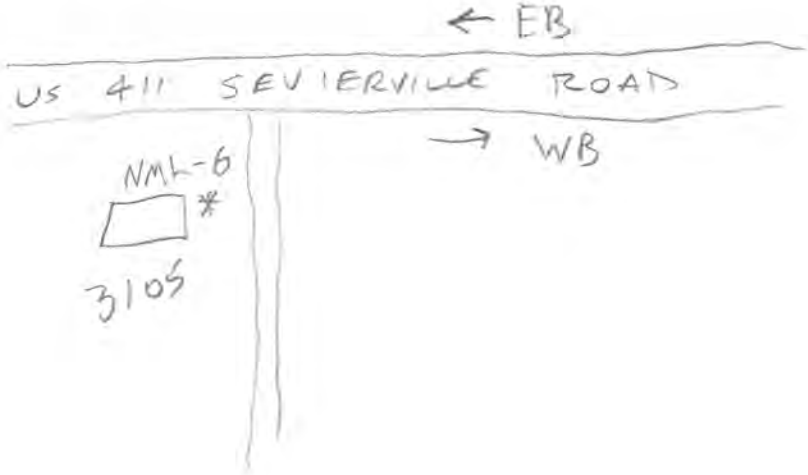
Leq (A) NOISE LEVEL		
NML- 6	56.3	dB(A)
NML-		dB(A)
NML-		dB(A)

TNM	Δ	Val?
58.9	2.6	✓

TRAFFIC DATA				
ROADWAY	US 411	US 411		
DIRECTION	WB	EB		
AUTO	78	75		
M-TRUCK	0	2		
H-TRUCK	1	3		
BUS	0	0		
MC	0	0		

WEATHER DATA	
TEMPERATURE (°F)	73°
RELATIVE HUMIDITY (%)	57%
DEW POINT (°F)	57%
WIND SPEED (MPH)	6
WIND DIRECTION	E
CLOUD COVER	Partly

INDICATE NORTH



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NOISE MEASUREMENT DATA SHEET

NML- 7 (F)
NML- _____ (M)
NML- _____ (B)

PROJECT: SR 162
OPERATOR(S): REX COOPER MARY MARTIN
NOISE METER FILE #'S: Front (F) 008 Middle (M) _____ Back (B) _____
NOISE METER SERIAL #'S: Front (F) 01021297 Middle (M) _____ Back (B) _____
CALIBRATION: 114.0 RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.
SITE DESCRIPTION: NEW CONSTRUCTION / DAVIS FORD RD
POSTED SPEED LIMIT: 35 mph (Primary Rd) _____ mph (Secondary Rd)
AVERAGE MEASURED SPEED LIMIT: 40 mph (Primary Rd) _____ mph (Secondary Rd)
MAJOR NOISE SOURCES: Davis Ford Rd

SAMPLE PERIOD:
DATE: 5/23/23
BEGIN: 3:05
END: 3:25

Leq (A) NOISE LEVEL		
NML- 7	45.6	dB(A)
NML-		dB(A)
NML-		dB(A)

TNM	Δ	Val?
46.3	0.7	✓

TRAFFIC DATA				
ROADWAY	DAVIS	DAVIS		
DIRECTION	EB	WB		
AUTO	12	13		
M-TRUCK	0	0		
H-TRUCK	0	0		
BUS	0	0		
MC	0	1		

WEATHER DATA	
TEMPERATURE (°F)	78°
RELATIVE HUMIDITY (%)	46%
DEW POINT (°F)	56
WIND SPEED (MPH)	9
WIND DIRECTION	NE
CLOUD COVER	PARTLY

INDICATE NORTH

Stantec

NOISE MEASUREMENT DATA SHEET

NML- 8 (F)
NML- _____ (M)
NML- _____ (B)

PROJECT: SR 162
OPERATOR(S): REX COOPER MARY MARTIN
NOISE METER FILE #'S: Front (F) 009 Middle (M) _____ Back (B) _____
NOISE METER SERIAL #'S: Front (F) 01021297 Middle (M) _____ Back (B) _____
CALIBRATION: 114.0 RESPONSE: FAST / (SLOW) WEIGHTING: (A) / C / LIN.
SITE DESCRIPTION: CORNER OF DAVIS FORD / NINA DOZIER / CENTENNIAL CHURCH
POSTED SPEED LIMIT: 35 mph (Primary Rd) 25 mph (Secondary Rd)
AVERAGE MEASURED SPEED LIMIT: 40 mph (Primary Rd) 30 mph (Secondary Rd)
MAJOR NOISE SOURCES: Davis Ford Rd Centennial Church Rd, Nina Delozier Rd

SAMPLE PERIOD:
DATE: 5/23/23
BEGIN: 3:41
END: 4:01

Leq (A) NOISE LEVEL		
NML- 8	52	dB(A)
NML-		dB(A)
NML-		dB(A)

TNM	Δ	Val?
53.6	1.6	✓

TRAFFIC DATA				
ROADWAY	DAVIS	DAVIS	Cent/Nina	Cent/Nina
DIRECTION	EB	WB	NB	SB
AUTO	21	5	9	10
M-TRUCK	0	0	0	0
H-TRUCK	0	0	0	0
BUS	0	0	0	0
MC	0	3	0	1

WEATHER DATA	
TEMPERATURE (°F)	78
RELATIVE HUMIDITY (%)	42%
DEW POINT (°F)	53°
WIND SPEED (MPH)	10
WIND DIRECTION	NE
CLOUD COVER	PARTLY

INDICATE NORTH

Stantec

NOISE MEASUREMENT DATA SHEET

NML- 9 (F)
NML- _____ (M)
NML- _____ (B)

PROJECT: SR 162

OPERATOR(S): REX COOPER MARY MARTIN

NOISE METER FILE #'S: Front (F) 012 Middle (M) _____ Back (B) _____

NOISE METER SERIAL #'S: Front (F) 01021297 Middle (M) _____ Back (B) _____

CALIBRATION: 114.0 RESPONSE: FAST / (SLOW) WEIGHTING: (A) / C / LIN.

SITE DESCRIPTION: FIELD ACROSS FROM CENTENNIAL CHURCH ROAD

POSTED SPEED LIMIT: 25 mph (Primary Rd) _____ mph (Secondary Rd)

AVERAGE MEASURED SPEED LIMIT: _____ mph (Primary Rd) _____ mph (Secondary Rd)

MAJOR NOISE SOURCES: None

SAMPLE PERIOD:
DATE: 5/24/23
BEGIN: 12:07
END: 12:27

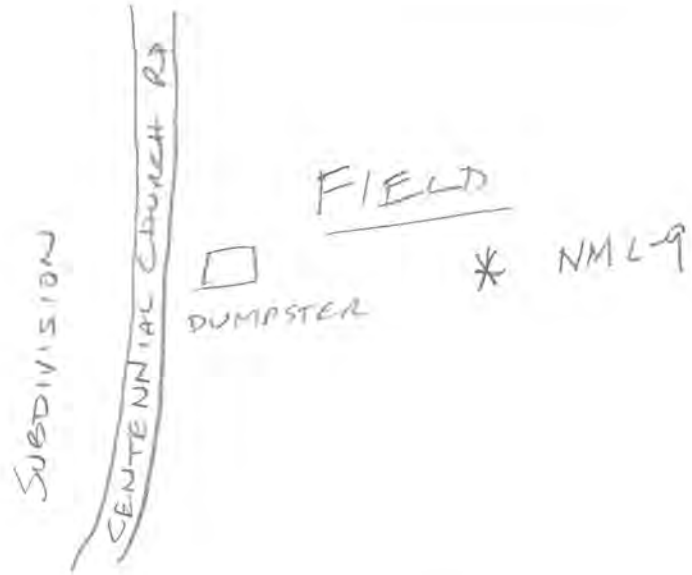
Leq (A) NOISE LEVEL		
NML- 9	38.3	dB(A)
NML- _____	_____	dB(A)
NML- _____	_____	dB(A)

TNM	Δ	Val?

TRAFFIC DATA				
ROADWAY				
DIRECTION		AMBIENT		
AUTO		ONLY		
M-TRUCK				
H-TRUCK				
BUS				
MC				

WEATHER DATA	
TEMPERATURE (°F)	73°
RELATIVE HUMIDITY (%)	49%
DEW POINT (°F)	53°
WIND SPEED (MPH)	0
WIND DIRECTION	N/A
CLOUD COVER	Partly

INDICATE NORTH



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NOISE MEASUREMENT DATA SHEET

NML- 10 (F)
NML- _____ (M)
NML- _____ (B)

PROJECT: SR 162
OPERATOR(S): Rex Cooper, Mary Martin
NOISE METER FILE #'S: Front (F) 001 Middle (M) _____ Back (B) _____
NOISE METER SERIAL #'S: Front (F) 00331834 Middle (M) _____ Back (B) _____
CALIBRATION: 114.0 RESPONSE: (FAST) / SLOW WEIGHTING: (A) / C / LIN.
SITE DESCRIPTION: Kensington Place Mobile Home Park
POSTED SPEED LIMIT: N/A mph (Primary Rd) N/A mph (Secondary Rd)
AVERAGE MEASURED SPEED LIMIT: N/A mph (Primary Rd) N/A mph (Secondary Rd)
MAJOR NOISE SOURCES: US 321

SAMPLE PERIOD:
DATE: 5/22/23
BEGIN: 4:32 PM
END: 4:32 PM

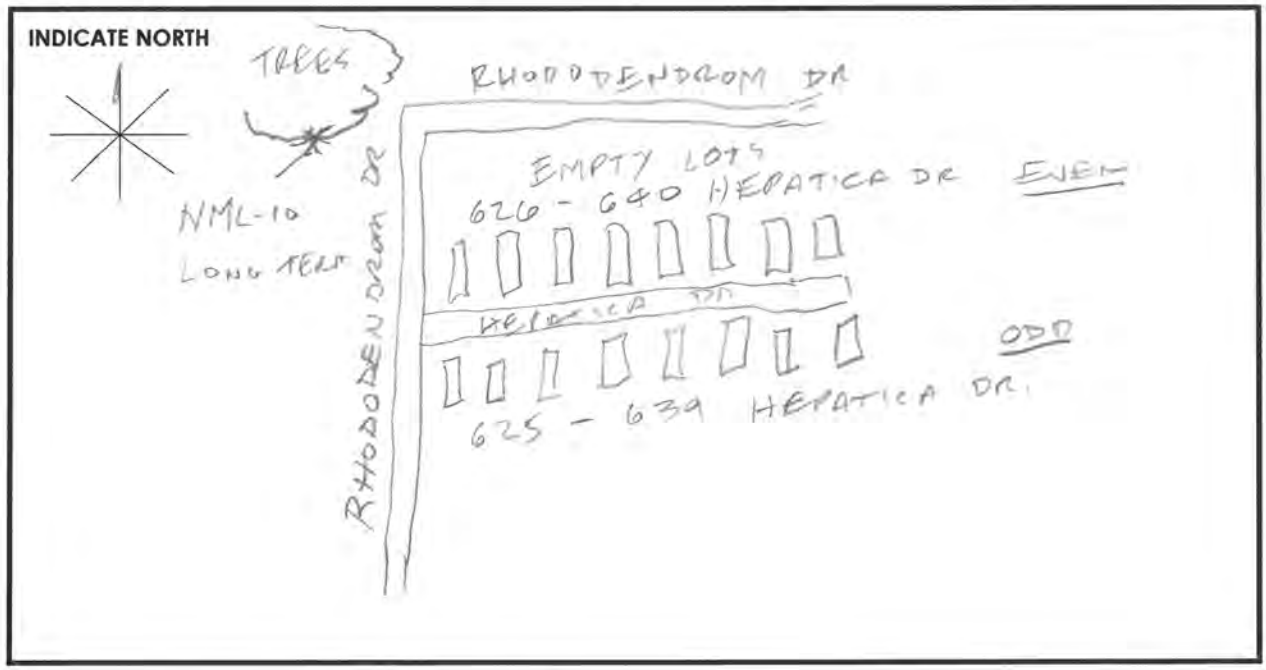
Leq (A) NOISE LEVEL	
NML- 10	_____ dB(A)
NML- _____	_____ dB(A)
NML- _____	_____ dB(A)

TNM	Δ	Val?

TRAFFIC DATA				
ROADWAY				
DIRECTION		AMBIENT		
AUTO		ONLY		
M-TRUCK				
H-TRUCK				
BUS				
MC				

WEATHER DATA	
TEMPERATURE (°F)	✓
RELATIVE HUMIDITY (%)	A
DEW POINT (°F)	R
WIND SPEED (MPH)	I
WIND DIRECTION	E
CLOUD COVER	S

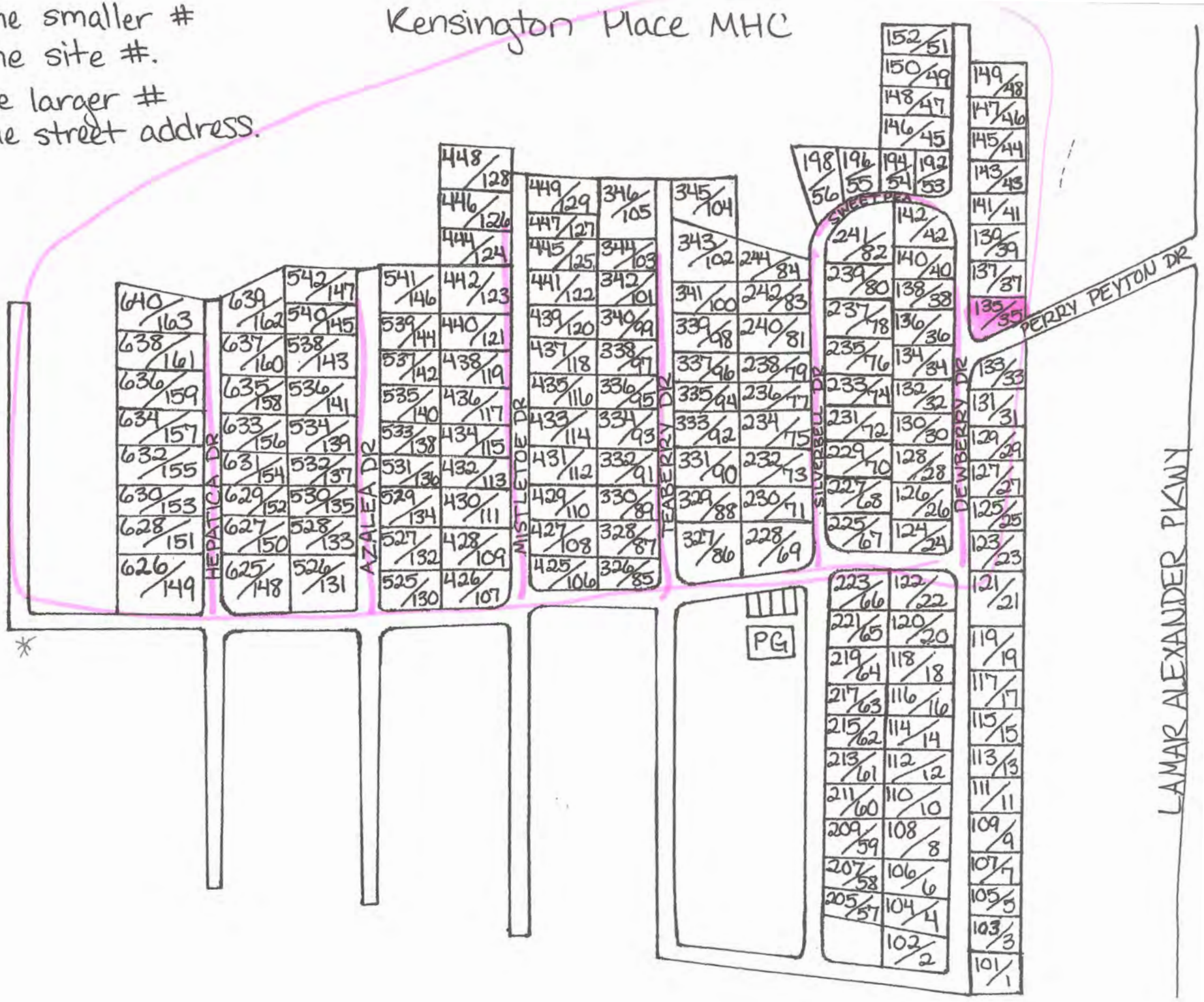
INDICATE NORTH



*The smaller # is the site #.

*The larger # is the street address.

Kensington Place MHC



Stantec

NOISE MEASUREMENT DATA SHEET

NML- 11 (F)
NML- _____ (M)
NML- _____ (B)

PROJECT: SR 162
OPERATOR(S): REX COOPER MARY MARTIN
NOISE METER FILE #'S: Front (F) 007 Middle (M) _____ Back (B) _____
NOISE METER SERIAL #'S: Front (F) 01021297 Middle (M) _____ Back (B) _____
CALIBRATION: 114.0 RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.
SITE DESCRIPTION: LAMAR ALEXANDER BLVD WEST OF MH PARK
POSTED SPEED LIMIT: 50 mph (Primary Rd) _____ mph (Secondary Rd)
AVERAGE MEASURED SPEED LIMIT: 55 mph (Primary Rd) _____ mph (Secondary Rd)
MAJOR NOISE SOURCES: LAMAR ALEXANDER BLVD / US 321

SAMPLE PERIOD:
DATE: 5/23/23
BEGIN: 2:21
END: 2:41

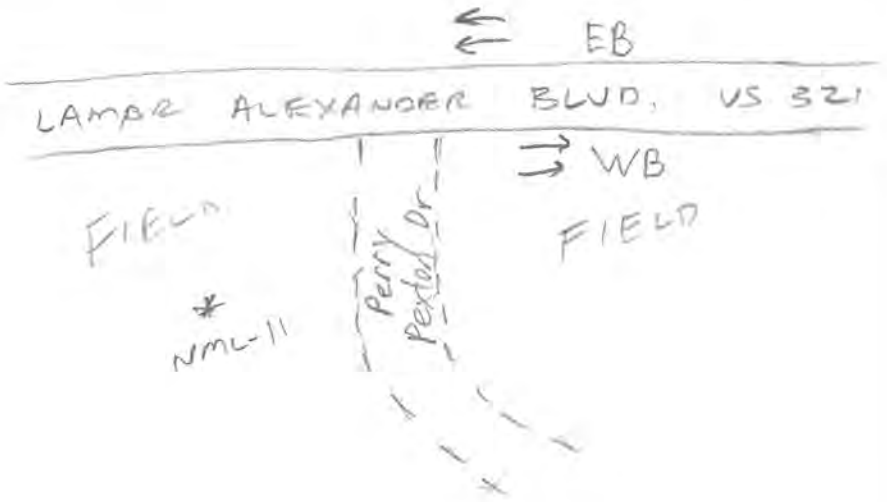
Leq (A) NOISE LEVEL		
NML- 11	66.1	dB(A)
NML- _____	_____	dB(A)
NML- _____	_____	dB(A)

TNM	Δ	Val?
68.1	2.0	✓

TRAFFIC DATA				
ROADWAY	US 321	US 321		
DIRECTION	WB	EB		
AUTO	257	260		
M-TRUCK	6	5		
H-TRUCK	2	4		
BUS	0	0		
MC	3	5		

WEATHER DATA	
TEMPERATURE (°F)	76°
RELATIVE HUMIDITY (%)	50%
DEW POINT (°F)	56°
WIND SPEED (MPH)	8
WIND DIRECTION	ENE
CLOUD COVER	PARTLY

INDICATE NORTH



NML- 12 (F)
NML- _____ (M)
NML- _____ (B)

Stantec

NOISE MEASUREMENT DATA SHEET

PROJECT: SR 162
OPERATOR(S): REX COOPER MARY MARTIN
NOISE METER FILE #'S: Front (F) 006 Middle (M) _____ Back (B) _____
NOISE METER SERIAL #'S: Front (F) 01021297 Middle (M) _____ Back (B) _____
CALIBRATION: 114.0 RESPONSE: FAST / (SLOW) WEIGHTING: (A) / C / LIN.
SITE DESCRIPTION: R10 REVOLUTION CHURCH - MARYVILLE
POSTED SPEED LIMIT: 50 mph (Primary Rd) _____ mph (Secondary Rd)
AVERAGE MEASURED SPEED LIMIT: 55 mph (Primary Rd) _____ mph (Secondary Rd)
MAJOR NOISE SOURCES: US 321 LAMAR ALEXANDER BLVD

SAMPLE PERIOD:
DATE: 5/23/23
BEGIN: 1:48
END: 2:08

Leq (A) NOISE LEVEL		
NML- 12	65.9	dB(A)
NML- _____	_____	dB(A)
NML- _____	_____	dB(A)

TNM	Δ	Val?
68.2	2.3	√

TRAFFIC DATA				
ROADWAY	US 321	US321		
DIRECTION	EB	WB		
AUTO	254	188		
M-TRUCK	8	8		
H-TRUCK	4	2		
BUS	0	0		
MC	10	4		

WEATHER DATA	
TEMPERATURE (°F)	75°
RELATIVE HUMIDITY (%)	54%
DEW POINT (°F)	57°
WIND SPEED (MPH)	7
WIND DIRECTION	NNE
CLOUD COVER	PARTLY

INDICATE NORTH

Stantec

NOISE MEASUREMENT DATA SHEET

NML- 13 (F)
NML- _____ (M)
NML- _____ (B)

PROJECT: SR 162
OPERATOR(S): REX COOPER MARY MARTIN
NOISE METER FILE #'S: Front (F) 004 Middle (M) _____ Back (B) _____
NOISE METER SERIAL #'S: Front (F) 01021297 Middle (M) _____ Back (B) _____
CALIBRATION: 114.0 RESPONSE: FAST / (SLOW) WEIGHTING: (A) / C / LIN.
SITE DESCRIPTION: Maryville Seventh-day Adventist Church
POSTED SPEED LIMIT: 45 mph (Primary Rd) _____ mph (Secondary Rd)
AVERAGE MEASURED SPEED LIMIT: 45-50 mph (Primary Rd) _____ mph (Secondary Rd)
MAJOR NOISE SOURCES: SEVIERVILLE RD US 411

SAMPLE PERIOD:
DATE: 5/23/23
BEGIN: 11:46
END: 12:06

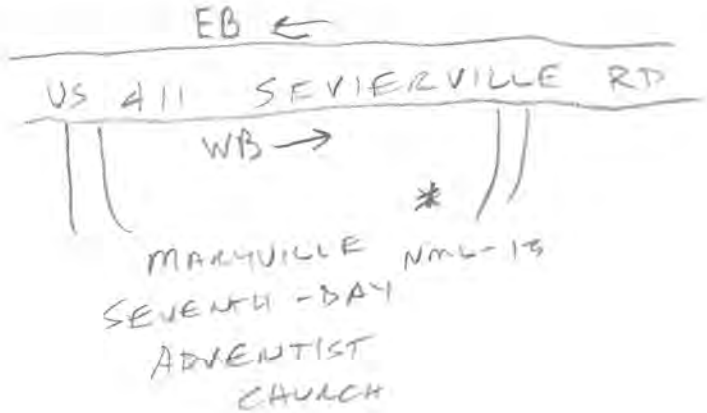
Leq (A) NOISE LEVEL		
NML- 13	55.2	dB(A)
NML- _____	_____	dB(A)
NML- _____	_____	dB(A)

TNM	Δ	Val?
57.0	1.8	✓

TRAFFIC DATA				
ROADWAY	Sevierville Rd.	Sevierville Rd.		
DIRECTION	WB	EB		
AUTO	82	76		
M-TRUCK	2	1		
H-TRUCK	0	1		
BUS	0	0		
MC	0	0		

WEATHER DATA	
TEMPERATURE (°F)	72°
RELATIVE HUMIDITY (%)	61%
DEW POINT (°F)	57°
WIND SPEED (MPH)	7
WIND DIRECTION	N
CLOUD COVER	PARTLY

INDICATE NORTH



Scantek, Inc.
CALIBRATION LABORATORY

ISO 17025: 2017, ANSI/NCSL Z540:1994 Part 1
ACCREDITED by NVLAP (an ILAC MRA signatory)

NVLAP®
CALIBRATION
NVLAP Lab Code: 200625-0

Calibration Certificate No.49674

Instrument: **Sound Level Meter**
Model: **NL52**
Manufacturer: **Rion**
Serial number: **01021297**
Tested with: **Microphone UC-59 s/n 04427**
Preamplifier NH25 s/n 21339
Type (class): **1**
Customer: **Scantek, Inc.**
Tel/Fax: **410-290-7726 / 410-290-9167**

Date Calibrated: **5/8/2023** *Cal Due:* **5/8/2024**

Status:	Received	Sent
In tolerance:	X	X
Out of tolerance:		
See comments:		

Contains non-accredited tests: __Yes X No
Calibration service: __ Basic X Standard
Address: **6430 Dobbin Road, Suite C, Columbia, MD 21045**

Tested in accordance with the following procedures and standards:
Calibration of Sound Level Meters, Scantek Inc., Rev. 6/26/2015
SLM & Dosimeters – Acoustical Tests, Scantek Inc., Rev. 7/6/2011

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
483B-Norsonic	SME Cal Unit	31052	Nov 7, 2022	Scantek, Inc./ NVLAP	Nov 7, 2023
DS-360-SRS	Function Generator	88077	Dec 21, 2022	ACR Env./ A2LA	Dec 21, 2024
34401A-Agilent Technologies	Digital Voltmeter	MY47011118	Apr 17, 2023	ACR Env. / A2LA	Apr 17, 2024
PTU300-Vaisala	EnvironmentalMonitor	P5011262	Sept 15, 2022	ACR Env./ A2LA	Sept 15, 2023
PC Program 1019 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1251-Norsonic	Calibrator	30878	Oct 31, 2022	Scantek, Inc./ NVLAP	Oct 31, 2023

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK).

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
22.8	99.57	43.1

Calibrated by:	Bailey Partoza	**Authorized signatory:**	William Gallagher
Signature		Signature	
Date	5/8/23	Date	5/9/2023

Calibration Certificates or Test Reports shall not be reproduced, except in full, without written approval of the laboratory.
This Calibration Certificate or Test Reports shall not be used to claim product certification, approval or endorsement by NVLAP, NIST, or any agency of the federal government.

Results summary: Device complies with following clauses of mentioned specifications:

CLAUSES [1] FROM IEC/ANSI STANDARDS REFERENCED IN PROCEDURES:	RESULT[2,3]	EXPANDED UNCERTAINTY (coverage factor 2) [dB]
INDICATION AT THE CALIBRATION CHECK FREQUENCY - IEC61672-3 ED.2 CLAUSE 10	Passed	0.15
SELF-GENERATED NOISE - IEC 61672-3 ED.2 CLAUSE 11	Passed	0.30
FREQUENCY WEIGHTINGS: A NETWORK - IEC 61672-3 ED.2.0 CLAUSE 13	Passed	0.20
FREQUENCY WEIGHTINGS: C NETWORK - IEC 61672-3 ED.2.0 CLAUSE 13	Passed	0.20
FREQUENCY WEIGHTINGS: Z NETWORK - IEC 61672-3 ED.2.0 CLAUSE 13	Passed	0.20
FREQUENCY AND TIME WEIGHTINGS AT 1 KHZ IEC 61672-3 ED.2.0 CLAUSE 14	Passed	0.20
LEVEL LINEARITY ON THE REFERENCE LEVEL RANGE - IEC 61672-3 ED.2 CLAUSE 16	Passed	0.25
TONEBURST RESPONSE - IEC 61672-3 ED.2.0 CLAUSE 18	Passed	0.30
PEAK C SOUND LEVEL - IEC 61672-3 ED.2.0 CLAUSE 19	Passed	0.35
OVERLOAD INDICATION - IEC 61672-3 ED.2.0 CLAUSE 20	Passed	0.25
HIGH LEVEL STABILITY TEST - IEC 61672-3 ED.2.0 CLAUSE 21	Passed	0.1
LONG TERM STABILITY TEST - IEC 61672-3 ED.2.0 CLAUSE 15	Passed	0.1
COMBINED ELECTRICAL AND ACOUSTICAL TEST - IEC 61672-3 ED.2.0 CLAUSE 13	Passed	See test report

[1] The results of this calibration apply only to the instrument type with serial number identified in this report.

[2] Parameters are certified at actual environmental conditions.

[3] The tests marked with (*) are not covered by the current NVLAP accreditation.

Comments: The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3, for the environmental conditions under which the tests were performed. As public evidence was available, from an independent testing organization responsible for approving the results of pattern evaluation tests performed in accordance with IEC 61672-2, to demonstrate that the model of sound level meter fully conforms to the requirements in the IEC 61672-2, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1.

Note: The instrument was tested for the parameters listed in the table above, using the test methods described in the listed standards. All tests were performed around the reference conditions. The test results were compared with the manufacturer's or with the standard's specifications, whichever are larger. The measurement results are reported as Pass / Fail simple acceptance; measured values are in the tolerance interval.

Tests made with the following attachments to the instrument:

Microphone: Rion UC-59 s/n 04427 for acoustical test
Preamplifier: Rion NH25 s/n 21339 for all tests
Other: line adaptor ADP005 (18pF) for electrical tests
Accompanying acoustical calibrator: none
Windscreen: Rion WS-10

Measured Data: in Test Report # 49674 of 7 +1 pages.

Place of Calibration: Scantek, Inc.
6430 Dobbin Road, Suite C
Columbia, MD 21045 USA

Ph/Fax: 410-290-7726/ -9167
callab@scantekinc.com

Calibration Certificates or Test Reports shall not be reproduced, except in full, without written approval of the laboratory.
This Calibration Certificate or Test Reports shall not be used to claim product certification, approval or endorsement by NVLAP, NIST, or any agency of the federal government.

Scantek, Inc.
CALIBRATION LABORATORY

ISO 17025: 2017, ANSI/NCSL Z540:1994 Part 1
ACCREDITED by NVLAP (an ILAC MRA signatory)

NVLAP®
CALIBRATION
NVLAP Lab Code: 200625-0

Calibration Certificate No.49675

Instrument: **Microphone**
Model: **UC-59**
Manufacturer: **Rion**
Serial number: **04427**
Composed of:

Date Calibrated: **5/8/2023** *Cal Due:* **5/8/2024**

Status:	Received	Sent
In tolerance:	X	X
Out of tolerance:		
See comments:		

Contains non-accredited tests: __Yes _X_ No

Customer: **Scantek, Inc.**
Tel/Fax: **410-290-7726/410-290-9167**
Address: **6430 Dobbin Road, Suite C, Columbia, MD 21045**

Tested in accordance with the following procedures and standards:
Calibration of Measurement Microphones, Scantek, Inc., Rev. 2/25/2015

Instrumentation used for calibration: N-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
483B-Norsonic	SME Cal Unit	31052	Nov 7, 2022	Scantek, Inc./ NVLAP	Nov 7, 2023
DS-360-SRS	Function Generator	88077	Dec 21, 2022	ACR Env./ A2LA	Dec 21, 2024
34401A-Agilent Technologies	Digital Voltmeter	MY47011118	Apr 17, 2023	ACR Env. / A2LA	Apr 17, 2024
PTU300-Vaisala	EnvironmentalMonitor	P5011262	Sept 15, 2022	ACR Env./ A2LA	Sept 15, 2023
PC Program 1017 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1253-Norsonic	Calibrator	28326	Oct 31, 2022	Scantek, Inc./ NVLAP	Oct 31, 2023
1203-Norsonic	Preamplifier	14059	Mar 7, 2023	Scantek, Inc./ NVLAP	Mar 7, 2024
4180-Brüel&Kjær	Microphone	2246115	Oct 6, 2021	DPLA / DANAK	Oct 6, 2023

Instrumentation and test results are traceable to SI - BIPM through standards maintained by NPL (UK) and NIST (USA)

Calibrated by:	Bailey Partoza	Authorized signatory:	William Gallagher
Signature		Signature	
Date	5/8/23	Date	5/9/2023

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This Calibration Certificate or Test Reports shall not be used to claim product certification, approval or endorsement by NVLAP, NIST, or any agency of the federal government.
Document stored as: Y:\Calibration Lab\Mic 2023\Rion59_04427_M1.doc

Results summary: Device was tested and complies with following clauses of mentioned specifications:

CLAUSES / METHODS[1] FROM PROCEDURES		MET[2,3]	NOT MET	NOT TESTED	MEASUREMENT EXPANDED UNCERTAINTY (coverage factor 2)
Open circuit sensitivity (insert voltage method, 250 Hz)		X			See below
Frequency response	Actuator response	X			63 – 200Hz: 0.3 dB 200 – 8000 Hz: 0.2 dB 8 – 10 kHz: 0.5 dB 10 – 20 kHz: 0.7 dB 20 – 50 kHz: 0.9 dB 50 – 100 kHz: 1.2 dB
	FF/Diffuse field responses	X			63 – 200Hz: 0.3 dB 200 – 4000 Hz: 0.2 dB 4 – 10 kHz: 0.6 dB 10 – 20 kHz: 0.9 dB 20 – 50 kHz: 2.2 dB 50 – 100 kHz: 4.4 dB
	Scantek, Inc. acoustical method			X	31.5 – 125 Hz: 0.16 dB 250, 1000 Hz: 0.12 dB 2 – 8 kHz: 0.8 dB 12.5 – 16 kHz: 2.4 dB

[1] The results of this calibration apply only to the instrument type with serial number identified in this report.

[2] Parameters are certified at actual environmental conditions.

[3] The tests marked with (*) are not covered by the current NVLAP accreditation.

Note: The free field/diffuse field characteristics were calculated based on the measured actuator response and adjustment coefficients as provided by the manufacturer. The measurement results are reported as Pass / Fail simple acceptance; measured values are in the tolerance interval.

Comments: The instrument was tested and met all specifications found in the referenced procedures.

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
22.8 ± 1.0	99.57 ± 0.020	43.1 ± 2.0

Main measured parameters:

Tone frequency (Hz)	Measured[4] /Acceptable Open circuit sensitivity (dB re 1V/Pa)	Sensitivity (mV/Pa)
250	-27.47 ± 0.12/ -27.0 ±2.0	42.31

[4] The reported expanded uncertainty is calculated with a coverage factor k=2.00

Tests made with following attachments to instrument and auxiliary devices:

Protection grid mounted for sensitivity measurements
Actuator type: G.R.A.S. RA0014

Measured Data: Found on Microphone Test Report # 49675 of one page.

Place of Calibration: Scantek, Inc.
6430 Dobbin Road, Suite C
Columbia, MD 21045 USA
Ph/Fax: 410-290-7726/ -9167
callab@scantekinc.com

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Scantek, Inc.
CALIBRATION LABORATORY

ISO 17025: 2017, ANSI/NCSL Z540:1994 Part 1
ACCREDITED by NVLAP (an ILAC MRA signatory)

NVLAP®
CALIBRATION
NVLAP Lab Code: 200625-0

Calibration Certificate No.49150

Instrument: **Sound Level Meter**
Model: **NL52**
Manufacturer: **Rion**
Serial number: **00331834**
Tested with: **Microphone UC-59 s/n 05046**
Preamplifier NH25 s/n 21785
Type (class): **1**
Customer: **Scantek, Inc.**
Tel/Fax: **410-290-7726 / 410-290-9167**

Date Calibrated: **2/14/2023** *Cal Due:* **2/14/2024**

Status:	Received	Sent
In tolerance:	X	X
Out of tolerance:		
See comments:		

Contains non-accredited tests: __Yes X No
Calibration service: __ Basic X Standard
Address: **6430 Dobbin Road, Suite C, Columbia, MD 21045**

Tested in accordance with the following procedures and standards:
Calibration of Sound Level Meters, Scantek Inc., Rev. 6/26/2015
SLM & Dosimeters – Acoustical Tests, Scantek Inc., Rev. 7/6/2011

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
483B-Norsonic	SME Cal Unit	31052	Nov 7, 2022	Scantek, Inc./ NVLAP	Nov 7, 2023
DS-360-SRS	Function Generator	88077	Dec 21, 2022	ACR Env./ A2LA	Dec 21, 2024
34401A-Agilent Technologies	Digital Voltmeter	MY47011118	Mar 10, 2022	ACR Env. / A2LA	Mar 10, 2023
PTU300-Vaisala	EnvironmentalMonitor	P5011262	Sept 15, 2022	ACR Env./ A2LA	Sept 15, 2023
PC Program 1019 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1251-Norsonic	Calibrator	30878	Oct 31, 2022	Scantek, Inc./ NVLAP	Oct 31, 2023

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK).

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
21.0	100.52	39.6

Calibrated by:	Bailey Partoza	**Authorized signatory:**	William Gallagher
Signature		Signature	
Date	2/14/23	Date	2/15/2023

Calibration Certificates or Test Reports shall not be reproduced, except in full, without written approval of the laboratory.
This Calibration Certificate or Test Reports shall not be used to claim product certification, approval or endorsement by NVLAP, NIST, or any agency of the federal government.

Results summary: Device complies with following clauses of mentioned specifications:

CLAUSES[1] FROM IEC/ANSI STANDARDS REFERENCED IN PROCEDURES:	RESULT[2,3]	EXPANDED UNCERTAINTY (coverage factor 2) [dB]
INDICATION AT THE CALIBRATION CHECK FREQUENCY - IEC61672-3 ED.2 CLAUSE 10	Passed	0.15
SELF-GENERATED NOISE - IEC 61672-3 ED.2 CLAUSE 11	Passed	0.30
FREQUENCY WEIGHTINGS: A NETWORK - IEC 61672-3 ED.2.0 CLAUSE 13	Passed	0.20
FREQUENCY WEIGHTINGS: C NETWORK - IEC 61672-3 ED.2.0 CLAUSE 13	Passed	0.20
FREQUENCY WEIGHTINGS: Z NETWORK - IEC 61672-3 ED.2.0 CLAUSE 13	Passed	0.20
FREQUENCY AND TIME WEIGHTINGS AT 1 KHZ IEC 61672-3 ED.2.0 CLAUSE 14	Passed	0.20
LEVEL LINEARITY ON THE REFERENCE LEVEL RANGE - IEC 61672-3 ED.2 CLAUSE 16	Passed	0.25
TONEBURST RESPONSE - IEC 61672-3 ED.2.0 CLAUSE 18	Passed	0.30
PEAK C SOUND LEVEL - IEC 61672-3 ED.2.0 CLAUSE 19	Passed	0.35
OVERLOAD INDICATION - IEC 61672-3 ED.2.0 CLAUSE 20	Passed	0.25
HIGH LEVEL STABILITY TEST - IEC 61672-3 ED.2.0 CLAUSE 21	Passed	0.1
LONG TERM STABILITY TEST - IEC 61672-3 ED.2.0 CLAUSE 15	Passed	0.1
COMBINED ELECTRICAL AND ACOUSTICAL TEST - IEC 61672-3 ED.2.0 CLAUSE 13	Passed	See test report

1 The results of this calibration apply only to the instrument type with serial number identified in this report.

2 Parameters are certified at actual environmental conditions.

3 The tests marked with (*) are not covered by the current NVLAP accreditation.

Comments: The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3, for the environmental conditions under which the tests were performed. As public evidence was available, from an independent testing organization responsible for approving the results of pattern evaluation tests performed in accordance with IEC 61672-2, to demonstrate that the model of sound level meter fully conforms to the requirements in the IEC 61672-2, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1.

Note: The instrument was tested for the parameters listed in the table above, using the test methods described in the listed standards. All tests were performed around the reference conditions. The test results were compared with the manufacturer's or with the standard's specifications, whichever are larger. The measurement results are reported as Pass / Fail simple acceptance; measured values are in the tolerance interval.

Tests made with the following attachments to the instrument:

Microphone: Rion UC-59 s/n 05046 for acoustical test
Preamplifier: Rion NH25 s/n 21785 for all tests
Other: line adaptor ADP005 (18pF) for electrical tests
Accompanying acoustical calibrator: none
Windscreen: Rion WS-10

Measured Data: in Test Report # 49150 of 7 +1 pages.

Place of Calibration: Scantek, Inc.
6430 Dobbin Road, Suite C
Columbia, MD 21045 USA

Ph/Fax: 410-290-7726/ -9167
callab@scantekinc.com

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Scantek, Inc.
CALIBRATION LABORATORY

ISO 17025: 2017, ANSI/NCSL Z540:1994 Part 1
ACCREDITED by NVLAP (an ILAC MRA signatory)

NVLAP®
CALIBRATION
NVLAP Lab Code: 200625-0

Calibration Certificate No.49151

Instrument:	**Microphone**
Model:	**UC-59**
Manufacturer:	**Rion**
Serial number:	**05046**
Composed of:	

Date Calibrated: **2/14/2023** *Cal Due:* **2/14/2024**

Status:	Received	Sent
In tolerance:	X	X
Out of tolerance:		
See comments:		

Contains non-accredited tests: __Yes _X_ No

Customer:	**Scantek, Inc.**
Tel/Fax:	**410-290-7726/410-290-9167**
Address:	**6430 Dobbin Road, Suite C, Columbia, MD 21045**

Tested in accordance with the following procedures and standards:
Calibration of Measurement Microphones, Scantek, Inc., Rev. 2/25/2015

Instrumentation used for calibration: N-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
483B-Norsonic	SME Cal Unit	31052	Nov 7, 2022	Scantek, Inc./ NVLAP	Nov 7, 2023
DS-360-SRS	Function Generator	88077	Dec 21, 2022	ACR Env./ A2LA	Dec 21, 2024
34401A-Agilent Technologies	Digital Voltmeter	MY47011118	Mar 10, 2022	ACR Env. / A2LA	Mar 10, 2023
PTU300-Vaisala	EnvironmentalMonitor	P5011262	Sept 15, 2022	ACR Env./ A2LA	Sept 15, 2023
PC Program 1017 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1253-Norsonic	Calibrator	28326	Oct 31, 2022	Scantek, Inc./ NVLAP	Oct 31, 2023
1203-Norsonic	Preamplifier	14059	Mar 7, 2022	Scantek, Inc./ NVLAP	Mar 7, 2023
4180-Brüel&Kjær	Microphone	2246115	Oct 6, 2021	DPLA / DANAK	Oct 6, 2023

Instrumentation and test results are traceable to SI - BIPM through standards maintained by NPL (UK) and NIST (USA)

Calibrated by:	Bailey Partoza	**Authorized signatory:**	William Gallagher
Signature		Signature	
Date	2/14/23	Date	2/15/2023

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This Calibration Certificate or Test Reports shall not be used to claim product certification, approval or endorsement by NVLAP, NIST, or any agency of the federal government.

Results summary: Device was tested and complies with following clauses of mentioned specifications:

CLAUSES / METHODS[1] FROM PROCEDURES		MET[2,3]	NOT MET	NOT TESTED	MEASUREMENT EXPANDED UNCERTAINTY (coverage factor 2)
Open circuit sensitivity (insert voltage method, 250 Hz)		X			See below
Frequency response	Actuator response	X			63 – 200Hz: 0.3 dB 200 – 8000 Hz: 0.2 dB 8 – 10 kHz: 0.5 dB 10 – 20 kHz: 0.7 dB 20 – 50 kHz: 0.9 dB 50 – 100 kHz: 1.2 dB
	FF/Diffuse field responses	X			63 – 200Hz: 0.3 dB 200 – 4000 Hz: 0.2 dB 4 – 10 kHz: 0.6 dB 10 – 20 kHz: 0.9 dB 20 – 50 kHz: 2.2 dB 50 – 100 kHz: 4.4 dB
	Scantek, Inc. acoustical method			X	31.5 – 125 Hz: 0.16 dB 250, 1000 Hz: 0.12 dB 2 – 8 kHz: 0.8 dB 12.5 – 16 kHz: 2.4 dB

[1] The results of this calibration apply only to the instrument type with serial number identified in this report.

[2] Parameters are certified at actual environmental conditions.

[3] The tests marked with (*) are not covered by the current NVLAP accreditation.

Note: The free field/diffuse field characteristics were calculated based on the measured actuator response and adjustment coefficients as provided by the manufacturer. The measurement results are reported as Pass / Fail simple acceptance; measured values are in the tolerance interval.

Comments: The instrument was tested and met all specifications found in the referenced procedures.

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
22.3 ± 1.0	100.87 ± 0.020	37.5 ± 2.0

Main measured parameters:

Tone frequency (Hz)	Measured[4] /Acceptable Open circuit sensitivity (dB re 1V/Pa)	Sensitivity (mV/Pa)
250	-26.00 ± 0.12/ -27.0 ±2.0	50.12

[4] The reported expanded uncertainty is calculated with a coverage factor k=2.00

Tests made with following attachments to instrument and auxiliary devices:

Protection grid mounted for sensitivity measurements
Actuator type: G.R.A.S. RA0014

Measured Data: Found on Microphone Test Report # 49151 of one page.

Place of Calibration: Scantek, Inc.
6430 Dobbin Road, Suite C
Columbia, MD 21045 USA
Ph/Fax: 410-290-7726/ -9167
callab@scantekinc.com

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Scantek, Inc.
CALIBRATION LABORATORY

ISO 17025: 2017, ANSI/NCSL Z540:1994 Part 1
ACCREDITED by NVLAP (an ILAC MRA signatory)

NVLAP®
CALIBRATION
NVLAP Lab Code: 200625-0

Calibration Certificate No.49139

Instrument:	**Acoustical Calibrator**	*Date Calibrated:* **2/9/2023**	*Cal Due:* **2/9/2024**		
Model:	**NC-74**	*Status:*	**Received**	**Sent**	
Manufacturer:	**Rion**	*In tolerance:*	**X**	**X**	
Serial number:	**34536122**	*Out of tolerance:*			
Class (IEC 60942):	**1**	*See comments:*			
Barometer type:		*Contains non-accredited tests:*	**__Yes _X_ No**		
Barometer s/n:					
Customer:	**Scantek, Inc.**	*Address:*	**6430 Dobbin Road, Suite C,**		
Tel/Fax:	**410-290-7726 / 410-290-9167**		**Columbia, MD 21045**		

Tested in accordance with the following procedures and standards:
Calibration of Acoustical Calibrators, Scantek Inc., Rev. 10/1/2010

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
483B-Norsonic	SME Cal Unit	31052	Nov 7, 2022	Scantek, Inc./ NVLAP	Nov 7, 2023
DS-360-SRS	Function Generator	88077	Dec 21, 2022	ACR Env./ A2LA	Dec 21, 2024
34401A-Agilent Technologies	Digital Voltmeter	MY47011118	Mar 10, 2022	ACR Env. / A2LA	Mar 10, 2023
PTU300-Vaisala	EnvironmentalMonitor	P5011262	Sept 15, 2022	ACR Env./ A2LA	Sept 15, 2023
140-Norsonic	Real Time Analyzer	1406423	Nov 9, 2022	Scantek / NVLAP	Nov 9, 2023
PC Program 1018 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
4134-Brüel&Kjær	Microphone	173368	Nov 7, 2022	Scantek, Inc. / NVLAP	Nov 7, 2023
1203-Norsonic	Preamplifier	14059	Mar 7, 2022	Scantek, Inc./ NVLAP	Mar 7, 2023

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK)

Calibrated by:	Bailey Partoza	**Authorized signatory:**	William Gallagher
Signature		Signature	
Date	2/9/23	Date	2/9/2023

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Results summary: Device was tested and complies with following clauses of mentioned specifications:

CLAUSES[1] FROM STANDARDS REFERENCED IN PROCEDURES:	MET[2]	NOT MET	COMMENTS
Manufacturer specifications			
Manufacturer specifications: Sound pressure level	X		
Manufacturer specifications: Frequency	X		
Manufacturer specifications: Total harmonic distortion	X		
Current standards			
ANSI S1.40:2006 B.3 / IEC 60942: 2003 B.2 - Preliminary inspection	X		
ANSI S1.40:2006 B.4.4 / IEC 60942: 2003 B.3.4 - Sound pressure level	X		
ANSI S1.40:2006 A.5.4 / IEC 60942: 2003 A.4.4 - Sound pressure level stability	-	-	
ANSI S1.40:2006 B.4.5 / IEC 60942: 2003 B.3.5 - Frequency	X		
ANSI S1.40:2006 B.4.6 / IEC 60942: 2003 B.3.6 - Total harmonic distortion	X		

1 The results of this calibration apply only to the instrument type with serial number identified in this report.

2 The tests marked with (*) are not covered by the current NVLAP accreditation.

Main measured parameters [3]:

Measured[4]/Acceptable[5] Tone frequency (Hz):	Measured[4]/Acceptable[5] Total Harmonic Distortion (%):	Measured [4]/Acceptable Level[5] (dB):
1002.86 ± 1.0/1000.0 ± 10.0	1.23 ± 0.10/ < 3	94.11 ± 0.12/94.0 ± 0.4

3 The stated level is valid at measurement conditions.

4 The above expanded uncertainties for frequency and distortion are calculated with a coverage factor k=2; for level k=2.00

5 Acceptable parameters values are from the current standards

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
23.7 ± 1.0	100.83 ± 0.000	39.4 ± 2.0

Tests made with following attachments to instrument:

Calibrator ½" Adaptor Type: NC-74-002
Other:

Adjustments: Unit was not adjusted.
Comments: The instrument was tested and met all specifications found in the referenced procedures.

Note: The instrument was tested for the parameters listed in the table above, using the test methods described in the listed standards. All tests were performed around the reference conditions. The test results were compared with the manufacturer's or with the standard's specifications, whichever are larger. The measurement results are reported as Pass / Fail simple acceptance; measured values are in the tolerance interval.

Measured Data: in Acoustical Calibrator Test Report # 49139 of one page.

Place of Calibration: Scantek, Inc.
6430 Dobbin Road, Suite C
Columbia, MD 21045 USA
Ph/Fax: 410-290-7726/ -9167
callab@scantekinc.com

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Stantec

Memo

To:	Kyle Kirschenmann, P.G. Environmental Manager Air and Noise Section	From:	Mary Martin Stantec Consulting Services Inc. mary.martin@stantec.com 919-395-6147
File:	171002599	Date:	June 15, 2023

Reference: Traffic Noise Model Validation
PIN:101423.00 PE-D: 05097-1233-14
SR-162 Ext, (Pellissippi Parkway)
From SR-33 to SR-73 (US-321) (IA)
Blount County, Tennessee

Stantec Consulting Services Inc. prepared the following Noise Model Validation Memorandum to meet requirements of TDOT's Section 5.3.4, Noise, in the *Tennessee Environmental Procedures Manual* (TDOT, June 2011) and the TDOT *Policy on Highway Traffic Noise Abatement* (effective July 13, 2011). This memorandum includes a description of the short-term and long-term noise measurement sites, as well as a summary of the methodology and results of the ambient noise data collection and traffic noise model validation efforts using Version 2.5 of the Federal Highway Administration (FHWA) Traffic Noise Model® (TNM) for the SR-162 Extension (Pellissippi Parkway) Noise Technical Report.

Project Description

The subject project involves extending and constructing a new section of Pellissippi Parkway (State Route [SR] 162) in Blount County, Tennessee. The project begins at the current terminus of Pellissippi Parkway/Interstate 140 (I-140) and extends from SR 33 (Old Knoxville Highway) to US 321/SR 73 (Lamar Alexander Parkway) in Blount County. The project is about 4.38 miles in length. The roadway is designed for traffic traveling at 60 miles-per-hour, although the posted speed may be lower. The base year for the project is 2026 and the design year is 2046. **Figure 1.1** shows the project location and limits.

A Record of Decision (ROD) for the project was signed on August 31, 2017. This is the Date of Public Knowledge for the project. TDOT is not responsible for evaluating traffic noise impacts or implementing noise abatement measures to protect developed or undeveloped lands that were not permitted before a project's Date of Public Knowledge.

The project area is comprised of single-family homes (NAC B), the outdoor playground area of the Clark's Grove Cumberland Presbyterian Church (NAC C), Claytons Disc Golf Course and greenway (NAC C), the walkways and benches at Pellissippi Place, a business park (NAC C), Rio Revolution Church – Maryville, soccer fields, picnic area and playground (NAC C) and the interior of Morning Star Baptist Church (NAC D). Non-noise-sensitive land uses are scattered throughout the project area (NAC F).

Existing Noise Measurements

The project's Noise Analysis Work Plan was approved by TDOT on March 9, 2023. The work plan proposed eight short-term noise measurement locations of 20-minute duration for TNM model validation. The work plan proposed four short-term noise measurement locations of 20-minute duration to obtain an ambient ready only and one 24-hour ambient reading at the rear of the Kensington Place Mobile Home Park to obtain the "worst-hour ambient noise level.

Reference: Traffic Noise Model Validation
PIN:101423.00 PE-D: 05097-1233-14
SR-162 Ext, (Pellissippi Parkway)
From SR-33 to SR-73 (US-321) (IA)
Blount County, Tennessee

Ambient noise measurements were performed on May 22nd – May 23rd, 2023. Due to dificulties in acessing some properties that were shown in the work plan, adjustments were made as needed to the locations for readings. The noise measument locations (NMLs) are shown on the figures and the field data sheets. Short-term measurements were taken at 12 noise measurement locations (NML) for a 20-minute duration. Eight measurement locations were used for validation. Four short-term measurements were taken for a 20-minute duration to record ambient sound only. One 24-hour long term measurement was taken at NML-10 to record ambient sound levels. The sound level metrics data for these measurements was collected in increments of one minute (i.e. a 20-minute short-term noise measurement session was comprised of 20 data points and a 24-hour long-term measurement was comprised of 1440 points).

Simultaneous traffic data was manually counted, recorded and classified, during each short-term noise measurement session, at areas near existing traffic noise sources. The counts were classified to account for auto, medium truck, heavy truck, bus and motorcycle vehicle mix counts. Traffic speeds were obtained by driving the project corridor and recording average speed and travel time, and supplemented with the utilization of a radar gun. Posted speed limits were recorded on field data sheets for all roadways within the project corridor.

During the ambient noise measurements, weather conditions were collected using a Kestrel 3000 handheld weather station for wind speeds and supplemented with data from the Weather Underground app with location services turned on (https://www.wunderground.com/). Refer to **Table 1** for a summary of the weather data during the noise measurements.

The noise levels obtained during the noise measurement process are shown below in **Table 2**, ranging from approximately 38 dB(A) Leq to 66 dB(A) Leq.

Validation Models

In accordance with the TDOT's Section 5.3.4, Noise, in the *Tennessee Environmental Procedures Manual* (TDOT, June 2011), computer models using the FHWA TNM 2.5® were created to predict traffic noise in the project study area, and these models have been validated to local conditions through comparison between measured and predicted noise levels. For each measurement location where the predicted noise level is within ±3 dB(A) of the measured noise level, that measurement site is considered validated. Refer to **Table 2** for a summary of the TNM validation results.

Reference: Traffic Noise Model Validation
PIN:101423.00 PE-D: 05097-1233-14
SR-162 Ext, (Pellissippi Parkway)
From SR-33 to SR-73 (US-321) (IA)
Blount County, Tennessee

Table 1: Ambient Noise Measurement Weather Summary

Measurement Site	Date (Time)	Temp. (°F)	Cloud Cover	Wind Direction	Wind Speed (mph)	Precipitation (in)	Relative Humidity (%)
NML-1	5/23/23 (9:35 am -9:55 am)	67	Partly Cloudy	N	5	0	68
NML-2	5/24/23 (10:53 am - 1:13am)	69	Clear	N	4	0	58
NML-3	5/23/23 (10:09 am -10:29 am)	68	Partly Cloudy	N	3	0	67
NML-4	5/24/23 (11:32 am – 11:52 am)	72	Clear	NNE	4	0	54
NML-5	5/23/23 (10:41 pm – 3:44 pm)	70	Partly Cloudy	N	5	0	63
NML-6	5/23/23 (12:28 pm – 12:48 pm)	73	Partly Cloudy	E	6	0	57
NML-7	5/23/23 (3:05 pm – 3:25 pm)	78	Partly Cloudy	NE	9	0	46
NML-8	5/23/23 (3:41 pm – 4:01 pm	78	Partly Cloudy	NE	10	0	42
NML-9	5/24/23 (12:07 pm – 12:27 pm	73	Partly Cloudy	N/A	0	0	49
NML-10	5/22/23 -5/23/23 (4:32 pm – 4:32 pm	Varies	Varies	Varies	Varies	0	Varies
NML-11	5/23/23 (2:21 pm – 2:41 pm)	76	Partly Cloudy	ENE	8	0	50
NML-12	5/23/23 (1:48 pm – 2:08 pm)	75	Partly Cloudy	NNE	7	0	54
NML-13	5/23/23 (11:46 am – 12:06 pm)	72	Partly Cloudy	N	7	0	61

Source: Kestral 3000 handheld weather station and wunderground.com

Reference: Traffic Noise Model Validation
PIN:101423.00 PE-D: 05097-1233-14
SR-162 Ext, (Pellissippi Parkway)
From SR-33 to SR-73 (US-321) (IA)
Blount County, Tennessee

Table 2: TNM Validation Table

Measurement Site[2]	Measured L_{eq}, dB(A)[1]	TNM-Predicted $L_{eq(h)}$, dB(A)[1]	Validation Change (Predicted-Measured), dB(A)[1]
NML-1	56.1	57.0	**0.9**
NML-2	46.6	Ambient Only	N/A
NML-3	42.0	Ambient Only	N/A
NML-4	41.5	Ambient Only	N/A
NML-5	57.3	57.8	**0.5**
NML-6	56.3	58.9	**2.6**
NML-7	45.6	46.3	**0.7**
NML-8	52.0	53.6	**1.6**
NML-9	38.3	Ambient Only	N/A
NML-10	52.3[3]	24-Hour Long Term Measurement	N/A
NML-11	66.1	68.1	**2.0**
NML-12	65.9	68.2	**2.3**
NML-13	55.2	57.0	**1.8**
Measurement Site Validated		Measurement Site Not Validated	

1. Hourly equivalent noise levels, Leq(h), are expressed to the nearest one-tenth decibels to ensure that TNM-predicted noise levels validate to within ± 3.0 dB(A) of measured noise levels without the benefits of rounding.
2. Please see figures for measurement locations.
3. A 24-hour meter was in place to obtain ambient background readings. The worst hour, using a rolling calculation, was on March 23 from 11:28 am – 12:28 pm at 52.3 dB(A).

Reference: Traffic Noise Model Validation
PIN:101423.00 PE-D: 05097-1233-14
SR-162 Ext, (Pellissippi Parkway)
From SR-33 to SR-73 (US-321) (IA)
Blount County, Tennessee

Measurement Location Photos

NML-1 (Near intersection of Old Knoxville Hwy. and Cemetery Road)

NML-2 (Pellissippi Place near ProNova Solutions)

Reference: Traffic Noise Model Validation
PIN:101423.00 PE-D: 05097-1233-14
SR-162 Ext, (Pellissippi Parkway)
From SR-33 to SR-73 (US-321) (IA)
Blount County, Tennessee

NML-3 (Cul-de-sac at the end of Jackson Hills Drive)

NML-4 (Clearing on Mt. Lebanon Road)

Reference: Traffic Noise Model Validation
PIN:101423.00 PE-D: 05097-1233-14
SR-162 Ext, (Pellissippi Parkway)
From SR-33 to SR-73 (US-321) (IA)
Blount County, Tennessee

NML-5 (Near intersection of Wildwood Road and E. Brown School Road)

NML-6 (At a residence along Sevierville Road)

Reference: Traffic Noise Model Validation
PIN:101423.00 PE-D: 05097-1233-14
SR-162 Ext, (Pellissippi Parkway)
From SR-33 to SR-73 (US-321) (IA)
Blount County, Tennessee

NML-7 (At new construction residence along Davis Ford Road)

NML-8 (Near intersection of Davis Ford Road and Nina Delozier Road/Centennial Church Road)

Reference: Traffic Noise Model Validation
PIN:101423.00 PE-D: 05097-1233-14
SR-162 Ext, (Pellissippi Parkway)
From SR-33 to SR-73 (US-321) (IA)
Blount County, Tennessee

NML-9 (field across from Centennial Church Road)

NML-10 (24-Hour long-term measurement at Kensington Place Mobile Home Park)

Reference: Traffic Noise Model Validation
PIN:101423.00 PE-D: 05097-1233-14
SR-162 Ext, (Pellissippi Parkway)
From SR-33 to SR-73 (US-321) (IA)
Blount County, Tennessee

NML-11 (Lamar Alexander Boulevard west of Mobile Home Park)

NML-12 (Rio Revolution Church at Lamar Alexander Boulevard)

Reference: Traffic Noise Model Validation
PIN:101423.00 PE-D: 05097-1233-14
SR-162 Ext, (Pellissippi Parkway)
From SR-33 to SR-73 (US-321) (IA)
Blount County, Tennessee

NML-13 (Maryville Seventh-Day Adventist Church on Sevierville Road)

Appendix C
Design Year Traffic Data

SR 162 Extension		Hourly Volumes				LOS C Capacity	% Cars	% Duals	% TTST	2026 AM - Direction 1			2026 AM - Direction 2			2026 PM - Direction 1			2026 PM - Direction 2			Direction 1
Road Name	Segment	2026 AM - Direction 1	2026 AM - Direction 2	2026 PM - Direction 1	2026 AM - Direction 2					Autos	Duals	TTST	Autos	Duals	TTST	Autos	Duals	TTST	Autos	Duals	TTST	
SR 162	North of SR 33 Northern Ramps	649	1,080	801	875	2880	96%	1.2%	2.8%	623	8	18	1037	13	30	769	10	22	840	11	25	Southbound
SR 35	West of Dell Road	156	392	338	176	710	93%	2.1%	4.9%	145	3	8	365	8	19	314	7	17	164	4	9	Eastbound
	Between Dell Road and Davis Ford Road	177	402	344	179	710	93%	2.1%	4.9%	165	4	9	374	8	20	320	7	17	166	4	9	Eastbound
	Between Davis Ford Road and Nina Delozier Road	230	387	352	121	710	93%	2.1%	4.9%	214	5	11	360	8	19	327	7	17	113	3	6	Eastbound
	East of Nina Delozier Road	228	382	344	102	710	93%	2.1%	4.9%	212	5	11	355	8	19	320	7	17	95	2	5	Eastbound
SR 162 Southbound Ramps	SR 33 Off-Ramp	649	-	801	-	852	96%	1.2%	2.8%	623	8	18	-	-	-	769	10	22	-	-	-	Southbound
SR 162 Northbound Ramps	SR 33 On-Ramp	1,080	-	875	-	852	96%	1.2%	2.8%	818	10	24	-	-	-	818	10	24	-	-	-	Northbound
SR 33	West of SR 162 Southbound Ramp	738	796	965	638	1740	96%	1.2%	2.8%	708	9	21	764	10	22	926	12	27	612	8	18	Eastbound
	Between SR 162 Ramps	950	218	1,535	230	1740	97%	0.9%	2.1%	922	9	20	211	2	5	1489	14	32	223	2	5	Eastbound
	East of SR 162 Northbound Ramp	87	675	863	623	710	98%	0.6%	1.4%	85	1	1	662	4	9	696	4	10	611	4	9	Eastbound
SR 73	-	179	815	763	610	1740	97%	0.9%	2.1%	174	2	4	791	7	17	740	7	16	592	5	13	Eastbound
Dell Road	South of SR 35	61	41	41	61	330	97%	0.9%	2.1%	59	1	1	40	0	1	40	0	1	59	1	1	Northbound
Davis Ford Road	South of SR 35	120	80	80	120	330	96%	1.2%	2.8%	115	1	3	77	1	2	77	1	2	115	1	3	Northbound
Nina Delozier Road	South of SR 35	19	14	14	19	330	94%	1.8%	4.2%	18	0	1	13	0	1	13	0	1	18	0	1	Northbound
Wildwood Road	-	332	332	332	332	330	98%	0.6%	1.4%	323	2	5	323	2	5	323	2	5	323	2	5	-
Brown School Road	-	120	120	120	120	330	96%	1.2%	2.8%	115	1	3	115	1	3	115	1	3	115	1	3	-

SR 162 Extension		Hourly Volumes				LOS C Capacity	% Cars	% Duals	% TTST	2046 AM - Direction 1			2046 AM - Direction 2			2046 PM - Direction 1			2046 PM - Direction 2			Direction 1
Road Name	Segment	2046 AM - Direction 1	2046 AM - Direction 2	2046 PM - Direction 1	2046 PM - Direction 2					Autos	Duals	TTST	Autos	Duals	TTST	Autos	Duals	TTST	Autos	Duals	TTST	
SR 162 Extension	North of SR 33 Northern Ramps	1,516	3,541	3,058	2,049	2880	95%	1.5%	3.5%	1440	23	53	2736	43	101	2736	43	101	1947	31	72	Southbound
	Between SR 33 Ramps	588	1,996	1,912	797	2880	94%	1.8%	4.2%	553	11	25	1876	36	84	1797	34	80	749	14	33	Southbound
	Between SR 33 Southern Ramps and SR 35 Northern Ramps	1,085	2,662	2,526	1,137	2880	94%	1.8%	4.2%	1020	20	46	2502	48	112	2374	45	106	1069	20	48	Southbound
	Between SR 35 Ramps	860	2,172	1,949	904	2880	94%	1.8%	4.2%	808	15	36	2042	39	91	1832	35	82	850	16	38	Southbound
	Between SR 35 Southern Ramps and SR 73 Northern Ramps	1,118	2,412	2,194	1,043	2880	93%	2.1%	4.9%	1040	23	55	2243	51	118	2040	46	108	970	22	51	Southbound
	Between SR 73 Northern Ramps and Eastbound SR 73	671	1,085	1,207	417	1440	93%	2.1%	4.9%	624	14	33	1009	23	53	1123	25	59	388	9	20	Southbound
SR 35	West of Dell Road	622	816	792	726	710	93%	2.1%	4.9%	578	13	30	660	15	35	660	15	35	660	15	35	Eastbound
	Between Dell Road and Davis Ford Road	652	822	798	756	1827	93%	2.1%	4.9%	606	14	32	764	17	40	742	17	39	703	16	37	Eastbound
	Between Davis Ford Road and SR 162 Extension Southbound Ramps	737	839	815	841	1305	93%	2.1%	4.9%	685	15	36	780	18	41	758	17	40	782	18	41	Eastbound
	Between SR 162 Extension Ramps	842	951	955	544	1653	93%	2.1%	4.9%	783	18	41	884	20	47	888	20	47	506	11	27	Eastbound
	Between SR 162 Extension and Nina Delozier Road	725	1,160	906	624	1305	93%	2.1%	4.9%	674	15	36	1079	24	57	843	19	44	580	13	31	Eastbound
	East of Nina Delozier Road	723	1,149	895	622	710	93%	2.1%	4.9%	660	15	35	660	15	35	660	15	35	578	13	30	Eastbound
SR 162 Southbound Ramps	SR 33 Off-Ramp	928	-	1,146	-	852	97%	0.9%	2.1%	826	8	18	-	-	-	826	8	18	-	-	-	Southbound
	SR 33 On-Ramp	497	-	614	-	852	97%	0.9%	2.1%	482	5	10	-	-	-	595	6	13	-	-	-	Southbound
	SR 35 Off-Ramp	285	-	763	-	852	93%	2.1%	4.9%	265	6	14	-	-	-	710	16	37	-	-	-	Southbound
	SR 35 On-Ramp	310	-	326	-	852	93%	2.1%	4.9%	288	7	15	-	-	-	303	7	16	-	-	-	Southbound
	SR 73 Westbound Off-Ramp	447	-	987	-	852	97%	0.9%	2.1%	434	4	9	-	-	-	826	8	18	-	-	-	Southbound
SR 162 Northbound Ramps	SR 73 Westbound On-Ramp	1,327	-	626	-	852	97%	0.9%	2.1%	826	8	18	-	-	-	607	6	13	-	-	-	Northbound
	SR 35 Off-Ramp	316	-	174	-	852	93%	2.1%	4.9%	294	7	15	-	-	-	162	4	9	-	-	-	Northbound
	SR 35 On-Ramp	624	-	303	-	852	93%	2.1%	4.9%	580	13	31	-	-	-	282	6	15	-	-	-	Northbound
	SR 33 Off-Ramp	818	-	420	-	852	97%	0.9%	2.1%	793	7	17	-	-	-	407	4	9	-	-	-	Northbound
	SR 33 On-Ramp	1,545	-	1,252	-	852	97%	0.9%	2.1%	826	8	18	-	-	-	826	8	18	-	-	-	Northbound
SR 33	West of SR 162 Southbound Ramps	1,191	1,209	1,521	932	1740	96%	1.2%	2.8%	1143	14	33	1161	15	34	1460	18	43	895	11	26	Eastbound
	Between SR 162 Ramps	1,115	702	1,802	681	1740	97%	0.9%	2.1%	1082	10	23	681	6	15	1688	16	37	661	6	14	Eastbound
	East of SR 162 Northbound Ramps	498	964	1,168	959	710	98%	0.6%	1.4%	488	3	7	696	4	10	696	4	10	696	4	10	Eastbound
SR 73	West of SR 162	1,350	1,651	1,544	1,888	1740	97%	0.9%	2.1%	1310	12	28	1601	15	35	1498	14	32	1688	16	37	Eastbound
	Between SR 162 Ramps	265	1,204	1,127	901	1740	97%	0.9%	2.1%	257	2	6	1168	11	25	1093	10	24	874	8	19	Eastbound
	East of SR 162	936	2,531	2,334	1,527	710	97%	0.9%	2.1%	689	6	15	689	6	15	689	6	15	689	6	15	Eastbound
Dell Road	South of SR 35	73	49	49	73	330	97%	0.9%	2.1%	71	1	2	48	0	1	48	0	1	71	1	2	Northbound
Davis Ford Road	South of SR 35	204	136	136	204	330	96%	1.2%	2.8%	196	2	6	131	2	4	131	2	4	196	2	6	Northbound
Nina Delozier Road	South of SR 35	30	21	21	30	330	94%	1.8%	4.2%	28	1	1	20	0	1	20	0	1	28	1	1	Northbound
Wildwood Road	-	565	565	565	565	330	98%	0.6%	1.4%	323	2	5	323	2	5	323	2	5	323	2	5	-
Brown School Road	-	205	205	205	205	330	96%	1.2%	2.8%	197	2	6	197	2	6	197	2	6	197	2	6	-

TENNESSEE DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION

PROJECT NO.: HPP/NH-162(7) : 05097-1233-14 ROUTE: S.R. 162 EXTENSION
COUNTY: BLOUNT CITY: MARYVILLE
PROJECT PIN NUMBER: 101423.00
PROJECT DESCRIPTION: FROM S.R. 33 TO S.R. 73.

[1] S.R. 162 EXTENSION AVERAGE TRAFFIC DATA

DIVISION REQUESTING:

		PAVEMENT DESIGN	☐
MAINTENANCE	☐	STRUCTURES	☐
S.T.I.D.	☐	SURVEY & ROADWAY DESIGN	☒
PROG. DEVELOPMENT & ADM.	☐	TRAFFIC SIGNAL DESIGN	☐
PUBLIC TRANS. & AERO.	☐	OTHER	☐

YEAR PROJECT PROGRAMMED FOR CONSTRUCTION: 2026
PROJECTED LETTING DATE: 2026

TRAFFIC ASSIGNMENT:

	BASE YEAR		DESIGN YEAR					DESIGN ROADWAY % TRUCKS		DESIGN AVERAGE DAILY LOADS	
	AADT	YEAR	AADT	DHV	%	YEAR	DIR.DIST.	DHV	AADT	FLEX	RIGID
[1]	20,720	2026	33,170	4,128	12	2046	55-45	4	6	573	848

REQUESTED BY: NAME STACY WEAVER DATE 5/8/22
DIVISION REGION I PROJECT DEVELOPMENT
ADDRESS 7345 REGION LANE
KNOXVILLE TN 37914

REVIEWED BY: RANDY BOGUSKIE Randy Boguskie DATE 5/10/2023
TRANSPORTATION MANAGER 1
SUITE 1000, JAMES K. POLK BUILDING

APPROVED BY: TONY ARMSTRONG Tony Armstrong DATE 5/10/2023
TRANSPORTATION MANAGER 2
SUITE 1000, JAMES K. POLK BUILDING

COMMENTS:

THIS TRAFFIC WAS UPDATED FROM THE PREVIOUS PROJECT PREPARED FOR REGION I DESIGN DATED 11/10/2022 AND IS BASED ON 2022 CYCLE COUNTS. THE DESIGN YEAR TRAFFIC IS BASED ON GROWTH RATES FROM THE KNOXVILLE TPO COMPUTER ASSIGNMENT MODEL ALONG WITH COMMENTS FROM MIKE CONGER FROM THE KNOXVILLE TPO. AADT's, DHV's AND ADL's ARE INCLUDED. THIS TRAFFIC REVISES THE INTERCHANGE @ S.R. 33 ONLY.

DHV'S ARE NOT REQUIRED FOR SIDE ROADS LESS THAN 1000 AADT.

NOTE: FOR BRIDGE REPLACEMENT PROJECTS, ADLs ARE NOT REQUIRED FOR ADTs OF 1000 OR LESS AND PERCENTAGE OF TRUCKS OF 7% OR LESS.
SEE ATTACHMENTS FOR TURNING MOVEMENTS AND/OR OTHER DETAILS. (REV. 6/9/21)

TENNESSEE DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENT DIVISION

PROJECT NO.: HPP/NH-162(7) : 05097-1233-14 ROUTE NO.: S.R. 162 EXTENSION
COUNTY: BLOUNT CITY: MARYVILLE
PROJECT DESCRIPTION: FROM S.R. 33 TO S.R. 73

FAP Urban

Pavement Structural Design

Calculation of Equivalent Daily 18 Kip Single Axle Loads

Type Vehicle		ADT (No. Counted)	Flexible 18-kip Factor	Flexible ADL	Rigid 18-kip Factor	Rigid ADL
Pass. cars and motorcycles (1-2)		19,131	0.001	19	0.001	19
Pick-up, Panel, Van (3)		6,196	0.004	25	0.004	25
Sing. Unit	Buses (4)	12	0.300	4	0.300	4
	2-axle, 6-tire (5)	196	0.260	51	0.260	51
	3-axle or more (6-7)	274	1.000	274	1.500	411
Comb.	4-axle (8)	370	0.640	237	0.800	296
	5-axle or more (9-13)	766	1.200	919	1.900	1,455
Totals (2036 AADT)		26,945		1,528		2,261

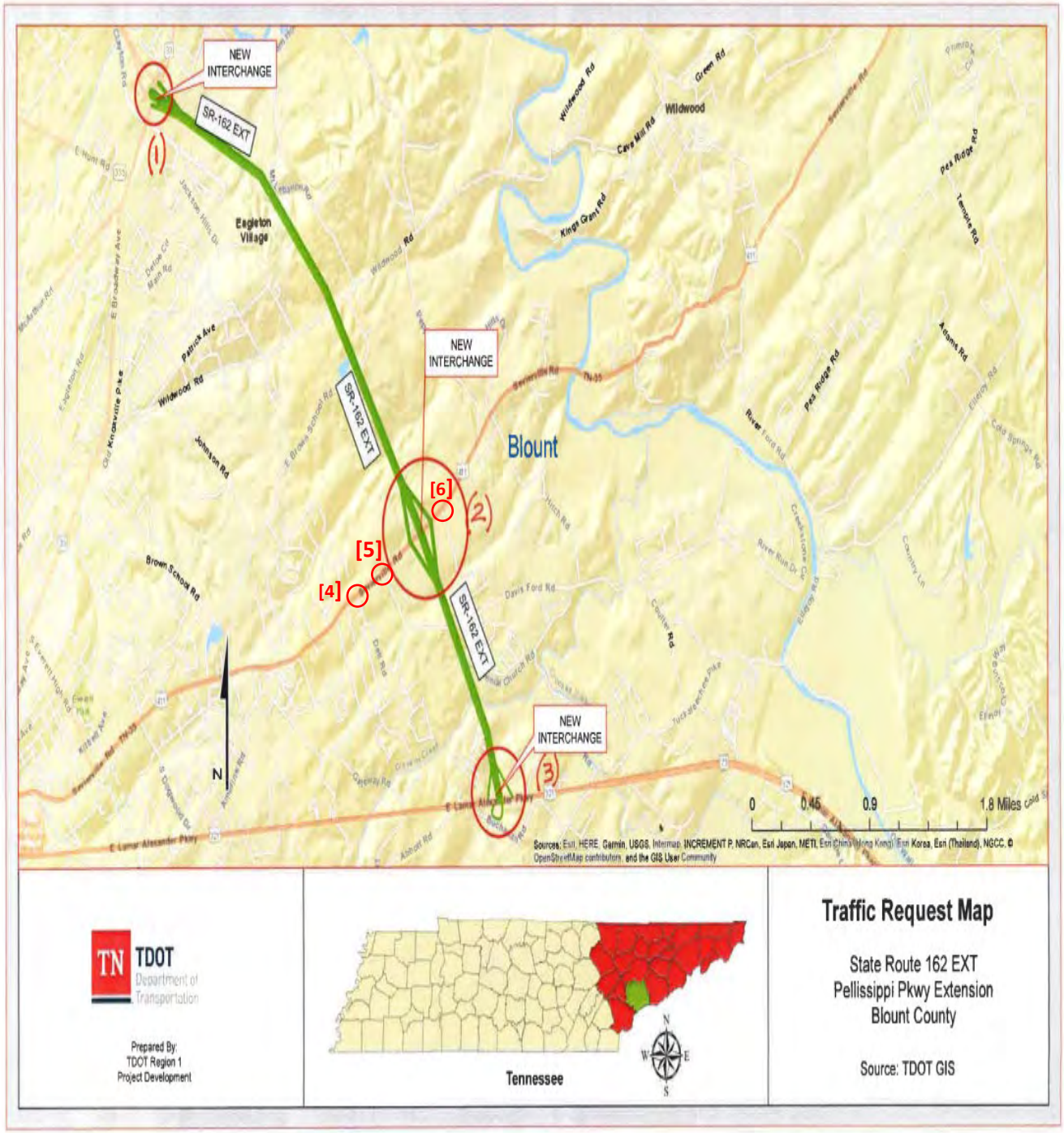
Suggested Percentages of Trucks in Design Lane

5,000 or less ADT	95%
5,000 - 10,000 ADT	90%
10,000 - 15,000 ADT	85%
15,000 - 20,000 ADT	80%
20,000 - 30,000 ADT	75%
30,000 - 40,000 ADT	70%
40,000 Plus	60%

No. of Lanes: 4
% Trucks in Design Lane: 75%
ADL in Design Lane:

FLEX:	0.5	X	0.75	X	1528.5	=	573
RIGID:	0.5	X	0.75	X	2260.9	=	848

ADL Calculations By: TONY ARMSTRONG Date: 5/10/2023
Reviewed By: Randy Boguskis Date: 5/10/2023
[REV. 7/1/14]



TN TDOT Department of Transportation

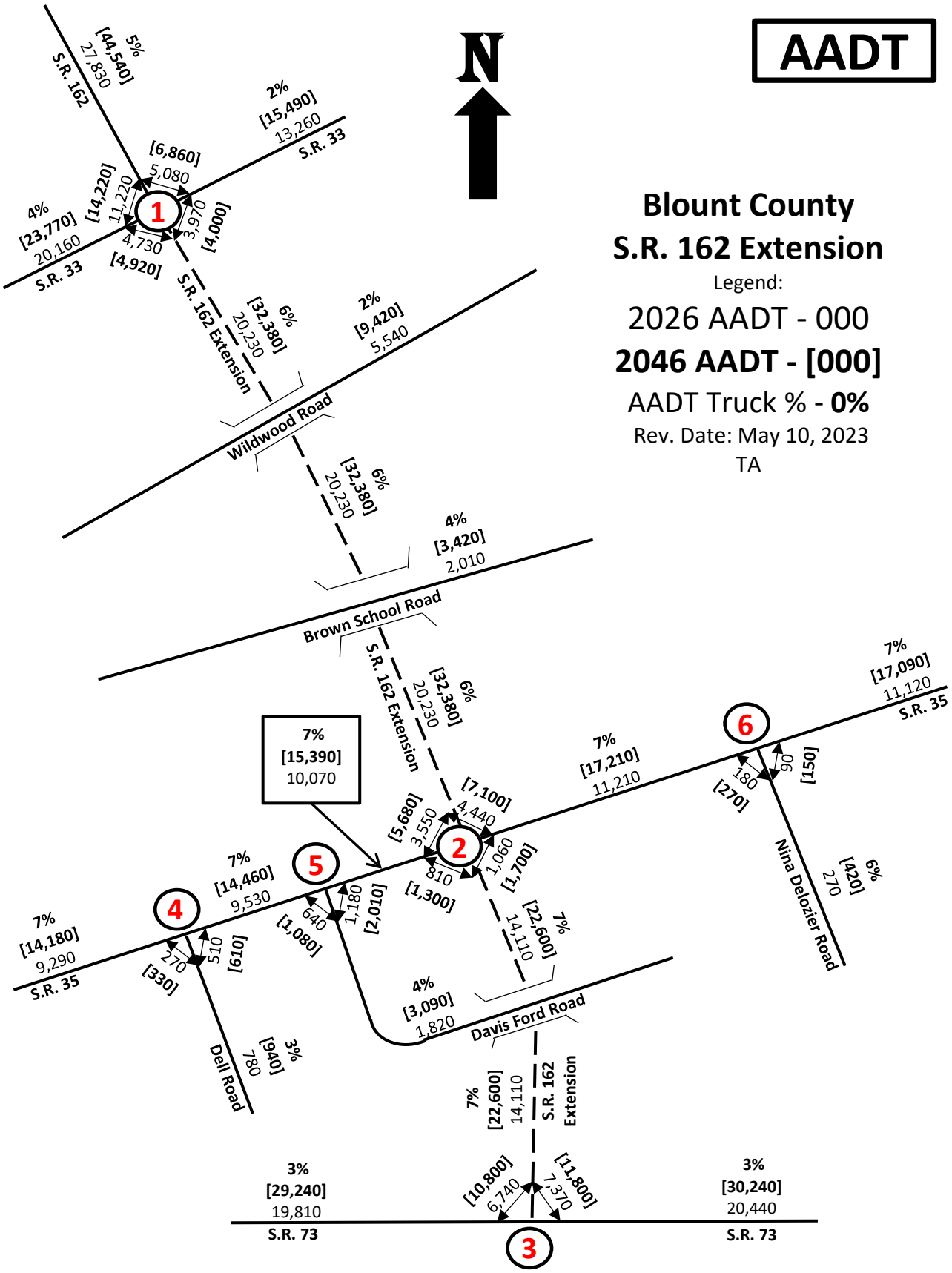
Prepared By:
TDOT Region 1
Project Development

Tennessee

Traffic Request Map

State Route 162 EXT
Pellissippi Pkwy Extension
Blount County

Source: TDOT GIS


AADT
N
Blount County
S.R. 162 Extension
Legend:
2026 AADT - 000
2046 AADT - [000]
AADT Truck % - 0%
Rev. Date: May 10, 2023
TA
S.R. 162
5%
[44,540]
27,830
S.R. 33
2%
[15,490]
13,260
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5,080
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11,220
4%
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20,160
S.R. 33
4,730
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3,970
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1
S.R. 162 Extension
6%
[32,380]
20,230
2%
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5,540
Wildwood Road
6%
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20,230
4%
[3,420]
2,010
Brown School Road
S.R. 162 Extension
6%
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20,230
7%
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2
810
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7%
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6
7%
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S.R. 35
180
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90
[150]
Nina Delozier Road
6%
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270
5
7%
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9,530
640
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1,180
[2,010]
7%
[22,600]
14,110
4
7%
[14,180]
9,290
S.R. 35
270
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510
[610]
4%
[3,090]
1,820
Davis Ford Road
Dell Road
3%
[940]
780
7%
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14,110
S.R. 162 Extension
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[29,240]
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S.R. 73
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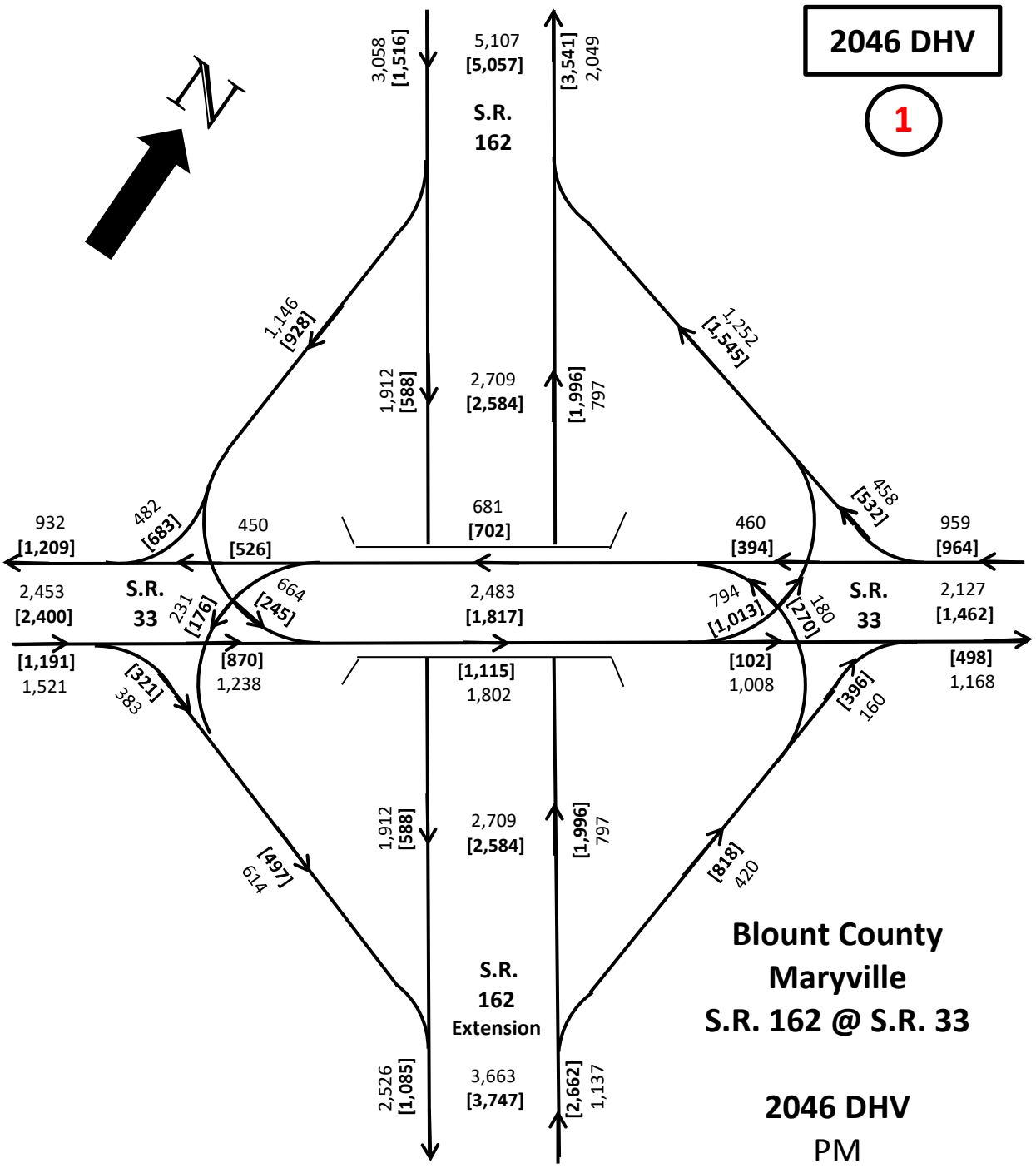
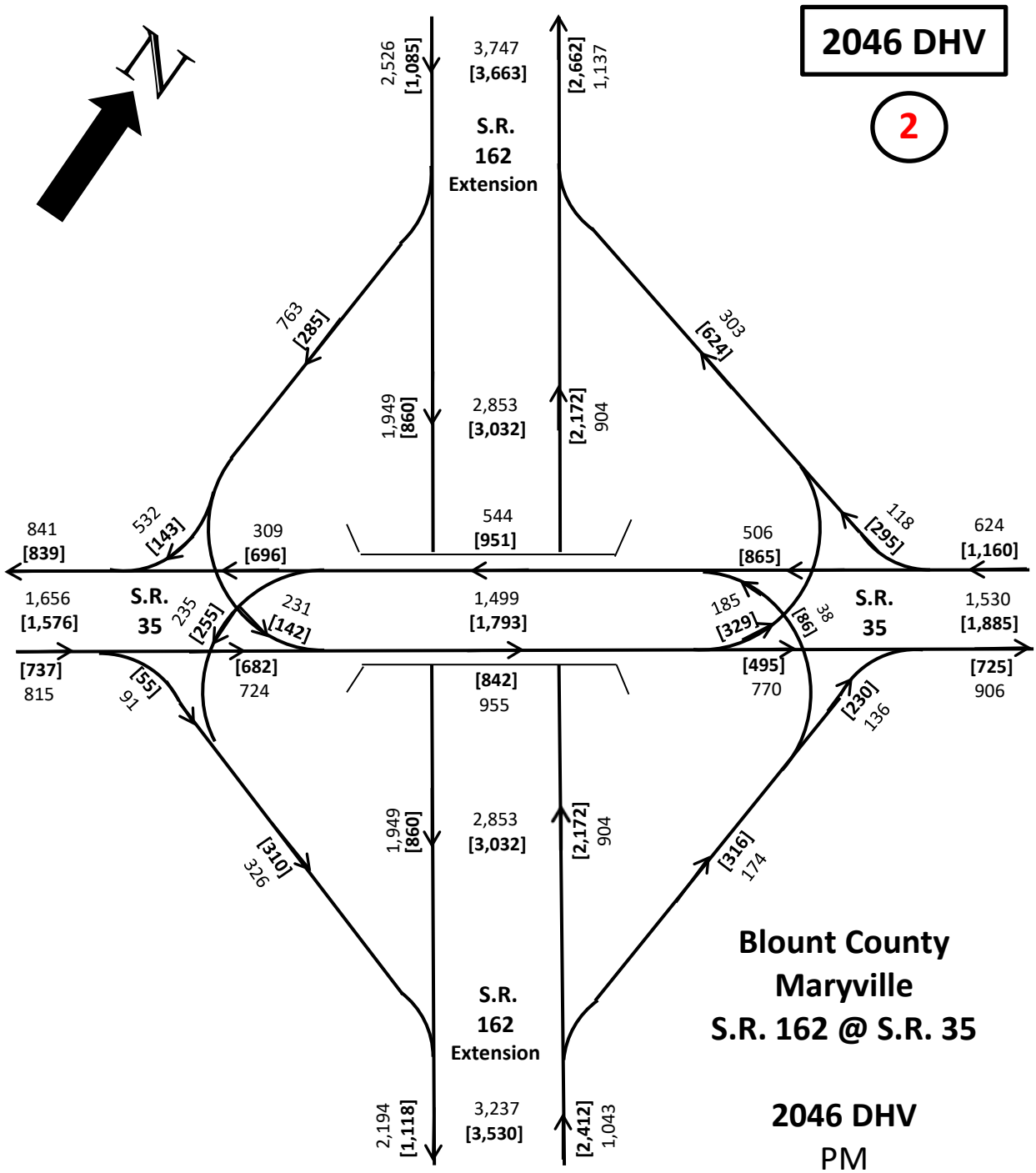
7,370
3
3%
[30,240]
20,440
S.R. 73



Blount County
Maryville
S.R. 162 @ S.R. 33

2046 DHV
PM
[AM]

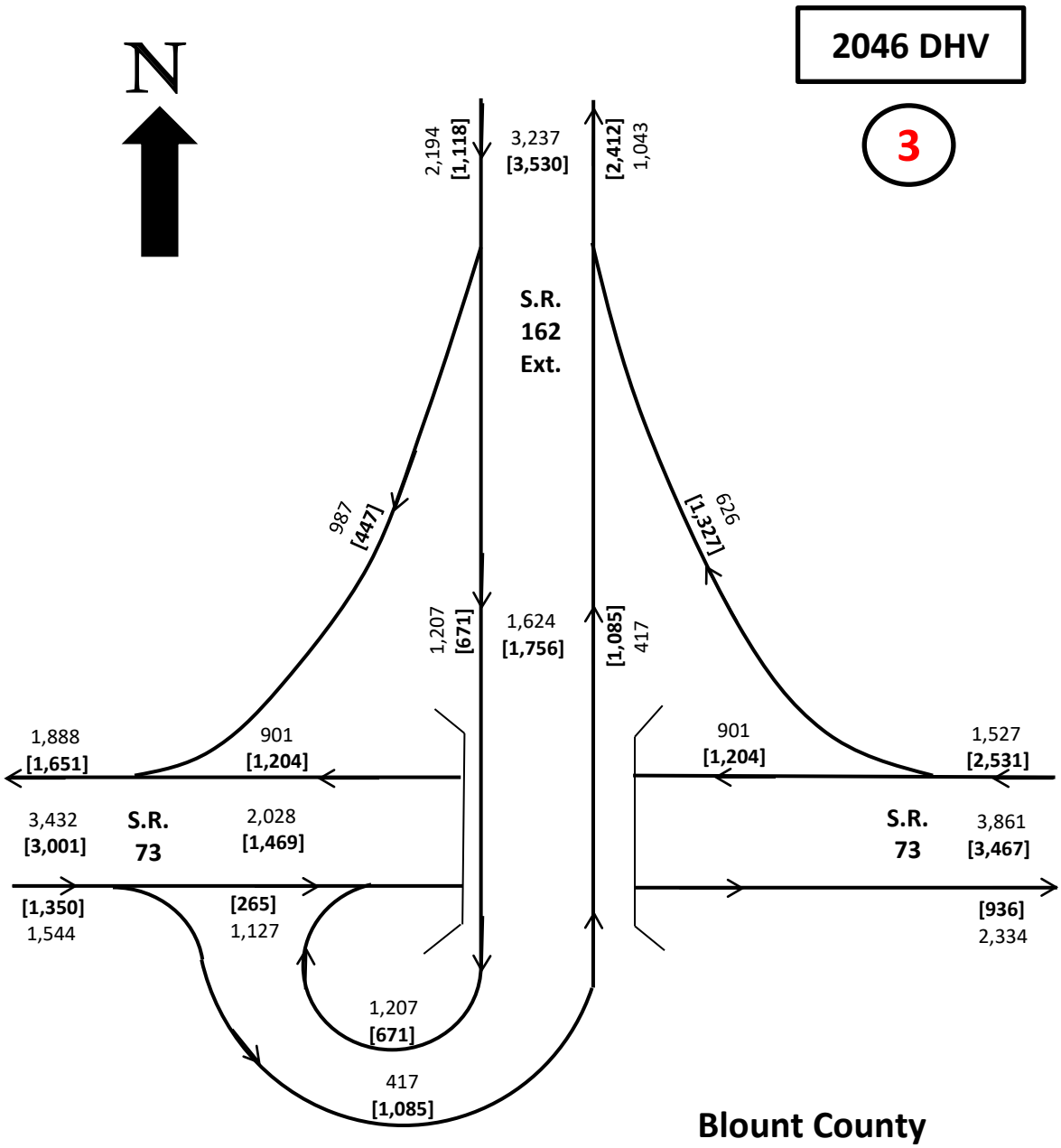
Rev. Date: May 10, 2023
TA



Blount County
Maryville
S.R. 162 @ S.R. 35

2046 DHV
PM
[AM]

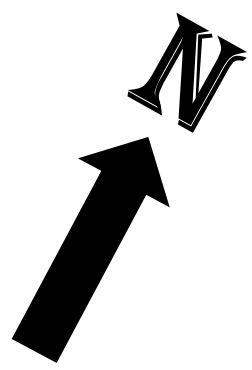
Rev. Date: May 10, 2023
TA



Blount County
Maryville
S.R. 162 @ S.R. 73

2046 DHV
PM
[AM]

Rev. Date: May 10, 2023
TA



2046 DHV

4

726 709 756

816 790 822

47
32

S.R. 35

S.R. 35

1,518
1,438

1,554
1,474

792
622

766
605

798
652

26
17

17
26

32
47

Dell Road

Blount County
S.R. 35 @ Dell Road

2046 DHV

73
49

49
73

122
122

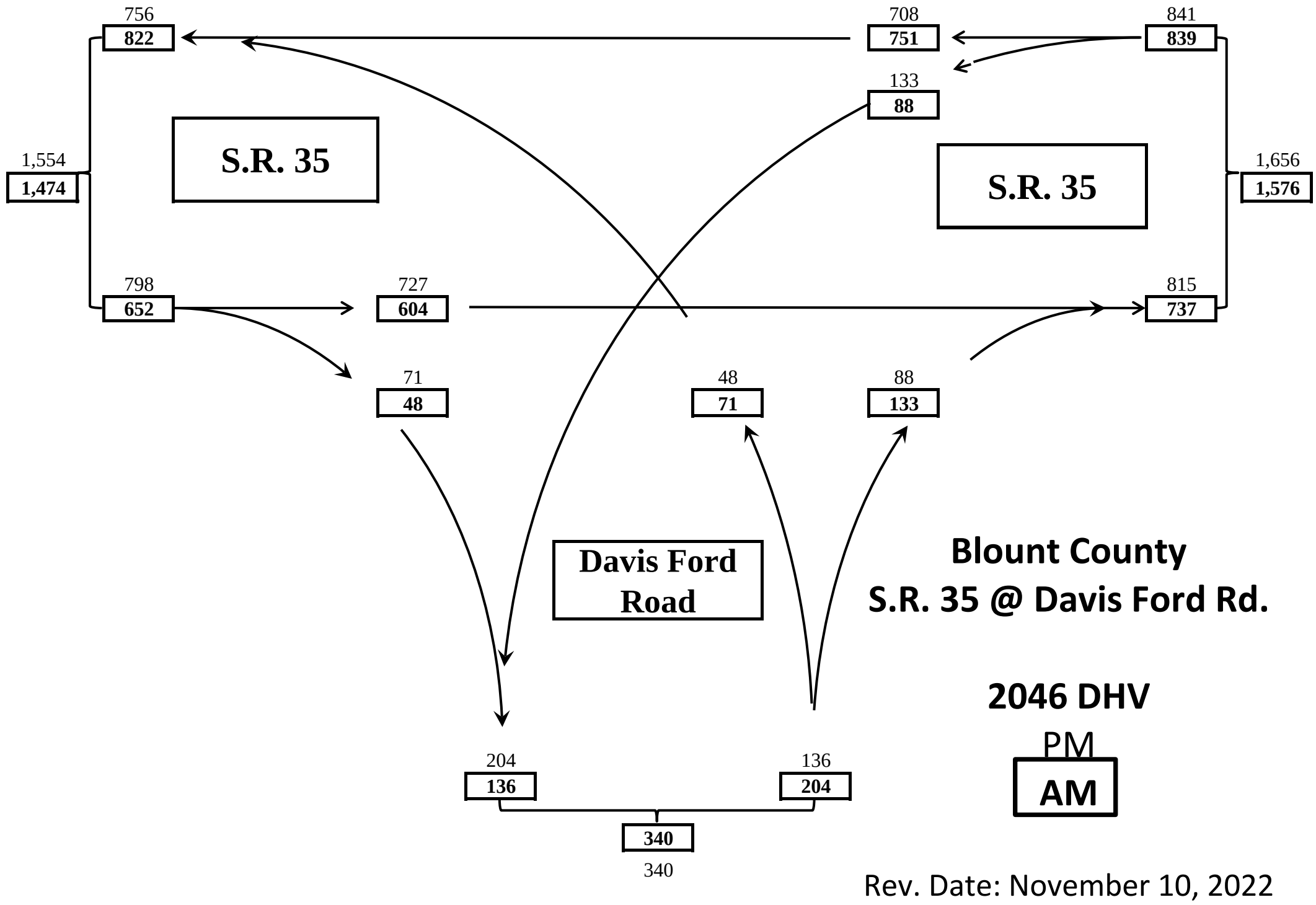
PM
AM

Rev. Date: November 10, 2022
TA

N

2046 DHV

5



Blount County

S.R. 35 @ Davis Ford Rd.

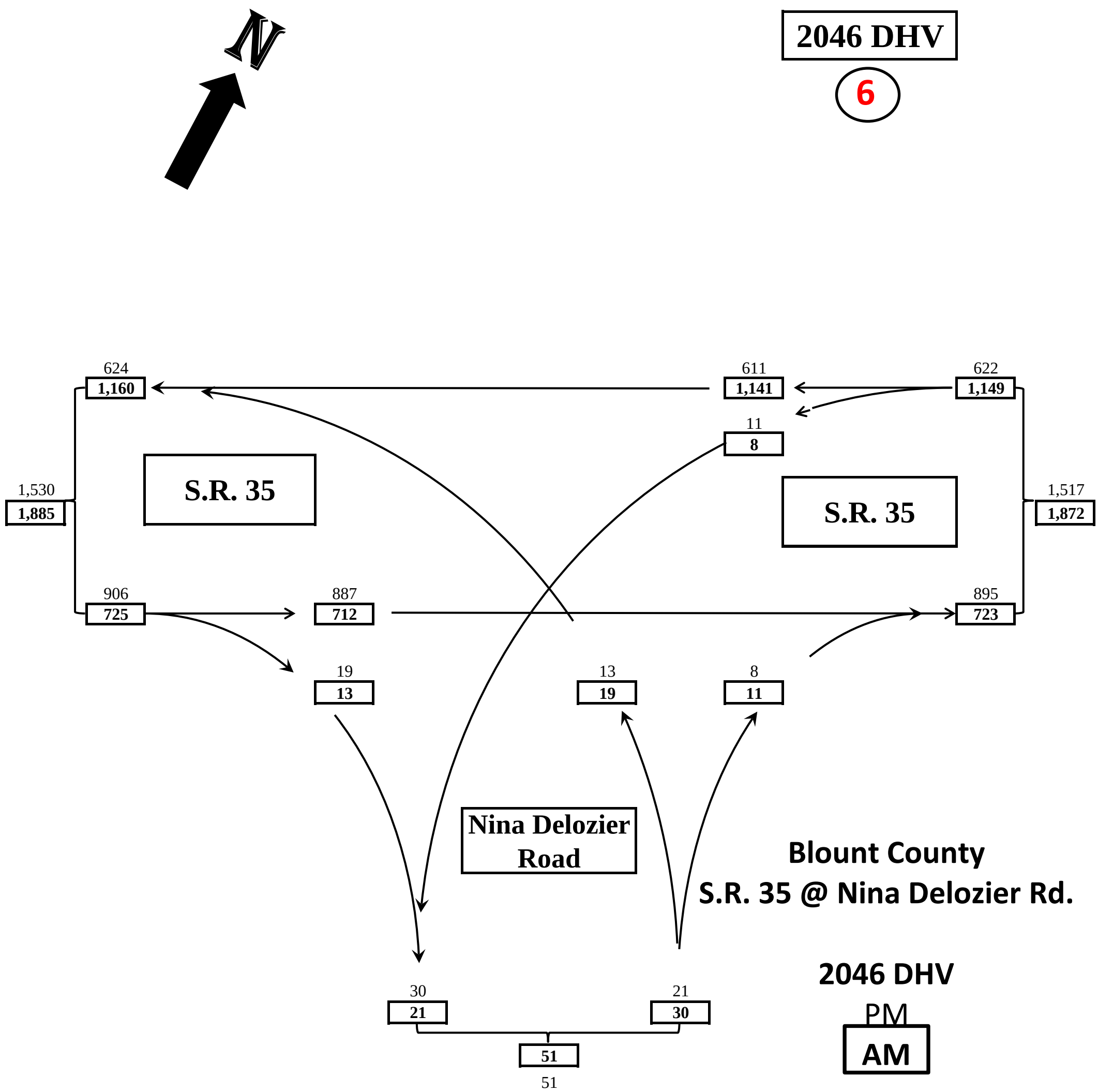
2046 DHV

PM

AM

Rev. Date: November 10, 2022

TA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622
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1,149
11
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S.R. 35
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1,872
906
725
887
712
895
723
19
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11
Nina Delozier Road
Blount County
S.R. 35 @ Nina Delozier Rd.
2046 DHV
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PM
AM
Rev. Date: November 10, 2022
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Appendix D
TNM Checklist and Plan Views

All modeling must be done in accordance with TDOT's Noise Procedures and TNM Modeling Guidelines

Project	**S.R. 162 Extension**
County	**Blount**
PIN	**101423.00**
Project Number	**HPP/NH-162(7) : 05097-1233-14**
Project Plans Description and Date	**Right of Way Plans 2022**
Traffic Data Source and Date	**Tennesee Department of Transportation Strategic Transportation Investments Division 2023**
TNM Modeler	**Franklin 'Rex' Cooper**
Date Checklist Completed	10/4/2023
TNM Reviewer	**Mary Martin**
Date Checklist Completed	10/10/2023

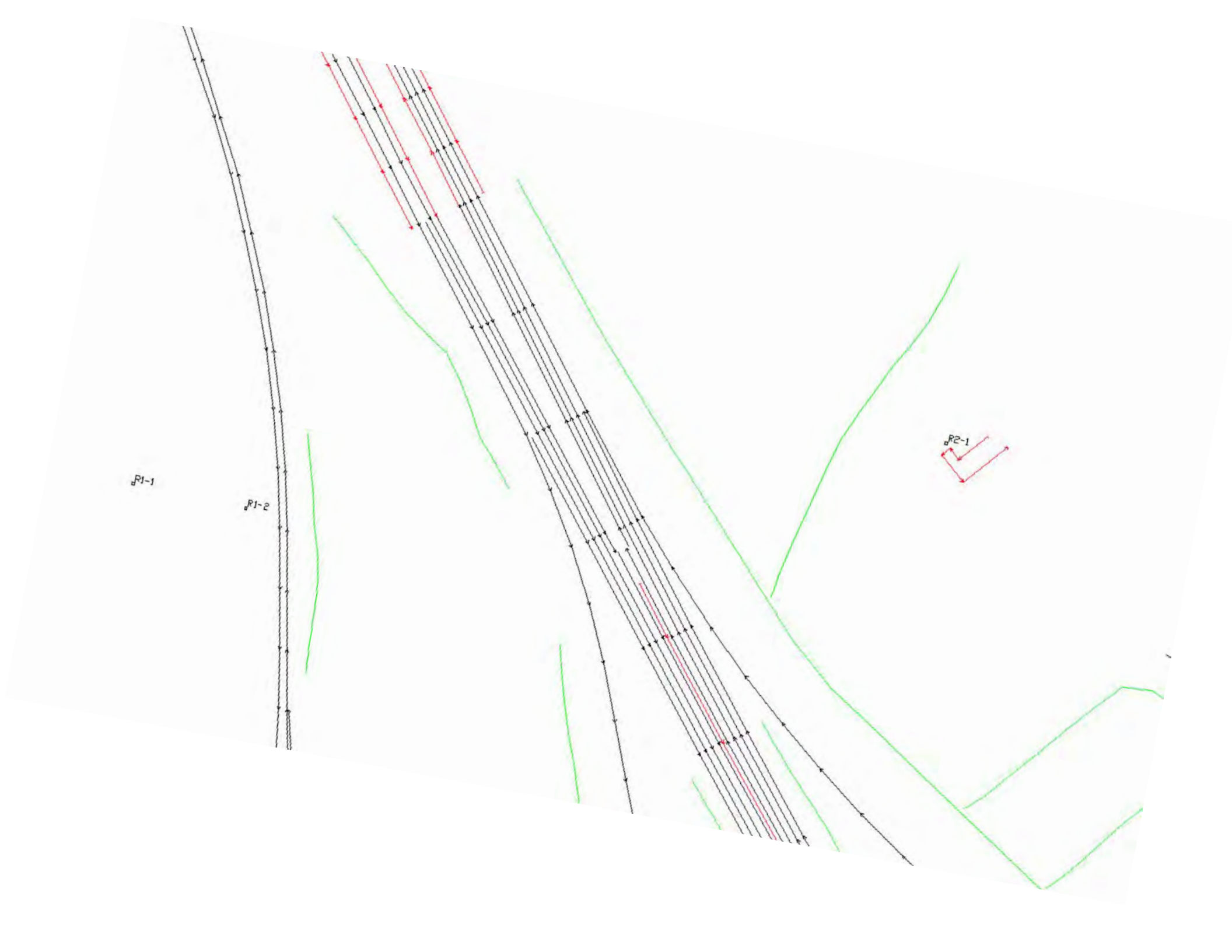
TNM Run	**All Models**		**Modeling Year**	**2026/2046**
Input	**Task**	**Complete?**	**Notes**	
Setup	Run Information	☒		
	General	☒		
Roadways	Roadway names assigned	☒		
	Traffic and Speeds on all Roadways	☒		
	Widths of All Roadways per Guidance	☒		
	Points tied to stationing if available	☒		
	Elevations appear to be correct	☒		
	Traffic Flow Control Devices Modeled • Traffic Signals • Stop Signs • On-Ramps	☒		
	Roadways modeled on structure as appropriate	☒		

TNM Run	All Models		Modeling Year	2026/2046
Input	**Task**	**Complete?**	**Notes**	
Receivers	Receivers named by address or stationing	☒	**Addresses can be found in the notes tab of the receiver input.**	
	Number of dwelling units set for each receiver (if applicable)	☒		
	Receivers in order of adjacent traffic flow	☒		
	Elevations appear to be correct	☒		
	Elevations at second-story locations at appropriate heights (if applicable)	☒		
	Enough receivers modeled (for impacts and benefits)	☒		
	NAC set per State's Policy for each receiver/ land use	☒		
	Noise Reduction set per State's Policy	☒		
	Substantial Increase set per State's Policy	☒		
Barriers	Significant buildings modeled	☒		
	Parapets, etc. modeled	☒		
	Perturbable barriers modeled as applicable	☒		
	Barrier names assigned	☒		
	Barrier points named by stationing or length	☒		
	Barrier heights assigned	☒		
	Elevations appear to be correct	☒		
	Increment and #up/down assigned	☒		
	Barriers modeled on structure as appropriate and shielded lists are correct	☒		
Building Rows	Building rows modeled per FHWA Guidance	☐	**N/A**	
	Elevations appear to be correct	☐	**N/A**	
	Height and percentage assigned	☐	**N/A**	

TNM Run	All Models		Modeling Year	2026/2046
Input	**Task**	**Complete?**	**Notes**	
Terrain Lines	Significant terrain features modeled	☒		
	Terrain line names assigned	☒		
	Elevations appear to be correct	☒		
Ground Zones	Ground Zones modeled per FHWA Guidance	☒		
	Ground zone names assigned	☒		
	Ground zone types assigned	☒		
Tree Zones	Tree zones modeled per FHWA Guidance	☐	**N/A**	
	Tree zone names assigned	☐	**N/A**	
	Elevations appear to be correct	☐	**N/A**	
Perspective Views	Perspective views checked for accuracy	☒		
Skew Views	Numerous skew views cut and checked for accuracy	☒		
Input Check	Input Check completed and errors fixed/documented	☒		

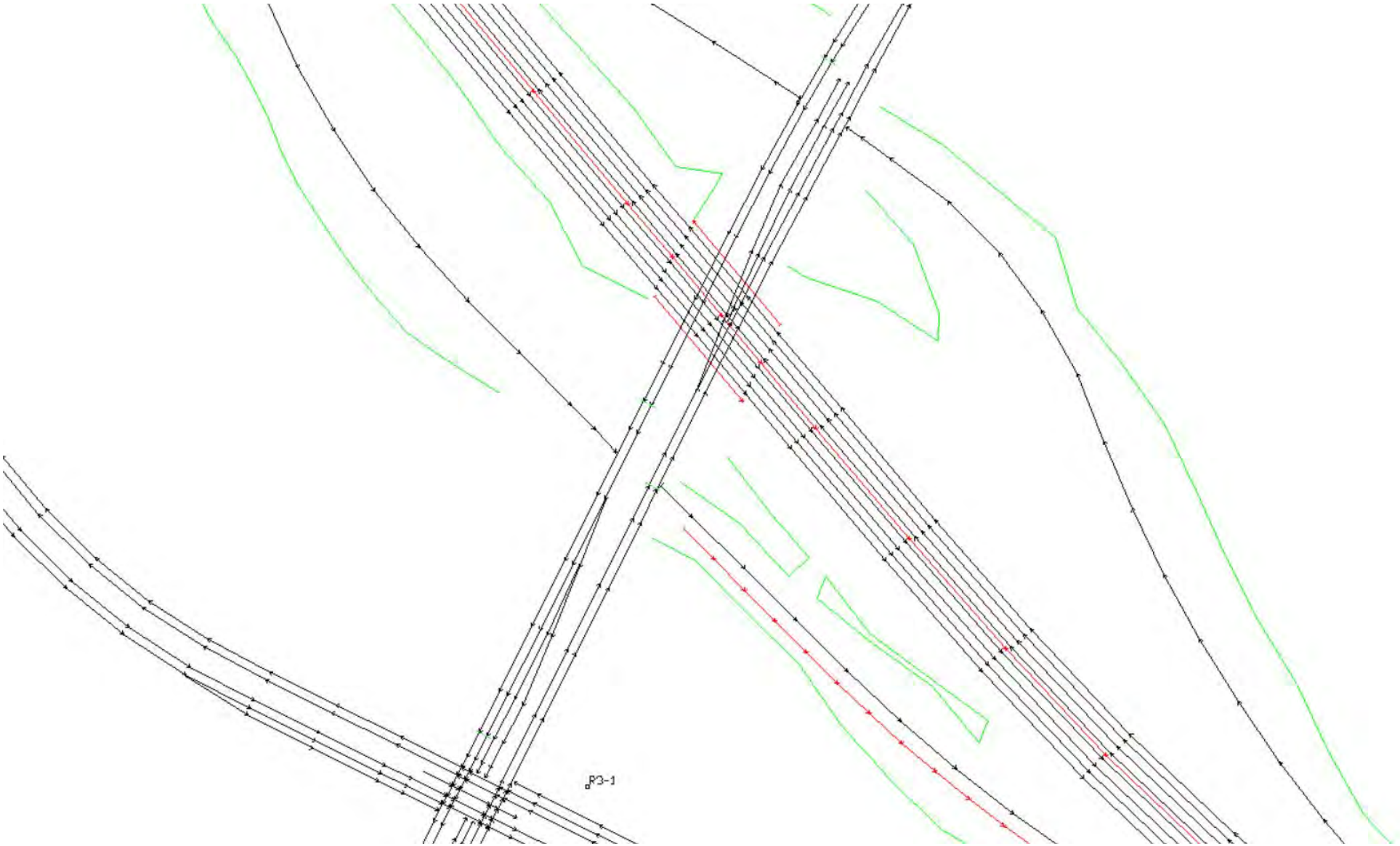
TNM Plan View

NAA-1 & 2


R1-1
R1-2
R2-1

TNM Plan View

NAA-3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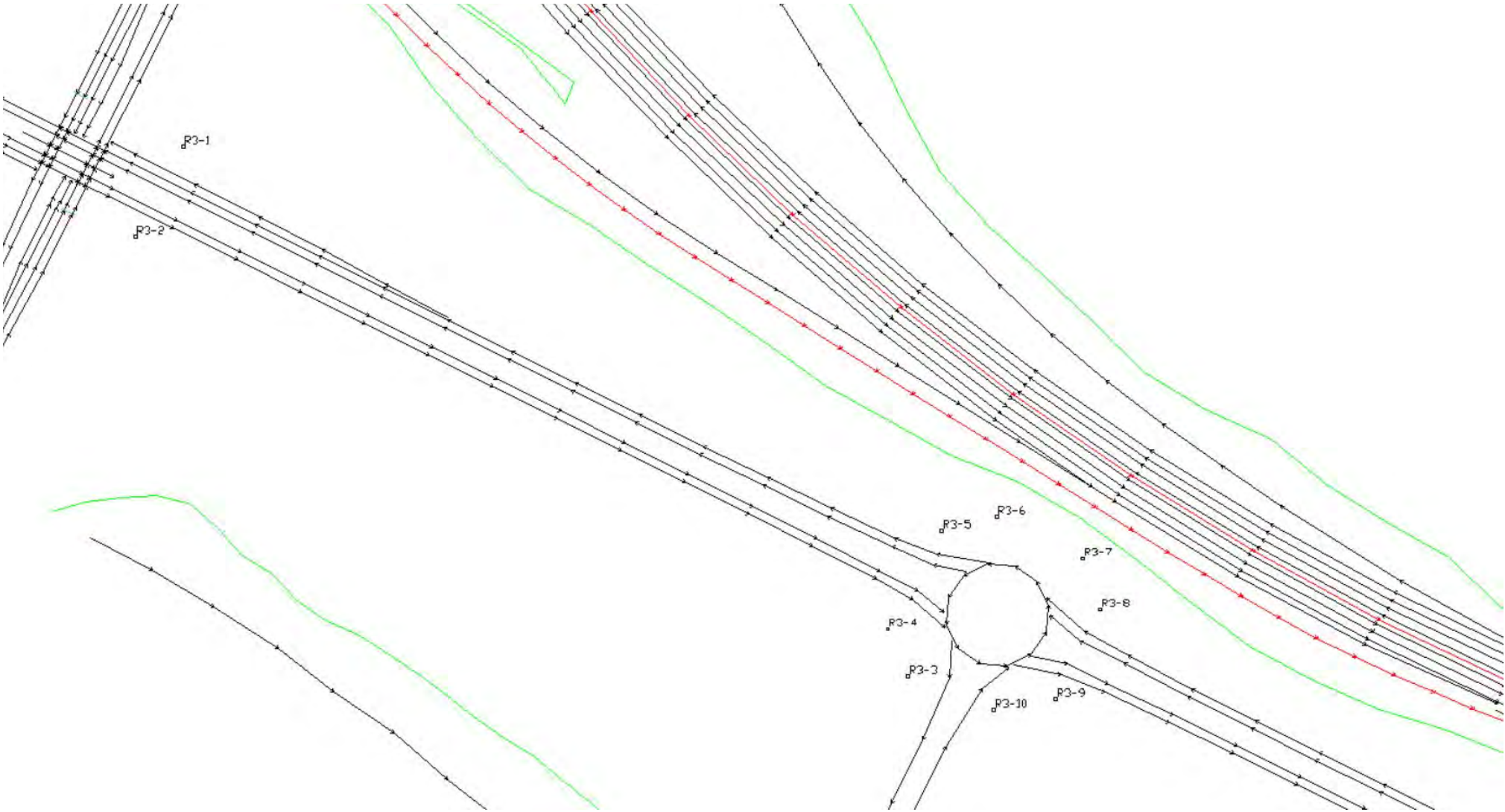
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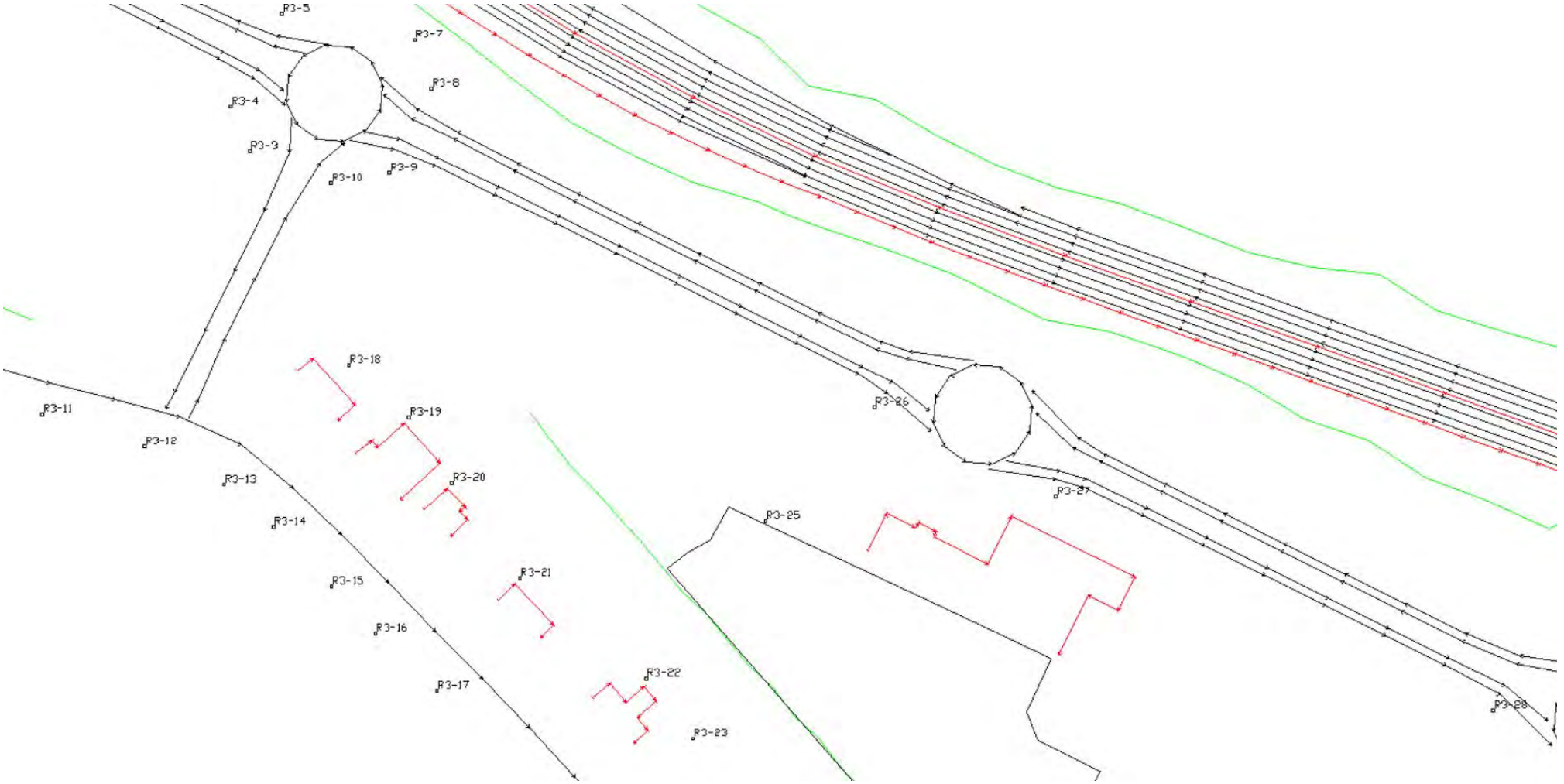
R3-10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R3-20
R3-13
R3-14
R3-21
R3-15
R3-16
R3-22
R3-17
R3-23
R3-26
R3-27
R3-25
R3-28

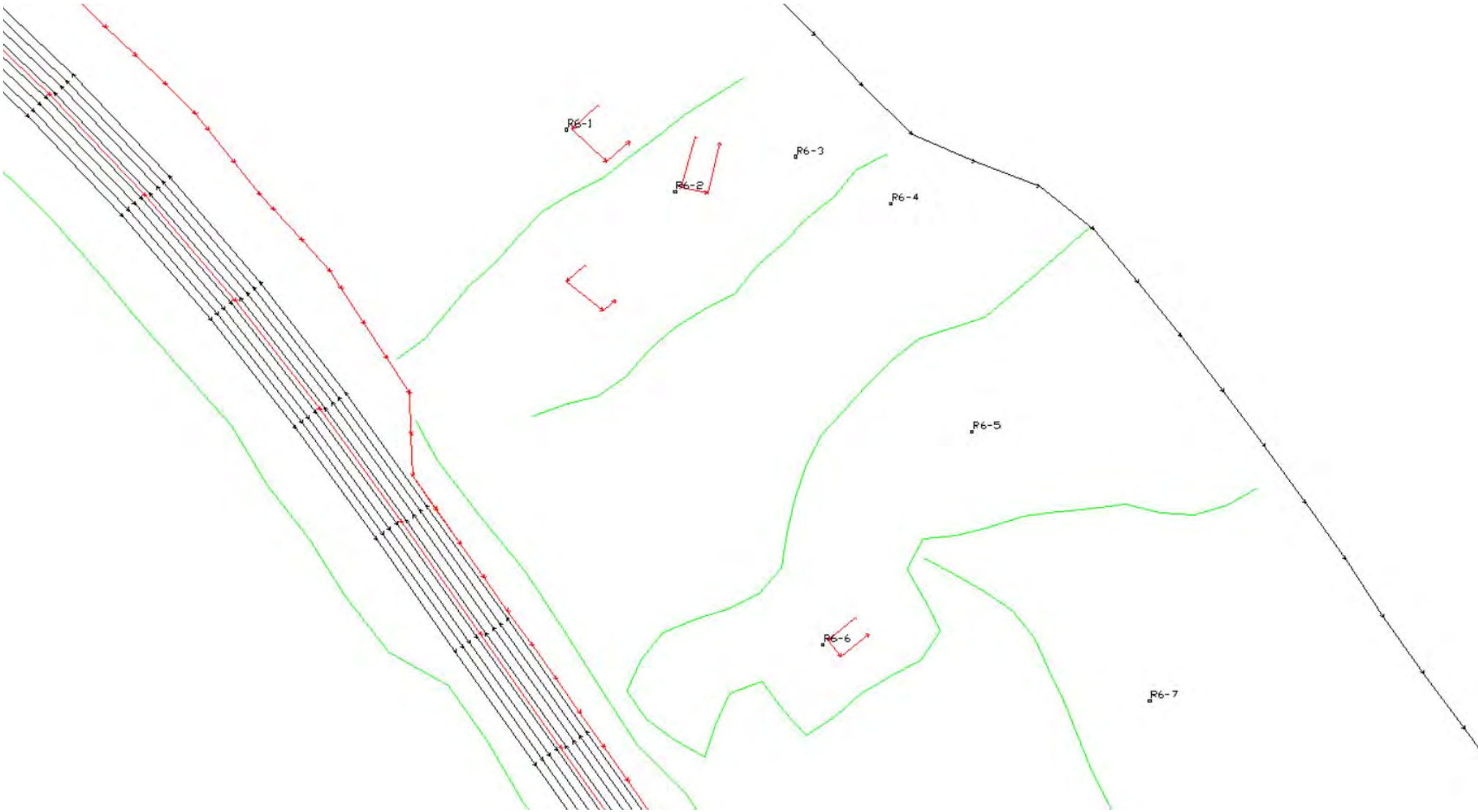
TNM Plan View

NAA-4 & 5

R5-1
R4-1
R4-2

TNM Plan View

NAA-6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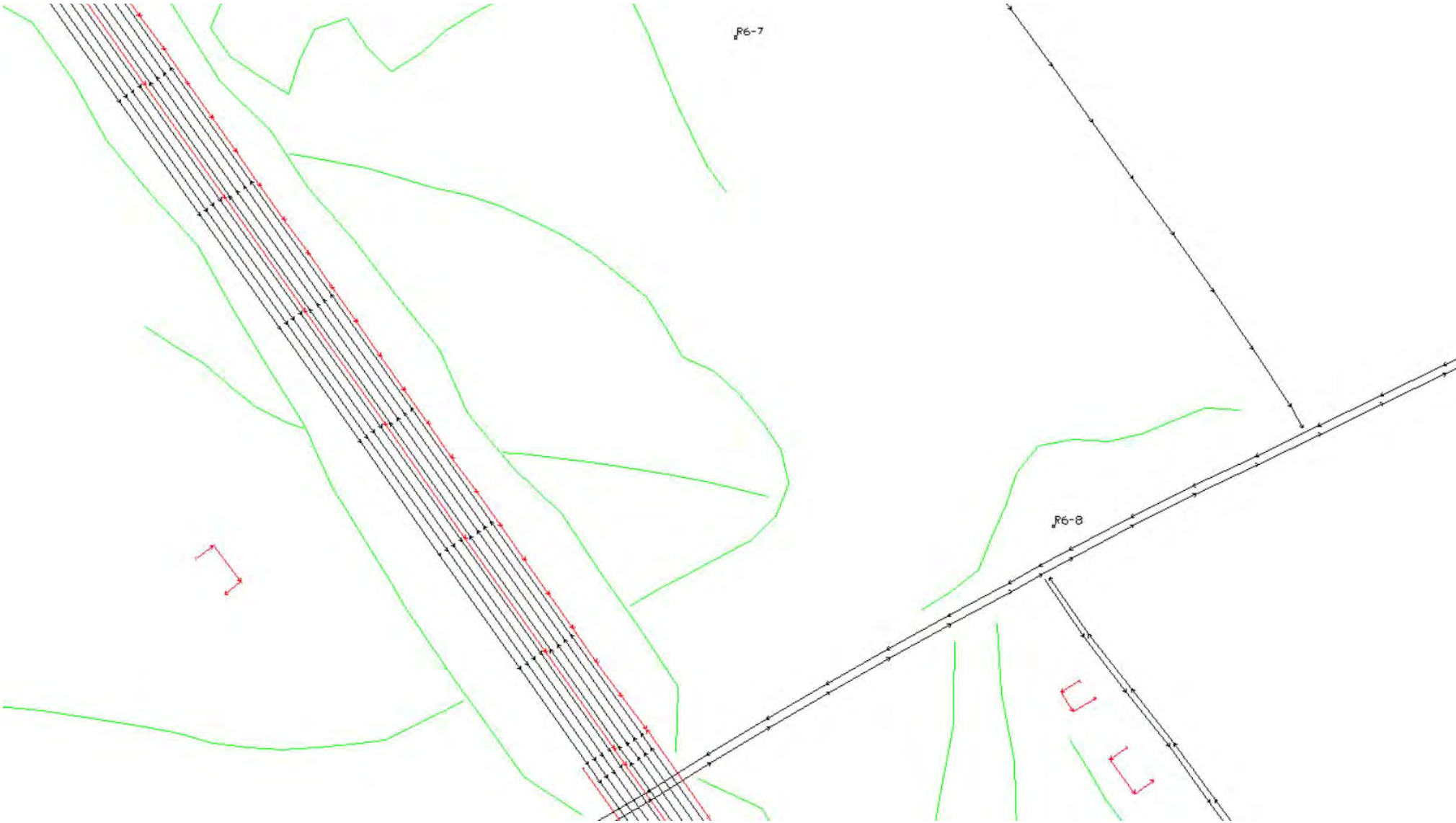
R6-6
R6-7


P6-7
P6-8

TNM Plan View

NAA-7

R7-1
R7-2 ROW TAKE
R7-3

TNM Plan View

NAA-8

R8-1 ROW TAKE
R8-2
R8-3
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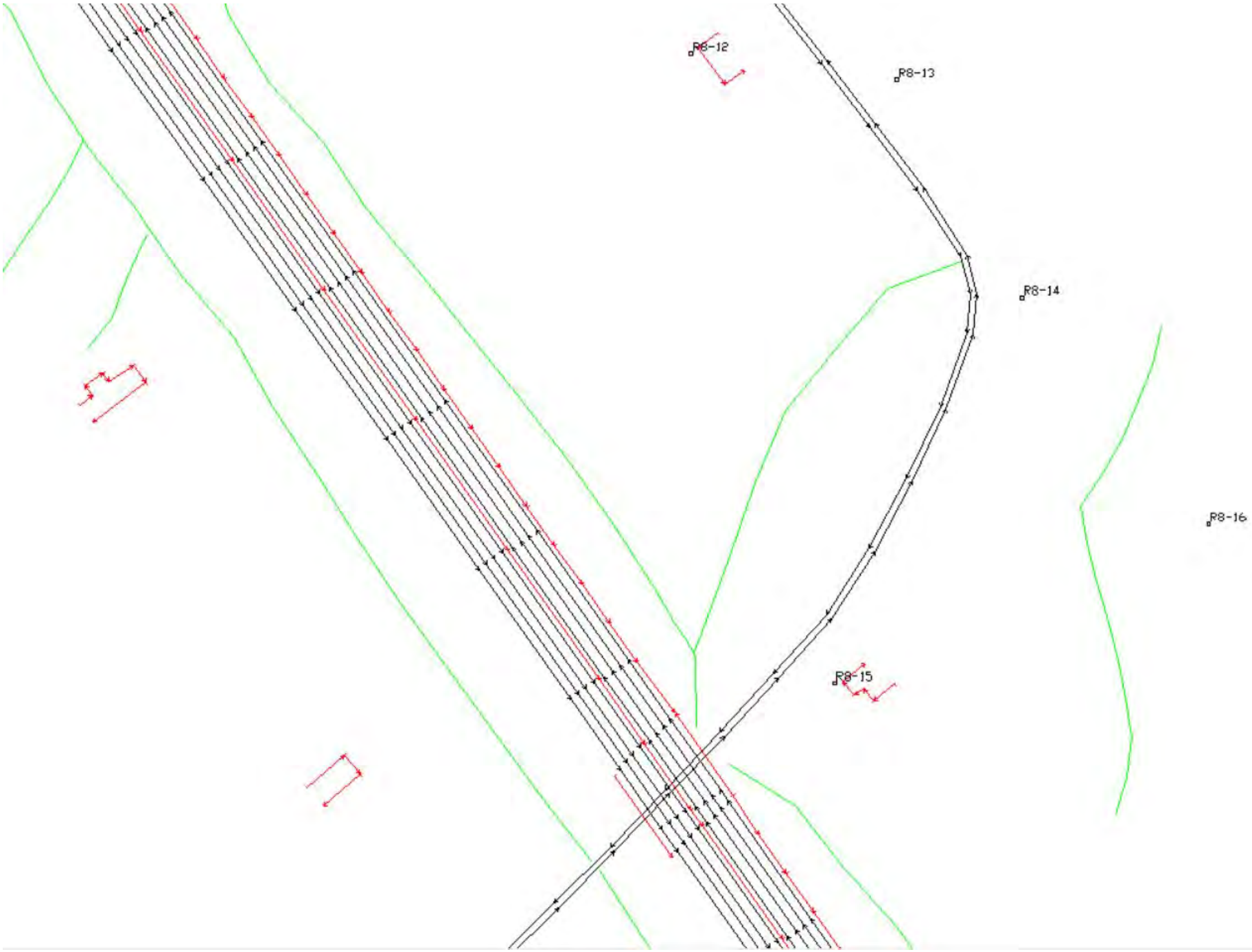
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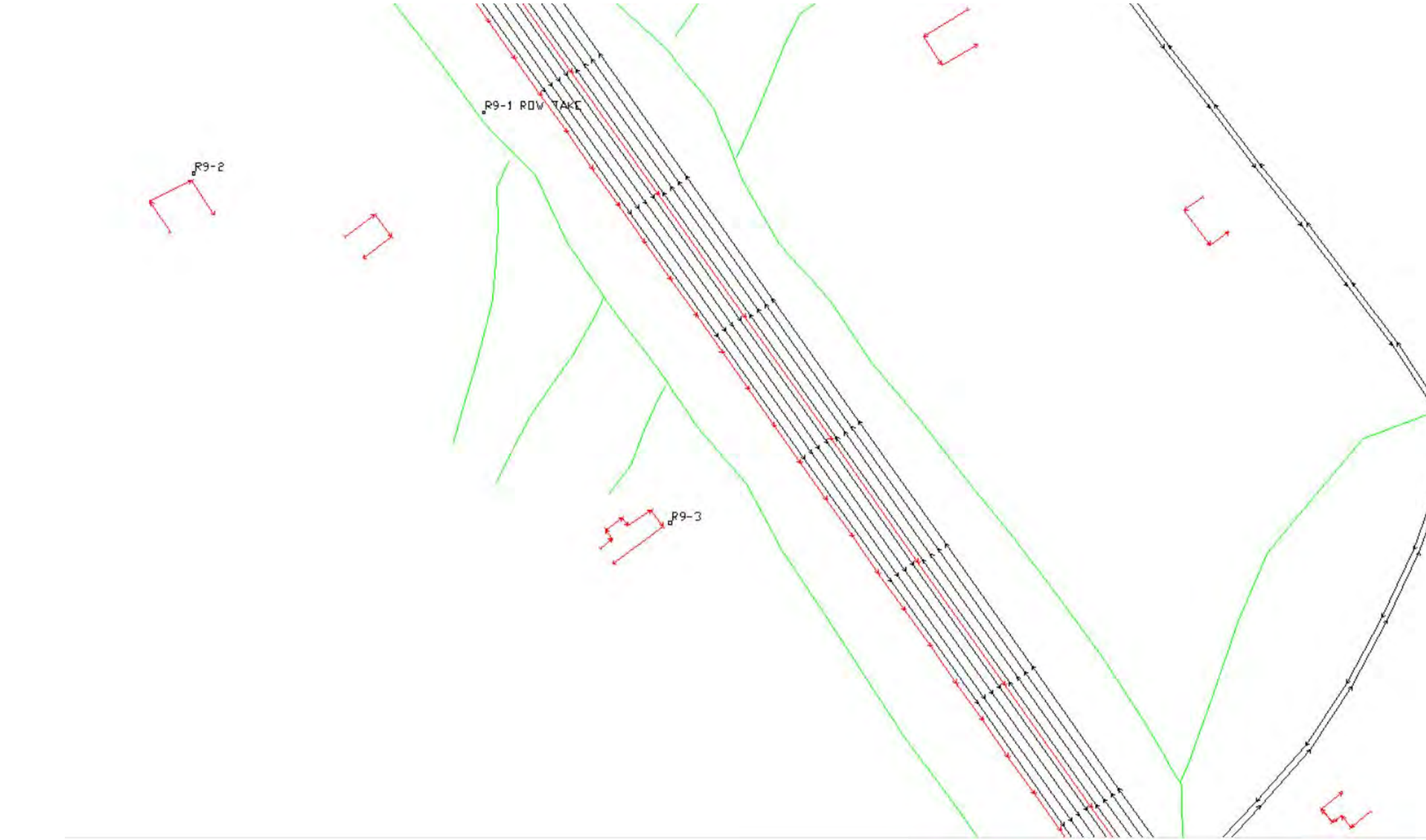
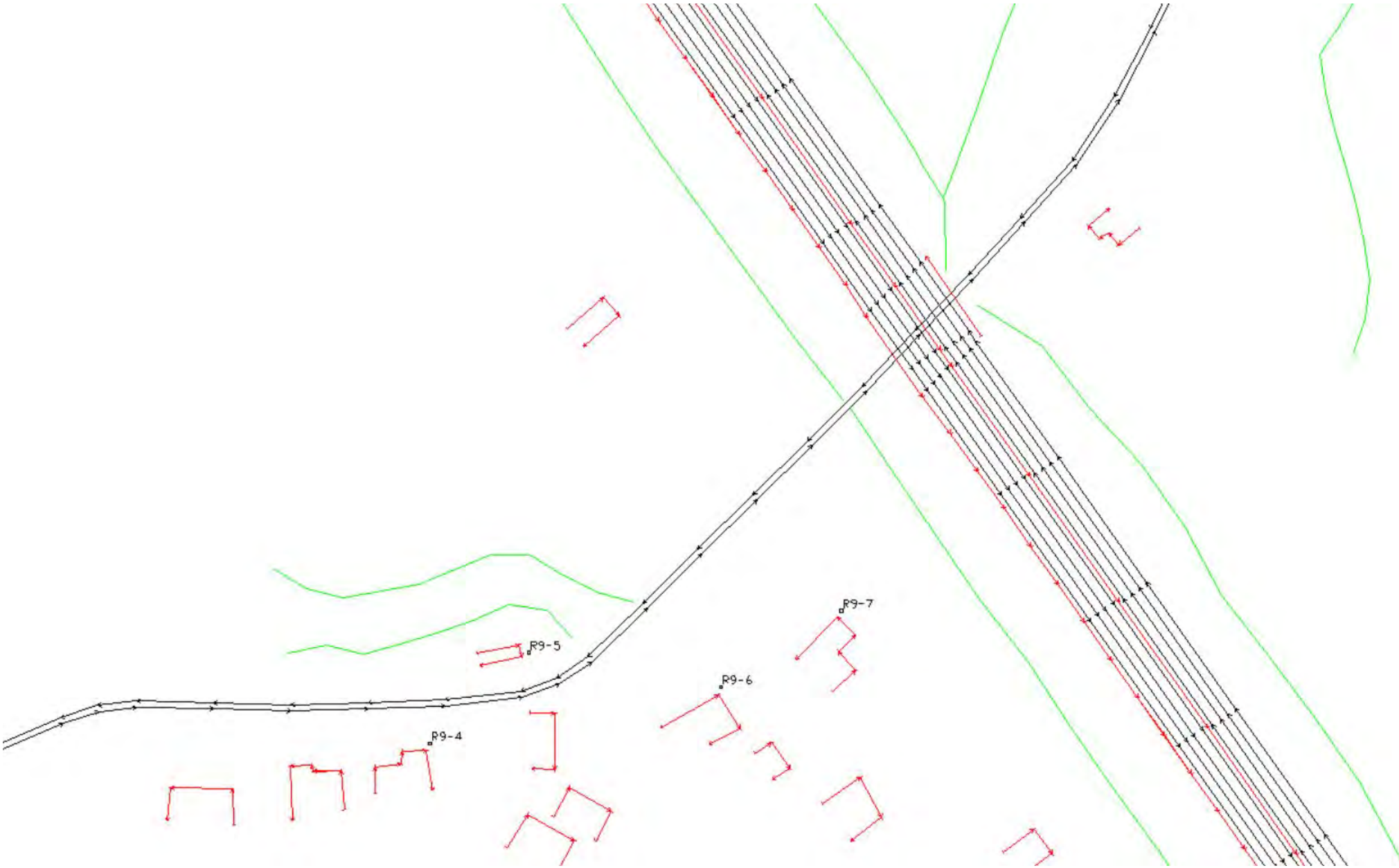
TNM Plan View

NAA-9

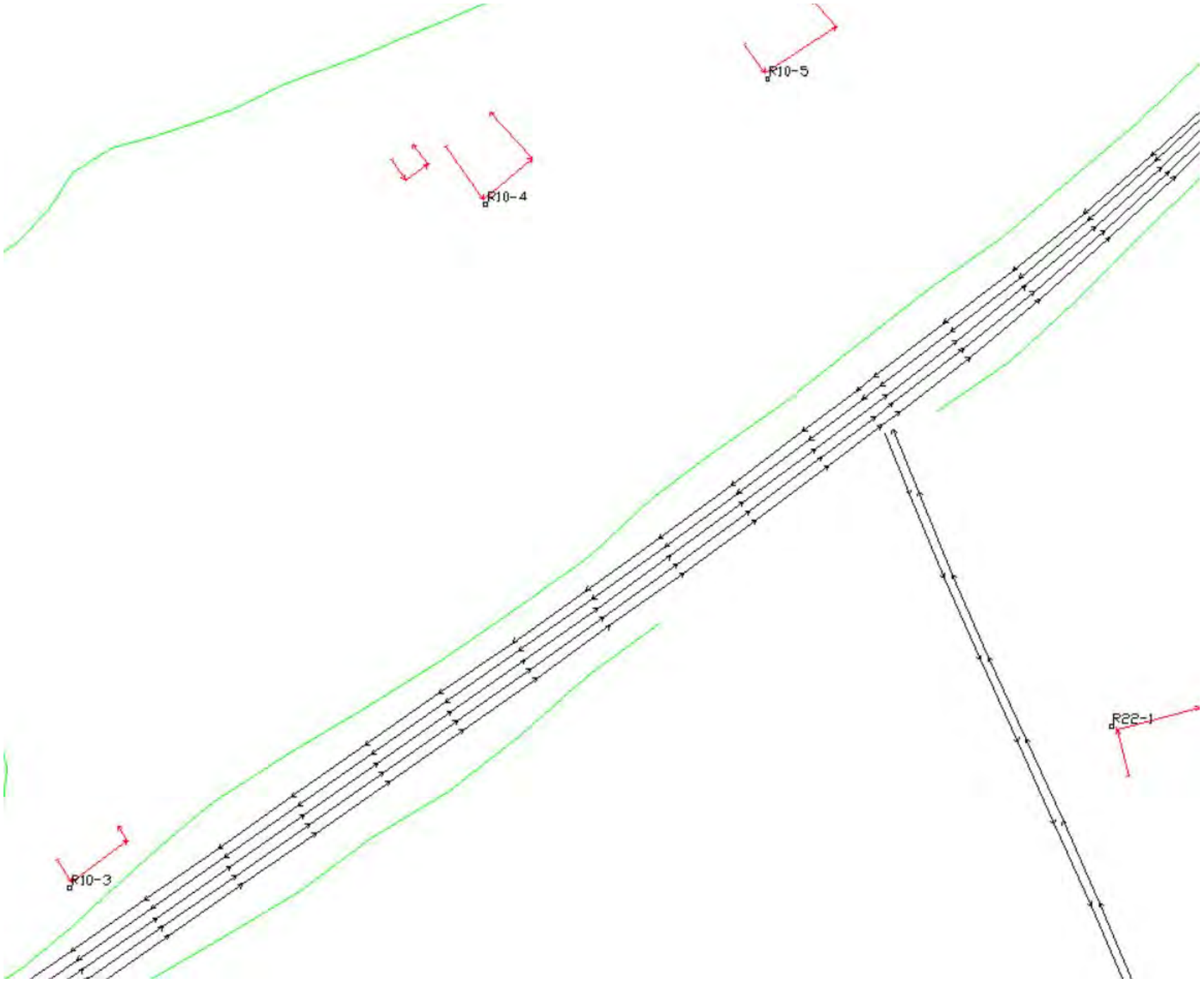

R9-1 ROW TAKE
R9-2
R9-3


R9-4
R9-5
R9-6
R9-7

TNM Plan View

NAA-10

R10-3
R10-2
R10-1 ROW TAKE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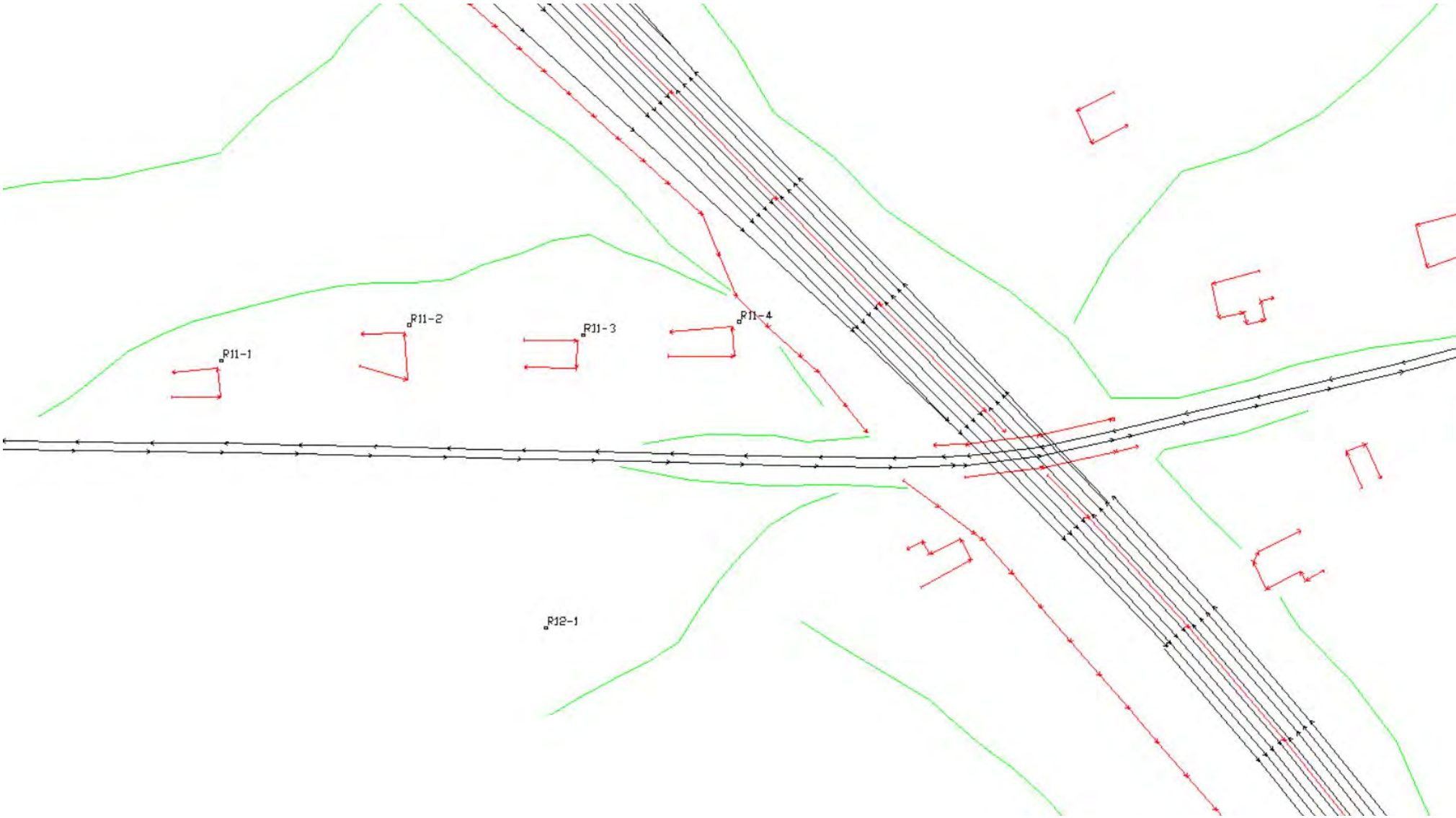
R10-4
R10-3
R22-1

TNM Plan View

NAA-11 & 12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R11-3
R11-4
R12-1

TNM Plan View

NAA-13

R13-4
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R13-2
R13-1
R14-1
R14-2
R14-3

TNM Plan View

NAA-14

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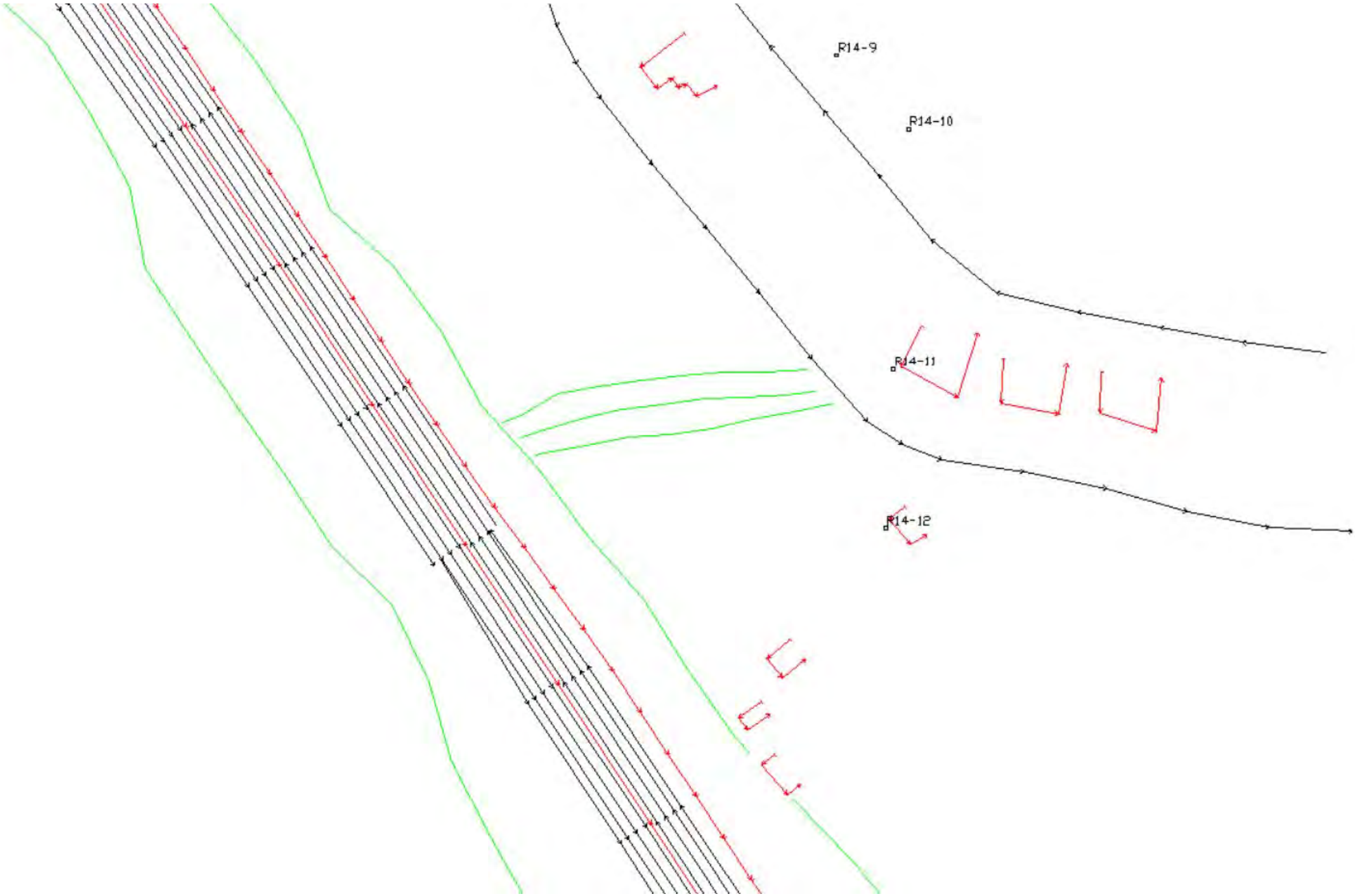
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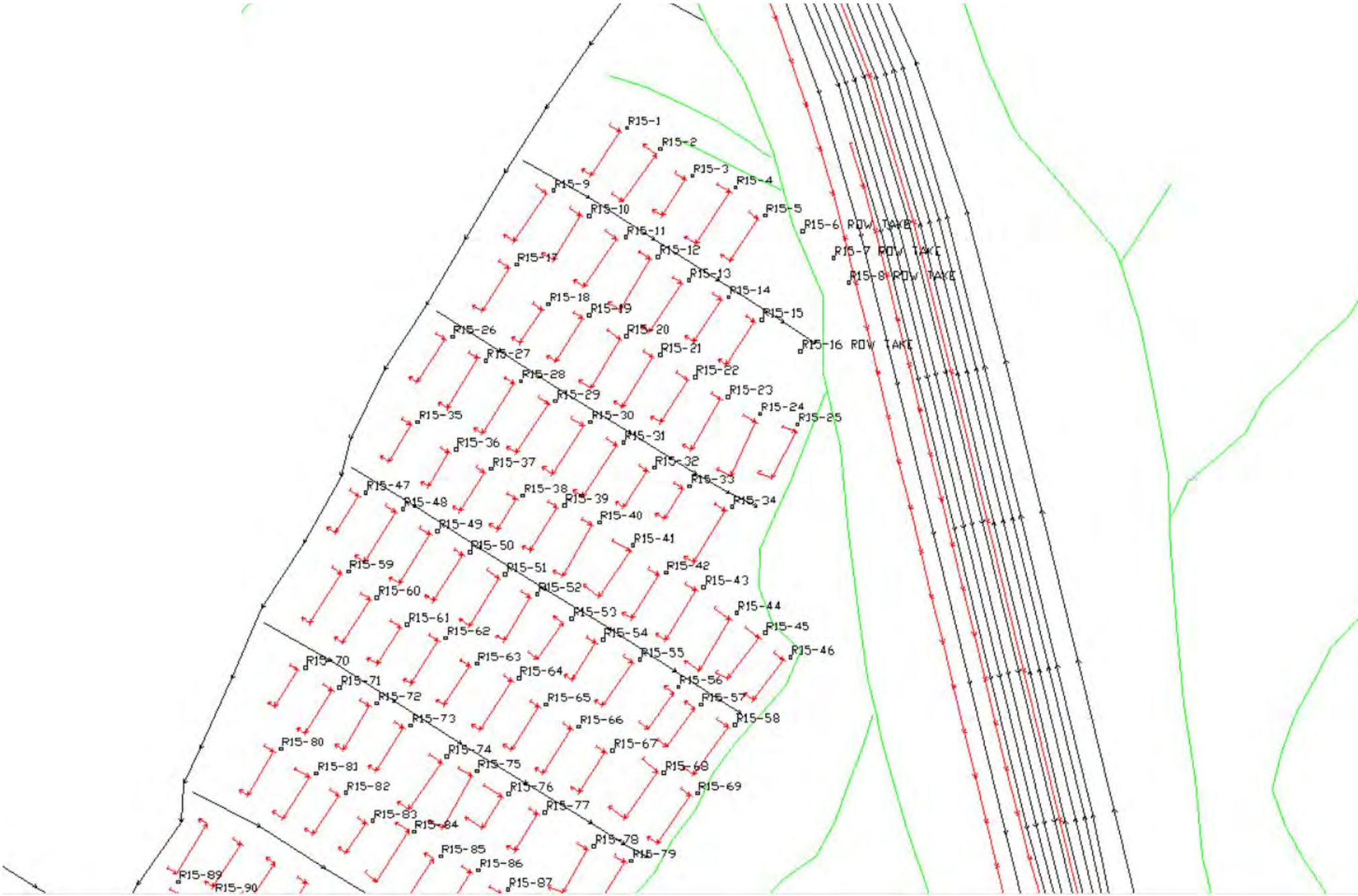
R14-12

TNM Plan View

NAA-15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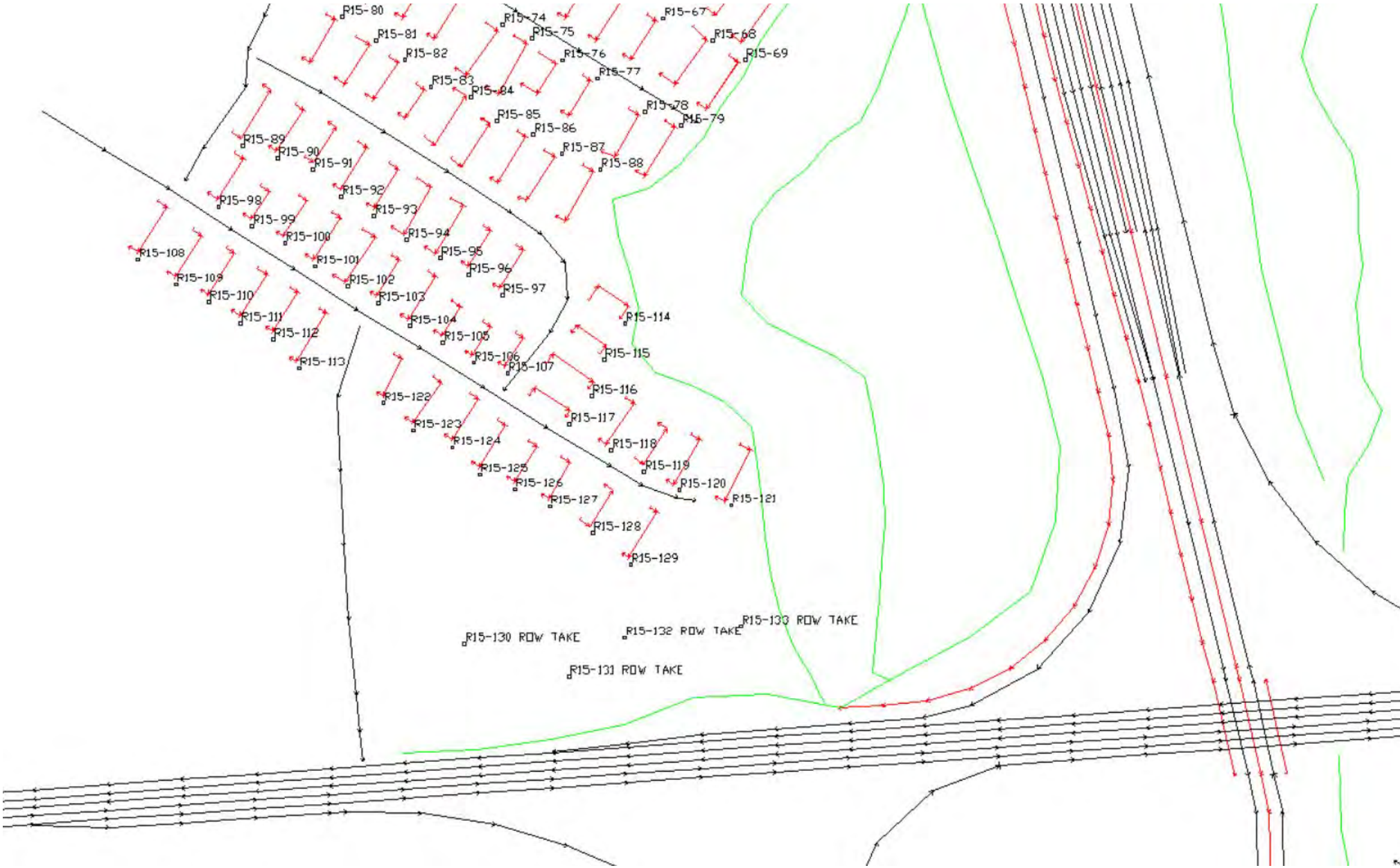
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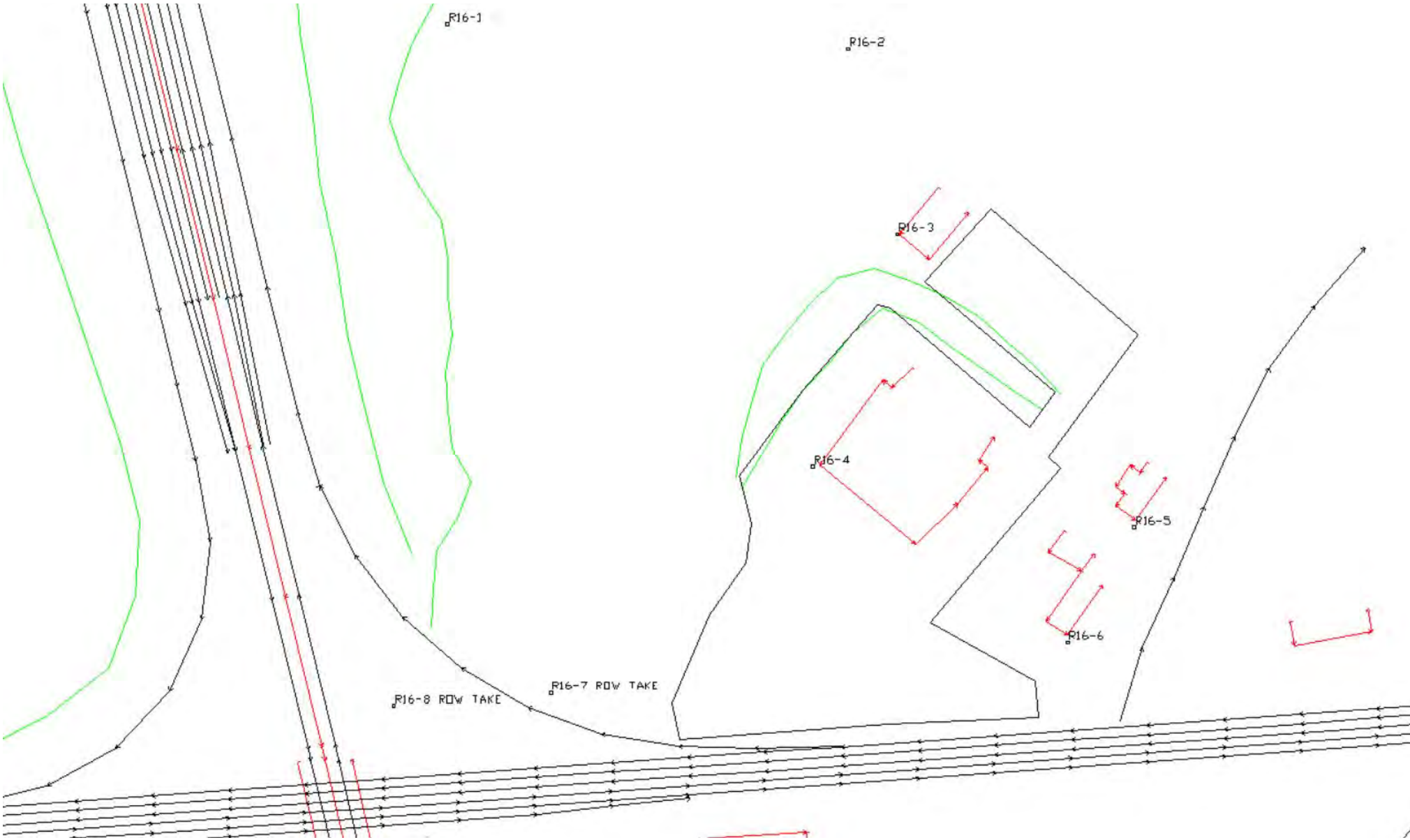
R15-67
R15-68
R15-69
R15-130 ROW TAKE
R15-131 ROW TAKE
R15-132 ROW TAKE
R15-133 ROW TAKE

TNM Plan View

NAA-16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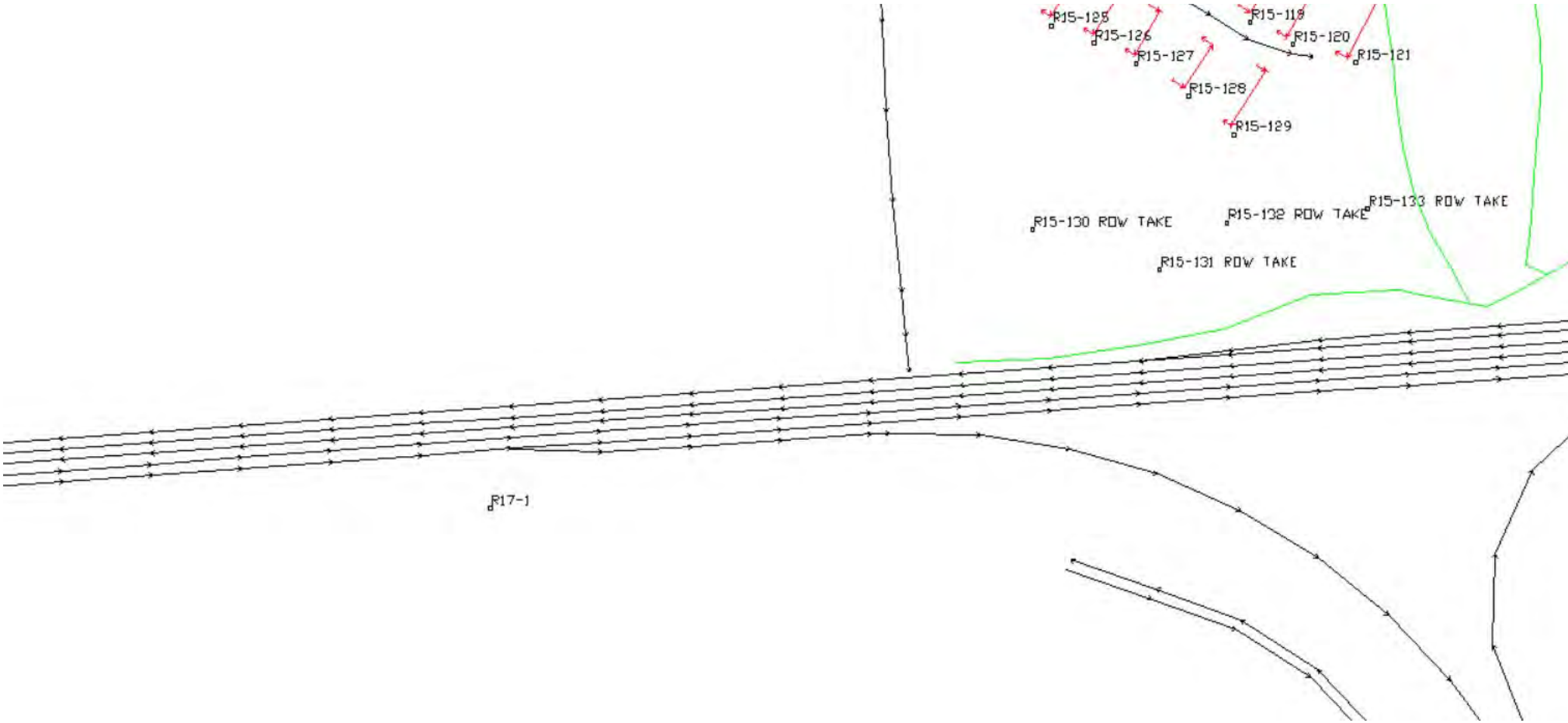
R16-5
R16-6
R16-7 ROW TAKE
R16-8 ROW TAKE

TNM Plan View

NAA-17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R15-129
R15-119
R15-120
R15-121
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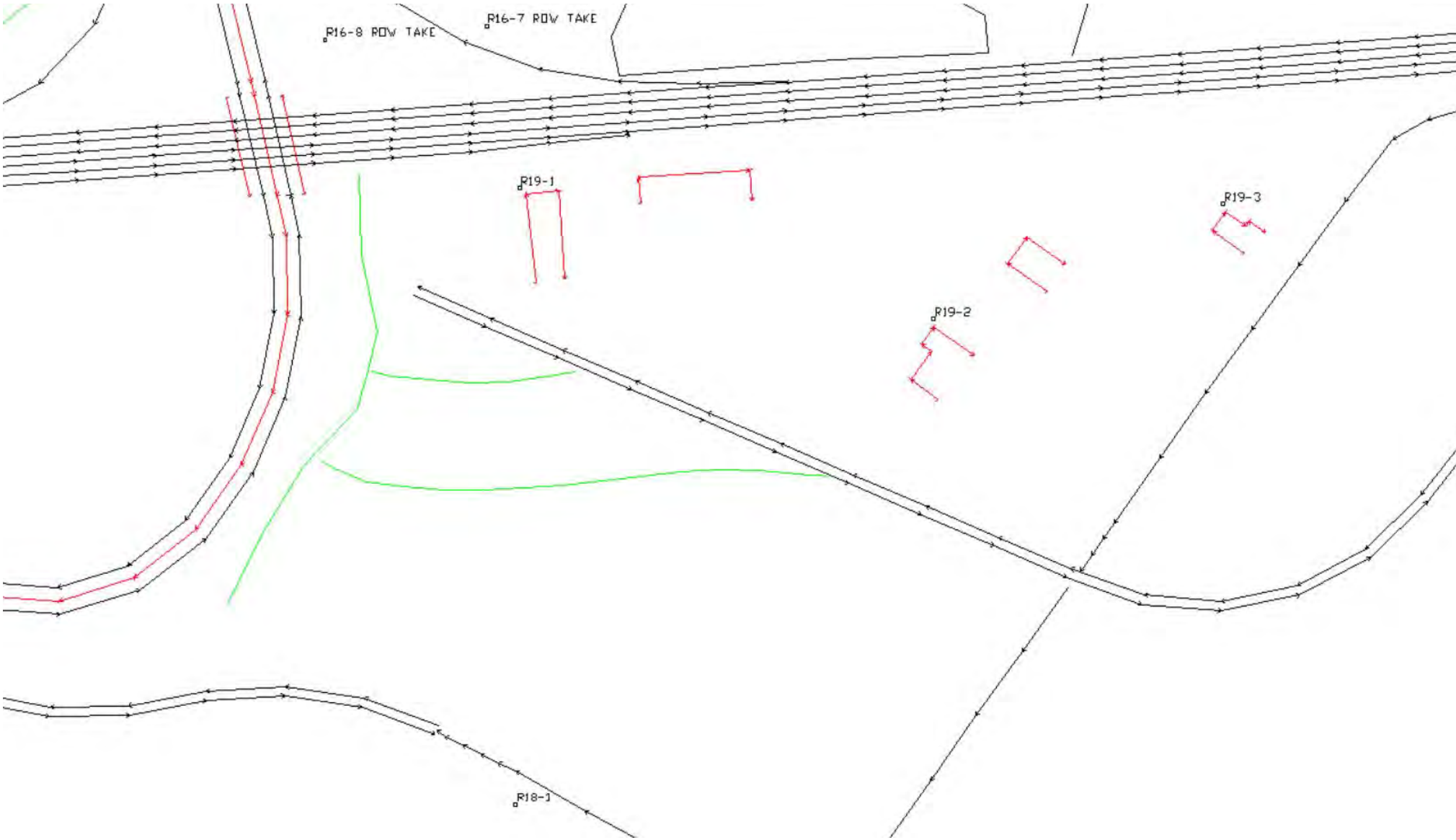
R15-131 ROW TAKE
R15-132 ROW TAKE
R15-133 ROW TAKE
R17-1

TNM Plan View

NAA-18 & 19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R19-1
R19-3
R19-2
R18-1

TNM Plan View

NAA-20

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R21-2
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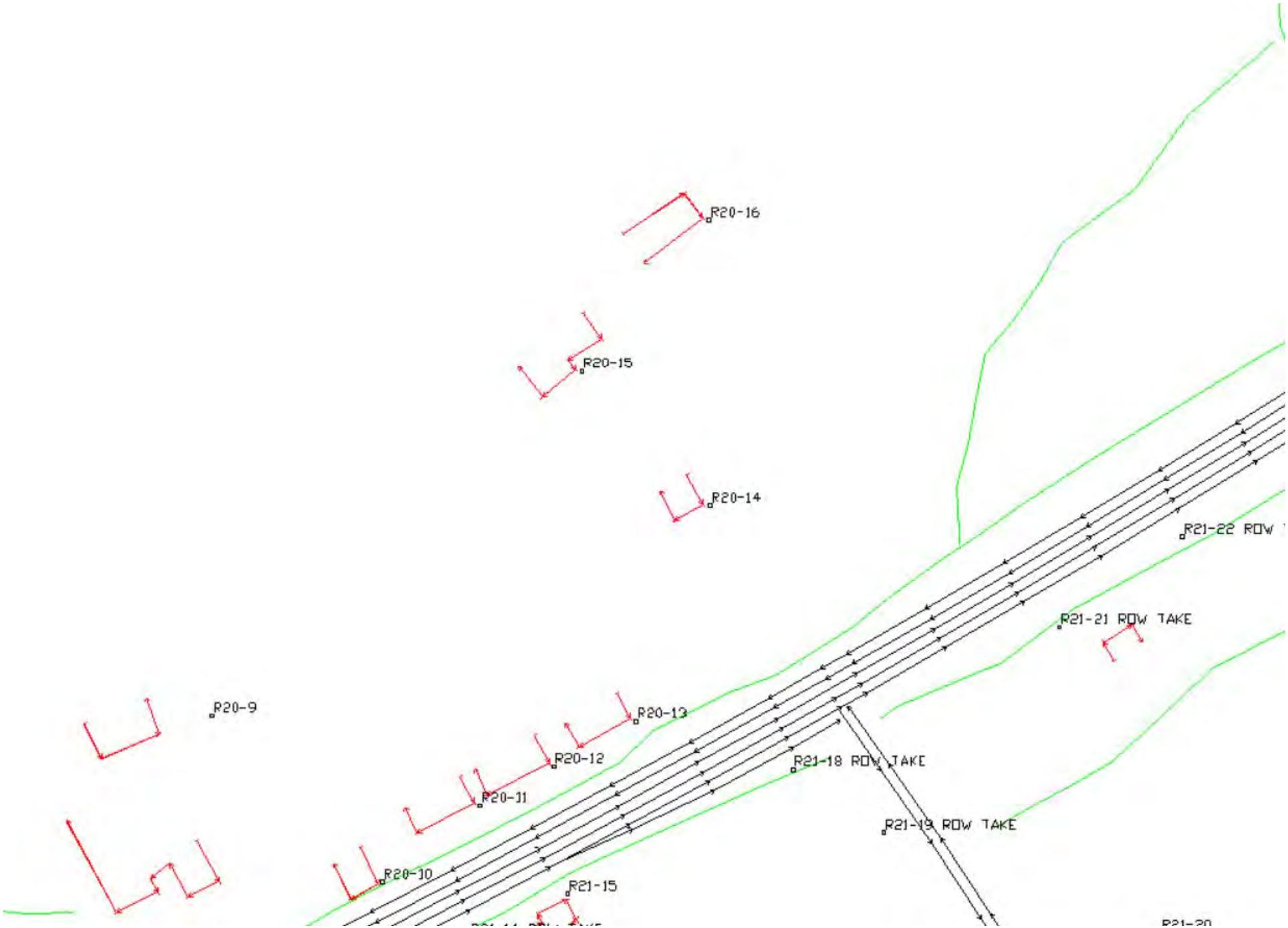
R21-13 ROW TAKE
R21-14 ROW TAKE
R21-15
R21-16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R21-18 ROW TAKE
R21-19 ROW TAKE
R20-10
R21-15

TNM Plan View

NAA-21

R20-1
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R21-1
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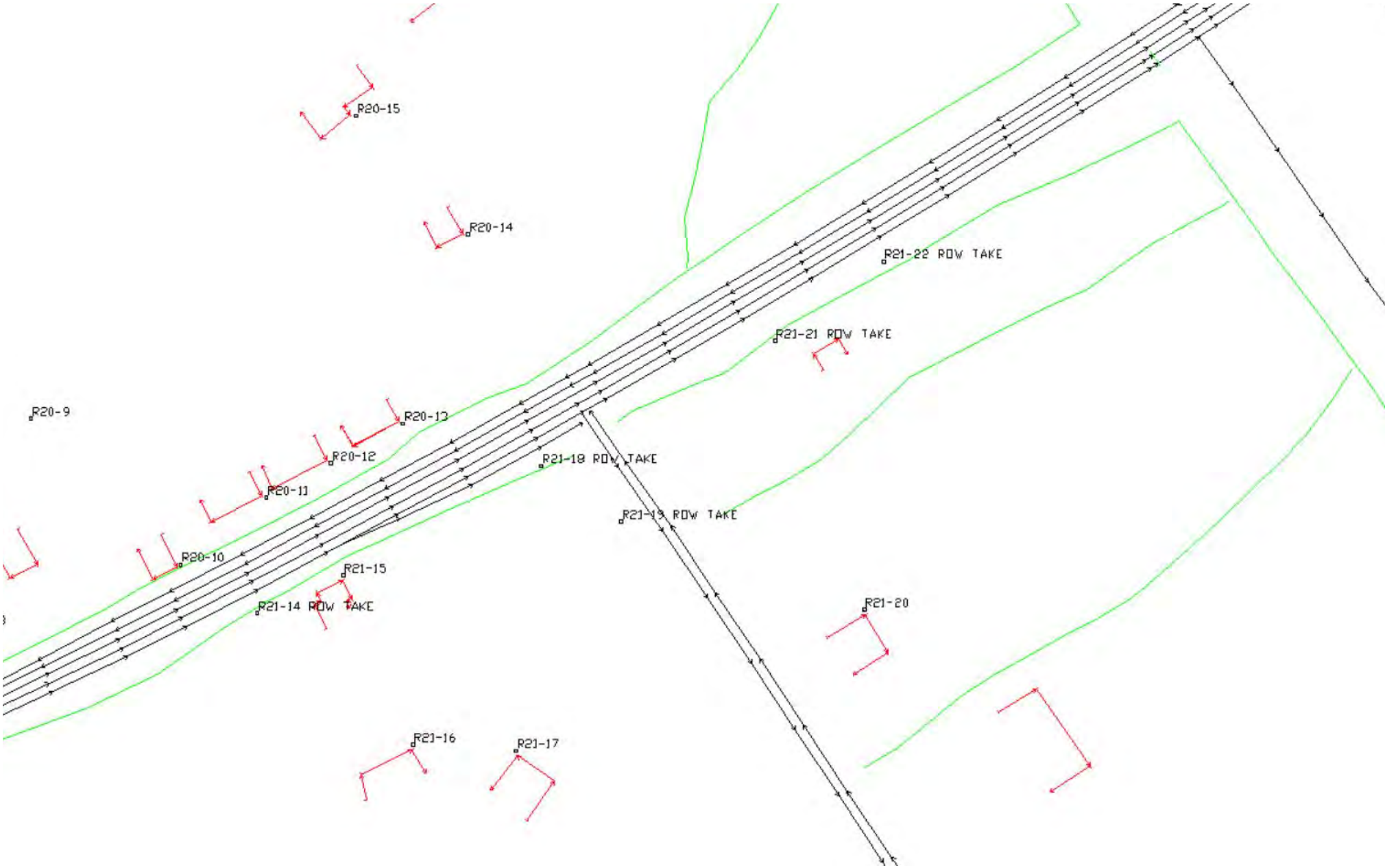
R21-16
R21-17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R21-22 ROW TAKE
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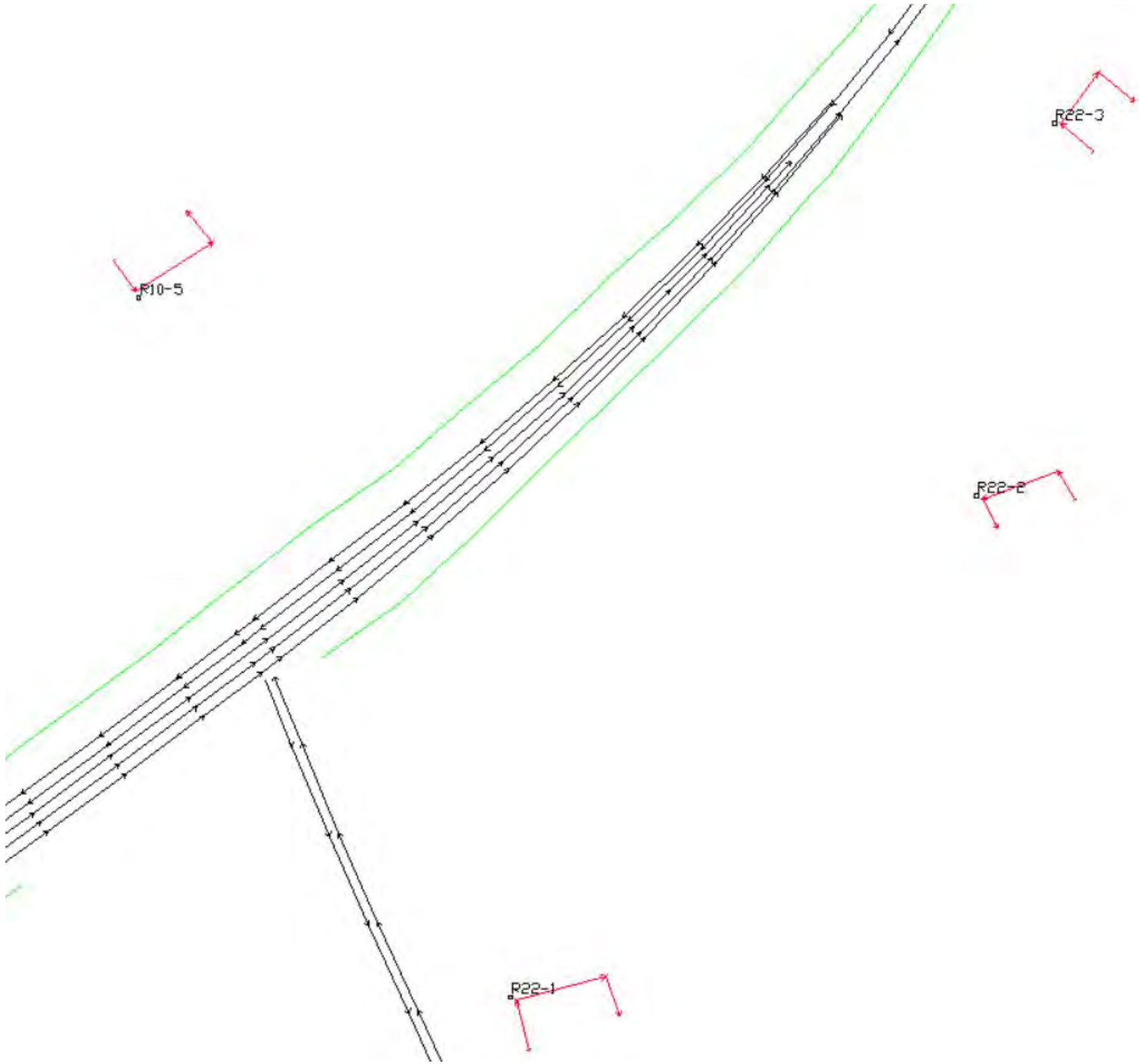
R21-20
R21-16
R21-17

TNM Plan View

NAA-22


R10-5
R22-3
R22-2
R22-1

Appendix E

Existing, No-Build and Build Design Year Noise Levels and Impacts

Table E.1
Noise-Sensitive Receptors and Hourly Equivalent Noise Levels - Build Alternative

Receptors					Predicted Noise Levels, Leq(h) (dB(A))			
Rec. No.	Address	NAC	Land Use	ERs	Existing	No Build	Build	Build - Existing
R1-1	ALCOA TRL	C	Disc Golf	1	53	55	59	6
R1-2	ALCOA TRL	C	Disc Golf	1	54	56	59	5
R2-1	3137 OLD KNOXVILLE HWY	C	Place of Worship	1	53	55	58	5
R3-1	OLD KNOXVILLE HWY	C	Park	.08[4]	65	67	**67**	2
R3-2	PELLISSIPPI PL	C	Park	.08[4]	65	67	**68**	3
R3-3	PELLISSIPPI PL	C	Park	.08[4]	**47[6]**	49	60	**13**
R3-4	PELLISSIPPI PL	C	Park	.08[4]	**47[6]**	49	61	**14**
R3-5	PELLISSIPPI PL	C	Park	.08[4]	**47[6]**	49	**66**	**19**
R3-6	PELLISSIPPI PL	C	Park	.08[4]	**47[6]**	49	**69**	**22**
R3-7	PELLISSIPPI PL	C	Park	.08[4]	**47[6]**	49	**72**	**25**
R3-8	PELLISSIPPI PL	C	Park	.08[4]	**47[6]**	49	**67**	**20**
R3-9	PELLISSIPPI PL	C	Park	.08[4]	**47[6]**	49	63	**16**
R3-10	PELLISSIPPI PL	C	Park	.08[4]	**47[6]**	49	61	**14**
R3-11	208 JACKSON HILLS DR	B	Residential	1	**47[6]**	49	54	7
R3-12	210 JACKSON HILLS DR	B	Residential	1	**47[6]**	49	53	6
R3-13	214 JACKSON HILLS DR	B	Residential	1	**47[6]**	49	53	6
R3-14	218 JACKSON HILLS DR	B	Residential	1	**47[6]**	49	52	5
R3-15	220 JACKSON HILLS DR	B	Residential	1	**47[6]**	49	53	6
R3-16	224 JACKSON HILLS DR	B	Residential	1	**47[6]**	49	53	6
R3-17	228 JACKSON HILLS DR	B	Residential	1	**47[6]**	49	53	6
R3-18	213 JACKSON HILLS DR	B	Residential	1	**47[6]**	49	57	**10**
R3-19	217 JACKSON HILLS DR	B	Residential	1	**47[6]**	49	56	9
R3-20	219 JACKSON HILLS DR	B	Residential	1	**47[6]**	49	55	8
R3-21	221 JACKSON HILLS DR	B	Residential	1	**47[6]**	49	56	9
R3-22	301 JACKSON HILLS DR	B	Residential	1	**47[6]**	49	57	**10**
R3-23	305 JACKSON HILLS DR	B	Residential	1	**47[6]**	49	56	9
R3-24	307 JACKSON HILLS DR	B	Residential	1	**47[6]**	49	56	9

Receptors					Predicted Noise Levels, Leq(h) (dB(A))			
Rec. No.	**Address**	**NAC**	**Land Use**	**ERs**	**Existing**	**No Build**	**Build**	**Build - Existing**
R3-25	330 PELLISSIPPI PL	C	Basketball Court	1	**47[6]**	49	59	**12**
R3-26	PELLISSIPPI PL	C	Park	.08[4]	**47[6]**	49	63	**16**
R3-27	PELLISSIPPI PL	C	Park	.08[4]	**47[6]**	49	63	**16**
R3-28	PELLISSIPPI PL	C	Park	.08[4]	**47[6]**	49	62	**15**
R4-1	553 JACKSON HILLS DR	B	Residential	1	**42[7]**	44	**70**	**28**
R4-2	557 JACKSON HILLS DR	B	Residential	1	**42[7]**	44	**68**	**26**
R5-1	736 MT LEBANON RD	B	Residential	1	**42[8]**	44	59	**17**
R6-1	913 MT LEBANON RD	B	Residential	1	**42[8]**	44	57	**15**
R6-2	917 MT LEBANON RD	B	Residential	1	**42[8]**	44	57	**15**
R6-3	919 MT LEBANON RD	B	Residential	1	**42[8]**	44	56	14
R6-4	927 MT LEBANON RD	B	Residential	1	**42[8]**	44	56	14
R6-5	945 MT LEBANON RD	B	Residential	1	**42[8]**	44	57	**15**
R6-6	1009 MT LEBANON RD	B	Residential	1	**42[8]**	44	64	**22**
R6-7	1013 MT LEBANON RD	B	Residential	1	43	45	60	**17**
R6-8	3205 WILDWOOD RD	B	Residential	1	63	65	65	2
R7-1	3049 WILDWOOD RD	B	Residential	1	**42[7]**	44	61	**19**
R7-2	115 SARATOGA DR	B	Residential	1	47	49	ROW	ROW
R7-3	3045 WILDWOOD RD	B	Residential	1	59	61	63	4
R8-1	3118 WILDWOOD RD	B	Residential	1	48	50	ROW	ROW
R8-2	1891 E BROWN SCHOOL RD	B	Residential	1	55	57	62	7
R8-3	1887 E BROWN SCHOOL RD	B	Residential	1	52	54	62	**10**
R8-4	1890 E BROWN SCHOOL RD	B	Residential	1	56	58	62	6
R8-5	1886 E BROWN SCHOOL RD	B	Residential	1	56	58	62	6
R8-6	1880 E BROWN SCHOOL RD	B	Residential	1	56	58	62	6
R8-7	1876 E BROWN SCHOOL RD	B	Residential	1	57	59	62	5
R8-8	1871 E BROWN SCHOOL RD	B	Residential	1	45	47	62	**17**
R8-9	1870 E BROWN SCHOOL RD	B	Residential	1	57	59	61	4
R8-10	1862 E BROWN SCHOOL RD	B	Residential	1	53	55	59	6
R8-11	1854 E BROWN SCHOOL RD	B	Residential	1	56	58	61	5
R8-12	1853 E BROWN SCHOOL RD	B	Residential	1	49	51	61	**12**
R8-13	1848 E BROWN	B	Residential	1	57	59	61	4

Receptors					Predicted Noise Levels, Leq(h) (dB(A))			
Rec. No.	Address	NAC	Land Use	ERs	Existing	No Build	Build	Build - Existing
	SCHOOL RD							
R8-14	1840 E BROWN SCHOOL RD	B	Residential	1	57	59	61	4
R8-15	1816 E BROWN SCHOOL RD	B	Residential	1	58	60	66	8
R8-16	1834 E BROWN SCHOOL RD	B	Residential	1	44	46	57	**13**
R9-1	3104 WILDWOOD RD	B	Residential	1	43	45	ROW	ROW
R9-2	3042 WILDWOOD RD	B	Residential	1	45	47	63	**18**
R9-3	1785 E BROWN SCHOOL RD	B	Residential	1	**42[7]**	44	65	**23**
R9-4	1756 E BROWN SCHOOL RD	B	Residential	1	58	60	62	4
R9-5	1763 E BROWN SCHOOL RD	B	Residential	1	59	61	64	5
R9-6	1772 E BROWN SCHOOL RD	B	Residential	1	51	53	63	**12**
R9-7	1780 E BROWN SCHOOL RD	B	Residential	1	48	50	64	**16**
R10-1	3026 3048 SEVIERVILLE RD	B	Residential	1	68	70	ROW	ROW
R10-2	3105 SEVIERVILLE RD	B	Residential	1	63	65	**70**	7
R10-3	3115 SEVIERVILLE RD	B	Residential	1	63	65	**70**	7
R10-4	3145 SEVIERVILLE RD	B	Residential	1	49	51	57	8
R10-5	3153 SEVIERVILLE RD	B	Residential	1	50	52	58	8
R11-1	3025 DAVIS FORD RD	B	Residential	1	49	51	59	**10**
R11-2	3033 DAVIS FORD RD	B	Residential	1	46	48	62	**16**
R11-3	3039 DAVIS FORD RD	B	Residential	1	47	49	65	**18**
R11-4	3047 DAVIS FORD RD	B	Residential	1	**46[9]**	48	**69**	**23**
R12-1	3020 DAVIS FORD RD	B	Residential	1	46	48	57	**11**
R13-1	3131 DAVIS FORD RD	B	Residential	1	**52[10]**	54	59	7
R13-2	3145 DAVIS FORD RD	B	Residential	1	**52[10]**	54	57	5
R13-3	909 NINA DELOZIER RD	B	Residential	1	**52[10]**	54	53	1
R13-4	913 NINA DELOZIER RD	B	Residential	1	**52[10]**	54	55	3
R14-1	3134 DAVIS FORD RD	B	Residential	1	54	56	61	7
R14-2	3212 CENTENNIAL CHURCH RD	B	Residential	1	**45[11]**	47	55	10
R14-3	3421 OLD PLANTATION WAY	B	Residential	1	45	47	53	8
R14-4	3412 OLD PLANTATION WAY	B	Residential	1	**45[11]**	47	55	10
R14-5	3228 CENTENNIAL CHURCH RD	B	Residential	1	**45[11]**	47	61	**16**

Receptors					Predicted Noise Levels, Leq(h) (dB(A))			
Rec. No.	**Address**	**NAC**	**Land Use**	**ERs**	**Existing**	**No Build**	**Build**	**Build - Existing**
R14-6	3401 OLD PLANTATION WAY	B	Residential	1	**45[11]**	47	60	**15**
R14-7	3384 OLD PLANTATION WAY	B	Residential	1	**45[11]**	47	56	11
R14-8	3380 OLD PLANTATION WAY	B	Residential	1	**45[11]**	47	58	**13**
R14-9	3376 OLD PLANTATION WAY	B	Residential	1	**45[11]**	47	58	**13**
R14-10	3372 OLD PLANTATION WAY	B	Residential	1	**45[11]**	47	58	**13**
R14-11	3367 OLD PLANTATION WAY	B	Residential	1	**45[11]**	47	61	**16**
R14-12	225 CENTENNIAL CHURCH RD	B	Residential	1	**45[11]**	47	62	**17**
R15-1	626 HEPATICA DR	B	Residential	1	**52[12]**	54	63	**11**
R15-2	628 HEPATICA DR	B	Residential	1	**52[12]**	54	65	**13**
R15-3	630 HEPATICA DR	B	Residential	1	**52[12]**	54	65	**13**
R15-4	632 HEPATICA DR	B	Residential	1	**52[12]**	54	**66**	**14**
R15-5	634 HEPATICA DR	B	Residential	1	**52[12]**	54	65	**13**
R15-6	636 HEPATICA DR	B	Residential	1	**52[12]**	54	ROW	ROW
R15-7	638 HEPATICA DR	B	Residential	1	**52[12]**	54	ROW	ROW
R15-8	640 HEPATICA DR	B	Residential	1	**52[12]**	54	ROW	ROW
R15-9	625 HEPATICA DR	B	Residential	1	**52[12]**	54	62	**10**
R15-10	627 HEPATICA DR	B	Residential	1	**52[12]**	54	61	9
R15-11	629 HEPATICA DR	B	Residential	1	**52[12]**	54	62	**10**
R15-12	631 HEPATICA DR	B	Residential	1	**52[12]**	54	62	**10**
R15-13	633 HEPATICA DR	B	Residential	1	**52[12]**	54	62	**10**
R15-14	635 HEPATICA DR	B	Residential	1	**52[12]**	54	63	**11**
R15-15	637 HEPATICA DR	B	Residential	1	**52[12]**	54	65	**13**
R15-16	639 HEPATICA DR	B	Residential	1	**52[12]**	54	ROW	ROW
R15-17	526 AZALEA DR	B	Residential	1	**52[12]**	54	59	7
R15-18	528 AZALEA DR	B	Residential	1	**52[12]**	54	59	7
R15-19	530 AZALEA DR	B	Residential	1	**52[12]**	54	60	8
R15-20	532 AZALEA DR	B	Residential	1	**52[12]**	54	60	8
R15-21	534 AZALEA DR	B	Residential	1	**52[12]**	54	61	9
R15-22	536 AZALEA DR	B	Residential	1	**52[12]**	54	62	**10**
R15-23	538 AZALEA DR	B	Residential	1	**52[12]**	54	63	**11**
R15-24	540 AZALEA DR	B	Residential	1	**52[12]**	54	63	**11**
R15-25	542 AZALEA DR	B	Residential	1	**52[12]**	54	64	**12**
R15-26	525 AZALEA DR	B	Residential	1	**52[12]**	54	59	7
R15-27	527 AZALEA DR	B	Residential	1	**52[12]**	54	59	7
R15-28	529 AZALEA DR	B	Residential	1	**52[12]**	54	59	7
R15-29	531 AZALEA DR	B	Residential	1	**52[12]**	54	59	7

Receptors					Predicted Noise Levels, Leq(h) (dB(A))			
Rec. No.	Address	NAC	Land Use	ERs	Existing	No Build	Build	Build - Existing
R15-30	533 AZALEA DR	B	Residential	1	52[12]	54	60	8
R15-31	535 AZALEA DR	B	Residential	1	52[12]	54	61	9
R15-32	537 AZALEA DR	B	Residential	1	52[12]	54	61	9
R15-33	539 AZALEA DR	B	Residential	1	52[12]	54	61	9
R15-34	541 AZALEA DR	B	Residential	1	52[12]	54	63	**11**
R15-35	426 MISTLETOE DR	B	Residential	1	52[12]	54	57	5
R15-36	428 MISTLETOE DR	B	Residential	1	52[12]	54	59	7
R15-37	430 MISTLETOE DR	B	Residential	1	52[12]	54	59	7
R15-38	432 MISTLETOE DR	B	Residential	1	52[12]	54	58	6
R15-39	434 MISTLETOE DR	B	Residential	1	52[12]	54	58	6
R15-40	436 MISTLETOE DR	B	Residential	1	52[12]	54	59	7
R15-41	438 MISTLETOE DR	B	Residential	1	52[12]	54	60	8
R15-42	440 MISTLETOE DR	B	Residential	1	52[12]	54	61	9
R15-43	442 MISTLETOE DR	B	Residential	1	52[12]	54	63	**11**
R15-44	444 MISTLETOE DR	B	Residential	1	52[12]	54	63	**11**
R15-45	446 MISTLETOE DR	B	Residential	1	52[12]	54	63	**11**
R15-46	448 MISTLETOE DR	B	Residential	1	52[12]	54	64	**12**
R15-47	425 MISTLETOE DR	B	Residential	1	52[12]	54	55	3
R15-48	427 MISTLETOE DR	B	Residential	1	52[12]	54	58	6
R15-49	429 MISTLETOE DR	B	Residential	1	52[12]	54	57	5
R15-50	431 MISTLETOE DR	B	Residential	1	52[12]	54	58	6
R15-51	433 MISTLETOE DR	B	Residential	1	52[12]	54	59	7
R15-52	437 MISTLETOE DR	B	Residential	1	52[12]	54	58	6
R15-53	439 MISTLETOE DR	B	Residential	1	52[12]	54	58	6
R15-54	441 MISTLETOE DR	B	Residential	1	52[12]	54	59	7
R15-55	443 MISTLETOE DR	B	Residential	1	52[12]	54	60	8
R15-56	445 MISTLETOE DR	B	Residential	1	52[12]	54	61	9
R15-57	447 MISTLETOE DR	B	Residential	1	52[12]	54	61	9
R15-58	449 MISTLETOE DR	B	Residential	1	52[12]	54	63	**11**
R15-59	326 TEABERRY DR	B	Residential	1	52[12]	54	55	3
R15-60	328 TEABERRY DR	B	Residential	1	52[12]	54	55	3
R15-61	330 TEABERRY DR	B	Residential	1	52[12]	54	55	3
R15-62	332 TEABERRY DR	B	Residential	1	52[12]	54	61	9
R15-63	334 TEABERRY DR	B	Residential	1	52[12]	54	58	6
R15-64	336 TEABERRY DR	B	Residential	1	52[12]	54	58	6
R15-65	338 TEABERRY DR	B	Residential	1	52[12]	54	57	5
R15-66	340 TEABERRY DR	B	Residential	1	52[12]	54	60	8
R15-67	342 TEABERRY DR	B	Residential	1	52[12]	54	60	8
R15-68	344 TEABERRY DR	B	Residential	1	52[12]	54	59	7
R15-69	346 TEABERRY DR	B	Residential	1	52[12]	54	62	**10**
R15-70	327 TEABERRY DR	B	Residential	1	52[12]	54	54	2

Receptors					Predicted Noise Levels, Leq(h) (dB(A))			
Rec. No.	Address	NAC	Land Use	ERs	Existing	No Build	Build	Build - Existing
R15-71	329 TEABERRY DR	B	Residential	1	52[12]	54	54	2
R15-72	331 TEABERRY DR	B	Residential	1	52[12]	54	55	3
R15-73	333 TEABERRY DR	B	Residential	1	52[12]	54	57	5
R15-74	335 TEABERRY DR	B	Residential	1	52[12]	54	56	4
R15-75	337 TEABERRY DR	B	Residential	1	52[12]	54	55	3
R15-76	339 TEABERRY DR	B	Residential	1	52[12]	54	55	3
R15-77	341 TEABERRY DR	B	Residential	1	52[12]	54	58	6
R15-78	343 TEABERRY DR	B	Residential	1	52[12]	54	58	6
R15-79	345 TEABERRY DR	B	Residential	1	52[12]	54	60	8
R15-80	228 SILVERBELL DR	B	Residential	1	52[12]	54	54	2
R15-81	230 SILVERBELL DR	B	Residential	1	52[12]	54	55	3
R15-82	232 SILVERBELL DR	B	Residential	1	52[12]	54	56	4
R15-83	234 SILVERBELL DR	B	Residential	1	52[12]	54	53	1
R15-84	236 SILVERBELL DR	B	Residential	1	52[12]	54	53	1
R15-85	238 SILVERBELL DR	B	Residential	1	52[12]	54	54	2
R15-86	240 SILVERBELL DR	B	Residential	1	52[12]	54	56	4
R15-87	242 SILVERBELL DR	B	Residential	1	52[12]	54	56	4
R15-88	244 SILVERBELL DR	B	Residential	1	52[12]	54	57	5
R15-89	225 SILVERBELL DR	B	Residential	1	52[12]	53	52	0
R15-90	227 SILVERBELL DR	B	Residential	1	52[12]	53	53	1
R15-91	229 SILVERBELL DR	B	Residential	1	52[12]	54	53	1
R15-92	231 SILVERBELL DR	B	Residential	1	52[12]	54	54	2
R15-93	233 SILVERBELL DR	B	Residential	1	52[12]	54	53	1
R15-94	235 SILVERBELL DR	B	Residential	1	52[12]	54	54	2
R15-95	237 SILVERBELL DR	B	Residential	1	52[12]	54	55	3
R15-96	239 SILVERBELL DR	B	Residential	1	52[12]	54	57	5
R15-97	241 SILVERBELL DR	B	Residential	1	52[12]	54	58	6
R15-98	124 DEWBERRY DR	B	Residential	1	52[12]	53	52	0
R15-99	126 DEWBERRY DR	B	Residential	1	52[12]	53	52	0
R15-100	128 DEWBERRY DR	B	Residential	1	52[12]	54	53	1
R15-101	130 DEWBERRY DR	B	Residential	1	52[12]	54	53	1
R15-102	132 DEWBERRY DR	B	Residential	1	52[12]	54	54	2
R15-103	134 DEWBERRY DR	B	Residential	1	52[12]	54	55	3
R15-104	136 DEWBERRY DR	B	Residential	1	52[12]	54	56	4
R15-105	138 DEWBERRY DR	B	Residential	1	52[12]	54	56	4
R15-106	140 DEWBERRY DR	B	Residential	1	52[12]	54	56	4
R15-107	142 DEWBERRY DR	B	Residential	1	52[12]	54	55	3
R15-108	123 DEWBERRY DR	B	Residential	1	52[12]	54	54	2
R15-109	125 DEWBERRY DR	B	Residential	1	52[12]	54	54	2
R15-110	127 DEWBERRY DR	B	Residential	1	52[12]	54	55	3
R15-111	129 DEWBERRY DR	B	Residential	1	52[12]	54	55	3

Receptors					Predicted Noise Levels, Leq(h) (dB(A))			
Rec. No.	Address	NAC	Land Use	ERs	Existing	No Build	Build	Build - Existing
R15-112	131 DEWBERRY DR	B	Residential	1	52[12]	54	55	3
R15-113	133 DEWBERRY DR	B	Residential	1	52	54	58	6
R15-114	198 SWEETPEA	B	Residential	1	52[12]	54	59	7
R15-115	196 SWEETPEA	B	Residential	1	52[12]	54	58	6
R15-116	194 SWEETPEA	B	Residential	1	52[12]	54	57	5
R15-117	192 SWEETPEA	B	Residential	1	52[12]	54	56	4
R15-118	146 DEWBERRY DR	B	Residential	1	52[12]	54	58	6
R15-119	148 DEWBERRY DR	B	Residential	1	52	54	59	7
R15-120	150 DEWBERRY DR	B	Residential	1	55	57	61	6
R15-121	152 DEWBERRY DR	B	Residential	1	57	59	63	6
R15-122	135 DEWBERRY DR	B	Residential	1	52	54	57	5
R15-123	137 DEWBERRY DR	B	Residential	1	52	54	58	6
R15-124	139 DEWBERRY DR	B	Residential	1	52	54	58	6
R15-125	141 DEWBERRY DR	B	Residential	1	53	55	59	6
R15-126	143 DEWBERRY DR	B	Residential	1	54	56	59	5
R15-127	145 DEWBERRY DR	B	Residential	1	54	56	60	6
R15-128	147 DEWBERRY DR	B	Residential	1	55	57	61	6
R15-129	149 DEWBERRY DR	B	Residential	1	56	58	64	8
R15-130	3325 E LAMAR ALEX PKWY	B	Residential	1	62	64	ROW	ROW
R15-131	3327 E LAMAR ALEX PKWY	B	Residential	1	65	67	ROW	ROW
R15-132	3335 E LAMAR ALEX PKWY	B	Residential	1	62	64	ROW	ROW
R15-133	3335 E LAMAR ALEX PKWY	B	Residential	1	61	63	ROW	ROW
R16-1	3419 E LAMAR ALEX PKWY	C	Soccer Field	1	52[12]	54	61	9
R16-2	3419 E LAMAR ALEX PKWY	C	Playground	1	52[12]	54	57	5
R16-3	3419 E LAMAR ALEX PKWY	C	Picnic Area	1	52[12]	54	57	5
R16-4	3419 E LAMAR ALEX PKWY	D	Place of Worship	1	58 / 33[5]	60 / 35[5]	61 / 36[5]	3
R16-5	111 JOHN HELTON RD	B	Residential	1	58	60	59	1
R16-6	107 JOHN HELTON RD	B	Residential	1	64	66	65	1
R16-7	3411 E LAMAR ALEX PKWY	B	Residential	1	65	67	ROW	ROW
R16-8	3405 E LAMAR ALEX PKWY	B	Residential	1	65	67	ROW	ROW
R17-1	3240 ABBOTT RD	B	Residential	1	67	69	71	4
R18-1	3366 BUCHANAN RD	B	Residential	1	49	51	57	8
R19-1	3412 E LAMAR ALEX PKWY	D	Place of Worship	1	68 / 43[5]	70 / 45[5]	73 / 48[5]	5

Receptors					Predicted Noise Levels, Leq(h) (dB(A))			
Rec. No.	Address	NAC	Land Use	ERs	Existing	No Build	Build	Build - Existing
R19-2	3449 BUCHANAN RD	B	Residential	1	57	59	59	2
R19-3	3449 BUCHANAN RD	B	Residential	1	62	64	63	1
R20-1	423 HIDDENBROOK LN	B	Residential	1	46	48	52	6
R20-2	425 HIDDENBROOK LN	B	Residential	1	46	48	51	5
R20-3	424 HIDDENBROOK LN	B	Residential	1	44	46	50	6
R20-4	422 HIDDENBROOK LN	B	Residential	1	47	49	53	6
R20-5	2835 SEVIERVILLE RD	B	Residential	1	60	62	64	4
R20-6	2901 SEVIERVILLE RD	B	Residential	1	57	59	63	6
R20-7	2925 SEVIERVILLE RD	B	Residential	1	59	61	65	6
R20-8	2925 SEVIERVILLE RD	C	Place of Worship/School	1	61	63	**67**	6
R20-9	2925 SEVIERVILLE RD	C	Playground	1	49	51	56	7
R20-10	2925 SEVIERVILLE RD	B	Residential	1	67	69	**72**	5
R20-11	2929 SEVIERVILLE RD	B	Residential	1	64	66	**69**	5
R20-12	2933 SEVIERVILLE RD	B	Residential	1	64	66	**69**	5
R20-13	2937 SEVIERVILLE RD	B	Residential	1	64	66	**69**	5
R20-14	2941 SEVIERVILLE RD	B	Residential	1	54	56	62	8
R20-15	2941 SEVIERVILLE RD	B	Residential	1	49	51	58	9
R20-16	3003 SEVIERVILLE RD	B	Residential	1	49	51	58	9
R21-1	410 SWEET BRIAR DR	B	Residential	1	50	52	54	4
R21-2	2834 SEVIERVILLE RD	B	Residential	1	65	67	**69**	4
R21-3	101 DELL RD	B	Residential	1	61	63	64	3
R21-4	105 DELL RD	B	Residential	1	53	55	56	3
R21-5	107 DELL CIR	B	Residential	1	49	51	53	4
R21-6	109 DELL CIR	B	Residential	1	46	48	51	5
R21-7	113 DELL CIR	B	Residential	1	51	53	54	3
R21-8	112 DELL RD	B	Residential	1	46	48	52	6
R21-9	110 DELL RD	B	Residential	1	47	49	53	6
R21-10	108 DELL RD	B	Residential	1	47	49	54	7
R21-11	2908 SEVIERVILLE RD	B	Residential	1	53	55	61	8
R21-12	102 DELL RD	B	Residential	1	65	67	**70**	5
R21-13	DAVIS FORD RD	B	Residential	1	68	70	ROW	ROW
R21-14	2928 SEVIERVILLE RD	B	Residential	1	66	68	ROW	ROW
R21-15	2934 SEVIERVILLE RD	B	Residential	1	65	67	**71**	6
R21-16	2930 SEVIERVILLE RD	B	Residential	1	51	53	59	8
R21-17	2916 DAVIS FORD RD	B	Residential	1	50	52	58	8
R21-18	2943 SEVIERVILLE RD	B	Residential	1	65	67	ROW	ROW
R21-19	2906 DAVIS FORD RD	B	Residential	1	61	63	ROW	ROW
R21-20	2919 DAVIS FORD RD	B	Residential	1	48	50	57	9
R21-21	3008 SEVIERVILLE RD	B	Residential	1	62	64	ROW	ROW
R21-22	3016 SEVIERVILLE RD	B	Residential	1	67	69	ROW	ROW

Receptors					Predicted Noise Levels, Leq(h) (dB(A))			
Rec. No.	**Address**	**NAC**	**Land Use**	**ERs**	**Existing**	**No Build**	**Build**	**Build - Existing**
R22-1	1046 NINA DELOZIER RD	B	Residential	1	50	52	58	8
R22-2	3230 SEVIERVILLE RD	B	Residential	1	49	51	55	6
R22-3	3238 SEVIERVILLE RD	B	Residential	1	55	57	60	5
Predicted "No-Build" Alternative Design Year 2046 Traffic Noise Impacts:[1, 4]							**15[2]**	**55[3]**
Noise Level Impact			**Substantial Increase Impact**			**Ambient Noise Measurement**		

1. The number of predicted impacts is not duplicated if receptors are predicted to be impacted by more than one criterion (e.g., if a receptor is impacted by NAC "C" and NAC "D", it is counted as only one impact).
2. Predicted traffic noise level impact due to approaching or exceeding NAC.
3. Predicted "substantial increase" traffic noise level impact.
4. Pellissippi Place Business Park has 13 benches whose equivalent receptor value equal 0.08 for a total of 1 receptor (13 ERs x 0.08 = 1 receptor).
5. Exterior/Interior levels. FHWA Building Noise Reduction Factors. A 25 dB(A) reduction was used to be conservative.
6. Ambient measurement of 47 dB(A) at noise measurement location 2 (NML-2) was used when existing TNM predictions were less than 47 dB(A).
7. Ambient measurement of 42 dB(A) at noise measurement location 3 (NML-3) was used when existing TNM predictions were less than 42 dB(A).
8. Ambient measurement of 42 dB(A) at noise measurement location 4 (NML-4) was used when existing TNM predictions were less than 42 dB(A).
9. Ambient measurement of 46 dB(A) at noise measurement location 7 (NML-7) was used when existing TNM predictions were less than 46 dB(A).
10. Ambient measurement of 52 dB(A) at noise measurement location 8 (NML-8) was used when existing TNM predictions were less than 52 dB(A).
11. Average ambient measurement of 45 dB(A) between noise measurement location 8 (NML-8) and noise measurement location 9 (NML-9) was used when existing TNM predictions were less than 45 dB(A).
12. Ambient measurement of 52 dB(A) at noise measurement location 10 (NML-10) was used when existing TNM predictions were less than 52 dB(A).

Appendix F
Noise Barrier Design and Reasonableness Analysis

A total of seven noise walls have been evaluated for the Build Alternative. Six noise walls (NW 3, NW 6, NW 8, NW 9, NW 11, and NW 14) do not meet TDOT Policy feasibility and reasonableness criteria, are preliminarily considered **Unlikely**, and are not recommended for construction. One noise wall, NW 15, meets TDOT Policy feasibility and reasonableness criteria and is recommended for construction. Four variations of NW 15 are presented for consideration. A final decision on noise wall construction will be made upon completion of final designs and of the public involvement process. The noise wall quantities outlined in this appendix are based on the acoustical profiles developed in TNM for the purpose of determining cost reasonableness for each noise wall. These values should not be used for construction estimating purposes.

The summary of the evaluated noise walls is as follows:

Table F-1 provides a summary of all noise barrier analysis for the SR 162 Extension project.

Table F-1: Noise Barrier Analysis Summary

Noise Wall Analysis	Noise Analysis Summary			Abatement Analysis Summary				
	Impacts	Benefits		Length (ft)	Area (ft^2)	Area / Benefit (ft^2)	Allowed Area / Benefit (ft^2)	Prelim. Feasible & Reasonable
		Total Benefits	≥7 dB(A)					
NW 3	4	7	1	2,640	38,765	5,538	1,900	**No**
NW 6	5	7	1	2,280	52,683	7,526	1,900	**No**
NW 8	4	4	0	3,260	45,992	11,498	1,900	**No**
NW 9	4	3	0	1,909	27,418	9,139	1,900	**No**
NW 11	5	3	1	600	7,650	2,550	1,900	**No**
NW 14	7	7	0	1,440	22,321	3,189	1,900	**No**
NW 15 Opt. 1	22	28	13	1,200	21,600	771	1,900	**Yes**
NW 15 Opt. 2	22	40	19	1,500	29,998	750	1,900	**Yes**
NW 15 Opt. 3	22	42	7	2,820[1]	25,921[2]	617	1,900	**Yes**
NW 15 Opt. 4	22	62	25	3,240[3]	36,721[4]	592	1,900	**Yes**

1. Total length of noise walls for option 3. Noise Wall 15 = 1,500 ft and Noise Wall 15.1 = 1,320 ft.
2. Total area of noise walls for option 3. Noise Wall 15 = 17,999 ft^2 and Noise Wall 15.1 = 7,922 ft^2.
3. Total length of noise walls for option 4. Noise Wall 15 = 1,800 ft and Noise Wall 15.1 = 1,440 ft.
4. Total area of noise walls for option 4. Noise Wall 15 = 25,200 ft^2 and Noise Wall 15.1 = 11,521 ft^2.

NW 3

Location: NW 3 is located east of SR 33 along the shoulder of southbound SR 162 and would provide abatement for Pellissippi Place Business Park and residents along Jackson Hills Drive.

TNM Run: NAA 3_PM
Barrier Analysis: A/B 5538 sf | 7 BR

Dimensions: Length = 2,640 ft., Avg. Height = 15 ft., Quantity = 38,765 ft^2
Impacts: 4
Benefits: 7
Minimum Attainable Quantity / Benefit: 5,538 ft^2
Allowable Quantity / Benefit: 1,900 ft^2

This noise wall does not meet TDOT reasonableness criteria because the minimum attainable quantity per benefit exceeds the allowable quantity per benefit.

Table F-2: Noise Barrier NW 3
Not Recommended
Performance
Without-Barrier and With-Barrier Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Address	NAC	Land Use	ERs	Build[1]	With-Bar	NLR
R3-1	OLD KNOXVILLE HWY	C	Park	.08[4]	67	67	0
R3-2	PELLISSIPPI PL	C	Park	.08[4]	68	68	0
R3-3	PELLISSIPPI PL	C	Park	.08[4]	60	54	6
R3-4	PELLISSIPPI PL	C	Park	.08[4]	61	55	6
R3-5	PELLISSIPPI PL	C	Park	.08[4]	66	57	9
R3-6	PELLISSIPPI PL	C	Park	.08[4]	69	58	11
R3-7	PELLISSIPPI PL	C	Park	.08[4]	72	59	13
R3-8	PELLISSIPPI PL	C	Park	.08[4]	67	58	9
R3-9	PELLISSIPPI PL	C	Park	.08[4]	63	55	8
R3-10	PELLISSIPPI PL	C	Park	.08[4]	61	54	7
R3-11	208 JACKSON HILLS DR	B	Residential	1	54	51	3
R3-12	210 JACKSON HILLS DR	B	Residential	1	53	50	3
R3-13	214 JACKSON HILLS DR	B	Residential	1	53	51	2
R3-14	218 JACKSON HILLS DR	B	Residential	1	52	49	3
R3-15	220 JACKSON HILLS DR	B	Residential	1	53	50	3
R3-16	224 JACKSON HILLS DR	B	Residential	1	53	51	2

Table F-2: Noise Barrier NW 3
Not Recommended

Performance
Without-Barrier and With-Barrier Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Address	NAC	Land Use	ERs	Build[1]	With-Bar	NLR
R3-17	228 JACKSON HILLS DR	B	Residential	1	53	50	3
R3-18	213 JACKSON HILLS DR	B	Residential	1	**57**	52	**5**
R3-19	217 JACKSON HILLS DR	B	Residential	1	56	51	**5**
R3-20	219 JACKSON HILLS DR	B	Residential	1	55	50	**5**
R3-21	221 JACKSON HILLS DR	B	Residential	1	**56**	51	**5**
R3-22	301 JACKSON HILLS DR	B	Residential	1	57	52	**5**
R3-23	305 JACKSON HILLS DR	B	Residential	1	56	53	3
R3-24	307 JACKSON HILLS DR	B	Residential	1	56	52	4
R3-25	330 PELLISSIPPI PL	C	Basketball Court	1	**59**	53	**6**
R3-26	PELLISSIPPI PL	C	Park	.08[4]	**63**	57	**6**
R3-27	PELLISSIPPI PL	C	Park	.08[4]	**63**	57	**6**
R3-28	PELLISSIPPI PL	C	Park	.08[4]	**62**	59	3
						Predicted "Build-Condition" With-Barrier Benefits:[2]	7[2]

Noise Level Impact	Substantial Increase Impact	5 to 6 dB(A) NLR	≥ 7 dB(A) NLR

1. Predicted traffic noise level impacts 1 receptors due to approaching or exceeding NAC (refer to Table 1) (6 impacted ERs x 0.08 per ER = 0.46 and was rounded to 1 impact). Predicted impacts to 4 receptors (11 impacted ERs x 0.08 per ER + 3 impacted receptors = 3.88 and was rounded to 4 impacts) are due to a predicted "substantial increase" in noise levels.

2. The optimized noise barrier NW 3 is predicted to provide at least 5 decibels (dB(A)) in noise level reduction (NLR) to 7 receptors (10 benefited ERs x 0.08 per ER + 6 benefited receptors = 6.8 and was rounded to 7 benefits.

3. The optimized noise barrier NW 3 is predicted to provide at least 7 decibels (dB(A)) in noise level reduction (NLR) to 1 receptor (6 benefited ERs x 0.08 per ER = 0.48 and was rounded to 1 benefit.

4. Pellissippi Place Business Park has 13 benches that were modeled. The equivalent receptor value equals 0.08 for a total of 1 receptor (13 ERs x 0.08 = 1 receptor).

NW 6

Location: NW 6 is located west of Wildwood Road along the shoulder of northbound SR162 and would provide abatement for residents near Mount Lebanon Road.

TNM Run: NAA 6_AM
Barrier Analysis: A/B 7526 sf | 7 BR

Dimensions: Length = 2,280 ft., Avg. Height = 23 ft., Quantity = 52,683 ft^2
Impacts: 5
Benefits: 7
Minimum Attainable Quantity / Benefit: 7,526 ft^2
Allowable Quantity / Benefit: 1,900 ft^2

This noise wall does not meet TDOT reasonableness criteria because the minimum attainable quantity per benefit exceeds the allowable quantity per benefit.

Table F-3: Noise Barrier NW 6
Not Recommended
Performance
Without-Barrier and With-Barrier Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Address	NAC	Land Use	ER	Build[1]	With-Bar	NLR
R6-1	913 MT LEBANON RD	B	Residential	1	**57**	52	**5**
R6-2	917 MT LEBANON RD	B	Residential	1	**57**	52	**5**
R6-3	919 MT LEBANON RD	B	Residential	1	56	51	**5**
R6-4	927 MT LEBANON RD	B	Residential	1	56	51	**5**
R6-5	945 MT LEBANON RD	B	Residential	1	**57**	52	**5**
R6-6	1009 MT LEBANON RD	B	Residential	1	**64**	55	**9**
R6-7	1013 MT LEBANON RD	B	Residential	1	**60**	54	**6**
R6-8	3205 WILDWOOD RD	B	Residential	1	65	64	1
						Predicted "Build-Condition" With-Barrier Benefits:[2]	7[2]

Noise Level Impact	Substantial Increase Impact	5 to 6 dB(A) NLR	≥ 7 dB(A) NLR

1. Predicted traffic noise level impacts 0 receptors due to approaching or exceeding NAC (refer to Table 2). Predicted impacts to 5 receptors are due to a predicted "substantial increase" in noise levels.

2. The optimized noise barrier NW 6 is predicted to provide at least 5 decibels (5 dB(A)) in noise level reduction (NLR) to 7 receptors.

3. The optimized noise barrier NW 6 is predicted to provide at least 7 decibels (7 dB(A)) in noise level reduction (NLR) to 1 receptor.

NW 8

Location: NW 8 is located west of Wildwood Road along the shoulder of northbound SR 162 to east of E. Brown School Road and would provide abatement for residents near E Brown School Rd.

TNM Run: NAA 8_AM
Barrier Analysis: A/B 11498 sf | 4 BR

Dimensions: Length = 3,260 ft., Avg. Height = 14 ft., Quantity = 45,992 ft^2
Impacts: 4
Benefits: 4
Minimum Attainable Quantity / Benefit: 11,498 ft^2
Allowable Quantity / Benefit: 1,900 ft^2

This noise wall does not meet TDOT reasonableness criteria because the minimum attainable quantity per benefit exceeds the allowable quantity per benefit.

Table F-4: Noise Barrier NW 8
Not Recommended
Performance
Without-Barrier and With-Barrier Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	**Address**	**NAC**	**Land Use**	**ER**	**Build[1]**	**With-Bar**	**NLR**
R6-8	3205 WILDWOOD RD	B	Residential	1	65	64	1
R8-1	3118 WILDWOOD RD	B	Residential	1	ROW	ROW	ROW
R8-2	1891 E BROWN SCHOOL RD	B	Residential	1	62	58	4
R8-3	1887 E BROWN SCHOOL RD	B	Residential	1	**62**	57	**5**
R8-4	1890 E BROWN SCHOOL RD	B	Residential	1	62	60	2
R8-5	1886 E BROWN SCHOOL RD	B	Residential	1	62	60	2
R8-6	1880 E BROWN SCHOOL RD	B	Residential	1	62	60	2
R8-7	1876 E BROWN SCHOOL RD	B	Residential	1	62	60	2
R8-8	1871 E BROWN SCHOOL RD	B	Residential	1	**62**	56	**6**
R8-9	1870 E BROWN SCHOOL RD	B	Residential	1	61	60	1
R8-10	1862 E BROWN SCHOOL RD	B	Residential	1	59	57	2
R8-11	1854 E BROWN SCHOOL RD	B	Residential	1	61	59	2
R8-12	1853 E BROWN SCHOOL RD	B	Residential	1	**61**	56	**5**
R8-13	1848 E BROWN SCHOOL RD	B	Residential	1	61	60	1
R8-14	1840 E BROWN SCHOOL RD	B	Residential	1	61	60	1
R8-15	1816 E BROWN SCHOOL RD	B	Residential	1	66	63	3
R8-16	1834 E BROWN SCHOOL RD	B	Residential	1	**57**	52	**5**
						Predicted "Build-Condition" With-Barrier Benefits:[2]	4[2]

Noise Level Impact	Substantial Increase Impact	5 to 6 dB(A) NLR	≥ 7 dB(A) NLR

Table F-4: Noise Barrier NW 8
Not Recommended

Performance
Without-Barrier and With-Barrier Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Address	NAC	Land Use	ER	Build[1]	With-Bar	NLR

1. Predicted traffic noise level impacts 0 receptors due to approaching or exceeding NAC (refer to Table 2). Predicted impacts to 4 receptors are due to a predicted "substantial increase" in noise levels.

2. The optimized noise barrier NW 8 is predicted to provide at least 5 decibels (5 dB(A)) in noise level reduction (NLR) to 4 receptors.

3. The optimized noise barrier NW 8 is predicted to provide at least 7 decibels (7 dB(A)) in noise level reduction (NLR) to 0 receptors.

NW 9

Location: NW 9 is located west of E Brown School Road along the shoulder of southbound SR162 to east of E Brown School Road and would provide abatement for residents near E Brown School Road.

TNM Run: NAA 9_PM
Barrier Analysis: A/B 9139 sf | 3 BR

Dimensions: Length = 1,909 ft., Avg. Height = 14 ft., Quantity = 27,418 ft^2
Impacts: 4
Benefits: 3
Minimum Attainable Quantity / Benefit: 9,139 ft^2
Allowable Quantity / Benefit: 1,900 ft^2

This noise wall does not meet TDOT reasonableness criteria because the minimum attainable quantity per benefit exceeds the allowable quantity per benefit.

Table F-5: Noise Barrier NW 9
Not Recommended

Performance
Without-Barrier and With-Barrier Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	**Address**	**NAC**	**Land Use**	**ER**	**Build[1]**	**With-Bar**	**NLR**
R7-3	3045 WILDWOOD RD	B	Residential	1	63	63	0
R9-1	3104 WILDWOOD RD	B	Residential	1	ROW	ROW	ROW
R9-2	3042 WILDWOOD RD	B	Residential	1	**63**	62	1
R9-3	1785 E BROWN SCHOOL RD	B	Residential	1	**65**	60	**5**
R9-4	1756 E BROWN SCHOOL RD	B	Residential	1	62	62	0
R9-5	1763 E BROWN SCHOOL RD	B	Residential	1	64	63	1
R9-6	1772 E BROWN SCHOOL RD	B	Residential	1	**63**	58	**5**
R9-7	1780 E BROWN SCHOOL RD	B	Residential	1	**64**	59	**5**
						Predicted "Build-Condition" With-Barrier Benefits:[2]	3^2

Noise Level Impact	Substantial Increase Impact	5 to 6 dB(A) NLR	≥ 7 dB(A) NLR

1. Predicted traffic noise level impacts 0 receptors due to approaching or exceeding NAC (refer to Table 2). Predicted impacts to 4 receptors are due to a predicted "substantial increase" in noise levels.

2. The optimized noise barrier NW 9 is predicted to provide at least 5 decibels (5 dB(A)) in noise level reduction (NLR) to 3 receptors.

3. The optimized noise barrier NW 9 is predicted to provide at least 7 decibels (7 dB(A)) in noise level reduction (NLR) to 0 receptors.

NW 11

Location: NW 11 is located north of Davis Ford Road along the shoulder of southbound SR 162 and would provide abatement for residents near Davis Ford Road.

TNM Run: NAA 11_PM
Barrier Analysis: A/B 2550 sf | 3 BR

Dimensions: Length = 600 ft., Avg. Height = 13 ft., Quantity = 7,650 ft^2
Impacts: 5
Benefits: 3
Minimum Attainable Quantity / Benefit: 2,550 ft^2
Allowable Quantity / Benefit: 1,900 ft^2

This noise wall does not meet TDOT reasonableness criteria because the minimum attainable quantity per benefit exceeds the allowable quantity per benefit.

Table F-6: Noise Barrier NW 11
Not Recommended

Performance
Without-Barrier and With-Barrier Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Address	NAC	Land Use	ER	Build[1]	With-Bar	NLR
R11-1	3025 DAVIS FORD RD	B	Residential	1	**59**	58	1
R11-2	3033 DAVIS FORD RD	B	Residential	1	**62**	57	**5**
R11-3	3039 DAVIS FORD RD	B	Residential	1	**65**	59	**6**
R11-4	3047 DAVIS FORD RD	B	Residential	1	**69**	61	**8**
R12-1	3020 DAVIS FORD RD	B	Residential	1	**57**	57	0
					Predicted "Build-Condition" With-Barrier Benefits:[2]		3[2]

Noise Level Impact	Substantial Increase Impact	5 to 6 dB(A) NLR	≥ 7 dB(A) NLR

1. Predicted traffic noise level impacts 1 receptor due to approaching or exceeding NAC (refer to Table 2). Predicted impacts to 5 receptors are due to a predicted "substantial increase" in noise levels.

2. The optimized noise barrier NW 11 is predicted to provide at least 5 decibels (5 dB(A)) in noise level reduction (NLR) to 3 receptors.

3. The optimized noise barrier NW 11 is predicted to provide at least 7 decibels (7 dB(A)) in noise level reduction (NLR) to 1 receptor.

NW 14

Location: NW 14 is located south of Davis Ford Road along the shoulder of northbound SR 162 and would provide abatement for residents near Centennial Church Road and Old Plantation Way.

TNM Run: NAA 14_AM
Barrier Analysis: A/B 3189 sf | 7 BR

Dimensions: Length = 1,440 ft., Avg. Height = 16 ft., Quantity = 22,321 ft^2
Impacts: 7
Benefits: 7
Minimum Attainable Quantity / Benefit: 3,189 ft^2
Allowable Quantity / Benefit: 1,900 ft^2

This noise wall does not meet TDOT reasonableness criteria because the minimum attainable quantity per benefit exceeds the allowable quantity per benefit.

Table F-7: Noise Barrier NW 14
Not Recommended
Performance
Without-Barrier and With-Barrier Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Address	NAC	Land Use	ER	Build[1]	With-Bar	NLR
R13-1	3131 DAVIS FORD RD	B	Residential	1	59	59	0
R13-2	3145 DAVIS FORD RD	B	Residential	1	57	56	1
R13-3	909 NINA DELOZIER RD	B	Residential	1	53	53	0
R13-4	913 NINA DELOZIER RD	B	Residential	1	55	55	0
R14-1	3134 DAVIS FORD RD	B	Residential	1	61	60	1
R14-2	3212 CENTENNIAL CHURCH RD	B	Residential	1	55	53	2
R14-3	3421 OLD PLANTATION WAY	B	Residential	1	53	51	2
R14-4	3412 OLD PLANTATION WAY	B	Residential	1	55	53	2
R14-5	3228 CENTENNIAL CHURCH RD	B	Residential	1	**61**	56	**5**
R14-6	3401 OLD PLANTATION WAY	B	Residential	1	**60**	55	**5**
R14-7	3384 OLD PLANTATION WAY	B	Residential	1	56	53	3
R14-8	3380 OLD PLANTATION WAY	B	Residential	1	**58**	53	**5**
R14-9	3376 OLD PLANTATION WAY	B	Residential	1	**58**	53	**5**
R14-10	3372 OLD PLANTATION WAY	B	Residential	1	**58**	53	**5**
R14-11	3367 OLD PLANTATION WAY	B	Residential	1	**61**	56	**5**
R14-12	225 CENTENNIAL CHURCH RD	B	Residential	1	**62**	57	**5**
						Predicted "Build-Condition" With-Barrier Benefits:[2]	7[2]

Noise Level Impact	Substantial Increase Impact	5 to 6 dB(A) NLR	≥ 7 dB(A) NLR

Table F-7: Noise Barrier NW 14
Not Recommended

Performance
Without-Barrier and With-Barrier Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Address	NAC	Land Use	ER	Build[1]	With-Bar	NLR

1. Predicted traffic noise level impacts 0 receptors due to approaching or exceeding NAC (refer to Table 2). Predicted impacts to 7 receptors are due to a predicted "substantial increase" in noise levels.

2. The optimized noise barrier NW 14 is predicted to provide at least 5 decibels (5 dB(A)) in noise level reduction (NLR) to 7 receptors.

3. The optimized noise barrier NW 14 is predicted to provide at least 7 decibels (7 dB(A)) in noise level reduction (NLR) to 0 receptors.

NW 15 Opt. 1

Location: NW 15 is located north of US 321 along the shoulder of southbound SR 162 and would provide abatement for the Kensington Place Mobile Home Park residents.

TNM Run: NAA 15_PM
Barrier Analysis: NW 15 Opt. 1

Dimensions: Length = 1,200 ft., Avg. Height = 18 ft., Quantity = 21,600 ft^2
Impacts: 22
Benefits: 28
Minimum Attainable Quantity / Benefit: 771 ft^2
Allowable Quantity / Benefit: 1,900 ft^2

This noise wall does meet TDOT feasibility and reasonableness criteria.

Table F-8: Noise Barrier NW 15 Opt. 1
Recommended
Performance
Without-Barrier and With-Barrier Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Address	NAC	Land Use	ER	Build[1]	With-Bar	NLR
R15-1	626 HEPATICA DR	B	Residential	1	**63**	60	3
R15-2	628 HEPATICA DR	B	Residential	1	**65**	60	**5**
R15-3	630 HEPATICA DR	B	Residential	1	**65**	60	**5**
R15-4	632 HEPATICA DR	B	Residential	1	**66**	58	**8**
R15-5	634 HEPATICA DR	B	Residential	1	**65**	57	**8**
R15-6	636 HEPATICA DR	B	Residential	1	ROW	ROW	ROW
R15-7	638 HEPATICA DR	B	Residential	1	ROW	ROW	ROW
R15-8	640 HEPATICA DR	B	Residential	1	ROW	ROW	ROW
R15-9	625 HEPATICA DR	B	Residential	1	**62**	59	3
R15-10	627 HEPATICA DR	B	Residential	1	61	56	**5**
R15-11	629 HEPATICA DR	B	Residential	1	**62**	54	**8**
R15-12	631 HEPATICA DR	B	Residential	1	**62**	55	**7**
R15-13	633 HEPATICA DR	B	Residential	1	**62**	54	**8**
R15-14	635 HEPATICA DR	B	Residential	1	**63**	54	**9**
R15-15	637 HEPATICA DR	B	Residential	1	**65**	56	**9**
R15-16	639 HEPATICA DR	B	Residential	1	ROW	ROW	ROW
R15-17	526 AZALEA DR	B	Residential	1	59	55	4
R15-18	528 AZALEA DR	B	Residential	1	59	53	**6**
R15-19	530 AZALEA DR	B	Residential	1	60	53	**7**
R15-20	532 AZALEA DR	B	Residential	1	60	54	**6**
R15-21	534 AZALEA DR	B	Residential	1	61	54	**7**
R15-22	536 AZALEA DR	B	Residential	1	**62**	54	**8**
R15-23	538 AZALEA DR	B	Residential	1	**63**	55	**8**
R15-24	540 AZALEA DR	B	Residential	1	**63**	55	**8**
R15-25	542 AZALEA DR	B	Residential	1	**64**	56	**8**
R15-26	525 AZALEA DR	B	Residential	1	59	56	3

Table F-8: Noise Barrier NW 15 Opt. 1
Recommended

Performance
Without-Barrier and With-Barrier Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Address	NAC	Land Use	ER	Build[1]	With-Bar	NLR
R15-27	527 AZALEA DR	B	Residential	1	59	55	4
R15-28	529 AZALEA DR	B	Residential	1	59	55	4
R15-29	531 AZALEA DR	B	Residential	1	59	54	**5**
R15-30	533 AZALEA DR	B	Residential	1	60	55	**5**
R15-31	535 AZALEA DR	B	Residential	1	61	55	**6**
R15-32	537 AZALEA DR	B	Residential	1	61	55	**6**
R15-33	539 AZALEA DR	B	Residential	1	61	55	**6**
R15-34	541 AZALEA DR	B	Residential	1	**63**	58	**5**
R15-35	426 MISTLETOE DR	B	Residential	1	57	55	2
R15-36	428 MISTLETOE DR	B	Residential	1	59	55	4
R15-37	430 MISTLETOE DR	B	Residential	1	59	54	**5**
R15-38	432 MISTLETOE DR	B	Residential	1	58	53	**5**
R15-39	434 MISTLETOE DR	B	Residential	1	58	54	4
R15-40	436 MISTLETOE DR	B	Residential	1	59	55	4
R15-41	438 MISTLETOE DR	B	Residential	1	60	56	4
R15-42	440 MISTLETOE DR	B	Residential	1	61	56	**5**
R15-43	442 MISTLETOE DR	B	Residential	1	**63**	59	4
R15-44	444 MISTLETOE DR	B	Residential	1	**63**	58	**5**
R15-45	446 MISTLETOE DR	B	Residential	1	**63**	59	4
R15-46	448 MISTLETOE DR	B	Residential	1	**64**	60	4
R15-47	425 MISTLETOE DR	B	Residential	1	55	53	2
R15-48	427 MISTLETOE DR	B	Residential	1	58	54	4
R15-49	429 MISTLETOE DR	B	Residential	1	57	55	2
R15-50	431 MISTLETOE DR	B	Residential	1	58	56	2
R15-51	433 MISTLETOE DR	B	Residential	1	59	56	3
R15-52	437 MISTLETOE DR	B	Residential	1	58	56	2
R15-53	439 MISTLETOE DR	B	Residential	1	58	56	2
R15-54	441 MISTLETOE DR	B	Residential	1	59	57	2
R15-55	443 MISTLETOE DR	B	Residential	1	60	58	2
R15-56	445 MISTLETOE DR	B	Residential	1	61	59	2
R15-57	447 MISTLETOE DR	B	Residential	1	61	59	2
R15-58	449 MISTLETOE DR	B	Residential	1	**63**	61	2
R15-59	326 TEABERRY DR	B	Residential	1	55	54	1
R15-60	328 TEABERRY DR	B	Residential	1	55	54	1
R15-61	330 TEABERRY DR	B	Residential	1	55	53	2
R15-62	332 TEABERRY DR	B	Residential	1	61	58	3
R15-63	334 TEABERRY DR	B	Residential	1	58	56	2
R15-64	336 TEABERRY DR	B	Residential	1	58	56	2
R15-65	338 TEABERRY DR	B	Residential	1	57	55	2
R15-66	340 TEABERRY DR	B	Residential	1	60	58	2
R15-67	342 TEABERRY DR	B	Residential	1	60	58	2
R15-68	344 TEABERRY DR	B	Residential	1	59	58	1

Table F-8: Noise Barrier NW 15 Opt. 1
Recommended

Performance
Without-Barrier and With-Barrier Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Address	NAC	Land Use	ER	Build[1]	With-Bar	NLR
R15-69	346 TEABERRY DR	B	Residential	1	**62**	61	1
R15-70	327 TEABERRY DR	B	Residential	1	54	53	1
R15-71	329 TEABERRY DR	B	Residential	1	54	53	1
R15-72	331 TEABERRY DR	B	Residential	1	55	54	1
R15-73	333 TEABERRY DR	B	Residential	1	57	55	2
R15-74	335 TEABERRY DR	B	Residential	1	56	54	2
R15-75	337 TEABERRY DR	B	Residential	1	55	53	2
R15-76	339 TEABERRY DR	B	Residential	1	55	54	1
R15-77	341 TEABERRY DR	B	Residential	1	58	57	1
R15-78	343 TEABERRY DR	B	Residential	1	58	57	1
R15-79	345 TEABERRY DR	B	Residential	1	60	60	0
R15-80	228 SILVERBELL DR	B	Residential	1	54	53	1
R15-81	230 SILVERBELL DR	B	Residential	1	55	54	1
R15-82	232 SILVERBELL DR	B	Residential	1	56	55	1
R15-83	234 SILVERBELL DR	B	Residential	1	53	52	1
R15-84	236 SILVERBELL DR	B	Residential	1	53	52	1
R15-85	238 SILVERBELL DR	B	Residential	1	54	53	1
R15-86	240 SILVERBELL DR	B	Residential	1	56	55	1
R15-87	242 SILVERBELL DR	B	Residential	1	56	55	1
R15-88	244 SILVERBELL DR	B	Residential	1	57	57	0
R15-89	225 SILVERBELL DR	B	Residential	1	52	**52**	0
R15-90	227 SILVERBELL DR	B	Residential	1	53	**52**	1
R15-91	229 SILVERBELL DR	B	Residential	1	53	**52**	1
R15-92	231 SILVERBELL DR	B	Residential	1	54	52	2
R15-93	233 SILVERBELL DR	B	Residential	1	53	**52**	1
R15-94	235 SILVERBELL DR	B	Residential	1	54	53	1
R15-95	237 SILVERBELL DR	B	Residential	1	55	53	2
R15-96	239 SILVERBELL DR	B	Residential	1	57	56	1
R15-97	241 SILVERBELL DR	B	Residential	1	58	57	1
R15-98	124 DEWBERRY DR	B	Residential	1	52	**52**	0
R15-99	126 DEWBERRY DR	B	Residential	1	52	**52**	0
R15-100	128 DEWBERRY DR	B	Residential	1	53	52	1
R15-101	130 DEWBERRY DR	B	Residential	1	53	53	0
R15-102	132 DEWBERRY DR	B	Residential	1	54	54	0
R15-103	134 DEWBERRY DR	B	Residential	1	55	54	1
R15-104	136 DEWBERRY DR	B	Residential	1	56	55	1
R15-105	138 DEWBERRY DR	B	Residential	1	56	55	1
R15-106	140 DEWBERRY DR	B	Residential	1	56	55	1
R15-107	142 DEWBERRY DR	B	Residential	1	55	54	1
R15-108	123 DEWBERRY DR	B	Residential	1	54	53	1
R15-109	125 DEWBERRY DR	B	Residential	1	54	54	0
R15-110	127 DEWBERRY DR	B	Residential	1	55	54	1

Table F-8: Noise Barrier NW 15 Opt. 1
Recommended

Performance
Without-Barrier and With-Barrier Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Address	NAC	Land Use	ER	Build[1]	With-Bar	NLR
R15-111	129 DEWBERRY DR	B	Residential	1	55	55	0
R15-112	131 DEWBERRY DR	B	Residential	1	55	55	0
R15-113	133 DEWBERRY DR	B	Residential	1	58	57	1
R15-114	198 SWEETPEA	B	Residential	1	59	58	1
R15-115	196 SWEETPEA	B	Residential	1	58	57	1
R15-116	194 SWEETPEA	B	Residential	1	57	56	1
R15-117	192 SWEETPEA	B	Residential	1	56	55	1
R15-118	146 DEWBERRY DR	B	Residential	1	58	57	1
R15-119	148 DEWBERRY DR	B	Residential	1	59	59	0
R15-120	150 DEWBERRY DR	B	Residential	1	61	61	0
R15-121	152 DEWBERRY DR	B	Residential	1	63	63	0
R15-122	135 DEWBERRY DR	B	Residential	1	57	57	0
R15-123	137 DEWBERRY DR	B	Residential	1	58	57	1
R15-124	139 DEWBERRY DR	B	Residential	1	58	58	0
R15-125	141 DEWBERRY DR	B	Residential	1	59	59	0
R15-126	143 DEWBERRY DR	B	Residential	1	59	59	0
R15-127	145 DEWBERRY DR	B	Residential	1	60	60	0
R15-128	147 DEWBERRY DR	B	Residential	1	61	61	0
R15-129	149 DEWBERRY DR	B	Residential	1	64	64	0
R15-130	3325 E LAMAR ALEX PKWY	B	Residential	1	ROW	ROW	ROW
R15-131	3327 E LAMAR ALEX PKWY	B	Residential	1	ROW	ROW	ROW
R15-132	3335 E LAMAR ALEX PKWY	B	Residential	1	ROW	ROW	ROW
R15-133	3335 E LAMAR ALEX PKWY	B	Residential	1	ROW	ROW	ROW
					Predicted "Build-Condition" With-Barrier Benefits:[2]		28[2]

Noise Level Impact	Substantial Increase Impact	5 to 6 dB(A) NLR	≥ 7 dB(A) NLR

Ambient Noise Measurement[4]

1. Predicted traffic noise level impacts 1 receptor due to approaching or exceeding NAC (refer to Table 2). Predicted impacts to 22 receptors are due to a predicted "substantial increase" in noise levels.

2. The optimized noise barrier NW 15 is predicted to provide at least 5 decibels (5 dB(A)) in noise level reduction (NLR) to 28 receptors.

3. The optimized noise barrier NW 15 is predicted to provide at least 7 decibels (7 dB(A)) in noise level reduction (NLR) to 13 receptors.

4. Ambient noise measurement of 52 decibels dB(A) was used when with-barrier sound levels were less than 52 decibels.

NW 15 Opt. 2

Location: NW 15 is located north of US 321 along the shoulder of southbound SR 162 and would provide abatement for the Kensington Place Mobile Home Park residents.

TNM Run: NAA 15_PM
Barrier Analysis: NW 15 Opt. 2

Dimensions: Length = 1,500 ft., Avg. Height = 20 ft., Quantity = 29,998 ft^2
Impacts: 22
Benefits: 40
Minimum Attainable Quantity / Benefit: 750 ft^2
Allowable Quantity / Benefit: 1,900 ft^2

This noise wall does meet TDOT feasibility and reasonableness criteria.

Table F-9: Noise Barrier NW 15 Opt. 2
Recommended
Performance
Without-Barrier and With-Barrier Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Address	NAC	Land Use	ER	Build[1]	With-Bar	NLR
R15-1	626 HEPATICA DR	B	Residential	1	**63**	58	**5**
R15-2	628 HEPATICA DR	B	Residential	1	**65**	58	**7**
R15-3	630 HEPATICA DR	B	Residential	1	**65**	58	**7**
R15-4	632 HEPATICA DR	B	Residential	1	**66**	57	**9**
R15-5	634 HEPATICA DR	B	Residential	1	**65**	56	**9**
R15-6	636 HEPATICA DR	B	Residential	1	ROW	ROW	ROW
R15-7	638 HEPATICA DR	B	Residential	1	ROW	ROW	ROW
R15-8	640 HEPATICA DR	B	Residential	1	ROW	ROW	ROW
R15-9	625 HEPATICA DR	B	Residential	1	**62**	57	**5**
R15-10	627 HEPATICA DR	B	Residential	1	61	55	**6**
R15-11	629 HEPATICA DR	B	Residential	1	**62**	53	**9**
R15-12	631 HEPATICA DR	B	Residential	1	**62**	55	**7**
R15-13	633 HEPATICA DR	B	Residential	1	**62**	53	**9**
R15-14	635 HEPATICA DR	B	Residential	1	**63**	53	**10**
R15-15	637 HEPATICA DR	B	Residential	1	**65**	56	**9**
R15-16	639 HEPATICA DR	B	Residential	1	ROW	ROW	ROW
R15-17	526 AZALEA DR	B	Residential	1	59	53	**6**
R15-18	528 AZALEA DR	B	Residential	1	59	52	**7**
R15-19	530 AZALEA DR	B	Residential	1	60	52	**8**
R15-20	532 AZALEA DR	B	Residential	1	60	53	**7**
R15-21	534 AZALEA DR	B	Residential	1	61	53	**8**
R15-22	536 AZALEA DR	B	Residential	1	**62**	54	**8**
R15-23	538 AZALEA DR	B	Residential	1	**63**	54	**9**
R15-24	540 AZALEA DR	B	Residential	1	**63**	54	**9**
R15-25	542 AZALEA DR	B	Residential	1	**64**	56	**8**
R15-26	525 AZALEA DR	B	Residential	1	59	55	4

Table F-9: Noise Barrier NW 15 Opt. 2
Recommended

Performance
Without-Barrier and With-Barrier Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Address	NAC	Land Use	ER	Build[1]	With-Bar	NLR
R15-27	527 AZALEA DR	B	Residential	1	59	53	6
R15-28	529 AZALEA DR	B	Residential	1	59	53	6
R15-29	531 AZALEA DR	B	Residential	1	59	54	5
R15-30	533 AZALEA DR	B	Residential	1	60	54	6
R15-31	535 AZALEA DR	B	Residential	1	61	54	7
R15-32	537 AZALEA DR	B	Residential	1	61	54	7
R15-33	539 AZALEA DR	B	Residential	1	61	55	6
R15-34	541 AZALEA DR	B	Residential	1	63	58	5
R15-35	426 MISTLETOE DR	B	Residential	1	57	54	3
R15-36	428 MISTLETOE DR	B	Residential	1	59	54	5
R15-37	430 MISTLETOE DR	B	Residential	1	59	53	6
R15-38	432 MISTLETOE DR	B	Residential	1	58	52	6
R15-39	434 MISTLETOE DR	B	Residential	1	58	54	4
R15-40	436 MISTLETOE DR	B	Residential	1	59	54	5
R15-41	438 MISTLETOE DR	B	Residential	1	60	55	5
R15-42	440 MISTLETOE DR	B	Residential	1	61	56	5
R15-43	442 MISTLETOE DR	B	Residential	1	63	57	6
R15-44	444 MISTLETOE DR	B	Residential	1	63	57	6
R15-45	446 MISTLETOE DR	B	Residential	1	63	58	5
R15-46	448 MISTLETOE DR	B	Residential	1	64	59	5
R15-47	425 MISTLETOE DR	B	Residential	1	55	53	2
R15-48	427 MISTLETOE DR	B	Residential	1	58	53	5
R15-49	429 MISTLETOE DR	B	Residential	1	57	54	3
R15-50	431 MISTLETOE DR	B	Residential	1	58	55	3
R15-51	433 MISTLETOE DR	B	Residential	1	59	55	4
R15-52	437 MISTLETOE DR	B	Residential	1	58	55	3
R15-53	439 MISTLETOE DR	B	Residential	1	58	55	3
R15-54	441 MISTLETOE DR	B	Residential	1	59	56	3
R15-55	443 MISTLETOE DR	B	Residential	1	60	57	3
R15-56	445 MISTLETOE DR	B	Residential	1	61	58	3
R15-57	447 MISTLETOE DR	B	Residential	1	61	58	3
R15-58	449 MISTLETOE DR	B	Residential	1	63	60	3
R15-59	326 TEABERRY DR	B	Residential	1	55	54	1
R15-60	328 TEABERRY DR	B	Residential	1	55	54	1
R15-61	330 TEABERRY DR	B	Residential	1	55	52	3
R15-62	332 TEABERRY DR	B	Residential	1	61	58	3
R15-63	334 TEABERRY DR	B	Residential	1	58	55	3
R15-64	336 TEABERRY DR	B	Residential	1	58	55	3
R15-65	338 TEABERRY DR	B	Residential	1	57	55	2
R15-66	340 TEABERRY DR	B	Residential	1	60	57	3
R15-67	342 TEABERRY DR	B	Residential	1	60	57	3
R15-68	344 TEABERRY DR	B	Residential	1	59	57	2

Table F-9: Noise Barrier NW 15 Opt. 2
Recommended

Performance
Without-Barrier and With-Barrier Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Address	NAC	Land Use	ER	Build[1]	With-Bar	NLR
R15-69	346 TEABERRY DR	B	Residential	1	**62**	60	2
R15-70	327 TEABERRY DR	B	Residential	1	54	52	2
R15-71	329 TEABERRY DR	B	Residential	1	54	52	2
R15-72	331 TEABERRY DR	B	Residential	1	55	54	1
R15-73	333 TEABERRY DR	B	Residential	1	57	55	2
R15-74	335 TEABERRY DR	B	Residential	1	56	54	2
R15-75	337 TEABERRY DR	B	Residential	1	55	53	2
R15-76	339 TEABERRY DR	B	Residential	1	55	54	1
R15-77	341 TEABERRY DR	B	Residential	1	58	57	1
R15-78	343 TEABERRY DR	B	Residential	1	58	56	2
R15-79	345 TEABERRY DR	B	Residential	1	60	59	1
R15-80	228 SILVERBELL DR	B	Residential	1	54	53	1
R15-81	230 SILVERBELL DR	B	Residential	1	55	54	1
R15-82	232 SILVERBELL DR	B	Residential	1	56	55	1
R15-83	234 SILVERBELL DR	B	Residential	1	53	52	1
R15-84	236 SILVERBELL DR	B	Residential	1	53	52	1
R15-85	238 SILVERBELL DR	B	Residential	1	54	53	1
R15-86	240 SILVERBELL DR	B	Residential	1	56	55	1
R15-87	242 SILVERBELL DR	B	Residential	1	56	55	1
R15-88	244 SILVERBELL DR	B	Residential	1	57	57	0
R15-89	225 SILVERBELL DR	B	Residential	1	52	**52**	0
R15-90	227 SILVERBELL DR	B	Residential	1	53	**52**	1
R15-91	229 SILVERBELL DR	B	Residential	1	53	**52**	1
R15-92	231 SILVERBELL DR	B	Residential	1	54	**52**	2
R15-93	233 SILVERBELL DR	B	Residential	1	53	**52**	1
R15-94	235 SILVERBELL DR	B	Residential	1	54	52	2
R15-95	237 SILVERBELL DR	B	Residential	1	55	53	2
R15-96	239 SILVERBELL DR	B	Residential	1	57	56	1
R15-97	241 SILVERBELL DR	B	Residential	1	58	57	1
R15-98	124 DEWBERRY DR	B	Residential	1	52	**52**	0
R15-99	126 DEWBERRY DR	B	Residential	1	52	**52**	0
R15-100	128 DEWBERRY DR	B	Residential	1	53	52	1
R15-101	130 DEWBERRY DR	B	Residential	1	53	52	1
R15-102	132 DEWBERRY DR	B	Residential	1	54	54	0
R15-103	134 DEWBERRY DR	B	Residential	1	55	54	1
R15-104	136 DEWBERRY DR	B	Residential	1	56	55	1
R15-105	138 DEWBERRY DR	B	Residential	1	56	55	1
R15-106	140 DEWBERRY DR	B	Residential	1	56	55	1
R15-107	142 DEWBERRY DR	B	Residential	1	55	54	1
R15-108	123 DEWBERRY DR	B	Residential	1	54	53	1
R15-109	125 DEWBERRY DR	B	Residential	1	54	54	0
R15-110	127 DEWBERRY DR	B	Residential	1	55	54	1

Table F-9: Noise Barrier NW 15 Opt. 2
Recommended

Performance
Without-Barrier and With-Barrier Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Address	NAC	Land Use	ER	Build[1]	With-Bar	NLR
R15-111	129 DEWBERRY DR	B	Residential	1	55	55	0
R15-112	131 DEWBERRY DR	B	Residential	1	55	55	0
R15-113	133 DEWBERRY DR	B	Residential	1	58	57	1
R15-114	198 SWEETPEA	B	Residential	1	59	58	1
R15-115	196 SWEETPEA	B	Residential	1	58	57	1
R15-116	194 SWEETPEA	B	Residential	1	57	56	1
R15-117	192 SWEETPEA	B	Residential	1	56	55	1
R15-118	146 DEWBERRY DR	B	Residential	1	58	57	1
R15-119	148 DEWBERRY DR	B	Residential	1	59	59	0
R15-120	150 DEWBERRY DR	B	Residential	1	61	61	0
R15-121	152 DEWBERRY DR	B	Residential	1	63	62	1
R15-122	135 DEWBERRY DR	B	Residential	1	57	57	0
R15-123	137 DEWBERRY DR	B	Residential	1	58	57	1
R15-124	139 DEWBERRY DR	B	Residential	1	58	58	0
R15-125	141 DEWBERRY DR	B	Residential	1	59	58	1
R15-126	143 DEWBERRY DR	B	Residential	1	59	59	0
R15-127	145 DEWBERRY DR	B	Residential	1	60	59	1
R15-128	147 DEWBERRY DR	B	Residential	1	61	61	0
R15-129	149 DEWBERRY DR	B	Residential	1	64	64	0
R15-130	3325 E LAMAR ALEX PKWY	B	Residential	1	ROW	ROW	ROW
R15-131	3327 E LAMAR ALEX PKWY	B	Residential	1	ROW	ROW	ROW
R15-132	3335 E LAMAR ALEX PKWY	B	Residential	1	ROW	ROW	ROW
R15-133	3335 E LAMAR ALEX PKWY	B	Residential	1	ROW	ROW	ROW
					Predicted "Build-Condition" With-Barrier Benefits:[2]		40[2]

Noise Level Impact	Substantial Increase Impact	5 to 6 dB(A) NLR	≥ 7 dB(A) NLR

Ambient Noise Measurement[4]

1. Predicted traffic noise level impacts 1 receptor due to approaching or exceeding NAC (refer to Table 2). Predicted impacts to 22 receptors are due to a predicted "substantial increase" in noise levels.

2. The optimized noise barrier NW 15 is predicted to provide at least 5 decibels (5 dB(A)) in noise level reduction (NLR) to 40 receptors.

3. The optimized noise barrier NW 15 is predicted to provide at least 7 decibels (7 dB(A)) in noise level reduction (NLR) to 19 receptors.

4. Ambient noise measurement of 52 decibels dB(A) was used when with-barrier sound levels were less than 52 decibels.

NW 15 Opt. 3

Location: NW 15 and NW 15.1 are located north of US 321 along the shoulders of southbound SR162 and would provide abatement for the Kensington Place Mobile Home Park residents.

TNM Run: NAA 15_PM
Barrier Analysis: NW 15 Opt. 3

Dimensions: Total Length = 2,820 ft. (NW15 = 1,500 ft. and NW15.1 = 1,320 ft.)
Avg. Height = 9 ft. (NW15 = 12 ft. and NW15.1 = 6 ft.)
Total Quantity = 25,921 ft^2 (NW15 = 17,999 ft^2 and NW15.1 = 7,922 ft^2)
Impacts: 22
Benefits: 42
Minimum Attainable Quantity / Benefit: 617 ft^2
Allowable Quantity / Benefit: 1,900 ft^2

This noise wall does meet TDOT feasibility and reasonableness criteria.

Table F-10: Noise Barrier NW 15 Opt. 3 Recommended

Performance Without-Barrier and With-Barrier Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Address	NAC	Land Use	ER	Build[1]	With-Bar	NLR
R15-1	626 HEPATICA DR	B	Residential	1	**63**	59	4
R15-2	628 HEPATICA DR	B	Residential	1	**65**	59	**6**
R15-3	630 HEPATICA DR	B	Residential	1	**65**	59	**6**
R15-4	632 HEPATICA DR	B	Residential	1	**66**	58	**8**
R15-5	634 HEPATICA DR	B	Residential	1	**65**	57	**8**
R15-6	636 HEPATICA DR	B	Residential	1	ROW	ROW	ROW
R15-7	638 HEPATICA DR	B	Residential	1	ROW	ROW	ROW
R15-8	640 HEPATICA DR	B	Residential	1	ROW	ROW	ROW
R15-9	625 HEPATICA DR	B	Residential	1	**62**	58	4
R15-10	627 HEPATICA DR	B	Residential	1	61	56	**5**
R15-11	629 HEPATICA DR	B	Residential	1	**62**	56	**6**
R15-12	631 HEPATICA DR	B	Residential	1	**62**	56	**6**
R15-13	633 HEPATICA DR	B	Residential	1	**62**	56	**6**
R15-14	635 HEPATICA DR	B	Residential	1	**63**	56	**7**
R15-15	637 HEPATICA DR	B	Residential	1	**65**	57	**8**
R15-16	639 HEPATICA DR	B	Residential	1	ROW	ROW	ROW
R15-17	526 AZALEA DR	B	Residential	1	59	54	**5**
R15-18	528 AZALEA DR	B	Residential	1	59	54	**5**
R15-19	530 AZALEA DR	B	Residential	1	60	54	**6**
R15-20	532 AZALEA DR	B	Residential	1	60	55	**5**
R15-21	534 AZALEA DR	B	Residential	1	61	55	**6**
R15-22	536 AZALEA DR	B	Residential	1	**62**	56	**6**
R15-23	538 AZALEA DR	B	Residential	1	**63**	56	**7**
R15-24	540 AZALEA DR	B	Residential	1	**63**	56	**7**
R15-25	542 AZALEA DR	B	Residential	1	**64**	57	**7**

Table F-10: Noise Barrier NW 15 Opt. 3
Recommended

Performance
Without-Barrier and With-Barrier Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Address	NAC	Land Use	ER	Build[1]	With-Bar	NLR
R15-26	525 AZALEA DR	B	Residential	1	59	56	3
R15-27	527 AZALEA DR	B	Residential	1	59	55	4
R15-28	529 AZALEA DR	B	Residential	1	59	55	4
R15-29	531 AZALEA DR	B	Residential	1	59	54	**5**
R15-30	533 AZALEA DR	B	Residential	1	60	55	**5**
R15-31	535 AZALEA DR	B	Residential	1	61	55	**6**
R15-32	537 AZALEA DR	B	Residential	1	61	56	**5**
R15-33	539 AZALEA DR	B	Residential	1	61	55	**6**
R15-34	541 AZALEA DR	B	Residential	1	**63**	57	**6**
R15-35	426 MISTLETOE DR	B	Residential	1	57	54	3
R15-36	428 MISTLETOE DR	B	Residential	1	59	54	**5**
R15-37	430 MISTLETOE DR	B	Residential	1	59	54	**5**
R15-38	432 MISTLETOE DR	B	Residential	1	58	53	**5**
R15-39	434 MISTLETOE DR	B	Residential	1	58	53	**5**
R15-40	436 MISTLETOE DR	B	Residential	1	59	54	**5**
R15-41	438 MISTLETOE DR	B	Residential	1	60	55	**5**
R15-42	440 MISTLETOE DR	B	Residential	1	61	55	**6**
R15-43	442 MISTLETOE DR	B	Residential	1	**63**	57	**6**
R15-44	444 MISTLETOE DR	B	Residential	1	**63**	57	**6**
R15-45	446 MISTLETOE DR	B	Residential	1	**63**	57	**6**
R15-46	448 MISTLETOE DR	B	Residential	1	**64**	59	**5**
R15-47	425 MISTLETOE DR	B	Residential	1	55	52	3
R15-48	427 MISTLETOE DR	B	Residential	1	58	53	**5**
R15-49	429 MISTLETOE DR	B	Residential	1	57	54	3
R15-50	431 MISTLETOE DR	B	Residential	1	58	54	4
R15-51	433 MISTLETOE DR	B	Residential	1	59	55	4
R15-52	437 MISTLETOE DR	B	Residential	1	58	54	4
R15-53	439 MISTLETOE DR	B	Residential	1	58	54	4
R15-54	441 MISTLETOE DR	B	Residential	1	59	54	**5**
R15-55	443 MISTLETOE DR	B	Residential	1	60	56	4
R15-56	445 MISTLETOE DR	B	Residential	1	61	56	**5**
R15-57	447 MISTLETOE DR	B	Residential	1	61	56	**5**
R15-58	449 MISTLETOE DR	B	Residential	1	**63**	59	4
R15-59	326 TEABERRY DR	B	Residential	1	55	52	3
R15-60	328 TEABERRY DR	B	Residential	1	55	52	3
R15-61	330 TEABERRY DR	B	Residential	1	55	**52**	3
R15-62	332 TEABERRY DR	B	Residential	1	61	57	4
R15-63	334 TEABERRY DR	B	Residential	1	58	53	**5**
R15-64	336 TEABERRY DR	B	Residential	1	58	54	4
R15-65	338 TEABERRY DR	B	Residential	1	57	53	4
R15-66	340 TEABERRY DR	B	Residential	1	60	55	**5**
R15-67	342 TEABERRY DR	B	Residential	1	60	56	4

Table F-10: Noise Barrier NW 15 Opt. 3
Recommended

Performance
Without-Barrier and With-Barrier Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Address	NAC	Land Use	ER	Build[1]	With-Bar	NLR
R15-68	344 TEABERRY DR	B	Residential	1	59	56	3
R15-69	346 TEABERRY DR	B	Residential	1	**62**	58	4
R15-70	327 TEABERRY DR	B	Residential	1	54	52	2
R15-71	329 TEABERRY DR	B	Residential	1	54	**52**	2
R15-72	331 TEABERRY DR	B	Residential	1	55	52	3
R15-73	333 TEABERRY DR	B	Residential	1	57	53	4
R15-74	335 TEABERRY DR	B	Residential	1	56	53	3
R15-75	337 TEABERRY DR	B	Residential	1	55	52	3
R15-76	339 TEABERRY DR	B	Residential	1	55	53	2
R15-77	341 TEABERRY DR	B	Residential	1	58	55	3
R15-78	343 TEABERRY DR	B	Residential	1	58	55	3
R15-79	345 TEABERRY DR	B	Residential	1	60	58	2
R15-80	228 SILVERBELL DR	B	Residential	1	54	**52**	2
R15-81	230 SILVERBELL DR	B	Residential	1	55	52	3
R15-82	232 SILVERBELL DR	B	Residential	1	56	53	3
R15-83	234 SILVERBELL DR	B	Residential	1	53	**52**	1
R15-84	236 SILVERBELL DR	B	Residential	1	53	**52**	1
R15-85	238 SILVERBELL DR	B	Residential	1	54	**52**	2
R15-86	240 SILVERBELL DR	B	Residential	1	56	53	3
R15-87	242 SILVERBELL DR	B	Residential	1	56	53	3
R15-88	244 SILVERBELL DR	B	Residential	1	57	56	1
R15-89	225 SILVERBELL DR	B	Residential	1	52	**52**	0
R15-90	227 SILVERBELL DR	B	Residential	1	53	**52**	1
R15-91	229 SILVERBELL DR	B	Residential	1	53	**52**	1
R15-92	231 SILVERBELL DR	B	Residential	1	54	**52**	2
R15-93	233 SILVERBELL DR	B	Residential	1	53	**52**	1
R15-94	235 SILVERBELL DR	B	Residential	1	54	52	2
R15-95	237 SILVERBELL DR	B	Residential	1	55	53	2
R15-96	239 SILVERBELL DR	B	Residential	1	57	55	2
R15-97	241 SILVERBELL DR	B	Residential	1	58	56	2
R15-98	124 DEWBERRY DR	B	Residential	1	52	**52**	0
R15-99	126 DEWBERRY DR	B	Residential	1	52	**52**	0
R15-100	128 DEWBERRY DR	B	Residential	1	53	**52**	1
R15-101	130 DEWBERRY DR	B	Residential	1	53	52	1
R15-102	132 DEWBERRY DR	B	Residential	1	54	53	1
R15-103	134 DEWBERRY DR	B	Residential	1	55	54	1
R15-104	136 DEWBERRY DR	B	Residential	1	56	54	2
R15-105	138 DEWBERRY DR	B	Residential	1	56	54	2
R15-106	140 DEWBERRY DR	B	Residential	1	56	55	1
R15-107	142 DEWBERRY DR	B	Residential	1	55	53	2
R15-108	123 DEWBERRY DR	B	Residential	1	54	53	1
R15-109	125 DEWBERRY DR	B	Residential	1	54	54	0

Table F-10: Noise Barrier NW 15 Opt. 3
Recommended

Performance
Without-Barrier and With-Barrier Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Address	NAC	Land Use	ER	Build[1]	With-Bar	NLR
R15-110	127 DEWBERRY DR	B	Residential	1	55	54	1
R15-111	129 DEWBERRY DR	B	Residential	1	55	55	0
R15-112	131 DEWBERRY DR	B	Residential	1	55	55	0
R15-113	133 DEWBERRY DR	B	Residential	1	58	57	1
R15-114	198 SWEETPEA	B	Residential	1	59	57	2
R15-115	196 SWEETPEA	B	Residential	1	58	56	2
R15-116	194 SWEETPEA	B	Residential	1	57	55	2
R15-117	192 SWEETPEA	B	Residential	1	56	54	2
R15-118	146 DEWBERRY DR	B	Residential	1	58	56	2
R15-119	148 DEWBERRY DR	B	Residential	1	59	58	1
R15-120	150 DEWBERRY DR	B	Residential	1	61	60	1
R15-121	152 DEWBERRY DR	B	Residential	1	63	62	1
R15-122	135 DEWBERRY DR	B	Residential	1	57	57	0
R15-123	137 DEWBERRY DR	B	Residential	1	58	57	1
R15-124	139 DEWBERRY DR	B	Residential	1	58	57	1
R15-125	141 DEWBERRY DR	B	Residential	1	59	58	1
R15-126	143 DEWBERRY DR	B	Residential	1	59	59	0
R15-127	145 DEWBERRY DR	B	Residential	1	60	59	1
R15-128	147 DEWBERRY DR	B	Residential	1	61	61	0
R15-129	149 DEWBERRY DR	B	Residential	1	64	63	1
R15-130	3325 E LAMAR ALEX PKWY	B	Residential	1	ROW	ROW	ROW
R15-131	3327 E LAMAR ALEX PKWY	B	Residential	1	ROW	ROW	ROW
R15-132	3335 E LAMAR ALEX PKWY	B	Residential	1	ROW	ROW	ROW
R15-133	3335 E LAMAR ALEX PKWY	B	Residential	1	ROW	ROW	ROW
					Predicted "Build-Condition" With-Barrier Benefits:[2]		42[2]

Noise Level Impact	Substantial Increase Impact	5 to 6 dB(A) NLR	≥ 7 dB(A) NLR

Ambient Noise Measurement[4]

1. Predicted traffic noise level impacts 1 receptor due to approaching or exceeding NAC (refer to Table 2). Predicted impacts to 22 receptors are due to a predicted "substantial increase" in noise levels.

2. The optimized noise barrier NW 15 is predicted to provide at least 5 decibels (5 dB(A)) in noise level reduction (NLR) to 42 receptors.

3. The optimized noise barrier NW 15 is predicted to provide at least 7 decibels (7 dB(A)) in noise level reduction (NLR) to 7 receptors.

4. Ambient noise measurement of 52 decibels dB(A) was used when with-barrier sound levels were less than 52 decibels.

NW 15 Opt. 4

Location: NW 15 and NW 15.1 are located north of US 321 along the shoulders of southbound SR 162 and would provide abatement for the Kensington Place Mobile Home Park residents.

TNM Run: NAA 15_PM
Barrier Analysis: NW 15 Opt. 4

Dimensions: Total Length = 3,240 ft. (NW15 = 1,800 ft. and NW15.1 = 1,440 ft.)
Avg. Height = 11 ft. (NW15 = 14 ft. and NW15.1 = 8 ft.)
Total Quantity = 36,721 ft^2 (NW15 = 25,200 ft^2 and NW15.1 = 11,521 ft^2)
Impacts: 22
Benefits: 62
Minimum Attainable Quantity / Benefit: 592 ft^2
Allowable Quantity / Benefit: 1,900 ft^2

This noise wall does meet TDOT feasibility and reasonableness criteria.

Table F-11: Noise Barrier NW 15 Opt. 4 Recommended

Performance Without-Barrier and With-Barrier Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Address	NAC	Land Use	ER	Build[1]	With-Bar	NLR
R15-1	626 HEPATICA DR	B	Residential	1	**63**	57	**6**
R15-2	628 HEPATICA DR	B	Residential	1	**65**	58	**7**
R15-3	630 HEPATICA DR	B	Residential	1	**65**	57	**8**
R15-4	632 HEPATICA DR	B	Residential	1	**66**	57	**9**
R15-5	634 HEPATICA DR	B	Residential	1	**65**	56	**9**
R15-6	636 HEPATICA DR	B	Residential	1	ROW	ROW	ROW
R15-7	638 HEPATICA DR	B	Residential	1	ROW	ROW	ROW
R15-8	640 HEPATICA DR	B	Residential	1	ROW	ROW	ROW
R15-9	625 HEPATICA DR	B	Residential	1	**62**	56	**6**
R15-10	627 HEPATICA DR	B	Residential	1	61	55	**6**
R15-11	629 HEPATICA DR	B	Residential	1	**62**	54	**8**
R15-12	631 HEPATICA DR	B	Residential	1	**62**	55	**7**
R15-13	633 HEPATICA DR	B	Residential	1	**62**	54	**8**
R15-14	635 HEPATICA DR	B	Residential	1	**63**	54	**9**
R15-15	637 HEPATICA DR	B	Residential	1	**65**	55	**10**
R15-16	639 HEPATICA DR	B	Residential	1	ROW	ROW	ROW
R15-17	526 AZALEA DR	B	Residential	1	59	53	**6**
R15-18	528 AZALEA DR	B	Residential	1	59	53	**6**
R15-19	530 AZALEA DR	B	Residential	1	60	53	**7**
R15-20	532 AZALEA DR	B	Residential	1	60	54	**6**
R15-21	534 AZALEA DR	B	Residential	1	61	54	**7**
R15-22	536 AZALEA DR	B	Residential	1	**62**	54	**8**
R15-23	538 AZALEA DR	B	Residential	1	**63**	55	**8**
R15-24	540 AZALEA DR	B	Residential	1	**63**	55	**8**
R15-25	542 AZALEA DR	B	Residential	1	**64**	55	**9**

Table F-11: Noise Barrier NW 15 Opt. 4
Recommended
Performance
Without-Barrier and With-Barrier Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Address	NAC	Land Use	ER	Build[1]	With-Bar	NLR
R15-26	525 AZALEA DR	B	Residential	1	59	54	5
R15-27	527 AZALEA DR	B	Residential	1	59	53	6
R15-28	529 AZALEA DR	B	Residential	1	59	53	6
R15-29	531 AZALEA DR	B	Residential	1	59	53	6
R15-30	533 AZALEA DR	B	Residential	1	60	54	6
R15-31	535 AZALEA DR	B	Residential	1	61	54	7
R15-32	537 AZALEA DR	B	Residential	1	61	54	7
R15-33	539 AZALEA DR	B	Residential	1	61	54	7
R15-34	541 AZALEA DR	B	Residential	1	**63**	56	7
R15-35	426 MISTLETOE DR	B	Residential	1	57	52	5
R15-36	428 MISTLETOE DR	B	Residential	1	59	53	6
R15-37	430 MISTLETOE DR	B	Residential	1	59	53	6
R15-38	432 MISTLETOE DR	B	Residential	1	58	52	6
R15-39	434 MISTLETOE DR	B	Residential	1	58	52	6
R15-40	436 MISTLETOE DR	B	Residential	1	59	53	6
R15-41	438 MISTLETOE DR	B	Residential	1	60	54	6
R15-42	440 MISTLETOE DR	B	Residential	1	61	54	7
R15-43	442 MISTLETOE DR	B	Residential	1	**63**	56	7
R15-44	444 MISTLETOE DR	B	Residential	1	**63**	56	7
R15-45	446 MISTLETOE DR	B	Residential	1	**63**	55	8
R15-46	448 MISTLETOE DR	B	Residential	1	**64**	57	7
R15-47	425 MISTLETOE DR	B	Residential	1	55	52	3
R15-48	427 MISTLETOE DR	B	Residential	1	58	52	6
R15-49	429 MISTLETOE DR	B	Residential	1	57	52	5
R15-50	431 MISTLETOE DR	B	Residential	1	58	53	5
R15-51	433 MISTLETOE DR	B	Residential	1	59	53	6
R15-52	437 MISTLETOE DR	B	Residential	1	58	53	5
R15-53	439 MISTLETOE DR	B	Residential	1	58	53	5
R15-54	441 MISTLETOE DR	B	Residential	1	59	53	6
R15-55	443 MISTLETOE DR	B	Residential	1	60	54	6
R15-56	445 MISTLETOE DR	B	Residential	1	61	55	6
R15-57	447 MISTLETOE DR	B	Residential	1	61	54	7
R15-58	449 MISTLETOE DR	B	Residential	1	**63**	57	6
R15-59	326 TEABERRY DR	B	Residential	1	55	**52**	3
R15-60	328 TEABERRY DR	B	Residential	1	55	**52**	3
R15-61	330 TEABERRY DR	B	Residential	1	55	**52**	3
R15-62	332 TEABERRY DR	B	Residential	1	61	56	5
R15-63	334 TEABERRY DR	B	Residential	1	58	52	6
R15-64	336 TEABERRY DR	B	Residential	1	58	53	5
R15-65	338 TEABERRY DR	B	Residential	1	57	52	5
R15-66	340 TEABERRY DR	B	Residential	1	60	54	6
R15-67	342 TEABERRY DR	B	Residential	1	60	55	5

Table F-11: Noise Barrier NW 15 Opt. 4
Recommended

Performance
Without-Barrier and With-Barrier Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Address	NAC	Land Use	ER	Build[1]	With-Bar	NLR
R15-68	344 TEABERRY DR	B	Residential	1	59	54	**5**
R15-69	346 TEABERRY DR	B	Residential	1	**62**	57	**5**
R15-70	327 TEABERRY DR	B	Residential	1	54	**52**	2
R15-71	329 TEABERRY DR	B	Residential	1	54	**52**	2
R15-72	331 TEABERRY DR	B	Residential	1	55	52	3
R15-73	333 TEABERRY DR	B	Residential	1	57	53	4
R15-74	335 TEABERRY DR	B	Residential	1	56	52	4
R15-75	337 TEABERRY DR	B	Residential	1	55	**52**	3
R15-76	339 TEABERRY DR	B	Residential	1	55	52	3
R15-77	341 TEABERRY DR	B	Residential	1	58	54	4
R15-78	343 TEABERRY DR	B	Residential	1	58	53	**5**
R15-79	345 TEABERRY DR	B	Residential	1	60	56	4
R15-80	228 SILVERBELL DR	B	Residential	1	54	**52**	2
R15-81	230 SILVERBELL DR	B	Residential	1	55	**52**	3
R15-82	232 SILVERBELL DR	B	Residential	1	56	52	4
R15-83	234 SILVERBELL DR	B	Residential	1	53	**52**	1
R15-84	236 SILVERBELL DR	B	Residential	1	53	**52**	1
R15-85	238 SILVERBELL DR	B	Residential	1	54	**52**	2
R15-86	240 SILVERBELL DR	B	Residential	1	56	52	4
R15-87	242 SILVERBELL DR	B	Residential	1	56	53	3
R15-88	244 SILVERBELL DR	B	Residential	1	57	55	2
R15-89	225 SILVERBELL DR	B	Residential	1	52	**52**	0
R15-90	227 SILVERBELL DR	B	Residential	1	53	**52**	1
R15-91	229 SILVERBELL DR	B	Residential	1	53	**52**	1
R15-92	231 SILVERBELL DR	B	Residential	1	54	**52**	2
R15-93	233 SILVERBELL DR	B	Residential	1	53	**52**	1
R15-94	235 SILVERBELL DR	B	Residential	1	54	52	2
R15-95	237 SILVERBELL DR	B	Residential	1	55	53	2
R15-96	239 SILVERBELL DR	B	Residential	1	57	54	3
R15-97	241 SILVERBELL DR	B	Residential	1	58	55	3
R15-98	124 DEWBERRY DR	B	Residential	1	52	**52**	0
R15-99	126 DEWBERRY DR	B	Residential	1	52	**52**	0
R15-100	128 DEWBERRY DR	B	Residential	1	53	**52**	1
R15-101	130 DEWBERRY DR	B	Residential	1	53	52	1
R15-102	132 DEWBERRY DR	B	Residential	1	54	53	1
R15-103	134 DEWBERRY DR	B	Residential	1	55	53	2
R15-104	136 DEWBERRY DR	B	Residential	1	56	54	2
R15-105	138 DEWBERRY DR	B	Residential	1	56	54	2
R15-106	140 DEWBERRY DR	B	Residential	1	56	54	2
R15-107	142 DEWBERRY DR	B	Residential	1	55	53	2
R15-108	123 DEWBERRY DR	B	Residential	1	54	53	1
R15-109	125 DEWBERRY DR	B	Residential	1	54	54	0

Table F-11: Noise Barrier NW 15 Opt. 4
Recommended
Performance
Without-Barrier and With-Barrier Noise Levels

Receptors					Predicted Noise Levels, $L_{eq(h)}$ (dB(A))		
ID#	Address	NAC	Land Use	ER	Build[1]	With-Bar	NLR
R15-110	127 DEWBERRY DR	B	Residential	1	55	54	1
R15-111	129 DEWBERRY DR	B	Residential	1	55	55	0
R15-112	131 DEWBERRY DR	B	Residential	1	55	54	1
R15-113	133 DEWBERRY DR	B	Residential	1	58	57	1
R15-114	198 SWEETPEA	B	Residential	1	59	56	3
R15-115	196 SWEETPEA	B	Residential	1	58	55	3
R15-116	194 SWEETPEA	B	Residential	1	57	54	3
R15-117	192 SWEETPEA	B	Residential	1	56	53	3
R15-118	146 DEWBERRY DR	B	Residential	1	58	56	2
R15-119	148 DEWBERRY DR	B	Residential	1	59	58	1
R15-120	150 DEWBERRY DR	B	Residential	1	61	60	1
R15-121	152 DEWBERRY DR	B	Residential	1	63	62	1
R15-122	135 DEWBERRY DR	B	Residential	1	57	57	0
R15-123	137 DEWBERRY DR	B	Residential	1	58	57	1
R15-124	139 DEWBERRY DR	B	Residential	1	58	57	1
R15-125	141 DEWBERRY DR	B	Residential	1	59	58	1
R15-126	143 DEWBERRY DR	B	Residential	1	59	59	0
R15-127	145 DEWBERRY DR	B	Residential	1	60	59	1
R15-128	147 DEWBERRY DR	B	Residential	1	61	61	0
R15-129	149 DEWBERRY DR	B	Residential	1	64	63	1
R15-130	3325 E LAMAR ALEX PKWY	B	Residential	1	ROW	ROW	ROW
R15-131	3327 E LAMAR ALEX PKWY	B	Residential	1	ROW	ROW	ROW
R15-132	3335 E LAMAR ALEX PKWY	B	Residential	1	ROW	ROW	ROW
R15-133	3335 E LAMAR ALEX PKWY	B	Residential	1	ROW	ROW	ROW
					Predicted "Build-Condition" With-Barrier Benefits:[2]		62[2]

Noise Level Impact	Substantial Increase Impact	5 to 6 dB(A) NLR	≥ 7 dB(A) NLR

Ambient Noise Measurement[4]

1. Predicted traffic noise level impacts 1 receptor due to approaching or exceeding NAC (refer to Table 2). Predicted impacts to 22 receptors are due to a predicted "substantial increase" in noise levels.

2. The optimized noise barrier NW 15 is predicted to provide at least 5 decibels (5 dB(A)) in noise level reduction (NLR) to 62 receptors.

3. The optimized noise barrier NW 15 is predicted to provide at least 7 decibels (7 dB(A)) in noise level reduction (NLR) to 25 receptors.

4. Ambient noise measurement of 52 decibels dB(A) was used when with-barrier sound levels were less than 52 decibels.