

LOR-I90-10.76  
PID 107714

## Noise Analysis Report



PREPARED BY:



**ms consultants, inc.**  
engineers, architects, planners

April 10, 2023

Table of Contents

	<b>Executive Summary</b>	<b>1</b>
<b>1.</b>	<b>Introduction</b>	<b>2</b>
<b>2.</b>	<b>Noise Analysis Overview</b>	<b>4</b>
<b>3.</b>	<b>Impact Assessment</b>	<b>9</b>
<b>4.</b>	<b>Noise Abatement</b>	<b>9</b>
<b>5.</b>	<b>Undeveloped Lands</b>	<b>15</b>
<b>6.</b>	<b>Construction Noise</b>	<b>16</b>
<b>7.</b>	<b>Sign and Utility Conflicts</b>	<b>16</b>
<b>8.</b>	<b>Conclusions and Recommendations</b>	<b>17</b>

**Figures**

**Figure 1 – Project Location Map**

**Figure 2 – Noise Study Areas and Monitoring Sites**

**NSA A**

**NSA B**

**NSA C**

**NSA D**

**NSA E – Park**

**NSA E – East**

**NSA F**

**NSA G**

**Appendices**

**Appendix A      Monitoring Data**

**Appendix B      Traffic Data**

**Appendix C      Validation Models**

**Appendix D1     Existing Conditions Models**

**Appendix D2     Existing Conditions Models – Roadway Output Sheets**

**Appendix E1     Future Conditions Models**

**Appendix E2     Future Conditions Models– Roadway Output Sheets**

**Appendix F      Noise Barrier Evaluations**

**Appendix G      Benefited Receiver Addresses**

**Appendix H      Sign & Utility Conflict Maps**

## EXECUTIVE SUMMARY

The purpose of this Noise Analysis was to investigate traffic noise levels associated with the proposed widening of I-90 in Lorain County: LOR-I90-10.76 – PID 107714. This Noise Analysis follows FHWA and ODOT guidelines as presented in **23 CFR 772** and **ODOT's Highway Traffic Noise Analysis Manual**. Because the project involves the addition of travel lanes on I-90 both westbound and eastbound the project has been designated a Type 1 Project. A Type 1 project considers sensitive land uses within 500' of the edge of pavement of the proposed project and focuses on the exterior areas of frequent human use in accordance with FHWA regulations.

The objectives of this noise analysis were to determine if the project would have traffic noise impacts and evaluate traffic noise abatement measures, if impacts were predicted.

The LOR-I90-10.76 project was predicted to have traffic noise impacts because noise levels will approach or exceed FHWA NAC in the Design Year (2045). No traffic noise levels were predicted to be a substantial increase.

Noise barriers have been evaluated in those NSAs which were predicted to have noise impacts in the Design Year (2045). Several noise barriers were evaluated and found not to be reasonable or feasible per the criteria presented in **ODOT's Highway Traffic Noise Analysis Manual**. The following were determined to be reasonable and feasible and are recommended for construction if desired by the adjacent property owners and residents:

**Barrier A:** a 1300' long, 12' tall wall running along the shoulder of eastbound I-90 near the Ohio Turnpike Toll Booth in Elyria Township.

**Barrier E-East:** a 2550' long, 12' tall wall running along the shoulder of eastbound I-90 north of Gulf Road in the City of Elyria.

**Barrier F-North:** a 2800' long, 12' tall wall running along the shoulder of eastbound I-90 north of Abbe Road in the Village of Sheffield.

**Barrier F-South:** a 6000' long, 12' tall wall running along the shoulder of eastbound I-90 south of Abbe Road in the Village of Sheffield.

**Barrier G-North:** a 4552' long, 12' tall wall running along the shoulder of eastbound I-90 south of the SR 611 interchange in the Village of Sheffield and City of Avon. Note that Barrier G-North has two parts separated by the bridge over the railroad.

**Construction Noise:** It can be assumed that all land uses and activities adjacent to the proposed project will be temporarily affected by noise generated from power operated equipment utilized in highway and bridge construction. This equipment will operate intermittently and usually produces noise in the range of 70 - 98 dBA at a distance of approximately 50 feet.

## 1. INTRODUCTION

### A. Purpose of the Analysis

The purpose of this Noise Analysis was to investigate traffic noise levels associated with the proposed widening of I-90 in Lorain County: LOR-I90-10.76 – PID 107714. This Noise Analysis follows FHWA and ODOT guidelines as presented in **23 CFR 772** and **ODOT's Highway Traffic Noise Analysis Manual**. Because the project involves the addition of travel lanes on I-90 both westbound and eastbound the project has been designated a Type 1 Project. A Type 1 project considers sensitive land uses within 500' of the edge of pavement of the proposed project and focuses on the exterior areas of frequent human use in accordance with FHWA regulations.

### B. Description of the Project

The Ohio Department of Transportation (ODOT) is proposing a major rehabilitation of I-90 including complete pavement replacement and adding one lane in each direction from the merge/diverge with State Route 2 (SR 2) to the State Route 611 (SR 611) interchange. This project is located in Elyria Township, the City of Elyria, the Village of Sheffield, and the City of Avon, Lorain County Ohio (See Figure 1). The project limits on I-90 will be from the Ohio Turnpike Toll Booth to the existing 6-lane section at the SR 611 interchange, a distance of roughly eight (8) miles. The section between the Ohio Turnpike Toll Booth to SR 2 will be repaved but will remain a 4-lane roadway. The new lanes will be constructed in the existing median of I-90. The project will also involve some bridge work; however, several of the I-90 bridges over the Black River, railroad lines, and local roads have already been widened to accommodate an additional travel lane and will require only re-striping to match the widened highway. The project will be advanced as a Design/Build project and construction is tentatively scheduled to begin in the Spring 2025. Because the project is Design/Build, there were no roadway plans or cross-sections available for reference during the noise analysis.



### **C. Description of the Project Area**

The overall project area contains a mix of existing residential, commercial, recreational, and industrial land uses. The density of residential development tends to increase from west to east. The project has been divided into seven (7) separate noise sensitive areas (NSA), which represent areas with similar land use characteristics. This report will also utilize these NSAs for organizing the content, modeling, analysis, conclusions, and recommendations. See Figure 2.

#### **NSA A**

NSA A is near the Ohio Turnpike Toll Booth and follows I-90. It consists of residential land uses along Freeland and Crestlane in Elyria Township. Traffic noise in NSA A is primarily from I-90.

#### **NSA B**

NSA B includes the merge/diverge of I-90 and SR 2. It consists of residential land uses along Murray Ridge and Dellefield in Elyria Township. Traffic noise in NSA B is primarily from SR 2, which has substantially more traffic than I-90 in this NSA.

#### **NSA C**

NSA C covers I-90 where the highway crosses Lake Avenue in Elyria Township. It consists of primarily residential land uses with some commercial sites along Lake Avenue. Traffic noise in NSA C is primarily from I-90 and local traffic on Lake Avenue. There is an existing railroad line in NSA C.

#### **NSA D**

NSA D includes I-90 and the interchange with SR 57 (Lorain Avenue) in the City of Elyria. NSA D has a mix of residential land uses, including both single-family and apartment buildings, and highway-orientated commercial activity along SR 57. Traffic noise in NSA D is from I-90, SR 57, and the interchange ramps.

#### **NSA E**

NSA E follows I-90 in the City of Elyria and includes the bridges over the Black River and Ford Road. Gulf Road crosses I-90 in NSA E. The southern portion of NSA E (NSA E-Park) includes the Black River, Lorain Metroparks Black River Reservation – Bur Oak area, and the Black River Bikeway. The northern portion of NSA E (NSA E-East) includes the residential land uses along Ford Road, Gulf Road, and multiple local streets. Traffic noise in NSA E is primarily from I-90.

#### **NSA F**

NSA F follows I-90 north of Detroit Road in the Village of Sheffield. Abbe Road crosses I-90 in NSA F. This NSA has primarily residential land uses including Preserve at French Creek on the east side of I-90. Traffic noise in NSA F is primarily from I-90 and local traffic on Abbe Road and French Creek Road. NSA F currently has undeveloped parcels east of I-90 between Abbe Road and French Creek Road. It is understood that these parcels will be developed in a future phase of the surrounding residential development.

#### **NSA G**

NSA G follows I-90 south of the SR 611 interchange in the Village of Sheffield and City of Avon. The Lake Erie Crushers Baseball Stadium and French Creek YMCA complex are located on the west side of I-90 in NSA G. This NSA has primarily residential land uses on the east side of I-90. Traffic noise in NSA G is primarily from I-90. There is an existing railroad line in NSA G.

## 2. NOISE ANALYSIS OVERVIEW

**ms consultants, inc.** conducted this traffic noise analysis according to the procedures contained in the *ODOT's Highway Traffic Noise Analysis Manual*. The objective of the noise analysis was to determine if the highway traffic noise levels will approach or exceed FHWA Noise Abatement Criteria (NAC) or substantially increase between the Existing and Design Year. The analysis included taking noise readings within the project area, validating computer models (TNM 2.5) with the noise readings, and modeling both the Existing traffic noise levels and the predicted Design Year traffic noise levels. When Design Year (Year 2045) traffic noise levels were predicted to approach or exceed FHWA/ODOT NAC or substantially increase between the Existing and Design year, noise abatement was evaluated.

### A. Noise Descriptors

Noise descriptors are used to describe the time-varying nature of noise. In this report, noise levels will be described as the hourly A-weighted equivalent sound level in decibels, or dBA  $L_{eq(h)}$ . The decibel (dB) is a measure used to express the relative measure of a sound in comparison with a standard reference level. The average person is capable of responding to a wide range of sound pressures. At the threshold of pain, the sound pressure is one million times greater than the sound pressure at the threshold of hearing. The decibel scale is used to logarithmically compress this large range of numeric values. By using the decibel scale, the range of sounds can be expressed as 0 to 120 dB rather than 1 to 1,000,000. In general, the average person cannot detect an increase or decrease in sound pressure level of less than 3 dBA. A change in sound pressure level of 5 dBA is readily perceptible by most people. An increase or decrease in sound pressure level of 10 dBA is perceived as a doubling or halving of the noise level.

Sound frequency is expressed as cycles per second or Hertz (Hz). The human ear can detect a wide range of frequencies from 20 to 20,000 Hz, but is most sensitive to sounds over a frequency range of 200 to 5,000 Hz. The human ear does not respond in a uniform manner to different frequency sounds. A sound pressure level of 70 dB will be perceived as much louder at 1,000 Hz than at 100 Hz. To account for this, various weighting methods have been developed to reflect human sensitivity to noise. The purpose of a weighting method is to de-emphasize the frequency ranges in which the human ear is less sensitive. The most commonly used measure of noise level is the A-weighted sound level (dBA). The dBA sound level is widely used for transportation-related noise measurements and specifications for community noise ordinances and standards. The dBA has been shown to be highly correlated to human response to noise.

In addition to noise fluctuating in frequency, environmental noise will fluctuate in intensity from moment to moment. Over a period of time there will be quiet moments and peak levels resulting from noisy, identifiable sources (trucks, aircraft, etc.). Because of these fluctuations, it is common practice to average these noise level fluctuations over a specified period of time. The equivalent sound level over a given period of interest,  $L_{eq}$ , is equal to the equivalent steady-state noise level which, in a stated time period, would contain the same acoustical energy as the time-varying noise levels that actually occurred during the same time period. The hourly value of  $L_{eq}$ , based upon the peak-hour percentage of the annual average daily traffic, is referred to as  $L_{eq(h)}$ . Surveys have shown that  $L_{eq}$  properly predicts annoyance, and this descriptor is commonly used for noise measurement, prediction, and impact assessment.

**B. Noise Monitoring**

As part of this Noise Analysis Report, an ambient noise survey was conducted at eight sites in the project area to obtain existing noise levels (See Appendix A). See Figure 2 for locations of the noise survey sites. The purpose of the ambient noise survey was to verify the accuracy of the FHWA’s Traffic Noise Model (TNM Version 2.5) for this project area.



In order to verify that TNM 2.5 was accurately predicting existing traffic noise in this project area, verification models were developed using observed traffic volumes and vehicle speeds (See Appendix A). The verification models indicated that TNM was predicting existing noise levels accurately (+/- 3 dB) in the project area and could be used without adjustment factors (See Table 1).

**Table 1 : TNM Verification, Existing Noise Levels dB(A)**

Location	Site Elevation	Adjacent Roadway Elevation	Speed Limit	Observed Speed I-90	Monitored Noise Level	TNM Predicted Level	Difference
Site A-1 (43015 Crestlane Dr.)	744'	747'	65	50	57.1	59.2	2.1
Site B-1 (6697 Murray Ridge Rd.)	742'	770'	65	50	61.9	63.2	1.3
Site C-1 (6610 Lake Ave.)	723'	742'	65	65	64.8	63.8	-1.0
Site E-1A (Black River Reservation - Bur Oak)	602'	652'	65	65	63.4	65.9	2.5
Site E-1B (Black River Reservation - Bur Oak/Bikeway)	605'	656'	65	65	65.3	66.7	1.4
Site E-2 (176 Hemlock Dr.)	684'	686'	65	65	72.5	74.2	1.7
Site F-1 (4218 Berkeley Dr.)	640'	644'	65	65	65.4	67.7	2.3
Site G-1 (2447 Fairfield Dr.)	628'	650'	65	65	66.2	68.2	2.0

Because TNM was predicting monitored noise levels accurately, the validation model was expanded to predict existing peak-hour noise levels at all receiver locations currently experiencing traffic noise (See Appendix E).

### C. Noise Modeling

FHWA's Traffic Noise Model (TNM Version 2.5) computer program was used to predict the Existing and Design Year (2045) noise levels generated by traffic within the project area. The Design Year analysis involved future traffic traveling at or accelerating to the speed limit within the project area. Because this will be a Design/Build project and construction plans are not available, roadway location and elevation data were obtained from recent (2022 and 2017) aerial photography and county GIS data. Proposed roadway elevations, including the elevation of the new median lanes were assumed to be the same as the existing lane elevations. Receiver location and elevation data were obtained from the same aerial photography and county GIS data.

### D. Traffic Data

Traffic data was derived from certified traffic plates prepared for the project (See Appendix B). This report considered 2020 as the existing year. Future predicted noise levels and impact assessment were derived from the Design Year 2045 forecast traffic plates. For this study, the PM Design Hourly Volume was considered the worst-case peak-hour volume. The percentage of trucks was also taken from the certified traffic plates and the split between Medium Trucks and Heavy Trucks was assumed to be the same as that observed during the noise monitoring period. Note: traffic for major crossroads not included in the certified traffic was obtained from TIMS and increased by the growth factor calculated from the certified traffic plates.

**Table 2 : Existing Traffic Summary**

Roadway Segment	Existing Traffic Data (2020)						
	ADT	DHV	Truck %	Auto	Medium	Heavy	Speed
I-90 EB (near toll plaza)	7820	390	29%	276	38	76	50
I-90 WB (near toll plaza)	7080	920	37%	580	112	228	50
I-90 EB (SR2 – SR57)	35900	3020	13%	2628	78	314	65
I-90 WB (SR2 – SR57)	32930	3850	10%	3466	78	308	65
I-90 EB (SR57 – SR254)	32860	2760	13%	2402	72	288	65
I-90 WB (SR57 – SR254)	28450	3450	8%	3174	56	220	65
I-90 EB (SR5254 – SR 611)	34170	2880	10%	2592	58	230	65
I-90 WB (SR254 – SR 611)	31430	3860	11%	3436	84	340	65
SR 2 EB	28080	2630	6%	2472	24	134	65
SR 2 WB	25850	2930	6%	2754	26	150	65



**Table 3 : Design Year 2045 Traffic Summary**

DY 2045 Traffic Data							
Roadway Segment	ADT	DHV	Truck %	Auto	Medium	Heavy	Speed
I-90 EB (near toll plaza)	11950	680	29%	482	66	132	65
I-90 WB (near toll plaza)	8470	1100	37%	694	134	272	65
I-90 EB (SR2 – SR57)	42250	3540	13%	3081	93	369	65
I-90 WB (SR2 – SR57)	38760	4521	10%	4068	90	363	65
I-90 EB (SR57 – SR254)	38870	3252	13%	2829	84	339	65
I-90 WB (SR57 – SR254)	33780	4080	8%	3753	66	261	65
I-90 EB (SR5254 – SR 611)	40330	3390	10%	3051	69	270	65
I-90 WB (SR254 – SR 611)	37100	4539	11%	4041	99	399	65
SR 2 EB	30300	2850	6%	2680	26	146	65
SR 2 WB	30290	3420	6%	3215	92	113	65

**E. Noise Impact Assessment**

According to *ODOT’s Traffic Noise Analysis Manual*, a project is defined as having a traffic noise impact if either of the following conditions occurs:

1. Predicted noise levels approach or exceed the FHWA Noise Abatement Criteria (NAC) as presented in Table 4.

**Table 4 : Noise Abatement Criteria (23 CFR 772), Hourly Weighted Sound Levels dB(A) For Various Land Use Activity Categories**

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

\* Includes undeveloped lands permitted for this activity category.

2. Predicted noise levels are a substantial increase over the existing noise levels. According to *ODOT’s Traffic Noise Analysis Manual*, a substantial increase occurs where the future noise level increases 10 dB(A) or more above the existing noise level.

**Predicted traffic noise levels for LOR-I90-10.76 PID 107714 will approach or exceed FHWA NAC in the Design Year (2045). No traffic noise levels were predicted to be a substantial increase.**

### 3. IMPACT ASSESSMENT

Predicted Noise Levels were modeled in order to compare the predicted noise levels from the Existing Year 2020 with the Design Year 2045 predicted noise levels. Appendix E contains a detailed table showing the modeled results for the Existing Year 2020 predicted traffic noise levels and the Design Year 2045 predicted traffic noise levels. The tables in Appendix E also show the decibel-level differences between the Existing Year 2020 traffic noise levels and the Design Year 2045 traffic noise levels. A summary of the findings for each NSA are shown below.

**Table 5 : Impact Summary (see Appendix E for more details)**

NSA	Total Receivers	First Row Receivers	Impacted Receivers	Impacted First Row Receivers	Substantial Impacts	NSA predicted to have traffic noise impacts
A	66	35	3	3	0	Yes
B	37	18	0	0	0	No
C	33	16	17	9	0	Yes
D**	388	284	109	108	0	Yes
E	188	79	53	52	0	Yes
F	399	96	60	57	0	Yes
G	157	72	39	38	0	Yes

*Note: \* NSA D includes apartments and a motel.*

Because impacts were predicted for Design Year 2045 noise abatement was considered.

### 4. NOISE ABATEMENT

According to *ODOT's Highway Traffic Noise Analysis Manual*, when the predicted Design Year noise levels approach or exceed FHWA NAC or when predicted Design Year noise levels substantially increase, noise mitigation must be considered. Traffic noise mitigation measures may include:

- Traffic management measures,
- Horizontal and vertical alignment modifications,
- Acquisition of right-of-way for buffer zones, or
- Construction of noise barriers.

Traffic management measures which impose vehicle size or weight restrictions, lower speed limits, time-of-operation restrictions, or rerouting traffic were not considered appropriate as noise abatement measures on this project. Vehicle size or weight restrictions were not considered because it is impractical to prohibit heavy vehicles from using I-90. Lowering the posted speed was not considered effective because of the subsequent reduction in Interstate highway capacity and incentive to use I-90. The proposed speed limit for I-90 throughout the project will be 65mph. Time-of-operation constraints or the rerouting of traffic were also not appropriate for this project.

Additional changes in vertical alignment or shifting the horizontal alignment of the roadways were not considered appropriate as noise abatement measures on this project. Alignment modifications are constrained by the location of existing adjacent developed land uses.

The development of buffer zones to provide noise mitigation was not considered appropriate as a noise abatement measure for this project. The amount of additional right-of-way required to create effective buffer zones would negatively impact existing and proposed adjacent land uses.

In order to recommend a noise barrier for inclusion in a highway improvement project, **ODOT's Highway Traffic Noise Analysis Manual** requires the barrier to be warranted, feasible, and reasonable. A noise barrier is warranted when the predicted Design Year no-barrier noise levels approach or exceed FHWA NAC or when the predicted design year no-barrier noise levels substantially increase over the existing sound levels and when other traffic noise mitigation measures are not appropriate for a project. If a noise barrier is warranted, its feasibility is investigated.



A noise barrier is considered feasible when it can provide a substantial reduction in traffic noise. Specifically, **ODOT's Highway Traffic Noise Analysis Manual** states that a barrier should provide an Insertion Loss of at least 5 dBA at 50% of the impacted receivers. A noise barrier is also considered feasible if it is physically possible to construct and maintain, and if it does not create restrictions to drainage, utilities, vehicular or pedestrian traffic (including driveways) and if it does not create safety problems such as reduced sight distances and insufficient clear zones. Once a barrier location is determined to be feasible, its reasonableness is evaluated.

A noise barrier is generally considered reasonable if it can provide an Insertion Loss of at least 7 dBA at one of the impacted receivers and the cost per benefited dwelling unit is less than a specified cost per unit. Benefited dwelling units are those existing or planned residential units which are provided with a minimum Insertion Loss of 5 dBA. To determine barrier reasonability, the total cost of the barrier is determined by calculating the area of the wall in square feet (length multiplied by height) and multiplying this area by \$35 per square foot or \$110 per square foot for bridges. The total cost is then divided by the number of benefited dwelling units. **ODOT's Highway Traffic Noise Analysis Manual** states that noise barriers exceeding \$42,000 per benefited dwelling unit are not considered reasonable.

**LOR-I90-10.76 - 107714**

As shown below, noise barriers have been evaluated in those NSAs which were predicted to have noise impacts in the Design Year (2045):

**Barrier A (NSA A)**

NSA A had three (3) dwelling units which were predicted to have design year noise level that approached or exceeded FHWA NAC. All of the impacted receivers were single family or multi-family residential dwellings. Noise barrier A was considered feasible because it provided an Insertion Loss of at least 5 dBA at 100% of the impacted receivers and had at least a 7dBA reduction at one or more impacted receivers. The total cost of the barrier was estimated at \$545,993 or \$32,117 per benefited dwelling unit (See Appendix F). Therefore, the barrier is considered reasonable because the cost does not exceed \$42,000 per benefited dwelling unit.

**Because Barrier A provided an insertion loss of at least 5dBA at 50% of impacted receivers and provided an insertion loss of 7dBA at one or more impacted receivers, it was considered feasible. Because the cost per benefitted dwelling unit does not exceed \$42,000 it was considered reasonable.**

**Therefore, Barrier A is recommended.**

**Barrier C North & Barrier C South (NSA C)**

NSA C had 17 dwelling units which were predicted to have design year noise level that approached or exceeded FHWA NAC. All of the impacted receivers were single family or multi-family residential dwellings. Noise barriers on both sides of I-90 could be considered feasible because they provided an Insertion Loss of at least 5 dBA at more than 50 % of the impacted receivers and had at least a 7dBA reduction at one or more impacted receivers. The cost of Barrier C – North was estimated at \$502,461 or \$83,744 per benefited dwelling unit (See Appendix F). The cost of Barrier C – South was estimated at \$860,160 or \$143,360 per benefited dwelling unit (See Appendix F). **Therefore, neither Barrier C North nor Barrier C South can be considered reasonable because the cost exceeds \$42,000 per benefited dwelling unit.**

**Barrier D North, Barrier D South, Barrier D Southeast, & Barrier D High Point (NSA D)**

NSA D had numerous dwelling units which were predicted to have design year noise level that approached or exceeded FHWA NAC. All of the impacted receivers were single family residential dwellings or apartment buildings.

- Noise barriers on both sides of I-90 west of West River Road could not be considered feasible because, while they provided an Insertion Loss of at least 5 dBA at more than 50 % of the impacted receivers, they could not provide a 7dBA reduction at even one impacted receiver.
- A third noise barrier on the south side of I-90 east of West River Road could not be considered feasible because, while it provided an Insertion Loss of at least 5 dBA at the impacted receiver, it could not provide a 7dBA reduction at even one impacted receiver.
- A fourth noise barrier on the north side of I-90 adjacent to the High Point in the Park apartment building could be considered feasible because it provided an Insertion Loss of at least 5 dBA at more than 50 % of the impacted receivers and had at least a 7dBA reduction at one or more impacted receivers. The cost of Barrier D – High Point was estimated at \$840,004 or \$44,211 per benefited dwelling unit (See Appendix F). Therefore, Barrier D – High Point cannot be considered reasonable because the cost exceeds \$42,000 per benefited dwelling unit.

**None of the four noise barriers evaluated within NSA D are recommended.**

**Barrier E Bikepath Bridge (NSA E-Park)**

NSA E-Park includes the Lorain Metroparks Black River Reservation Bur Oak Area and the Black River Bikeway. No impacts were predicted in the Bur Oak area. An impact was predicted for the Black River Bikeway bridge which is level with and adjacent to the eastbound I-90 bridge over the park and river. A noise barrier located on the I-90 eastbound bridge was evaluated. For recreational areas such as the Black River Bikeway bridge, **ODOT's Highway Traffic Noise Analysis Manual** requires the use of Equivalent Receptors rather than dwelling units to determine barrier reasonability. In general, the number of Equivalent Receptors is determined by:

$$\text{Equivalent \# Receptors} = \# \text{ Occupants} \div (\# \text{ People / Receptor}) \times \text{Usage}$$

Where: # Occupants = users per year

#people / typical receptor = 3 (Ohio average household size)

Usage = available hours/day

Information available from the Northeast Ohio Areawide Coordinating Agency (NOACA) indicated that in 2022, there were 135 daily users on the bikeway. Because the bikeway is not used year round, it has been assumed it is useable 305 days/year (10 months). Therefore, the formula for Equivalent Receptors at this location would be:

$$\text{Equivalent \# Receptors} = (135 \div 3) \times (12 \div 24) \times (305 \div 365)$$

or

19 Equivalent Receptors

In order to provide an insertion loss of 5 dBA at the bikeway bridge, the cost of the barrier was estimated at \$849,233 or \$44,696 per Equivalent Residential Unit (ERU). **Therefore, the barrier is not considered reasonable because the cost exceeds \$ 42,000 per benefited ERU.**

**Barrier EE West & Barrier EE East (NSA E-East)**

NSA E-East had numerous dwelling units which were predicted to have design year noise level that approached or exceeded FHWA NAC. All 52 of the impacted receivers were single family or multi-family residential dwellings. A noise barrier on the north side of I-90 adjacent to Ford Road could be considered feasible because it provided an Insertion Loss of at least 5 dBA at more than 50 % of the impacted receivers and had at least a 7dBA reduction at one or more impacted receivers. The cost of Barrier EE – West was estimated at \$145,631 or \$72,816 per benefited dwelling unit (See Appendix F). Therefore, Barrier EE – West cannot be considered reasonable because the cost exceeds \$42,000 per benefited dwelling unit.

Barrier EE East was considered feasible because it provided an Insertion Loss of at least 5 dBA at 78% of the impacted receivers and had at least a 7dBA reduction at one or more impacted receivers. The total cost of the barrier was estimated at \$1,070,975 or \$21,000 per benefited dwelling unit (See Appendix F). Therefore, the barrier is considered reasonable because the cost does not exceed \$42,000 per benefited dwelling unit.

**Because Barrier EE East provided an insertion loss of at least 5dBA at 50% of impacted receivers and provided an insertion loss of 7dBA at one or more impacted receivers, it was considered feasible. Because the cost per benefitted dwelling unit does not exceed \$42,000 it was considered reasonable.**

**Therefore, Barrier EE East is recommended.**

**Barrier F North & Barrier F South (NSA F)**

NSA F had numerous dwelling units which were predicted to have design year noise level that approached or exceeded FHWA NAC. All 59 of the impacted receivers were single family or multi-family residential dwellings. Two noise barriers on the east side of I-90 adjacent to Abbe Road could be considered feasible because they provided an Insertion Loss of at least 5 dBA at more than 50 % of the impacted receivers and had at least a 7dBA reduction at one or more impacted receivers.

Barrier F North was considered feasible because it provided an Insertion Loss of at least 5 dBA at 82% of the impacted receivers and had at least a 7dBA reduction at one or more impacted receivers. The total cost of the barrier was estimated at \$1,175,993 or \$17,294 per benefited dwelling unit (See Appendix F). Therefore, the barrier is considered reasonable because the cost does not exceed \$42,000 per benefited dwelling unit.

**Because Barrier F North provided an insertion loss of at least 5dBA at 50% of impacted receivers and provided an insertion loss of 7dBA at one or more impacted receivers, it was considered feasible. Because the cost per benefitted dwelling unit does not exceed \$42,000 it was considered reasonable.**

**Therefore, Barrier F North is recommended.**

Barrier F South was considered feasible because it provided an Insertion Loss of at least 5 dBA at 95% of the impacted receivers and had at least a 7dBA reduction at one or more impacted receivers. The total cost of the barrier was estimated at \$2,519,976 or \$29,647 per benefited dwelling unit (See Appendix F). Therefore, the barrier is considered reasonable because the cost does not exceed \$42,000 per benefited dwelling unit.

**Because Barrier F South provided an insertion loss of at least 5dBA at 50% of impacted receivers and provided an insertion loss of 7dBA at one or more impacted receivers, it was considered feasible. Because the cost per benefitted dwelling unit does not exceed \$42,000 it was considered reasonable.**

**Therefore, Barrier F South is recommended.**

A third barrier, Barrier F West could be considered feasible because it provided an Insertion Loss of at least 5 dBA at more than 50 % of the impacted receivers and had at least a 7dBA reduction at one or more impacted receivers. The cost of Barrier F – West was estimated at \$563,483 or \$563,483 per benefited dwelling unit (See Appendix F). Therefore, Barrier F – West cannot be considered reasonable because the cost exceeds \$42,000 per benefited dwelling unit.

**Barrier G North (NSA G)**

NSA F had numerous dwelling units which were predicted to have design year noise level that approached or exceeded FHWA NAC. All 38 of the impacted receivers were single family or multi-family residential dwellings. A noise barrier on the east side of I-90, south of the SR 611 interchange could be considered feasible because it provided an Insertion Loss of at least 5 dBA at more than 50 % of the impacted receivers and had at least a 7dBA reduction at one or more impacted receivers.

Barrier G North was considered feasible because it provided an Insertion Loss of at least 5 dBA at 95% of the impacted receivers and had at least a 7dBA reduction at one or more impacted receivers. The total cost of the barrier was estimated at \$1,869,641 or \$19,890 per benefited dwelling unit (See Appendix F). Therefore, the barrier is considered reasonable because the cost does not exceed \$42,000 per benefited dwelling unit. As shown in Table 6, Barrier G-North has two parts separated by the bridge over the railroad.

**Because Barrier G North provided an insertion loss of at least 5dBA at 50% of impacted receivers and provided an insertion loss of 7dBA at one or more impacted receivers, it was considered feasible. Because the cost per benefitted dwelling unit does not exceed \$42,000 it was considered reasonable.**

**Therefore, Barrier G North is recommended.**

Another barrier, Barrier G - South could be considered feasible because it provided an Insertion Loss of at least 5 dBA at a single impacted receiver and had at least a 7dBA reduction at one or more impacted receivers. The cost of Barrier G – South was estimated at \$560,000 or \$560,000 per benefited dwelling unit (See Appendix F). Therefore, Barrier G – South cannot be considered reasonable because the cost exceeds \$42,000 per benefited dwelling unit.



## **5. UNDEVELOPED LANDS**

The LOR-I90-10.67, PID 107714 project area contains existing residential, commercial, recreational, and industrial land uses. There are several undeveloped areas within the project area. These undeveloped lands are summarized:

### **NSA A**

NSA A has undeveloped lands west of I-90. These agricultural fields and wooded areas are part of Elyria Township and are zoned Agricultural-Residential. No information on proposed future development of these areas has been found. Should information on traffic noise in the areas west of I-90 be requested, it can be assumed noise levels at any given distance will be the same as those predicted in NSA A east of I-90.

### **NSA B**

NSA B has undeveloped lands south of I-90. These wooded areas are part of Elyria Township and are zoned Low-Density Residential. No information on proposed future development of these areas has been found. Should information on traffic noise in the areas south of I-90 be requested, it can be assumed noise levels at any given distance will be the same as those predicted along Murray Ridge in NSA B south of I-90.

### **NSA C**

NSA C has no undeveloped lands on either side of I-90.

### **NSA D**

NSA D has an undeveloped parcel north of I-90 along West River Road. This report includes predicted existing and future noise levels on this parcel (Receiver D-25).

### **NSA E**

NSA E has undeveloped lands on both sides of I-90 along Ford Road. This land is part of Lorain Metro Parks Black River Reservation. NSA E also has undeveloped lands north of I-90 and east of Gulf Road. These agricultural fields are part of Sheffield Village and are zoned General Commercial. No information on proposed future development of these areas has been found. Should information on traffic noise in the areas north of I-90 be requested, it can be assumed noise levels at any given distance will be the same as those predicted in NSA E east of I-90.

### **NSA F**

NSA F currently has undeveloped parcels east of I-90 between Abbe and French Creek. According to the Sheffield Village administrator, these parcels will be developed in a future phase of the surrounding residential development. Therefore, Barrier F-North is intended to reduce traffic noise at the homes anticipated to be constructed on this parcel. NSA F also has undeveloped lands west of I-90 at the end of Preservation Blvd. These wooded areas are part of Sheffield Village and are zoned Industrial Park. The land closest to I-90 is owned by Norfolk & Southern Railroad and occupied by high voltage power lines. Other parcels are owned by Lorain Metro Parks and according to the Sheffield Village Administrator there are no plans for future development of these parcels. Should information on traffic noise in the areas west of I-90 be requested, it can be assumed noise levels at any given distance will be the same as those predicted in NSA F east of I-90.

### **NSA G**

NSA G has undeveloped lands on the west side of I-90. These wooded areas are part of the City of Avon and are zoned Residential. The land is owned by the City of Avon and identified as recreational but appears to be undeveloped. Should information on traffic noise in the areas west of I-90 be requested, it can be assumed noise levels at any given distance will be the same as those predicted in NSA G east of I-90.

## 6. CONSTRUCTION NOISE

Project specific construction-related noise levels have not been predicted LOR-I90-10.67, PID 107714. However, it can be assumed that all land uses and activities adjacent to the proposed project will be temporarily affected by noise generated from power operated equipment utilized in highway and bridge construction. Such equipment may include, however is not limited to, front loaders, backhoes, bulldozers, trucks, tractors, scrapers, graders, pavers, roller compactors, slip form equipment, concrete mixers, cranes, compressors, generators, pumps, jack hammers, pneumatic tools, saws, and vibrators. This equipment will operate intermittently and usually produces noise in the range of 70 - 98 dBA at a distance of approximately 50 feet.

## 7. SIGN AND UTILITY CONFLICTS

A preliminary review of the project area has been conducted in order to identify potential conflicts between the recommended noise barriers and existing signs and overhead utilities. Maps showing the location of these potential conflicts are presented in Appendix H.

When construction plans are being developed for the recommended noise barriers, the barriers may need to be adjusted to avoid the signs. When making these adjustments, the designer should maintain the top elevation of the barrier to avoid reducing the noise reduction provided by the barrier. It should be also noted that there are numerous small signs such as mile markers and speed limit signs throughout the project area that may need to be considered.



## 8. CONCLUSIONS AND RECOMMENDATIONS

Design Year (2045) traffic noise levels were predicted for the study area using TNM 2.5. Numerous Design Year traffic noise levels approached or exceeded the Noise Abatement Criteria (NAC) according to *ODOT's Highway Traffic Noise Analysis Manual*. Noise barriers have been evaluated and are summarized below and in Table 6.

### **Barrier A -- Recommended For Construction**

Barrier A will be a 1300' long, 12' tall wall running along the shoulder of eastbound I-90. Barrier A was considered feasible because it provided an Insertion Loss of at least 5 dBA at 100% of the impacted receivers and had at least a 7dBA reduction at one or more impacted receivers. The total cost of the barrier was estimated at \$545,993 or \$32,117 per benefited dwelling unit.

### **Barrier E-East -- Recommended For Construction**

Barrier E-East will be a 2550' long, 12' tall wall running along the shoulder of eastbound I-90. Barrier E-East was considered feasible because it provided an Insertion Loss of at least 5 dBA at 78% of the impacted receivers and had at least a 7dBA reduction at one or more impacted receivers. The total cost of the barrier was estimated at \$1,070,975 or \$21,000 per benefited dwelling unit.

### **Barrier F-North -- Recommended For Construction**

Barrier F-North will be a 2800' long, 12' tall wall running along the shoulder of eastbound I-90. Barrier F-North was considered feasible because it provided an Insertion Loss of at least 5 dBA at 82% of the impacted receivers and had at least a 7dBA reduction at one or more impacted receivers. The total cost of the barrier was estimated at \$1,175,993 or \$17,294 per benefited dwelling unit.

### **Barrier F-South -- Recommended For Construction**

Barrier F-South will be a 6000' long, 12' tall wall running along the shoulder of eastbound I-90. Barrier F-South was considered feasible because it provided an Insertion Loss of at least 5 dBA at 95% of the impacted receivers and had at least a 7dBA reduction at one or more impacted receivers. The total cost of the barrier was estimated at \$2,519,976 or \$29,647 per benefited dwelling unit.

### **Barrier G-North -- Recommended For Construction**

Barrier G-North will be a 4552' long, 12' tall wall running along the shoulder of eastbound I-90. Barrier F-North was considered feasible because it provided an Insertion Loss of at least 5 dBA at 95% of the impacted receivers and had at least a 7dBA reduction at one or more impacted receivers. The total cost of the barrier was estimated at \$1,869,641 or \$19,890 per benefited dwelling unit. As shown in Table 6, Barrier G-North has two parts separated by the bridge over the railroad.

Table 6: Noise Barrier Evaluation Summary (See Appendix F)

Barrier	Impacted Units	Benefited Units	Units IL > 7dB	Length	Height	Square Feet	Barrier Cost	Cost/	Barrier Recommended
								Benefited Unit	
Barrier A	3	17	3	1300'	12'	15,600	\$545,993	\$32,117	YES
Barrier C-North	10	6	1	1675'	12'	20,100	\$502,461	\$83,744	No
Barrier C-South	7	6	2	1250'	16'	20,000	\$860,160	\$143,360	No
Barrier D-North	2	1	0	1094'	20'	21,880	\$765,951	\$765,951	No
Barrier D-South	32	60	0	1349'	20'	26,980	\$944,275	\$15,738	No
Barrier D-Southeast	1	1	0	1101'	20'	22,020	\$770,741	\$770,741	No
Barrier D-High Point	20	19	13	1500'	16'	24,000	\$840,004	\$44,211	No
Barrier E-Bikepath	19 ERU	19 ERU	0	851'	14'	11,912	\$849,233	\$44,696	No
Barrier E-West	2	2	1	416'	10'	4,160	\$145,631	\$72,816	No
Barrier E-East	49	51	37	2550'	12'	30,599	\$1,070,975	\$21,000	YES
Barrier F-North	22	68	8	2800'	12'	33,600	\$1,175,993	\$17,294	YES
Barrier F-South	37	85	27	6000'	12'	71,999	\$2,519,976	\$29,647	YES
Barrier F-West	1	1	1	1150'	14'	16,100	\$563,483	\$563,483	No
Barrier G-North South of Railroad	40*	94*	29*	655'	12'	7,860	\$275,097	\$19,890*	YES*
Barrier G-North North of Railroad				3797'	12'	45,558	\$1,594,544		
Barrier G-South	1	1	1	800'	20'	16,000	\$560,000	\$560,000	No

\* Total for Barrier G-North which has two parts separated by the bridge over the railroad.

Table 7: Recommended Noise Barriers

Barrier	Impacted Units	Benefited Units	Units IL > 7dB	Length	Height	Square Feet	Barrier Cost	Cost/	Barrier Recommended
								Benefited Unit	
Barrier A	3	17	3	1300'	12'	15,600	\$545,993	\$32,117	YES
Barrier E-East	49	51	37	2550'	12'	30,599	\$1,070,975	\$21,000	YES
Barrier F-North	22	68	8	2800'	12'	33,600	\$1,175,993	\$17,294	YES
Barrier F-South	37	85	27	6000'	12'	71,999	\$2,519,976	\$29,647	YES
Barrier G-North South of Railroad	40*	94*	29*	655'	12'	7,860	\$275,097	\$19,890*	YES*
Barrier G-North North of Railroad				3797'	12'	45,558	\$1,594,544		
Total:				17,102'		205,216	\$ 7,182,578		

Figures

---

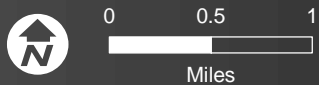
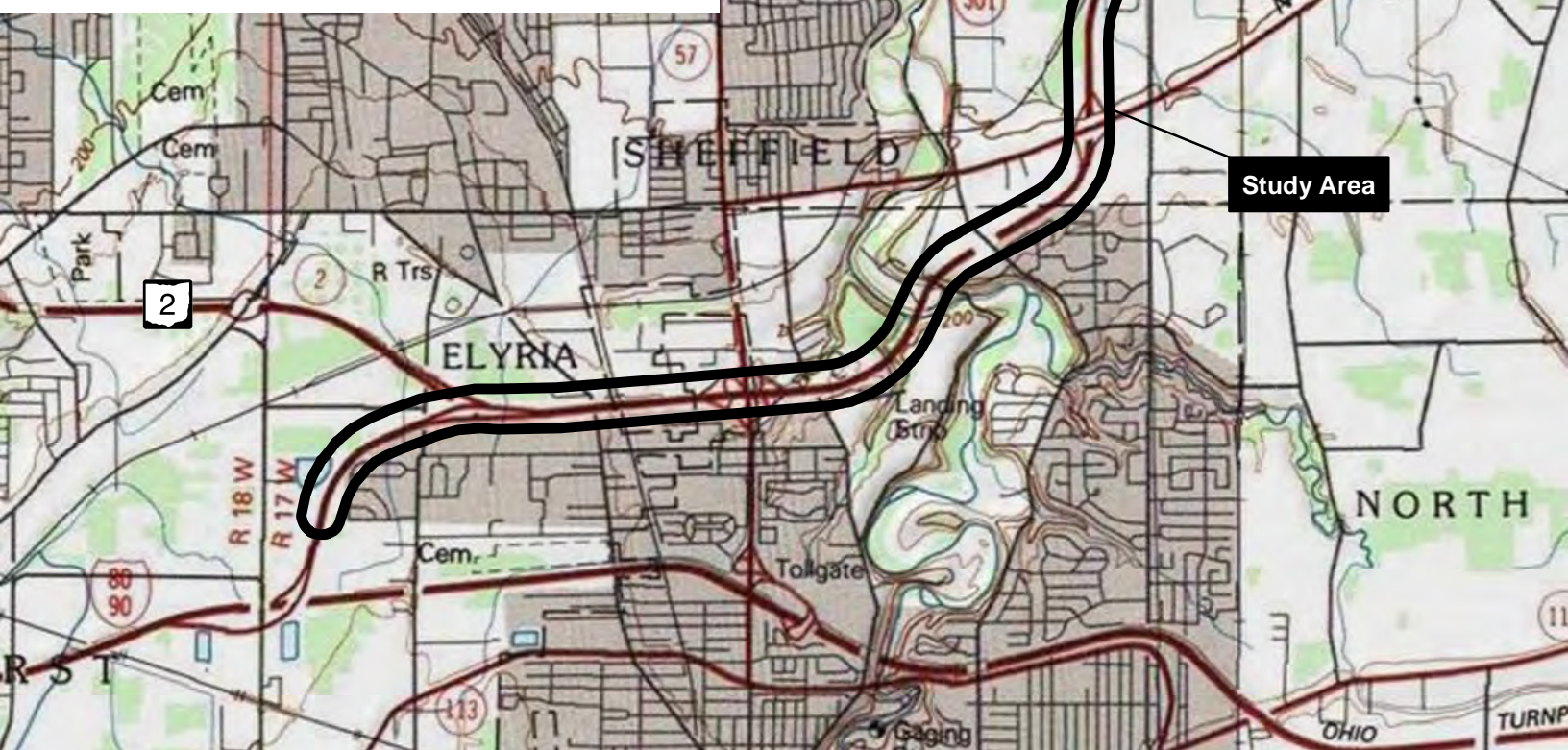
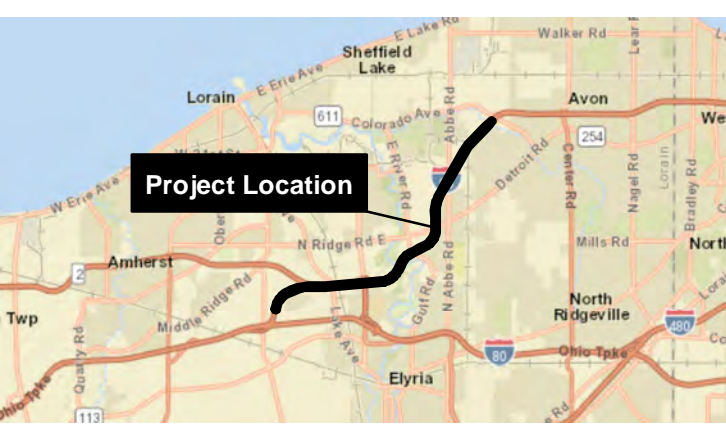
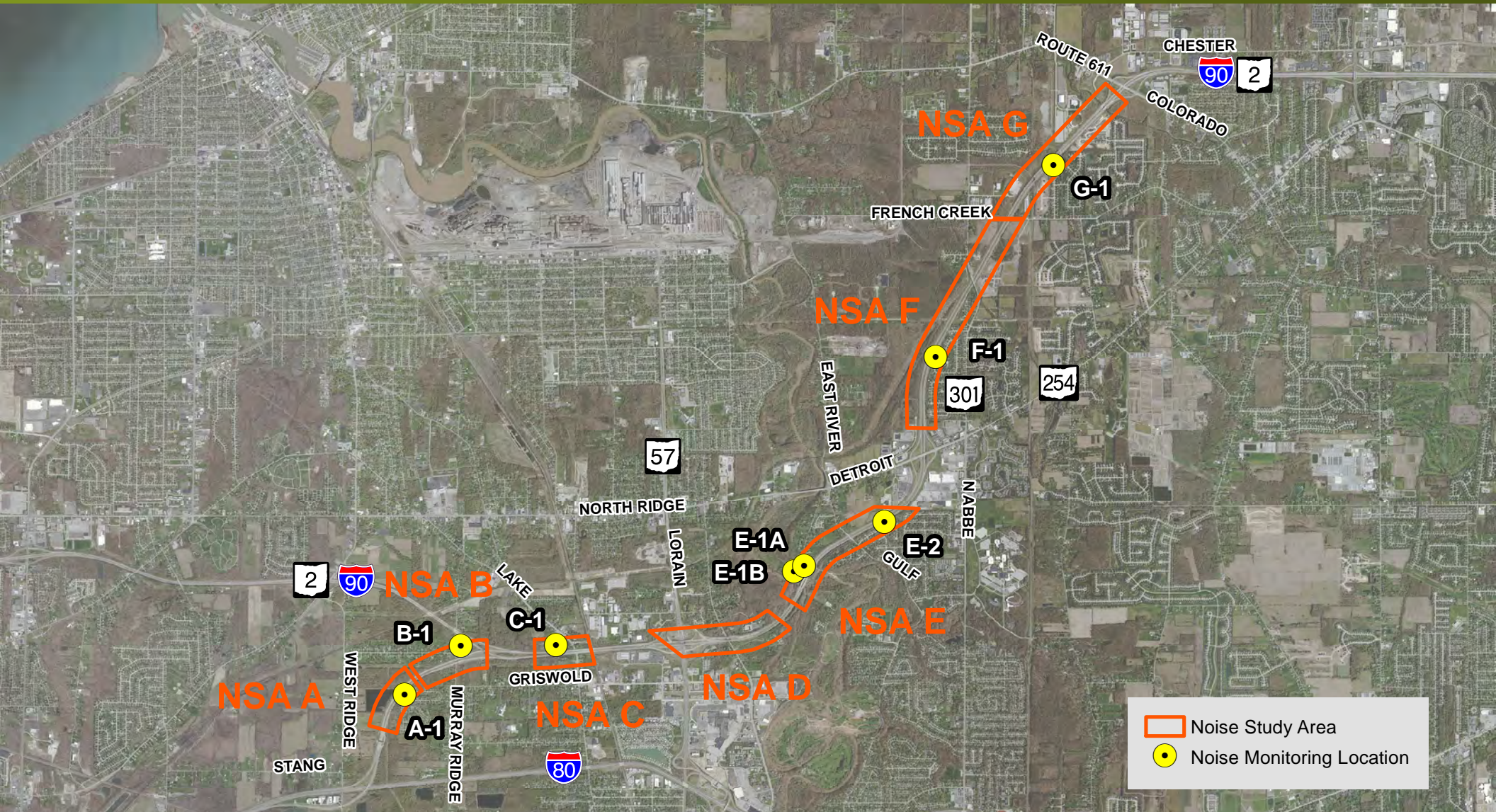


Figure 1  
Project Location Map

Source: USGS, Lorain and Avon Quadrangles



Legend:

- Noise Study Area (orange outline)
- Noise Monitoring Location (yellow circle)



Figure 2  
Noise Study Areas and Monitoring Locations

**Receivers**

- Not Impacted, Not Benefitted
- Benefitted, Not Impacted
- Impacted, Not Benefitted
- Impacted, Benefitted

**Noise Barriers**

- Recommended
- Not Recommended
- ▭ Noise Study Area

**NSA A**

**Barrier A**  
Edge of Shoulder  
12' Height  
1,300' Length



CRESTLANE

HAVEN

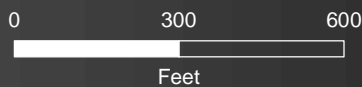
WOODHILL

FRELAND

EMERALD

IMPERIAL

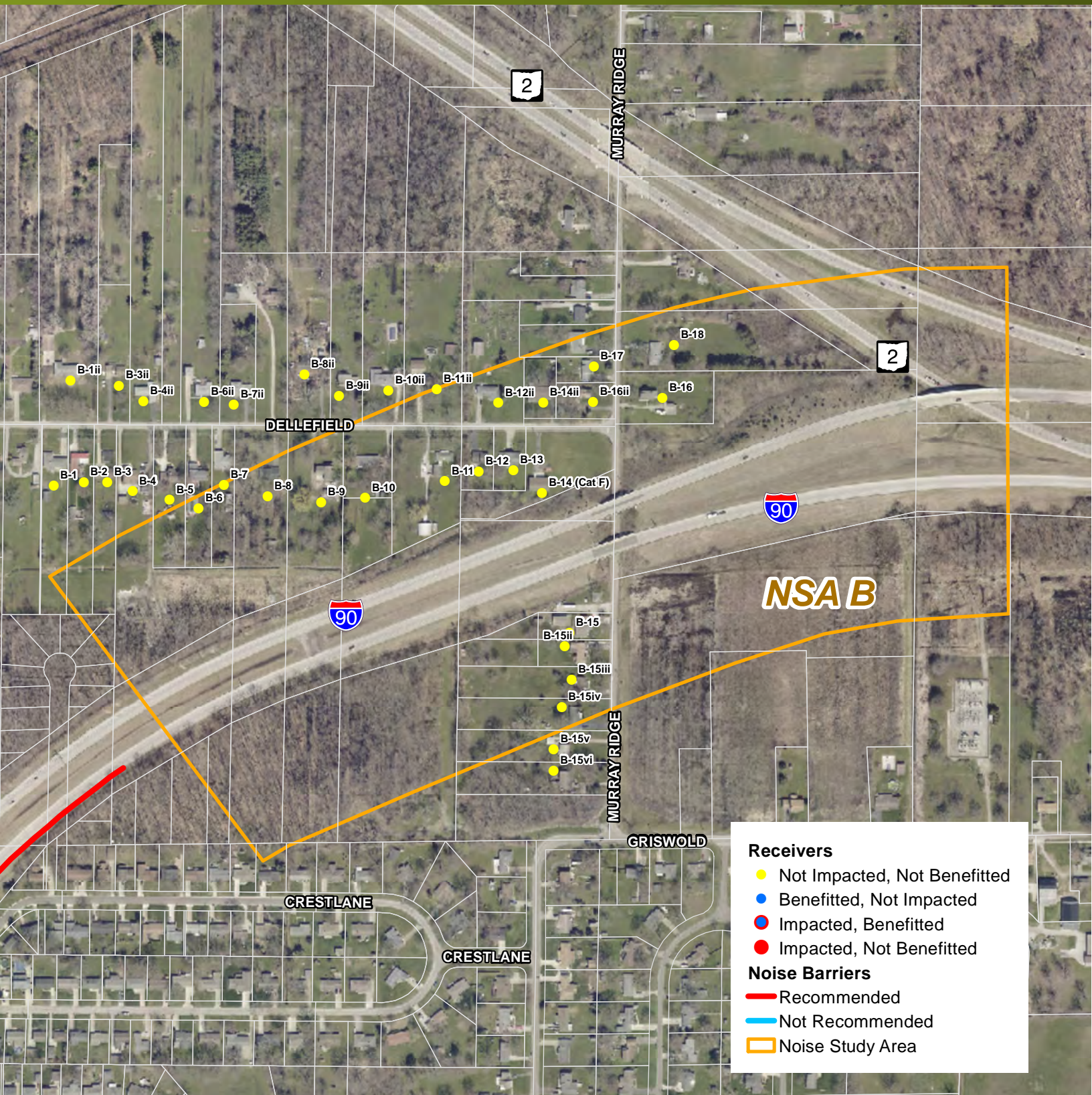
GALAXY



**NSA A**





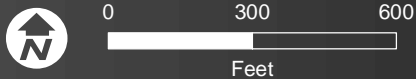


**Receivers**

- Not Impacted, Not Benefitted
- Benefitted, Not Impacted
- Impacted, Benefitted
- Impacted, Not Benefitted

**Noise Barriers**

- Recommended
- Not Recommended
- Noise Study Area



**NSA B**

**Receivers**

- Not Impacted, Not Benefitted
- Benefitted, Not Impacted
- Impacted, Benefitted
- Impacted, Not Benefitted

**Noise Barriers**

- Recommended
- Not Recommended
- ▭ Noise Study Area

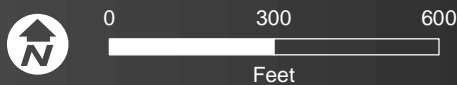


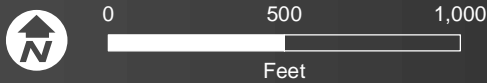
Barrier C North  
Edge of Shoulder  
12' Height  
1,675' Length

Barrier C South  
Edge of Shoulder  
16' Height  
1,250' Length

**NSA C**

**NSA C**





NSA D



### NSA E East

**Barrier EE East  
Edge of Shoulder  
12' Height  
2,550' Length**

**Barrier EE West  
Edge of Shoulder  
10' Height  
416' Length**

**Receivers**

- Not Impacted, Not Benefitted
- Benefitted, Not Impacted
- Impacted, Benefitted
- Impacted, Not Benefitted

**Noise Barriers**

- Recommended
- Not Recommended
- Noise Study Area



### NSA E - East



Barrier E Park  
Edge of Shoulder  
14' Height  
851' Length

**Receivers**

- Not Impacted, Not Benefitted
- Benefitted, Not Impacted
- Impacted, Benefitted
- Impacted, Not Benefitted

**Noise Barriers**

- Recommended
- Not Recommended
- Noise Study Area

NSA E - Park



**Receivers**

- Not Impacted, Not Benefitted
- Benefitted, Not Impacted
- Impacted, Benefitted
- Impacted, Not Benefitted

**Noise Barriers**

- Recommended
- Not Recommended
- Noise Study Area





Barrier G North  
North of Railroad  
Edge of Shoulder  
12' Height  
3,797' Length

Barrier G North  
South of Railroad  
Edge of Shoulder  
12' Height  
655' Length

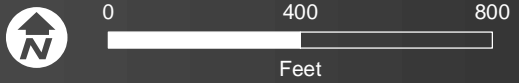
Barrier G South  
Edge of Shoulder  
20' Height  
800' Length

**Receivers**

- Not Impacted, Not Benefitted
- Benefitted, Not Impacted
- Impacted, Benefitted
- Impacted, Not Benefitted

**Noise Barriers**

- Recommended
- Not Recommended
- Noise Study Area



**Appendix A**

**Noise Monitoring**

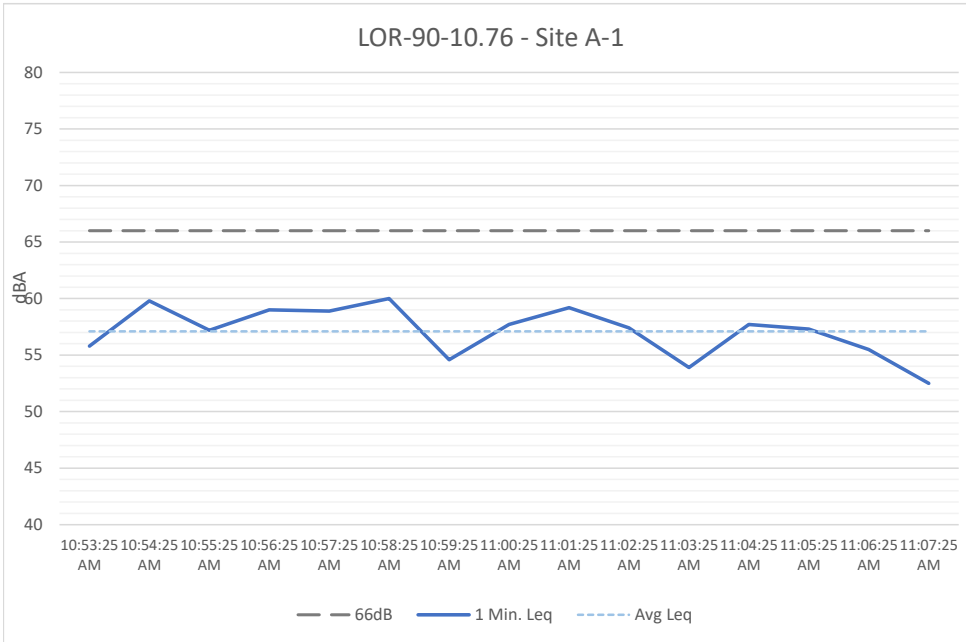
**Data**

---



## Noise Monitoring Recorded Data

File Name.....	Site A-1 Data Sheet	Date Recorded.....	10/24/2022
Logger.....	Rion A and C, Seq. 0001	Start Time.....	10:53:25 AM
Project Name.....	LOR-90-10.76, PID 107714	Stop Time.....	11:07:25 AM
Test Location.....	Site A-1		
Employee Name.....	KLC		
Site Address.....	43015 Crestlane Drive	Site Notes.....	Side Yard
	Elyria, OH 44035		
Temperature.....	63F	Wind Speed.....	0-5 mph
Cloud Cover.....	Clear	Wind Direction.....	SW



### Sound Measurements dBA

Min	Mon. Leq	Cum. Leq
1	55.8	55.8
2	59.8	57.8
3	57.2	57.6
4	59.0	58.0
5	58.9	58.1
6	60.0	58.5
7	54.6	57.9
8	57.7	57.9
9	59.2	58.0
10	57.4	58.0
11	53.9	57.6
12	57.7	57.6
13	57.3	57.6
14	55.5	57.4
15	52.5	57.1

<b>15 Min. Leq</b>	<b>57.1</b>
------------------------	-------------



Latitude: 41.399225  
 Longitude: -82.155929

## Field Noise Measurement Data

Project: LOR-90-10.76, PID 107714

Project #: 60-02413-00-00-0202

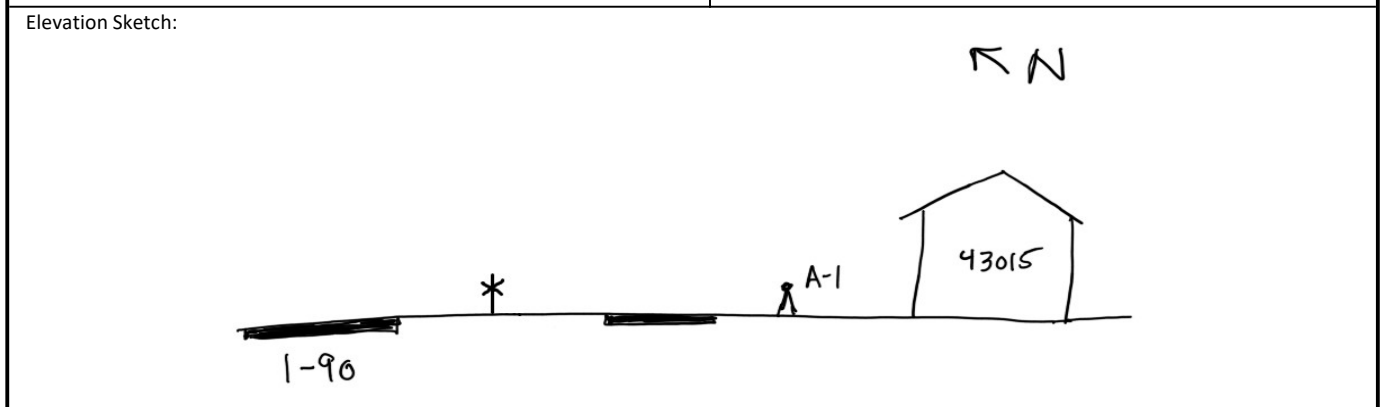
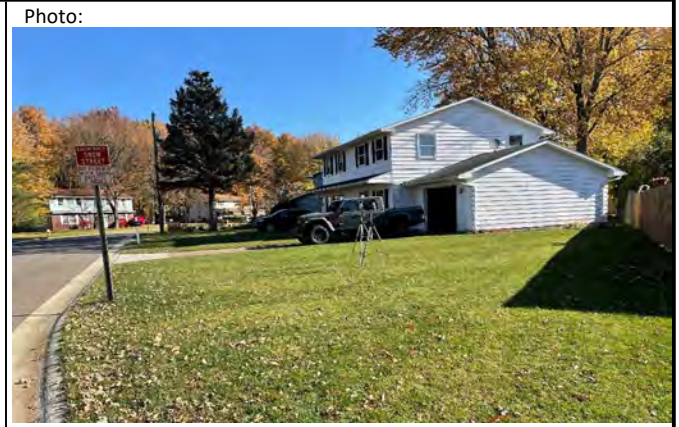
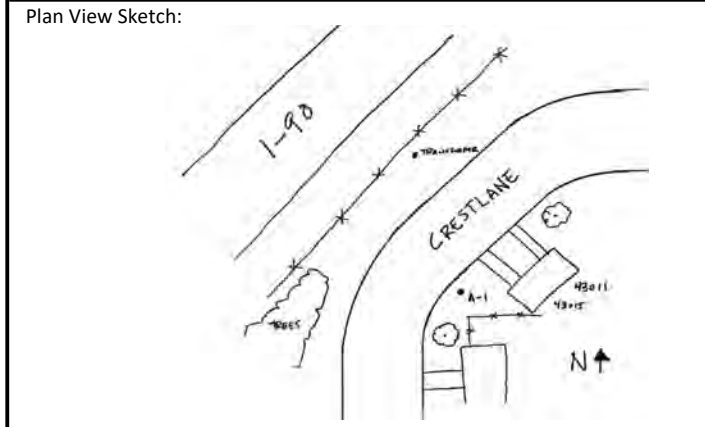
<b>Site Identification:</b>	<b>A-1</b>		Observers:	KLC/RMP	
Start Date/Time:	10/24/22	10:53:00 AM	End Date/Time:	10/24/22	11:09:00 AM
Site Address:	43015 Crestlane Drive		Landmark:	Side Yard	

<b>Meteorological Conditions:</b>					
Temp:	63	F	Wind:	0-5 mph	
Sky:	Clear		Wind Dir:	SW	

<b>Acoustic Measurements:</b>					
Instrument:	Rion NL-31 A (SN 01273090) & C (SN 01252412)			Seq. #	0001
Calibrator:	Rion NC-74 (SN 34557100)(9/26/22)				

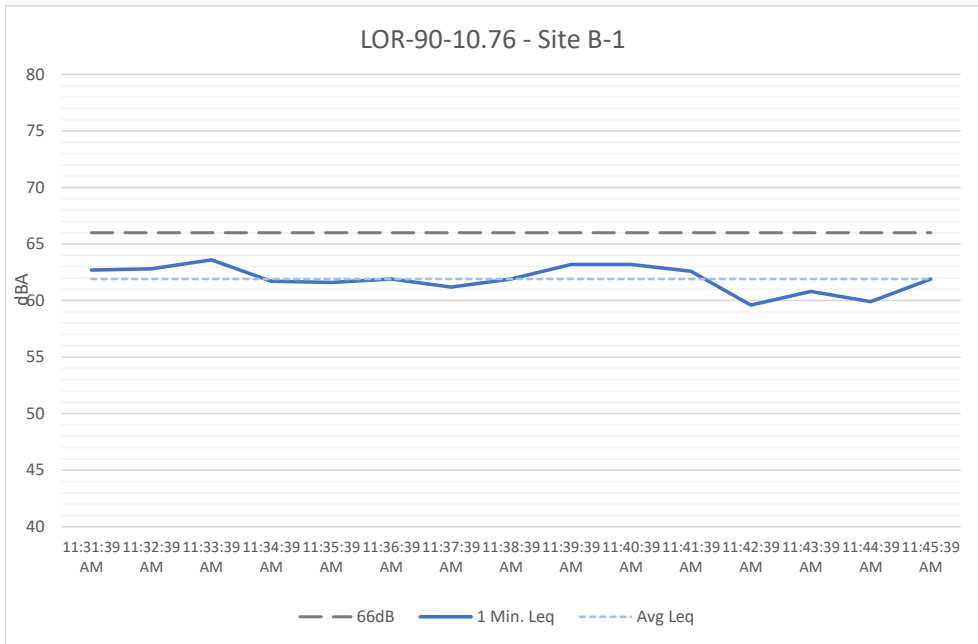
<b>Source Info and Traffic Counts:</b>					
Primary Noise Source:	Traffic I-90 (OTC connector)		Roadway Surface:	Asphalt	
Video (Start/End):	10:55 AM	11:10 AM	Near Lane Dir:	Eastbound	
Traffic Count Duration:	15 Min		Speed Estimated by:	Radar	
		WB	Speed	EB	Speed
Autos:		328	50	224	50
Medium Trucks:		8	50	16	45
Heavy Trucks:		104	50	32	45
Other Noise Sources:	Mower in distance + Wind in tree leaves				
Other:					

<b>Description / Sketch:</b>		Terrain: <u>Soft</u>	Photos: <u>Yes</u>
------------------------------	--	----------------------	--------------------



## Noise Monitoring Recorded Data

File Name.....	Site B-1 Data Sheet	Date Recorded.....	10/24/2022
Logger.....	Rion A and C, Seq. 0001	Start Time.....	11:31:39 AM
Project Name.....	LOR-90-10.76, PID 107714	Stop Time.....	11:45:39 AM
Test Location.....	Site B-1		
Employee Name.....	KLC		
Site Address.....	6697 Murray Ridge Road Elyria, OH 44035	Site Notes.....	Edge of Big Lawn
Temperature.....	65F	Wind Speed.....	Variable Light
Cloud Cover.....	Clear	Wind Direction.....	Variable



### Sound Measurements dBA

Min	Mon. Leq	Cum. Leq
1	62.7	62.7
2	62.8	62.8
3	63.6	63.0
4	61.7	62.7
5	61.6	62.5
6	61.9	62.4
7	61.2	62.2
8	61.9	62.2
9	63.2	62.3
10	63.2	62.4
11	62.6	62.4
12	59.6	62.2
13	60.8	62.1
14	59.9	61.9
15	61.9	61.9

<b>15 Min. Leq</b>	<b>61.9</b>
--------------------	-------------

Latitude: 41.404432  
 Longitude: -82.147963



### Field Noise Measurement Data

Project: LOR-90-10.76, PID 107714

Project #: 60-02413-00-00-0202

<b>Site Identification:</b>	<b>B-1</b>		Observers:	KLC/RMP	
Start Date/Time:	10/24/22	11:32:00 AM	End Date/Time:	10/24/22	11:48:00 AM
Site Address:	6697 Murray Ridge Road		Landmark:	Edge of large back lawn	

<b>Meteorological Conditions:</b>					
Temp:	65	F	Wind:	Light	
Sky:	Clear		Wind Dir:	Variable	

<b>Acoustic Measurements:</b>					
Instrument:	Rion NL-31 A (SN 01273090) & C (SN 01252412)			Seq. #	0002
Calibrator:	Rion NC-74 (SN 34557100)(9/26/22)				

<b>Source Info and Traffic Counts:</b>					
Primary Noise Source:	Traffic SR 2		Roadway Surface:	Asphalt	
Video (Start/End):	11:32 AM	11:47 AM	Near Lane Dir:	Eastbound	
Traffic Count Duration:	15 Min		Speed Estimated by:	Radar	
		WB	Speed	EB	Speed
Autos:		1500	70	1404	70
Medium Trucks:		12	66	8	66
Heavy Trucks:		84	65	76	65
Other Noise Sources:	Murry Ridge Road traffic - light				
Other:					

<b>Description / Sketch:</b>				
Terrain:	Soft		Photos:	No

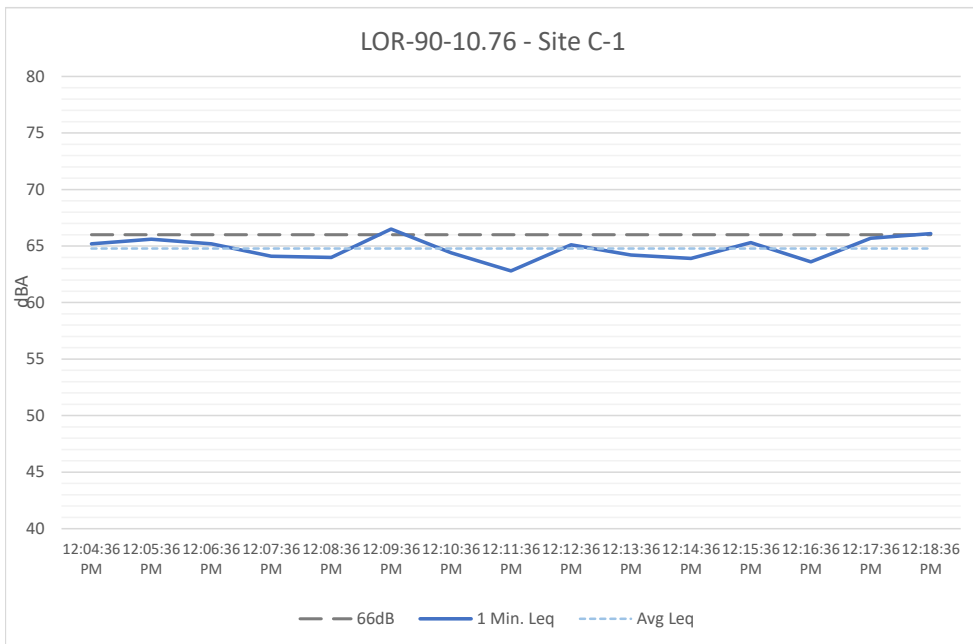
<p>Plan View Sketch:</p>	<p>Photo:</p>
--------------------------	---------------

Elevation Sketch:

## Noise Monitoring Recorded Data

File Name..... Site C-1 Data Sheet                      Date Recorded..... 10/24/2022  
 Logger..... Rion A and C, Seq. 0001                      Start Time..... 12:04:36 PM  
 Project Name..... LOR-90-10.76, PID 107714                      Stop Time..... 12:18:36 PM  
 Test Location..... Site C-1  
 Employee Name..... KLC

Site Address..... 6610 Lake Avenue                      Site Notes..... Fire Hydrant and Big Rock  
                                 Elyria, OH 44035  
 Temperature..... 63F                      Wind Speed..... Light  
 Cloud Cover..... Clear                      Wind Direction..... Variable



### Sound Measurements dBA

Min	Mon. Leq	Cum. Leq
1	65.2	65.2
2	65.6	65.4
3	65.2	65.3
4	64.1	65.0
5	64.0	64.8
6	66.5	65.1
7	64.4	65.0
8	62.8	64.7
9	65.1	64.8
10	64.2	64.7
11	63.9	64.6
12	65.3	64.7
13	63.6	64.6
14	65.7	64.7
15	66.1	64.8

<b>15 Min. Leq</b>	<b>64.8</b>
--------------------	-------------



Latitude: 41.404437  
 Longitude: -82.134474

### Field Noise Measurement Data

Project: LOR-90-10.76, PID 107714

Project #: 60-02413-00-00-0202

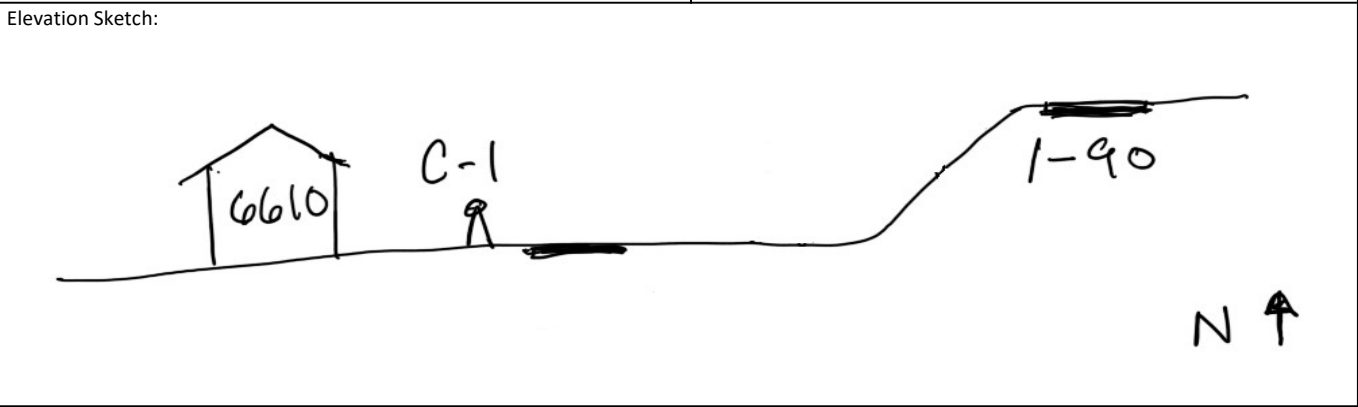
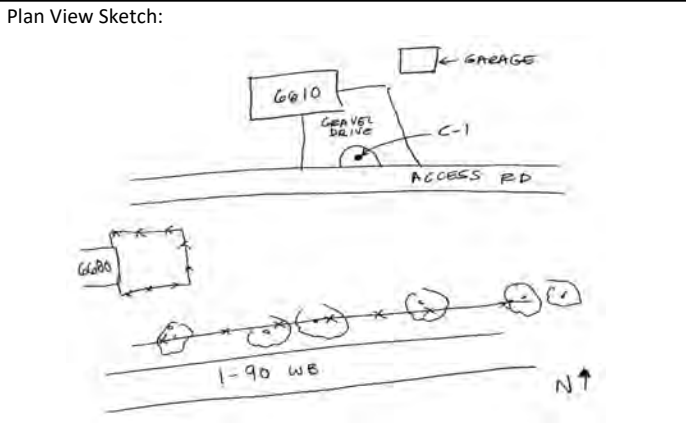
<b>Site Identification:</b>	<b>C-1</b>		Observers:	KLC/RMP	
Start Date/Time:	10/24/22	12:05:00 PM	End Date/Time:	10/24/22	12:20:00 PM
Site Address:	6610 Lake Avenue		Landmark:	Near Fire Hydrant & Big Rock	

<b>Meteorological Conditions:</b>					
Temp:	63	F	Wind:	Light	
Sky:	Clear		Wind Dir:	Variable	

<b>Acoustic Measurements:</b>					
Instrument:	Rion NL-31 A (SN 01273090) & C (SN 01252412)			Seq. #	0003
Calibrator:	Rion NC-74 (SN 34557100)(9/26/22)				

<b>Source Info and Traffic Counts:</b>					
Primary Noise Source:	Traffic I-90		Roadway Surface:	Asphalt	
Video (Start/End):	12:07 PM	12:17 PM	Near Lane Dir:	Westbound	
Traffic Count Duration:	10 Min		Speed Estimated by:	Radar	
		WB	Speed	EB	Speed
Autos:		1314	65	1276	65
Medium Trucks:		24	60	36	60
Heavy Trucks:		120	60	727	60
Other Noise Sources:	Light traffic on Lake Ave				
Other:					

<b>Description / Sketch:</b>		Terrain: Soft	Photos: Yes
------------------------------	--	---------------	-------------





### Field Noise Measurement Data

Project: LOR-90-10.76, PID 107714

Project #: 60-02413-00-00-0202

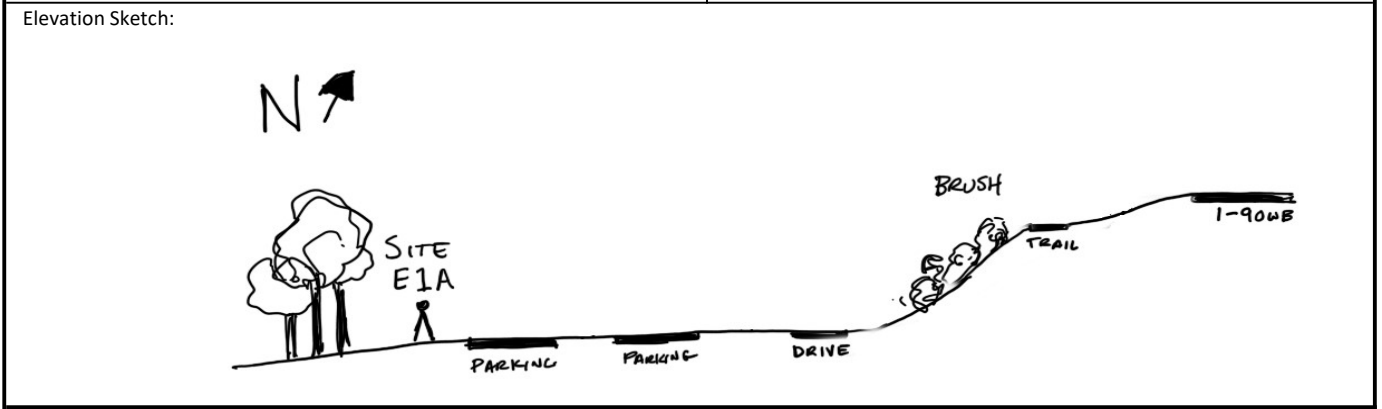
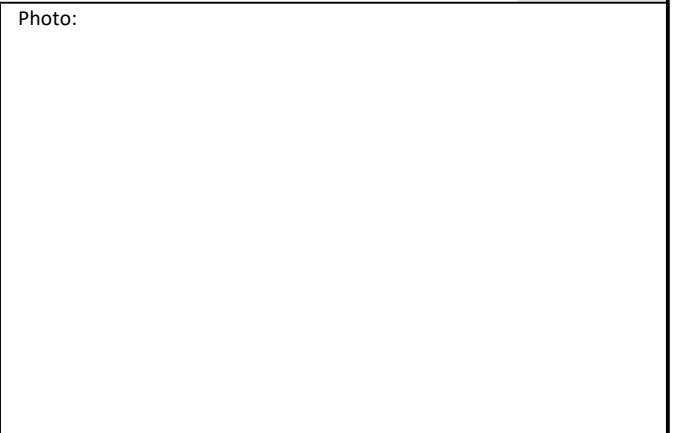
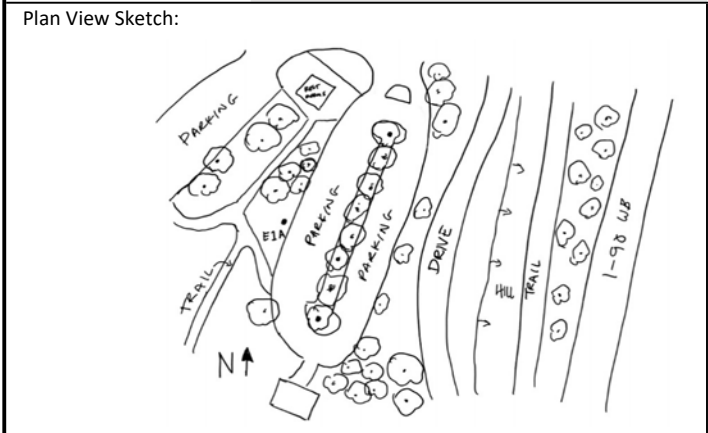
<b>Site Identification:</b>	<b>E-1 A</b>		Observers:	KLC/RMP	
Start Date/Time:	10/24/22	3:55:00 PM	End Date/Time:	10/24/22	4:10:00 PM
Site Address:	Lorain County Metro Parks Black River Reservation -- Bur Oak		Landmark:	E-1A Picnic Area	

<b>Meteorological Conditions:</b>					
Temp:	75	F	Wind:	Light	
Sky:	Clear		Wind Dir:	Variable	

<b>Acoustic Measurements:</b>					
Instrument:	Rion NL-31 A (SN 01273090) & C (SN 01252412)			Seq. #	0007
Calibrator:	Rion NC-74 (SN 34557100)(9/26/22)				

<b>Source Info and Traffic Counts:</b>					
Primary Noise Source:	Traffic I-90		Roadway Surface:	Asphalt	
Video (Start/End):	4:02 PM	4:12 PM	Near Lane Dir:	Westbound	
Traffic Count Duration:	10 Min		Speed Estimated by:	Radar	
		WB	Speed	EB	Speed
Autos:		1627	60	1576	60
Medium Trucks:		32	60	36	60
Heavy Trucks:		150	60	160	60
Other Noise Sources:	Birds Wind in leaves				
Other:					

<b>Description / Sketch:</b>		Terrain: Soft	Photos: No
------------------------------	--	---------------	------------

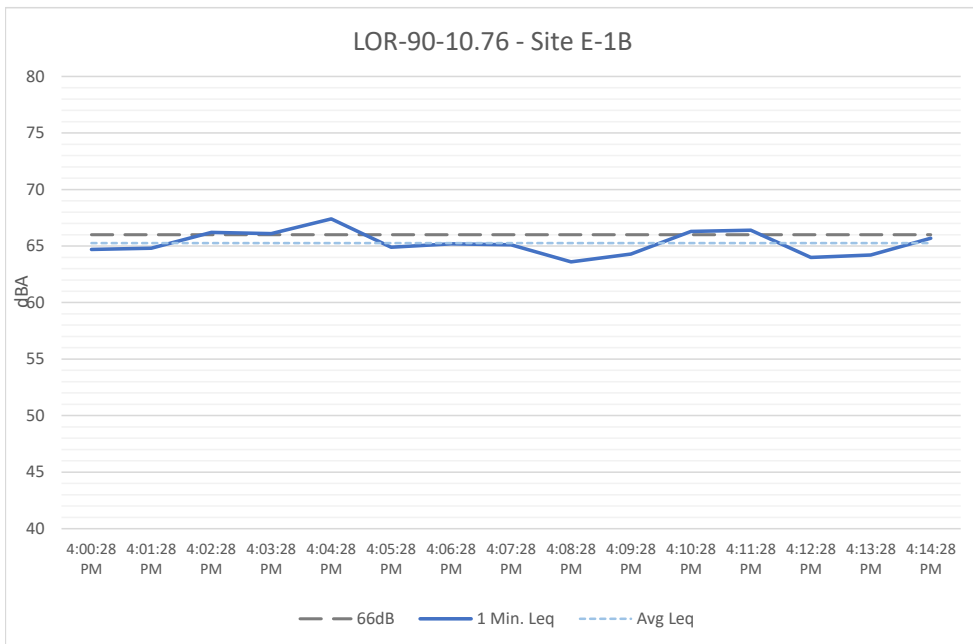




## Noise Monitoring Recorded Data

File Name..... Site E-1B Data Sheet                                      Date Recorded..... 10/24/2022  
 Logger..... Rion B and C, Seq. 0001                                      Start Time..... 4:00:28 PM  
 Project Name..... LOR-90-10.76, PID 107714                                      Stop Time..... 4:14:28 PM  
 Test Location..... Site E-1B  
 Employee Name..... KLC

Site Address..... Black River Bikeway                                      Site Notes..... Picnic Area  
                                     LaGrange, OH 44050  
 Temperature..... 75F                                      Wind Speed..... Light with Gusts 5-6 mph  
 Cloud Cover..... Clear                                      Wind Direction..... Variable



### Sound Measurements dBA

Min	Mon. Leq	Cum. Leq
1	64.7	64.7
2	64.8	64.8
3	66.2	65.2
4	66.1	65.5
5	67.4	65.8
6	64.9	65.7
7	65.2	65.6
8	65.1	65.6
9	63.6	65.3
10	64.3	65.2
11	66.3	65.3
12	66.4	65.4
13	64.0	65.3
14	64.2	65.2
15	65.7	65.3

<b>15 Min. Leq</b>	<b>65.3</b>
--------------------	-------------

Latitude: 41.412093  
 Longitude: -82.101157



### Field Noise Measurement Data

Project: LOR-90-10.76, PID 107714

Project #: 60-02413-00-00-0202

<b>Site Identification:</b>	<b>E-1 B</b>		Observers:	KLC/RMP	
Start Date/Time:	10/24/22	4:05:00 PM	End Date/Time:	10/24/22	4:15:00 PM
Site Address:	Lorain County Metro Parks Black River Reservation -- Bur Oak		Landmark:	E-1B Bike Trail near I-90	

<b>Meteorological Conditions:</b>					
Temp:	75	F	Wind:	Light	
Sky:	Clear		Wind Dir:	Variable	

<b>Acoustic Measurements:</b>					
Instrument:	Rion NL-31 (Ser. No. 00303798) "B"			Seq. #	0001
Calibrator:	Rion NC-74 (SN 34557100)(9/26/22)				

<b>Source Info and Traffic Counts:</b>					
Primary Noise Source:	Traffic I-90		Roadway Surface:	Asphalt	
Video (Start/End):	4:02 PM	4:12 PM	Near Lane Dir:	Westbound	
Traffic Count Duration:	10 Min		Speed Estimated by:	Radar	
		WB	Speed	EB	Speed
Autos:		1627	60	1576	60
Medium Trucks:		32	60	36	60
Heavy Trucks:		150	60	160	60
Other Noise Sources:	Birds Wind in leaves				
Other:					

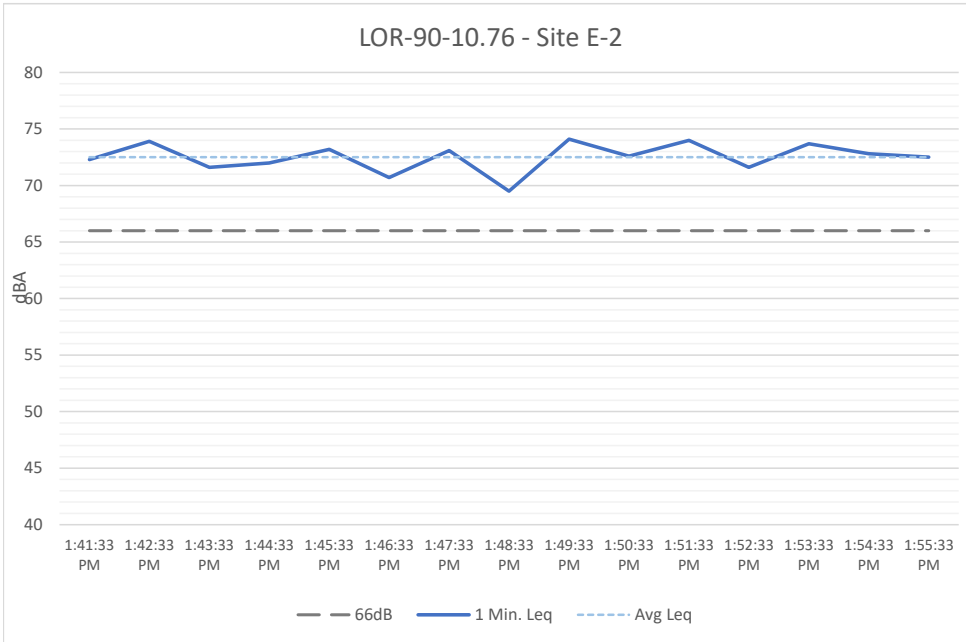
<b>Description / Sketch:</b>			
Terrain: Soft		Photos:	No

<p>Plan View Sketch:</p>	<p>Photo:</p>
--------------------------	---------------

<p>Elevation Sketch:</p>	
--------------------------	--

## Noise Monitoring Recorded Data

File Name.....	Site E-2 Data Sheet	Date Recorded.....	10/24/2022
Logger.....	Rion A and C, Seq. 0001	Start Time.....	1:41:33 PM
Project Name.....	LOR-90-10.76, PID 107714	Stop Time.....	1:55:33 PM
Test Location.....	Site E-2		
Employee Name.....	KLC		
Site Address..... 176 Hemlock Drive		Site Notes.....	Backyard
Elyria, OH 44035			
Temperature.....	67F	Wind Speed.....	Light
Cloud Cover.....	Clear	Wind Direction.....	Variable



### Sound Measurements dBA

Min	Mon. Leq	Cum. Leq
1	72.3	72.3
2	73.9	73.1
3	71.6	72.6
4	72.0	72.5
5	73.2	72.6
6	70.7	72.3
7	73.1	72.4
8	69.5	72.0
9	74.1	72.3
10	72.6	72.3
11	74.0	72.5
12	71.6	72.4
13	73.7	72.5
14	72.8	72.5
15	72.5	72.5

<b>15 Min. Leq</b>	<b>72.5</b>
--------------------	-------------



Latitude: 41.417354  
 Longitude: -82.08826

### Field Noise Measurement Data

Project: LOR-90-10.76, PID 107714

Project #: 60-02413-00-00-0202

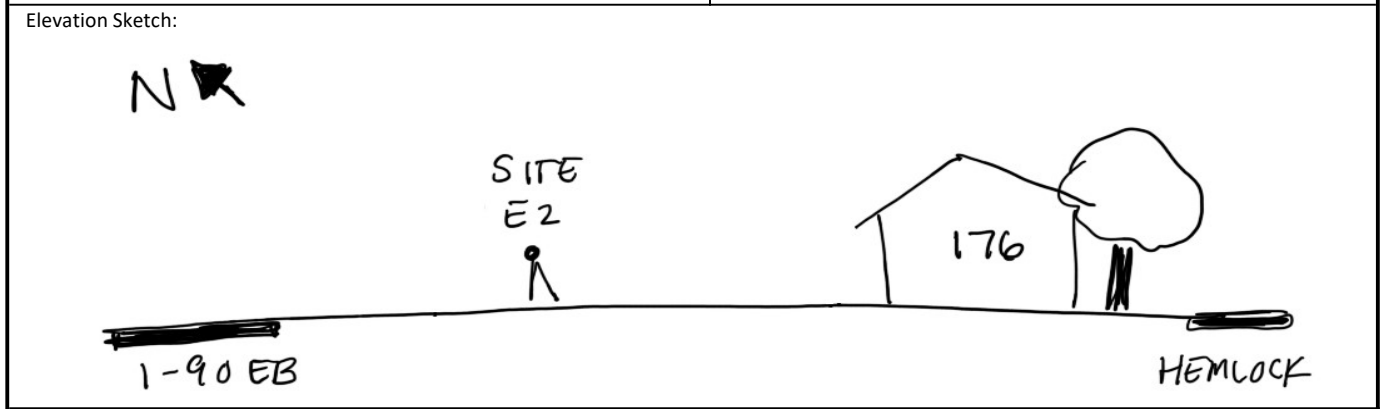
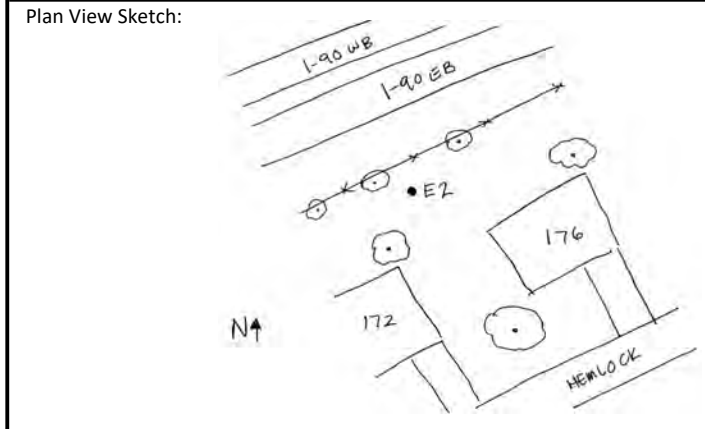
<b>Site Identification:</b>	<b>E-2</b>		Observers:	KLC/RMP	
Start Date/Time:	10/24/22	1:41:00 PM	End Date/Time:	10/24/22	1:56:00 PM
Site Address:	176 Hemlock Drive		Landmark:	Back yard between 176 & 178	

<b>Meteorological Conditions:</b>					
Temp:	67	F	Wind:	Light	
Sky:	Clear		Wind Dir:	Variable	

<b>Acoustic Measurements:</b>					
Instrument:	Rion NL-31 A (SN 01273090) & C (SN 01252412)			Seq. #	0004
Calibrator:	Rion NC-74 (SN 34557100)(9/26/22)				

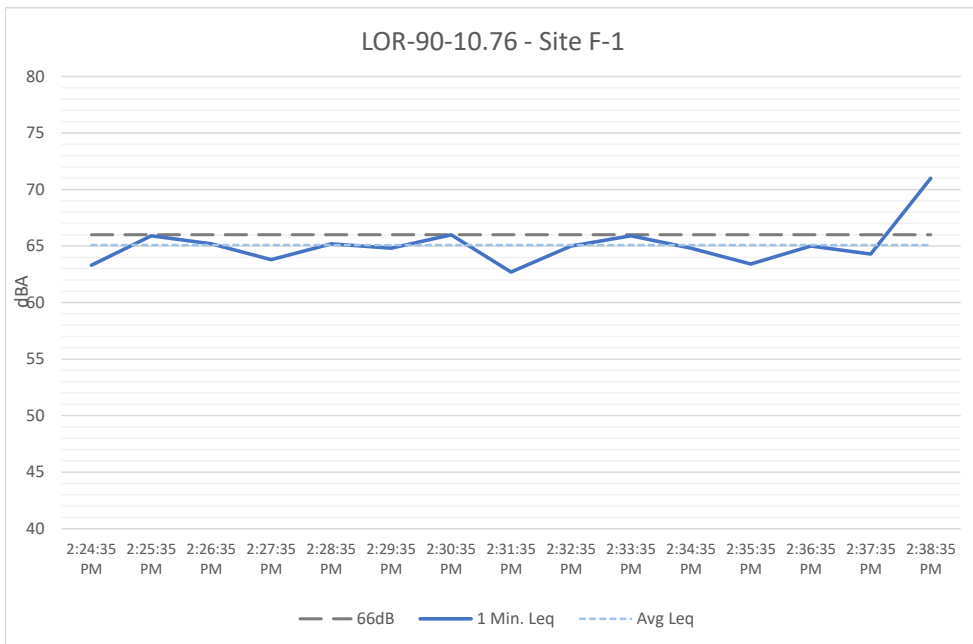
<b>Source Info and Traffic Counts:</b>					
Primary Noise Source:	Traffic I-90		Roadway Surface:	Asphalt	
Video (Start/End):	1:41 PM	1:56 PM	Near Lane Dir:	Eastbound	
Traffic Count Duration:	15 Min		Speed Estimated by:	Radar	
		WB	Speed	EB	Speed
Autos:		1672	60	1576	60
Medium Trucks:		32	60	36	60
Heavy Trucks:		100	60	160	60
Other Noise Sources:	Leaf blower across street stopped at 1:46				
Other:					

<b>Description / Sketch:</b>		Terrain: Soft	Photos: Yes
------------------------------	--	---------------	-------------



## Noise Monitoring Recorded Data

File Name.....	Site F-1 Data Sheet	Date Recorded.....	10/24/2022
Logger.....	Rion A and C, Seq. 0001	Start Time.....	2:24:35 PM
Project Name.....	LOR-90-10.76, PID 107714	Stop Time.....	2:38:35 PM
Test Location.....	Site F-1		
Employee Name.....	KLC		
Site Address.....	4218 Berkeley Dr. Sheffield Lake, OH 44054	Site Notes.....	Middle Backyard
Temperature.....	73F	Wind Speed.....	0-5 mph
Cloud Cover.....	Clear	Wind Direction.....	5 Variable (South)



### Sound Measurements dBA

Min	Mon. Leq	Cum. Leq
1	63.3	63.3
2	65.9	64.6
3	65.2	64.8
4	63.8	64.6
5	65.2	64.7
6	64.8	64.7
7	66.0	64.9
8	62.7	64.6
9	65.0	64.7
10	65.9	64.8
11	64.8	64.8
12	63.4	64.7
13	65.0	64.7
14	64.3	64.7
15	71.0	65.1

<b>15 Min. Leq</b>	<b>65.1</b>
--------------------	-------------



Latitude: 41.434769  
 Longitude: -82.081019

### Field Noise Measurement Data

Project: LOR-90-10.76, PID 107714

Project #: 60-02413-00-00-0202

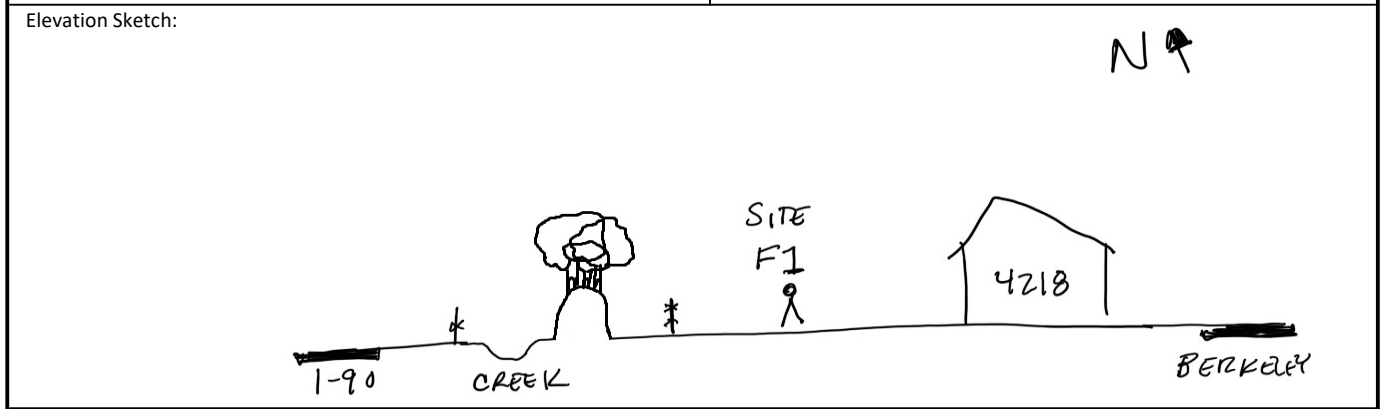
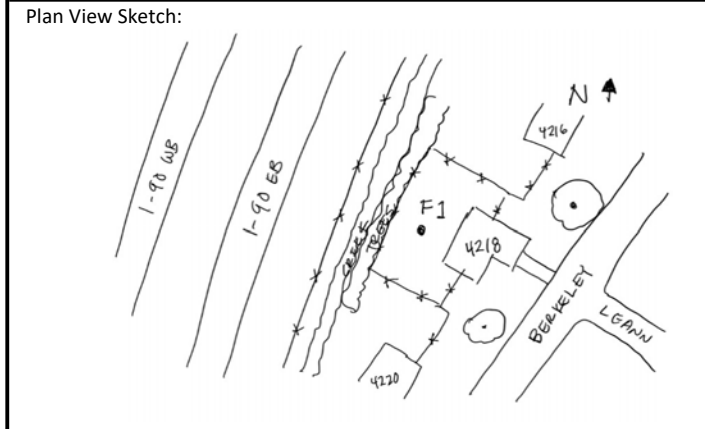
<b>Site Identification:</b>	<b>F-1</b>		Observers:	KLC/RMP	
Start Date/Time:	10/24/22	2:25:00 PM	End Date/Time:	10/24/22	2:40:00 PM
Site Address:	4218 Berkeley Drive		Landmark:	Back yard center	

<b>Meteorological Conditions:</b>					
Temp:	73	F	Wind:	0-5 mph	
Sky:	Clear		Wind Dir:	Variable	

<b>Acoustic Measurements:</b>					
Instrument:	Rion NL-31 A (SN 01273090) & C (SN 01252412)			Seq. #	0005
Calibrator:	Rion NC-74 (SN 34557100)(9/26/22)				

<b>Source Info and Traffic Counts:</b>					
Primary Noise Source:	Traffic I-90		Roadway Surface:	Asphalt	
Video (Start/End):	2:25 PM	2:35 PM	Near Lane Dir:	Eastbound	
Traffic Count Duration:	10 Min		Speed Estimated by:	Radar	
		WB	Speed	EB	Speed
Autos:		1908	65	1608	65
Medium Trucks:		6	60	24	60
Heavy Trucks:		126	60	96	60
Other Noise Sources:	Wind in Pine Trees Aircraft @ 2:27 Rumble Strip Hit @ 2:28 Motorcycle @ 2:39				
Other:					

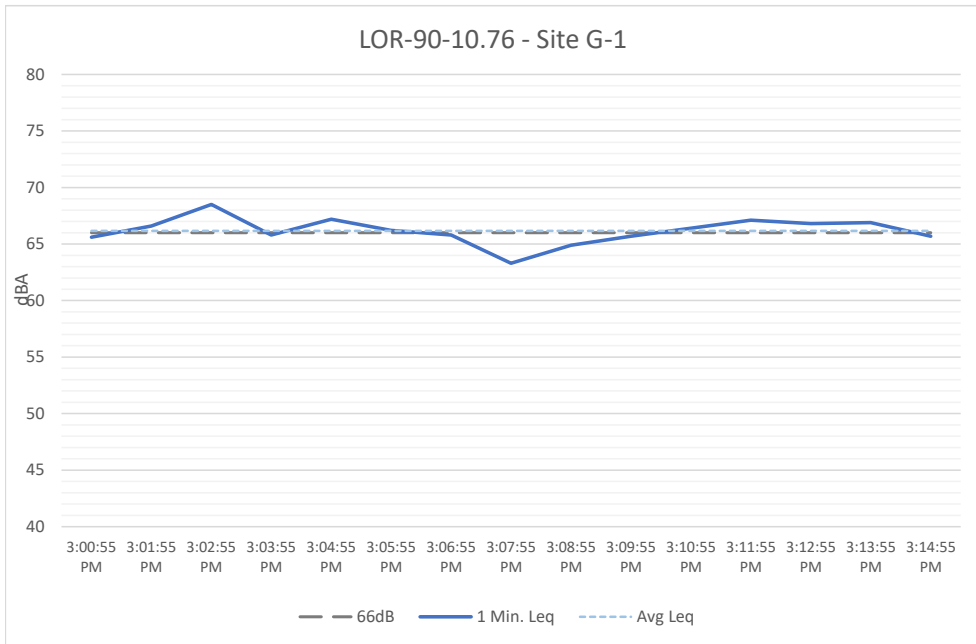
<b>Description / Sketch:</b>		Terrain: <u>Soft</u>	Photos: <u>Yes</u>
------------------------------	--	----------------------	--------------------



## Noise Monitoring Recorded Data

File Name..... Site G-1 Data Sheet                      Date Recorded..... 10/24/2022  
 Logger..... Rion A and C, Seq. 0001                      Start Time..... 3:00:55 PM  
 Project Name..... LOR-90-10.76, PID 107714                      Stop Time..... 3:14:55 PM  
 Test Location..... Site G-1  
 Employee Name..... KLC

Site Address..... 2447 Fairfield Dr                      Site Notes..... Middle Backyard  
                          Avon, OH 44011  
 Temperature..... 75F                      Wind Speed..... 0-5 mph and Gusts >5  
 Cloud Cover..... Clear                      Wind Direction..... S-SW



### Sound Measurements dBA

Min	Mon. Leq	Cum. Leq
1	65.6	65.6
2	66.6	66.1
3	68.5	66.9
4	65.8	66.6
5	67.2	66.7
6	66.2	66.7
7	65.8	66.5
8	63.3	66.1
9	64.9	66.0
10	65.7	66.0
11	66.4	66.0
12	67.1	66.1
13	66.8	66.1
14	66.9	66.2
15	65.7	66.2

<b>15 Min. Leq</b>	<b>66.2</b>
--------------------	-------------



Latitude: 41.455014  
 Longitude: -82.063937

### Field Noise Measurement Data

Project: LOR-90-10.76, PID 107714

Project #: 60-02413-00-00-0202

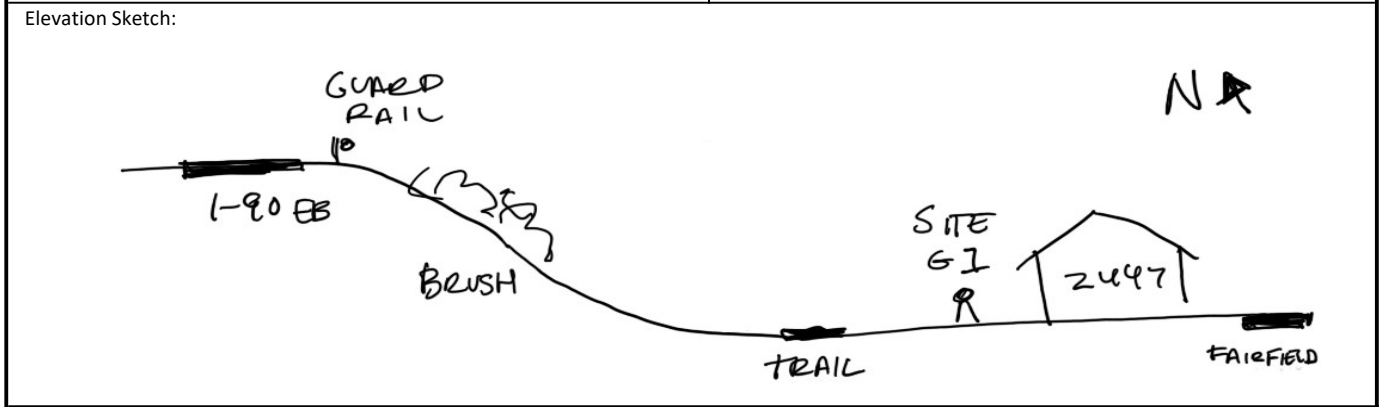
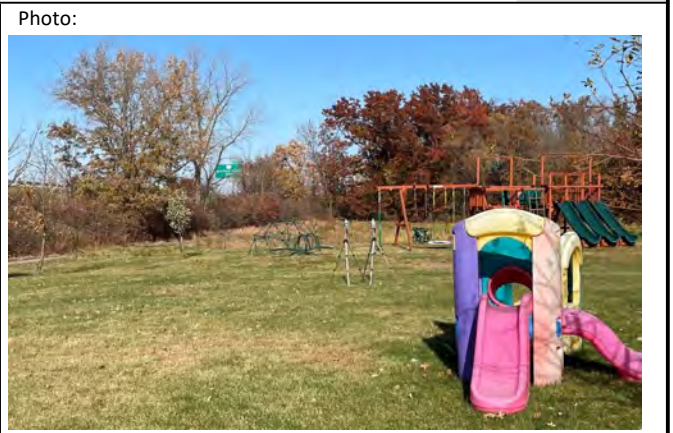
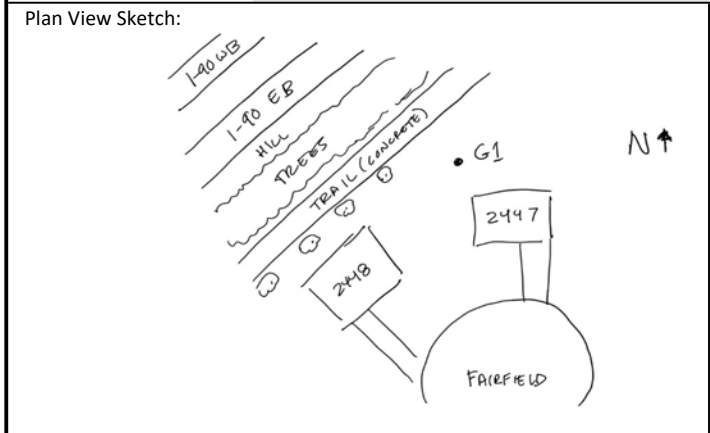
<b>Site Identification:</b>	<b>G-1</b>		Observers:	KLC/RMP	
Start Date/Time:	10/24/22	3:01:00 PM	End Date/Time:	10/24/22	3:16:00 PM
Site Address:	2447 Fairfield Drive		Landmark:	Back yard middle	

<b>Meteorological Conditions:</b>					
Temp:	75	F	Wind:	0-5 mph	
Sky:	Clear		Wind Dir:	SW	

<b>Acoustic Measurements:</b>					
Instrument:	Rion NL-31 A (SN 01273090) & C (SN 01252412)			Seq. #	0006
Calibrator:	Rion NC-74 (SN 34557100)(9/26/22)				

<b>Source Info and Traffic Counts:</b>					
Primary Noise Source:	Traffic I-90		Roadway Surface:	Asphalt	
Video (Start/End):	3:01 PM	3:11 PM	Near Lane Dir:	Eastbound	
Traffic Count Duration:	10 Min		Speed Estimated by:	Radar	
		WB	Speed	EB	Speed
Autos:		1900	65	1600	60
Medium Trucks:		5	60	20	50
Heavy Trucks:		125	60	100	50
Other Noise Sources:	Garbage Truck @ 3:06 Dogs Barking in distance				
Other:	EB traffic slower then WB due to upstream work zone				

**Description / Sketch:** Terrain: Soft Photos: Yes





## Calibration Certificate No.48619

**Instrument:** Acoustical Calibrator  
**Model:** NC-74  
**Manufacturer:** Rion  
**Serial number:** 34557100  
**Class (IEC 60942):** 1  
**Barometer type:**  
**Barometer s/n:**  
**Customer:** MS Consultants, Inc.  
**Tel/Fax:** 330-744-5321 / 330-744-5256

**Date Calibrated:** 9/26/2022 **Cal Due:**  
**Status:**

Received	Sent
X	X

  
**In tolerance:**

X	X
---	---

  
**Out of tolerance:**

--	--

  
**See comments:**

--	--

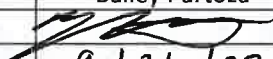
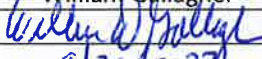
  
**Contains non-accredited tests:**    Yes    No  
**Address:** 333 East Federal Street,  
Youngstown, Ohio 44503

**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. Due
				Cal. Lab / Accreditation	
483B-Norsonic	SME Cal Unit	31052	Nov 8, 2021	Scantek, Inc./ NVLAP	Nov 8, 2022
DS-360-SRS	Function Generator	88077	Dec 3, 2020	ACR Env./ A2LA	Dec 3, 2022
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 8, 2021	Scantek / NVLAP	Nov 8, 2022
PC Program 1018 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
4134-Brüel&Kjær	Microphone	173368	Nov 8, 2021	Scantek, Inc. / NVLAP	Nov 8, 2022
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)**

<b>Calibrated by:</b>	Bailey Partoza	<b>Authorized signatory:</b>	William Gallagher
Signature		Signature	
Date	9/26/22	Date	9/26/2022

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

CLAUSES <sup>1</sup> FROM STANDARDS REFERENCED IN PROCEDURES:	MET <sup>2</sup>	NOT MET	COMMENTS
<b>Manufacturer specifications</b>			
Manufacturer specifications: Sound pressure level	X		
Manufacturer specifications: Frequency	X		
Manufacturer specifications: Total harmonic distortion	X		
<b>Current standards</b>			
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		

- <sup>1</sup> The results of this calibration apply only to the instrument type with serial number identified in this report.
- <sup>2</sup> The tests marked with (\*) are not covered by the current NVLAP accreditation.

**Main measured parameters <sup>3</sup>:**

Measured <sup>4</sup> /Acceptable <sup>5</sup> Tone frequency (Hz):	Measured <sup>4</sup> /Acceptable <sup>5</sup> Total Harmonic Distortion (%):	Measured <sup>4</sup> /Acceptable Level <sup>5</sup> (dB):
1001.77 ± 1.0/1000.0 ± 10.0	1.17 ± 0.10/ < 3	94.12 ± 0.12/94.0 ± 0.4

- <sup>3</sup> The stated level is valid at measurement conditions.
- <sup>4</sup> The above expanded uncertainties for frequency and distortion are calculated with a coverage factor k=2; for level k=2.00
- <sup>5</sup> Acceptable parameters values are from the current standards

**Environmental conditions:**

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
23.0 ± 1.0	99.42 ± 0.000	48.1 ± 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 # 48619 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](mailto:callab@scantekinc.com)

# Test Report No.:48619

**Manufacturer:** Rion  
**Type:** NC-74  
**Serial no:** 34557100

**Customer:** MS Consultants, Inc.  
**Department:**  
**Address:** 333 East Federal Street, Youngstown, Ohio 44503  
**Order No:**  
**Contact Person:** Karel Cubick  
**Phone No.:** 330-744-5321  
**Fax No.:** 330-744-5256  
**eMail:** kcubick@msconsultants.com

## Measurement Results:

	Level: (dB)	P. Stab : (dB)	Frequency: (Hz)	F. Stab : (%)	Distortion: (% TD)
1:	94.13	0.02	1001.78	0.00	1.17
2:	94.12	0.02	1001.77	0.00	1.16
3:	94.12	0.02	1001.76	0.00	1.17
<b>Result (Average) :</b>	<b>94.12</b>	<b>0.02</b>	<b>1001.77</b>	<b>0.00</b>	<b>1.17</b>
Expanded Uncertainty:	0.12	0.02	1.00	0.01	0.10
Degree of Freedom:	>100	>100	>100	>100	>100
Coverage Factor:	2.00	2.00	2.00	2.00	2.00

The stated levels are relative to 20 $\mu$ Pa.

The stated level is valid at measurement conditions.  
Reference microphone: 4134-173368. Volume correction: 0.006 dB  
Records:Y:\Calibration Lab\Cal 2022\RIONNC74-0.5in\_34557100\_M1.nmf

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k = 2$ , which for a normal distribution corresponds to coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with EA publication EA-4/02.

## Environmental conditions:

**Pressure:** 99.420  $\pm$  0.020 kPa      **Temperature:** 23.0  $\pm$  1.0  $^{\circ}$ C      **Relative humidity:** 48.1  $\pm$  2.0 %RH

Date of calibration: 9/26/2022

Date of issue: 9/26/2022

Supervisor : Lydon Dawkins  
Measurements performed by:



Bailey Partoza  
Software version: 6.1T

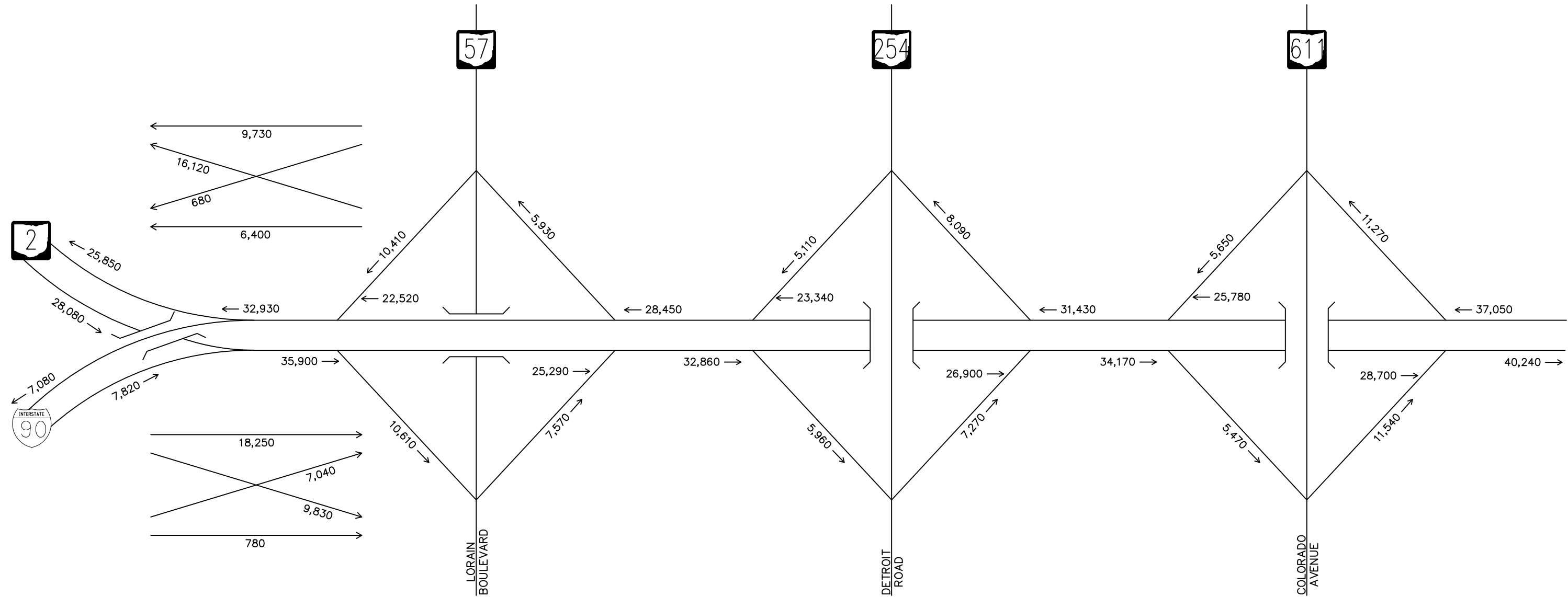
**Scantek, Inc.**

6430 Dobbin Rd., Suite C, Columbia, MD 21045  
Ph: 410-290-7726 eMail: callab@scantekinc.com

Appendix B

Traffic Data

---



Drawing File: C:\2020\2020086 CADOT D12-03 Traffic TO\03-01 LOR-90 Certified Traffic\Design\Traffic\Study\Figures\4-Lane Volume\PLATE 1 - 2020 ADT.dwg Layout: PLATE 1  
 Date: Jun 07, 2022 Time: 2:06 pm User: bferrell

**NOTE:**  
 COUNTS COLLECTED DURING COVID-19 PANDEMIC AND FACTORED  
 PER ODOT MODELING AND FORECASTING GUIDANCE.



PLATE 1

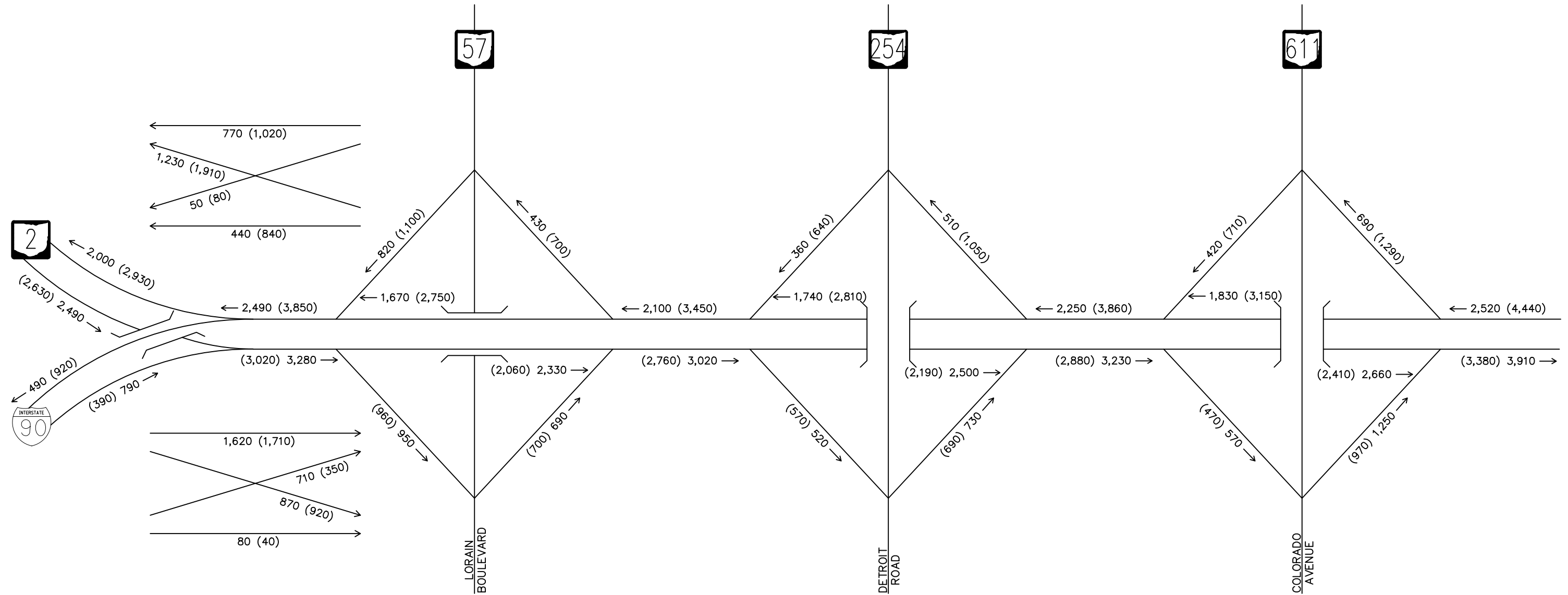
EXISTING YEAR 2020  
ADT

MARCH 2021 (REV. JANUARY 2022)

Technician: bferrell



Drawing File: C:\2020\2020088 COOT D12-03 Traffic TO\05-01 LOR-90 Certified Traffic\Design\Traffic\Study\Figures\4-Lane Volume\PLATE 2 - 2020 AM & PM DHV.dwg Layout: PLATE 1  
Date: Jun 07, 2022 Time: 2:14 pm User: J



**NOTE:**  
COUNTS COLLECTED DURING COVID-19 PANDEMIC AND FACTORED PER ODOT MODELING AND FORECASTING GUIDANCE.

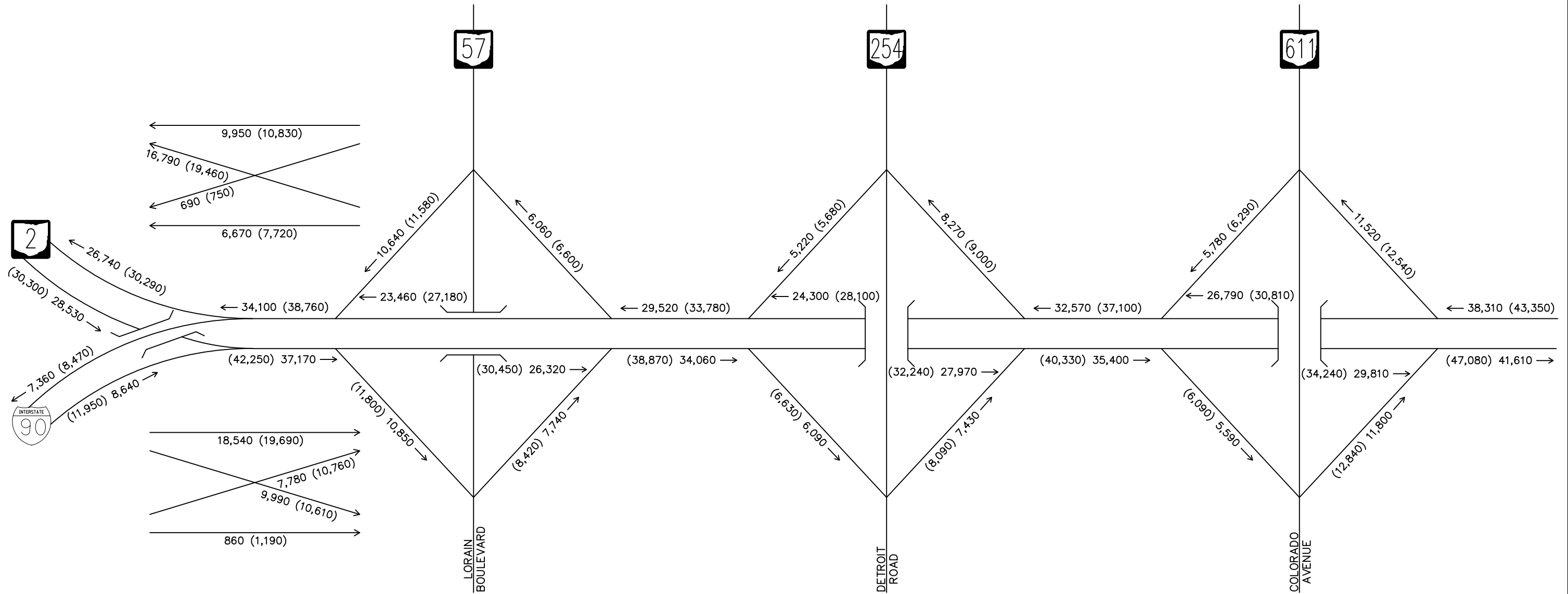
**LEGEND**  
## - AM DHV  
### - PM DHV

**PLATE 2**

EXISTING YEAR 2020  
AM / PM DHV

MARCH 2021 (REV. JANUARY 2022)

Technician: bferrell

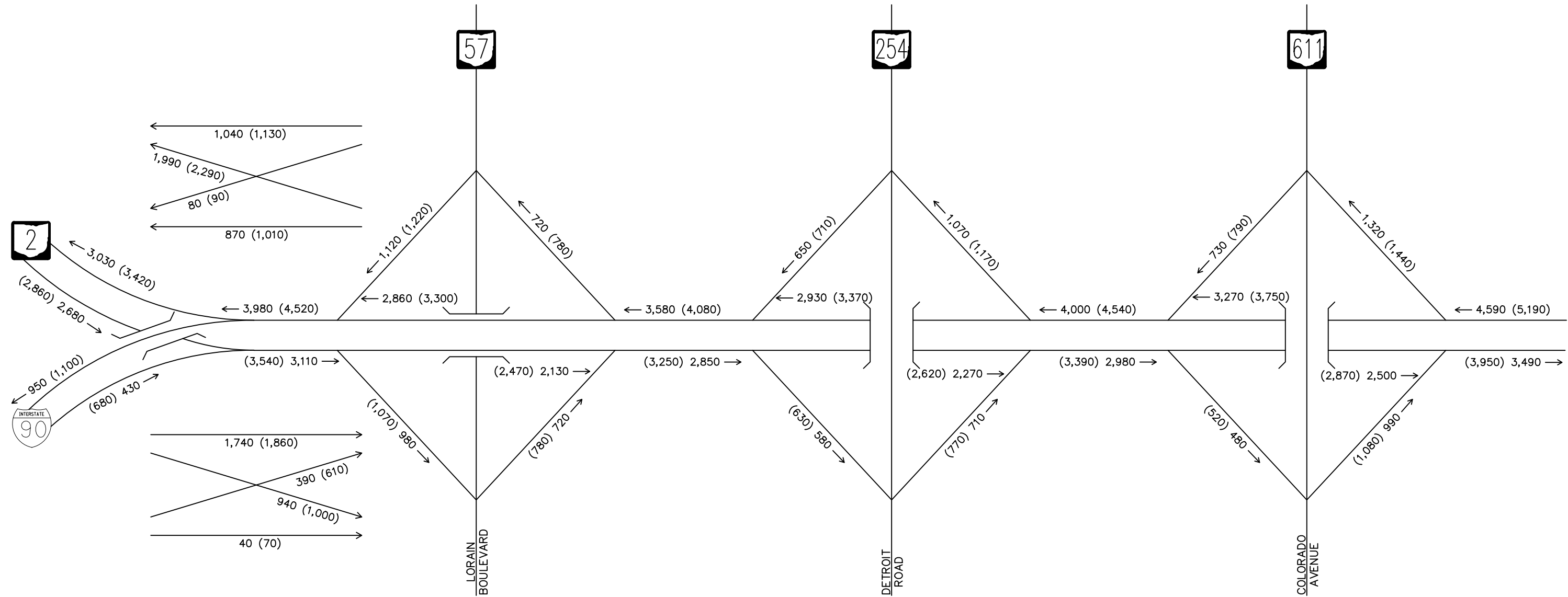


**NOTE:**  
 COUNTS COLLECTED DURING COVID-19 PANDEMIC AND FACTORED  
 PER ODOT MODELING AND FORECASTING GUIDANCE.

**LEGEND**  
 ## - YEAR 2025 VOLUME  
 (##) - YEAR 2045 VOLUME

**PLATE 6**  
 YEAR 2025 / YEAR 2045  
 ADT  
 6 LANES  
 JANUARY 2022

Drawing File: C:\2020\2020080 CADOT D12-03 Traffic TO\05-01 LOR-90 Certified Traffic\Design\Figures\6-Lane Volume\PLATE 6 - 2025 & 2045 ADT.dwg Layout: PLATE 6  
 Date: Jan 10, 2022 Time: 9:20 am User: j...  
 Technician: bferrell



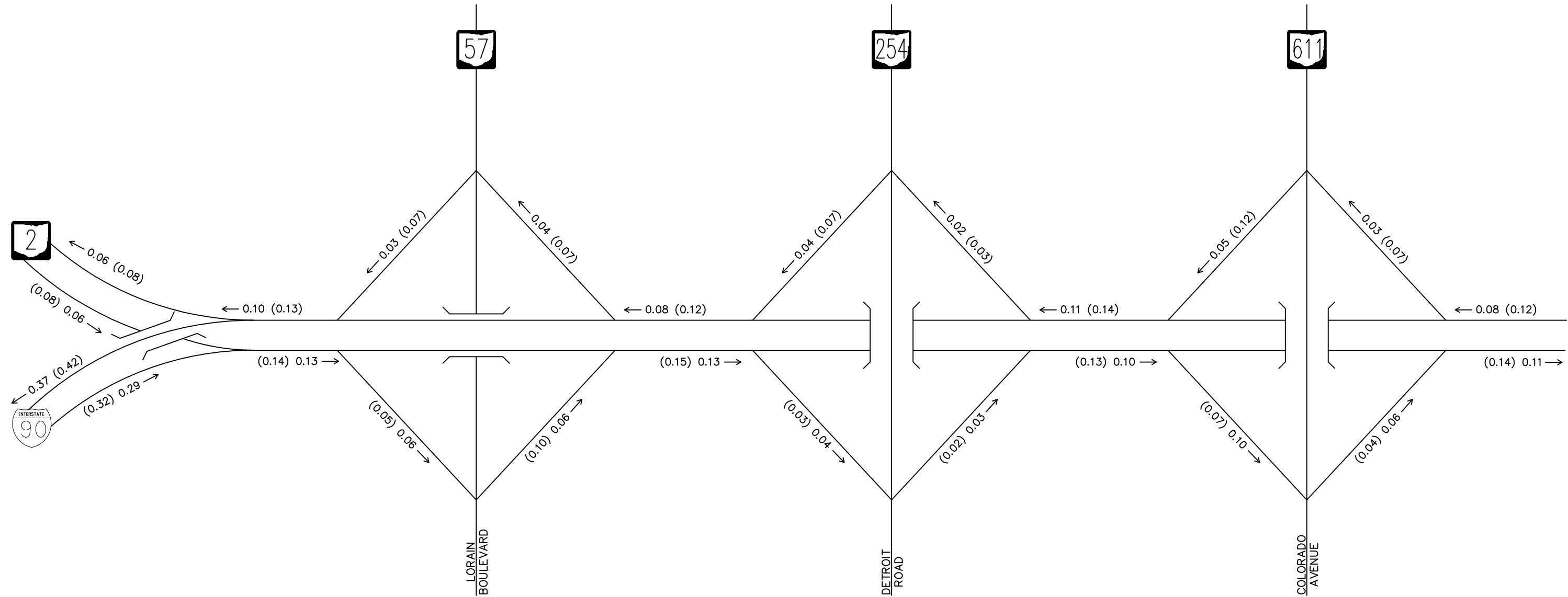
Drawing File: C:\2020\20200808\_CDOT\_D12-D3\_Traffic TO\03-01\_LOR-90\_Certified\_Traffic\_Design\Traffic\Study\Figures\6-Lane\_Volumes\PLATE 8 - 2025 & 2045 PM DHV.dwg Layout: PLATE 8  
 Date: Jan 10, 2022 Time: 9:25 am User: j...  
 Technician: bferrell

**NOTE:**  
 COUNTS COLLECTED DURING COVID-19 PANDEMIC AND FACTORED  
 PER ODOT MODELING AND FORECASTING GUIDANCE.

**LEGEND**  
 ## - YEAR 2025 VOLUME  
 (##) - YEAR 2045 VOLUME

PLATE 8  
 YEAR 2025 / YEAR 2045  
 PM DHV  
 6 LANES  
 JANUARY 2022





Drawing File: C:\2020\20200808\_0001 D12-03 Traffic TO\05-01 LOR-90 Certified Traffic\Design\Traffic\Study\Figures\Attachment H - TD & T24 Values.dwg Layout: PLATE 4  
 Date: Jun 04, 2022 Time: 9:17 am User: j

**NOTE:**  
 COUNTS COLLECTED DURING COVID-19 PANDEMIC AND FACTORED  
 PER ODOT MODELING AND FORECASTING GUIDANCE.

**LEGEND**  
 ## - TD  
 (##) - T24

ATTACHMENT H

TD & T24 VALUES

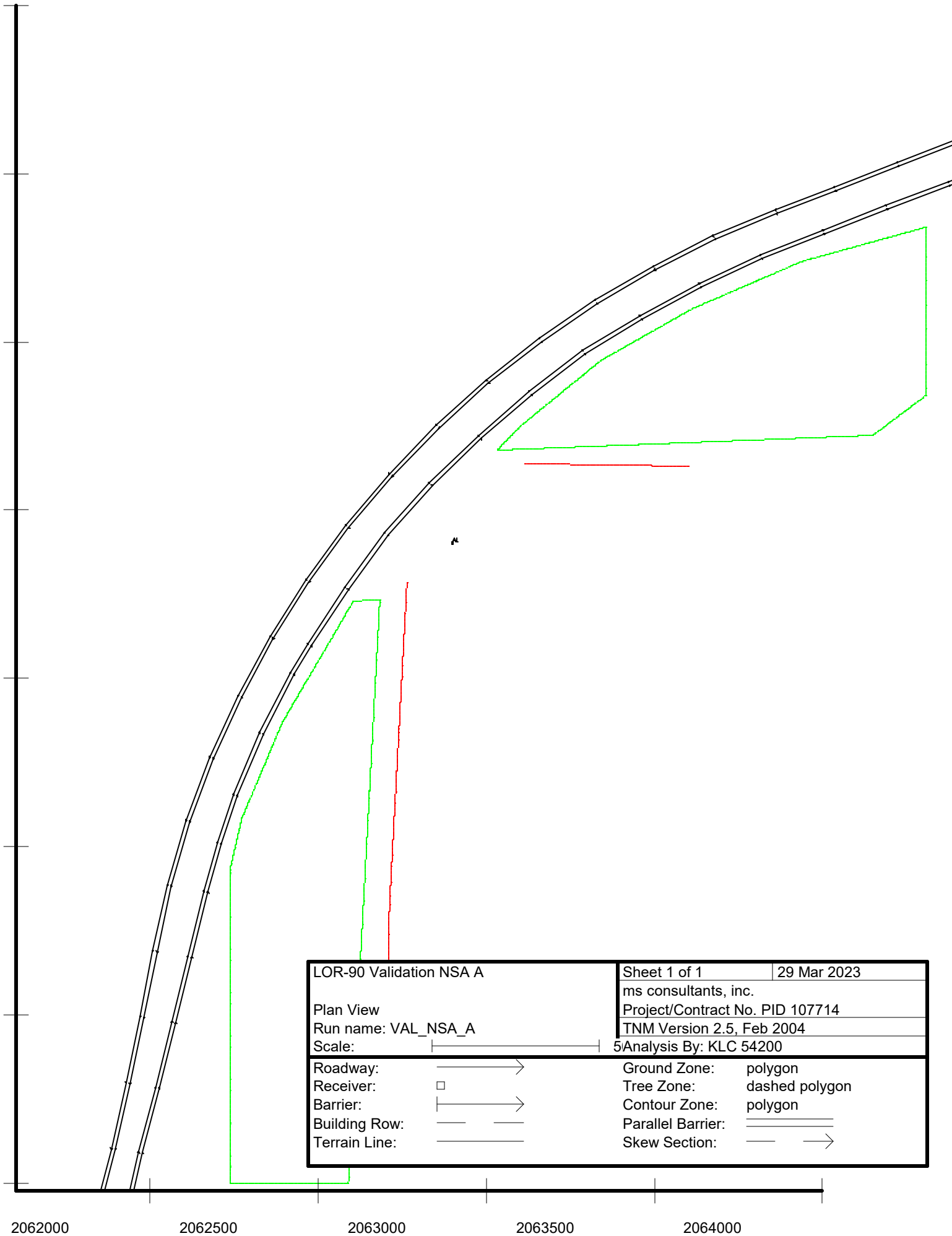
MARCH 2021

**Appendix C**

**TNM 2.5**

**Validation Models**

---

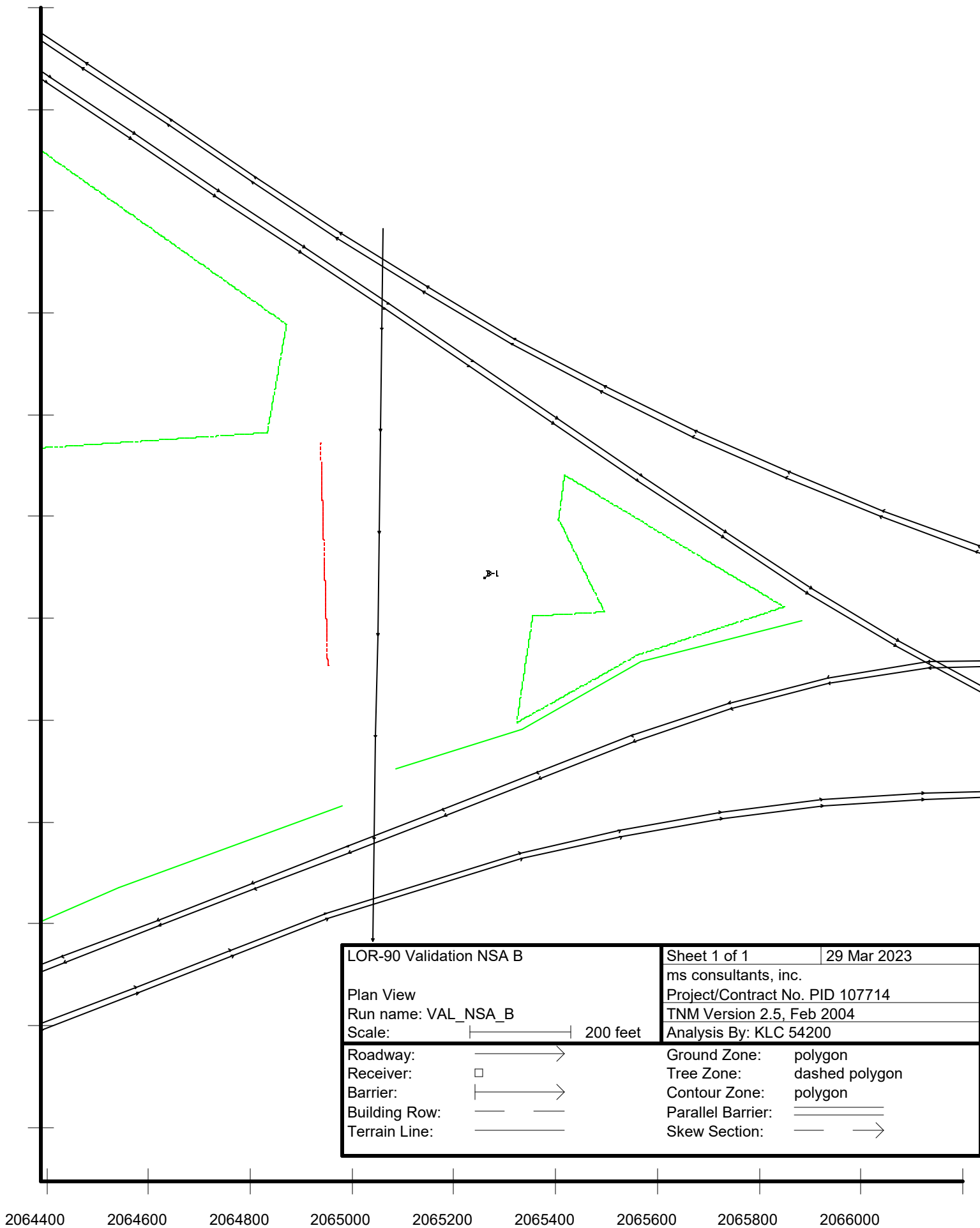










LOR-90 Validation NSA A		Sheet 1 of 1	29 Mar 2023
Plan View		ms consultants, inc.	
Run name: VAL_NSA_A		Project/Contract No. PID 107714	
Scale: 1" = 5'		TNM Version 2.5, Feb 2004	
		Analysis By: KLC 54200	
Roadway:	—————>	Ground Zone:	polygon
Receiver:	□	Tree Zone:	dashed polygon
Barrier:	—————>	Contour Zone:	polygon
Building Row:	—— —	Parallel Barrier:	=====
Terrain Line:	—————	Skew Section:	—— —>

**RESULTS: SOUND LEVELS**

**PID 107714**

ms consultants, inc. KLC 54200		5 April 2023 TNM 2.5 Calculated with TNM 2.5										
<b>RESULTS: SOUND LEVELS</b>												
<b>PROJECT/CONTRACT:</b>		PID 107714										
<b>RUN:</b>		LOR-90 Validation NSA A										
<b>BARRIER DESIGN:</b>		INPUT HEIGHTS Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.										
<b>ATMOSPHERICS:</b>		68 deg F, 50% RH										
<b>Receiver</b>												
<b>Name</b>	<b>No.</b>	<b>#DUs</b>	<b>Existing LAeq1h</b>	<b>No Barrier LAeq1h</b>	<b>Increase over existing</b>		<b>Type</b>	<b>With Barrier</b>		<b>Noise Reduction</b>		
				<b>Calculated</b>	<b>Crit'n</b>	<b>Calculated</b>	<b>Crit'n</b>	<b>Impact</b>	<b>Calculated LAeq1h</b>	<b>Calculated</b>	<b>Goal</b>	<b>Calculated minus Goal</b>
			dB	dB	dB	dB	dB		dB	dB	dB	dB
A1	613	1	57.1	59.2	66	2.1	10	----	59.2	0.0	5	-5.0
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									
			<b>Min</b>	<b>Avg</b>	<b>Max</b>							
			<b>dB</b>	<b>dB</b>	<b>dB</b>							
All Selected		1	0.0	0.0	0.0							
All Impacted		0	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							

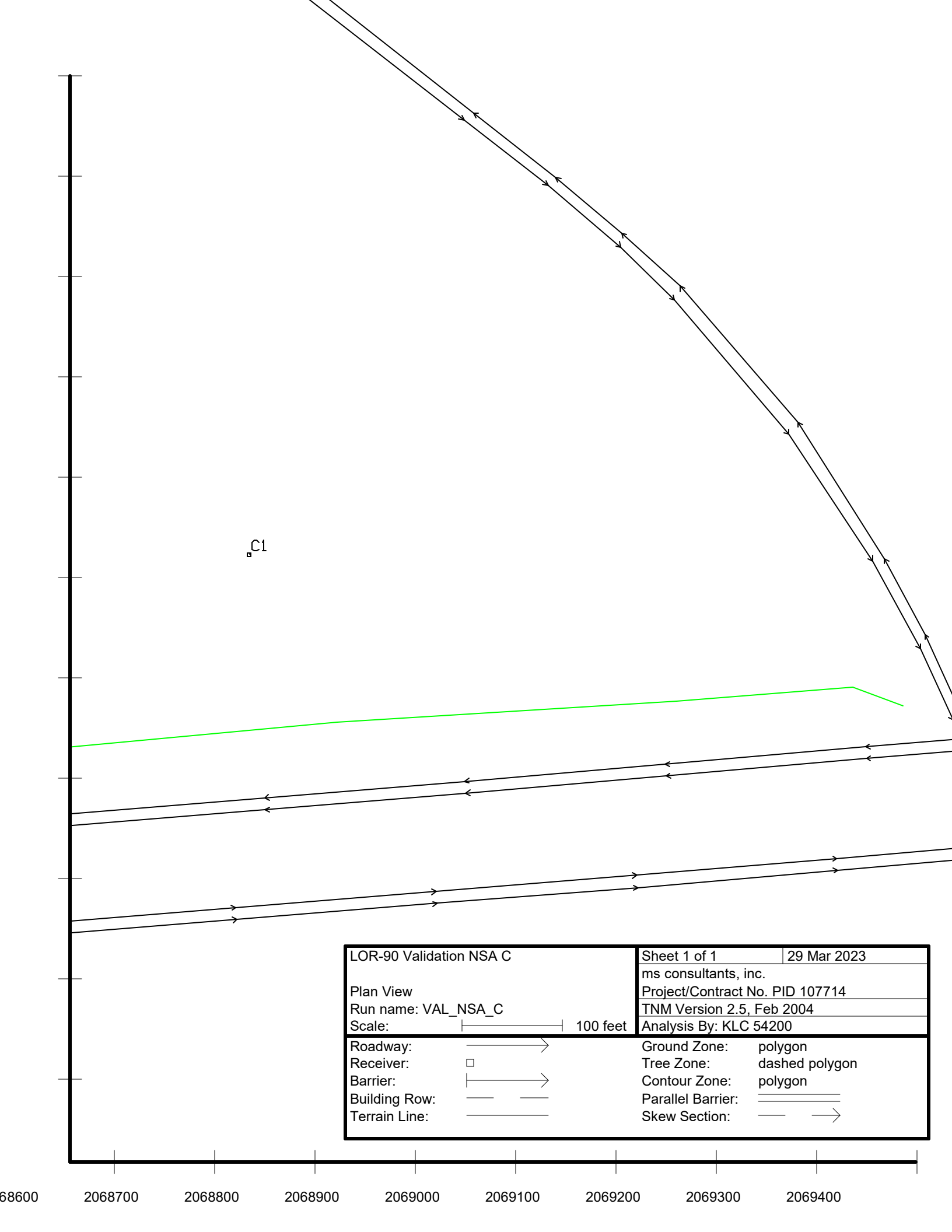


LOR-90 Validation NSA B		Sheet 1 of 1	29 Mar 2023
Plan View		ms consultants, inc.	
Run name: VAL_NSA_B		Project/Contract No. PID 107714	
Scale:  200 feet		TNM Version 2.5, Feb 2004	
		Analysis By: KLC 54200	
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	









**RESULTS: SOUND LEVELS**

**PID 107714**

ms consultants, inc. KLC 54200						5 April 2023 TNM 2.5 Calculated with TNM 2.5						
<b>RESULTS: SOUND LEVELS</b>												
<b>PROJECT/CONTRACT:</b>		PID 107714										
<b>RUN:</b>		LOR-90 Validation NSA B										
<b>BARRIER DESIGN:</b>		INPUT HEIGHTS					Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.					
<b>ATMOSPHERICS:</b>		68 deg F, 50% RH										
<b>Receiver</b>												
<b>Name</b>	<b>No.</b>	<b>#DUs</b>	<b>Existing LAeq1h</b>	<b>No Barrier LAeq1h</b>	<b>Increase over existing</b>		<b>Type</b>	<b>With Barrier</b>		<b>Noise Reduction</b>		
				<b>Calculated</b>	<b>Crit'n</b>	<b>Calculated</b>	<b>Crit'n</b>	<b>Impact</b>	<b>Calculated LAeq1h</b>	<b>Calculated</b>	<b>Goal</b>	<b>Calculated minus Goal</b>
			dB	dB	dB	dB	dB		dB	dB	dB	dB
B-1	54	1	61.9	63.2	66	1.3	10	----	63.2	0.0	5	-5.0
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									
			<b>Min</b>	<b>Avg</b>	<b>Max</b>							
			<b>dB</b>	<b>dB</b>	<b>dB</b>							
All Selected		1	0.0	0.0	0.0							
All Impacted		0	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							



C1

LOR-90 Validation NSA C		Sheet 1 of 1	29 Mar 2023
Plan View		ms consultants, inc.	
Run name: VAL_NSA_C		Project/Contract No. PID 107714	
Scale:  100 feet		TNM Version 2.5, Feb 2004	
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	

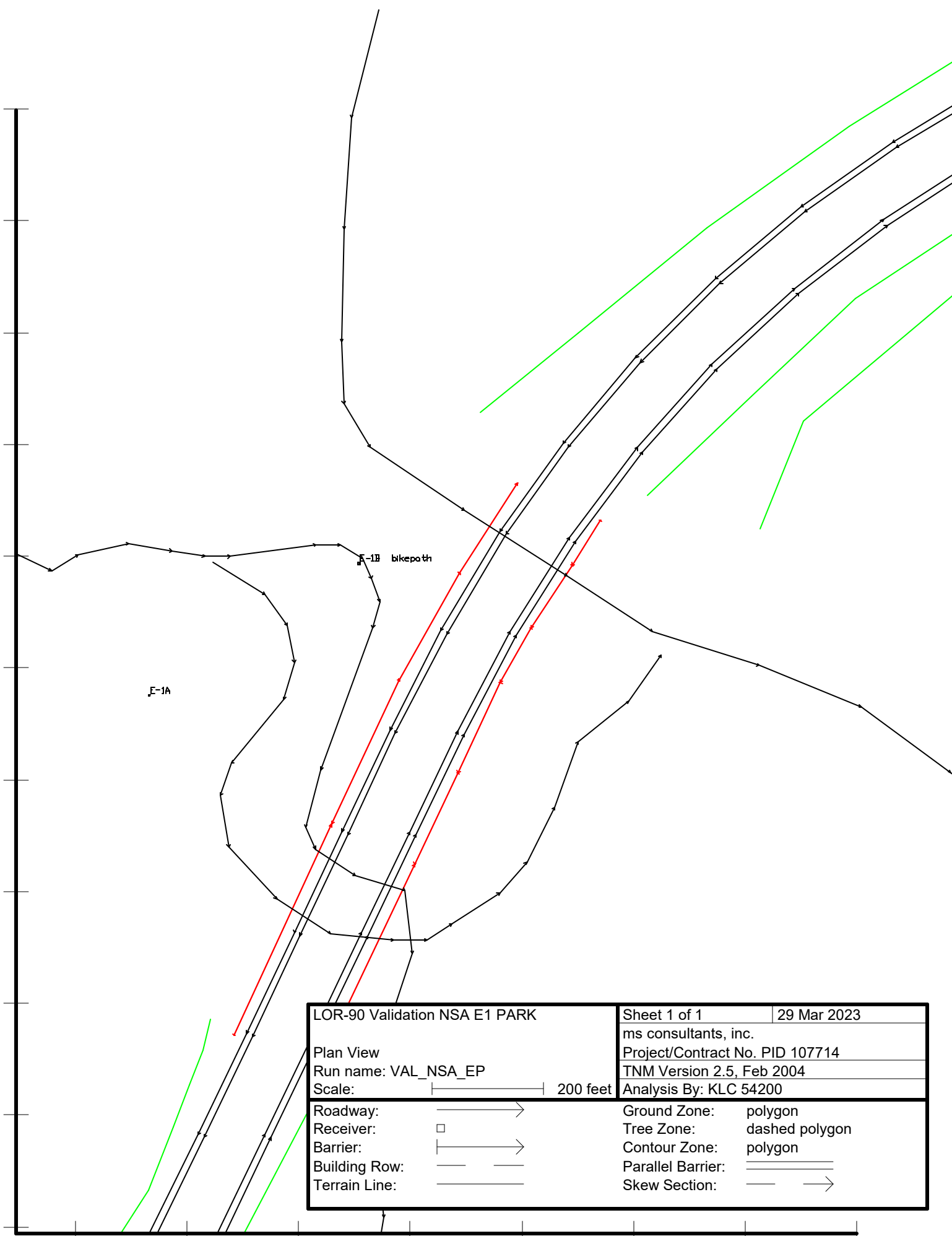
068600 2068700 2068800 2068900 2069000 2069100 2069200 2069300 2069400






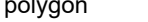

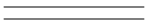
**RESULTS: SOUND LEVELS**

**PID 107714**

ms consultants, inc. KLC 54200		29 March 2023 TNM 2.5 Calculated with TNM 2.5										
<b>RESULTS: SOUND LEVELS</b>												
<b>PROJECT/CONTRACT:</b>		PID 107714										
<b>RUN:</b>		LOR-90 Validation NSA C										
<b>BARRIER DESIGN:</b>		INPUT HEIGHTS Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.										
<b>ATMOSPHERICS:</b>		68 deg F, 50% RH										
<b>Receiver</b>												
<b>Name</b>	<b>No.</b>	<b>#DUs</b>	<b>Existing LAeq1h</b>	<b>No Barrier LAeq1h</b>	<b>Increase over existing</b>		<b>Type</b>	<b>With Barrier</b>		<b>Noise Reduction</b>		
				<b>Calculated</b>	<b>Crit'n</b>	<b>Calculated</b>	<b>Crit'n</b>	<b>Impact</b>	<b>Calculated LAeq1h</b>	<b>Calculated</b>	<b>Goal</b>	<b>Calculated minus Goal</b>
			dB	dB	dB	dB	dB		dB	dB	dB	dB
C1	37	1	64.8	63.8	66	-1.0	10	----	63.8	0.0	5	-5.0
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									
			<b>Min</b>	<b>Avg</b>	<b>Max</b>							
			<b>dB</b>	<b>dB</b>	<b>dB</b>							
All Selected		1	0.0	0.0	0.0							
All Impacted		0	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							





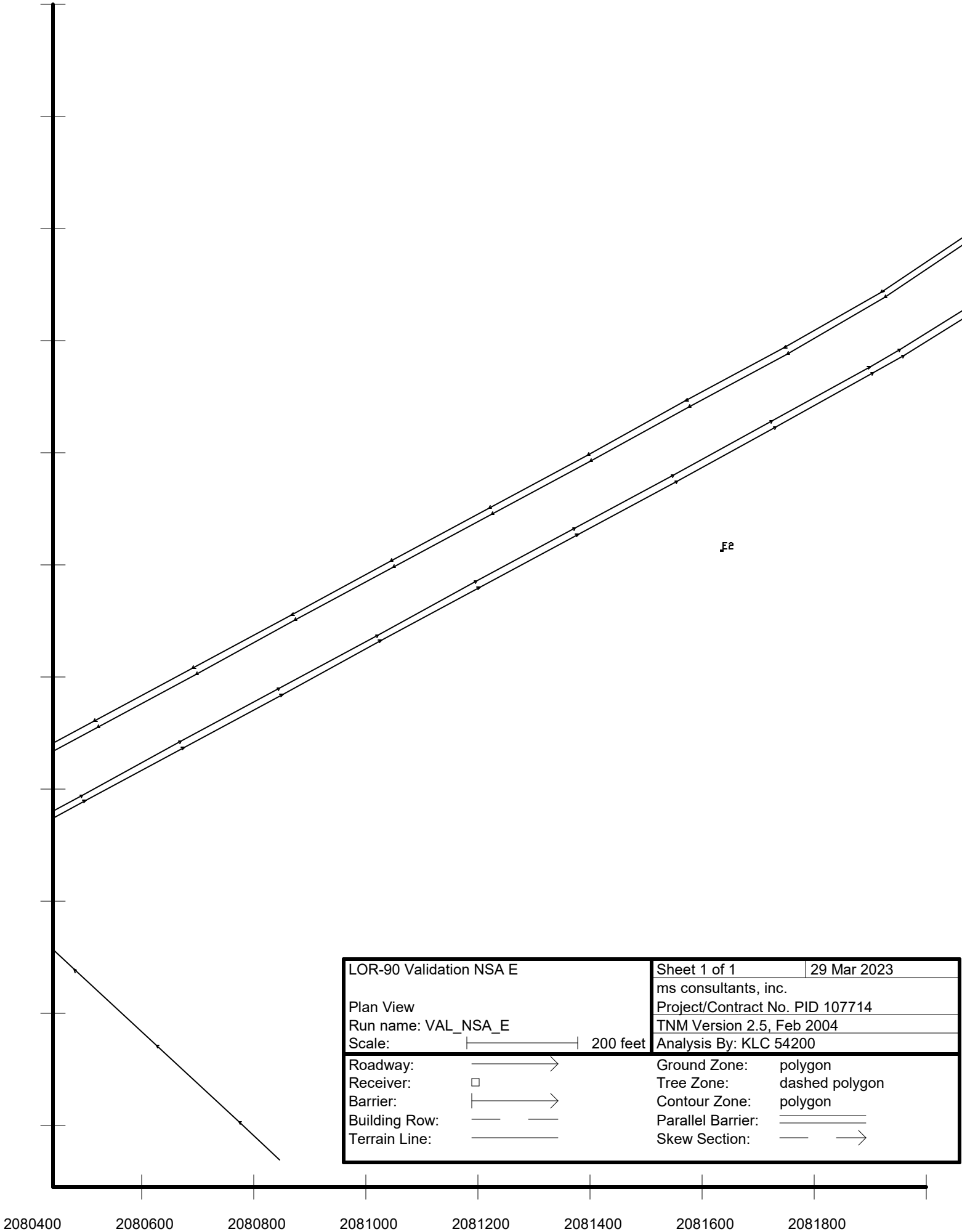
LOR-90 Validation NSA E1 PARK		Sheet 1 of 1	29 Mar 2023
Plan View		ms consultants, inc.	
Run name: VAL_NSA_EP		Project/Contract No. PID 107714	
Scale: 		TNM Version 2.5, Feb 2004	
		Analysis By: KLC 54200	
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	









2077800 2078000 2078200 2078400 2078600 2078800 2079000 2079200

**RESULTS: SOUND LEVELS**

**PID 107714**

ms consultants, inc. KLC 54200										5 April 2023 TNM 2.5 Calculated with TNM 2.5		
<b>RESULTS: SOUND LEVELS</b>												
<b>PROJECT/CONTRACT:</b> PID 107714												
<b>RUN:</b> LOR-90 Validation NSA E1 PARK												
<b>BARRIER DESIGN:</b> INPUT HEIGHTS										Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.		
<b>ATMOSPHERICS:</b> 68 deg F, 50% RH												
<b>Receiver</b>												
<b>Name</b>	<b>No.</b>	<b>#DUs</b>	<b>Existing LAeq1h</b>	<b>No Barrier LAeq1h</b>	<b>Increase over existing</b>		<b>Type</b>	<b>With Barrier</b>	<b>Noise Reduction</b>			
				<b>Calculated</b>	<b>Crit'n</b>	<b>Calculated</b>	<b>Crit'n</b>	<b>Impact</b>	<b>Calculated LAeq1h</b>	<b>Calculated</b>	<b>Goal</b>	<b>Calculated minus Goal</b>
			dB	dB	dB	dB	dB		dB	dB	dB	dB
E-1A	43	1	63.4	65.9	66	2.5	10	----	64.4	1.5	5	-3.5
E-1B bikepath	93	1	65.3	66.7	66	1.4	10	Snd Lvl	64.7	2.0	5	-3.0
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									
			<b>Min</b>	<b>Avg</b>	<b>Max</b>							
			<b>dB</b>	<b>dB</b>	<b>dB</b>							
All Selected		2	1.5	1.8	2.0							
All Impacted		1	2.0	2.0	2.0							
All that meet NR Goal		0	0.0	0.0	0.0							

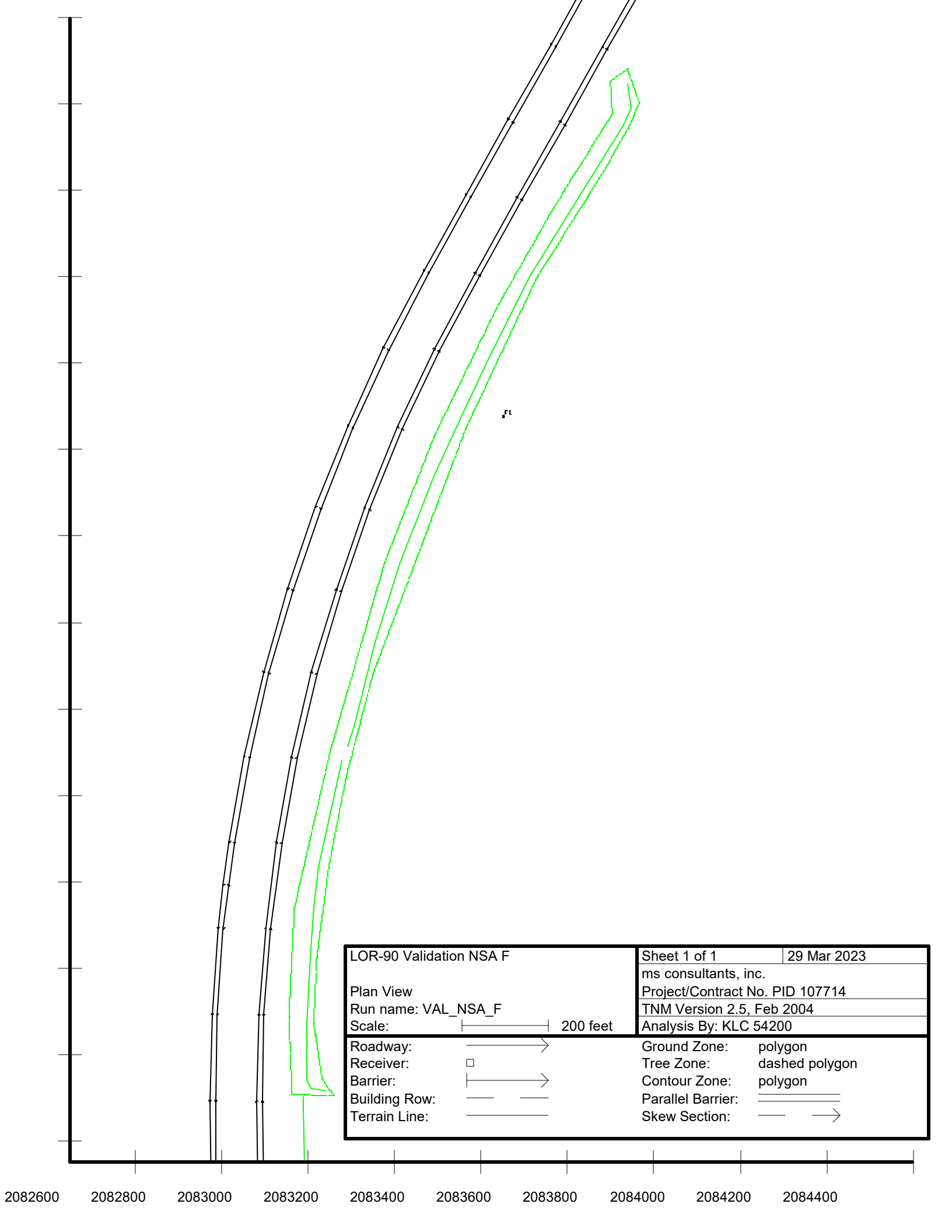


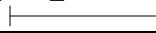







LOR-90 Validation NSA E		Sheet 1 of 1	29 Mar 2023
Plan View		ms consultants, inc.	
Run name: VAL_NSA_E		Project/Contract No. PID 107714	
Scale: 		TNM Version 2.5, Feb 2004	
		Analysis By: KLC 54200	
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	

**RESULTS: SOUND LEVELS**

**PID 107714**

ms consultants, inc. KLC 54200						5 April 2023 TNM 2.5 Calculated with TNM 2.5							
<b>RESULTS: SOUND LEVELS</b>		PID 107714											
<b>PROJECT/CONTRACT:</b>		LOR-90 Validation NSA E											
<b>RUN:</b>		INPUT HEIGHTS											
<b>BARRIER DESIGN:</b>												Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.	
<b>ATMOSPHERICS:</b>		68 deg F, 50% RH											
<b>Receiver</b>													
<b>Name</b>	<b>No.</b>	<b>#DUs</b>	<b>Existing LAeq1h</b>	<b>No Barrier LAeq1h</b>	<b>Increase over existing</b>		<b>Type</b>	<b>With Barrier</b>		<b>Noise Reduction</b>			
				<b>Calculated</b>	<b>Crit'n</b>	<b>Calculated</b>	<b>Crit'n</b>	<b>Impact</b>	<b>Calculated LAeq1h</b>	<b>Calculated</b>	<b>Goal</b>	<b>Calculated minus Goal</b>	
			dB	dB	dB	dB	dB		dB	dB	dB	dB	
E2	587	1	72.5	74.2	66	1.7	10	Snd Lvl	74.2	0.0	5	-5.0	
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>										
			<b>Min</b>	<b>Avg</b>	<b>Max</b>								
			<b>dB</b>	<b>dB</b>	<b>dB</b>								
All Selected		1	0.0	0.0	0.0								
All Impacted		1	0.0	0.0	0.0								
All that meet NR Goal		0	0.0	0.0	0.0								

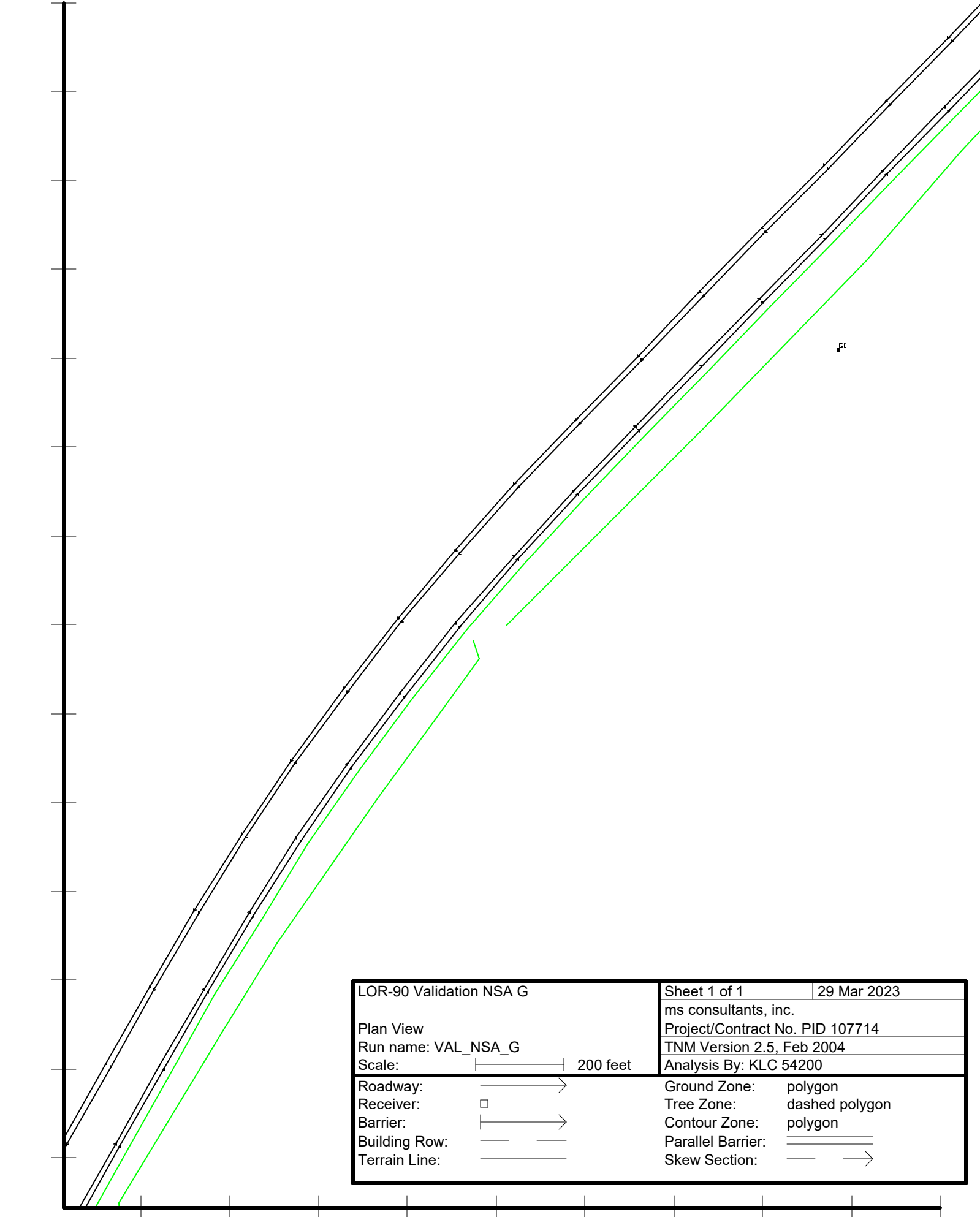







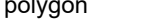

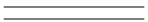
LOR-90 Validation NSA F		Sheet 1 of 1	29 Mar 2023
Plan View		ms consultants, inc.	
Run name: VAL_NSA_F		Project/Contract No. PID 107714	
Scale: 		TNM Version 2.5, Feb 2004	
		Analysis By: KLC 54200	
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	

**RESULTS: SOUND LEVELS**

**PID 107714**

ms consultants, inc. KLC 54200										5 April 2023 TNM 2.5 Calculated with TNM 2.5		
<b>RESULTS: SOUND LEVELS</b>												
<b>PROJECT/CONTRACT:</b> PID 107714												
<b>RUN:</b> LOR-90 Validation NSA F												
<b>BARRIER DESIGN:</b> INPUT HEIGHTS										Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.		
<b>ATMOSPHERICS:</b> 68 deg F, 50% RH												
<b>Receiver</b>												
<b>Name</b>	<b>No.</b>	<b>#DUs</b>	<b>Existing LAeq1h</b>	<b>No Barrier LAeq1h</b>	<b>Increase over existing</b>		<b>Type</b>	<b>With Barrier</b>		<b>Noise Reduction</b>		
				<b>Calculated</b>	<b>Crit'n</b>	<b>Calculated</b>	<b>Crit'n</b>	<b>Impact</b>	<b>Calculated LAeq1h</b>	<b>Calculated</b>	<b>Goal</b>	<b>Calculated minus Goal</b>
			dB	dB	dB	dB	dB		dB	dB	dB	dB
F1	300	1	65.1	67.7	66	2.6	10	Snd Lvl	67.7	0.0	5	-5.0
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									
			<b>Min</b>	<b>Avg</b>	<b>Max</b>							
			<b>dB</b>	<b>dB</b>	<b>dB</b>							
All Selected		1	0.0	0.0	0.0							
All Impacted		1	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							



LOR-90 Validation NSA G		Sheet 1 of 1	29 Mar 2023
Plan View		ms consultants, inc.	
Run name: VAL_NSA_G		Project/Contract No. PID 107714	
Scale: 		TNM Version 2.5, Feb 2004	
Analysis By: KLC 54200			
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	

2086400    2086600    2086800    2087000    2087200    2087400    2087600    2087800    2088000    2088200

**RESULTS: SOUND LEVELS**

**PID 107714**

ms consultants, inc. KLC 54200		5 April 2023 TNM 2.5 Calculated with TNM 2.5										
<b>RESULTS: SOUND LEVELS</b>												
<b>PROJECT/CONTRACT:</b>		PID 107714										
<b>RUN:</b>		LOR-90 Validation NSA G										
<b>BARRIER DESIGN:</b>		INPUT HEIGHTS Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.										
<b>ATMOSPHERICS:</b>		68 deg F, 50% RH										
<b>Receiver</b>												
<b>Name</b>	<b>No.</b>	<b>#DUs</b>	<b>Existing LAeq1h</b>	<b>No Barrier LAeq1h</b>	<b>Increase over existing</b>		<b>Type</b>	<b>With Barrier</b>		<b>Noise Reduction</b>		
				<b>Calculated</b>	<b>Crit'n</b>	<b>Calculated</b>	<b>Crit'n</b>	<b>Impact</b>	<b>Calculated LAeq1h</b>	<b>Calculated</b>	<b>Goal</b>	<b>Calculated minus Goal</b>
			dB	dB	dB	dB	dB		dB	dB	dB	dB
G1	159	1	66.2	68.2	66	2.0	10	Snd Lvl	68.2	0.0	5	-5.0
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									
			<b>Min</b>	<b>Avg</b>	<b>Max</b>							
			<b>dB</b>	<b>dB</b>	<b>dB</b>							
All Selected		1	0.0	0.0	0.0							
All Impacted		1	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							



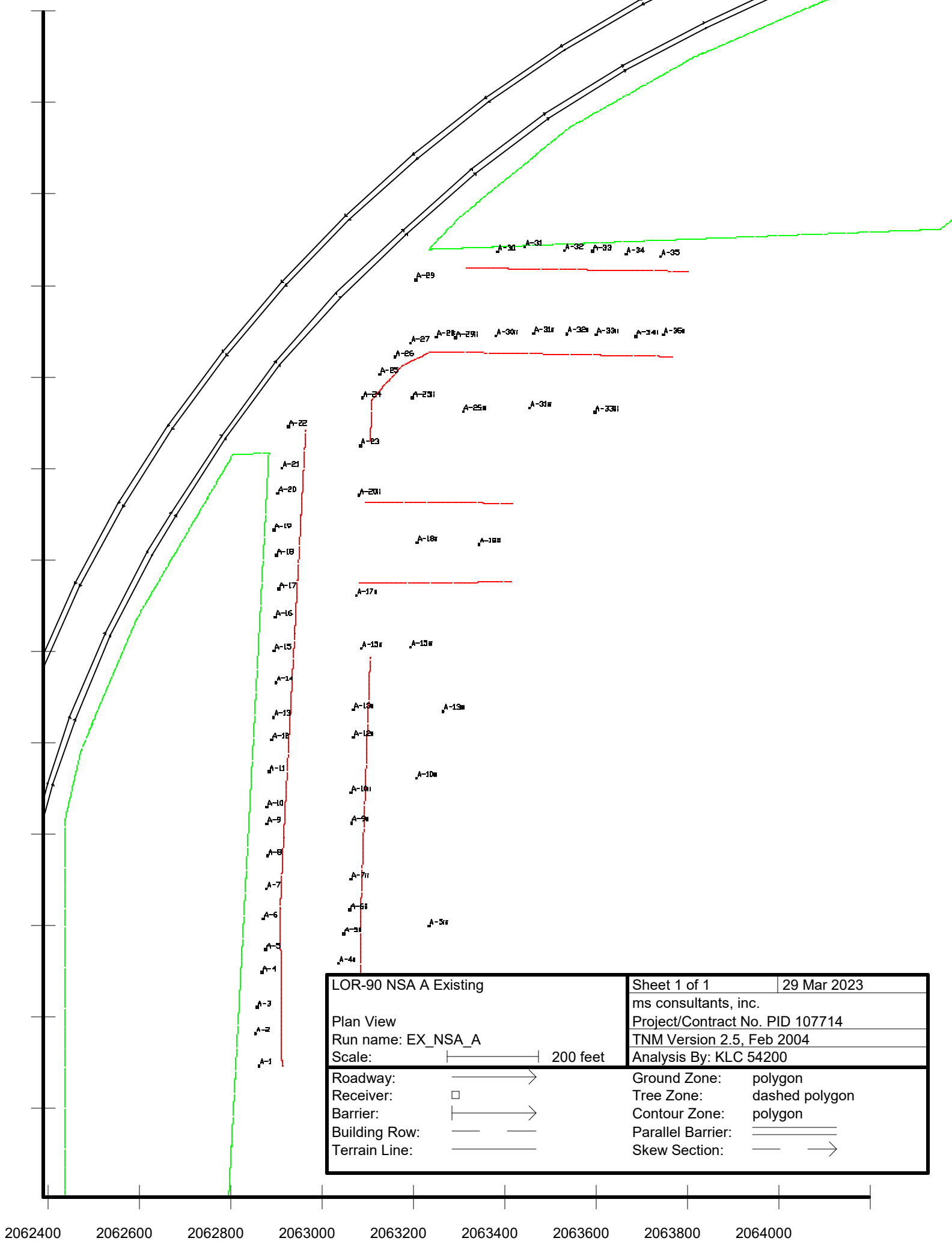
**Appendix D1**









**TNM 2.5**

**Existing Conditions Models**

**Year 2020**

---



LOR-90 NSA A Existing		Sheet 1 of 1	29 Mar 2023
Plan View		ms consultants, inc.	
Run name: EX_NSA_A		Project/Contract No. PID 107714	
Scale: 		TNM Version 2.5, Feb 2004	
		Analysis By: KLC 54200	
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	

RESULTS: SOUND LEVELS

PID 107714

ms consultants, inc. KLC 54200				29 March 2023 TNM 2.5 Calculated with TNM 2.5			
-----------------------------------	--	--	--	---	--	--	--

RESULTS: SOUND LEVELS PROJECT/CONTRACT:		PID 107714			
RUN:		LOR-90 NSA A Existing			
BARRIER DESIGN:		INPUT HEIGHTS			
ATMOSPHERICS:		68 deg F, 50% RH		Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.	

Receiver												
Name	No.	#DUs	Existing	No Barrier			With Barrier			Noise Reduction		
			LAeq1h	LAeq1h		Increase over existing	Type	Calculated	Calculated	Goal	Calculated	Calculated
			Calculated	Crit'n	Calculated	Crit'n	Impact	LAeq1h	Calculated	Goal	Calculated	minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
A-1	590	1	0.0	47.5	66	47.5	10	----	47.5	0.0	8	-8.0
A-2	591	1	0.0	47.7	66	47.7	10	----	47.7	0.0	8	-8.0
A-3	592	1	0.0	47.9	66	47.9	10	----	47.9	0.0	8	-8.0
A-4	593	1	0.0	48.1	66	48.1	10	----	48.1	0.0	8	-8.0
A-5	594	1	0.0	48.2	66	48.2	10	----	48.2	0.0	8	-8.0
A-6	595	1	0.0	48.7	66	48.7	10	----	48.7	0.0	8	-8.0
A-7	596	1	0.0	48.9	66	48.9	10	----	48.9	0.0	8	-8.0
A-8	597	1	0.0	49.2	66	49.2	10	----	49.2	0.0	8	-8.0
A-9	598	1	0.0	49.8	66	49.8	10	----	49.8	0.0	8	-8.0
A-10	599	1	0.0	50.1	66	50.1	10	----	50.1	0.0	8	-8.0
A-11	600	1	0.0	51.0	66	51.0	10	----	51.0	0.0	8	-8.0
A-12	601	1	0.0	51.8	66	51.8	10	----	51.8	0.0	8	-8.0
A-13	602	1	0.0	52.2	66	52.2	10	----	52.2	0.0	8	-8.0
A-14	603	1	0.0	53.1	66	53.1	10	----	53.1	0.0	8	-8.0
A-15	604	1	0.0	54.2	66	54.2	10	----	54.2	0.0	8	-8.0
A-16	605	1	0.0	55.4	66	55.4	10	----	55.4	0.0	8	-8.0
A-17	606	1	0.0	56.4	66	56.4	10	----	56.4	0.0	8	-8.0
A-18	607	1	0.0	58.0	66	58.0	10	----	58.0	0.0	8	-8.0
A-19	608	1	0.0	59.3	66	59.3	10	----	59.3	0.0	8	-8.0
A-20	609	1	0.0	61.2	66	61.2	10	----	61.2	0.0	8	-8.0
A-21	610	1	0.0	62.7	66	62.7	10	----	62.7	0.0	8	-8.0
A-22	611	1	0.0	65.0	66	65.0	10	----	65.0	0.0	8	-8.0
A-23	612	1	0.0	58.7	66	58.7	10	----	58.7	0.0	8	-8.0
A-24	613	1	0.0	61.4	66	61.4	10	----	61.4	0.0	8	-8.0

**RESULTS: SOUND LEVELS**

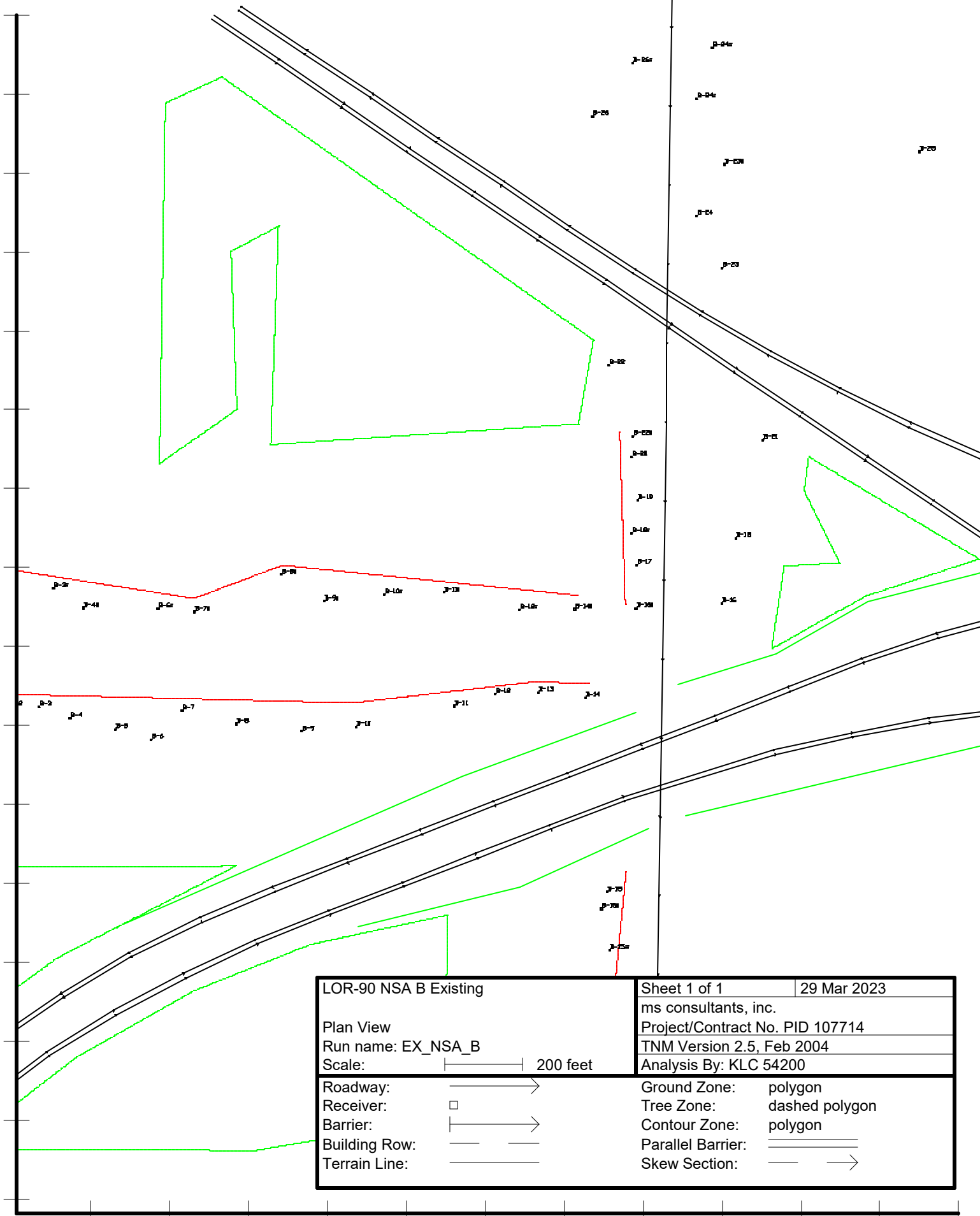
**PID 107714**

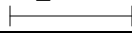







A-25	614	1	0.0	61.7	66	61.7	10	----	61.7	0.0	8	-8.0
A-26	615	1	0.0	61.8	66	61.8	10	----	61.8	0.0	8	-8.0
A-27	616	1	0.0	61.7	66	61.7	10	----	61.7	0.0	8	-8.0
A-28	617	1	0.0	60.7	66	60.7	10	----	60.7	0.0	8	-8.0
A-29	618	1	0.0	65.8	66	65.8	10	----	65.8	0.0	8	-8.0
A-30	619	1	0.0	61.1	66	61.1	10	----	61.1	0.0	8	-8.0
A-31	620	1	0.0	59.2	66	59.2	10	----	59.2	0.0	8	-8.0
A-32	621	1	0.0	56.8	66	56.8	8	----	56.8	0.0	8	-8.0
A-33	622	1	0.0	55.4	66	55.4	10	----	55.4	0.0	8	-8.0
A-34	623	1	0.0	53.9	66	53.9	10	----	53.9	0.0	8	-8.0
A-35	624	1	0.0	52.6	66	52.6	10	----	52.6	0.0	8	-8.0
A-1ii	627	1	0.0	45.7	66	45.7	10	----	45.7	0.0	8	-8.0
A-2ii	628	1	0.0	45.8	66	45.8	10	----	45.8	0.0	8	-8.0
A-4ii	629	1	0.0	46.0	66	46.0	10	----	46.0	0.0	8	-8.0
A-5ii	630	1	0.0	46.3	66	46.3	10	----	46.3	0.0	8	-8.0
A-6ii	631	1	0.0	46.6	66	46.6	10	----	46.6	0.0	8	-8.0
A-7ii	632	1	0.0	47.1	66	47.1	10	----	47.1	0.0	8	-8.0
A-9ii	633	1	0.0	48.1	66	48.1	10	----	48.1	0.0	8	-8.0
A-10ii	634	1	0.0	48.7	66	48.7	10	----	48.7	0.0	8	-8.0
A-12ii	635	1	0.0	50.0	66	50.0	10	----	50.0	0.0	8	-8.0
A-13ii	636	1	0.0	50.6	66	50.6	10	----	50.6	0.0	8	-8.0
A-15ii	637	1	0.0	52.0	66	52.0	10	----	52.0	0.0	8	-8.0
A-17ii	638	1	0.0	53.6	66	53.6	10	----	53.6	0.0	8	-8.0
A-18ii	639	1	0.0	52.7	66	52.7	10	----	52.7	0.0	8	-8.0
A-20ii	640	1	0.0	56.5	66	56.5	10	----	56.5	0.0	8	-8.0
A-25ii	641	1	0.0	55.4	66	55.4	10	----	55.4	0.0	8	-8.0
A-29ii	642	1	0.0	59.7	66	59.7	10	----	59.7	0.0	8	-8.0
A-30ii	643	1	0.0	57.3	66	57.3	10	----	57.3	0.0	8	-8.0
A-31ii	644	1	0.0	55.5	66	55.5	10	----	55.5	0.0	8	-8.0
A-32ii	645	1	0.0	54.2	66	54.2	10	----	54.2	0.0	8	-8.0
A-33ii	646	1	0.0	53.3	66	53.3	10	----	53.3	0.0	8	-8.0
A-34ii	647	1	0.0	52.0	66	52.0	10	----	52.0	0.0	8	-8.0
A-35ii	648	1	0.0	51.2	66	51.2	10	----	51.2	0.0	8	-8.0
A-2iii	649	1	0.0	44.0	66	44.0	10	----	44.0	0.0	8	-8.0
A-5iii	650	1	0.0	45.0	66	45.0	10	----	45.0	0.0	8	-8.0
A-10iii	651	1	0.0	47.3	66	47.3	10	----	47.3	0.0	8	-8.0
A-13iii	652	1	0.0	48.8	66	48.8	10	----	48.8	0.0	8	-8.0
A-15iii	653	1	0.0	50.5	66	50.5	10	----	50.5	0.0	8	-8.0
A-18iii	655	1	0.0	50.6	66	50.6	10	----	50.6	0.0	8	-8.0
A-25iii	656	1	0.0	54.9	66	54.9	10	----	54.9	0.0	8	-8.0
A-31iii	657	1	0.0	53.4	66	53.4	10	----	53.4	0.0	8	-8.0

**RESULTS: SOUND LEVELS**

**PID 107714**

A-33iii	658	1	0.0	51.7	66	51.7	10	----	51.7	0.0	8	-8.0
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									
			<b>Min</b>	<b>Avg</b>								
			<b>dB</b>	<b>dB</b>								
					<b>Max</b>							
					<b>dB</b>							
All Selected		66	0.0	0.0	0.0							
All Impacted		0	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							



LOR-90 NSA B Existing		Sheet 1 of 1	29 Mar 2023
Plan View		ms consultants, inc.	
Run name: EX_NSA_B		Project/Contract No. PID 107714	
Scale:  200 feet		TNM Version 2.5, Feb 2004	
Roadway: 		Ground Zone: polygon	
Receiver: 		Tree Zone: dashed polygon	
Barrier: 		Contour Zone: polygon	
Building Row: 		Parallel Barrier: 	
Terrain Line: 		Skew Section: 	

2063400 2063600 2063800 2064000 2064200 2064400 2064600 2064800 2065000 2065200 2065400 2065600

**RESULTS: SOUND LEVELS**

**PID 107714**

ms consultants, inc.													
KLC 54200													
<b>RESULTS: SOUND LEVELS</b>													
<b>PROJECT/CONTRACT:</b>		<b>PID 107714</b>											
<b>RUN:</b>		<b>LOR-90 NSA B Existing</b>											
<b>BARRIER DESIGN:</b>		<b>INPUT HEIGHTS</b>											
									<b>Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.</b>				
<b>ATMOSPHERICS:</b>		<b>68 deg F, 50% RH</b>											

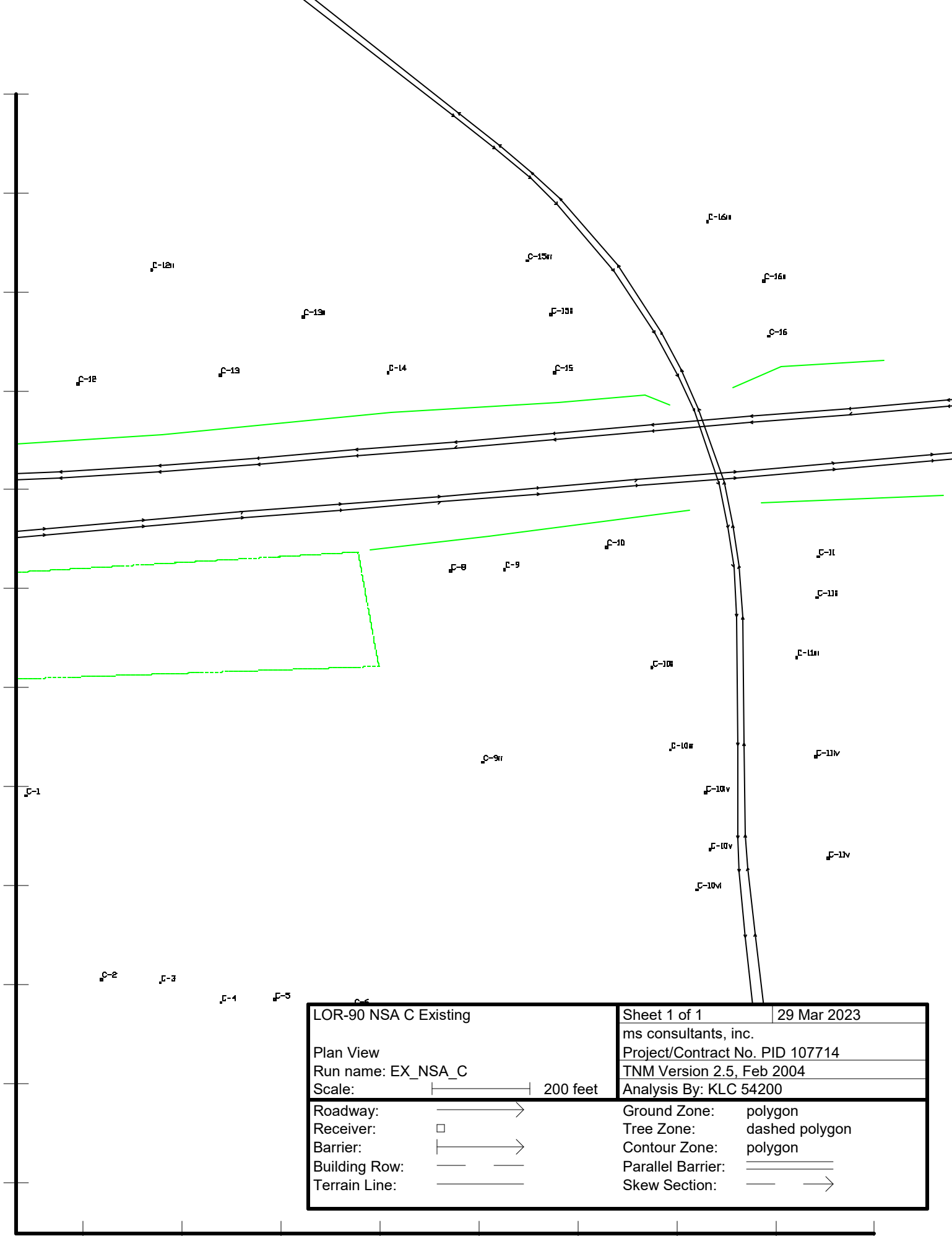
Receiver													
Name	No.	#DUs	Existing			No Barrier			With Barrier		Noise Reduction		
			LAeq1h	LAeq1h	Crit'n	Increase over existing		Type	Calculated	Calculated	Goal	Calculated minus Goal	
				Calculated		Crit'n	Calculated		Crit'n				LAeq1h
			dBA	dBA	dBA					dBA	dB	dB	dB
B-1	1	1	0.0	51.1	66	51.1	10	----	51.1	0.0	8	-8.0	
B-2	2	1	0.0	52.0	66	52.0	10	----	52.0	0.0	8	-8.0	
B-3	3	1	0.0	52.7	66	52.7	10	----	52.7	0.0	8	-8.0	
B-4	4	1	0.0	53.8	66	53.8	10	----	53.8	0.0	8	-8.0	
B-5	5	1	0.0	55.2	66	55.2	10	----	55.2	0.0	8	-8.0	
B-6	6	1	0.0	56.6	66	56.6	10	----	56.6	0.0	8	-8.0	
B-7	7	1	0.0	56.3	66	56.3	10	----	56.3	0.0	8	-8.0	
B-8	8	1	0.0	58.3	66	58.3	10	----	58.3	0.0	8	-8.0	
B-9	9	1	0.0	60.2	66	60.2	10	----	60.2	0.0	8	-8.0	
B-10	10	1	0.0	61.2	66	61.2	10	----	61.2	0.0	8	-8.0	
B-11	11	1	0.0	62.4	66	62.4	10	----	62.4	0.0	8	-8.0	
B-12	12	1	0.0	62.6	66	62.6	10	----	62.6	0.0	8	-8.0	
B-13	13	1	0.0	63.6	66	63.6	10	----	63.6	0.0	8	-8.0	
B-14	15	1	0.0	65.4	66	65.4	10	----	65.4	0.0	8	-8.0	
B-15	16	1	0.0	61.4	66	61.4	10	----	61.4	0.0	8	-8.0	
B-16	17	1	0.0	64.4	66	64.4	10	----	64.4	0.0	8	-8.0	
B-17	18	1	0.0	63.0	66	63.0	10	----	63.0	0.0	8	-8.0	
B-18	19	1	0.0	64.8	66	64.8	10	----	64.8	0.0	8	-8.0	
B-19	20	1	0.0	63.9	66	63.9	10	----	63.9	0.0	8	-8.0	
B-20	21	1	0.0	65.2	66	65.2	10	----	65.2	0.0	8	-8.0	
B-21	22	1	0.0	71.2	66	71.2	10	Snd Lvl	71.2	0.0	8	-8.0	
B-22	23	1	0.0	69.3	66	69.3	10	Snd Lvl	69.3	0.0	8	-8.0	
B-23	24	1	0.0	70.6	66	70.6	10	Snd Lvl	70.6	0.0	8	-8.0	
B-24	25	1	0.0	68.8	66	68.8	10	Snd Lvl	68.8	0.0	8	-8.0	









**RESULTS: SOUND LEVELS**

**PID 107714**

B-25	26	1	0.0	59.9	66	59.9	10	----	59.9	0.0	8	-8.0
B-26	27	1	0.0	66.1	66	66.1	10	Snd Lvl	66.1	0.0	8	-8.0
B-1ii	28	1	0.0	49.6	66	49.6	10	----	49.6	0.0	8	-8.0
B-3ii	29	1	0.0	50.6	66	50.6	10	----	50.6	0.0	8	-8.0
B-4ii	30	1	0.0	51.4	66	51.4	10	----	51.4	0.0	8	-8.0
B-6ii	31	1	0.0	52.8	66	52.8	10	----	52.8	0.0	8	-8.0
B-7ii	32	1	0.0	53.6	66	53.6	10	----	53.6	0.0	8	-8.0
B-8ii	33	1	0.0	54.4	66	54.4	10	----	54.4	0.0	8	-8.0
B-9ii	34	1	0.0	55.6	66	55.6	10	----	55.6	0.0	8	-8.0
B-10ii	35	1	0.0	56.5	66	56.5	10	----	56.5	0.0	8	-8.0
B-11ii	36	1	0.0	57.5	66	57.5	10	----	57.5	0.0	8	-8.0
B-12ii	37	1	0.0	59.2	66	59.2	10	----	59.2	0.0	8	-8.0
B-14ii	38	1	0.0	61.3	66	61.3	10	----	61.3	0.0	8	-8.0
B-15ii	39	1	0.0	60.5	66	60.5	10	----	60.5	0.0	8	-8.0
B-16ii	40	1	0.0	63.5	66	63.5	10	----	63.5	0.0	8	-8.0
B-18ii	41	1	0.0	62.9	66	62.9	10	----	62.9	0.0	8	-8.0
B-22ii	42	1	0.0	66.4	66	66.4	10	Snd Lvl	66.4	0.0	8	-8.0
B-23ii	43	1	0.0	64.9	66	64.9	10	----	64.9	0.0	8	-8.0
B-24ii	44	1	0.0	63.5	66	63.5	10	----	63.5	0.0	8	-8.0
B-26ii	45	1	0.0	63.0	66	63.0	10	----	63.0	0.0	8	-8.0
B-15iii	46	1	0.0	58.1	66	58.1	10	----	58.1	0.0	8	-8.0
B-24iii	47	1	0.0	60.8	66	60.8	10	----	60.8	0.0	8	-8.0
B-15iv	48	1	0.0	57.3	66	57.3	10	----	57.3	0.0	8	-8.0
B-15v	50	1	0.0	55.9	66	55.9	10	----	55.9	0.0	8	-8.0
B-15vi	51	1	0.0	55.2	66	55.2	10	----	55.2	0.0	8	-8.0
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									
			<b>Min</b>	<b>Avg</b>	<b>Max</b>							
			<b>dB</b>	<b>dB</b>	<b>dB</b>							
All Selected		49	0.0	0.0	0.0							
All Impacted		6	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							





LOR-90 NSA C Existing		Sheet 1 of 1	29 Mar 2023
Plan View		ms consultants, inc.	
Run name: EX_NSA_C		Project/Contract No. PID 107714	
Scale:  200 feet		TNM Version 2.5, Feb 2004	
Analysis By: KLC 54200			
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	

2068200    2068400    2068600    2068800    2069000    2069200    2069400    2069600    2069800

**RESULTS: SOUND LEVELS**

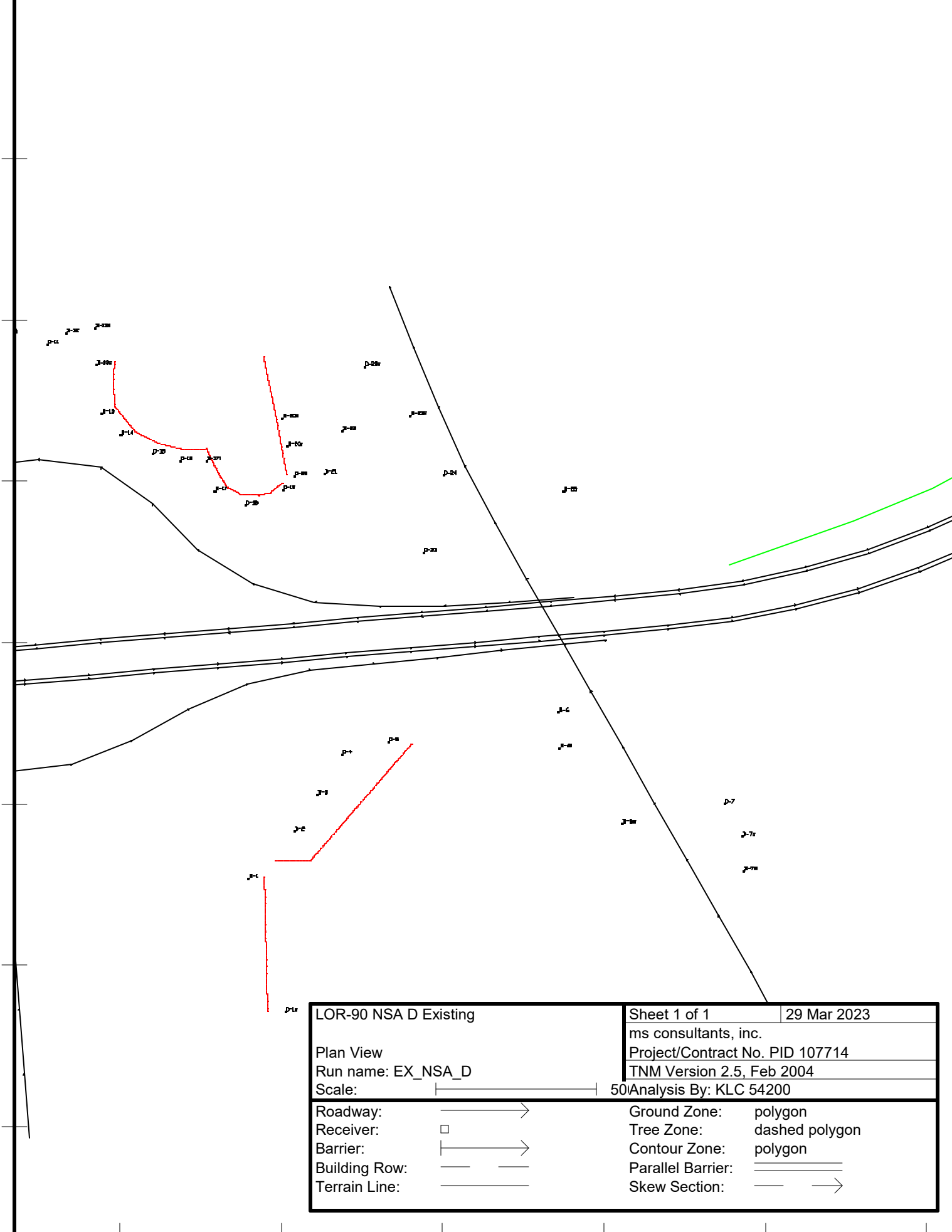
**PID 107714**

ms consultants, inc. KLC 54200			29 March 2023 TNM 2.5 Calculated with TNM 2.5										
<b>RESULTS: SOUND LEVELS</b>													
<b>PROJECT/CONTRACT:</b>		PID 107714											
<b>RUN:</b>		LOR-90 NSA C Existing											
<b>BARRIER DESIGN:</b>		INPUT HEIGHTS											
<b>ATMOSPHERICS:</b>		68 deg F, 50% RH											
<b>Receiver</b>		Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.											
Name	No.	#DUs	Existing	No Barrier				With Barrier					
			LAeq1h	LAeq1h	Increase over existing		Type	Calculated	Noise Reduction				
				Calculated	Crit'n	Calculated	Crit'n	Impact	LAeq1h	Calculated	Goal	Calculated	Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB	dB
C-1	1	1	0.0	57.2	66	57.2	10	----	57.2	0.0	8	-8.0	
C-2	2	1	0.0	53.9	66	53.9	10	----	53.9	0.0	8	-8.0	
C-3	3	1	0.0	54.2	66	54.2	10	----	54.2	0.0	8	-8.0	
C-4	4	1	0.0	54.2	66	54.2	10	----	54.2	0.0	8	-8.0	
C-5	5	1	0.0	54.6	66	54.6	10	----	54.6	0.0	8	-8.0	
C-6	6	1	0.0	55.0	66	55.0	10	----	55.0	0.0	8	-8.0	
C-7	7	1	0.0	55.1	66	55.1	10	----	55.1	0.0	8	-8.0	
C-8	8	1	0.0	70.1	66	70.1	10	Snd Lvl	70.1	0.0	8	-8.0	
C-9	9	1	0.0	69.8	66	69.8	10	Snd Lvl	69.8	0.0	8	-8.0	
C-10	10	1	0.0	70.6	66	70.6	10	Snd Lvl	70.6	0.0	8	-8.0	
C-11	11	1	0.0	69.3	66	69.3	10	Snd Lvl	69.3	0.0	8	-8.0	
C-12	12	1	0.0	71.4	66	71.4	10	Snd Lvl	71.4	0.0	8	-8.0	
C-13	13	1	0.0	70.0	66	70.0	10	Snd Lvl	70.0	0.0	8	-8.0	
C-14	14	1	0.0	69.9	66	69.9	10	Snd Lvl	69.9	0.0	8	-8.0	
C-15	15	1	0.0	70.1	66	70.1	10	Snd Lvl	70.1	0.0	8	-8.0	
C-16	16	1	0.0	70.2	66	70.2	10	Snd Lvl	70.2	0.0	8	-8.0	
C-8ii	17	1	0.0	55.6	66	55.6	10	----	55.6	0.0	8	-8.0	
C-9ii	18	1	0.0	61.9	66	61.9	10	----	61.9	0.0	8	-8.0	
C-10ii	19	1	0.0	65.8	66	65.8	10	----	65.8	0.0	8	-8.0	
C-11ii	20	1	0.0	67.8	66	67.8	10	Snd Lvl	67.8	0.0	8	-8.0	
C-12ii	21	1	0.0	64.2	66	64.2	10	----	64.2	0.0	8	-8.0	
C-13ii	22	1	0.0	66.5	66	66.5	10	Snd Lvl	66.5	0.0	8	-8.0	
C-15ii	23	1	0.0	68.4	66	68.4	10	Snd Lvl	68.4	0.0	8	-8.0	
C-16ii	24	1	0.0	68.0	66	68.0	10	Snd Lvl	68.0	0.0	8	-8.0	

**RESULTS: SOUND LEVELS**

**PID 107714**

C-10iii	25	1	0.0	63.5	66	63.5	10	----	63.5	0.0	8	-8.0
C-11iii	26	1	0.0	65.4	66	65.4	10	----	65.4	0.0	8	-8.0
C-15iii	27	1	0.0	66.1	66	66.1	10	Snd Lvl	66.1	0.0	8	-8.0
C-16iii	28	1	0.0	65.1	66	65.1	10	----	65.1	0.0	8	-8.0
C-10iv	29	1	0.0	64.1	66	64.1	10	----	64.1	0.0	8	-8.0
C-11iv	30	1	0.0	61.9	66	61.9	10	----	61.9	0.0	8	-8.0
C-10v	31	1	0.0	63.6	66	63.6	10	----	63.6	0.0	8	-8.0
C-11v	32	1	0.0	59.2	66	59.2	10	----	59.2	0.0	8	-8.0
C-10vi	35	1	0.0	62.0	66	62.0	10	----	62.0	0.0	8	-8.0
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									
			<b>Min</b>	<b>Avg</b>	<b>Max</b>							
			<b>dB</b>	<b>dB</b>	<b>dB</b>							
All Selected		33	0.0	0.0	0.0							
All Impacted		14	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							



LOR-90 NSA D Existing		Sheet 1 of 1	29 Mar 2023
Plan View		ms consultants, inc.	
Run name: EX_NSA_D		Project/Contract No. PID 107714	
Scale: _____		TNM Version 2.5, Feb 2004	
		50 Analysis By: KLC 54200	
Roadway:	—————>	Ground Zone:	polygon
Receiver:	□	Tree Zone:	dashed polygon
Barrier:	—————>	Contour Zone:	polygon
Building Row:	— — — — —	Parallel Barrier:	=====
Terrain Line:	—————	Skew Section:	———>

2074000      2074500      2075000      2075500      2076000      2076500

**RESULTS: SOUND LEVELS**

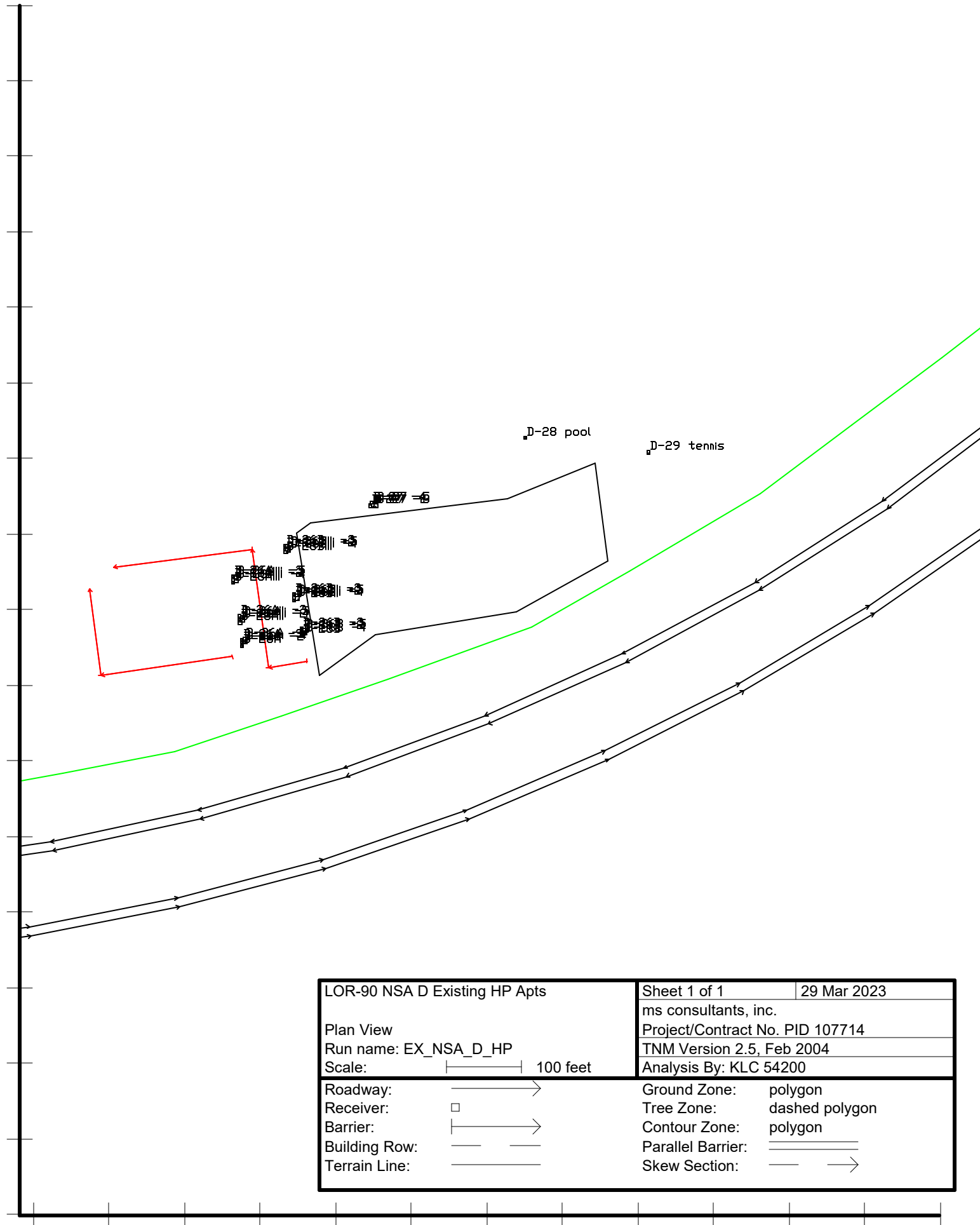
**PID 107714**

ms consultants, inc. KLC 54200										29 March 2023 TNM 2.5 Calculated with TNM 2.5			
<b>RESULTS: SOUND LEVELS PROJECT/CONTRACT:</b>		<b>PID 107714</b>											
<b>RUN:</b>		<b>LOR-90 NSA D Existing</b>											
<b>BARRIER DESIGN:</b>		<b>INPUT HEIGHTS</b>								<b>Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.</b>			
<b>ATMOSPHERICS:</b>		<b>68 deg F, 50% RH</b>											
<b>Receiver</b>													
<b>Name</b>	<b>No.</b>	<b>#DUs</b>	<b>Existing LAeq1h</b>	<b>No Barrier LAeq1h</b>	<b>Increase over existing</b>			<b>Type</b>	<b>With Barrier</b>		<b>Noise Reduction</b>		
				<b>Calculated</b>	<b>Crit'n</b>	<b>Calculated</b>	<b>Crit'n</b>	<b>Impact</b>	<b>Calculated LAeq1h</b>	<b>Calculated</b>	<b>Goal</b>	<b>Calculated minus Goal</b>	
			<b>dBA</b>	<b>dBA</b>	<b>dBA</b>	<b>dB</b>	<b>dB</b>		<b>dBA</b>	<b>dB</b>	<b>dB</b>	<b>dB</b>	
D-1	1	126	0.0	60.8	66	60.8	10	----	60.8	0.0	8	-8.0	
D-2	2	18	0.0	62.6	66	62.6	10	----	62.6	0.0	8	-8.0	
D-3	3	36	0.0	64.1	66	64.1	10	----	64.1	0.0	8	-8.0	
D-4	4	24	0.0	66.0	66	66.0	10	Snd Lvl	66.0	0.0	8	-8.0	
D-5	5	35	0.0	67.0	66	67.0	10	Snd Lvl	67.0	0.0	8	-8.0	
D-6	6	1	0.0	70.8	66	70.8	10	Snd Lvl	70.8	0.0	8	-8.0	
D-7	7	1	0.0	61.4	66	61.4	10	----	61.4	0.0	8	-8.0	
D-8	8	1	0.0	69.4	66	69.4	10	Snd Lvl	69.4	0.0	8	-8.0	
D-9	9	1	0.0	63.7	66	63.7	10	----	63.7	0.0	8	-8.0	
D-10	10	1	0.0	62.2	66	62.2	10	----	62.2	0.0	8	-8.0	
D-11	11	1	0.0	59.7	66	59.7	10	----	59.7	0.0	8	-8.0	
D-12	12	1	0.0	59.3	66	59.3	10	----	59.3	0.0	8	-8.0	
D-13	13	2	0.0	60.9	66	60.9	10	----	60.9	0.0	8	-8.0	
D-14	14	2	0.0	61.7	66	61.7	10	----	61.7	0.0	8	-8.0	
D-15	15	2	0.0	61.5	66	61.5	10	----	61.5	0.0	8	-8.0	
D-16	16	2	0.0	61.5	66	61.5	10	----	61.5	0.0	8	-8.0	
D-17	17	2	0.0	63.5	66	63.5	10	----	63.5	0.0	8	-8.0	
D-18	18	2	0.0	64.5	66	64.5	10	----	64.5	0.0	8	-8.0	
D-19	19	1	0.0	64.7	66	64.7	10	----	64.7	0.0	8	-8.0	
D-20	20	1	0.0	63.9	66	63.9	10	----	63.9	0.0	8	-8.0	
D-21	21	1	0.0	64.4	66	64.4	10	----	64.4	0.0	8	-8.0	
D-22	22	1	0.0	62.6	66	62.6	10	----	62.6	0.0	8	-8.0	
D-23	23	1	0.0	69.0	66	69.0	10	Snd Lvl	69.0	0.0	8	-8.0	
D-24	24	1	0.0	66.0	66	66.0	10	Snd Lvl	66.0	0.0	8	-8.0	

**RESULTS: SOUND LEVELS**

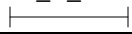







**PID 107714**

D-25	25	1	0.0	67.9	66	67.9	10	Snd Lvl	67.9	0.0	8	-8.0
D-1ii	30	41	0.0	55.8	66	55.8	10	----	55.8	0.0	8	-8.0
D-6ii	31	1	0.0	66.7	66	66.7	10	Snd Lvl	66.7	0.0	8	-8.0
D-7ii	32	1	0.0	59.8	66	59.8	10	----	59.8	0.0	8	-8.0
D-8ii	33	1	0.0	62.7	66	62.7	10	----	62.7	0.0	8	-8.0
D-9ii	34	1	0.0	60.6	66	60.6	10	----	60.6	0.0	8	-8.0
D-13ii	35	2	0.0	59.0	66	59.0	10	----	59.0	0.0	8	-8.0
D-17ii	36	2	0.0	61.6	66	61.6	10	----	61.6	0.0	8	-8.0
D-20ii	37	1	0.0	61.4	66	61.4	10	----	61.4	0.0	8	-8.0
D-22ii	38	1	0.0	60.0	66	60.0	10	----	60.0	0.0	8	-8.0
D-23ii	39	1	0.0	63.2	66	63.2	10	----	63.2	0.0	8	-8.0
D-6iii	40	1	0.0	61.4	66	61.4	10	----	61.4	0.0	8	-8.0
D-7iii	41	1	0.0	58.6	66	58.6	10	----	58.6	0.0	8	-8.0
D-8iii	42	1	0.0	57.3	66	57.3	10	----	57.3	0.0	8	-8.0
D-13iii	43	1	0.0	58.4	66	58.4	10	----	58.4	0.0	8	-8.0
D-20iii	44	1	0.0	60.0	66	60.0	10	----	60.0	0.0	8	-8.0
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									
			<b>Min</b>	<b>Avg</b>	<b>Max</b>							
			<b>dB</b>	<b>dB</b>	<b>dB</b>							
All Selected		322	0.0	0.0	0.0							
All Impacted		65	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							



D-28 pool

D-29 tennis

LOR-90 NSA D Existing HP Apts		Sheet 1 of 1	29 Mar 2023
Plan View		ms consultants, inc.	
Run name: EX_NSA_D_HP		Project/Contract No. PID 107714	
Scale:  100 feet		TNM Version 2.5, Feb 2004	
Analysis By: KLC 54200			
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	

**RESULTS: SOUND LEVELS**

**PID 107714**

ms consultants, inc. KLC 54200									29 March 2023 TNM 2.5 Calculated with TNM 2.5			
-----------------------------------	--	--	--	--	--	--	--	--	---	--	--	--

<b>RESULTS: SOUND LEVELS PROJECT/CONTRACT: RUN: BARRIER DESIGN:</b>	PID 107714 LOR-90 NSA D Existing HP Apts INPUT HEIGHTS	Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.										
<b>ATMOSPHERICS:</b>	68 deg F, 50% RH											

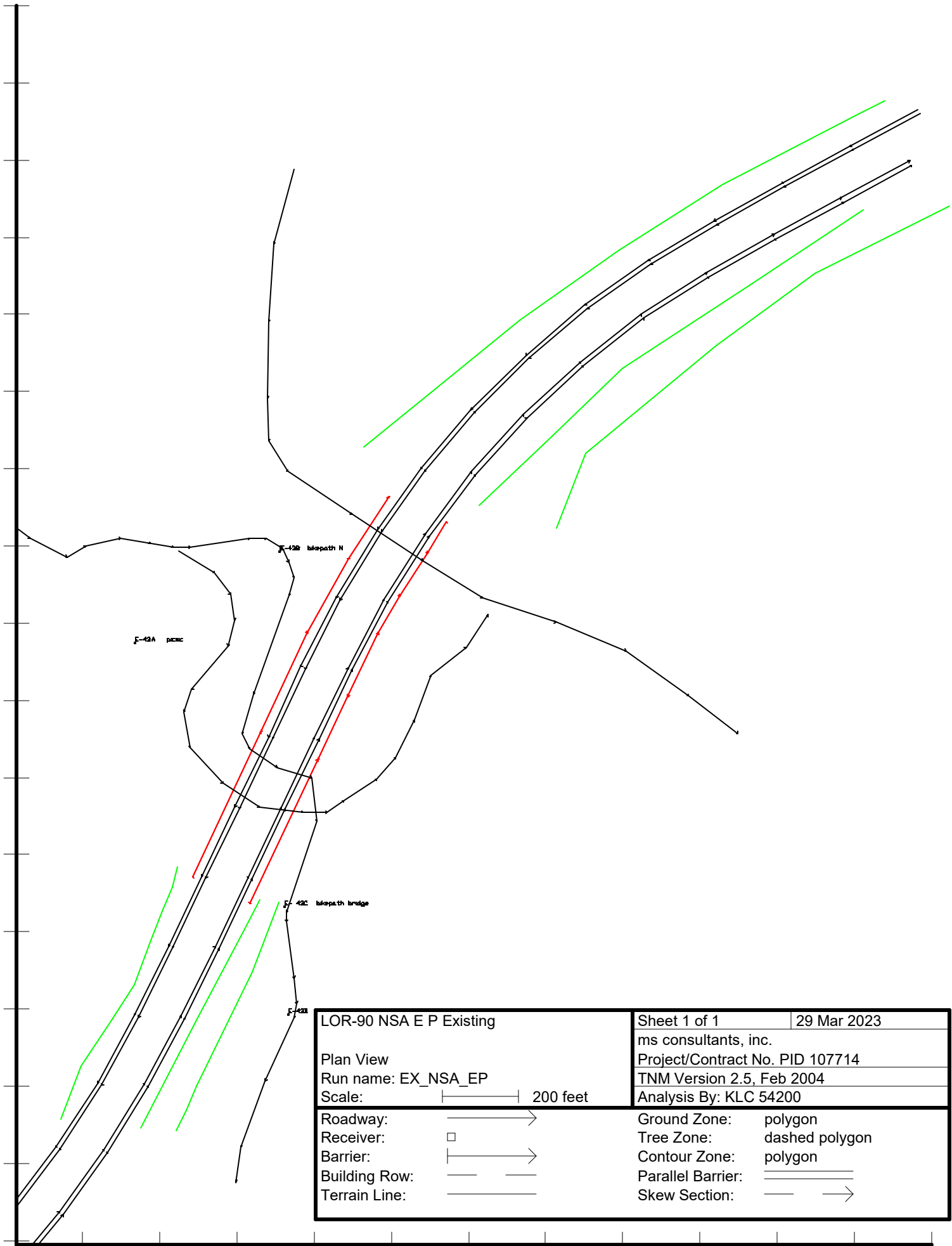
Receiver															
Name	No.	#DUs	Existing	No Barrier			Increase over existing			Type	With Barrier				
			LAeq1h	LAeq1h	Crit'n	Calculated	Crit'n	Impact	Calculated	Noise Reduction	Calculated	Goal	Calculated		
				Calculated	Crit'n		Calculated	Crit'n			Calculated <td>Calculated <td>Goal <td>Calculated</td> </td></td>	Calculated <td>Goal <td>Calculated</td> </td>	Goal <td>Calculated</td>	Calculated	
			dBA	dBA	dBA		dB				dBA	dB	dB	dB	
								Sub'l Inc							minus
															Goal
D-26A	26	1	0.0	65.5	66		65.5	10	----		65.5	0.0	5	-5.0	
D-26B	27	1	0.0	64.9	66		64.9	10	----		64.9	0.0	5	-5.0	
D-27	28	4	0.0	64.8	66		64.8	10	----		64.8	0.0	5	-5.0	
D-28 pool	29	10	0.0	63.4	66		63.4	10	----		63.4	0.0	5	-5.0	
D-29 tennis	48	1	0.0	66.2	66		66.2	10	Snd Lvl		66.2	0.0	5	-5.0	
D-26Aii	49	1	0.0	61.9	66		61.9	10	----		61.9	0.0	5	-5.0	
D-26Aiii	50	1	0.0	59.5	66		59.5	10	----		59.5	0.0	5	-5.0	
D-26Bii	51	1	0.0	63.8	66		63.8	10	----		63.8	0.0	5	-5.0	
D-26Biii	52	2	0.0	62.8	66		62.8	10	----		62.8	0.0	5	-5.0	
D-26A -2	54	1	0.0	69.1	66		69.1	10	Snd Lvl		69.1	0.0	5	-5.0	
D-26A -3	55	1	0.0	71.2	66		71.2	10	Snd Lvl		71.2	0.0	5	-5.0	
D-26A -4	56	1	0.0	71.9	66		71.9	10	Snd Lvl		71.9	0.0	5	-5.0	
D-26A -5	57	1	0.0	72.2	66		72.2	10	Snd Lvl		72.2	0.0	5	-5.0	
D-26Aii -2	59	1	0.0	66.5	66		66.5	10	Snd Lvl		66.5	0.0	5	-5.0	
D-26Aii -3	60	1	0.0	69.8	66		69.8	10	Snd Lvl		69.8	0.0	5	-5.0	
D-26Aii -4	61	1	0.0	70.7	66		70.7	10	Snd Lvl		70.7	0.0	5	-5.0	
D-26Aii -5	62	1	0.0	70.8	66		70.8	10	Snd Lvl		70.8	0.0	5	-5.0	
D-26Aiii -2	64	1	0.0	63.8	66		63.8	10	----		63.8	0.0	5	-5.0	
D-26Aiii -3	65	1	0.0	67.5	66		67.5	10	Snd Lvl		67.5	0.0	5	-5.0	
D-26Aiii -4	66	1	0.0	68.9	66		68.9	10	Snd Lvl		68.9	0.0	5	-5.0	
D-26Aiii -5	67	1	0.0	69.4	66		69.4	10	Snd Lvl		69.4	0.0	5	-5.0	
D-26B -2	69	1	0.0	68.1	66		68.1	10	Snd Lvl		68.1	0.0	5	-5.0	
D-26B -3	70	1	0.0	69.5	66		69.5	10	Snd Lvl		69.5	0.0	5	-5.0	
D-26B -4	71	1	0.0	71.4	66		71.4	10	Snd Lvl		71.4	0.0	5	-5.0	

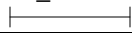









**RESULTS: SOUND LEVELS**

**PID 107714**

D-26B -5	72	1	0.0	71.9	66	71.9	10	Snd Lvl	71.9	0.0	5	-5.0
D-26Bii -2	74	1	0.0	65.7	66	65.7	10	----	65.7	0.0	5	-5.0
D-26Bii -3	75	1	0.0	67.1	66	67.1	10	Snd Lvl	67.1	0.0	5	-5.0
D-26Bii -4	76	1	0.0	68.6	66	68.6	10	Snd Lvl	68.6	0.0	5	-5.0
D-26Bii -5	77	1	0.0	69.3	66	69.3	10	Snd Lvl	69.3	0.0	5	-5.0
D-26Biii -2	79	2	0.0	64.4	66	64.4	10	----	64.4	0.0	5	-5.0
D-26Biii -3	80	2	0.0	65.3	66	65.3	10	----	65.3	0.0	5	-5.0
D-26Biii -4	81	2	0.0	66.3	66	66.3	10	Snd Lvl	66.3	0.0	5	-5.0
D-26Biii -5	82	2	0.0	66.9	66	66.9	10	Snd Lvl	66.9	0.0	5	-5.0
D-27 -2	84	4	0.0	66.2	66	66.2	10	Snd Lvl	66.2	0.0	5	-5.0
D-27 -3	85	4	0.0	66.9	66	66.9	10	Snd Lvl	66.9	0.0	5	-5.0
D-27 -4	86	4	0.0	67.0	66	67.0	10	Snd Lvl	67.0	0.0	5	-5.0
D-27 -5	87	4	0.0	67.6	66	67.6	10	Snd Lvl	67.6	0.0	5	-5.0
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									
			<b>Min</b>	<b>Avg</b>	<b>Max</b>							
			<b>dB</b>	<b>dB</b>	<b>dB</b>							
All Selected		66	0.0	0.0	0.0							
All Impacted		39	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							



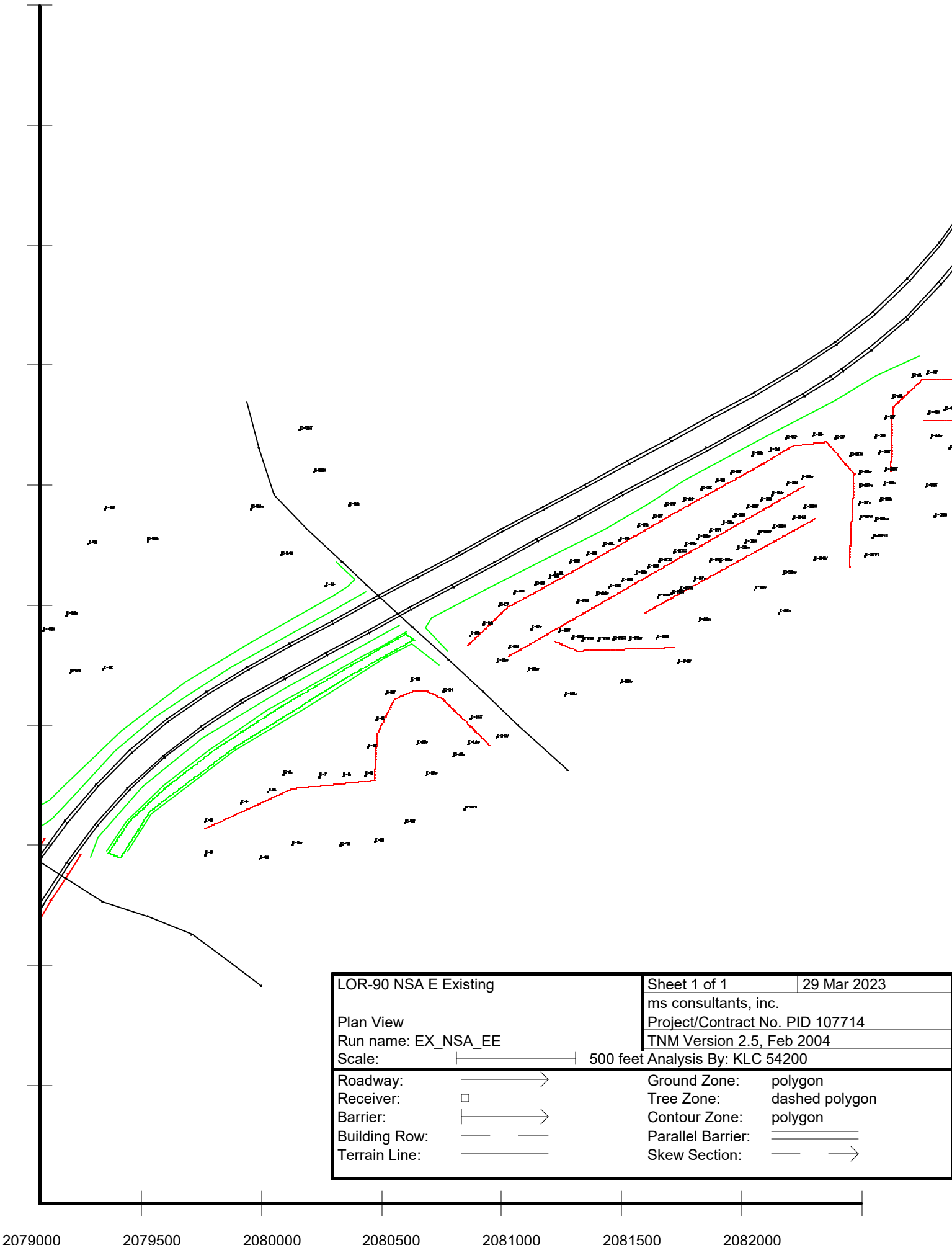
LOR-90 NSA E P Existing		Sheet 1 of 1	29 Mar 2023
Plan View		ms consultants, inc.	
Run name: EX_NSA_EP		Project/Contract No. PID 107714	
Scale: 		TNM Version 2.5, Feb 2004	
		Analysis By: KLC 54200	
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	









2077800 2078000 2078200 2078400 2078600 2078800 2079000 2079200 2079400 2079600 2079800 2080000

**RESULTS: SOUND LEVELS**

**PID 107714**

ms consultants, inc. KLC 54200										29 March 2023 TNM 2.5 Calculated with TNM 2.5		
<b>RESULTS: SOUND LEVELS</b>												
<b>PROJECT/CONTRACT:</b> PID 107714												
<b>RUN:</b> LOR-90 NSA E P Existing												
<b>BARRIER DESIGN:</b> INPUT HEIGHTS										Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.		
<b>ATMOSPHERICS:</b> 68 deg F, 50% RH												
<b>Receiver</b>												
<b>Name</b>	<b>No.</b>	<b>#DUs</b>	<b>Existing LAeq1h</b>	<b>No Barrier LAeq1h</b>	<b>Increase over existing</b>		<b>Type</b>	<b>With Barrier</b>		<b>Noise Reduction</b>		
				<b>Calculated</b>	<b>Crit'n</b>	<b>Calculated</b>	<b>Crit'n</b>	<b>Impact</b>	<b>Calculated LAeq1h</b>	<b>Calculated</b>	<b>Goal</b>	<b>Calculated minus Goal</b>
			dB	dB	dB	dB	dB		dB	dB	dB	dB
E-43A picnic	43	1	0.0	62.1	66	62.1	10	----	62.1	0.0	8	-8.0
E-43B bikepath N	93	1	0.0	62.4	66	62.4	10	----	62.4	0.0	8	-8.0
E-43D bikepath S	168	1	0.0	64.6	66	64.6	10	----	64.6	0.0	8	-8.0
E-43Dii parking area	169	1	0.0	58.4	66	58.4	10	----	58.4	0.0	8	-8.0
E- 43C bikepath bridge	170	1	0.0	75.2	66	75.2	10	Snd Lvl	75.2	0.0	8	-8.0
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									
			<b>Min</b>	<b>Avg</b>	<b>Max</b>							
			<b>dB</b>	<b>dB</b>	<b>dB</b>							
All Selected		5	0.0	0.0	0.0							
All Impacted		1	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							



LOR-90 NSA E Existing		Sheet 1 of 1	29 Mar 2023
Plan View		ms consultants, inc.	
Run name: EX_NSA_EE		Project/Contract No. PID 107714	
Scale: 		TNM Version 2.5, Feb 2004	
Analysis By: KLC 54200			
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	

2079000      2079500      2080000      2080500      2081000      2081500      2082000

RESULTS: SOUND LEVELS

PID 107714

ms consultants, inc. KLC 54200									29 March 2023 TNM 2.5 Calculated with TNM 2.5			
RESULTS: SOUND LEVELS PROJECT/CONTRACT: RUN: BARRIER DESIGN:												
			PID 107714 LOR-90 NSA E Existing INPUT HEIGHTS									Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.
ATMOSPHERICS:			68 deg F, 50% RH									

Receiver												
Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h	Increase over existing			Type	With Barrier Calculated LAeq1h	Noise Reduction		
				Calculated	Crit'n	Calculated	Crit'n	Impact		Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
E-2	2	1	0.0	63.9	66	63.9	10	----	62.8	1.1	8	-6.9
E-3	3	1	0.0	64.2	66	64.2	10	----	63.5	0.7	8	-7.3
E-4	4	1	0.0	62.4	66	62.4	10	----	62.0	0.4	8	-7.6
E-5	5	1	0.0	61.1	66	61.1	10	----	60.9	0.2	8	-7.8
E-6	6	1	0.0	62.0	66	62.0	10	----	62.0	0.0	8	-8.0
E-7	7	1	0.0	60.6	66	60.6	10	----	60.6	0.0	8	-8.0
E-8	8	1	0.0	59.8	66	59.8	10	----	59.7	0.1	8	-7.9
E-9	9	1	0.0	58.7	66	58.7	10	----	58.7	0.0	8	-8.0
E-10	10	1	0.0	61.0	66	61.0	10	----	60.9	0.1	8	-7.9
E-11	11	1	0.0	62.8	66	62.8	10	----	62.8	0.0	8	-8.0
E-12	12	1	0.0	64.9	66	64.9	10	----	64.9	0.0	8	-8.0
E-13	13	1	0.0	63.8	66	63.8	10	----	63.8	0.0	8	-8.0
E-14	14	1	0.0	60.5	66	60.5	10	----	60.5	0.0	8	-8.0
E-15	15	1	0.0	67.3	66	67.3	10	Snd Lvl	67.3	0.0	8	-8.0
E-16	16	1	0.0	68.3	66	68.3	10	Snd Lvl	68.3	0.0	8	-8.0
E-17	17	1	0.0	70.9	66	70.9	10	Snd Lvl	70.9	0.0	8	-8.0
E-18	18	1	0.0	72.2	66	72.2	10	Snd Lvl	72.2	0.0	8	-8.0
E-19	19	1	0.0	71.4	66	71.4	10	Snd Lvl	71.4	0.0	8	-8.0
E-20	20	1	0.0	71.4	66	71.4	10	Snd Lvl	71.4	0.0	8	-8.0
E-21	21	1	0.0	71.4	66	71.4	10	Snd Lvl	71.4	0.0	8	-8.0
E-22	22	1	0.0	72.3	66	72.3	10	Snd Lvl	72.3	0.0	8	-8.0
E-23	23	1	0.0	71.8	66	71.8	10	Snd Lvl	71.8	0.0	8	-8.0
E-24	24	1	0.0	71.8	66	71.8	10	Snd Lvl	71.8	0.0	8	-8.0
E-25	25	1	0.0	71.2	66	71.2	10	Snd Lvl	71.2	0.0	8	-8.0

**RESULTS: SOUND LEVELS**

**PID 107714**

E-26	26	1	0.0	71.9	66	71.9	10	Snd Lvl	71.9	0.0	8	-8.0
E-27	27	1	0.0	72.1	66	72.1	10	Snd Lvl	72.1	0.0	8	-8.0
E-28	28	1	0.0	73.5	66	73.5	10	Snd Lvl	73.5	0.0	8	-8.0
E-29	29	1	0.0	72.2	66	72.2	10	Snd Lvl	72.2	0.0	8	-8.0
E-30	30	1	0.0	72.8	66	72.8	10	Snd Lvl	72.8	0.0	8	-8.0
E-31	31	1	0.0	73.1	66	73.1	10	Snd Lvl	73.1	0.0	8	-8.0
E-32	32	1	0.0	73.4	66	73.4	10	Snd Lvl	73.4	0.0	8	-8.0
E-33	33	1	0.0	75.1	66	75.1	10	Snd Lvl	75.1	0.0	8	-8.0
E-34	34	1	0.0	73.6	66	73.6	10	Snd Lvl	73.6	0.0	8	-8.0
E-35	35	1	0.0	74.6	66	74.6	10	Snd Lvl	74.6	0.0	8	-8.0
E-36	36	1	0.0	71.6	66	71.6	10	Snd Lvl	71.6	0.0	8	-8.0
E-37	37	1	0.0	68.6	66	68.6	10	Snd Lvl	68.6	0.0	8	-8.0
E-38	38	1	0.0	65.4	66	65.4	10	----	65.4	0.0	8	-8.0
E-39	39	1	0.0	67.1	66	67.1	10	Snd Lvl	67.1	0.0	8	-8.0
E-40	40	1	0.0	69.2	66	69.2	10	Snd Lvl	69.2	0.0	8	-8.0
E-41	41	1	0.0	70.0	66	70.0	10	Snd Lvl	70.0	0.0	8	-8.0
E-42	42	1	0.0	68.7	66	68.7	10	Snd Lvl	68.7	0.0	8	-8.0
E-44	44	1	0.0	70.1	66	70.1	10	Snd Lvl	68.3	1.8	8	-6.2
E-45	45	1	0.0	67.7	66	67.7	10	Snd Lvl	66.9	0.8	8	-7.2
E-46	46	1	0.0	63.5	66	63.5	10	----	62.8	0.7	8	-7.3
E-47	47	1	0.0	60.5	66	60.5	10	----	60.1	0.4	8	-7.6
E-48	48	1	0.0	59.0	66	59.0	10	----	58.6	0.4	8	-7.6
E-49	49	1	0.0	58.0	66	58.0	10	----	58.0	0.0	8	-8.0
E-50	50	1	0.0	59.6	66	59.6	10	----	59.6	0.0	8	-8.0
E-51	51	1	0.0	54.3	66	54.3	10	----	54.2	0.1	8	-7.9
E-52	52	1	0.0	55.1	66	55.1	10	----	55.0	0.1	8	-7.9
E-53	53	1	0.0	55.8	66	55.8	10	----	55.8	0.0	8	-8.0
E-54	54	1	0.0	71.0	66	71.0	10	Snd Lvl	71.0	0.0	8	-8.0
E-55	55	1	0.0	62.0	66	62.0	10	----	62.0	0.0	8	-8.0
E-4ii	57	1	0.0	61.3	66	61.3	10	----	60.4	0.9	8	-7.1
E-5ii	58	1	0.0	59.9	66	59.9	10	----	59.3	0.6	8	-7.4
E-7ii	59	1	0.0	58.0	66	58.0	10	----	57.4	0.6	8	-7.4
E-8ii	60	1	0.0	57.0	66	57.0	10	----	56.5	0.5	8	-7.5
E-9ii	61	1	0.0	56.4	66	56.4	10	----	56.0	0.4	8	-7.6
E-12ii	62	1	0.0	56.8	66	56.8	10	----	56.8	0.0	8	-8.0
E-13ii	63	1	0.0	56.5	66	56.5	10	----	56.4	0.1	8	-7.9
E-14ii	64	1	0.0	57.9	66	57.9	10	----	57.9	0.0	8	-8.0
E-15ii	65	1	0.0	59.6	66	59.6	10	----	59.6	0.0	8	-8.0
E-16ii	66	1	0.0	60.1	66	60.1	10	----	60.1	0.0	8	-8.0
E-17ii	67	1	0.0	60.9	66	60.9	10	----	60.9	0.0	8	-8.0
E-18ii	68	1	0.0	56.8	66	56.8	10	----	56.8	0.0	8	-8.0

**RESULTS: SOUND LEVELS**

**PID 107714**

E-19ii	69	1	0.0	57.3	66	57.3	10	----	57.3	0.0	8	-8.0
E-20ii	70	1	0.0	56.8	66	56.8	10	----	56.8	0.0	8	-8.0
E-21ii	71	1	0.0	61.4	66	61.4	10	----	61.4	0.0	8	-8.0
E-22ii	72	1	0.0	61.2	66	61.2	10	----	61.2	0.0	8	-8.0
E-23ii	73	1	0.0	61.5	66	61.5	10	----	61.5	0.0	8	-8.0
E-24ii	74	1	0.0	61.5	66	61.5	10	----	61.5	0.0	8	-8.0
E-25ii	75	1	0.0	61.5	66	61.5	10	----	61.5	0.0	8	-8.0
E-26ii	76	1	0.0	61.5	66	61.5	10	----	61.5	0.0	8	-8.0
E-27ii	77	1	0.0	61.5	66	61.5	10	----	61.5	0.0	8	-8.0
E-28ii	78	1	0.0	61.8	66	61.8	10	----	61.8	0.0	8	-8.0
E-29ii	79	1	0.0	61.9	66	61.9	10	----	61.9	0.0	8	-8.0
E-30ii	80	1	0.0	62.0	66	62.0	10	----	62.0	0.0	8	-8.0
E-31ii	81	1	0.0	62.2	66	62.2	10	----	62.2	0.0	8	-8.0
E-32ii	82	1	0.0	62.5	66	62.5	10	----	62.5	0.0	8	-8.0
E-33ii	83	1	0.0	62.6	66	62.6	10	----	62.6	0.0	8	-8.0
E-34ii	84	1	0.0	62.6	66	62.6	10	----	62.6	0.0	8	-8.0
E-35ii	85	1	0.0	62.9	66	62.9	10	----	62.9	0.0	8	-8.0
E-36ii	86	1	0.0	62.7	66	62.7	10	----	62.7	0.0	8	-8.0
E-37ii	87	1	0.0	64.5	66	64.5	10	----	64.5	0.0	8	-8.0
E-38ii	88	1	0.0	63.4	66	63.4	10	----	63.4	0.0	8	-8.0
E-39ii	89	1	0.0	55.9	66	55.9	10	----	55.9	0.0	8	-8.0
E-40ii	90	1	0.0	58.4	66	58.4	10	----	58.4	0.0	8	-8.0
E-41ii	91	1	0.0	60.0	66	60.0	10	----	60.0	0.0	8	-8.0
E-42ii	92	1	0.0	65.9	66	65.9	10	----	65.9	0.0	8	-8.0
E-44ii	94	1	0.0	59.1	66	59.1	10	----	58.8	0.3	8	-7.7
E-45ii	95	1	0.0	55.7	66	55.7	10	----	55.3	0.4	8	-7.6
E-46ii	96	1	0.0	54.4	66	54.4	10	----	54.1	0.3	8	-7.7
E-47ii	97	1	0.0	54.5	66	54.5	10	----	54.2	0.3	8	-7.7
E-48ii	98	1	0.0	56.3	66	56.3	10	----	56.1	0.2	8	-7.8
E-49ii	99	1	0.0	55.8	66	55.8	10	----	55.7	0.1	8	-7.9
E-50ii	100	1	0.0	56.0	66	56.0	10	----	55.9	0.1	8	-7.9
E-54ii	101	1	0.0	62.3	66	62.3	10	----	62.3	0.0	8	-8.0
E-55ii	102	1	0.0	58.8	66	58.8	10	----	58.8	0.0	8	-8.0
E-12iii	103	1	0.0	56.8	66	56.8	10	----	56.7	0.1	8	-7.9
E-14iii	104	1	0.0	56.2	66	56.2	10	----	56.1	0.1	8	-7.9
E-16iii	105	1	0.0	56.8	66	56.8	10	----	56.8	0.0	8	-8.0
E-21iii	106	1	0.0	56.4	66	56.4	10	----	56.4	0.0	8	-8.0
E-22iii	107	1	0.0	56.1	66	56.1	10	----	56.1	0.0	8	-8.0
E-23iii	108	1	0.0	55.6	66	55.6	10	----	55.6	0.0	8	-8.0
E-24iii	109	1	0.0	54.5	66	54.5	10	----	54.5	0.0	8	-8.0
E-25iii	110	1	0.0	57.6	66	57.6	10	----	57.6	0.0	8	-8.0

**RESULTS: SOUND LEVELS**

**PID 107714**

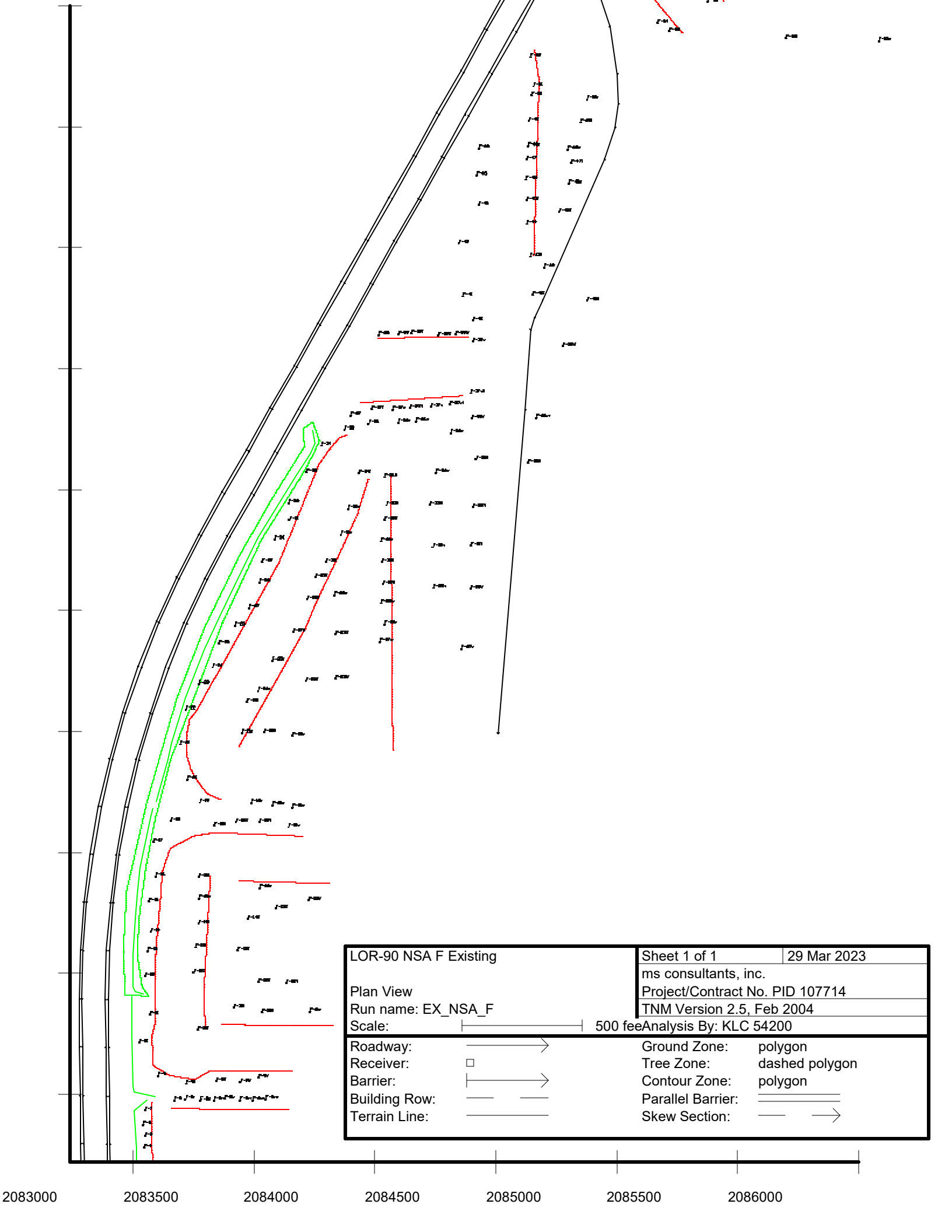
E-26iii	111	1	0.0	57.4	66	57.4	10	----	57.4	0.0	8	-8.0
E-27iii	112	1	0.0	61.7	66	61.7	10	----	61.7	0.0	8	-8.0
E-28iii	113	1	0.0	62.0	66	62.0	10	----	62.0	0.0	8	-8.0
E-29iii	114	1	0.0	57.7	66	57.7	10	----	57.7	0.0	8	-8.0
E-30iii	115	1	0.0	57.9	66	57.9	10	----	57.9	0.0	8	-8.0
E-31iii	116	1	0.0	58.1	66	58.1	10	----	58.0	0.1	8	-7.9
E-32iii	117	1	0.0	58.2	66	58.2	10	----	58.2	0.0	8	-8.0
E-33iii	118	1	0.0	58.1	66	58.1	10	----	58.1	0.0	8	-8.0
E-34iii	119	1	0.0	58.5	66	58.5	10	----	58.5	0.0	8	-8.0
E-35iii	120	1	0.0	59.0	66	59.0	10	----	59.0	0.0	8	-8.0
E-37iii	121	1	0.0	61.9	66	61.9	10	----	61.9	0.0	8	-8.0
E-38iii	122	1	0.0	61.3	66	61.3	10	----	61.3	0.0	8	-8.0
E-39iii	123	1	0.0	54.8	66	54.8	10	----	54.8	0.0	8	-8.0
E-40iii	124	1	0.0	56.5	66	56.5	10	----	56.5	0.0	8	-8.0
E-41iii	125	1	0.0	59.3	66	59.3	10	----	59.3	0.0	8	-8.0
E-42iii	126	1	0.0	64.4	66	64.4	10	----	64.4	0.0	8	-8.0
E-47iii	127	1	0.0	54.8	66	54.8	10	----	54.6	0.2	8	-7.8
E-48iii	128	1	0.0	55.9	66	55.9	10	----	55.7	0.2	8	-7.8
E-49iii	129	1	0.0	55.5	66	55.5	10	----	55.5	0.0	8	-8.0
E-50iii	130	1	0.0	55.3	66	55.3	10	----	55.2	0.1	8	-7.9
E-54iii	131	1	0.0	58.7	66	58.7	10	----	58.7	0.0	8	-8.0
E-55iii	132	1	0.0	56.3	66	56.3	10	----	56.3	0.0	8	-8.0
E-12iv	133	1	0.0	55.5	66	55.5	10	----	55.3	0.2	8	-7.8
E-14iv	134	1	0.0	56.5	66	56.5	10	----	56.5	0.0	8	-8.0
E-16iv	135	1	0.0	54.8	66	54.8	10	----	54.8	0.0	8	-8.0
E-21iv	136	1	0.0	53.0	66	53.0	10	----	53.0	0.0	8	-8.0
E-24iv	137	1	0.0	52.5	66	52.5	10	----	52.5	0.0	8	-8.0
E-26iv	138	1	0.0	53.9	66	53.9	10	----	53.9	0.0	8	-8.0
E-27iv	139	1	0.0	57.5	66	57.5	10	----	57.5	0.0	8	-8.0
E-28iv	140	1	0.0	58.1	66	58.1	10	----	58.1	0.0	8	-8.0
E-30iv	141	1	0.0	54.2	66	54.2	10	----	54.2	0.0	8	-8.0
E-32iv	142	1	0.0	54.1	66	54.1	10	----	54.1	0.0	8	-8.0
E-34iv	143	1	0.0	54.5	66	54.5	10	----	54.5	0.0	8	-8.0
E-37iv	144	1	0.0	59.8	66	59.8	10	----	59.8	0.0	8	-8.0
E-38iv	145	1	0.0	59.9	66	59.9	10	----	59.9	0.0	8	-8.0
E-40iv	146	1	0.0	56.3	66	56.3	10	----	56.3	0.0	8	-8.0
E-41iv	147	1	0.0	58.3	66	58.3	10	----	58.3	0.0	8	-8.0
E-42iv	148	1	0.0	63.4	66	63.4	10	----	63.4	0.0	8	-8.0
E-47iv	149	1	0.0	56.0	66	56.0	10	----	55.9	0.1	8	-7.9
E-48iv	150	1	0.0	55.9	66	55.9	10	----	55.8	0.1	8	-7.9
E-27v	151	1	0.0	57.5	66	57.5	10	----	57.5	0.0	8	-8.0






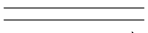




**RESULTS: SOUND LEVELS**

**PID 107714**

E-30v	152	1	0.0	53.1	66	53.1	10	----	53.1	0.0	8	-8.0
E-37v	153	1	0.0	57.8	66	57.8	10	----	57.8	0.0	8	-8.0
E-38v	154	1	0.0	58.7	66	58.7	10	----	58.7	0.0	8	-8.0
E-40v	155	1	0.0	55.7	66	55.7	10	----	55.7	0.0	8	-8.0
E-41v	156	1	0.0	57.4	66	57.4	10	----	57.4	0.0	8	-8.0
E-42v	157	1	0.0	61.9	66	61.9	10	----	61.9	0.0	8	-8.0
E-37vi	158	1	0.0	56.8	66	56.8	10	----	56.8	0.0	8	-8.0
E-38vi	159	1	0.0	56.7	66	56.7	10	----	56.7	0.0	8	-8.0
E-40vi	160	1	0.0	55.1	66	55.1	10	----	55.1	0.0	8	-8.0
E-42vi	161	1	0.0	60.8	66	60.8	10	----	60.8	0.0	8	-8.0
E-37vii	162	1	0.0	54.0	66	54.0	10	----	54.0	0.0	8	-8.0
E-38vii	163	1	0.0	55.4	66	55.4	10	----	55.4	0.0	8	-8.0
E-40vii	164	1	0.0	53.6	66	53.6	10	----	53.6	0.0	8	-8.0
E-42vii	165	1	0.0	60.1	66	60.1	10	----	60.1	0.0	8	-8.0
E-42viii	166	1	0.0	57.1	66	57.1	10	----	57.1	0.0	8	-8.0
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									
			<b>Min</b>	<b>Avg</b>	<b>Max</b>							
			<b>dB</b>	<b>dB</b>	<b>dB</b>							
All Selected		162	0.0	0.1	1.8							
All Impacted		30	0.0	0.1	1.8							
All that meet NR Goal		0	0.0	0.0	0.0							



LOR-90 NSA F Existing		Sheet 1 of 1	29 Mar 2023
Plan View		ms consultants, inc.	
Run name: EX_NSA_F		Project/Contract No. PID 107714	
Scale: 		TNM Version 2.5, Feb 2004	
		Analysis By: KLC 54200	
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	

2083000 2083500 2084000 2084500 2085000 2085500 2086000

**RESULTS: SOUND LEVELS**

**PID 107714**

ms consultants, inc. KLC 54200		29 March 2023 TNM 2.5 Calculated with TNM 2.5										
<b>RESULTS: SOUND LEVELS</b>												
<b>PROJECT/CONTRACT:</b>		PID 107714										
<b>RUN:</b>		LOR-90 NSA F Existing										
<b>BARRIER DESIGN:</b>		INPUT HEIGHTS				Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.						
<b>ATMOSPHERICS:</b>		68 deg F, 50% RH										
<b>Receiver</b>												
Name	No.	#DUs	Existing	No Barrier		Increase over existing		Type	With Barrier	Noise Reduction		
			LAeq1h	LAeq1h	Crit'n	Calculated	Crit'n		Calculated	Sub'l Inc	LAeq1h	Calculated
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
F-1	1	2	0.0	63.7	66	63.7	10	----	63.7	0.0	8	-8.0
F-2	2	1	0.0	68.0	66	68.0	10	Snd Lvl	68.0	0.0	8	-8.0
F-3	3	1	0.0	69.2	66	69.2	10	Snd Lvl	69.2	0.0	8	-8.0
F-4	4	2	0.0	69.3	66	69.3	10	Snd Lvl	69.3	0.0	8	-8.0
F-5	5	1	0.0	68.7	66	68.7	10	Snd Lvl	68.7	0.0	8	-8.0
F-6	6	2	0.0	68.2	66	68.2	10	Snd Lvl	68.2	0.0	8	-8.0
F-7	7	1	0.0	68.6	66	68.6	10	Snd Lvl	68.6	0.0	8	-8.0
F-8	8	2	0.0	63.7	66	63.7	10	----	63.7	0.0	8	-8.0
F-9	9	1	0.0	67.2	66	67.2	10	Snd Lvl	67.2	0.0	8	-8.0
F-10	10	1	0.0	70.7	66	70.7	10	Snd Lvl	70.7	0.0	8	-8.0
F-11	11	1	0.0	69.0	66	69.0	10	Snd Lvl	69.0	0.0	8	-8.0
F-12	12	1	0.0	70.0	66	70.0	10	Snd Lvl	70.0	0.0	8	-8.0
F-13	13	1	0.0	69.4	66	69.4	10	Snd Lvl	69.4	0.0	8	-8.0
F-14	14	1	0.0	69.0	66	69.0	10	Snd Lvl	69.0	0.0	8	-8.0
F-15	15	1	0.0	69.8	66	69.8	10	Snd Lvl	69.8	0.0	8	-8.0
F-16	16	1	0.0	69.2	66	69.2	10	Snd Lvl	69.2	0.0	8	-8.0
F-17	17	1	0.0	70.9	66	70.9	10	Snd Lvl	70.9	0.0	8	-8.0
F-18	18	1	0.0	68.1	66	68.1	10	Snd Lvl	68.1	0.0	8	-8.0
F-19	19	1	0.0	62.7	66	62.7	10	----	62.7	0.0	8	-8.0
F-20	20	1	0.0	62.4	66	62.4	10	----	62.4	0.0	8	-8.0
F-21	21	1	0.0	62.5	66	62.5	10	----	62.5	0.0	8	-8.0
F-22	22	1	0.0	60.8	66	60.8	10	----	60.8	0.0	8	-8.0
F-23	23	1	0.0	61.4	66	61.4	10	----	61.4	0.0	8	-8.0
F-24	26	1	0.0	63.2	66	63.2	10	----	63.2	0.0	8	-8.0

**RESULTS: SOUND LEVELS**

**PID 107714**

F-25	27	1	0.0	65.1	66	65.1	10	----	65.1	0.0	8	-8.0
F-26	28	1	0.0	65.3	66	65.3	10	----	65.3	0.0	8	-8.0
F-27	29	1	0.0	64.8	66	64.8	10	----	64.8	0.0	8	-8.0
F-28	30	1	0.0	65.0	66	65.0	10	----	65.0	0.0	8	-8.0
F-29	31	1	0.0	64.7	66	64.7	10	----	64.7	0.0	8	-8.0
F-30	32	1	0.0	65.8	66	65.8	10	----	65.8	0.0	8	-8.0
F-31	33	1	0.0	65.5	66	65.5	10	----	65.5	0.0	8	-8.0
F-32	34	1	0.0	64.5	66	64.5	10	----	64.5	0.0	8	-8.0
F-33	35	1	0.0	62.8	66	62.8	10	----	62.8	0.0	8	-8.0
F-34	36	1	0.0	66.6	66	66.6	10	Snd Lvl	66.6	0.0	8	-8.0
F-35	37	1	0.0	67.5	66	67.5	10	Snd Lvl	67.5	0.0	8	-8.0
F-36	38	1	0.0	64.6	66	64.6	10	----	64.6	0.0	8	-8.0
F-37	39	1	0.0	68.0	66	68.0	10	Snd Lvl	68.0	0.0	8	-8.0
F-38	40	1	0.0	71.6	66	71.6	10	Snd Lvl	71.6	0.0	8	-8.0
F-39	41	1	0.0	67.5	66	67.5	10	Snd Lvl	67.5	0.0	8	-8.0
F-40	42	1	0.0	61.7	66	61.7	10	----	61.7	0.0	8	-8.0
F-41	43	1	0.0	63.6	66	63.6	10	----	63.6	0.0	8	-8.0
F-42	44	1	0.0	65.2	66	65.2	10	----	65.2	0.0	8	-8.0
F-43	45	1	0.0	67.0	66	67.0	10	Snd Lvl	67.0	0.0	8	-8.0
F-44	47	1	0.0	61.7	66	61.7	10	----	61.7	0.0	8	-8.0
F-45	48	1	0.0	67.1	66	67.1	10	Snd Lvl	67.1	0.0	8	-8.0
F-46	49	1	0.0	70.0	66	70.0	10	Snd Lvl	70.0	0.0	8	-8.0
F-47	50	1	0.0	64.6	66	64.6	10	----	64.6	0.0	8	-8.0
F-48	51	1	0.0	73.1	66	73.1	10	Snd Lvl	73.1	0.0	8	-8.0
F-49	52	1	0.0	66.6	66	66.6	10	Snd Lvl	66.6	0.0	8	-8.0
F-50	53	1	0.0	68.3	66	68.3	10	Snd Lvl	68.3	0.0	8	-8.0
F-51	54	1	0.0	68.7	66	68.7	10	Snd Lvl	68.7	0.0	8	-8.0
F-52	55	1	0.0	73.0	66	73.0	10	Snd Lvl	73.0	0.0	8	-8.0
F-53	56	2	0.0	57.1	66	57.1	10	----	57.1	0.0	8	-8.0
F-54	57	2	0.0	58.2	66	58.2	10	----	58.2	0.0	8	-8.0
F-55	58	4	0.0	57.6	66	57.6	10	----	57.6	0.0	8	-8.0
F-56	59	2	0.0	60.4	66	60.4	10	----	60.4	0.0	8	-8.0
F-57	60	2	0.0	61.4	66	61.4	10	----	61.4	0.0	8	-8.0
F-58	61	2	0.0	63.5	66	63.5	10	----	63.5	0.0	8	-8.0
F-59	62	2	0.0	66.4	66	66.4	10	Snd Lvl	66.4	0.0	8	-8.0
F-60	63	2	0.0	72.0	66	72.0	10	Snd Lvl	72.0	0.0	8	-8.0
F-61	64	2	0.0	71.8	66	71.8	10	Snd Lvl	71.8	0.0	8	-8.0
F-62	65	2	0.0	70.1	66	70.1	10	Snd Lvl	70.1	0.0	8	-8.0
F-63	77	2	0.0	69.2	66	69.2	10	Snd Lvl	69.2	0.0	8	-8.0
F-64	68	2	0.0	66.0	66	66.0	10	Snd Lvl	66.0	0.0	8	-8.0
F-65	69	2	0.0	63.8	66	63.8	10	----	63.8	0.0	8	-8.0

**RESULTS: SOUND LEVELS**

**PID 107714**

F-66	70	3	0.0	61.9	66	61.9	10	----	61.9	0.0	8	-8.0
F-67	71	2	0.0	60.9	66	60.9	10	----	60.9	0.0	8	-8.0
F-68	72	3	0.0	57.2	66	57.2	10	----	57.2	0.0	8	-8.0
F-69	73	2	0.0	60.5	66	60.5	10	----	60.5	0.0	8	-8.0
F-70	74	3	0.0	60.2	66	60.2	10	----	60.2	0.0	8	-8.0
F-71	75	2	0.0	58.1	66	58.1	10	----	58.1	0.0	8	-8.0
F-72	76	2	0.0	58.4	66	58.4	10	----	58.4	0.0	8	-8.0
F-73	78	2	0.0	59.1	66	59.1	10	----	59.1	0.0	8	-8.0
F-74	79	1	0.0	61.9	66	61.9	10	----	61.9	0.0	8	-8.0
F-75	80	1	0.0	63.6	66	63.6	10	----	63.6	0.0	8	-8.0
F-76	81	1	0.0	65.3	66	65.3	10	----	65.3	0.0	8	-8.0
F-77	82	1	0.0	66.2	66	66.2	10	Snd Lvl	66.2	0.0	8	-8.0
F-78	83	1	0.0	66.6	66	66.6	10	Snd Lvl	66.6	0.0	8	-8.0
F-79	84	1	0.0	66.8	66	66.8	10	Snd Lvl	66.8	0.0	8	-8.0
F-80	85	1	0.0	67.0	66	67.0	10	Snd Lvl	67.0	0.0	8	-8.0
F-81	86	1	0.0	67.0	66	67.0	10	Snd Lvl	67.0	0.0	8	-8.0
F-82	87	1	0.0	67.2	66	67.2	10	Snd Lvl	67.2	0.0	8	-8.0
F-83	91	1	0.0	67.4	66	67.4	10	Snd Lvl	67.4	0.0	8	-8.0
F-84	92	1	0.0	66.2	66	66.2	10	Snd Lvl	66.2	0.0	8	-8.0
F-85	93	1	0.0	65.3	66	65.3	10	----	65.3	0.0	8	-8.0
F-86	94	1	0.0	62.5	66	62.5	10	----	62.5	0.0	8	-8.0
F-87	95	1	0.0	60.3	66	60.3	10	----	60.3	0.0	8	-8.0
F-88	96	1	0.0	56.0	66	56.0	10	----	56.0	0.0	8	-8.0
F-89	97	1	0.0	57.1	66	57.1	10	----	57.1	0.0	8	-8.0
F-90	98	1	0.0	60.4	66	60.4	10	----	60.4	0.0	8	-8.0
F-91	99	1	0.0	62.1	66	62.1	10	----	62.1	0.0	8	-8.0
F-92	100	1	0.0	61.8	66	61.8	10	----	61.8	0.0	8	-8.0
F-93	101	1	0.0	66.8	66	66.8	10	Snd Lvl	66.8	0.0	8	-8.0
F-94	103	1	0.0	62.5	66	62.5	10	----	62.5	0.0	8	-8.0
F-95	103	1	0.0	59.9	66	59.9	10	----	59.9	0.0	8	-8.0
F-96	106	1	0.0	56.7	66	56.7	10	----	56.7	0.0	8	-8.0
F-1ii	107	1	0.0	62.3	66	62.3	10	----	62.3	0.0	8	-8.0
F-8ii	108	1	0.0	62.1	66	62.1	10	----	62.1	0.0	8	-8.0
F-9ii	109	1	0.0	62.7	66	62.7	10	----	62.7	0.0	8	-8.0
F-10ii	110	1	0.0	59.5	66	59.5	10	----	59.5	0.0	8	-8.0
F-11ii	111	1	0.0	55.5	66	55.5	10	----	55.5	0.0	8	-8.0
F-12ii	112	1	0.0	59.7	66	59.7	10	----	59.7	0.0	8	-8.0
F-13ii	113	1	0.0	59.5	66	59.5	10	----	59.5	0.0	8	-8.0
F-14ii	114	1	0.0	59.5	66	59.5	10	----	59.5	0.0	8	-8.0
F-15ii	115	1	0.0	59.7	66	59.7	10	----	59.7	0.0	8	-8.0
F-16ii	116	1	0.0	59.7	66	59.7	10	----	59.7	0.0	8	-8.0

**RESULTS: SOUND LEVELS**

**PID 107714**

F-18ii	117	1	0.0	61.0	66	61.0	10	----	61.0	0.0	8	-8.0
F-19ii	118	1	0.0	58.7	66	58.7	10	----	58.7	0.0	8	-8.0
F-21ii	119	1	0.0	60.1	66	60.1	10	----	60.1	0.0	8	-8.0
F-23ii	120	1	0.0	59.5	66	59.5	10	----	59.5	0.0	8	-8.0
F-24ii	121	1	0.0	59.6	66	59.6	10	----	59.6	0.0	8	-8.0
F-25ii	122	1	0.0	59.7	66	59.7	10	----	59.7	0.0	8	-8.0
F-27ii	123	1	0.0	59.9	66	59.9	10	----	59.9	0.0	8	-8.0
F-28ii	124	1	0.0	60.0	66	60.0	10	----	60.0	0.0	8	-8.0
F-29ii	125	1	0.0	60.4	66	60.4	10	----	60.4	0.0	8	-8.0
F-30ii	126	1	0.0	60.4	66	60.4	10	----	60.4	0.0	8	-8.0
F-31ii	127	1	0.0	60.8	66	60.8	10	----	60.8	0.0	8	-8.0
F-32ii	129	1	0.0	61.0	66	61.0	10	----	61.0	0.0	8	-8.0
F-33ii	131	1	0.0	59.3	66	59.3	10	----	59.3	0.0	8	-8.0
F-34ii	132	1	0.0	61.5	66	61.5	10	----	61.5	0.0	8	-8.0
F-35ii	133	1	0.0	58.2	66	58.2	10	----	58.2	0.0	8	-8.0
F-36ii	134	1	0.0	61.1	66	61.1	10	----	61.1	0.0	8	-8.0
F-37ii	135	1	0.0	64.0	66	64.0	10	----	64.0	0.0	8	-8.0
F-39ii	136	1	0.0	65.9	66	65.9	10	----	65.9	0.0	8	-8.0
F-41ii	137	1	0.0	65.6	66	65.6	10	----	65.6	0.0	8	-8.0
F-43ii	138	1	0.0	61.5	66	61.5	10	----	61.5	0.0	8	-8.0
F-45ii	139	1	0.0	62.6	66	62.6	10	----	62.6	0.0	8	-8.0
F-46ii	140	1	0.0	63.6	66	63.6	10	----	63.6	0.0	8	-8.0
F-47ii	141	1	0.0	59.8	66	59.8	10	----	59.8	0.0	8	-8.0
F-48ii	142	1	0.0	65.1	66	65.1	10	----	65.1	0.0	8	-8.0
F-49ii	143	1	0.0	60.4	66	60.4	10	----	60.4	0.0	8	-8.0
F-50ii	144	1	0.0	61.2	66	61.2	10	----	61.2	0.0	8	-8.0
F-53ii	145	1	0.0	55.0	66	55.0	10	----	55.0	0.0	8	-8.0
F-55ii	146	5	0.0	55.8	66	55.8	10	----	55.8	0.0	8	-8.0
F-57ii	147	4	0.0	58.5	66	58.5	10	----	58.5	0.0	8	-8.0
F-58ii	148	4	0.0	61.6	66	61.6	10	----	61.6	0.0	8	-8.0
F-60ii	149	2	0.0	61.9	66	61.9	10	----	61.9	0.0	8	-8.0
F-67ii	150	3	0.0	58.8	66	58.8	10	----	58.8	0.0	8	-8.0
F-68ii	151	4	0.0	55.8	66	55.8	10	----	55.8	0.0	8	-8.0
F-69ii	152	2	0.0	57.7	66	57.7	10	----	57.7	0.0	8	-8.0
F-70ii	155	3	0.0	57.9	66	57.9	10	----	57.9	0.0	8	-8.0
F-71ii	157	4	0.0	55.7	66	55.7	10	----	55.7	0.0	8	-8.0
F-72ii	158	4	0.0	56.3	66	56.3	10	----	56.3	0.0	8	-8.0
F-73ii	159	2	0.0	58.2	66	58.2	10	----	58.2	0.0	8	-8.0
F-74ii	160	1	0.0	60.0	66	60.0	10	----	60.0	0.0	8	-8.0
F-77ii	161	1	0.0	58.2	66	58.2	10	----	58.2	0.0	8	-8.0
F-78ii	162	1	0.0	58.3	66	58.3	10	----	58.3	0.0	8	-8.0

**RESULTS: SOUND LEVELS**

**PID 107714**

F-79ii	163	1	0.0	58.2	66	58.2	10	----	58.2	0.0	8	-8.0
F-80ii	164	1	0.0	58.6	66	58.6	10	----	58.6	0.0	8	-8.0
F-82ii	165	1	0.0	58.5	66	58.5	10	----	58.5	0.0	8	-8.0
F-83ii	166	1	0.0	58.2	66	58.2	10	----	58.2	0.0	8	-8.0
F-87ii	167	1	0.0	58.9	66	58.9	10	----	58.9	0.0	8	-8.0
F-88ii	168	1	0.0	55.5	66	55.5	10	----	55.5	0.0	8	-8.0
F-89ii	169	1	0.0	57.6	66	57.6	10	----	57.6	0.0	8	-8.0
F-92ii	170	1	0.0	60.3	66	60.3	10	----	60.3	0.0	8	-8.0
F-93ii	171	1	0.0	61.0	66	61.0	10	----	61.0	0.0	8	-8.0
F-94ii	172	1	0.0	66.1	66	66.1	10	Snd Lvl	66.1	0.0	8	-8.0
F-95ii	173	1	0.0	65.9	66	65.9	10	----	65.9	0.0	8	-8.0
F-96ii	174	1	0.0	57.5	66	57.5	10	----	57.5	0.0	8	-8.0
F-1iii	177	1	0.0	60.8	66	60.8	10	----	60.8	0.0	8	-8.0
F-8iii	178	1	0.0	60.1	66	60.1	10	----	60.1	0.0	8	-8.0
F-9iii	179	1	0.0	58.8	66	58.8	10	----	58.8	0.0	8	-8.0
F-11iii	180	1	0.0	53.9	66	53.9	10	----	53.9	0.0	8	-8.0
F-12iii	181	1	0.0	54.4	66	54.4	10	----	54.4	0.0	8	-8.0
F-13iii	182	1	0.0	55.3	66	55.3	10	----	55.3	0.0	8	-8.0
F-15iii	183	1	0.0	53.8	66	53.8	10	----	53.8	0.0	8	-8.0
F-14iii	184	1	0.0	55.2	66	55.2	10	----	55.2	0.0	8	-8.0
F-16iii	185	1	0.0	54.4	66	54.4	10	----	54.4	0.0	8	-8.0
F-18iii	186	1	0.0	58.7	66	58.7	10	----	58.7	0.0	8	-8.0
F-19iii	187	1	0.0	57.6	66	57.6	10	----	57.6	0.0	8	-8.0
F-21iii	188	1	0.0	57.0	66	57.0	10	----	57.0	0.0	8	-8.0
F-25iii	189	1	0.0	56.3	66	56.3	10	----	56.3	0.0	8	-8.0
F-27iii	190	1	0.0	56.7	66	56.7	10	----	56.7	0.0	8	-8.0
F-28iii	191	1	0.0	56.7	66	56.7	10	----	56.7	0.0	8	-8.0
F-29iii	192	1	0.0	57.2	66	57.2	10	----	57.2	0.0	8	-8.0
F-30iii	193	1	0.0	57.8	66	57.8	10	----	57.8	0.0	8	-8.0
F-31iii	194	1	0.0	57.7	66	57.7	10	----	57.7	0.0	8	-8.0
F-32iii	195	1	0.0	58.3	66	58.3	10	----	58.3	0.0	8	-8.0
F-33iii	196	1	0.0	57.5	66	57.5	10	----	57.5	0.0	8	-8.0
F-34iii	197	1	0.0	60.8	66	60.8	10	----	60.8	0.0	8	-8.0
F-35iii	198	1	0.0	66.7	66	66.7	10	Snd Lvl	66.7	0.0	8	-8.0
F-36iii	199	1	0.0	59.8	66	59.8	10	----	59.8	0.0	8	-8.0
F-37iii	200	1	0.0	61.3	66	61.3	10	----	61.3	0.0	8	-8.0
F-39iii	201	1	0.0	63.1	66	63.1	10	----	63.1	0.0	8	-8.0
F-41iii	202	1	0.0	58.0	66	58.0	10	----	58.0	0.0	8	-8.0
F-45iii	203	1	0.0	60.8	66	60.8	10	----	60.8	0.0	8	-8.0
F-46iii	204	1	0.0	60.4	66	60.4	10	----	60.4	0.0	8	-8.0
F-48iii	205	1	0.0	59.6	66	59.6	10	----	59.6	0.0	8	-8.0

**RESULTS: SOUND LEVELS**

**PID 107714**

F-53iii	207	5	0.0	53.2	66	53.2	10	----	53.2	0.0	8	-8.0
F-55iii	209	5	0.0	54.3	66	54.3	10	----	54.3	0.0	8	-8.0
F-58iii	210	4	0.0	55.7	66	55.7	10	----	55.7	0.0	8	-8.0
F-60iii	211	2	0.0	61.3	66	61.3	10	----	61.3	0.0	8	-8.0
F-67iii	212	2	0.0	58.1	66	58.1	10	----	58.1	0.0	8	-8.0
F-68iii	213	9	0.0	54.6	66	54.6	10	----	54.6	0.0	8	-8.0
F-70iii	214	4	0.0	56.0	66	56.0	10	----	56.0	0.0	8	-8.0
F-72iii	215	4	0.0	54.9	66	54.9	10	----	54.9	0.0	8	-8.0
F-73iii	216	2	0.0	57.5	66	57.5	10	----	57.5	0.0	8	-8.0
F-74iii	217	1	0.0	57.5	66	57.5	10	----	57.5	0.0	8	-8.0
F-77iii	218	1	0.0	56.4	66	56.4	10	----	56.4	0.0	8	-8.0
F-79iii	219	2	0.0	53.3	66	53.3	10	----	53.3	0.0	8	-8.0
F-82iii	220	2	0.0	53.5	66	53.5	10	----	53.5	0.0	8	-8.0
F-83iii	221	1	0.0	56.7	66	56.7	10	----	56.7	0.0	8	-8.0
F-87iii	222	1	0.0	57.7	66	57.7	10	----	57.7	0.0	8	-8.0
F-89iii	223	1	0.0	57.2	66	57.2	10	----	57.2	0.0	8	-8.0
F-92iii	224	1	0.0	57.9	66	57.9	10	----	57.9	0.0	8	-8.0
F-93iii	225	1	0.0	58.5	66	58.5	10	----	58.5	0.0	8	-8.0
F-94iii	226	1	0.0	65.9	66	65.9	10	----	65.9	0.0	8	-8.0
F-1iv	227	2	0.0	59.7	66	59.7	10	----	59.7	0.0	8	-8.0
F-8iv	228	2	0.0	58.9	66	58.9	10	----	58.9	0.0	8	-8.0
F-9iv	229	1	0.0	57.0	66	57.0	10	----	57.0	0.0	8	-8.0
F-11iv	230	1	0.0	52.7	66	52.7	10	----	52.7	0.0	8	-8.0
F-12iv	231	1	0.0	53.4	66	53.4	10	----	53.4	0.0	8	-8.0
F-15iv	232	1	0.0	52.6	66	52.6	10	----	52.6	0.0	8	-8.0
F-18iv	233	1	0.0	58.1	66	58.1	10	----	58.1	0.0	8	-8.0
F-19iv	234	1	0.0	56.5	66	56.5	10	----	56.5	0.0	8	-8.0
F-21iv	235	1	0.0	56.9	66	56.9	10	----	56.9	0.0	8	-8.0
F-25iv	236	1	0.0	56.6	66	56.6	10	----	56.6	0.0	8	-8.0
F-27iv	238	1	0.0	55.9	66	55.9	10	----	55.9	0.0	8	-8.0
F-28iv	240	1	0.0	56.8	66	56.8	10	----	56.8	0.0	8	-8.0
F-29iv	241	1	0.0	54.6	66	54.6	10	----	54.6	0.0	8	-8.0
F-31iv	242	1	0.0	55.7	66	55.7	10	----	55.7	0.0	8	-8.0
F-33iv	243	1	0.0	57.3	66	57.3	10	----	57.3	0.0	8	-8.0
F-34iv	244	1	0.0	58.7	66	58.7	10	----	58.7	0.0	8	-8.0
F-36iv	245	1	0.0	58.4	66	58.4	10	----	58.4	0.0	8	-8.0
F-37iv	246	1	0.0	60.1	66	60.1	10	----	60.1	0.0	8	-8.0
F-39iv	247	1	0.0	61.9	66	61.9	10	----	61.9	0.0	8	-8.0
F-58iv	248	9	0.0	53.7	66	53.7	10	----	53.7	0.0	8	-8.0
F-60iv	249	5	0.0	60.2	66	60.2	10	----	60.2	0.0	8	-8.0
F-67iv	250	2	0.0	57.1	66	57.1	10	----	57.1	0.0	8	-8.0



**RESULTS: SOUND LEVELS**

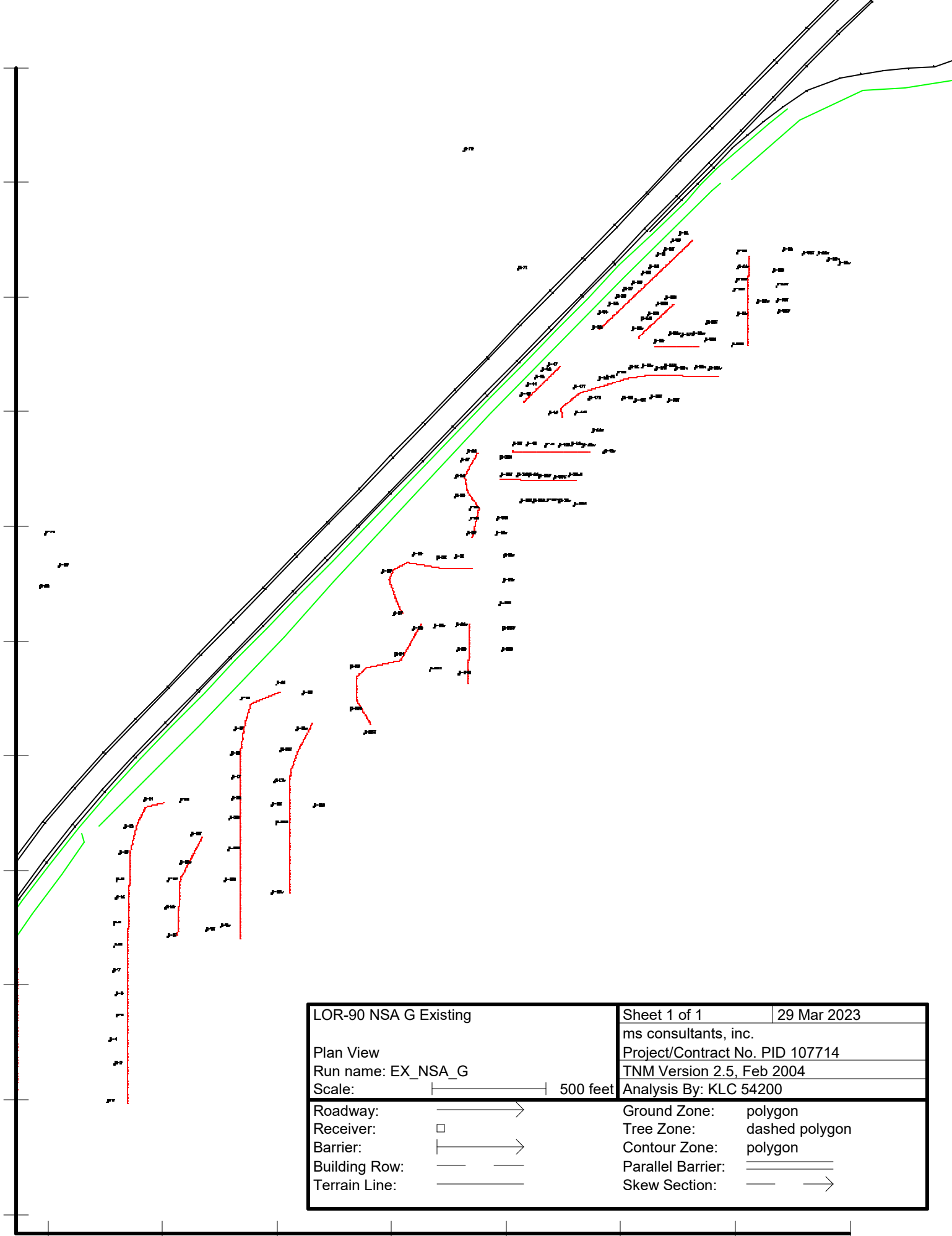
**PID 107714**

F-70iv	251	10	0.0	54.1	66	54.1	10	----	54.1	0.0	8	-8.0
F-73iv	252	2	0.0	56.8	66	56.8	10	----	56.8	0.0	8	-8.0
F-74iv	253	1	0.0	56.2	66	56.2	10	----	56.2	0.0	8	-8.0
F-77iv	254	1	0.0	55.4	66	55.4	10	----	55.4	0.0	8	-8.0
F-83iv	255	1	0.0	55.7	66	55.7	10	----	55.7	0.0	8	-8.0
F-87iv	256	1	0.0	56.5	66	56.5	10	----	56.5	0.0	8	-8.0
F-89iv	257	1	0.0	56.2	66	56.2	10	----	56.2	0.0	8	-8.0
F-1v	258	1	0.0	58.5	66	58.5	10	----	58.5	0.0	8	-8.0
F-8v	259	1	0.0	58.1	66	58.1	10	----	58.1	0.0	8	-8.0
F-9v	260	1	0.0	55.9	66	55.9	10	----	55.9	0.0	8	-8.0
F-18v	261	1	0.0	56.3	66	56.3	10	----	56.3	0.0	8	-8.0
F-27v	262	1	0.0	54.8	66	54.8	10	----	54.8	0.0	8	-8.0
F-28v	263	1	0.0	56.2	66	56.2	10	----	56.2	0.0	8	-8.0
F-29v	264	1	0.0	56.0	66	56.0	10	----	56.0	0.0	8	-8.0
F-31v	265	1	0.0	56.6	66	56.6	10	----	56.6	0.0	8	-8.0
F-36v	266	1	0.0	58.5	66	58.5	10	----	58.5	0.0	8	-8.0
F-37v	267	1	0.0	58.9	66	58.9	10	----	58.9	0.0	8	-8.0
F-39v	269	1	0.0	60.4	66	60.4	10	----	60.4	0.0	8	-8.0
F-60v	272	5	0.0	59.0	66	59.0	10	----	59.0	0.0	8	-8.0
F-73v	273	2	0.0	56.2	66	56.2	10	----	56.2	0.0	8	-8.0
F-74v	274	1	0.0	55.2	66	55.2	10	----	55.2	0.0	8	-8.0
F-77v	275	2	0.0	54.0	66	54.0	10	----	54.0	0.0	8	-8.0
F-83v	276	1	0.0	55.1	66	55.1	10	----	55.1	0.0	8	-8.0
F-87v	277	1	0.0	54.8	66	54.8	10	----	54.8	0.0	8	-8.0
F-1vi	278	1	0.0	57.7	66	57.7	10	----	57.7	0.0	8	-8.0
F-8vi	279	1	0.0	56.9	66	56.9	10	----	56.9	0.0	8	-8.0
F-36vi	280	1	0.0	64.9	66	64.9	10	----	64.9	0.0	8	-8.0
F-37vi	281	1	0.0	58.0	66	58.0	10	----	58.0	0.0	8	-8.0
F-39vi	282	1	0.0	59.0	66	59.0	10	----	59.0	0.0	8	-8.0
F-60vi	283	4	0.0	56.6	66	56.6	10	----	56.6	0.0	8	-8.0
F-73vi	284	2	0.0	55.5	66	55.5	10	----	55.5	0.0	8	-8.0
F-77vi	285	1	0.0	53.5	66	53.5	10	----	53.5	0.0	8	-8.0
F-83vi	286	2	0.0	53.9	66	53.9	10	----	53.9	0.0	8	-8.0
F-87vi	287	2	0.0	54.8	66	54.8	10	----	54.8	0.0	8	-8.0
F-1vii	288	2	0.0	56.8	66	56.8	10	----	56.8	0.0	8	-8.0
F-8vii	289	2	0.0	56.0	66	56.0	10	----	56.0	0.0	8	-8.0
F-37vii	290	1	0.0	59.8	66	59.8	10	----	59.8	0.0	8	-8.0
F-60vii	291	4	0.0	55.5	66	55.5	10	----	55.5	0.0	8	-8.0
F-1viii	294	2	0.0	56.2	66	56.2	10	----	56.2	0.0	8	-8.0
F-8viii	299	2	0.0	55.3	66	55.3	10	----	55.3	0.0	8	-8.0
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									

**RESULTS: SOUND LEVELS**

PID 107714

			Min	Avg	Max							
			dB	dB	dB							
All Selected		399	0.0	0.0	0.0							
All Impacted		54	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							



000 2087500 2088000 2088500 2089000 2089500 2090000 2090500

**RESULTS: SOUND LEVELS**

**PID 107714**

ms consultants, inc. KLC 54200		29 March 2023 TNM 2.5 Calculated with TNM 2.5										
<b>RESULTS: SOUND LEVELS</b>												
<b>PROJECT/CONTRACT:</b>		PID 107714										
<b>RUN:</b>		LOR-90 NSA G Existing										
<b>BARRIER DESIGN:</b>		INPUT HEIGHTS Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.										
<b>ATMOSPHERICS:</b>		68 deg F, 50% RH										
<b>Receiver</b>												
Name	No.	#DUs	Existing	No Barrier		Increase over existing		Type	With Barrier	Noise Reduction		
			LAeq1h	LAeq1h	Crit'n	Calculated	Crit'n	Impact	Calculated	Calculated	Goal	Calculated
				Calculated	Crit'n	Calculated	Crit'n		LAeq1h	Calculated	Goal	Calculated
							Sub'l Inc					minus
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
G-1	161	1	0.0	66.0	66	66.0	10	Snd Lvl	66.0	0.0	8	-8.0
G-2	162	1	0.0	59.0	66	59.0	10	----	59.0	0.0	8	-8.0
G-3	163	1	0.0	59.7	66	59.7	10	----	59.7	0.0	8	-8.0
G-4	164	1	0.0	60.6	66	60.6	10	----	60.6	0.0	8	-8.0
G-5	165	1	0.0	61.1	66	61.1	10	----	61.1	0.0	8	-8.0
G-6	166	1	0.0	61.9	66	61.9	10	----	61.9	0.0	8	-8.0
G-7	167	1	0.0	62.9	66	62.9	10	----	62.9	0.0	8	-8.0
G-8	168	1	0.0	63.9	66	63.9	10	----	63.9	0.0	8	-8.0
G-9	169	1	0.0	64.6	66	64.6	10	----	64.6	0.0	8	-8.0
G-10	170	1	0.0	65.3	66	65.3	10	----	65.3	0.0	8	-8.0
G-11	171	1	0.0	66.3	66	66.3	10	Snd Lvl	66.3	0.0	8	-8.0
G-12	172	1	0.0	66.7	66	66.7	10	Snd Lvl	66.7	0.0	8	-8.0
G-13	173	1	0.0	67.1	66	67.1	10	Snd Lvl	67.1	0.0	8	-8.0
G-14	174	1	0.0	67.1	66	67.1	10	Snd Lvl	67.1	0.0	8	-8.0
G-15	175	1	0.0	66.0	66	66.0	10	Snd Lvl	66.0	0.0	8	-8.0
G-16	176	1	0.0	64.3	66	64.3	10	----	64.3	0.0	8	-8.0
G-17	177	1	0.0	65.0	66	65.0	10	----	65.0	0.0	8	-8.0
G-18	178	1	0.0	65.9	66	65.9	10	----	65.9	0.0	8	-8.0
G-19	179	1	0.0	66.2	66	66.2	10	Snd Lvl	66.2	0.0	8	-8.0
G-20	180	1	0.0	67.2	66	67.2	10	Snd Lvl	67.2	0.0	8	-8.0
G-21	181	1	0.0	66.9	66	66.9	10	Snd Lvl	66.9	0.0	8	-8.0
G-22	182	1	0.0	64.8	66	64.8	10	----	64.8	0.0	8	-8.0
G-23	183	1	0.0	64.1	66	64.1	10	----	64.1	0.0	8	-8.0
G-24	184	1	0.0	61.9	66	61.9	10	----	61.9	0.0	8	-8.0

**RESULTS: SOUND LEVELS**

**PID 107714**

G-25	185	1	0.0	57.5	66	57.5	10	----	57.5	0.0	8	-8.0
G-26	186	1	0.0	61.7	66	61.7	10	----	61.7	0.0	8	-8.0
G-27	187	1	0.0	63.7	66	63.7	10	----	63.7	0.0	8	-8.0
G-28	188	1	0.0	67.4	66	67.4	10	Snd Lvl	67.4	0.0	8	-8.0
G-29	189	1	0.0	66.2	66	66.2	10	Snd Lvl	66.2	0.0	8	-8.0
G-30	190	1	0.0	63.8	66	63.8	10	----	63.8	0.0	8	-8.0
G-31	191	1	0.0	62.6	66	62.6	10	----	62.6	0.0	8	-8.0
G-32	192	1	0.0	63.5	66	63.5	10	----	63.5	0.0	8	-8.0
G-33	193	1	0.0	64.3	66	64.3	10	----	64.3	0.0	8	-8.0
G-34	194	1	0.0	65.0	66	65.0	10	----	65.0	0.0	8	-8.0
G-35	195	1	0.0	68.1	66	68.1	10	Snd Lvl	68.1	0.0	8	-8.0
G-36	196	1	0.0	70.2	66	70.2	10	Snd Lvl	70.2	0.0	8	-8.0
G-37	197	1	0.0	71.8	66	71.8	10	Snd Lvl	71.8	0.0	8	-8.0
G-38	198	1	0.0	72.4	66	72.4	10	Snd Lvl	72.4	0.0	8	-8.0
G-39	199	1	0.0	68.0	66	68.0	10	Snd Lvl	68.0	0.0	8	-8.0
G-40	200	1	0.0	66.1	66	66.1	10	Snd Lvl	66.1	0.0	8	-8.0
G-41	201	1	0.0	63.5	66	63.5	10	----	63.5	0.0	8	-8.0
G-42	202	1	0.0	65.6	66	65.6	10	----	65.6	0.0	8	-8.0
G-43	203	1	0.0	74.2	66	74.2	10	Snd Lvl	74.2	0.0	8	-8.0
G-44	204	1	0.0	73.7	66	73.7	10	Snd Lvl	73.7	0.0	8	-8.0
G-45	205	1	0.0	72.8	66	72.8	10	Snd Lvl	72.8	0.0	8	-8.0
G-46	206	1	0.0	72.2	66	72.2	10	Snd Lvl	72.2	0.0	8	-8.0
G-47	207	1	0.0	71.7	66	71.7	10	Snd Lvl	71.7	0.0	8	-8.0
G-48	209	1	0.0	63.5	66	63.5	10	----	63.5	0.0	8	-8.0
G-49	210	1	0.0	62.9	66	62.9	10	----	62.9	0.0	8	-8.0
G-50	211	1	0.0	62.2	66	62.2	10	----	62.2	0.0	8	-8.0
G-51	212	1	0.0	61.1	66	61.1	10	----	61.1	0.0	8	-8.0
G-52	213	1	0.0	59.9	66	59.9	10	----	59.9	0.0	8	-8.0
G-53	214	1	0.0	71.4	66	71.4	10	Snd Lvl	71.4	0.0	8	-8.0
G-54	215	1	0.0	73.1	66	73.1	10	Snd Lvl	73.1	0.0	8	-8.0
G-55	216	1	0.0	72.7	66	72.7	10	Snd Lvl	72.7	0.0	8	-8.0
G-56	217	1	0.0	72.8	66	72.8	10	Snd Lvl	72.8	0.0	8	-8.0
G-57	218	1	0.0	72.7	66	72.7	10	Snd Lvl	72.7	0.0	8	-8.0
G-58	219	1	0.0	71.9	66	71.9	10	Snd Lvl	71.9	0.0	8	-8.0
G-59	220	1	0.0	72.1	66	72.1	10	Snd Lvl	72.1	0.0	8	-8.0
G-60	221	1	0.0	72.0	66	72.0	10	Snd Lvl	72.0	0.0	8	-8.0
G-61	222	1	0.0	71.2	66	71.2	10	Snd Lvl	71.2	0.0	8	-8.0
G-62	223	1	0.0	72.0	66	72.0	10	Snd Lvl	72.0	0.0	8	-8.0
G-63	224	1	0.0	71.1	66	71.1	10	Snd Lvl	71.1	0.0	8	-8.0
G-64	225	1	0.0	71.4	66	71.4	10	Snd Lvl	71.4	0.0	8	-8.0
G-65	226	1	0.0	64.0	66	64.0	10	----	64.0	0.0	8	-8.0

**RESULTS: SOUND LEVELS**

**PID 107714**

G-66	227	1	0.0	61.2	66	61.2	10	----	61.2	0.0	8	-8.0
G-67	228	1	0.0	59.0	66	59.0	10	----	59.0	0.0	8	-8.0
G-68	229	1	0.0	59.8	66	59.8	10	----	59.8	0.0	8	-8.0
G-69	230	1	0.0	59.7	66	59.7	10	----	59.7	0.0	8	-8.0
G-70	231	1	0.0	57.9	66	57.9	10	----	57.9	0.0	8	-8.0
G-71	232	1	0.0	71.3	66	71.3	10	Snd Lvl	71.3	0.0	8	-8.0
G-72	233	1	0.0	58.9	66	58.9	10	----	58.9	0.0	8	-8.0
G-1ii	234	1	0.0	62.6	66	62.6	10	----	62.6	0.0	8	-8.0
G-9ii	235	1	0.0	61.1	66	61.1	10	----	61.1	0.0	8	-8.0
G-10ii	236	1	0.0	62.0	66	62.0	10	----	62.0	0.0	8	-8.0
G-11ii	237	1	0.0	62.9	66	62.9	10	----	62.9	0.0	8	-8.0
G-12ii	238	1	0.0	63.4	66	63.4	10	----	63.4	0.0	8	-8.0
G-13ii	239	1	0.0	64.3	66	64.3	10	----	64.3	0.0	8	-8.0
G-15ii	240	1	0.0	63.7	66	63.7	10	----	63.7	0.0	8	-8.0
G-16ii	241	1	0.0	59.8	66	59.8	10	----	59.8	0.0	8	-8.0
G-17ii	242	1	0.0	60.5	66	60.5	10	----	60.5	0.0	8	-8.0
G-18ii	243	1	0.0	61.3	66	61.3	10	----	61.3	0.0	8	-8.0
G-19ii	244	1	0.0	62.1	66	62.1	10	----	62.1	0.0	8	-8.0
G-22ii	245	1	0.0	62.1	66	62.1	10	----	62.1	0.0	8	-8.0
G-24ii	246	1	0.0	57.8	66	57.8	10	----	57.8	0.0	8	-8.0
G-25ii	247	1	0.0	54.9	66	54.9	10	----	54.9	0.0	8	-8.0
G-26ii	248	1	0.0	59.0	66	59.0	10	----	59.0	0.0	8	-8.0
G-28ii	249	1	0.0	57.8	66	57.8	10	----	57.8	0.0	8	-8.0
G-29ii	250	1	0.0	58.7	66	58.7	10	----	58.7	0.0	8	-8.0
G-31ii	251	1	0.0	59.1	66	59.1	10	----	59.1	0.0	8	-8.0
G-32ii	252	1	0.0	59.4	66	59.4	10	----	59.4	0.0	8	-8.0
G-33ii	253	1	0.0	59.3	66	59.3	10	----	59.3	0.0	8	-8.0
G-35ii	254	1	0.0	58.0	66	58.0	10	----	58.0	0.0	8	-8.0
G-36ii	255	1	0.0	64.6	66	64.6	10	----	64.6	0.0	8	-8.0
G-38ii	256	1	0.0	66.7	66	66.7	10	Snd Lvl	66.7	0.0	8	-8.0
G-43ii	257	1	0.0	62.0	66	62.0	10	----	62.0	0.0	8	-8.0
G-44ii	258	1	0.0	59.5	66	59.5	10	----	59.5	0.0	8	-8.0
G-47ii	259	1	0.0	64.4	66	64.4	10	----	64.4	0.0	8	-8.0
G-48ii	260	1	0.0	57.7	66	57.7	10	----	57.7	0.0	8	-8.0
G-49ii	261	1	0.0	57.1	66	57.1	10	----	57.1	0.0	8	-8.0
G-50ii	262	1	0.0	56.5	66	56.5	10	----	56.5	0.0	8	-8.0
G-53ii	263	1	0.0	60.1	66	60.1	10	----	60.1	0.0	8	-8.0
G-54ii	264	1	0.0	58.8	66	58.8	10	----	58.8	0.0	8	-8.0
G-55ii	265	1	0.0	62.3	66	62.3	10	----	62.3	0.0	8	-8.0
G-56ii	266	1	0.0	61.9	66	61.9	10	----	61.9	0.0	8	-8.0
G-57ii	261	1	0.0	61.7	66	61.7	10	----	61.7	0.0	8	-8.0

**RESULTS: SOUND LEVELS**

**PID 107714**

G-58ii	267	1	0.0	61.6	66	61.6	10	----	61.6	0.0	8	-8.0
G-59ii	268	1	0.0	61.6	66	61.6	10	----	61.6	0.0	8	-8.0
G-60ii	269	1	0.0	59.2	66	59.2	10	----	59.2	0.0	8	-8.0
G-61ii	270	1	0.0	59.0	66	59.0	10	----	59.0	0.0	8	-8.0
G-62ii	271	1	0.0	60.9	66	60.9	10	----	60.9	0.0	8	-8.0
G-63ii	272	1	0.0	61.6	66	61.6	10	----	61.6	0.0	8	-8.0
G-64ii	273	1	0.0	62.6	66	62.6	10	----	62.6	0.0	8	-8.0
G-65ii	274	1	0.0	59.8	66	59.8	10	----	59.8	0.0	8	-8.0
G-66ii	275	1	0.0	60.1	66	60.1	10	----	60.1	0.0	8	-8.0
G-9iii	276	1	0.0	58.8	66	58.8	10	----	58.8	0.0	8	-8.0
G-12iii	277	1	0.0	59.9	66	59.9	10	----	59.9	0.0	8	-8.0
G-13iii	278	1	0.0	61.7	66	61.7	10	----	61.7	0.0	8	-8.0
G-15iii	279	1	0.0	59.3	66	59.3	10	----	59.3	0.0	8	-8.0
G-16iii	280	1	0.0	56.7	66	56.7	10	----	56.7	0.0	8	-8.0
G-22iii	281	1	0.0	59.8	66	59.8	10	----	59.8	0.0	8	-8.0
G-24iii	282	1	0.0	56.9	66	56.9	10	----	56.9	0.0	8	-8.0
G-26iii	283	1	0.0	58.3	66	58.3	10	----	58.3	0.0	8	-8.0
G-35iii	284	1	0.0	57.5	66	57.5	10	----	57.5	0.0	8	-8.0
G-36iii	285	1	0.0	62.8	66	62.8	10	----	62.8	0.0	8	-8.0
G-43iii	286	1	0.0	60.7	66	60.7	10	----	60.7	0.0	8	-8.0
G-44iii	287	1	0.0	59.5	66	59.5	10	----	59.5	0.0	8	-8.0
G-47iii	288	1	0.0	58.9	66	58.9	10	----	58.9	0.0	8	-8.0
G-53iii	289	1	0.0	55.9	66	55.9	10	----	55.9	0.0	8	-8.0
G-55iii	290	1	0.0	58.2	66	58.2	10	----	58.2	0.0	8	-8.0
G-56iii	291	1	0.0	59.3	66	59.3	10	----	59.3	0.0	8	-8.0
G-57iii	292	1	0.0	58.8	66	58.8	10	----	58.8	0.0	8	-8.0
G-58iii	293	1	0.0	58.7	66	58.7	10	----	58.7	0.0	8	-8.0
G-59iii	294	1	0.0	58.1	66	58.1	10	----	58.1	0.0	8	-8.0
G-60iii	295	1	0.0	57.7	66	57.7	10	----	57.7	0.0	8	-8.0
G-62iii	296	1	0.0	57.1	66	57.1	10	----	57.1	0.0	8	-8.0
G-63iii	297	1	0.0	57.5	66	57.5	10	----	57.5	0.0	8	-8.0
G-64iii	298	1	0.0	58.7	66	58.7	10	----	58.7	0.0	8	-8.0
G-66iii	299	1	0.0	59.4	66	59.4	10	----	59.4	0.0	8	-8.0
G-9iv	300	1	0.0	58.8	66	58.8	10	----	58.8	0.0	8	-8.0
G-12iv	301	1	0.0	56.7	66	56.7	10	----	56.7	0.0	8	-8.0
G-26iv	302	1	0.0	56.1	66	56.1	10	----	56.1	0.0	8	-8.0
G-35iv	303	1	0.0	57.0	66	57.0	10	----	57.0	0.0	8	-8.0
G-36iv	304	1	0.0	61.2	66	61.2	10	----	61.2	0.0	8	-8.0
G-43iv	306	1	0.0	59.7	66	59.7	10	----	59.7	0.0	8	-8.0
G-55iv	307	1	0.0	57.3	66	57.3	10	----	57.3	0.0	8	-8.0
G-56iv	308	1	0.0	56.8	66	56.8	10	----	56.8	0.0	8	-8.0

**RESULTS: SOUND LEVELS**

**PID 107714**

G-62iv	309	1	0.0	56.8	66	56.8	10	----	56.8	0.0	8	-8.0
G-66iv	310	1	0.0	58.6	66	58.6	10	----	58.6	0.0	8	-8.0
G-35v	311	1	0.0	56.5	66	56.5	10	----	56.5	0.0	8	-8.0
G-36v	312	1	0.0	59.9	66	59.9	10	----	59.9	0.0	8	-8.0
G-43v	313	1	0.0	58.2	66	58.2	10	----	58.2	0.0	8	-8.0
G-55v	314	1	0.0	56.7	66	56.7	10	----	56.7	0.0	8	-8.0
G-66v	315	1	0.0	57.8	66	57.8	10	----	57.8	0.0	8	-8.0
G-35vi	316	1	0.0	56.5	66	56.5	10	----	56.5	0.0	8	-8.0
G-36vi	317	1	0.0	58.5	66	58.5	10	----	58.5	0.0	8	-8.0
G-36vii	318	1	0.0	57.8	66	57.8	10	----	57.8	0.0	8	-8.0
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									
			<b>Min</b>	<b>Avg</b>	<b>Max</b>							
			<b>dB</b>	<b>dB</b>	<b>dB</b>							
All Selected		157	0.0	0.0	0.0							
All Impacted		36	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							



**Appendix D2**

**TNM 2.5**

**Existing Conditions Models**

**Year 2020**

**Roadway Output Sheets**

---

ms consultants, inc. KLC 54200					6 April 2023 TNM 2.5					
-----------------------------------	--	--	--	--	-------------------------	--	--	--	--	--

INPUT: ROADWAYS										
PROJECT/CONTRACT:	PID 107714									Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA
RUN:	LOR-90 NSA A Existing									

Roadway Name	Width	Points			Coordinates (pavement)			Flow Control			Segment	
		Name	No.		X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected		Pvmt Type
	ft				ft	ft	ft		mph	%		
90 WB B	12.0	54+00	3247		2,064,604.8	632,670.9	759.00				Average	
		52+00	3246		2,064,418.1	632,598.9	753.00				Average	
		50+00	3245		2,064,220.4	632,521.9	748.00				Average	
		48+00	3244		2,064,033.4	632,449.2	745.50				Average	
		46+00	3243		2,063,859.1	632,381.4	745.00				Average	
		44+00	3242		2,063,674.8	632,304.7	746.00				Average	
		42+00	3241		2,063,496.2	632,215.4	747.00				Average	
		40+00	3240		2,063,324.4	632,114.0	747.00				Average	
		38+00	3239		2,063,159.9	632,001.1	748.00				Average	
		36+00	3238		2,063,003.1	631,877.5	748.00				Average	
		34+00	3237		2,062,855.2	631,743.6	749.00				Average	
		32+00	3236		2,062,716.5	631,600.1	749.50				Average	
		30+00	3235		2,062,587.8	631,447.6	750.00				Average	
		28+00	3234		2,062,469.6	631,286.8	751.00				Average	
		26+00	3233		2,062,362.6	631,118.4	751.00				Average	
		24+00	3232		2,062,267.9	630,942.8	751.00				Average	
		22+00	3231		2,062,185.6	630,761.0	751.50				Average	
		20+00	3230		2,062,116.2	630,573.9	752.00				Average	
		18+00	3229		2,062,060.4	630,382.4	752.00				Average	
		16+00	3228		2,062,017.9	630,187.2	752.00				Average	
		14+00	3227		2,061,979.9	629,990.9	752.00				Average	
		12+00	3226		2,061,937.2	629,795.4	753.00				Average	
		10+00	3225		2,061,894.4	629,600.1	754.00				Average	
		8+00	3224		2,061,842.6	629,402.6	754.00				Average	
		6+00	3223		2,061,791.2	629,213.1	754.00				Average	

INPUT: ROADWAYS

PID 107714

		4+00	3222	2,061,739.8	629,019.9	756.00					
90 WB A	12.0	54+00	3289	2,064,600.5	632,682.1	759.00					Average
		52+00	3288	2,064,413.9	632,610.1	753.00					Average
		50+00	3287	2,064,216.0	632,533.1	748.00					Average
		48+00	3286	2,064,029.0	632,460.4	745.50					Average
		46+00	3285	2,063,854.6	632,392.6	745.00					Average
		44+00	3284	2,063,669.8	632,315.6	746.00					Average
		42+00	3283	2,063,490.5	632,226.0	747.00					Average
		40+00	3282	2,063,318.0	632,124.1	747.00					Average
		38+00	3281	2,063,152.8	632,010.8	748.00					Average
		36+00	3280	2,062,995.4	631,886.7	748.00					Average
		34+00	3279	2,062,846.9	631,752.2	749.00					Average
		32+00	3278	2,062,707.6	631,608.2	749.50					Average
		30+00	3277	2,062,578.4	631,455.1	750.00					Average
		28+00	3276	2,062,459.8	631,293.6	751.00					Average
		26+00	3275	2,062,352.4	631,124.4	751.00					Average
		24+00	3274	2,062,257.1	630,948.1	751.00					Average
		22+00	3273	2,062,174.5	630,765.6	751.50					Average
		20+00	3272	2,062,104.9	630,577.7	752.00					Average
		18+00	3271	2,062,048.6	630,385.3	752.00					Average
		16+00	3270	2,062,006.1	630,189.7	752.00					Average
		14+00	3269	2,061,968.1	629,993.3	752.00					Average
		12+00	3268	2,061,925.5	629,798.0	753.00					Average
		10+00	3267	2,061,882.6	629,602.7	754.00					Average
		8+00	3266	2,061,830.1	629,407.5	754.00					Average
		6+00	3265	2,061,779.8	629,216.6	754.00					Average
		4+00	3264	2,061,728.1	629,023.3	756.00					
90 EB A	24.0	4+00	2989	2,061,843.0	629,008.9	755.00					Average
		6+00	2988	2,061,887.5	629,203.4	754.00					Average
		8+00	2987	2,061,932.1	629,398.4	754.00					Average
		10+00	2986	2,061,976.9	629,593.2	754.00					Average
		12+00	2985	2,062,026.5	629,786.9	753.00					Average
		14+00	2984	2,062,076.0	629,980.7	752.00					Average
		16+00	2983	2,062,122.8	630,175.2	751.00					Average
		18+00	3204	2,062,170.6	630,369.2	751.00					Average
		19+50	3203	2,062,209.9	630,513.4	750.50					Average
		21+00	3202	2,062,258.1	630,655.4	750.00					Average
		23+00	3201	2,062,335.6	630,839.2	749.50					Average
		25+00	3200	2,062,428.1	631,016.0	748.50					Average

INPUT: ROADWAYS

PID 107714

		26+00	3199	2,062,479.5	631,101.4	748.00				Average	
		28+00	3198	2,062,588.2	631,268.9	748.00				Average	
		30+00	3197	2,062,706.6	631,429.4	748.00				Average	
		32+00	3196	2,062,838.9	631,577.9	747.00				Average	
		34+00	3195	2,062,984.6	631,715.3	746.50				Average	
		36+00	3194	2,063,134.2	631,847.5	746.50				Average	
		38+00	3193	2,063,292.9	631,968.2	745.50				Average	
		40+00	3192	2,063,463.1	632,072.1	744.50				Average	
		42+00	3191	2,063,639.2	632,166.1	744.50				Average	
		44+00	3309	2,063,820.1	632,250.3	744.50				Average	
		46+00	3308	2,064,005.8	632,324.7	745.00				Average	
		48+00	3307	2,064,192.5	632,396.2	746.00				Average	
		50+00	3306	2,064,379.0	632,468.5	751.00				Average	
		52+00	3305	2,064,565.5	632,540.8	752.50				Average	
		54+00	3304	2,064,752.0	632,613.0	755.50					
90 EB B	12.0	4+00	3188	2,061,831.2	629,011.1	755.00				Average	
		6+00	3187	2,061,875.9	629,206.1	754.00				Average	
		8+00	3186	2,061,920.5	629,401.1	754.00				Average	
		10+00	3185	2,061,965.2	629,596.1	754.00				Average	
		12+00	3184	2,062,014.9	629,789.9	753.00				Average	
		14+00	3183	2,062,064.4	629,983.6	752.00				Average	
		16+00	3182	2,062,111.1	630,178.1	751.00				Average	
		18+00	3219	2,062,159.1	630,372.4	751.00				Average	
		19+50	3218	2,062,198.5	630,516.9	750.50				Average	
		21+00	3217	2,062,246.9	630,659.6	750.00				Average	
		23+00	3216	2,062,324.9	630,844.2	749.50				Average	
		25+00	3215	2,062,417.6	631,021.9	748.50				Average	
		26+00	3214	2,062,469.2	631,107.8	748.00				Average	
		28+00	3213	2,062,578.4	631,275.8	748.00				Average	
		30+00	3212	2,062,697.4	631,437.0	748.00				Average	
		32+00	3211	2,062,830.2	631,586.3	747.00				Average	
		34+00	3210	2,062,976.5	631,724.1	746.50				Average	
		36+00	3209	2,063,126.6	631,856.8	746.50				Average	
		38+00	3208	2,063,286.1	631,978.1	745.50				Average	
		40+00	3207	2,063,457.2	632,082.6	744.50				Average	
		42+00	3206	2,063,634.0	632,176.8	744.50				Average	
		44+00	3315	2,063,815.8	632,261.4	744.50				Average	
		46+00	3314	2,064,001.4	632,335.9	745.00				Average	
		48+00	3313	2,064,188.1	632,407.4	746.00				Average	

**INPUT: ROADWAYS****PID 107714**

		50+00	3312	2,064,374.6	632,479.7	751.00				Average	
		52+00	3311	2,064,561.1	632,552.0	752.50				Average	
		54+00	3310	2,064,747.6	632,624.2	755.50					

INPUT: ROADWAYS

PID 107714

ms consultants, inc. KLC 54200																					6 April 2023 TNM 2.5	
INPUT: ROADWAYS																						Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA
PROJECT/CONTRACT:																						PID 107714
RUN:																						LOR-90 NSA B Existing

Roadway Name	Width	Points			Coordinates (pavement)			Flow Control			Segment	On Struct?
		Name	No.		X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected		
	ft				ft	ft	ft		mph	%		
Murray Ridge Rd	12.0	point1	1		2,064,873.0	634,954.6	746.00				Average	
		point2	2		2,064,870.4	634,768.5	740.00				Average	
		point3	3		2,064,867.5	634,568.5	740.00				Average	
		point4	4		2,064,864.6	634,368.6	740.00				Average	
		point5	5		2,064,861.9	634,168.6	741.40				Average	
		point6	6		2,064,859.0	633,968.6	742.00				Average	
		point7	7		2,064,856.1	633,768.6	742.00				Average	
		point8	8		2,064,853.4	633,568.6	742.10				Average	
		point9	9		2,064,850.5	633,368.6	742.00				Average	
		point10	10		2,064,847.6	633,168.7	742.00				Average	
		point11	11		2,064,844.8	632,968.7	742.00				Average	
		point12	12		2,064,842.0	632,768.7	744.70				Average	
		point13	13		2,064,839.1	632,568.8	740.60				Average	
		point14	14		2,064,836.2	632,368.8	740.00				Average	
		point15	15		2,064,833.5	632,168.8	740.00				Average	
		point16	16		2,064,830.6	631,968.8	740.00				Average	
		point17	17		2,064,827.8	631,768.8	740.00					
90 WB A	12.0	point18	18		2,067,353.0	633,032.1	737.10				Average	
		point19	19		2,067,325.6	633,034.0	738.00				Average	
		point20	20		2,067,126.1	633,047.5	737.60				Average	
		point21	21		2,066,926.6	633,061.0	740.00				Average	
		point22	22		2,066,727.5	633,078.4	742.00				Average	
		point23	23		2,066,528.2	633,095.8	748.00				Average	
		point24	24		2,066,328.8	633,112.4	754.00				Average	
		point25	25		2,066,128.6	633,121.4	760.90				Average	Y

INPUT: ROADWAYS

PID 107714

		point26	26	2,065,928.2	633,117.1	765.00				Average	Y
		point27	27	2,065,730.0	633,086.5	770.00				Average	Y
		point28	28	2,065,536.1	633,035.8	772.00				Average	
		point29	29	2,065,346.2	632,971.9	772.00				Average	
		point30	30	2,065,159.8	632,899.1	769.50				Average	
		point31	31	2,064,973.6	632,826.2	767.30				Average	Y
		point32	32	2,064,787.1	632,754.0	762.70				Average	Y
		point33	33	2,064,600.5	632,682.1	758.50				Average	
		point34	34	2,064,413.9	632,610.1	751.30				Average	
		point35	35	2,064,227.5	632,537.6	747.20				Average	
		point36	36	2,064,041.0	632,465.1	744.00				Average	
		point37	37	2,063,854.6	632,392.6	744.00				Average	
		point38	38	2,063,669.8	632,315.6	745.90				Average	
		point39	39	2,063,490.5	632,226.0	746.00				Average	
		point40	40	2,063,318.0	632,124.1	746.00				Average	
		point41	41	2,063,152.8	632,010.8	747.20				Average	
		point42	42	2,062,995.4	631,886.7	748.00				Average	
		point43	43	2,062,846.9	631,752.2	748.00				Average	
		point44	44	2,062,707.6	631,608.2	748.00				Average	
		point45	45	2,062,578.4	631,455.1	749.90					
90 WB B	12.0	point62	62	2,067,352.2	633,020.1	737.10				Average	
		point63	63	2,067,324.9	633,022.0	738.00				Average	
		point64	64	2,067,125.2	633,035.6	737.60				Average	
		point65	65	2,066,925.8	633,049.1	740.00				Average	
		point66	66	2,066,726.4	633,066.4	742.00				Average	
		point67	67	2,066,527.1	633,083.9	748.00				Average	
		point68	68	2,066,328.0	633,100.4	754.00				Average	
		point69	69	2,066,128.5	633,109.4	760.90				Average	Y
		point70	70	2,065,929.2	633,105.1	765.00				Average	Y
		point71	71	2,065,732.5	633,074.8	770.00				Average	Y
		point72	72	2,065,539.5	633,024.3	772.00				Average	
		point73	73	2,065,350.4	632,960.6	772.00				Average	
		point74	74	2,065,164.1	632,887.9	769.50				Average	
		point75	75	2,064,977.9	632,815.0	767.30				Average	Y
		point76	76	2,064,791.4	632,742.8	762.70				Average	Y
		point77	77	2,064,604.8	632,670.9	758.50				Average	
		point78	78	2,064,418.1	632,598.9	751.30				Average	
		point79	79	2,064,231.8	632,526.4	747.20				Average	
		point80	80	2,064,045.4	632,453.9	744.00				Average	

INPUT: ROADWAYS

PID 107714

		point81	81	2,063,859.1	632,381.4	744.00				Average	
		point82	82	2,063,674.8	632,304.7	745.90				Average	
		point83	83	2,063,496.2	632,215.4	746.00				Average	
		point84	84	2,063,324.4	632,114.0	746.00				Average	
		point85	85	2,063,159.9	632,001.1	747.20				Average	
		point86	86	2,063,003.1	631,877.5	748.00				Average	
		point87	87	2,062,855.2	631,743.6	748.00				Average	
		point88	88	2,062,716.5	631,600.1	748.00				Average	
		point89	89	2,062,587.8	631,447.6	749.90					
90 EB A	12.0	point145	145	2,063,820.1	632,250.3	746.00				Average	
		point144	144	2,064,005.8	632,324.7	750.00				Average	
		point143	143	2,064,192.5	632,396.2	755.40				Average	
		point142	142	2,064,379.0	632,468.5	758.90				Average	
		point141	141	2,064,565.5	632,540.8	759.00				Average	
		point140	140	2,064,752.0	632,613.0	759.30					
90 EB B	12.0	point151	151	2,063,815.8	632,261.4	746.00				Average	
		point150	150	2,064,001.4	632,335.9	750.00				Average	
		point149	149	2,064,188.1	632,407.4	755.40				Average	
		point148	148	2,064,374.6	632,479.7	758.90				Average	
		point147	147	2,064,561.1	632,552.0	759.00				Average	
		point146	146	2,064,747.6	632,624.2	759.30					
Roadway9	12.0	point152	152	2,064,751.5	632,612.9	758.90				Average	Y
		point153	153	2,065,133.1	632,731.0	759.30				Average	Y
		point154	154	2,065,328.1	632,774.0	761.10				Average	
		point155	155	2,065,524.5	632,810.4	760.40				Average	
		point156	156	2,065,722.5	632,835.3	758.00				Average	
		point157	157	2,065,921.9	632,847.4	753.20				Average	
		point158	158	2,066,121.5	632,853.6	748.80				Average	
		point159	159	2,066,321.0	632,845.8	744.10					
Roadway10	12.0	point160	160	2,064,748.0	632,624.3	758.90				Average	Y
		point161	161	2,065,130.1	632,742.6	759.30				Average	Y
		point162	162	2,065,325.8	632,785.8	761.10				Average	
		point163	163	2,065,522.6	632,822.2	760.40				Average	
		point164	164	2,065,721.4	632,847.2	758.00				Average	
		point165	165	2,065,921.2	632,859.4	753.20				Average	
		point166	166	2,066,121.5	632,865.6	748.80				Average	
		point167	167	2,066,321.5	632,857.8	744.10					
Roadway5-2	12.0	point170	170	2,062,578.4	631,275.8	747.60				Average	
		point115	115	2,062,697.4	631,437.0	746.50				Average	



INPUT: ROADWAYS

PID 107714

		point116	116	2,062,831.1	631,586.3	746.00				Average	
		point117	117	2,062,976.5	631,724.1	745.90				Average	
		point118	118	2,063,126.6	631,856.8	744.90				Average	
		point119	119	2,063,286.1	631,978.1	744.00				Average	
		point120	120	2,063,457.2	632,082.6	744.00				Average	
		point121	121	2,063,634.0	632,176.8	744.00				Average	
		point122	122	2,063,815.4	632,261.3	744.00					
Roadway6-2	12.0	point171	171	2,062,588.2	631,268.9	747.60				Average	
		point132	132	2,062,706.6	631,429.4	746.50				Average	
		point133	133	2,062,839.8	631,577.9	746.00				Average	
		point134	134	2,062,984.6	631,715.3	745.90				Average	
		point135	135	2,063,134.2	631,847.5	744.90				Average	
		point136	136	2,063,292.9	631,968.2	744.00				Average	
		point137	137	2,063,463.1	632,072.1	744.00				Average	
		point138	138	2,063,639.4	632,166.1	744.00				Average	
		point139	139	2,063,820.5	632,250.4	744.00					
2 WB A	12.0	point192	192	2,067,353.0	633,057.2	738.00				Average	
		point191	191	2,067,191.2	633,074.2	738.00				Average	
		point190	190	2,066,993.6	633,102.9	738.60				Average	
		point189	189	2,066,796.9	633,137.8	740.00				Average	
		point188	188	2,066,601.8	633,180.7	738.30				Average	
		point187	187	2,066,408.0	633,229.2	742.00				Average	
		point186	186	2,066,216.2	633,285.2	742.00				Average	
		point185	185	2,066,025.8	633,345.3	742.00				Average	
		point184	184	2,065,838.5	633,414.9	741.40				Average	
		point183	183	2,065,653.8	633,490.9	743.00				Average	
		point182	182	2,065,470.8	633,571.1	746.00				Average	
		point181	181	2,065,291.4	633,658.9	749.60				Average	
		point180	180	2,065,115.2	633,753.1	754.00				Average	
		point179	179	2,064,943.1	633,854.4	758.00				Average	Y
		point178	178	2,064,773.4	633,959.9	764.00				Average	Y
		point177	177	2,064,606.2	634,069.5	768.00				Average	
		point176	176	2,064,441.0	634,182.1	768.70				Average	
		point175	175	2,064,274.8	634,293.4	771.00				Average	
		point174	174	2,064,108.4	634,404.3	771.80				Average	
		point173	173	2,063,941.9	634,515.2	770.00				Average	
		point172	172	2,063,775.5	634,626.1	770.00					
2 WB B	12.0	point213	213	2,067,351.8	633,045.2	738.00				Average	
		point212	212	2,067,189.9	633,062.2	738.00				Average	

INPUT: ROADWAYS

PID 107714

		point211	211	2,066,991.8	633,091.1	738.60				Average	
		point210	210	2,066,794.5	633,126.0	740.00				Average	
		point209	209	2,066,599.0	633,169.0	738.30				Average	
		point208	208	2,066,404.9	633,217.7	742.00				Average	
		point207	207	2,066,212.8	633,273.8	742.00				Average	
		point206	206	2,066,021.9	633,333.9	742.00				Average	
		point205	205	2,065,834.1	633,403.7	741.40				Average	
		point204	204	2,065,649.1	633,479.8	743.00				Average	
		point203	203	2,065,465.8	633,560.2	746.00				Average	
		point202	202	2,065,285.9	633,648.2	749.60				Average	
		point201	201	2,065,109.4	633,742.6	754.00				Average	
		point200	200	2,064,936.9	633,844.2	758.00				Average	Y
		point199	199	2,064,766.9	633,949.8	764.00				Average	Y
		point198	198	2,064,599.6	634,059.5	768.00				Average	
		point197	197	2,064,434.2	634,172.2	768.70				Average	
		point196	196	2,064,268.1	634,283.4	771.00				Average	
		point195	195	2,064,101.8	634,394.3	771.80				Average	
		point194	194	2,063,935.2	634,505.2	770.00				Average	
		point193	193	2,063,768.9	634,616.1	770.00					
2 EB B	12.0	point227	227	2,063,710.0	634,601.7	770.00				Average	
		point226	226	2,063,875.4	634,489.2	770.00				Average	
		point225	225	2,064,040.8	634,376.8	771.20				Average	
		point224	224	2,064,206.2	634,264.5	772.00				Average	
		point223	223	2,064,371.9	634,152.5	772.00				Average	
		point222	222	2,064,537.6	634,040.4	768.00				Average	
		point221	221	2,064,704.9	633,930.9	765.00				Average	Y
		point220	220	2,064,870.5	633,818.8	760.00				Average	Y
		point219	219	2,065,035.8	633,706.0	756.00				Average	
		point218	218	2,065,201.4	633,593.9	751.00				Average	
		point217	217	2,065,367.4	633,482.5	745.50				Average	
		point216	216	2,065,533.6	633,371.2	744.00				Average	
		point215	215	2,065,699.9	633,260.4	744.30				Average	
		point214	214	2,065,871.4	633,158.0	744.00					
2 EB A	12.0	point241	241	2,063,703.2	634,591.8	770.00				Average	
		point240	240	2,063,868.6	634,479.2	770.00				Average	
		point239	239	2,064,034.0	634,366.8	771.20				Average	
		point238	238	2,064,199.5	634,254.6	772.00				Average	
		point237	237	2,064,365.2	634,142.5	772.00				Average	
		point236	236	2,064,530.9	634,030.5	768.00				Average	

**INPUT: ROADWAYS**

**PID 107714**

		point235	235	2,064,698.2	633,920.9	765.00				Average	Y
		point234	234	2,064,863.8	633,808.8	760.00				Average	Y
		point233	233	2,065,029.0	633,696.1	756.00				Average	
		point232	232	2,065,194.6	633,584.0	751.00				Average	
		point231	231	2,065,360.8	633,472.5	745.50				Average	
		point230	230	2,065,526.9	633,361.2	744.00				Average	
		point229	229	2,065,693.5	633,250.3	744.30				Average	
		point228	228	2,065,865.2	633,147.8	744.00					
Roadway19	12.0	point245	245	2,065,865.5	633,147.6	744.00				Average	
		point244	244	2,066,041.2	633,051.8	741.70				Average	
		point243	243	2,066,226.4	632,974.8	741.10				Average	
		point242	242	2,066,417.0	632,913.6	740.00					
Roadway20	12.0	point249	249	2,065,871.2	633,158.1	744.00				Average	
		point248	248	2,066,046.5	633,062.7	741.70				Average	
		point247	247	2,066,230.6	632,986.1	741.10				Average	
		point246	246	2,066,419.5	632,925.4	740.00					
Roadway21	12.0	point250	250	2,066,420.2	632,925.1	741.10				Average	
		point251	251	2,066,615.0	632,880.1	740.00					
Roadway22	12.0	point256	256	2,066,614.5	632,880.1	740.00				Average	
		point255	255	2,066,812.1	632,851.4	739.80				Average	
		point254	254	2,067,011.2	632,839.3	739.20				Average	
		point253	253	2,067,210.6	632,843.8	738.00				Average	
		point252	252	2,067,326.0	632,854.0	736.70					
Roadway23	12.0	point257	257	2,066,417.5	632,913.4	741.10				Average	
		point258	258	2,066,612.2	632,868.4	740.00					
Roadway24	12.0	point263	263	2,066,612.8	632,868.2	740.00				Average	
		point262	262	2,066,810.9	632,839.5	739.80				Average	
		point261	261	2,067,011.0	632,827.3	739.20				Average	
		point260	260	2,067,211.2	632,831.8	738.00				Average	
		point259	259	2,067,327.1	632,842.0	736.70					

ms consultants, inc. KLC 54200				6 April 2023 TNM 2.5							
INPUT: ROADWAYS				PROJECT/CONTRACT: PID 107714				Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA			
RUN: LOR-90 NSA C Existing											

Roadway Name	Width	Points			Coordinates (pavement)			Flow Control			Segment	On Struct?
		Name	No.		X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected		
	ft				ft	ft	ft		mph	%		
90 EB A	12.0	40+00	1		2,067,328.1	632,830.1	738.00				Average	
		0+00	2		2,067,407.5	632,836.8	737.00				Average	
		2+00	3		2,067,527.8	632,849.2	736.00				Average	
		4+00	4		2,067,726.2	632,869.9	734.00				Average	
		6+00	5		2,067,924.9	632,892.7	734.00				Average	
		8+00	6		2,068,123.2	632,911.4	734.00				Average	
		10+00	7		2,068,323.1	632,928.4	735.50				Average	
		12+00	8		2,068,522.5	632,944.9	738.00				Average	
		14+00	9		2,068,721.9	632,960.8	741.00				Average	
		16+00	10		2,068,921.2	632,976.8	744.00				Average	
		18+00	11		2,069,120.6	632,992.9	746.00				Average	
		20+00	12		2,069,319.9	633,009.8	746.00				Average	Y
		22+00	13		2,069,519.1	633,026.7	746.00				Average	
		24+00	14		2,069,718.4	633,043.6	746.00				Average	
		26+00	15		2,069,917.8	633,060.5	744.00				Average	
		28+00	16		2,070,117.0	633,077.4	743.50				Average	
		30+00	17		2,070,316.2	633,093.9	738.00				Average	
		32+00	18		2,070,515.6	633,110.6	734.00				Average	
		34+00	19		2,070,714.9	633,127.1	728.50				Average	
		36+00	20		2,070,914.2	633,143.7	723.00				Average	
		38+00	21		2,071,113.5	633,160.3	717.50				Average	
		40+00	22		2,071,312.9	633,177.0	712.00					
90 EB B	12.0	40+00	23		2,067,327.1	632,842.0	738.00				Average	
		0+00	24		2,067,406.4	632,848.8	737.00				Average	
		2+00	25		2,067,526.5	632,861.2	736.00				Average	

INPUT: ROADWAYS

PID 107714

		4+00	26	2,067,724.9	632,881.8	734.00				Average	
		6+00	27	2,067,923.6	632,904.6	734.00				Average	
		8+00	28	2,068,122.1	632,923.3	734.00				Average	
		10+00	29	2,068,322.1	632,940.4	735.50				Average	
		12+00	30	2,068,521.5	632,956.8	738.00				Average	
		14+00	31	2,068,720.9	632,972.8	741.00				Average	
		16+00	32	2,068,920.2	632,988.7	744.00				Average	
		18+00	33	2,069,119.6	633,004.9	746.00				Average	
		20+00	34	2,069,318.9	633,021.8	746.00				Average	Y
		22+00	35	2,069,518.1	633,038.7	746.00				Average	
		24+00	36	2,069,717.4	633,055.6	746.00				Average	
		26+00	37	2,069,916.8	633,072.5	744.00				Average	
		28+00	38	2,070,116.0	633,089.4	743.50				Average	
		30+00	39	2,070,315.2	633,105.9	738.00				Average	
		32+00	40	2,070,514.6	633,122.5	734.00				Average	
		34+00	41	2,070,713.9	633,139.1	728.50				Average	
		36+00	42	2,070,913.2	633,155.7	723.00				Average	
		38+00	43	2,071,112.5	633,172.3	717.50				Average	
		40+00	44	2,071,311.9	633,188.9	712.00					
90 WB B	12.0	38+00	45	2,071,341.1	633,286.1	717.00				Average	
		36+00	46	2,071,141.9	633,269.5	722.50				Average	
		34+00	47	2,070,942.5	633,253.1	728.00				Average	
		32+00	48	2,070,743.2	633,236.8	733.00				Average	
		30+00	49	2,070,543.9	633,220.1	738.00				Average	
		28+00	50	2,070,344.5	633,203.8	740.00				Average	
		26+00	51	2,070,145.2	633,187.6	744.00				Average	
		24+00	52	2,069,945.9	633,171.0	746.00				Average	
		22+00	53	2,069,746.6	633,154.3	746.00				Average	
		20+00	54	2,069,547.4	633,137.5	746.00				Average	Y
		18+00	55	2,069,348.0	633,120.8	746.00				Average	
		16+00	56	2,069,148.8	633,103.3	744.00				Average	
		14+00	57	2,068,949.5	633,086.6	742.00				Average	
		12+00	58	2,068,750.1	633,069.8	738.00				Average	
		10+00	59	2,068,550.9	633,053.9	736.00				Average	
		8+00	60	2,068,351.4	633,037.8	734.00				Average	
		6+00	61	2,068,151.6	633,025.6	734.00				Average	
		6+00	62	2,068,028.2	633,020.6	734.00				Average	
		4+00	63	2,067,951.5	633,019.8	734.00				Average	
		2+00	64	2,067,751.4	633,019.7	736.00				Average	

INPUT: ROADWAYS

PID 107714

		0+00	65	2,067,551.4	633,030.1	738.00				Average	
		36+00 2B	66	2,067,351.9	633,045.2	738.70					
90 WB A	12.0	38+00	67	2,071,340.1	633,298.1	717.00				Average	
		36+00	68	2,071,140.9	633,281.4	722.50				Average	
		34+00	69	2,070,941.5	633,265.1	728.00				Average	
		32+00	70	2,070,742.2	633,248.8	733.00				Average	
		30+00	71	2,070,542.9	633,232.1	738.00				Average	
		28+00	72	2,070,343.6	633,215.7	740.00				Average	
		26+00	73	2,070,144.2	633,199.6	744.00				Average	
		24+00	74	2,069,944.9	633,182.9	746.00				Average	
		22+00	75	2,069,745.6	633,166.2	746.00				Average	
		20+00	76	2,069,546.4	633,149.4	746.00				Average	Y
		18+00	77	2,069,347.0	633,132.7	746.00				Average	
		16+00	78	2,069,147.8	633,115.2	744.00				Average	
		14+00	79	2,068,948.5	633,098.6	742.00				Average	
		12+00	80	2,068,749.2	633,081.8	738.00				Average	
		10+00	81	2,068,549.9	633,065.8	736.00				Average	
		8+00	82	2,068,350.5	633,049.8	734.00				Average	
		6+00	83	2,068,151.0	633,037.6	734.00				Average	
		6+00	84	2,068,027.9	633,032.6	734.00				Average	
		4+00	85	2,067,951.4	633,031.8	734.00				Average	
		2+00	86	2,067,751.6	633,031.7	736.00				Average	
		0+00	87	2,067,552.1	633,042.1	738.00				Average	
		36+00 2B	88	2,067,352.8	633,057.2	738.70					
Lake NB	24.0	0+00	89	2,069,585.9	631,852.1	729.00				Average	
		2+50	90	2,069,556.4	632,104.1	729.00				Average	
		4+00	91	2,069,542.4	632,237.7	729.00				Average	
		4+25	92	2,069,536.5	632,304.5	729.00				Average	
		6+50	93	2,069,533.6	632,490.2	729.00				Average	
		9+00	94	2,069,532.4	632,744.9	728.00				Average	
		10+00	95	2,069,524.1	632,848.2	727.00				Average	
		11+00	96	2,069,511.0	632,930.4	727.00				Average	
		12+00	97	2,069,493.0	633,017.3	727.00				Average	
		14+00	98	2,069,442.2	633,165.6	728.00				Average	
		14+50	99	2,069,406.6	633,244.5	728.50				Average	
		15+00	100	2,069,366.0	633,320.1	729.00				Average	
		17+00	101	2,069,279.8	633,455.3	730.00				Average	
		19+00	102	2,069,162.2	633,590.8	730.00				Average	
		20+00	103	2,069,104.9	633,643.1	730.00				Average	

**INPUT: ROADWAYS**

**PID 107714**

		21+00	104	2,069,039.1	633,699.2	730.00				Average
		22+00	105	2,068,957.2	633,763.6	730.00				Average
		26+00	106	2,068,575.6	634,063.9	731.00				
Lake SB	24.0	26+00	107	2,068,561.0	634,057.3	731.00				Average
		22+00	108	2,068,947.5	633,756.1	730.00				Average
		21+00	109	2,069,031.4	633,691.6	730.00				Average
		20+00	110	2,069,103.6	633,630.2	730.00				Average
		19+00	111	2,069,157.4	633,577.6	730.00				Average
		17+00	112	2,069,271.1	633,443.6	730.00				Average
		15+00	113	2,069,354.1	633,317.9	729.00				Average
		14+50	114	2,069,401.9	633,229.9	728.50				Average
		14+00	115	2,069,434.5	633,159.5	728.00				Average
		12+00	116	2,069,483.8	633,013.1	727.00				Average
		11+00	117	2,069,502.0	632,925.1	727.00				Average
		10+00	118	2,069,513.0	632,845.6	727.00				Average
		9+00	119	2,069,519.6	632,745.2	728.00				Average
		6+50	120	2,069,522.9	632,485.8	729.00				Average
		4+25	121	2,069,521.5	632,298.1	729.00				Average
		4+00	122	2,069,524.2	632,230.7	729.00				Average
		2+50	123	2,069,537.9	632,097.1	729.00				Average
		0+00	124	2,069,563.8	631,847.8	729.00				

ms consultants, inc. KLC 54200				6 April 2023 TNM 2.5							
INPUT: ROADWAYS				Average pavement type shall be used unless			a State highway agency substantiates the use				
PROJECT/CONTRACT: PID 107714				of a different type with the approval of FHWA							
RUN: LOR-90 NSA D Existing											
Roadway Name	Width	Points		Coordinates (pavement)			Flow Control			Segment	On Struct?
		Name	No.	X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected		
	ft			ft	ft	ft		mph	%		
90 WB A	24.0	114+00	779	2,078,018.8	635,367.0	646.00				Average	
		112+00	132	2,077,930.5	635,187.7	644.00				Average	
		110+00	133	2,077,835.5	635,012.2	642.00				Average	
		108+00	134	2,077,726.1	634,845.3	642.50				Average	
		106+00	135	2,077,605.9	634,686.1	644.00				Average	
		104+00	136	2,077,474.4	634,536.0	651.00				Average	
		102+00	138	2,077,333.4	634,394.9	652.00				Average	
		100+00	139	2,077,181.5	634,265.5	656.00				Average	
		98+00	140	2,077,021.5	634,146.2	660.00				Average	
		96+00	141	2,076,853.5	634,038.4	664.00				Average	
		94+00	142	2,076,678.0	633,943.6	670.00				Average	
		92+00	143	2,076,495.8	633,862.4	672.00				Average	
		90+00	144	2,076,308.8	633,792.9	676.00				Average	
		88+00	145	2,076,117.0	633,737.4	680.00				Average	
		86+00	146	2,075,921.9	633,695.7	684.00				Average	
		84+00	147	2,075,724.5	633,666.2	688.00				Average	
		82+00	148	2,075,525.6	633,647.4	692.00				Average	Y
		80+00	149	2,075,326.4	633,630.6	695.00					
90 WB B	24.0	114+00	781	2,078,029.5	635,361.8	646.00				Average	
		112+00	322	2,077,941.1	635,182.2	644.00				Average	
		110+00	323	2,077,845.8	635,006.0	642.00				Average	
		108+00	324	2,077,736.0	634,838.4	642.50				Average	
		106+00	325	2,077,615.1	634,678.5	644.00				Average	
		104+00	326	2,077,483.1	634,527.8	651.00				Average	
		102+00	328	2,077,341.5	634,386.1	652.00				Average	



INPUT: ROADWAYS

PID 107714

		100+00	329	2,077,189.0	634,256.1	656.00				Average	
		98+00	330	2,077,028.2	634,136.4	660.00				Average	
		96+00	331	2,076,859.6	634,028.1	664.00				Average	
		94+00	332	2,076,683.2	633,932.9	670.00				Average	
		92+00	333	2,076,500.2	633,851.2	672.00				Average	
		90+00	334	2,076,312.5	633,781.6	676.00				Average	
		88+00	335	2,076,120.0	633,725.8	680.00				Average	
		86+00	336	2,075,924.1	633,683.9	684.00				Average	
		84+00	337	2,075,726.0	633,654.3	688.00				Average	
		82+00	338	2,075,526.6	633,635.5	692.00				Average	
		80+00	339	2,075,327.4	633,618.6	695.00					
90 EB B	24.0	40+00	558	2,071,311.9	633,188.9	712.00				Average	
		42+00	557	2,071,511.1	633,205.6	706.00				Average	
		44+00	556	2,071,710.4	633,222.4	702.00				Average	
		46+00	555	2,071,909.8	633,239.2	700.00					
90 EB A	24.0	40+00	757	2,071,312.9	633,177.0	712.00				Average	
		42+00	756	2,071,512.1	633,193.7	706.00				Average	
		44+00	755	2,071,711.5	633,210.5	702.00				Average	
		46+00	754	2,071,910.8	633,227.2	700.00					
W River	12.0	27+58.34	789	2,076,119.6	632,171.5	690.00				Average	
		26+00	790	2,076,044.1	632,310.7	690.00				Average	
		24+00	791	2,075,948.6	632,486.3	692.00				Average	
		22+00	792	2,075,849.5	632,660.0	692.00				Average	
		20+00	793	2,075,750.5	632,833.7	691.00				Average	
		18+00	794	2,075,651.4	633,007.4	690.00				Average	
		16+00	795	2,075,552.4	633,181.2	688.00				Average	
		14+00	796	2,075,453.6	633,355.2	680.00				Average	
		12+00	797	2,075,354.6	633,528.9	673.50				Average	
		10+00	798	2,075,255.6	633,702.7	666.00				Average	
		8+00	799	2,075,158.1	633,877.4	662.00				Average	
		6+00	800	2,075,062.1	634,053.2	664.00				Average	
		4+00	801	2,074,980.6	634,236.2	676.00				Average	
		2+00	802	2,074,904.5	634,421.2	684.00				Average	
		0+00	803	2,074,831.0	634,607.3	684.00					
Lorain N	24.0	34+00	822	2,073,713.5	631,970.3	696.00				Average	
		32+00	821	2,073,698.1	632,169.7	695.00				Average	
		30+00	820	2,073,682.6	632,369.1	694.00				Average	
		28+00	819	2,073,666.9	632,568.4	694.00				Average	
		26+00	818	2,073,648.6	632,767.6	694.00				Average	

INPUT: ROADWAYS

PID 107714

		24+00	817	2,073,630.5	632,966.8	694.00				Average
		22+00	816	2,073,610.9	633,165.6	692.00				Average
		20+00	815	2,073,587.2	633,357.0	692.00				
Lorain S	24.0	0+00	824	2,073,276.9	635,339.8	686.00				Average
		2+00	825	2,073,299.8	635,141.1	686.00				Average
		4+00	826	2,073,322.6	634,942.4	686.00				Average
		6+00	827	2,073,345.5	634,743.7	688.00				Average
		8+00	828	2,073,368.2	634,545.0	688.00				Average
		10+00	829	2,073,391.1	634,346.3	689.00				Average
		12+00	830	2,073,414.0	634,147.6	690.00				Average
		14+00	831	2,073,438.4	633,949.1	690.50				Average
		16+00	832	2,073,463.5	633,750.6	692.00				Average
		18+00	833	2,073,488.2	633,552.2	692.00				
90 WB On Ramp2	12.0	3+00	848	2,073,115.8	633,987.5	692.00				Average
		5+00	847	2,072,931.6	633,921.8	694.00				Average
		7+00	846	2,072,793.9	633,781.2	696.00				Average
		9+00	845	2,072,670.1	633,623.8	698.00				Average
		11+00	844	2,072,512.6	633,499.1	700.00				Average
		13+00	843	2,072,327.4	633,421.2	700.00				Average
		15+00	842	2,072,129.1	633,391.2	698.00				
90 WB On Ramp1	12.0	0+00	851	2,073,388.6	634,025.9	690.00				Average
		1+00	850	2,073,294.9	634,013.8	690.00				Average
		3+00	849	2,073,117.6	633,988.1	692.00				
90 WB On Ramp3	12.0	15+00	858	2,072,128.9	633,391.2	698.00				Average
		17+00	857	2,071,929.9	633,370.2	700.00				Average
		19+00	856	2,071,731.0	633,349.2	702.00				Average
		21+00	855	2,071,532.1	633,328.3	706.50				Average
		23+00	854	2,071,333.2	633,307.3	712.00				
90 EB Off Ramp	12.0	17+00	867	2,071,909.8	633,212.6	699.00				Average
		15+25.81	891	2,072,109.0	633,225.3	698.00				Average
		13+00	866	2,072,305.4	633,219.4	699.00				Average
		11+00	865	2,072,440.2	633,206.5	701.00				Average
		9+00	864	2,072,631.8	633,153.3	699.00				Average
		7+00	863	2,072,818.6	633,082.7	700.00				Average
		5+00	862	2,073,009.9	633,021.4	698.00				Average
		3+00	861	2,073,209.9	633,021.2	693.50				Average
		1+00	860	2,073,408.8	633,045.1	691.00				Average
		0.00	859	2,073,528.9	633,059.5	692.50				
90 EB On Ramp	12.0	0+00	868	2,073,649.5	633,102.0	693.00				Average

INPUT: ROADWAYS

PID 107714

		2+00	869	2,073,848.8	633,126.5	691.00				Average	
		4+00	870	2,074,034.1	633,200.9	694.00				Average	
		6+00	871	2,074,209.4	633,297.6	695.00				Average	
		8+00	872	2,074,391.5	633,377.0	700.50				Average	
		10+00	873	2,074,585.6	633,420.2	702.00				Average	
		12+00	874	2,074,784.2	633,439.2	701.00				Average	
		14+00	875	2,074,983.5	633,456.9	699.00				Average	
		16+00	876	2,075,179.8	633,480.8	696.00				Average	Y
		18+00	877	2,075,378.8	633,499.5	694.50				Average	Y
		19+14	878	2,075,500.9	633,511.2	692.00					
90 WB Off Ramp	12.0	20+00	889	2,075,399.9	633,645.7	693.00				Average	Y
		18+00	888	2,075,198.2	633,629.7	696.00				Average	Y
		16+00	887	2,074,999.2	633,617.4	698.00				Average	
		14+00	886	2,074,798.9	633,614.9	700.00				Average	
		12+00	885	2,074,598.6	633,629.5	701.50				Average	
		10+00	884	2,074,406.0	633,686.0	700.00				Average	
		8+00	883	2,074,235.5	633,792.0	699.00				Average	
		6+00	882	2,074,095.4	633,933.4	697.00				Average	
		4+00	881	2,073,935.4	634,046.4	692.00				Average	
		2+00	880	2,073,741.1	634,071.8	692.00				Average	
		0+00	879	2,073,543.4	634,048.3	690.00					
Lorain S-2	24.0	point893	893	2,073,488.2	633,552.2	692.00				Average	
		20+00	834	2,073,512.9	633,347.9	692.00				Average	
		22+00	835	2,073,533.8	633,154.9	692.00				Average	
		24+00	836	2,073,555.2	632,956.4	694.00				Average	
		26+00	837	2,073,574.1	632,757.1	694.00				Average	
		28+00	838	2,073,591.5	632,557.9	694.00				Average	
		30+00	839	2,073,607.1	632,358.5	694.00				Average	
		32+00	840	2,073,620.6	632,159.0	695.00				Average	
		34+00	841	2,073,631.0	632,005.0	696.00					
Lorain N-2	24.0	point894	894	2,073,587.2	633,358.3	692.00				Average	
		18+00	814	2,073,561.9	633,562.6	692.00				Average	
		16+00	813	2,073,537.2	633,761.1	692.00				Average	
		14+00	812	2,073,512.8	633,959.6	690.00				Average	
		12+00	810	2,073,487.0	634,157.8	690.00				Average	
		10+00	809	2,073,459.1	634,355.8	690.00				Average	
		8+00	808	2,073,431.4	634,553.9	688.00				Average	
		6+00	807	2,073,403.5	634,751.9	688.00				Average	
		4+00	806	2,073,375.8	634,950.0	687.00				Average	

INPUT: ROADWAYS

PID 107714

		2+00	805	2,073,348.0	635,148.1	686.00				Average	
		0+00	804	2,073,320.1	635,346.1	686.00					
90 WB A-2	24.0	point895	895	2,075,326.4	633,630.6	695.00				Average	Y
		78+00	150	2,075,127.0	633,614.1	696.00				Average	Y
		76+00	151	2,074,927.8	633,597.6	699.50				Average	
		74+00	152	2,074,728.4	633,580.7	702.00				Average	
		72+00	153	2,074,529.1	633,563.7	704.00				Average	
		70+00	154	2,074,329.9	633,546.6	704.00				Average	
		68+00	155	2,074,130.5	633,530.3	707.50				Average	
		66+00	156	2,073,931.1	633,514.2	710.00				Average	
		64+00	157	2,073,731.9	633,497.2	710.00				Average	Y
		62+00	158	2,073,532.6	633,480.7	711.00				Average	Y
		60+00	159	2,073,333.2	633,464.0	712.00				Average	Y
		58+00	160	2,073,134.0	633,447.4	710.00				Average	
		56+00	161	2,072,934.6	633,431.1	708.00				Average	
		54+00	162	2,072,735.4	633,413.8	704.00				Average	
		52+00	163	2,072,536.1	633,397.2	702.00				Average	
		50+00	164	2,072,336.8	633,380.8	700.00				Average	
		48+00	165	2,072,137.4	633,364.5	698.00				Average	
		46+00	166	2,071,938.1	633,348.3	700.00				Average	
		44+00	167	2,071,738.8	633,332.1	702.00				Average	
		42+00	168	2,071,539.4	633,315.4	706.50				Average	
		40+00	169	2,071,340.1	633,298.1	712.00					
90 WB B-2	24.0	point896	896	2,075,327.4	633,618.6	695.00				Average	Y
		78+00	340	2,075,128.0	633,602.2	696.00				Average	Y
		76+00	341	2,074,928.8	633,585.6	699.50				Average	
		74+00	342	2,074,729.4	633,568.8	702.00				Average	
		72+00	343	2,074,530.1	633,551.7	704.00				Average	
		70+00	344	2,074,330.9	633,534.7	704.00				Average	
		68+00	345	2,074,131.5	633,518.4	707.50				Average	
		66+00	346	2,073,932.1	633,502.2	710.00				Average	
		64+00	347	2,073,732.9	633,485.3	710.00				Average	Y
		62+00	348	2,073,533.6	633,468.8	711.00				Average	Y
		60+00	349	2,073,334.2	633,452.1	712.00				Average	Y
		58+00	350	2,073,135.0	633,435.5	710.00				Average	
		56+00	351	2,072,935.6	633,419.1	708.00				Average	
		54+00	352	2,072,736.4	633,401.9	704.00				Average	
		52+00	353	2,072,537.1	633,385.2	702.00				Average	
		50+00	354	2,072,337.8	633,368.9	700.00				Average	

INPUT: ROADWAYS

PID 107714

		48+00	355	2,072,138.4	633,352.6	698.00				Average	
		46+00	356	2,071,939.0	633,336.4	700.00				Average	
		44+00	357	2,071,739.8	633,320.2	702.00				Average	
		42+00	358	2,071,540.4	633,303.5	706.50				Average	
		40+00	359	2,071,341.1	633,286.1	712.00					
90 EB B-2	24.0	point897	897	2,075,497.1	633,538.8	692.00				Average	
		84+00	536	2,075,696.1	633,557.4	690.00				Average	
		86+00	535	2,075,894.5	633,583.4	687.00				Average	
		88+00	534	2,076,090.2	633,620.9	683.50				Average	
		90+00	533	2,076,283.0	633,672.4	679.50				Average	
		92+00	532	2,076,471.6	633,737.1	675.00				Average	
		94+00	531	2,076,655.1	633,815.5	671.50				Average	
		96+00	530	2,076,833.5	633,905.1	667.50				Average	
		98+00	529	2,077,004.9	634,007.3	664.00				Average	
		100+00	528	2,077,168.9	634,121.0	660.00				Average	
		102+00	527	2,077,324.5	634,246.0	655.00				Average	
		104+00	526	2,077,471.8	634,380.5	651.00				Average	
		106+00	525	2,077,609.1	634,525.3	648.00				Average	
		108+00	524	2,077,736.0	634,679.2	644.50				Average	
		110+00	523	2,077,852.4	634,841.2	644.00				Average	
		112+00	522	2,077,956.6	635,011.4	644.00				Average	
		114+00	521	2,078,051.5	635,187.2	646.00				Average	
		116+00	783	2,078,138.9	635,366.9	647.00					
90 EB A-2	24.0	point898	898	2,075,498.2	633,526.8	692.00				Average	
		84+00	735	2,075,697.5	633,545.6	690.00				Average	
		86+00	734	2,075,896.4	633,571.5	687.00				Average	
		88+00	733	2,076,092.9	633,609.2	683.50				Average	
		90+00	732	2,076,286.5	633,660.9	679.50				Average	
		92+00	731	2,076,476.0	633,725.9	675.00				Average	
		94+00	730	2,076,660.2	633,804.6	671.50				Average	
		96+00	729	2,076,839.2	633,894.6	667.50				Average	
		98+00	728	2,077,011.4	633,997.2	664.00				Average	
		100+00	727	2,077,176.0	634,111.4	660.00				Average	
		102+00	726	2,077,332.2	634,236.9	655.00				Average	
		104+00	725	2,077,480.2	634,371.9	651.00				Average	
		106+00	724	2,077,618.1	634,517.3	648.00				Average	
		108+00	723	2,077,745.5	634,671.9	644.50				Average	
		110+00	722	2,077,862.5	634,834.6	644.00				Average	
		112+00	721	2,077,967.1	635,005.5	644.00				Average	

INPUT: ROADWAYS

PID 107714

		114+00	720	2,078,062.1	635,181.8	646.00				Average	
		116+00	784	2,078,149.6	635,361.7	647.00					
90 EB A-2	24.0	point899	899	2,071,910.8	633,227.2	700.00				Average	
		48+00	753	2,072,110.0	633,243.9	698.00				Average	
		50+00	752	2,072,309.4	633,260.6	700.00				Average	
		52+00	751	2,072,508.6	633,277.2	702.00				Average	
		54+00	750	2,072,708.0	633,293.4	704.00				Average	
		56+00	749	2,072,907.4	633,309.8	706.50				Average	
		58+00	748	2,073,106.6	633,326.2	710.00				Average	
		60+00	747	2,073,306.1	633,342.6	710.00				Average	
		62+00	746	2,073,505.2	633,359.4	712.00				Average	Y
		64+00	745	2,073,704.5	633,376.3	712.00				Average	Y
		66+00	744	2,073,903.8	633,392.9	710.00				Average	
		68+00	743	2,074,103.1	633,409.5	708.00				Average	
		70+00	742	2,074,302.5	633,426.1	706.00				Average	
		72+00	741	2,074,501.8	633,442.6	704.00				Average	
		74+00	740	2,074,701.1	633,459.3	702.00				Average	
		76+00	739	2,074,900.4	633,475.8	700.00				Average	
		78+00	738	2,075,099.8	633,492.8	698.00				Average	
		80+00	737	2,075,299.0	633,509.7	695.00				Average	Y
		82+00	736	2,075,498.2	633,526.8	692.00					
90 EB B-2	24.0	point900	900	2,071,909.8	633,239.2	700.00				Average	
		48+00	554	2,072,109.0	633,255.9	698.00				Average	
		50+00	553	2,072,308.4	633,272.6	700.00				Average	
		52+00	552	2,072,507.6	633,289.1	702.00				Average	
		54+00	551	2,072,707.0	633,305.3	704.00				Average	
		56+00	550	2,072,906.4	633,321.8	706.50				Average	
		58+00	549	2,073,105.6	633,338.1	710.00				Average	
		60+00	548	2,073,305.1	633,354.6	710.00				Average	
		62+00	547	2,073,504.2	633,371.4	712.00				Average	Y
		64+00	546	2,073,703.5	633,388.2	712.00				Average	Y
		66+00	545	2,073,902.8	633,404.8	710.00				Average	
		68+00	544	2,074,102.1	633,421.4	708.00				Average	
		70+00	543	2,074,301.5	633,438.0	706.00				Average	
		72+00	542	2,074,500.8	633,454.6	704.00				Average	
		74+00	541	2,074,700.1	633,471.2	702.00				Average	
		76+00	540	2,074,899.4	633,487.8	700.00				Average	
		78+00	539	2,075,098.6	633,504.7	698.00				Average	
		80+00	538	2,075,298.0	633,521.7	695.00				Average	Y

**INPUT: ROADWAYS**

**PID 107714**

		82+00	537	2,075,497.1	633,538.8	692.00					
--	--	-------	-----	-------------	-----------	--------	--	--	--	--	--

ms consultants, inc. KLC 54200				6 April 2023 TNM 2.5							
INPUT: ROADWAYS				PROJECT/CONTRACT: PID 107714			Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA				
RUN: LOR-90 NSA E Existing											
Roadway Name	Width	Points Name	No.	Coordinates (pavement)			Flow Control			Segment	
				X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected	Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
Ford Road	24.0	point1	1	2,078,546.2	637,943.8	674.00				Average	
		point2	2	2,078,478.4	637,755.6	677.00				Average	
		point3	3	2,078,410.6	637,567.5	680.00				Average	
		point4	4	2,078,342.6	637,379.1	681.00				Average	
		point5	5	2,078,292.8	637,185.3	681.00				Average	
		point6	6	2,078,279.9	636,985.3	680.00				Average	
		point7	7	2,078,276.5	636,785.1	673.00				Average	
		point8	8	2,078,279.4	636,674.3	667.00				Average	
		point9	9	2,078,327.6	636,595.8	669.00				Average	
		point10	10	2,078,494.8	636,484.1	646.00				Average	
		point11	11	2,078,678.8	636,365.3	624.00				Average	
		point12	12	2,078,832.0	636,267.4	612.00				Average	
		point13	13	2,079,022.4	636,205.6	605.80				Average	
		point14	14	2,079,205.6	636,132.1	601.80				Average	
		point15	15	2,079,366.4	636,014.6	600.00				Average	
		point16	16	2,079,494.2	635,918.0	599.50					
Gulf Road	24.0	point17	17	2,079,431.0	638,348.1	675.00				Average	
		point18	18	2,079,482.6	638,154.7	679.50				Average	
		point19	19	2,079,547.9	637,964.8	684.00				Average	
		point20	20	2,079,684.2	637,817.7	686.00				Average	
		point21	21	2,079,831.2	637,681.8	688.00				Average	
		point22	22	2,079,932.0	637,586.7	690.00				Average	Y
		point23	23	2,080,125.2	637,410.5	692.00				Average	
		point24	24	2,080,272.2	637,274.9	694.00				Average	
		point25	25	2,080,419.6	637,139.7	692.00				Average	



INPUT: ROADWAYS

PID 107714

		point26	26	2,080,566.4	637,003.8	690.00				Average	
		point27	27	2,080,771.2	636,813.9	690.00					
90 WB A	24.0	176+00	818	2,082,533.4	639,342.5	671.00				Average	Y
		174+00	716	2,082,429.6	639,172.2	673.00				Average	
		172+00	717	2,082,313.1	639,010.4	675.50				Average	
		170+00	718	2,082,182.2	638,860.1	678.00				Average	
		168+00	719	2,082,037.8	638,722.7	680.50				Average	
		166+00	720	2,081,881.6	638,598.8	683.00				Average	
		164+00	721	2,081,716.1	638,487.5	685.00				Average	
		162+00	722	2,081,542.8	638,388.2	686.00				Average	
		160+00	723	2,081,366.9	638,293.3	686.00				Average	
		158+00	724	2,081,191.5	638,197.0	685.00				Average	
		156+00	725	2,081,015.8	638,101.7	684.00				Average	
		154+00	726	2,080,839.8	638,006.7	682.00				Average	
		152+00	727	2,080,663.6	637,911.9	680.50				Average	
		150+00	728	2,080,487.6	637,817.0	678.50				Average	
		148+00	729	2,080,311.6	637,722.0	678.00				Average	
		146+00	730	2,080,135.5	637,627.2	676.00				Average	
		144+00	731	2,079,959.4	637,532.4	673.90				Average	
		142+00	732	2,079,783.1	637,437.9	672.00				Average	
		140+00	733	2,079,607.5	637,342.1	670.00				Average	
		138+00	734	2,079,432.5	637,244.9	668.50				Average	
		136+00	735	2,079,260.9	637,141.8	667.40				Average	
		134+00	736	2,079,096.9	637,026.6	666.10				Average	
		132+00	737	2,078,943.9	636,897.1	664.80				Average	
		130+00	738	2,078,801.5	636,756.1	662.30				Average	
		128+00	739	2,078,671.8	636,603.3	660.40				Average	
		126+00	740	2,078,567.5	636,458.1	658.00				Average	Y
		124+00	741	2,078,453.2	636,267.9	656.00				Average	
		122+00	742	2,078,361.4	636,089.9	654.00				Average	
		120+00	743	2,078,276.8	635,908.6	652.00				Average	
		118+00	744	2,078,190.6	635,727.7	650.00				Average	
		116+00	745	2,078,104.9	635,547.4	648.00					
90 WB B	24.0	176+00	819	2,082,544.0	639,336.8	671.00				Average	
		174+00	526	2,082,439.6	639,165.6	673.00				Average	
		172+00	527	2,082,322.6	639,002.9	675.50				Average	
		170+00	528	2,082,190.9	638,851.8	678.00				Average	
		168+00	529	2,082,045.6	638,713.6	680.50				Average	
		166+00	530	2,081,888.6	638,589.1	683.00				Average	

INPUT: ROADWAYS

PID 107714

		164+00	531	2,081,722.4	638,477.3	685.00				Average	
		162+00	532	2,081,548.6	638,377.8	686.00				Average	
		160+00	533	2,081,372.6	638,282.8	686.00				Average	
		158+00	534	2,081,197.2	638,186.5	685.00				Average	
		156+00	535	2,081,021.5	638,091.1	684.00				Average	
		154+00	536	2,080,845.5	637,996.1	682.00				Average	
		152+00	537	2,080,669.4	637,901.4	680.50				Average	
		150+00	538	2,080,493.2	637,806.4	678.50				Average	
		148+00	539	2,080,317.2	637,711.4	678.00				Average	
		146+00	540	2,080,141.2	637,616.6	676.00				Average	
		144+00	541	2,079,965.1	637,521.8	673.90				Average	
		142+00	542	2,079,788.9	637,427.4	672.00				Average	
		140+00	543	2,079,613.2	637,331.6	670.00				Average	
		138+00	544	2,079,438.6	637,234.6	668.50				Average	
		136+00	545	2,079,267.4	637,131.8	667.40				Average	
		134+00	546	2,079,104.2	637,017.1	666.10				Average	
		132+00	547	2,078,952.0	636,888.3	664.80				Average	
		130+00	548	2,078,810.4	636,747.9	662.30				Average	
		128+00	549	2,078,681.2	636,595.9	660.40				Average	
		126+00	550	2,078,575.5	636,451.2	658.00				Average	Y
		124+00	551	2,078,463.8	636,262.1	656.00				Average	
		122+00	552	2,078,372.1	636,084.6	654.00				Average	
		120+00	553	2,078,287.6	635,903.4	652.00				Average	
		118+00	554	2,078,201.5	635,722.6	650.00				Average	
		116+00	555	2,078,115.6	635,542.2	648.00					
90 EB B	24.0	118+00	365	2,078,225.1	635,547.3	648.00				Average	
		120+00	364	2,078,311.2	635,727.8	650.00				Average	
		122+00	363	2,078,397.5	635,908.4	652.00				Average	
		124+00	362	2,078,484.4	636,088.6	654.00				Average	
		126+00	361	2,078,576.8	636,266.3	655.00				Average	Y
		128+00	360	2,078,684.1	636,435.6	657.00				Average	
		130+00	359	2,078,804.8	636,595.6	659.40				Average	
		132+00	358	2,078,938.8	636,744.6	661.20				Average	
		134+00	357	2,079,086.4	636,880.1	663.40				Average	
		136+00	356	2,079,244.8	637,003.0	665.30				Average	
		138+00	355	2,079,413.4	637,111.3	667.10				Average	
		140+00	354	2,079,587.6	637,209.8	668.90				Average	
		142+00	353	2,079,763.5	637,305.1	672.00				Average	
		144+00	352	2,079,939.2	637,400.5	672.00				Average	

INPUT: ROADWAYS

PID 107714

		146+00	351	2,080,115.2	637,495.6	674.00				Average	
		148+00	350	2,080,291.1	637,590.8	676.00				Average	
		150+00	349	2,080,467.0	637,686.0	678.00				Average	
		152+00	348	2,080,642.9	637,781.2	680.00				Average	
		154+00	347	2,080,818.8	637,876.4	682.00				Average	
		156+00	346	2,080,994.8	637,971.4	684.00				Average	
		158+00	345	2,081,170.8	638,066.6	684.00				Average	
		160+00	344	2,081,346.8	638,161.8	686.00				Average	
		162+00	343	2,081,522.5	638,257.1	686.00				Average	
		164+00	342	2,081,697.2	638,354.1	688.00				Average	
		166+00	341	2,081,751.5	638,384.9	686.50				Average	
		168+00	340	2,081,867.5	638,458.2	684.50				Average	
		170+00	339	2,081,912.8	638,488.7	682.50				Average	
		172+00	338	2,082,028.5	638,575.6	680.00				Average	
		174+00	337	2,082,178.6	638,706.9	678.00				Average	
		176+00	336	2,082,317.4	638,850.2	676.00				Average	
		178+00	335	2,082,444.0	639,004.1	673.50				Average	
		180+00	334	2,082,556.2	639,168.9	671.50				Average	
		182+00	333	2,082,653.6	639,342.9	669.00					
90 EB A	24.0	118+00	166	2,078,236.0	635,542.2	648.00				Average	
		120+00	165	2,078,322.1	635,722.6	650.00				Average	
		122+00	164	2,078,408.4	635,903.2	652.00				Average	
		124+00	163	2,078,495.1	636,083.2	654.00				Average	
		126+00	162	2,078,587.2	636,260.3	655.00				Average	Y
		128+00	161	2,078,694.0	636,428.8	657.00				Average	
		130+00	160	2,078,814.0	636,587.9	659.40				Average	
		132+00	159	2,078,947.2	636,736.2	661.20				Average	
		134+00	158	2,079,094.1	636,870.9	663.40				Average	
		136+00	157	2,079,251.8	636,993.2	665.30				Average	
		138+00	156	2,079,419.5	637,101.0	667.10				Average	
		140+00	155	2,079,593.4	637,199.3	668.90				Average	
		142+00	154	2,079,769.2	637,294.5	672.00				Average	
		144+00	153	2,079,945.0	637,389.9	672.00				Average	
		146+00	152	2,080,121.0	637,485.1	674.00				Average	
		148+00	151	2,080,296.9	637,580.2	676.00				Average	
		150+00	150	2,080,472.8	637,675.4	678.00				Average	
		152+00	149	2,080,648.6	637,770.7	680.00				Average	
		154+00	148	2,080,824.5	637,865.9	682.00				Average	
		156+00	147	2,081,000.5	637,960.9	684.00				Average	

**INPUT: ROADWAYS****PID 107714**

		158+00	146	2,081,176.4	638,056.1	684.00				Average	
		160+00	145	2,081,352.5	638,151.2	686.00				Average	
		162+00	144	2,081,528.2	638,246.6	686.00				Average	
		164+00	143	2,081,703.2	638,343.6	688.00				Average	
		166+00	142	2,081,757.6	638,374.6	686.50				Average	
		168+00	141	2,081,874.0	638,448.1	684.50				Average	
		170+00	140	2,081,919.8	638,478.9	682.50				Average	
		172+00	139	2,082,036.0	638,566.2	680.00				Average	
		174+00	138	2,082,186.9	638,698.2	678.00				Average	
		176+00	137	2,082,326.4	638,842.2	676.00				Average	
		178+00	136	2,082,453.6	638,996.9	673.50				Average	
		180+00	135	2,082,566.4	639,162.6	671.50				Average	
		182+00	134	2,082,664.2	639,337.6	669.00					

ms consultants, inc. KLC 54200					6 April 2023 TNM 2.5					
INPUT: ROADWAYS										
PROJECT/CONTRACT:	PID 107714				Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA					
RUN:	LOR-90 NSA E P Existing									

Roadway Name	Width	Points		Coordinates (pavement)			Flow Control			Segment Pmnt Type	On Struct?
		Name	No.	X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected		
	ft			ft	ft	ft		mph	%		
90 EB A	24.0	106+00	172	2,077,618.1	634,517.3	648.00				Average	
		108+00	171	2,077,745.5	634,671.9	644.40				Average	
		110+00	170	2,077,862.5	634,834.6	644.00				Average	
		112+00	169	2,077,967.1	635,005.5	643.90				Average	
		114+00	168	2,078,062.1	635,181.8	646.00				Average	
		116+00	167	2,078,149.6	635,361.7	647.10				Average	
		118+00	166	2,078,236.0	635,542.2	648.00				Average	Y
		120+00	165	2,078,322.1	635,722.6	650.00				Average	Y
		122+00	164	2,078,408.4	635,903.2	652.00				Average	
		124+00	163	2,078,495.1	636,083.2	654.00				Average	
		126+00	162	2,078,587.2	636,260.3	655.00				Average	Y
		128+00	161	2,078,694.0	636,428.8	657.00				Average	
		130+00	160	2,078,814.0	636,587.9	659.40				Average	
		132+00	159	2,078,947.2	636,736.2	661.20				Average	
		134+00	158	2,079,094.1	636,870.9	663.40				Average	
		136+00	157	2,079,251.8	636,993.2	665.30				Average	
138+00	156	2,079,419.5	637,101.0	667.10				Average			
140+00	155	2,079,593.4	637,199.3	668.90				Average			
142+00	154	2,079,769.2	637,294.5	672.00				Average			
144+00	153	2,079,945.0	637,389.9	672.00				Average			
90 EB B	24.0	106+00	371	2,077,609.1	634,525.3	648.00				Average	
		108+00	370	2,077,736.0	634,679.2	644.40				Average	
		110+00	369	2,077,852.4	634,841.2	644.00				Average	
		112+00	368	2,077,956.6	635,011.4	643.90				Average	
		114+00	367	2,078,051.5	635,187.2	646.00				Average	

INPUT: ROADWAYS

PID 107714

		116+00	366	2,078,138.9	635,366.9	647.10				Average	
		118+00	365	2,078,225.1	635,547.3	648.00				Average	Y
		120+00	364	2,078,311.2	635,727.8	650.00				Average	Y
		122+00	363	2,078,397.5	635,908.4	652.00				Average	
		124+00	362	2,078,484.4	636,088.6	654.00				Average	
		126+00	361	2,078,576.8	636,266.3	655.00				Average	Y
		128+00	360	2,078,684.1	636,435.6	657.00				Average	
		130+00	359	2,078,804.8	636,595.6	659.40				Average	
		132+00	358	2,078,938.8	636,744.6	661.20				Average	
		134+00	357	2,079,086.4	636,880.1	663.40				Average	
		136+00	356	2,079,244.8	637,003.0	665.30				Average	
		138+00	355	2,079,413.4	637,111.3	667.10				Average	
		140+00	354	2,079,587.6	637,209.8	668.90				Average	
		142+00	353	2,079,763.5	637,305.1	672.00				Average	
		144+00	352	2,079,939.2	637,400.5	672.00					
90 WB B	24.0	144+00	541	2,079,965.1	637,521.8	673.90				Average	
		142+00	542	2,079,788.9	637,427.4	672.00				Average	
		140+00	543	2,079,613.2	637,331.6	670.00				Average	
		138+00	544	2,079,438.6	637,234.6	668.50				Average	
		136+00	545	2,079,267.4	637,131.8	667.40				Average	
		134+00	546	2,079,104.2	637,017.1	666.10				Average	
		132+00	547	2,078,952.0	636,888.3	664.80				Average	
		130+00	548	2,078,810.4	636,747.9	662.30				Average	
		128+00	549	2,078,681.2	636,595.9	660.40				Average	
		126+00	550	2,078,570.2	636,440.3	658.00				Average	Y
		124+00	551	2,078,463.8	636,262.1	656.00				Average	
		122+00	552	2,078,372.1	636,084.6	654.00				Average	
		120+00	553	2,078,287.6	635,903.4	652.00				Average	Y
		118+00	554	2,078,201.5	635,722.6	650.00				Average	Y
		116+00	555	2,078,115.6	635,542.2	648.00				Average	
		114+00	556	2,078,029.5	635,361.8	646.00				Average	
		112+00	557	2,077,941.1	635,182.2	644.00				Average	
		110+00	558	2,077,845.8	635,006.0	642.00				Average	
		108+00	559	2,077,736.0	634,838.4	642.40				Average	
		106+00	560	2,077,615.1	634,678.5	644.00				Average	
		104+00	561	2,077,483.1	634,527.8	647.80					
90 WB A	24.0	144+00	731	2,079,959.4	637,532.4	673.90				Average	
		142+00	732	2,079,783.1	637,437.9	672.00				Average	
		140+00	733	2,079,607.5	637,342.1	670.00				Average	

INPUT: ROADWAYS

PID 107714

		138+00	734	2,079,432.5	637,244.9	668.50				Average	
		136+00	735	2,079,260.9	637,141.8	667.40				Average	
		134+00	736	2,079,096.9	637,026.6	666.10				Average	
		132+00	737	2,078,943.9	636,897.1	664.80				Average	
		130+00	738	2,078,801.5	636,756.1	662.30				Average	
		128+00	739	2,078,671.8	636,603.3	660.40				Average	
		126+00	740	2,078,559.5	636,446.2	658.00				Average	Y
		124+00	741	2,078,453.2	636,267.9	656.00				Average	
		122+00	742	2,078,361.4	636,089.9	654.00				Average	
		120+00	743	2,078,276.8	635,908.6	652.00				Average	Y
		118+00	744	2,078,190.6	635,727.7	650.00				Average	Y
		116+00	745	2,078,104.9	635,547.4	648.00				Average	
		114+00	746	2,078,018.8	635,367.0	646.00				Average	
		112+00	747	2,077,930.5	635,187.7	644.00				Average	
		110+00	748	2,077,835.5	635,012.2	642.00				Average	
		108+00	749	2,077,726.1	634,845.3	642.40				Average	
		106+00	750	2,077,605.9	634,686.1	644.00				Average	
		104+00	751	2,077,474.4	634,536.0	647.80					
Ford Road	24.0	point824	824	2,078,342.6	637,379.1	682.00				Average	
		point5	5	2,078,292.8	637,185.3	681.00				Average	
		point6	6	2,078,279.9	636,985.3	680.30				Average	
		point7	7	2,078,276.5	636,785.1	680.70				Average	
		point8	8	2,078,279.4	636,674.3	667.00				Average	
		point9	9	2,078,327.6	636,595.8	669.00				Average	
		point10	10	2,078,494.8	636,484.1	646.00				Average	
		point11	11	2,078,678.8	636,365.3	624.00				Average	
		point12	12	2,078,832.0	636,267.4	612.00				Average	
		point13	13	2,079,022.4	636,205.6	605.80				Average	
		point14	14	2,079,205.6	636,132.1	601.80				Average	
		point15	15	2,079,366.4	636,014.6	600.00				Average	
		point16	16	2,079,494.2	635,918.0	599.50					
Park Access Road	24.0	point825	825	2,078,045.9	636,390.8	600.00				Average	
		point826	826	2,078,138.5	636,333.1	600.00				Average	
		point827	827	2,078,179.4	636,276.9	600.00				Average	
		point828	828	2,078,191.2	636,210.7	600.00				Average	
		point829	829	2,078,171.8	636,144.6	600.00				Average	
		point830	830	2,078,079.5	636,030.6	600.00				Average	
		point831	831	2,078,058.9	635,973.1	600.00				Average	
		point832	832	2,078,074.0	635,880.9	600.00				Average	

INPUT: ROADWAYS

PID 107714

		point833	833	2,078,159.8	635,787.6	600.00				Average	
		point834	834	2,078,255.4	635,726.9	600.00				Average	
		point835	835	2,078,368.2	635,714.1	600.00				Average	
		point836	836	2,078,429.1	635,714.1	600.00				Average	
		point837	837	2,078,473.5	635,743.1	600.00				Average	
		point838	838	2,078,558.2	635,798.4	600.00				Average	
		point839	839	2,078,607.1	635,854.9	600.00				Average	
		point840	840	2,078,655.9	635,952.5	600.00				Average	
		point841	841	2,078,698.2	636,069.7	602.00				Average	
		point842	842	2,078,789.6	636,141.8	606.00				Average	
		point843	843	2,078,847.8	636,224.8	610.00					
Trail	10.0	point844	844	2,077,435.9	636,591.6	600.00				Average	
		point845	845	2,077,659.2	636,422.2	600.00				Average	
		point846	846	2,077,756.9	636,374.8	600.00				Average	
		point847	847	2,077,804.1	636,404.6	600.00				Average	
		point848	848	2,077,894.2	636,424.6	600.00				Average	
		point849	849	2,077,972.1	636,410.8	600.00				Average	
		point850	850	2,078,031.1	636,400.4	600.00				Average	
		point851	851	2,078,076.2	636,400.4	601.00				Average	
		point852	852	2,078,230.4	636,421.9	604.00				Average	
		point853	853	2,078,272.8	636,421.9	605.00				Average	
		point854	854	2,078,313.9	636,397.8	605.00				Average	
		point855	855	2,078,329.6	636,360.9	606.00				Average	
		point856	856	2,078,343.6	636,319.6	608.00				Average	
		point857	857	2,078,331.0	636,273.7	614.00				Average	
		point858	858	2,078,238.9	636,019.0	621.00				Average	
		point859	859	2,078,210.6	635,916.4	625.00				Average	
		point860	860	2,078,229.6	635,877.2	625.00				Average	
		point861	861	2,078,301.0	635,830.1	625.00				Average	
		point862	862	2,078,388.9	635,803.8	625.00				Average	Y
		point863	863	2,078,402.0	635,690.8	630.00				Average	Y
		point864	864	2,078,325.1	635,454.9	650.00				Average	
		point865	865	2,078,325.1	635,429.6	660.00				Average	
		point866	866	2,078,344.9	635,283.8	673.00				Average	
		point867	867	2,078,351.4	635,218.4	675.00				Average	
		point868	868	2,078,344.6	635,180.1	680.00				Average	
		point869	869	2,078,269.5	635,017.9	680.00				Average	
		point870	870	2,078,206.4	634,845.9	680.00				Average	
		point871	871	2,078,194.4	634,755.6	680.00					



ms consultants, inc. KLC 54200				6 April 2023 TNM 2.5							
INPUT: ROADWAYS								Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA			
PROJECT/CONTRACT: PID 107714											
RUN: LOR-90 NSA F Existing											

Roadway Name	Width	Points		Coordinates (pavement)			Flow Control			Segment	
		Name	No.	X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected	Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
90 EB A	12.0	192+00	100	2,082,919.2	640,699.9	656.00				Average	
		194+00	99	2,082,917.0	640,899.9	654.00				Average	
		196+00	98	2,082,913.9	641,099.9	652.00				Average	
		198+00	97	2,082,910.9	641,299.9	652.00				Average	
		200+00	96	2,082,908.8	641,499.9	650.00				Average	
		202+00	95	2,082,906.6	641,699.9	650.00				Average	
		204+00	94	2,082,904.6	641,899.9	650.00				Average	
		206+00	93	2,082,902.0	642,099.9	650.00				Average	
		208+00	92	2,082,898.1	642,299.8	650.00				Average	
		210+00	91	2,082,896.4	642,499.8	649.00				Average	
		212+00	90	2,082,894.6	642,699.8	648.00				Average	
		214+00	89	2,082,892.2	642,899.7	648.00				Average	
		216+00	88	2,082,896.8	643,099.3	648.00				Average	
		218+00	87	2,082,912.2	643,298.4	646.50				Average	
		220+00	86	2,082,937.9	643,496.4	646.00				Average	
		222+00	85	2,082,973.1	643,692.9	646.00				Average	
		224+00	84	2,083,019.0	643,887.2	645.00				Average	
		226+00	83	2,083,075.9	644,078.6	644.00				Average	
		228+00	81	2,083,141.6	644,267.1	643.00				Average	
		230+00	80	2,083,217.8	644,451.6	644.00				Average	
		232+00	79	2,083,302.9	644,632.2	643.00				Average	
		234+00	78	2,083,396.2	644,808.9	643.00				Average	
		236+00	77	2,083,494.0	644,983.2	642.00				Average	
		238+00	76	2,083,593.1	645,156.9	642.00				Average	
		240+00	75	2,083,691.2	645,331.2	643.00				Average	

INPUT: ROADWAYS

PID 107714

		242+00	74	2,083,790.4	645,504.9	642.00				Average	
		244+00	73	2,083,889.1	645,678.9	641.00				Average	
		246+00	72	2,083,987.4	645,853.1	641.00				Average	
		248+00	71	2,084,085.8	646,027.2	640.00				Average	
		250+00	70	2,084,184.0	646,201.4	640.00				Average	
		252+00	69	2,084,282.4	646,375.6	640.00				Average	
		254+00	68	2,084,380.8	646,549.7	639.00				Average	
		256+00	67	2,084,479.1	646,723.8	638.00				Average	
		258+00	66	2,084,577.8	646,897.8	638.00				Average	
		260+00	65	2,084,676.4	647,071.8	638.00				Average	
		262+00	63	2,084,774.8	647,245.9	638.00				Average	
		264+00	62	2,084,873.5	647,419.9	638.00				Average	
		266+00	61	2,084,971.6	647,594.1	638.00				Average	
		268+00	60	2,085,070.5	647,767.9	640.00				Average	
		270+00	59	2,085,169.4	647,941.8	638.00				Average	
		272+00	58	2,085,267.1	648,116.2	638.00				Average	
		274+00	57	2,085,365.9	648,290.2	638.00				Average	
		276+00	56	2,085,464.4	648,464.2	638.00				Average	
		278+00	54	2,085,563.1	648,638.1	636.50				Average	
		280+00	53	2,085,661.2	648,812.6	636.00				Average	
		282+00	52	2,085,759.2	648,986.9	636.00				Average	
		284+00	51	2,085,857.9	649,160.8	636.00				Average	
		286+00	50	2,085,956.5	649,334.8	634.00				Average	
		288+00	49	2,086,055.0	649,508.9	634.00				Average	
		290+00	48	2,086,153.5	649,682.9	634.00				Average	
		292+00	47	2,086,252.1	649,856.9	636.00				Average	
		294+00	46	2,086,350.8	650,030.9	639.00				Average	
		296+00	45	2,086,449.2	650,204.9	642.50				Average	
		298+00	44	2,086,549.5	650,377.9	646.00				Average	
		300+00	43	2,086,651.2	650,550.0	650.00					
90 EB B	24.0	192+00	299	2,082,907.2	640,699.9	656.00				Average	
		194+00	298	2,082,905.0	640,899.8	654.00				Average	
		196+00	297	2,082,901.9	641,099.8	652.00				Average	
		198+00	296	2,082,898.9	641,299.8	652.00				Average	
		200+00	295	2,082,896.8	641,499.8	650.00				Average	
		202+00	294	2,082,894.6	641,699.8	650.00				Average	
		204+00	293	2,082,892.6	641,899.8	650.00				Average	
		206+00	292	2,082,890.0	642,099.7	650.00				Average	
		208+00	291	2,082,886.1	642,299.7	650.00				Average	

INPUT: ROADWAYS

PID 107714

		210+00	290	2,082,884.4	642,499.7	649.00				Average	
		212+00	289	2,082,882.6	642,699.6	648.00				Average	
		214+00	288	2,082,880.2	642,899.8	648.00				Average	
		216+00	287	2,082,884.8	643,099.9	648.00				Average	
		218+00	286	2,082,900.2	643,299.6	646.50				Average	
		220+00	285	2,082,926.0	643,498.2	646.00				Average	
		222+00	284	2,082,961.4	643,695.3	646.00				Average	
		224+00	283	2,083,007.4	643,890.3	645.00				Average	
		226+00	282	2,083,064.4	644,082.2	644.00				Average	
		228+00	280	2,083,130.4	644,271.4	643.00				Average	
		230+00	279	2,083,206.8	644,456.5	644.00				Average	
		232+00	278	2,083,292.1	644,637.6	643.00				Average	
		234+00	277	2,083,385.8	644,814.6	643.00				Average	
		236+00	276	2,083,483.5	644,989.2	642.00				Average	
		238+00	275	2,083,582.6	645,162.9	642.00				Average	
		240+00	274	2,083,680.8	645,337.1	643.00				Average	
		242+00	273	2,083,779.9	645,510.9	642.00				Average	
		244+00	272	2,083,878.6	645,684.8	641.00				Average	
		246+00	271	2,083,977.0	645,858.9	641.00				Average	
		248+00	270	2,084,075.2	646,033.1	640.00				Average	
		250+00	269	2,084,173.6	646,207.2	640.00				Average	
		252+00	268	2,084,271.9	646,381.4	640.00				Average	
		254+00	267	2,084,370.2	646,555.6	639.00				Average	
		256+00	266	2,084,468.8	646,729.7	638.00				Average	
		258+00	265	2,084,567.4	646,903.7	638.00				Average	
		260+00	264	2,084,665.9	647,077.7	638.00				Average	
		262+00	262	2,084,764.4	647,251.8	638.00				Average	
		264+00	261	2,084,863.0	647,425.8	638.00				Average	
		266+00	260	2,084,961.1	647,600.0	638.00				Average	
		268+00	259	2,085,060.0	647,773.9	640.00				Average	
		270+00	258	2,085,158.9	647,947.7	638.00				Average	
		272+00	257	2,085,256.6	648,122.2	638.00				Average	
		274+00	256	2,085,355.5	648,296.1	638.00				Average	
		276+00	255	2,085,454.0	648,470.2	638.00				Average	
		278+00	253	2,085,552.8	648,644.1	636.50				Average	
		280+00	252	2,085,650.8	648,818.4	636.00				Average	
		282+00	251	2,085,748.9	648,992.8	636.00				Average	
		284+00	250	2,085,847.4	649,166.8	634.00				Average	
		286+00	249	2,085,946.0	649,340.7	634.00				Average	

INPUT: ROADWAYS

PID 107714

		288+00	248	2,086,044.5	649,514.8	634.00				Average	
		290+00	247	2,086,143.0	649,688.8	634.00				Average	
		292+00	246	2,086,241.8	649,862.8	636.00				Average	
		294+00	245	2,086,340.2	650,036.8	639.00				Average	
		296+00	244	2,086,438.9	650,210.9	642.50				Average	
		298+00	243	2,086,539.1	650,384.0	646.00				Average	
		300+00	784	2,086,641.0	650,556.2	650.00					
90 WB B	12.0	298+00	785	2,086,525.9	650,552.1	650.00				Average	
		296+00	627	2,086,425.5	650,379.2	646.00				Average	
		294+00	628	2,086,326.6	650,205.5	642.00				Average	
		292+00	629	2,086,228.4	650,031.2	638.00				Average	
		290+00	630	2,086,129.6	649,857.4	636.00				Average	
		288+00	631	2,086,031.2	649,683.2	634.00				Average	
		286+00	632	2,085,932.8	649,509.1	634.00				Average	
		284+00	633	2,085,834.4	649,335.0	634.00				Average	
		282+00	634	2,085,735.6	649,161.1	636.00				Average	
		280+00	635	2,085,637.2	648,987.0	636.00				Average	
		278+00	636	2,085,538.6	648,813.0	636.00				Average	
		276+00	637	2,085,440.2	648,638.9	637.00				Average	
		274+00	638	2,085,342.6	648,464.3	638.00				Average	
		272+00	639	2,085,243.2	648,290.8	638.00				Average	
		270+00	640	2,085,145.4	648,116.4	638.00				Average	
		268+00	641	2,085,046.6	647,942.4	638.00				Average	
		266+00	642	2,084,947.9	647,768.5	638.00				Average	
		264+00	643	2,084,849.6	647,594.3	638.00				Average	
		262+00	644	2,084,751.5	647,420.0	638.00				Average	
		260+00	645	2,084,652.9	647,246.0	638.00				Average	
		258+00	646	2,084,554.0	647,072.1	638.00				Average	
		256+00	647	2,084,455.2	646,898.2	638.00				Average	
		254+00	648	2,084,357.0	646,724.1	638.00				Average	
		252+00	649	2,084,258.9	646,549.8	640.00				Average	
		250+00	650	2,084,160.1	646,375.9	640.00				Average	
		248+00	651	2,084,061.9	646,201.7	640.00				Average	
		246+00	652	2,083,963.6	646,027.5	640.00				Average	
		244+00	653	2,083,864.9	645,853.5	641.00				Average	
		242+00	654	2,083,766.2	645,679.5	641.00				Average	
		240+00	655	2,083,667.5	645,505.6	642.00				Average	
		238+00	656	2,083,569.2	645,331.4	642.00				Average	
		236+00	657	2,083,470.5	645,157.4	642.00				Average	

INPUT: ROADWAYS

PID 107714

		234+00	658	2,083,372.0	644,983.4	644.00				Average	
		232+00	659	2,083,275.5	644,808.4	644.00				Average	
		230+00	660	2,083,183.0	644,631.4	644.00				Average	
		228+00	661	2,083,100.5	644,449.6	644.00				Average	
		226+00	662	2,083,026.6	644,264.0	645.00				Average	
		224+00	663	2,082,962.0	644,075.1	646.00				Average	
		222+00	664	2,082,907.1	643,883.1	646.00				Average	
		220+00	665	2,082,862.4	643,688.6	647.00				Average	
		218+00	666	2,082,828.1	643,491.8	647.00				Average	
		216+00	668	2,082,802.8	643,293.8	648.00				Average	
		214+00	669	2,082,788.9	643,094.6	648.00				Average	
		212+00	670	2,082,784.1	642,894.9	648.00				Average	
		210+00	671	2,082,786.2	642,695.0	648.00				Average	
		208+00	672	2,082,788.8	642,495.1	648.00				Average	
		206+00	673	2,082,790.8	642,295.1	650.00				Average	
		204+00	674	2,082,794.2	642,095.1	650.00				Average	
		202+00	675	2,082,796.2	641,895.1	650.00				Average	
		200+00	676	2,082,799.2	641,695.1	650.00				Average	
		198+00	677	2,082,801.4	641,495.1	652.00				Average	
		196+00	678	2,082,804.6	641,295.2	652.00				Average	
		194+00	679	2,082,807.0	641,095.2	652.00				Average	
		192+00	680	2,082,810.0	640,895.2	654.00				Average	
		190+00	681	2,082,812.5	640,695.2	656.00					
90 WB A	12.0	298+00	786	2,086,515.6	650,558.3	650.00				Average	
		296+00	437	2,086,415.1	650,385.2	646.00				Average	
		294+00	438	2,086,316.1	650,211.4	642.00				Average	
		292+00	439	2,086,218.0	650,037.2	638.00				Average	
		290+00	440	2,086,119.1	649,863.3	636.00				Average	
		288+00	441	2,086,020.9	649,689.1	634.00				Average	
		286+00	442	2,085,922.4	649,515.1	634.00				Average	
		284+00	443	2,085,824.0	649,340.9	634.00				Average	
		282+00	444	2,085,725.1	649,167.0	636.00				Average	
		280+00	445	2,085,626.8	648,992.9	636.00				Average	
		278+00	446	2,085,528.2	648,818.9	636.00				Average	
		276+00	447	2,085,429.8	648,644.8	637.00				Average	
		274+00	448	2,085,332.1	648,470.2	638.00				Average	
		272+00	449	2,085,232.8	648,296.6	638.00				Average	
		270+00	450	2,085,134.9	648,122.2	638.00				Average	
		268+00	451	2,085,036.2	647,948.3	638.00				Average	

INPUT: ROADWAYS

PID 107714

		266+00	452	2,084,937.4	647,774.4	638.00				Average	
		264+00	453	2,084,839.1	647,600.2	638.00				Average	
		262+00	454	2,084,741.1	647,425.9	638.00				Average	
		260+00	455	2,084,642.4	647,251.9	638.00				Average	
		258+00	456	2,084,543.6	647,078.1	638.00				Average	
		256+00	457	2,084,444.9	646,904.1	638.00				Average	
		254+00	458	2,084,346.5	646,729.9	638.00				Average	
		252+00	459	2,084,248.4	646,555.7	640.00				Average	
		250+00	460	2,084,149.6	646,381.8	640.00				Average	
		248+00	461	2,084,051.4	646,207.6	640.00				Average	
		246+00	462	2,083,953.1	646,033.4	640.00				Average	
		244+00	463	2,083,854.4	645,859.4	641.00				Average	
		242+00	464	2,083,755.9	645,685.4	641.00				Average	
		240+00	465	2,083,657.1	645,511.5	642.00				Average	
		238+00	466	2,083,558.8	645,337.3	642.00				Average	
		236+00	467	2,083,460.1	645,163.4	642.00				Average	
		234+00	468	2,083,361.5	644,989.3	644.00				Average	
		232+00	469	2,083,264.9	644,814.1	644.00				Average	
		230+00	470	2,083,172.1	644,636.7	644.00				Average	
		228+00	471	2,083,089.4	644,454.2	644.00				Average	
		226+00	472	2,083,015.4	644,268.2	645.00				Average	
		224+00	473	2,082,950.5	644,078.7	646.00				Average	
		222+00	474	2,082,895.5	643,886.1	646.00				Average	
		220+00	475	2,082,850.6	643,690.9	647.00				Average	
		218+00	476	2,082,816.2	643,493.7	647.00				Average	
		216+00	478	2,082,790.9	643,294.9	648.00				Average	
		214+00	479	2,082,776.9	643,095.2	648.00				Average	
		212+00	480	2,082,772.1	642,895.0	648.00				Average	
		210+00	481	2,082,774.2	642,694.9	648.00				Average	
		208+00	482	2,082,776.8	642,494.9	648.00				Average	
		206+00	483	2,082,778.8	642,294.9	650.00				Average	
		204+00	484	2,082,782.2	642,094.9	650.00				Average	
		202+00	485	2,082,784.2	641,894.9	650.00				Average	
		200+00	486	2,082,787.2	641,694.9	650.00				Average	
		198+00	487	2,082,789.4	641,495.0	652.00				Average	
		196+00	488	2,082,792.6	641,295.0	652.00				Average	
		194+00	489	2,082,795.0	641,095.0	652.00				Average	
		192+00	490	2,082,798.0	640,895.1	654.00				Average	
		190+00	491	2,082,800.5	640,695.1	656.00					

**INPUT: ROADWAYS**

**PID 107714**

French Creek Rd	12.0	0+00	787	2,084,912.8	649,782.5	630.00				Average	
		2+00	788	2,085,112.8	649,782.6	630.00				Average	
		4+00	789	2,085,312.8	649,782.8	633.50				Average	
		6+00	790	2,085,512.8	649,782.7	640.00				Average	
		8+00	791	2,085,712.8	649,782.5	648.00				Average	
		10+00	792	2,085,912.8	649,782.3	654.00				Average	Y
		12+00	793	2,086,112.8	649,782.1	655.00				Average	Y
		14+00	794	2,086,312.8	649,781.9	654.00				Average	
		16+00	795	2,086,512.8	649,781.7	650.00				Average	
		18+00	796	2,086,712.8	649,781.5	642.00				Average	
		20+00	797	2,087,553.6	649,781.3	634.00					
Abbe Rd	12.0	A	819	2,084,585.5	649,740.8	632.00				Average	
		B	818	2,084,587.2	649,742.6	632.00				Average	
		C	820	2,084,582.4	648,888.4	632.00				Average	
		0+00	798	2,084,577.5	648,452.4	632.00				Average	
		2+00	799	2,084,579.0	648,252.4	634.00				Average	
		4+00	801	2,084,590.8	648,052.2	639.50				Average	
		6+00	802	2,084,630.4	647,855.6	648.00				Average	
		8+00	803	2,084,694.5	647,665.8	656.00				Average	
		10+00	804	2,084,749.0	647,517.2	658.00				Average	Y
		12+00	805	2,084,835.4	647,291.3	658.00				Average	
		14+00	806	2,084,904.5	647,103.8	656.00				Average	
		16+00	807	2,084,963.2	646,913.4	648.00				Average	
		18+00	808	2,084,995.5	646,717.2	641.50				Average	
		19+00	822	2,084,999.9	646,594.4	640.00				Average	
		20+00	823	2,084,986.9	646,493.8	639.00				Average	
		21+00	824	2,084,942.9	646,363.5	638.00				Average	
		V	825	2,084,684.2	645,783.9	638.00				Average	
		W	826	2,084,651.2	645,710.5	638.00				Average	
		X	827	2,084,636.5	645,659.1	638.00				Average	
		Y	829	2,084,614.5	645,327.1	638.00				Average	
		Z	830	2,084,502.5	643,992.5	638.00					

ms consultants, inc. KLC 54200					6 April 2023 TNM 2.5						
INPUT: ROADWAYS								Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA			
PROJECT/CONTRACT:		PID 107714									
RUN:		LOR-90 NSA G Existing									

Roadway Name	Width	Points		Coordinates (pavement)			Flow Control			Segment	On Struct?
		Name	No.	X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected		
	ft			ft	ft	ft		mph	%		
French Creek Rd	24.0	0+00	779	2,084,912.8	649,782.5	630.00				Average	
		2+00	780	2,085,112.8	649,782.6	630.00				Average	
		4+00	781	2,085,312.8	649,782.8	634.00				Average	
		6+00	782	2,085,512.8	649,782.7	640.00				Average	
		8+00	783	2,085,712.8	649,782.5	648.00				Average	
		10+00	784	2,085,912.8	649,782.3	654.00				Average	Y
		12+00	785	2,086,112.8	649,782.1	655.00				Average	Y
		14+00	786	2,086,312.8	649,781.9	654.00				Average	
		16+00	787	2,086,512.8	649,781.7	650.00				Average	
		18+00	788	2,086,712.8	649,781.5	642.00				Average	
90 WB A	24.0	20+00	789	2,086,853.4	649,781.3	634.00					
		358+00	796	2,090,594.5	654,945.8	634.00				Average	
		356+00	597	2,090,442.9	654,815.0	634.00				Average	
		354+00	598	2,090,300.2	654,674.5	634.00				Average	
		352+00	599	2,090,160.4	654,531.5	634.00				Average	
		350+00	600	2,090,021.0	654,388.1	634.00				Average	
		348+00	601	2,089,881.2	654,244.9	634.00				Average	
		346+00	602	2,089,741.6	654,101.7	634.00				Average	
		344+00	603	2,089,602.8	653,957.8	634.00				Average	
		342+00	604	2,089,463.6	653,814.1	634.00				Average	
		340+00	605	2,089,324.0	653,670.9	633.00				Average	
		338+00	606	2,089,184.4	653,527.8	632.00				Average	
		336+00	607	2,089,045.4	653,383.9	632.00				Average	
		334+00	608	2,088,906.0	653,240.4	632.00				Average	
		332+00	609	2,088,766.6	653,097.1	630.00				Average	



INPUT: ROADWAYS

PID 107714

		330+00	610	2,088,627.5	652,953.4	630.00				Average	
		328+00	611	2,088,488.9	652,809.2	632.00				Average	
		326+00	612	2,088,350.0	652,665.3	634.00				Average	
		324+00	613	2,088,210.8	652,521.7	636.00				Average	
		322+00	614	2,088,071.1	652,378.1	640.00				Average	
		320+00	615	2,087,931.4	652,235.4	644.00				Average	
		318+00	616	2,087,791.6	652,092.4	648.00				Average	
		316+00	617	2,087,652.4	651,948.8	652.00				Average	
		314+00	618	2,087,513.4	651,805.1	656.00				Average	
		312+00	619	2,087,373.8	651,661.8	658.00				Average	
		310+00	620	2,087,234.9	651,517.4	660.00				Average	
		308+00	621	2,087,102.5	651,367.5	660.00				Average	
		306+00	622	2,086,973.1	651,214.8	660.00				Average	
		304+00	623	2,086,850.9	651,056.3	658.00				Average	
		302+00	624	2,086,732.6	650,894.7	656.00				Average	
		300+00	625	2,086,621.4	650,728.2	654.00				Average	
		298+00	626	2,086,515.6	650,558.3	650.00				Average	
		296+00	627	2,086,415.1	650,385.2	646.00				Average	
		294+00	628	2,086,316.1	650,211.4	642.00				Average	
		292+00	629	2,086,218.0	650,037.2	638.00				Average	
		290+00	630	2,086,119.1	649,863.3	636.00				Average	
		288+00	631	2,086,020.9	649,689.1	634.00				Average	
		286+00	632	2,085,922.4	649,515.1	634.00				Average	
		284+00	633	2,085,824.0	649,340.9	634.00				Average	
		282+00	634	2,085,725.1	649,167.0	636.00				Average	
		280+00	635	2,085,626.8	648,992.9	636.00					
90 WB B	24.0	358+00	798	2,090,602.1	654,936.5	634.00				Average	
		356+00	407	2,090,451.0	654,806.2	634.00				Average	
		354+00	408	2,090,308.8	654,666.1	634.00				Average	
		352+00	409	2,090,168.9	654,523.1	634.00				Average	
		350+00	410	2,090,029.5	654,379.7	634.00				Average	
		348+00	411	2,089,889.8	654,236.6	634.00				Average	
		346+00	412	2,089,750.2	654,093.4	634.00				Average	
		344+00	413	2,089,611.4	653,949.4	634.00				Average	
		342+00	414	2,089,472.2	653,805.8	634.00				Average	
		340+00	415	2,089,332.6	653,662.6	633.00				Average	
		338+00	416	2,089,193.0	653,519.4	632.00				Average	
		336+00	417	2,089,054.0	653,375.6	632.00				Average	
		334+00	418	2,088,914.6	653,232.1	632.00				Average	

INPUT: ROADWAYS

PID 107714

		332+00	419	2,088,775.2	653,088.8	630.00				Average	
		330+00	420	2,088,636.1	652,945.1	630.00				Average	
		328+00	421	2,088,497.5	652,800.9	632.00				Average	
		326+00	422	2,088,358.6	652,657.0	634.00				Average	
		324+00	423	2,088,219.4	652,513.3	636.00				Average	
		322+00	424	2,088,079.6	652,369.7	640.00				Average	
		320+00	425	2,087,940.0	652,227.1	644.00				Average	
		318+00	426	2,087,800.2	652,084.1	648.00				Average	
		316+00	427	2,087,661.0	651,940.5	652.00				Average	
		314+00	428	2,087,521.9	651,796.8	656.00				Average	
		312+00	429	2,087,382.4	651,653.4	658.00				Average	
		310+00	430	2,087,243.6	651,509.3	660.00				Average	
		308+00	431	2,087,111.5	651,359.7	660.00				Average	
		306+00	432	2,086,982.5	651,207.2	660.00				Average	
		304+00	433	2,086,860.4	651,049.1	658.00				Average	
		302+00	434	2,086,742.5	650,887.8	656.00				Average	
		300+00	435	2,086,631.5	650,721.8	654.00				Average	
		298+00	436	2,086,525.9	650,552.1	650.00				Average	
		296+00	437	2,086,425.5	650,379.2	646.00				Average	
		294+00	438	2,086,326.6	650,205.5	642.00				Average	
		292+00	439	2,086,228.4	650,031.2	638.00				Average	
		290+00	440	2,086,129.6	649,857.4	636.00				Average	
		288+00	441	2,086,031.2	649,683.2	634.00				Average	
		286+00	442	2,085,932.8	649,509.1	634.00				Average	
		284+00	443	2,085,834.4	649,335.0	634.00				Average	
		282+00	444	2,085,735.6	649,161.1	636.00				Average	
		280+00	445	2,085,637.2	648,987.0	636.00					
90 EB B	24.0	282+00	251	2,085,748.9	648,992.8	636.00				Average	
		284+00	250	2,085,847.4	649,166.8	634.00				Average	
		286+00	249	2,085,946.0	649,340.7	634.00				Average	
		288+00	248	2,086,044.5	649,514.8	634.00				Average	
		290+00	247	2,086,143.0	649,688.8	634.00				Average	
		292+00	246	2,086,241.8	649,862.8	636.00				Average	
		294+00	245	2,086,340.2	650,036.8	639.00				Average	
		296+00	244	2,086,438.9	650,210.9	642.50				Average	
		298+00	243	2,086,539.1	650,384.0	646.00				Average	
		300+00	242	2,086,641.0	650,556.2	650.00				Average	
		302+00	241	2,086,748.1	650,725.2	654.00				Average	
		304+00	240	2,086,861.6	650,890.2	656.00				Average	

INPUT: ROADWAYS

PID 107714

		306+00	239	2,086,981.9	651,050.3	658.00				Average	
		308+00	238	2,087,106.0	651,207.3	658.00				Average	
		310+00	237	2,087,237.0	651,358.6	658.00				Average	
		312+00	236	2,087,372.5	651,505.9	658.00				Average	
		314+00	235	2,087,511.0	651,650.3	656.00				Average	
		316+00	234	2,087,649.9	651,794.2	654.00				Average	
		318+00	233	2,087,789.2	651,937.8	650.00				Average	
		320+00	232	2,087,928.9	652,081.0	646.00				Average	
		322+00	231	2,088,067.6	652,224.9	642.50				Average	
		324+00	230	2,088,207.0	652,368.4	638.00				Average	
		326+00	229	2,088,346.2	652,512.0	635.50				Average	
		328+00	228	2,088,485.5	652,655.6	632.00				Average	
		330+00	227	2,088,624.8	652,799.1	630.00				Average	
		332+00	226	2,088,764.4	652,942.3	630.00				Average	
		334+00	225	2,088,904.1	653,085.4	632.00				Average	
		336+00	224	2,089,043.6	653,228.7	632.00				Average	
		338+00	223	2,089,183.2	653,371.9	632.00				Average	
		340+00	221	2,089,322.8	653,515.2	632.50				Average	
		342+00	220	2,089,462.4	653,658.4	634.00				Average	
		344+00	219	2,089,601.4	653,802.1	634.00				Average	
		346+00	218	2,089,740.5	653,945.9	634.50				Average	
		348+00	217	2,089,880.2	654,088.9	635.00				Average	
		350+00	215	2,090,019.8	654,232.2	635.50				Average	
		352+00	214	2,090,158.8	654,376.1	636.00				Average	
		354+00	212	2,090,297.9	654,519.8	634.00				Average	
		356+00	211	2,090,438.9	654,661.7	634.00				Average	
		358+00	799	2,090,584.0	654,799.9	632.00					
90 EB A	24.0	282+00	52	2,085,759.2	648,986.9	636.00				Average	
		284+00	51	2,085,857.9	649,160.8	634.00				Average	
		286+00	50	2,085,956.5	649,334.8	634.00				Average	
		288+00	49	2,086,055.0	649,508.9	634.00				Average	
		290+00	48	2,086,153.5	649,682.9	634.00				Average	
		292+00	47	2,086,252.1	649,856.9	636.00				Average	
		294+00	46	2,086,350.8	650,030.9	639.00				Average	
		296+00	45	2,086,449.2	650,204.9	642.50				Average	
		298+00	44	2,086,549.5	650,377.9	646.00				Average	
		300+00	43	2,086,651.2	650,550.0	650.00				Average	
		302+00	42	2,086,758.2	650,718.6	654.00				Average	
		304+00	41	2,086,871.4	650,883.2	656.00				Average	

INPUT: ROADWAYS

PID 107714

		306+00	40	2,086,991.4	651,043.0	658.00				Average	
		308+00	39	2,087,115.2	651,199.7	658.00				Average	
		310+00	38	2,087,246.0	651,350.7	658.00				Average	
		312+00	37	2,087,381.2	651,497.8	658.00				Average	
		314+00	36	2,087,519.6	651,642.0	656.00				Average	
		316+00	35	2,087,658.5	651,785.9	654.00				Average	
		318+00	34	2,087,797.9	651,929.4	650.00				Average	
		320+00	33	2,087,937.4	652,072.6	646.00				Average	
		322+00	32	2,088,076.2	652,216.6	642.50				Average	
		324+00	31	2,088,215.6	652,360.1	638.00				Average	
		326+00	30	2,088,354.9	652,503.6	635.50				Average	
		328+00	29	2,088,494.1	652,647.2	632.00				Average	
		330+00	28	2,088,633.2	652,790.8	630.00				Average	
		332+00	27	2,088,773.0	652,933.9	630.00				Average	
		334+00	26	2,088,912.8	653,077.0	632.00				Average	
		336+00	25	2,089,052.2	653,220.3	632.00				Average	
		338+00	24	2,089,191.8	653,363.6	632.00				Average	
		340+00	22	2,089,331.4	653,506.8	632.50				Average	
		342+00	21	2,089,471.0	653,650.1	634.00				Average	
		344+00	20	2,089,610.0	653,793.8	634.00				Average	
		346+00	19	2,089,749.1	653,937.6	634.50				Average	
		348+00	18	2,089,888.9	654,080.6	635.00				Average	
		350+00	16	2,090,028.4	654,223.9	635.50				Average	
		352+00	15	2,090,167.4	654,367.8	636.00				Average	
		354+00	13	2,090,306.5	654,511.3	634.00				Average	
		356+00	12	2,090,447.4	654,653.2	634.00				Average	
		358+00	800	2,090,591.9	654,790.9	632.00					
Off-Ramp	16.0	344+00	814	2,089,622.5	653,789.8	634.00				Average	
		346+00	813	2,089,759.4	653,929.6	634.00				Average	
		347+00	812	2,089,830.1	654,000.6	634.50				Average	
		348+00	811	2,089,899.6	654,070.0	634.50				Average	
		348+50	810	2,089,980.2	654,152.9	634.50				Average	
		350+00	815	2,090,048.0	654,211.9	634.50				Average	
		351+00	809	2,090,115.9	654,271.0	635.00				Average	
		352+00	808	2,090,200.8	654,335.6	635.50				Average	
		A	807	2,090,307.9	654,404.6	636.00				Average	
		B	806	2,090,449.5	654,459.1	637.00				Average	
		C	816	2,090,543.8	654,474.9	638.00				Average	
		D	805	2,090,638.1	654,490.6	639.00				Average	

**INPUT: ROADWAYS**

**PID 107714**

		E	804	2,090,750.5	654,498.1	640.50				Average	
		F	803	2,090,858.8	654,508.7	642.00				Average	
		G	802	2,090,952.0	654,541.0	643.00				Average	
		H	801	2,091,043.5	654,609.3	644.00					

**Appendix E1**

**TNM**

**Future Conditions Models**

**Year 2045**

---

Receiver	Land Use Activity Category	Existing Year 2020 Level	Design Year 2045 Level	Increase	Impact
<b>NSA A</b>					
A-1	B	47.5	50.5	3.0	No
A-2	B	47.7	50.7	3.0	No
A-3	B	47.9	50.9	3.0	No
A-4	B	48.1	51.2	3.1	No
A-5	B	48.2	51.2	3.0	No
A-6	B	48.7	51.7	3.0	No
A-7	B	48.9	52.0	3.1	No
A-8	B	49.2	52.2	3.0	No
A-9	B	49.8	52.9	3.1	No
A-10	B	50.1	53.2	3.1	No
A-11	B	51.0	54.1	3.1	No
A-12	B	51.8	55.0	3.2	No
A-13	B	52.2	55.4	3.2	No
A-14	B	53.1	56.3	3.2	No
A-15	B	54.2	57.5	3.3	No
A-16	B	55.4	58.9	3.5	No
A-17	B	56.4	59.8	3.4	No
A-18	B	58.0	61.4	3.4	No
A-19	B	59.3	63.0	3.7	No
A-20	B	61.2	65.2	4.0	No
A-21	B	62.7	66.8	4.1	Yes
A-22	B	65.0	69.6	4.6	Yes
A-23	B	58.7	62.2	3.5	No
A-24	B	61.4	65.3	3.9	No
A-25	B	61.7	65.6	3.9	No
A-26	B	61.8	65.6	3.8	No
A-27	B	61.7	65.5	3.8	No
A-28	B	60.7	64.4	3.7	No
A-29	B	65.8	70.5	4.7	Yes
A-30	B	61.1	64.9	3.8	No
A-31	B	59.2	63.0	3.8	No
A-32	B	56.8	60.4	3.6	No
A-33	B	55.4	58.8	3.4	No
A-34	B	53.9	57.3	3.4	No
A-35	B	52.6	55.8	3.2	No
A-1ii	B	45.7	48.5	2.8	No
A-2ii	B	45.8	48.7	2.9	No
A-4ii	B	46.0	48.8	2.8	No
A-5ii	B	46.3	49.2	2.9	No
A-6ii	B	46.6	49.5	2.9	No
A-7ii	B	47.1	50.0	2.9	No
A-9ii	B	48.1	51.1	3.0	No
A-10ii	B	48.7	51.7	3.0	No
A-12ii	B	50.0	53.1	3.1	No
A-13ii	B	50.6	53.6	3.0	No
A-15ii	B	52.0	55.0	3.0	No

Receiver	Land Use Activity Category	Existing Year 2020 Level	Design Year 2045 Level	Increase	Impact
A-17ii	B	53.6	56.7	3.1	No
A-18ii	B	52.7	55.8	3.1	No
A-20ii	B	56.5	59.9	3.4	No
A-25ii	B	55.4	58.6	3.2	No
A-29ii	B	59.7	63.1	3.4	No
A-30ii	B	57.3	60.7	3.4	No
A-31ii	B	55.5	58.7	3.2	No
A-32ii	B	54.2	57.3	3.1	No
A-33ii	B	53.3	56.3	3.0	No
A-34ii	B	52.0	55.0	3.0	No
A-35ii	B	51.2	54.2	3.0	No
A-2iii	B	44.0	46.9	2.9	No
A-5iii	B	45.0	47.9	2.9	No
A-10iii	B	47.3	50.4	3.1	No
A-13iii	B	48.8	52.0	3.2	No
A-15iii	B	50.5	53.6	3.1	No
A-18iii	B	50.6	53.7	3.1	No
A-25iii	B	54.9	57.9	3.0	No
A-31iii	B	53.4	56.6	3.2	No
A-33iii	B	51.7	54.8	3.1	No
<b>NSA B</b>					
B-1	B	51.1	54.2	3.1	No
B-2	B	52.0	55.1	3.1	No
B-3	B	52.7	55.9	3.2	No
B-4	B	53.8	57.0	3.2	No
B-5	B	55.2	58.6	3.4	No
B-6	B	56.6	60.0	3.4	No
B-7	B	56.3	59.7	3.4	No
B-8	B	58.2	61.7	3.5	No
B-9	B	60.0	63.7	3.7	No
B-10	B	61.1	64.7	3.6	No
B-11	B	61.8	65.3	3.5	No
B-12	B	61.9	65.3	3.4	No
B-13	B	62.6	65.8	3.2	No
B-14	F	64.0	66.8	2.8	No
B-15	B	61.3	64.8	3.5	No
B-16	B	63.8	65.3	1.5	No
B-17	B	62.8	64.4	1.6	No
B-18	B	64.7	65.8	1.1	No
B-1ii	B	49.7	52.4	2.7	No
B-3ii	B	50.6	53.4	2.8	No
B-4ii	B	51.4	54.1	2.7	No
B-6ii	B	52.8	55.6	2.8	No
B-7ii	B	53.7	56.4	2.7	No
B-8ii	B	54.4	57.2	2.8	No
B-9ii	B	55.5	58.3	2.8	No
B-10ii	B	56.5	59.3	2.8	No
B-11ii	B	57.4	60.2	2.8	No
B-12ii	B	59.0	61.8	2.8	No
B-14ii	B	61.0	63.4	2.4	No
B-15ii	B	60.5	64.0	3.5	No
B-16ii	B	63.1	65.1	2.0	No
B-18ii	B	62.8	64.6	1.8	No



Receiver	Land Use Activity Category	Existing Year 2020 Level	Design Year 2045 Level	Increase	Impact
B-15iii	B	58.0	61.7	3.7	No
B-24iii	B	60.8	62.0	1.2	No
B-15iv	B	57.3	60.9	3.6	No
B-15v	B	55.8	59.3	3.5	No
B-15vi	B	55.1	58.5	3.4	No
<b>NSA C</b>					
C-1	B	57.2	58.7	1.5	No
C-2	B	53.9	55.3	1.4	No
C-3	B	54.2	55.5	1.3	No
C-4	B	54.2	55.5	1.3	No
C-5	B	54.6	55.9	1.3	No
C-6	B	55.0	56.2	1.2	No
C-7	B	55.1	56.5	1.4	No
C-8	B	70.1	69.5	-0.6	Yes
C-9	B	69.8	69.3	-0.5	Yes
C-10	B	70.6	69.8	-0.8	Yes
C-11	B	69.3	69.4	0.1	Yes
C-12	B	71.4	72.3	0.9	Yes
C-13	B	70.0	70.2	0.2	Yes
C-14	B	69.9	70.0	0.1	Yes
C-15	B	70.1	70.0	-0.1	Yes
C-16	B	70.2	70.4	0.2	Yes
C-8ii	B	55.6	56.7	1.1	No
C-9ii	C	61.9	63.3	1.4	No
C-10ii	E	65.8	67.0	1.2	No
C-11ii	B	67.8	68.4	0.6	Yes
C-12ii	B	64.2	65.3	1.1	No
C-13ii	B	66.5	67.3	0.8	Yes
C-15ii	B	68.4	68.8	0.4	Yes
C-16ii	E	68.0	68.8	0.8	No
C-10iii	B	63.5	64.7	1.2	No
C-11iii	B	65.4	66.9	1.5	Yes
C-15iii	E	66.1	67.1	1.0	No
C-16iii	B	65.1	66.7	1.6	Yes
C-10iv	B	64.1	64.9	0.8	No
C-11iv	E	61.9	63.8	1.9	No
C-10v	E	63.6	64.4	0.8	No
C-11v	B	59.2	61.2	2.0	No
C-10vi	E	62.0	62.8	0.8	No

Receiver	Land Use Activity Category	Existing Year 2020 Level	Design Year 2045 Level	Increase	Impact
<b>NSA D</b>					
D-1	E	60.8	61.5	0.7	No
D-2 pool	B	62.6	62.5	-0.1	No
D-3	B	64.1	63.3	-0.8	No
D-4	B	66.0	66.3	0.3	Yes
D-5	B	67.0	67.3	0.3	Yes
D-6	B	70.8	70.9	0.1	Yes
D-7	B	61.4	62.2	0.8	No
D-8	B	69.4	70.3	0.9	Yes
D-9	C	63.7	64.8	1.1	No
D-10	B	62.2	63.0	0.8	No
D-11	B	59.7	60.3	0.6	No
D-12	B	59.3	59.9	0.6	No
D-13	B	60.9	61.7	0.8	No
D-14	B	61.7	62.3	0.6	No
D-15	B	61.5	62.3	0.8	No
D-16	B	61.5	62.3	0.8	No
D-17	B	63.5	64.0	0.5	No
D-18	B	64.7	64.7	0.0	No
D-19	B	65.2	65.0	-0.2	No
D-20	B	64.0	64.3	0.3	No
D-21	B	65.0	64.8	-0.2	No
D-22	B	62.6	63.6	1.0	No
D-23	B	69.0	67.2	-1.8	Yes
D-24	B	66.0	65.3	-0.7	No
D-25	B	67.9	68.0	0.1	Yes
D-1ii	B	55.8	56.6	0.8	No
D-6ii	B	66.7	67.0	0.3	Yes
D-7ii	B	59.8	60.6	0.8	No
D-8ii	B	62.7	63.9	1.2	No
D-9ii	E	60.6	61.8	1.2	No
D-13ii	B	59.0	60.0	1.0	No
D-17ii	B	61.6	62.5	0.9	No
D-20ii	B	61.4	62.5	1.1	No
D-22ii	C	60.0	60.8	0.8	No
D-23ii	B	63.2	63.9	0.7	No
D-6iii	B	61.4	62.2	0.8	No
D-7iii	B	58.6	59.4	0.8	No
D-8iii	B	57.3	58.4	1.1	No
D-13iii	B	58.4	59.2	0.8	No
D-20iii	B	60.0	60.8	0.8	No
D-26A	B	71.2	70.9	-0.3	Yes
D-26B	B	68.1	69.8	1.7	Yes
D-27	B	66.9	67.8	0.9	Yes
D-28 pool	B	63.4	63.8	0.4	No
D-29 tennis	B	66.2	66.6	0.4	Yes
D-26Aii	B	69.8	69.8	0.0	Yes
D-26Aiii	B	67.5	68.4	0.9	Yes
D-26Bii	B	65.7	67.1	1.4	Yes
D-26Biii	B	64.4	65.2	0.8	No

Receiver	Land Use Activity Category	Existing Year 2020 Level	Design Year 2045 Level	Increase	Impact
<b>NSA E</b>					
E-43A picnic	C	62.1	63.3	1.2	No
E-43B bikepath N	C	62.4	63.3	0.9	No
E- 43C bikepath bridge	C	75.2	75.9	0.7	Yes
E-43D bikepath S	C	64.6	65.4	0.8	No
E-43Dii parking area	C	58.4	59.1	0.7	No
E-2	B	63.9	62.9	-1.0	No
E-3	B	64.2	63.4	-0.8	No
E-4	B	62.4	61.8	-0.6	No
E-5	B	61.1	60.8	-0.3	No
E-6	B	62.0	61.7	-0.3	No
E-7	B	60.6	60.4	-0.2	No
E-8	B	59.8	59.5	-0.3	No
E-9	B	58.7	58.4	-0.3	No
E-10	B	61.0	60.7	-0.3	No
E-11	B	62.8	62.5	-0.3	No
E-12	B	64.9	64.6	-0.3	No
E-13	B	63.8	63.6	-0.2	No
E-14	B	60.5	60.6	0.1	No
E-15	B	67.3	68.8	1.5	Yes
E-16	B	68.3	69.6	1.3	Yes
E-17	B	70.9	72.0	1.1	Yes
E-18	B	72.2	73.2	1.0	Yes
E-19	B	71.4	72.3	0.9	Yes
E-20	B	71.4	72.3	0.9	Yes
E-21	B	71.4	72.2	0.8	Yes
E-22	B	72.3	73.1	0.8	Yes
E-23	B	71.8	72.5	0.7	Yes
E-24	B	71.8	72.5	0.7	Yes
E-25	B	71.2	71.9	0.7	Yes
E-26	B	71.9	72.6	0.7	Yes
E-27	B	72.1	72.8	0.7	Yes
E-28	B	73.5	74.1	0.6	Yes
E-29	B	72.2	73.0	0.8	Yes
E-30	B	72.8	73.5	0.7	Yes
E-31	B	73.1	73.7	0.6	Yes
E-32	B	73.4	73.8	0.4	Yes
E-33	B	75.1	75.1	0.0	Yes
E-34	B	73.6	74.0	0.4	Yes
E-35	B	74.6	74.7	0.1	Yes
E-36	B	71.6	72.2	0.6	Yes
E-37	B	68.6	69.2	0.6	Yes
E-38	B	65.4	66.6	1.2	Yes
E-39	B	67.1	67.9	0.8	Yes
E-40	B	69.2	70.1	0.9	Yes
E-41	B	70.0	70.9	0.9	Yes
E-42	B	68.7	69.6	0.9	Yes
E-44	B	70.1	68.3	-1.8	Yes
E-45	B	67.7	66.6	-1.1	Yes
E-46	B	63.5	62.4	-1.1	No

Receiver	Land Use Activity Category	Existing Year 2020 Level	Design Year 2045 Level	Increase	Impact
E-47	B	60.5	60.0	-0.5	No
E-48	B	59.0	58.8	-0.2	No
E-49	B	58.0	58.6	0.6	No
E-50	B	59.6	60.3	0.7	No
E-51	B	54.3	55.3	1.0	No
E-52	B	55.1	55.8	0.7	No
E-53	B	55.8	56.8	1.0	No
E-54	B	71.0	72.2	1.2	Yes
E-55	B	62.0	62.8	0.8	No
E-4ii	B	61.3	60.5	-0.8	No
E-5ii	B	59.9	59.5	-0.4	No
E-7ii	B	58.0	57.8	-0.2	No
E-8ii	B	57.0	56.9	-0.1	No
E-9ii	B	56.4	56.4	0.0	No
E-12ii	B	56.8	56.8	0.0	No
E-13ii	B	56.5	56.7	0.2	No
E-14ii	B	57.9	58.4	0.5	No
E-15ii	B	59.6	60.6	1.0	No
E-16ii	B	60.1	61.0	0.9	No
E-17ii	B	60.9	61.8	0.9	No
E-18ii	B	56.8	57.7	0.9	No
E-19ii	B	57.3	58.0	0.7	No
E-20ii	B	56.8	57.6	0.8	No
E-21ii	B	61.4	62.2	0.8	No
E-22ii	B	61.2	62.0	0.8	No
E-23ii	B	61.5	62.2	0.7	No
E-24ii	B	61.5	62.1	0.6	No
E-25ii	B	61.5	62.1	0.6	No
E-26ii	B	61.5	62.1	0.6	No
E-27ii	B	61.5	62.2	0.7	No
E-28ii	B	61.8	62.5	0.7	No
E-29ii	B	61.9	62.6	0.7	No
E-30ii	B	62.0	62.7	0.7	No
E-31ii	B	62.2	62.9	0.7	No
E-32ii	B	62.5	63.2	0.7	No
E-33ii	B	62.6	63.2	0.6	No
E-34ii	B	62.6	63.3	0.7	No
E-35ii	B	62.9	63.6	0.7	No
E-36ii	B	62.7	63.5	0.8	No
E-37ii	B	64.5	65.7	1.2	No
E-38ii	B	63.4	64.4	1.0	No
E-39ii	B	55.9	56.7	0.8	No
E-40ii	B	58.4	59.0	0.6	No
E-41ii	B	60.0	60.9	0.9	No
E-42ii	B	65.9	66.7	0.8	Yes
E-44ii	B	59.1	59.2	0.1	No
E-45ii	B	55.7	56.0	0.3	No
E-46ii	B	54.4	54.7	0.3	No
E-47ii	B	54.5	54.8	0.3	No
E-48ii	B	56.3	56.6	0.3	No
E-49ii	B	55.8	56.4	0.6	No
E-50ii	B	56.0	56.6	0.6	No
E-54ii	B	62.3	63.0	0.7	No
E-55ii	B	58.8	59.8	1.0	No

Receiver	Land Use Activity Category	Existing Year 2020 Level	Design Year 2045 Level	Increase	Impact
E-12iii	B	56.8	56.9	0.1	No
E-14iii	B	56.2	56.5	0.3	No
E-16iii	B	56.8	57.5	0.7	No
E-21iii	B	56.4	57.2	0.8	No
E-22iii	B	56.1	57.0	0.9	No
E-23iii	B	55.6	56.5	0.9	No
E-24iii	B	54.5	55.4	0.9	No
E-25iii	B	57.6	58.4	0.8	No
E-26iii	B	57.4	58.2	0.8	No
E-27iii	B	61.7	62.4	0.7	No
E-28iii	B	62.0	62.6	0.6	No
E-29iii	B	57.7	58.6	0.9	No
E-30iii	B	57.9	58.7	0.8	No
E-31iii	B	58.1	58.8	0.7	No
E-32iii	B	58.2	59.0	0.8	No
E-33iii	B	58.1	59.0	0.9	No
E-34iii	B	58.5	59.4	0.9	No
E-35iii	B	59.0	60.0	1.0	No
E-37iii	B	61.9	62.9	1.0	No
E-38iii	B	61.3	62.0	0.7	No
E-39iii	B	54.8	55.4	0.6	No
E-40iii	B	56.5	57.2	0.7	No
E-41iii	B	59.3	60.0	0.7	No
E-42iii	B	64.4	65.4	1.0	No
E-47iii	B	54.8	55.2	0.4	No
E-48iii	B	55.9	56.3	0.4	No
E-49iii	B	55.5	56.0	0.5	No
E-50iii	B	55.3	55.8	0.5	No
E-54iii	B	58.7	59.3	0.6	No
E-55iii	B	56.3	57.6	1.3	No
E-12iv	B	55.5	55.7	0.2	No
E-14iv	B	56.5	57.0	0.5	No
E-16iv	B	54.8	55.5	0.7	No
E-21iv	B	53.0	53.8	0.8	No
E-24iv	B	52.5	53.4	0.9	No
E-26iv	B	53.9	54.8	0.9	No
E-27iv	B	57.5	58.2	0.7	No
E-28iv	B	58.1	58.8	0.7	No
E-30iv	B	54.2	55.0	0.8	No
E-32iv	B	54.1	54.9	0.8	No
E-34iv	B	54.5	55.6	1.1	No
E-37iv	B	59.8	60.6	0.8	No
E-38iv	B	59.9	60.7	0.8	No
E-40iv	B	56.3	56.8	0.5	No
E-41iv	B	58.3	58.8	0.5	No
E-42iv	B	63.4	64.4	1.0	No
E-47iv	B	56.0	56.5	0.5	No
E-48iv	B	55.9	56.4	0.5	No

Receiver	Land Use Activity Category	Existing Year 2020 Level	Design Year 2045 Level	Increase	Impact
E-27v	B	57.5	58.3	0.8	No
E-30v	B	53.1	53.9	0.8	No
E-37v	B	57.8	58.7	0.9	No
E-38v	B	58.7	59.5	0.8	No
E-40v	B	55.7	55.9	0.2	No
E-41v	B	57.4	58.0	0.6	No
E-42v	B	61.9	62.8	0.9	No
E-37vi	B	56.8	57.7	0.9	No
E-38vi	B	56.7	57.6	0.9	No
E-40vi	B	55.1	55.6	0.5	No
E-42vi	B	60.8	61.6	0.8	No
E-37vii	B	54.0	55.0	1.0	No
E-38vii	B	55.4	56.3	0.9	No
E-40vii	B	53.6	54.6	1.0	No
E-42vii	B	60.1	61.0	0.9	No
E-42viii	B	57.1	58.2	1.1	No

Receiver	Land Use Activity Category	Existing Year 2020 Level	Design Year 2045 Level	Increase	Impact
<b>NSA F</b>					
F-1	B	63.7	65.1	1.4	No
F-2	B	68.0	69.0	1.0	Yes
F-3	B	69.2	70.8	1.6	Yes
F-4	B	69.3	71.0	1.7	Yes
F-5	B	68.7	70.1	1.4	Yes
F-6	B	68.2	69.3	1.1	Yes
F-7	B	68.6	70.1	1.5	Yes
F-8	B	63.7	64.9	1.2	No
F-9	B	67.2	68.5	1.3	Yes
F-10	B	70.7	71.9	1.2	Yes
F-11	B	69.0	70.2	1.2	Yes
F-12	B	70.0	70.8	0.8	Yes
F-13	B	69.4	70.4	1.0	Yes
F-14	B	69.0	69.9	0.9	Yes
F-15	B	69.8	71.0	1.2	Yes
F-16	B	69.2	70.7	1.5	Yes
F-17	B	70.9	72.2	1.3	Yes
F-18	B	68.1	69.5	1.4	Yes
F-19	B	62.7	64.1	1.4	No
F-20	B	62.4	63.6	1.2	No
F-21	B	62.5	63.2	0.7	No
F-22	B	60.8	61.6	0.8	No
F-23	B	61.4	62.1	0.7	No
F-24	B	63.2	63.7	0.5	No
F-25	B	65.1	65.7	0.6	No
F-26	B	65.3	65.9	0.6	No
F-27	B	64.8	65.4	0.6	No
F-28	B	65.0	65.6	0.6	No
F-29	B	64.7	65.3	0.6	No
F-30	B	65.8	66.5	0.7	Yes
F-31	B	65.5	66.2	0.7	Yes
F-32	B	64.5	65.0	0.5	No
F-33	B	62.8	63.5	0.7	No
F-34	B	66.6	67.3	0.7	Yes
F-35	B	67.5	68.1	0.6	Yes
F-36	B	64.6	65.4	0.8	No
F-37	B	68.0	68.5	0.5	Yes
F-38	B	71.6	71.1	-0.5	Yes
F-39	B	67.5	68.8	1.3	Yes
F-40	B	61.7	62.7	1.0	No
F-41	B	63.6	64.6	1.0	No
F-42	B	65.2	65.5	0.3	No
F-43	B	67.0	68.2	1.2	Yes
F-44	B	61.7	62.8	1.1	No
F-45	B	67.1	68.5	1.4	Yes
F-46	B	70.0	71.0	1.0	Yes
F-47	B	64.6	65.8	1.2	No
F-48	B	73.1	73.7	0.6	Yes
F-49	B	66.6	67.9	1.3	Yes
F-50	B	68.3	69.5	1.2	Yes
F-51	B	68.7	70.0	1.3	Yes
F-52	B	73.0	74.2	1.2	Yes
F-53	B	57.1	57.8	0.7	No

Receiver	Land Use Activity Category	Existing Year 2020 Level	Design Year 2045 Level	Increase	Impact
F-54	B	58.2	59.1	0.9	No
F-55	B	57.6	58.3	0.7	No
F-56	B	60.4	61.3	0.9	No
F-57	B	61.4	62.2	0.8	No
F-58	B	63.5	64.5	1.0	No
F-59	B	66.4	67.3	0.9	Yes
F-60	B	72.0	72.4	0.4	Yes
F-61	B	71.8	72.2	0.4	Yes
F-62	B	70.1	70.8	0.7	Yes
F-63	B	69.2	69.7	0.5	Yes
F-64	B	66.0	66.2	0.2	Yes
F-65	B	63.8	64.5	0.7	No
F-66	B	61.9	62.6	0.7	No
F-67	B	60.9	61.6	0.7	No
F-68	B	57.2	58.2	1.0	No
F-69	B	60.5	61.5	1.0	No
F-70	B	60.2	61.4	1.2	No
F-71	B	58.1	59.6	1.5	No
F-72	B	58.4	59.9	1.5	No
F-73	B	59.1	60.5	1.4	No
F-74	B	61.9	62.9	1.0	No
F-75	B	63.6	64.6	1.0	No
F-76	B	65.3	66.3	1.0	Yes
F-77	B	66.2	67.3	1.1	Yes
F-78	B	66.6	68.1	1.5	Yes
F-79	B	66.8	68.3	1.5	Yes
F-80	B	67.0	68.6	1.6	Yes
F-81	B	67.0	68.6	1.6	Yes
F-82	B	67.2	68.8	1.6	Yes
F-83	B	67.4	69.2	1.8	Yes
F-84	B	66.2	67.8	1.6	Yes
F-85	B	65.3	66.9	1.6	Yes
F-86	B	62.5	63.9	1.4	No
F-87	B	60.3	61.6	1.3	No
F-88	B	56.0	57.2	1.2	No
F-89	B	57.1	58.1	1.0	No
F-90	B	60.4	61.2	0.8	No
F-91	B	62.1	62.9	0.8	No
F-92	B	61.8	62.6	0.8	No
F-93	B	66.8	67.9	1.1	Yes
F-94	B	62.5	63.6	1.1	No
F-95	B	59.9	60.8	0.9	No
F-96	B	56.7	57.6	0.9	No
F-1ii	B	62.3	63.8	1.5	No
F-8ii	B	62.1	63.3	1.2	No
F-9ii	B	62.7	63.6	0.9	No
F-10ii	B	59.5	60.7	1.2	No
F-11ii	B	55.5	56.5	1.0	No
F-12ii	B	59.7	60.8	1.1	No
F-13ii	B	59.5	60.7	1.2	No
F-14ii	B	59.5	60.7	1.2	No
F-15ii	B	59.7	60.8	1.1	No
F-16ii	B	59.7	60.8	1.1	No
F-18ii	B	61.0	62.1	1.1	No
F-19ii	B	58.7	59.7	1.0	No



Receiver	Land Use Activity Category	Existing Year 2020 Level	Design Year 2045 Level	Increase	Impact
F-21ii	B	60.1	61.0	0.9	No
F-23ii	B	59.5	60.3	0.8	No
F-24ii	B	59.6	60.3	0.7	No
F-25ii	B	59.7	60.5	0.8	No
F-27ii	B	59.9	60.6	0.7	No
F-28ii	B	60.0	60.5	0.5	No
F-29ii	B	60.4	60.6	0.2	No
F-30ii	B	60.4	60.8	0.4	No
F-31ii	B	60.8	61.2	0.4	No
F-32ii	B	61.0	61.5	0.5	No
F-33ii	B	59.3	59.2	-0.1	No
F-34ii	B	61.5	61.9	0.4	No
F-35ii	B	58.2	59.0	0.8	No
F-36ii	B	61.1	62.0	0.9	No
F-37ii	B	64.0	64.7	0.7	No
F-39ii	B	65.9	67.0	1.1	Yes
F-41ii	B	65.7	66.1	0.4	Yes
F-43ii	B	61.5	62.3	0.8	No
F-45ii	B	62.6	63.8	1.2	No
F-46ii	B	63.6	64.9	1.3	No
F-47ii	B	59.8	60.5	0.7	No
F-48ii	B	65.1	66.4	1.3	Yes
F-49ii	B	60.4	61.2	0.8	No
F-50ii	B	61.2	62.0	0.8	No
F-53ii	B	55.0	55.9	0.9	No
F-55ii	B	55.8	56.6	0.8	No
F-57ii	B	58.5	59.2	0.7	No
F-58ii	B	61.6	62.2	0.6	No
F-60ii	B	61.9	62.6	0.7	No
F-67ii	B	58.8	59.7	0.9	No
F-68ii	B	55.8	56.7	0.9	No
F-69ii	B	57.7	58.9	1.2	No
F-70ii	B	57.9	59.2	1.3	No
F-71ii	B	55.7	56.9	1.2	No
F-72ii	B	56.3	57.3	1.0	No
F-73ii	B	58.2	59.7	1.5	No
F-74ii	B	60.0	61.0	1.0	No
F-77ii	B	58.2	59.0	0.8	No
F-78ii	B	58.3	59.3	1.0	No
F-79ii	B	58.2	59.3	1.1	No
F-80ii	B	58.6	59.5	0.9	No
F-82ii	B	58.5	59.5	1.0	No
F-83ii	B	58.2	59.2	1.0	No
F-87ii	B	58.9	60.0	1.1	No
F-88ii	B	55.5	56.2	0.7	No
F-89ii	B	57.6	58.7	1.1	No
F-92ii	B	60.3	61.5	1.2	No
F-93ii	B	61.0	62.1	1.1	No
F-94ii	B	66.1	66.3	0.2	Yes
F-95ii	B	66.1	66.2	0.1	Yes
F-96ii	B	57.5	58.1	0.6	No
F-1iii	B	60.8	62.2	1.4	No
F-8iii	B	60.1	61.3	1.2	No
F-9iii	B	58.8	60.3	1.5	No
F-11iii	B	53.9	55.1	1.2	No

Receiver	Land Use Activity Category	Existing Year 2020 Level	Design Year 2045 Level	Increase	Impact
F-12iii	B	54.4	55.4	1.0	No
F-13iii	B	55.3	56.3	1.0	No
F-15iii	B	53.8	54.8	1.0	No
F-14iii	B	55.2	56.2	1.0	No
F-16iii	B	54.4	55.4	1.0	No
F-18iii	B	58.7	59.4	0.7	No
F-19iii	B	57.6	58.5	0.9	No
F-21iii	B	57.0	57.9	0.9	No
F-25iii	B	56.3	56.9	0.6	No
F-27iii	B	56.7	57.2	0.5	No
F-28iii	B	56.7	57.3	0.6	No
F-29iii	B	57.2	57.8	0.6	No
F-30iii	B	57.8	58.0	0.2	No
F-31iii	B	57.7	58.0	0.3	No
F-32iii	B	58.3	58.5	0.2	No
F-33iii	B	57.5	58.0	0.5	No
F-34iii	B	60.8	61.4	0.6	No
F-35iii	B	66.7	66.8	0.1	Yes
F-36iii	B	59.8	60.6	0.8	No
F-37iii	B	61.3	62.1	0.8	No
F-39iii	B	63.1	64.2	1.1	No
F-41iii	B	58.0	58.8	0.8	No
F-45iii	B	60.8	61.2	0.4	No
F-46iii	B	60.4	60.9	0.5	No
F-48iii	B	59.6	60.4	0.8	No
F-53iii	B	53.2	53.7	0.5	No
F-55iii	B	54.3	55.2	0.9	No
F-58iii	B	55.7	56.6	0.9	No
F-60iii	B	61.3	62.0	0.7	No
F-67iii	B	58.1	59.1	1.0	No
F-68iii	B	54.6	55.8	1.2	No
F-70iii	B	56.0	57.1	1.1	No
F-72iii	B	54.9	56.1	1.2	No
F-73iii	B	57.5	58.9	1.4	No
F-74iii	B	57.5	58.7	1.2	No
F-77iii	B	56.4	57.2	0.8	No
F-79iii	B	53.3	54.2	0.9	No
F-82iii	B	53.5	54.4	0.9	No
F-83iii	B	56.7	57.7	1.0	No
F-87iii	B	57.7	58.8	1.1	No
F-89iii	B	57.2	58.2	1.0	No
F-92iii	B	57.9	59.0	1.1	No
F-93iii	B	58.5	59.5	1.0	No
F-94iii	B	65.9	66.1	0.2	Yes
F-1iv	B	59.7	60.9	1.2	No
F-8iv	B	58.9	60.1	1.2	No
F-9iv	B	57.0	58.5	1.5	No
F-11iv	B	52.7	53.6	0.9	No
F-12iv	B	53.4	54.4	1.0	No
F-15iv	B	52.6	53.6	1.0	No
F-18iv	B	58.1	59.1	1.0	No
F-19iv	B	56.5	57.4	0.9	No
F-21iv	B	56.9	57.8	0.9	No
F-25iv	B	56.6	57.2	0.6	No
F-27iv	B	55.9	56.7	0.8	No

Receiver	Land Use Activity Category	Existing Year 2020 Level	Design Year 2045 Level	Increase	Impact
F-28iv	B	56.8	57.4	0.6	No
F-29iv	B	54.6	55.0	0.4	No
F-31iv	B	55.7	56.1	0.4	No
F-33iv	B	57.3	58.1	0.8	No
F-34iv	B	58.7	59.6	0.9	No
F-36iv	B	58.4	59.1	0.7	No
F-37iv	B	60.1	60.7	0.6	No
F-39iv	B	61.9	62.9	1.0	No
F-58iv	B	53.7	54.6	0.9	No
F-60iv	B	60.2	60.8	0.6	No
F-67iv	B	57.1	58.2	1.1	No
F-70iv	B	54.1	55.2	1.1	No
F-73iv	B	56.8	58.0	1.2	No
F-74iv	B	56.2	57.6	1.4	No
F-77iv	B	55.4	56.0	0.6	No
F-83iv	B	55.7	56.7	1.0	No
F-87iv	B	56.5	57.5	1.0	No
F-89iv	B	56.2	56.8	0.6	No
F-1v	B	58.5	59.9	1.4	No
F-8v	B	58.1	59.2	1.1	No
F-9v	B	55.9	57.3	1.4	No
F-18v	B	56.3	57.2	0.9	No
F-27v	B	54.8	55.2	0.4	No
F-28v	B	56.2	56.8	0.6	No
F-29v	B	56.0	56.5	0.5	No
F-31v	B	56.6	57.2	0.6	No
F-36v	B	58.5	59.4	0.9	No
F-37v	B	58.9	59.4	0.5	No
F-39v	B	60.4	61.4	1.0	No
F-60v	B	59.0	59.7	0.7	No
F-73v	B	56.2	57.4	1.2	No
F-74v	B	55.2	56.4	1.2	No
F-77v	B	54.0	54.8	0.8	No
F-83v	B	55.1	55.9	0.8	No
F-87v	B	54.8	55.8	1.0	No
F-1vi	B	57.7	59.0	1.3	No
F-8vi	B	56.9	57.9	1.0	No
F-36vi	B	64.9	65.1	0.2	No
F-37vi	B	58.0	58.8	0.8	No
F-39vi	B	59.0	59.9	0.9	No
F-60vi	B	56.6	57.7	1.1	No
F-73vi	B	55.5	56.6	1.1	No
F-77vi	B	53.5	54.5	1.0	No
F-83vi	B	53.9	54.8	0.9	No
F-87vi	B	54.8	55.7	0.9	No
F-1vii	B	56.8	58.3	1.5	No
F-8vii	B	56.0	57.1	1.1	No
F-37vii	B	59.8	60.8	1.0	No
F-60vii	B	55.5	56.5	1.0	No
F-1viii	B	56.2	57.7	1.5	No
F-8viii	B	55.3	56.4	1.1	No

Receiver	Land Use Activity Category	Existing Year 2020 Level	Design Year 2045 Level	Increase	Impact
<b>NSA G</b>					
G-1	B	66.0	66.4	0.4	Yes
G-2	B	59.0	59.6	0.6	No
G-3	B	59.7	60.4	0.7	No
G-4	B	60.6	61.3	0.7	No
G-5	B	61.1	61.7	0.6	No
G-6	B	61.9	62.5	0.6	No
G-7	B	62.9	63.5	0.6	No
G-8	B	63.9	64.4	0.5	No
G-9	B	64.6	65.2	0.6	No
G-10	B	65.3	66.0	0.7	No
G-11	B	66.3	66.8	0.5	Yes
G-12	B	66.7	67.2	0.5	Yes
G-13	B	67.1	67.4	0.3	Yes
G-14	B	67.1	67.5	0.4	Yes
G-15	B	66.0	66.6	0.6	Yes
G-16	B	64.3	64.8	0.5	No
G-17	B	65.0	65.5	0.5	No
G-18	B	65.9	66.4	0.5	Yes
G-19	B	66.2	66.8	0.6	Yes
G-20	B	67.2	67.6	0.4	Yes
G-21	B	66.9	67.5	0.6	Yes
G-22	B	64.8	65.4	0.6	No
G-23	B	64.1	64.8	0.7	No
G-24	B	61.9	62.6	0.7	No
G-25	B	57.5	58.2	0.7	No
G-26	B	61.7	62.3	0.6	No
G-27	B	63.7	64.4	0.7	No
G-28	B	67.4	68.1	0.7	Yes
G-29	B	66.2	66.9	0.7	Yes
G-30	B	63.8	64.6	0.8	No
G-31	B	62.6	63.5	0.9	No
G-32	B	63.5	64.5	1.0	No
G-33	B	64.3	65.4	1.1	No
G-34	B	65.0	66.1	1.1	Yes
G-35	B	68.1	69.1	1.0	Yes
G-36	B	70.2	71.1	0.9	Yes
G-37	B	71.8	72.5	0.7	Yes
G-38	B	72.4	73.1	0.7	Yes
G-39	B	68.0	68.7	0.7	Yes
G-40	B	66.1	67.3	1.2	Yes
G-41	B	63.5	64.7	1.2	No
G-42	B	65.6	66.3	0.7	Yes
G-43	B	74.2	74.4	0.2	Yes
G-44	B	73.7	74.0	0.3	Yes
G-45	B	72.8	73.1	0.3	Yes
G-46	B	72.2	72.5	0.3	Yes
G-47	B	71.7	72.1	0.4	Yes
G-48	B	63.5	64.3	0.8	No
G-49	B	62.9	63.7	0.8	No
G-50	B	62.2	63.0	0.8	No
G-51	B	61.1	61.9	0.8	No

Receiver	Land Use Activity Category	Existing Year 2020 Level	Design Year 2045 Level	Increase	Impact
G-52	B	59.9	60.8	0.9	No
G-53	B	71.4	72.4	1.0	Yes
G-54	B	73.1	74.2	1.1	Yes
G-55	B	72.7	73.6	0.9	Yes
G-56	B	72.8	73.6	0.8	Yes
G-57	B	72.7	73.5	0.8	Yes
G-58	B	71.9	72.9	1.0	Yes
G-59	B	72.1	72.9	0.8	Yes
G-60	B	72.0	72.9	0.9	Yes
G-61	B	71.2	71.9	0.7	Yes
G-62	B	72.0	72.5	0.5	Yes
G-63	B	71.1	71.6	0.5	Yes
G-64	B	71.4	71.9	0.5	Yes
G-65	B	64.0	64.9	0.9	No
G-66	B	61.2	61.9	0.7	No
G-67	B	59.0	59.1	0.1	No
G-68	B	59.8	59.9	0.1	No
G-69	B	59.7	59.9	0.2	No
G-70	B	57.9	58.5	0.6	No
G-71	E	71.3	71.9	0.6	No
G-72	E	58.9	59.6	0.7	No
G-1ii	B	62.6	63.2	0.6	No
G-9ii	B	61.1	61.8	0.7	No
G-10ii	B	62.0	62.6	0.6	No
G-11ii	B	62.9	63.5	0.6	No
G-12ii	B	63.4	63.9	0.5	No
G-13ii	B	64.3	64.8	0.5	No
G-15ii	B	63.7	64.3	0.6	No
G-16ii	B	59.8	60.4	0.6	No
G-17ii	B	60.5	61.1	0.6	No
G-18ii	B	61.3	61.9	0.6	No
G-19ii	B	62.1	62.7	0.6	No
G-22ii	B	62.1	62.8	0.7	No
G-24ii	B	57.8	58.5	0.7	No
G-25ii	B	54.9	55.7	0.8	No
G-26ii	B	59.0	59.7	0.7	No
G-28ii	B	57.8	58.6	0.8	No
G-29ii	B	58.7	59.6	0.9	No
G-31ii	B	59.1	60.1	1.0	No
G-32ii	B	59.4	60.5	1.1	No
G-33ii	B	59.3	60.6	1.3	No
G-35ii	B	58.0	58.8	0.8	No
G-36ii	B	64.6	65.3	0.7	No
G-38ii	B	66.7	67.7	1.0	Yes
G-43ii	B	62.0	63.4	1.4	No
G-44ii	B	59.5	60.6	1.1	No
G-47ii	B	64.4	65.1	0.7	No
G-48ii	B	57.7	58.6	0.9	No
G-49ii	B	57.1	58.0	0.9	No
G-50ii	B	56.5	57.3	0.8	No
G-53ii	B	60.1	60.9	0.8	No
G-54ii	B	58.8	59.6	0.8	No
G-55ii	B	62.3	63.1	0.8	No

Receiver	Land Use Activity Category	Existing Year 2020 Level	Design Year 2045 Level	Increase	Impact
G-56ii	B	61.9	62.6	0.7	No
G-57ii	B	61.7	62.4	0.7	No
G-58ii	B	61.6	62.4	0.8	No
G-59ii	B	61.6	62.3	0.7	No
G-60ii	B	59.2	60.1	0.9	No
G-61ii	B	59.0	59.9	0.9	No
G-62ii	B	60.9	61.8	0.9	No
G-63ii	B	61.6	62.6	1.0	No
G-64ii	B	62.6	63.5	0.9	No
G-65ii	B	59.8	60.6	0.8	No
G-66ii	B	60.1	60.8	0.7	No
G-9iii	B	58.8	59.4	0.6	No
G-12iii	B	59.9	60.5	0.6	No
G-13iii	B	61.7	62.3	0.6	No
G-15iii	B	59.3	59.9	0.6	No
G-16iii	B	56.7	57.3	0.6	No
G-22iii	B	59.8	60.4	0.6	No
G-24iii	B	56.9	57.6	0.7	No
G-26iii	B	58.3	59.0	0.7	No
G-35iii	B	57.5	58.4	0.9	No
G-36iii	B	62.8	63.9	1.1	No
G-43iii	B	60.7	62.0	1.3	No
G-44iii	B	59.5	60.6	1.1	No
G-47iii	B	58.9	59.8	0.9	No
G-53iii	B	55.9	56.7	0.8	No
G-55iii	B	58.2	59.0	0.8	No
G-56iii	B	59.3	60.3	1.0	No
G-57iii	B	58.8	59.8	1.0	No
G-58iii	B	58.7	59.7	1.0	No
G-59iii	B	58.1	59.0	0.9	No
G-60iii	B	57.7	58.6	0.9	No
G-62iii	B	57.1	57.9	0.8	No
G-63iii	B	57.5	58.4	0.9	No
G-64iii	B	58.7	59.6	0.9	No
G-66iii	B	59.4	60.1	0.7	No
G-9iv	B	58.8	59.4	0.6	No
G-12iv	B	56.7	57.3	0.6	No
G-26iv	B	56.1	57.0	0.9	No
G-35iv	B	57.0	57.9	0.9	No
G-36iv	B	61.2	62.1	0.9	No
G-43iv	B	59.7	60.8	1.1	No
G-55iv	B	57.3	58.1	0.8	No
G-56iv	B	56.8	57.7	0.9	No
G-62iv	B	56.8	57.6	0.8	No
G-66iv	B	58.6	59.3	0.7	No
G-35v	B	56.5	57.4	0.9	No
G-36v	B	59.9	60.8	0.9	No
G-43v	B	58.2	59.2	1.0	No
G-55v	B	56.7	57.5	0.8	No
G-66v	B	57.8	58.6	0.8	No
G-35vi	B	56.5	57.4	0.9	No
G-36vi	B	58.5	59.5	1.0	No
G-36vii	B	57.8	58.8	1.0	No
G-36viii	B	57.8	59.1	1.3	No

RESULTS: SOUND LEVELS

PID 107714

ms consultants, inc. KLC 54200										29 March 2023 TNM 2.5 Calculated with TNM 2.5			
RESULTS: SOUND LEVELS PROJECT/CONTRACT: RUN: BARRIER DESIGN:													
ATMOSPHERICS:													
Receiver													
Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h			Increase over existing	Type		With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
				Calculated	Crit'n		Calculated	Crit'n	Impact				
								Sub'l Inc					
			dBA	dBA	dBA		dB	dB		dBA	dB	dB	dB

A-1	590	1	47.5	50.5	66		3.0	10	----	50.1	0.4	5	-4.6
A-2	591	1	47.7	50.7	66		3.0	10	----	50.3	0.4	5	-4.6
A-3	592	1	47.9	50.9	66		3.0	10	----	50.5	0.4	5	-4.6
A-4	593	1	48.1	51.2	66		3.1	10	----	50.7	0.5	5	-4.5
A-5	594	1	48.2	51.2	66		3.0	10	----	50.7	0.5	5	-4.5
A-6	595	1	48.7	51.7	66		3.0	10	----	51.1	0.6	5	-4.4
A-7	596	1	48.9	52.0	66		3.1	10	----	51.2	0.8	5	-4.2
A-8	597	1	49.2	52.2	66		3.0	10	----	51.2	1.0	5	-4.0
A-9	598	1	49.8	52.9	66		3.1	10	----	51.6	1.3	5	-3.7
A-10	599	1	50.1	53.2	66		3.1	10	----	51.8	1.4	5	-3.6
A-11	600	1	51.0	54.1	66		3.1	10	----	52.2	1.9	5	-3.1
A-12	601	1	51.8	55.0	66		3.2	10	----	52.5	2.5	5	-2.5
A-13	602	1	52.2	55.4	66		3.2	10	----	52.4	3.0	5	-2.0
A-14	603	1	53.1	56.3	66		3.2	10	----	52.5	3.8	5	-1.2
A-15	604	1	54.2	57.5	66		3.3	10	----	52.9	4.6	5	-0.4
A-16	605	1	55.4	58.9	66		3.5	10	----	53.3	5.6	5	0.6
A-17	606	1	56.4	59.8	66		3.4	10	----	53.7	6.1	5	1.1
A-18	607	1	58.0	61.4	66		3.4	10	----	54.5	6.9	5	1.9
A-19	608	1	59.3	63.0	66		3.7	10	----	55.2	7.8	5	2.8
A-20	609	1	61.2	65.2	66		4.0	10	----	56.3	8.9	5	3.9
A-21	610	1	62.7	66.8	66		4.1	10	Snd Lvl	57.0	9.8	5	4.8
A-22	611	1	65.0	69.6	66		4.6	10	Snd Lvl	58.4	11.2	5	6.2
A-23	612	1	58.7	62.2	66		3.5	10	----	55.1	7.1	5	2.1
A-24	613	1	61.4	65.3	66		3.9	10	----	57.2	8.1	5	3.1

**RESULTS: SOUND LEVELS**

**PID 107714**

A-25	614	1	61.7	65.6	66	3.9	10	----	57.4	8.2	5	3.2
A-26	615	1	61.8	65.6	66	3.8	10	----	57.5	8.1	5	3.1
A-27	616	1	61.7	65.5	66	3.8	10	----	57.4	8.1	5	3.1
A-28	617	1	60.7	64.4	66	3.7	10	----	56.8	7.6	5	2.6
A-29	618	1	65.8	70.5	66	4.7	10	Snd Lvl	59.2	11.3	5	6.3
A-30	619	1	61.1	64.9	66	3.8	10	----	56.6	8.3	5	3.3
A-31	620	1	59.2	63.0	66	3.8	10	----	55.7	7.3	5	2.3
A-32	621	1	56.8	60.4	66	3.6	10	----	54.6	5.8	5	0.8
A-33	622	1	55.4	58.8	66	3.4	10	----	54.1	4.7	5	-0.3
A-34	623	1	53.9	57.3	66	3.4	10	----	53.4	3.9	5	-1.1
A-35	624	1	52.6	55.8	66	3.2	10	----	52.7	3.1	5	-1.9
A-1ii	627	1	45.7	48.5	66	2.8	10	----	47.8	0.7	5	-4.3
A-2ii	628	1	45.8	48.7	66	2.9	10	----	47.7	1.0	5	-4.0
A-4ii	629	1	46.0	48.8	66	2.8	10	----	47.4	1.4	5	-3.6
A-5ii	630	1	46.3	49.2	66	2.9	10	----	47.5	1.7	5	-3.3
A-6ii	631	1	46.6	49.5	66	2.9	10	----	47.7	1.8	5	-3.2
A-7ii	632	1	47.1	50.0	66	2.9	10	----	47.9	2.1	5	-2.9
A-9ii	633	1	48.1	51.1	66	3.0	10	----	48.4	2.7	5	-2.3
A-10ii	634	1	48.7	51.7	66	3.0	10	----	48.7	3.0	5	-2.0
A-12ii	635	1	50.0	53.1	66	3.1	10	----	49.4	3.7	5	-1.3
A-13ii	636	1	50.6	53.6	66	3.0	10	----	49.5	4.1	5	-0.9
A-15ii	637	1	52.0	55.0	66	3.0	10	----	50.3	4.7	5	-0.3
A-17ii	638	1	53.6	56.7	66	3.1	10	----	51.4	5.3	5	0.3
A-18ii	639	1	52.7	55.8	66	3.1	10	----	50.2	5.6	5	0.6
A-20ii	640	1	56.5	59.9	66	3.4	10	----	53.5	6.4	5	1.4
A-25ii	641	1	55.4	58.6	66	3.2	10	----	52.2	6.4	5	1.4
A-29ii	642	1	59.7	63.1	66	3.4	10	----	56.0	7.1	5	2.1
A-30ii	643	1	57.3	60.7	66	3.4	10	----	54.3	6.4	5	1.4
A-31ii	644	1	55.5	58.7	66	3.2	10	----	53.0	5.7	5	0.7
A-32ii	645	1	54.2	57.3	66	3.1	10	----	52.1	5.2	5	0.2
A-33ii	646	1	53.3	56.3	66	3.0	10	----	51.4	4.9	5	-0.1
A-34ii	647	1	52.0	55.0	66	3.0	10	----	50.5	4.5	5	-0.5
A-35ii	648	1	51.2	54.2	66	3.0	10	----	50.0	4.2	5	-0.8
A-2iii	649	1	44.0	46.9	66	2.9	10	----	45.1	1.8	5	-3.2
A-5iii	650	1	45.0	47.9	66	2.9	10	----	45.4	2.5	5	-2.5
A-10iii	651	1	47.3	50.4	66	3.1	10	----	46.4	4.0	5	-1.0
A-13iii	652	1	48.8	52.0	66	3.2	10	----	47.3	4.7	5	-0.3
A-15iii	653	1	50.5	53.6	66	3.1	10	----	48.7	4.9	5	-0.1
A-18iii	655	1	50.6	53.7	66	3.1	10	----	48.3	5.4	5	0.4
A-25iii	656	1	54.9	57.9	66	3.0	10	----	52.0	5.9	5	0.9
A-31iii	657	1	53.4	56.6	66	3.2	10	----	50.8	5.8	5	0.8



**RESULTS: SOUND LEVELS**

**PID 107714**

A-33iii	658	1	51.7	54.8	66	3.1	10	----	49.4	5.4	5	0.4
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									
			<b>Min</b>	<b>Avg</b>	<b>Max</b>							
			<b>dB</b>	<b>dB</b>	<b>dB</b>							
All Selected		66	0.4	4.5	11.3							
All Impacted		3	9.8	10.8	11.3							
All that meet NR Goal		29	5.2	7.1	11.3							

**RESULTS: SOUND LEVELS**

**PID 107714**

ms consultants, inc. KLC 54200											29 March 2023		
											TNM 2.5		
											Calculated with TNM 2.5		

<b>RESULTS: SOUND LEVELS</b> <b>PROJECT/CONTRACT:</b>	<b>PID 107714</b>												
<b>RUN:</b>	<b>LOR-90 NSA B Design Year 2045 +</b>												
<b>BARRIER DESIGN:</b>	<b>INPUT HEIGHTS</b>												
<b>ATMOSPHERICS:</b>	<b>68 deg F, 50% RH</b>												
	<b>Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.</b>												

Receiver														
Name	No.	#DUs	Existing			No Barrier		Increase over existing		Type	With Barrier		Noise Reduction	
			LAeq1h	LAeq1h	LAeq1h	LAeq1h	Crit'n	Calculated	Crit'n	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB	
B-1	1	1	51.1	54.2	66	3.1	10	----	54.2	0.0	5	-5.0		
B-2	2	1	52.0	55.1	66	3.1	10	----	55.1	0.0	5	-5.0		
B-3	3	1	52.7	55.9	66	3.2	10	----	55.9	0.0	5	-5.0		
B-4	4	1	53.8	57.0	66	3.2	10	----	57.0	0.0	5	-5.0		
B-5	5	1	55.2	58.6	66	3.4	10	----	58.6	0.0	5	-5.0		
B-6	6	1	56.6	60.0	66	3.4	10	----	60.0	0.0	5	-5.0		
B-7	7	1	56.3	59.7	66	3.4	10	----	59.7	0.0	5	-5.0		
B-8	8	1	58.2	61.7	66	3.5	10	----	61.7	0.0	5	-5.0		
B-9	9	1	60.0	63.7	66	3.7	10	----	63.7	0.0	5	-5.0		
B-10	10	1	61.1	64.7	66	3.6	10	----	64.7	0.0	5	-5.0		
B-11	11	1	61.8	65.3	66	3.5	10	----	65.3	0.0	5	-5.0		
B-12	12	1	61.9	65.3	66	3.4	10	----	65.3	0.0	5	-5.0		
B-13	13	1	62.6	65.8	66	3.2	10	----	65.8	0.0	5	-5.0		
B-14 (Cat F)	15	1	64.0	66.8	99	2.8	10	----	66.8	0.0	5	-5.0		
B-15	16	1	61.3	64.8	66	3.5	10	----	64.8	0.0	5	-5.0		
B-16	17	1	63.8	65.3	66	1.5	10	----	65.3	0.0	5	-5.0		
B-17	18	1	62.8	64.4	66	1.6	10	----	64.4	0.0	5	-5.0		
B-18	19	1	64.7	65.8	66	1.1	10	----	65.8	0.0	5	-5.0		
B-19	20	1	63.9	65.4	66	1.5	10	----	65.4	0.0	5	-5.0		
B-20	21	1	65.2	66.4	66	1.2	10	Snd Lvl	66.4	0.0	5	-5.0		
B-21	22	1	71.2	71.6	66	0.4	10	Snd Lvl	71.6	0.0	5	-5.0		
B-22	23	1	69.3	69.6	66	0.3	10	Snd Lvl	69.6	0.0	5	-5.0		
B-23	24	1	70.6	71.1	66	0.5	10	Snd Lvl	71.1	0.0	5	-5.0		
B-24	25	1	68.8	69.5	66	0.7	10	Snd Lvl	69.5	0.0	5	-5.0		

**RESULTS: SOUND LEVELS**

**PID 107714**

B-25	26	1	59.9	60.8	66	0.9	10	----	60.8	0.0	5	-5.0
B-26	27	1	66.1	66.8	66	0.7	10	Snd Lvl	66.8	0.0	5	-5.0
B-1ii	28	1	49.7	52.4	66	2.7	10	----	52.4	0.0	5	-5.0
B-3ii	29	1	50.6	53.4	66	2.8	10	----	53.4	0.0	5	-5.0
B-4ii	30	1	51.4	54.1	66	2.7	10	----	54.1	0.0	5	-5.0
B-6ii	31	1	52.8	55.6	66	2.8	10	----	55.6	0.0	5	-5.0
B-7ii	32	1	53.7	56.4	66	2.7	10	----	56.4	0.0	5	-5.0
B-8ii	33	1	54.4	57.2	66	2.8	10	----	57.2	0.0	5	-5.0
B-9ii	34	1	55.5	58.3	66	2.8	10	----	58.3	0.0	5	-5.0
B-10ii	35	1	56.5	59.3	66	2.8	10	----	59.3	0.0	5	-5.0
B-11ii	36	1	57.4	60.2	66	2.8	10	----	60.2	0.0	5	-5.0
B-12ii	37	1	59.0	61.8	66	2.8	10	----	61.8	0.0	5	-5.0
B-14ii	38	1	61.0	63.4	66	2.4	10	----	63.4	0.0	5	-5.0
B-15ii	39	1	60.5	64.0	66	3.5	10	----	64.0	0.0	5	-5.0
B-16ii	40	1	63.1	65.1	66	2.0	10	----	65.1	0.0	5	-5.0
B-18ii	41	1	62.8	64.6	66	1.8	10	----	64.6	0.0	5	-5.0
B-22ii	42	1	66.4	67.5	66	1.1	10	Snd Lvl	67.5	0.0	5	-5.0
B-23ii	43	1	64.9	65.9	66	1.0	10	----	65.9	0.0	5	-5.0
B-24ii	44	1	63.5	64.6	66	1.1	10	----	64.6	0.0	5	-5.0
B-26ii	45	1	63.0	64.3	66	1.3	10	----	64.3	0.0	5	-5.0
B-15iii	46	1	58.0	61.7	66	3.7	10	----	61.7	0.0	5	-5.0
B-24iii	47	1	60.8	62.0	66	1.2	10	----	62.0	0.0	5	-5.0
B-15iv	48	1	57.3	60.9	66	3.6	10	----	60.9	0.0	5	-5.0
B-15v	50	1	55.8	59.3	66	3.5	10	----	59.3	0.0	5	-5.0
B-15vi	51	1	55.1	58.5	66	3.4	10	----	58.5	0.0	5	-5.0
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									
			<b>Min</b>	<b>Avg</b>	<b>Max</b>							
			<b>dB</b>	<b>dB</b>	<b>dB</b>							
All Selected		49	0.0	0.0	0.0							
All Impacted		7	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							

**RESULTS: SOUND LEVELS**

**PID 107714**

ms consultants, inc. KLC 54200	29 March 2023 TNM 2.5 Calculated with TNM 2.5											
-----------------------------------	---	--	--	--	--	--	--	--	--	--	--	--

**RESULTS: SOUND LEVELS**

<b>PROJECT/CONTRACT:</b>	PID 107714											
<b>RUN:</b>	LOR-90 NSA C Design Year 2045											
<b>BARRIER DESIGN:</b>	INPUT HEIGHTS						Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.					
<b>ATMOSPHERICS:</b>	68 deg F, 50% RH											

Receiver													
Name	No.	#DUs	Existing	No Barrier			Increase over existing		Type	With Barrier	Noise Reduction		
			L <sub>Aeq</sub> 1h	L <sub>Aeq</sub> 1h	Crit'n	Calculated	Crit'n	Impact		Calculated	Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA					dBA	dB	dB	dB
C-1	1	1	57.2	58.7	66	1.5	10	----		56.8	1.9	5	-3.1
C-2	2	1	53.9	55.3	66	1.4	10	----		52.7	2.6	5	-2.4
C-3	3	1	54.2	55.5	66	1.3	10	----		52.7	2.8	5	-2.2
C-4	4	1	54.2	55.5	66	1.3	10	----		52.4	3.1	5	-1.9
C-5	5	1	54.6	55.9	66	1.3	10	----		52.6	3.3	5	-1.7
C-6	6	1	55.0	56.2	66	1.2	10	----		52.8	3.4	5	-1.6
C-7	7	1	55.1	56.5	66	1.4	10	----		53.1	3.4	5	-1.6
C-8	8	1	70.1	69.5	66	-0.6	10	Snd Lvl		61.3	8.2	5	3.2
C-9	9	1	69.8	69.3	66	-0.5	10	Snd Lvl		61.3	8.0	5	3.0
C-10	10	1	70.6	69.8	66	-0.8	10	Snd Lvl		62.9	6.9	5	1.9
C-11	11	1	69.3	69.4	66	0.1	10	Snd Lvl		63.5	5.9	5	0.9
C-12	12	1	71.4	72.3	66	0.9	10	Snd Lvl		62.0	10.3	5	5.3
C-13	13	1	70.0	70.2	66	0.2	10	Snd Lvl		61.9	8.3	5	3.3
C-14	14	1	69.9	70.0	66	0.1	10	Snd Lvl		61.5	8.5	5	3.5
C-15	15	1	70.1	70.0	66	-0.1	10	Snd Lvl		62.5	7.5	5	2.5
C-16	16	1	70.2	70.4	66	0.2	10	Snd Lvl		65.0	5.4	5	0.4
C-8ii	17	1	55.6	56.7	66	1.1	10	----		53.1	3.6	5	-1.4
C-9ii	18	1	61.9	63.3	66	1.4	10	----		57.7	5.6	5	0.6
C-10ii	19	1	65.8	67.0	66	1.2	10	Snd Lvl		61.7	5.3	5	0.3
C-11ii	20	1	67.8	68.4	66	0.6	10	Snd Lvl		62.6	5.8	5	0.8
C-12ii	21	1	64.2	65.3	66	1.1	10	----		58.7	6.6	5	1.6
C-13ii	22	1	66.5	67.3	66	0.8	10	Snd Lvl		60.2	7.1	5	2.1
C-15ii	23	1	68.4	68.8	66	0.4	10	Snd Lvl		62.6	6.2	5	1.2
C-16ii	24	1	68.0	68.8	66	0.8	10	Snd Lvl		62.6	6.2	5	1.2

**RESULTS: SOUND LEVELS**

**PID 107714**

C-10iii	25	1	63.5	64.7	66	1.2	10	----	60.6	4.1	5	-0.9
C-11iii	26	1	65.4	66.9	66	1.5	10	Snd Lvl	62.6	4.3	5	-0.7
C-15iii	27	1	66.1	67.1	66	1.0	10	Snd Lvl	61.9	5.2	5	0.2
C-16iii	28	1	65.1	66.7	66	1.6	10	Snd Lvl	61.0	5.7	5	0.7
C-10iv	29	1	64.1	64.9	66	0.8	10	----	62.8	2.1	5	-2.9
C-11iv	30	1	61.9	63.8	66	1.9	10	----	60.0	3.8	5	-1.2
C-10v	31	1	63.6	64.4	66	0.8	10	----	62.7	1.7	5	-3.3
C-11v	32	1	59.2	61.2	66	2.0	10	----	58.0	3.2	5	-1.8
C-10vi	35	1	62.0	62.8	66	0.8	10	----	60.9	1.9	5	-3.1
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									
			<b>Min</b>	<b>Avg</b>	<b>Max</b>							
			<b>dB</b>	<b>dB</b>	<b>dB</b>							
All Selected		33	1.7	5.1	10.3							
All Impacted		17	4.3	6.8	10.3							
All that meet NR Goal		18	5.2	6.8	10.3							

**RESULTS: SOUND LEVELS**

**PID 107714**

ms consultants, inc.										29 March 2023		
KLC 54200										TNM 2.5		
										Calculated with TNM 2.5		

**RESULTS: SOUND LEVELS**

<b>PROJECT/CONTRACT:</b>	PID 107714
<b>RUN:</b>	LOR-90 NSA D Design Year 2045
<b>BARRIER DESIGN:</b>	INPUT HEIGHTS
<b>ATMOSPHERICS:</b>	68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver												
Name	No.	#DUs	No Barrier				With Barrier				Goal	Calculated minus Goal
			Existing LAeq1h	LAeq1h	Increase over existing	Type	Calculated	Noise Reduction				
			Calculated	Crit'n		Calculated	Crit'n	Impact	LAeq1h	Calculated	Goal	Calculated
						Sub'l Inc						
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
D-1	1	126	60.8	61.5	66	0.7	10	----	61.5	0.0	5	-5.0
D-2	2	18	62.6	63.1	66	0.5	10	----	63.1	0.0	5	-5.0
D-3	3	36	64.1	64.4	66	0.3	10	----	64.4	0.0	5	-5.0
D-4	4	24	66.0	66.4	66	0.4	10	Snd Lvl	66.4	0.0	5	-5.0
D-5	5	35	67.0	67.4	66	0.4	10	Snd Lvl	67.4	0.0	5	-5.0
D-6	6	1	70.8	71.0	66	0.2	10	Snd Lvl	71.0	0.0	5	-5.0
D-7	7	1	61.4	62.2	66	0.8	10	----	62.2	0.0	5	-5.0
D-8	8	1	69.4	70.3	66	0.9	10	Snd Lvl	70.3	0.0	5	-5.0
D-9	9	1	63.7	64.8	66	1.1	10	----	64.8	0.0	5	-5.0
D-10	10	1	62.2	63.0	66	0.8	10	----	63.0	0.0	5	-5.0
D-11	11	1	59.7	60.3	66	0.6	10	----	60.3	0.0	5	-5.0
D-12	12	1	59.3	59.9	66	0.6	10	----	59.9	0.0	5	-5.0
D-13	13	2	60.9	61.7	66	0.8	10	----	61.7	0.0	5	-5.0
D-14	14	2	61.7	62.3	66	0.6	10	----	62.3	0.0	5	-5.0
D-15	15	2	61.5	62.3	66	0.8	10	----	62.3	0.0	5	-5.0
D-16	16	2	61.5	62.3	66	0.8	10	----	62.3	0.0	5	-5.0
D-17	17	2	63.5	64.2	66	0.7	10	----	64.2	0.0	5	-5.0
D-18	18	2	64.5	65.1	66	0.6	10	----	65.1	0.0	5	-5.0
D-19	19	1	64.7	65.3	66	0.6	10	----	65.3	0.0	5	-5.0
D-20	20	1	63.9	64.6	66	0.7	10	----	64.6	0.0	5	-5.0
D-21	21	1	64.4	65.2	66	0.8	10	----	65.2	0.0	5	-5.0
D-22	22	1	62.6	63.6	66	1.0	10	----	63.6	0.0	5	-5.0
D-23	23	1	69.0	69.6	66	0.6	10	Snd Lvl	69.6	0.0	5	-5.0
D-24	24	1	66.0	66.2	66	0.2	10	Snd Lvl	66.2	0.0	5	-5.0

**RESULTS: SOUND LEVELS**

**PID 107714**

D-25	25	1	67.9	68.2	66	0.3	10	Snd Lvl	68.2	0.0	5	-5.0
D-1ii	30	41	55.8	56.6	66	0.8	10	----	56.6	0.0	5	-5.0
D-6ii	31	1	66.7	67.2	66	0.5	10	Snd Lvl	67.2	0.0	5	-5.0
D-7ii	32	1	59.8	60.6	66	0.8	10	----	60.6	0.0	5	-5.0
D-8ii	33	1	62.7	63.7	66	1.0	10	----	63.7	0.0	5	-5.0
D-9ii	34	1	60.6	61.8	66	1.2	10	----	61.8	0.0	5	-5.0
D-13ii	35	2	59.0	60.0	66	1.0	10	----	60.0	0.0	5	-5.0
D-17ii	36	2	61.6	62.5	66	0.9	10	----	62.5	0.0	5	-5.0
D-20ii	37	1	61.4	62.5	66	1.1	10	----	62.5	0.0	5	-5.0
D-22ii	38	1	60.0	60.8	66	0.8	10	----	60.8	0.0	5	-5.0
D-23ii	39	1	63.2	63.9	66	0.7	10	----	63.9	0.0	5	-5.0
D-6iii	40	1	61.4	62.2	66	0.8	10	----	62.2	0.0	5	-5.0
D-7iii	41	1	58.6	59.4	66	0.8	10	----	59.4	0.0	5	-5.0
D-8iii	42	1	57.3	58.5	66	1.2	10	----	58.5	0.0	5	-5.0
D-13iii	43	1	58.4	59.2	66	0.8	10	----	59.2	0.0	5	-5.0
D-20iii	44	1	60.0	60.8	66	0.8	10	----	60.8	0.0	5	-5.0
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									
			<b>Min</b>	<b>Avg</b>	<b>Max</b>							
			<b>dB</b>	<b>dB</b>	<b>dB</b>							
All Selected		322	0.0	0.0	0.0							
All Impacted		65	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							

RESULTS: SOUND LEVELS

PID 107714

ms consultants, inc. KLC 54200									29 March 2023			
									TNM 2.5			
									Calculated with TNM 2.5			

RESULTS: SOUND LEVELS

PROJECT/CONTRACT:

PID 107714

RUN:

LOR-90 NSA D DY 2045 HP Apts 2&3

BARRIER DESIGN:

INPUT HEIGHTS

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

ATMOSPHERICS:

68 deg F, 50% RH

Receiver												
Name	No.	#DUs	Existing	No Barrier		Increase over existing		Type	With Barrier		Noise Reduction	
			L <sub>Aeq</sub> 1h	L <sub>Aeq</sub> 1h	Crit'n	Crit'n	Impact		L <sub>Aeq</sub> 1h	Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
D-26A	26	1	65.5	66.3	66	0.8	10	Snd Lvl	58.5	7.8	5	2.8
D-26B	27	1	64.9	66.7	66	1.8	10	Snd Lvl	59.2	7.5	5	2.5
D-27	28	4	64.8	65.5	66	0.7	10	----	57.9	7.6	5	2.6
D-28 pool	29	10	63.4	63.8	66	0.4	10	----	59.7	4.1	5	-0.9
D-29 tennis	48	1	66.2	66.6	66	0.4	10	Snd Lvl	60.8	5.8	5	0.8
D-26Aii	49	1	61.9	62.4	66	0.5	10	----	55.3	7.1	5	2.1
D-26Aiii	50	1	59.5	58.1	66	-1.4	10	----	52.7	5.4	5	0.4
D-26Bii	51	1	63.8	65.0	66	1.2	10	----	57.9	7.1	5	2.1
D-26Biii	52	2	62.8	63.2	66	0.4	10	----	56.5	6.7	5	1.7
D-26A -2	54	1	69.1	69.4	66	0.3	10	Snd Lvl	63.1	6.3	5	1.3
D-26A -3	55	1	71.2	70.9	66	-0.3	10	Snd Lvl	67.8	3.1	5	-1.9
D-26A -4	56	1	71.9	71.3	66	-0.6	10	Snd Lvl	70.5	0.8	5	-4.2
D-26A -5	57	1	72.2	71.6	66	-0.6	10	Snd Lvl	71.6	0.0	5	-5.0
D-26Aii -2	59	1	66.5	66.5	66	0.0	10	Snd Lvl	62.3	4.2	5	-0.8
D-26Aii -3	60	1	69.8	69.8	66	0.0	10	Snd Lvl	65.7	4.1	5	-0.9
D-26Aii -4	61	1	70.7	70.4	66	-0.3	10	Snd Lvl	68.6	1.8	5	-3.2
D-26Aii -5	62	1	70.8	70.7	66	-0.1	10	Snd Lvl	70.1	0.6	5	-4.4
D-26Aiii -2	64	1	63.8	63.3	66	-0.5	10	----	61.4	1.9	5	-3.1
D-26Aiii -3	65	1	67.5	68.4	66	0.9	10	Snd Lvl	64.2	4.2	5	-0.8
D-26Aiii -4	66	1	68.9	69.1	66	0.2	10	Snd Lvl	67.0	2.1	5	-2.9
D-26Aiii -5	67	1	69.4	69.4	66	0.0	10	Snd Lvl	67.8	1.6	5	-3.4
D-26B -2	69	1	68.1	69.8	66	1.7	10	Snd Lvl	61.7	8.1	5	3.1
D-26B -3	70	1	69.5	70.9	66	1.4	10	Snd Lvl	67.0	3.9	5	-1.1
D-26B -4	71	1	71.4	72.3	66	0.9	10	Snd Lvl	71.2	1.1	5	-3.9



**RESULTS: SOUND LEVELS**

**PID 107714**

D-26B -5	72	1	71.9	72.5	66	0.6	10	Snd Lvl	72.4	0.1	5	-4.9
D-26Bii -2	74	1	65.7	67.1	66	1.4	10	Snd Lvl	59.6	7.5	5	2.5
D-26Bii -3	75	1	67.1	68.3	66	1.2	10	Snd Lvl	62.6	5.7	5	0.7
D-26Bii -4	76	1	68.6	69.6	66	1.0	10	Snd Lvl	67.1	2.5	5	-2.5
D-26Bii -5	77	1	69.3	70.0	66	0.7	10	Snd Lvl	69.0	1.0	5	-4.0
D-26Biii -2	79	2	64.4	65.2	66	0.8	10	----	57.9	7.3	5	2.3
D-26Biii -3	80	2	65.3	66.4	66	1.1	10	Snd Lvl	60.0	6.4	5	1.4
D-26Biii -4	81	2	66.3	67.3	66	1.0	10	Snd Lvl	63.6	3.7	5	-1.3
D-26Biii -5	82	2	66.9	67.7	66	0.8	10	Snd Lvl	65.7	2.0	5	-3.0
D-27 -2	84	4	66.2	66.9	66	0.7	10	Snd Lvl	60.0	6.9	5	1.9
D-27 -3	85	4	66.9	67.8	66	0.9	10	Snd Lvl	61.2	6.6	5	1.6
D-27 -4	86	4	67.0	67.9	66	0.9	10	Snd Lvl	63.8	4.1	5	-0.9
D-27 -5	87	4	67.6	68.3	66	0.7	10	Snd Lvl	66.5	1.8	5	-3.2
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									
			<b>Min</b>	<b>Avg</b>	<b>Max</b>							
			<b>dB</b>	<b>dB</b>	<b>dB</b>							
All Selected		66	0.0	4.3	8.1							
All Impacted		44	0.0	3.8	8.1							
All that meet NR Goal		28	5.4	6.9	8.1							

**RESULTS: SOUND LEVELS**

**PID 107714**

ms consultants, inc. KLC 54200										29 March 2023 TNM 2.5 Calculated with TNM 2.5			
<b>RESULTS: SOUND LEVELS</b>													
<b>PROJECT/CONTRACT:</b>										PID 107714			
<b>RUN:</b>										LOR-90 NSA E P Design Year 2045			
<b>BARRIER DESIGN:</b>										INPUT HEIGHTS			
<b>ATMOSPHERICS:</b>										68 deg F, 50% RH			
										Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.			
<b>Receiver</b>													
<b>Name</b>		<b>No.</b>	<b>#DUs</b>	<b>Existing LAeq1h</b>	<b>No Barrier LAeq1h</b>	<b>Increase over existing</b>		<b>Type</b>	<b>With Barrier</b>	<b>Noise Reduction</b>			
					<b>Calculated</b>	<b>Crit'n</b>	<b>Calculated</b>	<b>Crit'n</b>	<b>Impact</b>	<b>Calculated LAeq1h</b>	<b>Calculated</b>	<b>Goal</b>	<b>Calculated minus Goal</b>
								<b>Sub'l Inc</b>					
				<b>dB</b>	<b>dB</b>	<b>dB</b>	<b>dB</b>			<b>dB</b>	<b>dB</b>	<b>dB</b>	<b>dB</b>
E-43A picnic		43	1	62.1	63.3	66	1.2	10	----	63.3	0.0	5	-5.0
E-43B bikepath N		93	1	62.4	63.3	66	0.9	10	----	63.3	0.0	5	-5.0
E-43D bikepath S		168	1	64.6	64.8	66	0.2	10	----	64.8	0.0	5	-5.0
E-43Dii parking area		169	1	58.4	59.0	66	0.6	10	----	59.0	0.0	5	-5.0
E- 43C bikepath bridge		170	1	75.2	75.3	66	0.1	10	Snd Lvl	75.3	0.0	5	-5.0
<b>Dwelling Units</b>			<b># DUs</b>	<b>Noise Reduction</b>									
				<b>Min</b>	<b>Avg</b>	<b>Max</b>							
				<b>dB</b>	<b>dB</b>	<b>dB</b>							
All Selected			5	0.0	0.0	0.0							
All Impacted			1	0.0	0.0	0.0							
All that meet NR Goal			0	0.0	0.0	0.0							

RESULTS: SOUND LEVELS

PID 107714

ms consultants, inc. KLC 54200		29 March 2023 TNM 2.5 Calculated with TNM 2.5										
<b>RESULTS: SOUND LEVELS</b>												
<b>PROJECT/CONTRACT:</b>		PID 107714										
<b>RUN:</b>		LOR-90 NSA E DY 2045 Barriers										
<b>BARRIER DESIGN:</b>		INPUT HEIGHTS Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.										
<b>ATMOSPHERICS:</b>		68 deg F, 50% RH										
<b>Receiver</b>												
Name	No.	#DUs	Existing	No Barrier		Increase over existing		Type	With Barrier		Noise Reduction	
			LAeq1h	LAeq1h	Crit'n	Calculated	Crit'n		Calculated	LAeq1h	Calculated	Goal
				Calculated	Crit'n	Calculated	Crit'n	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
E-2	2	1	63.9	62.9	66	-1.0	10	----	62.9	0.0	5	-5.0
E-3	3	1	64.2	63.4	66	-0.8	10	----	63.5	-0.1	5	-5.1
E-4	4	1	62.4	61.8	66	-0.6	10	----	61.8	0.0	5	-5.0
E-5	5	1	61.1	60.8	66	-0.3	10	----	60.8	0.0	5	-5.0
E-6	6	1	62.0	61.7	66	-0.3	10	----	61.8	-0.1	5	-5.1
E-7	7	1	60.6	60.4	66	-0.2	10	----	60.4	0.0	5	-5.0
E-8	8	1	59.8	59.5	66	-0.3	10	----	59.3	0.2	5	-4.8
E-9	9	1	58.7	58.4	66	-0.3	10	----	58.2	0.2	5	-4.8
E-10	10	1	61.0	60.7	66	-0.3	10	----	60.6	0.1	5	-4.9
E-11	11	1	62.8	62.5	66	-0.3	10	----	62.4	0.1	5	-4.9
E-12	12	1	64.9	64.6	66	-0.3	10	----	64.5	0.1	5	-4.9
E-13	13	1	63.8	63.6	66	-0.2	10	----	63.3	0.3	5	-4.7
E-14	14	1	60.5	60.6	66	0.1	10	----	59.4	1.2	5	-3.8
E-15	15	2	67.3	68.8	66	1.5	10	Snd Lvl	63.4	5.4	5	0.4
E-16	16	2	68.3	69.6	66	1.3	10	Snd Lvl	62.8	6.8	5	1.8
E-17	17	2	70.9	72.0	66	1.1	10	Snd Lvl	63.7	8.3	5	3.3
E-18	18	2	72.2	73.2	66	1.0	10	Snd Lvl	64.0	9.2	5	4.2
E-19	19	2	71.4	72.3	66	0.9	10	Snd Lvl	63.4	8.9	5	3.9
E-20	20	1	71.4	72.3	66	0.9	10	Snd Lvl	63.3	9.0	5	4.0
E-21	21	1	71.4	72.2	66	0.8	10	Snd Lvl	63.1	9.1	5	4.1
E-22	22	2	72.3	73.1	66	0.8	10	Snd Lvl	63.3	9.8	5	4.8
E-23	23	2	71.8	72.5	66	0.7	10	Snd Lvl	62.9	9.6	5	4.6
E-24	24	2	71.8	72.5	66	0.7	10	Snd Lvl	62.7	9.8	5	4.8
E-25	25	2	71.2	71.9	66	0.7	10	Snd Lvl	62.4	9.5	5	4.5

## RESULTS: SOUND LEVELS

PID 107714

E-26	26	2	71.9	72.6	66	0.7	10	Snd Lvl	62.6	10.0	5	5.0
E-27	27	2	72.1	72.8	66	0.7	10	Snd Lvl	62.7	10.1	5	5.1
E-28	28	2	73.5	74.1	66	0.6	10	Snd Lvl	63.2	10.9	5	5.9
E-29	29	2	72.2	73.0	66	0.8	10	Snd Lvl	62.7	10.3	5	5.3
E-30	30	2	72.8	73.5	66	0.7	10	Snd Lvl	62.9	10.6	5	5.6
E-31	31	2	73.1	73.7	66	0.6	10	Snd Lvl	62.9	10.8	5	5.8
E-32	32	2	73.4	73.8	66	0.4	10	Snd Lvl	63.0	10.8	5	5.8
E-33	33	2	75.1	75.1	66	0.0	10	Snd Lvl	63.4	11.7	5	6.7
E-34	34	2	73.6	74.0	66	0.4	10	Snd Lvl	62.8	11.2	5	6.2
E-35	35	2	74.6	74.7	66	0.1	10	Snd Lvl	62.9	11.8	5	6.8
E-36	36	2	71.6	72.2	66	0.6	10	Snd Lvl	61.9	10.3	5	5.3
E-37	37	1	68.6	69.2	66	0.6	10	Snd Lvl	60.5	8.7	5	3.7
E-38	38	1	65.4	66.6	66	1.2	10	Snd Lvl	59.6	7.0	5	2.0
E-39	39	1	67.1	67.9	66	0.8	10	Snd Lvl	61.2	6.7	5	1.7
E-40	40	1	69.2	70.1	66	0.9	10	Snd Lvl	63.0	7.1	5	2.1
E-41	41	1	70.0	70.9	66	0.9	10	Snd Lvl	64.3	6.6	5	1.6
E-42	42	1	68.7	69.6	66	0.9	10	Snd Lvl	63.9	5.7	5	0.7
E-44	44	1	70.1	68.3	66	-1.8	10	Snd Lvl	58.3	10.0	5	5.0
E-45	45	1	67.7	66.6	66	-1.1	10	Snd Lvl	58.5	8.1	5	3.1
E-46	46	1	63.5	62.4	66	-1.1	10	----	57.1	5.3	5	0.3
E-47	47	1	60.5	60.0	66	-0.5	10	----	56.0	4.0	5	-1.0
E-48	48	1	59.0	58.8	66	-0.2	10	----	55.4	3.4	5	-1.6
E-49	49	1	58.0	58.6	66	0.6	10	----	55.3	3.3	5	-1.7
E-50	50	1	59.6	60.3	66	0.7	10	----	56.5	3.8	5	-1.2
E-51	51	1	54.3	55.3	66	1.0	10	----	53.6	1.7	5	-3.3
E-52	52	1	55.1	55.8	66	0.7	10	----	54.7	1.1	5	-3.9
E-53	53	1	55.8	56.8	66	1.0	10	----	54.8	2.0	5	-3.0
E-54	54	1	71.0	72.2	66	1.2	10	Snd Lvl	61.3	10.9	5	5.9
E-55	55	1	62.0	62.8	66	0.8	10	----	62.7	0.1	5	-4.9
E-4ii	57	1	61.3	60.5	66	-0.8	10	----	60.5	0.0	5	-5.0
E-5ii	58	1	59.9	59.5	66	-0.4	10	----	59.4	0.1	5	-4.9
E-7ii	59	1	58.0	57.8	66	-0.2	10	----	57.6	0.2	5	-4.8
E-8ii	60	1	57.0	56.9	66	-0.1	10	----	56.5	0.4	5	-4.6
E-9ii	61	1	56.4	56.4	66	0.0	10	----	55.9	0.5	5	-4.5
E-12ii	62	1	56.8	56.8	66	0.0	10	----	55.9	0.9	5	-4.1
E-13ii	63	1	56.5	56.7	66	0.2	10	----	55.7	1.0	5	-4.0
E-14ii	64	1	57.9	58.4	66	0.5	10	----	56.2	2.2	5	-2.8
E-15ii	65	1	59.6	60.6	66	1.0	10	----	57.6	3.0	5	-2.0
E-16ii	66	2	60.1	61.0	66	0.9	10	----	57.3	3.7	5	-1.3
E-17ii	67	1	60.9	61.8	66	0.9	10	----	57.7	4.1	5	-0.9
E-18ii	68	1	56.8	57.7	66	0.9	10	----	52.6	5.1	5	0.1

**RESULTS: SOUND LEVELS**

**PID 107714**

E-19ii	69	1	57.3	58.0	66	0.7	10	----	53.3	4.7	5	-0.3
E-20ii	70	1	56.8	57.6	66	0.8	10	----	52.8	4.8	5	-0.2
E-21ii	71	1	61.4	62.2	66	0.8	10	----	57.7	4.5	5	-0.5
E-22ii	72	1	61.2	62.0	66	0.8	10	----	61.5	0.5	5	-4.5
E-23ii	73	1	61.5	62.2	66	0.7	10	----	57.7	4.5	5	-0.5
E-24ii	74	1	61.5	62.1	66	0.6	10	----	58.9	3.2	5	-1.8
E-25ii	75	1	61.5	62.1	66	0.6	10	----	58.2	3.9	5	-1.1
E-26ii	76	1	61.5	62.1	66	0.6	10	----	59.1	3.0	5	-2.0
E-27ii	77	1	61.5	62.2	66	0.7	10	----	59.1	3.1	5	-1.9
E-28ii	78	1	61.8	62.5	66	0.7	10	----	59.2	3.3	5	-1.7
E-29ii	79	1	61.9	62.6	66	0.7	10	----	58.6	4.0	5	-1.0
E-30ii	80	1	62.0	62.7	66	0.7	10	----	58.2	4.5	5	-0.5
E-31ii	81	1	62.2	62.9	66	0.7	10	----	58.3	4.6	5	-0.4
E-32ii	82	1	62.5	63.2	66	0.7	10	----	58.3	4.9	5	-0.1
E-33ii	83	1	62.6	63.2	66	0.6	10	----	56.2	7.0	5	2.0
E-34ii	84	1	62.6	63.3	66	0.7	10	----	56.2	7.1	5	2.1
E-35ii	85	1	62.9	63.6	66	0.7	10	----	56.0	7.6	5	2.6
E-36ii	86	1	62.7	63.5	66	0.8	10	----	55.9	7.6	5	2.6
E-37ii	87	1	64.5	65.7	66	1.2	10	----	58.2	7.5	5	2.5
E-38ii	88	1	63.4	64.4	66	1.0	10	----	57.6	6.8	5	1.8
E-39ii	89	1	55.9	56.7	66	0.8	10	----	53.1	3.6	5	-1.4
E-40ii	90	1	58.4	59.0	66	0.6	10	----	55.4	3.6	5	-1.4
E-41ii	91	1	60.0	60.9	66	0.9	10	----	58.5	2.4	5	-2.6
E-42ii	92	1	65.9	66.7	66	0.8	10	Snd Lvl	62.5	4.2	5	-0.8
E-44ii	94	1	59.1	59.2	66	0.1	10	----	58.5	0.7	5	-4.3
E-45ii	95	1	55.7	56.0	66	0.3	10	----	54.9	1.1	5	-3.9
E-46ii	96	1	54.4	54.7	66	0.3	10	----	53.6	1.1	5	-3.9
E-47ii	97	1	54.5	54.8	66	0.3	10	----	53.7	1.1	5	-3.9
E-48ii	98	1	56.3	56.6	66	0.3	10	----	54.0	2.6	5	-2.4
E-49ii	99	1	55.8	56.4	66	0.6	10	----	53.8	2.6	5	-2.4
E-50ii	100	1	56.0	56.6	66	0.6	10	----	54.0	2.6	5	-2.4
E-54ii	101	1	62.3	63.0	66	0.7	10	----	59.8	3.2	5	-1.8
E-55ii	102	1	58.8	59.8	66	1.0	10	----	58.8	1.0	5	-4.0
E-12iii	103	1	56.8	56.9	66	0.1	10	----	56.1	0.8	5	-4.2
E-14iii	104	1	56.2	56.5	66	0.3	10	----	55.3	1.2	5	-3.8
E-16iii	105	1	56.8	57.5	66	0.7	10	----	53.8	3.7	5	-1.3
E-21iii	106	1	56.4	57.2	66	0.8	10	----	52.4	4.8	5	-0.2
E-22iii	107	1	56.1	57.0	66	0.9	10	----	52.2	4.8	5	-0.2
E-23iii	108	1	55.6	56.5	66	0.9	10	----	51.5	5.0	5	0.0
E-24iii	109	1	54.5	55.4	66	0.9	10	----	50.5	4.9	5	-0.1
E-25iii	110	1	57.6	58.4	66	0.8	10	----	53.0	5.4	5	0.4

**RESULTS: SOUND LEVELS**

**PID 107714**

E-26iii	111	1	57.4	58.2	66	0.8	10	----	52.5	5.7	5	0.7
E-27iii	112	1	61.7	62.4	66	0.7	10	----	60.2	2.2	5	-2.8
E-28iii	113	1	62.0	62.6	66	0.6	10	----	60.3	2.3	5	-2.7
E-29iii	114	1	57.7	58.6	66	0.9	10	----	52.4	6.2	5	1.2
E-30iii	115	1	57.9	58.7	66	0.8	10	----	52.4	6.3	5	1.3
E-31iii	116	1	58.1	58.8	66	0.7	10	----	52.6	6.2	5	1.2
E-32iii	117	1	58.2	59.0	66	0.8	10	----	52.5	6.5	5	1.5
E-33iii	118	1	58.1	59.0	66	0.9	10	----	52.4	6.6	5	1.6
E-34iii	119	1	58.5	59.4	66	0.9	10	----	52.9	6.5	5	1.5
E-35iii	120	1	59.0	60.0	66	1.0	10	----	53.5	6.5	5	1.5
E-37iii	121	1	61.9	62.9	66	1.0	10	----	56.5	6.4	5	1.4
E-38iii	122	1	61.3	62.0	66	0.7	10	----	56.0	6.0	5	1.0
E-39iii	123	1	54.8	55.4	66	0.6	10	----	51.6	3.8	5	-1.2
E-40iii	124	1	56.5	57.2	66	0.7	10	----	54.1	3.1	5	-1.9
E-41iii	125	1	59.3	60.0	66	0.7	10	----	58.2	1.8	5	-3.2
E-42iii	126	1	64.4	65.4	66	1.0	10	----	61.8	3.6	5	-1.4
E-47iii	127	1	54.8	55.2	66	0.4	10	----	54.0	1.2	5	-3.8
E-48iii	128	1	55.9	56.3	66	0.4	10	----	54.1	2.2	5	-2.8
E-49iii	129	1	55.5	56.0	66	0.5	10	----	54.3	1.7	5	-3.3
E-50iii	130	1	55.3	55.8	66	0.5	10	----	54.3	1.5	5	-3.5
E-54iii	131	1	58.7	59.3	66	0.6	10	----	57.7	1.6	5	-3.4
E-55iii	132	1	56.3	57.6	66	1.3	10	----	57.4	0.2	5	-4.8
E-12iv	133	1	55.5	55.7	66	0.2	10	----	54.8	0.9	5	-4.1
E-14iv	134	1	56.5	57.0	66	0.5	10	----	55.2	1.8	5	-3.2
E-16iv	135	1	54.8	55.5	66	0.7	10	----	52.7	2.8	5	-2.2
E-21iv	136	1	53.0	53.8	66	0.8	10	----	50.3	3.5	5	-1.5
E-24iv	137	1	52.5	53.4	66	0.9	10	----	49.0	4.4	5	-0.6
E-26iv	138	1	53.9	54.8	66	0.9	10	----	49.9	4.9	5	-0.1
E-27iv	139	1	57.5	58.2	66	0.7	10	----	52.9	5.3	5	0.3
E-28iv	140	1	58.1	58.8	66	0.7	10	----	52.6	6.2	5	1.2
E-30iv	141	1	54.2	55.0	66	0.8	10	----	49.6	5.4	5	0.4
E-32iv	142	1	54.1	54.9	66	0.8	10	----	49.6	5.3	5	0.3
E-34iv	143	1	54.5	55.6	66	1.1	10	----	50.4	5.2	5	0.2
E-37iv	144	1	59.8	60.6	66	0.8	10	----	54.6	6.0	5	1.0
E-38iv	145	1	59.9	60.7	66	0.8	10	----	54.9	5.8	5	0.8
E-40iv	146	1	56.3	56.8	66	0.5	10	----	53.5	3.3	5	-1.7
E-41iv	147	1	58.3	58.8	66	0.5	10	----	57.1	1.7	5	-3.3
E-42iv	148	1	63.4	64.4	66	1.0	10	----	61.3	3.1	5	-1.9
E-47iv	149	1	56.0	56.5	66	0.5	10	----	54.8	1.7	5	-3.3
E-48iv	150	1	55.9	56.4	66	0.5	10	----	54.3	2.1	5	-2.9
E-27v	151	1	57.5	58.3	66	0.8	10	----	52.6	5.7	5	0.7

**RESULTS: SOUND LEVELS**

**PID 107714**

E-30v	152	1	53.1	53.9	66	0.8	10	----	49.3	4.6	5	-0.4
E-37v	153	1	57.8	58.7	66	0.9	10	----	52.8	5.9	5	0.9
E-38v	154	1	58.7	59.5	66	0.8	10	----	53.9	5.6	5	0.6
E-40v	155	1	55.7	55.9	66	0.2	10	----	52.9	3.0	5	-2.0
E-41v	156	1	57.4	58.0	66	0.6	10	----	56.5	1.5	5	-3.5
E-42v	157	1	61.9	62.8	66	0.9	10	----	60.2	2.6	5	-2.4
E-37vi	158	1	56.8	57.7	66	0.9	10	----	52.0	5.7	5	0.7
E-38vi	159	1	56.7	57.6	66	0.9	10	----	52.3	5.3	5	0.3
E-40vi	160	1	55.1	55.6	66	0.5	10	----	52.3	3.3	5	-1.7
E-42vi	161	1	60.8	61.6	66	0.8	10	----	59.5	2.1	5	-2.9
E-37vii	162	1	54.0	55.0	66	1.0	10	----	50.0	5.0	5	0.0
E-38vii	163	1	55.4	56.3	66	0.9	10	----	51.2	5.1	5	0.1
E-40vii	164	1	53.6	54.6	66	1.0	10	----	52.9	1.7	5	-3.3
E-42vii	165	1	60.1	61.0	66	0.9	10	----	59.0	2.0	5	-3.0
E-42viii	166	1	57.1	58.2	66	1.1	10	----	56.8	1.4	5	-3.6
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									
			<b>Min</b>	<b>Avg</b>	<b>Max</b>							
			<b>dB</b>	<b>dB</b>	<b>dB</b>							
All Selected		183	-0.1	4.4	11.8							
All Impacted		52	4.2	9.0	11.8							
All that meet NR Goal		85	5.0	7.5	11.8							

RESULTS: SOUND LEVELS

PID 107714

ms consultants, inc. KLC 54200										29 March 2023 TNM 2.5 Calculated with TNM 2.5		
RESULTS: SOUND LEVELS PROJECT/CONTRACT: RUN: BARRIER DESIGN: ATMOSPHERICS:												

Receiver													
Name	No.	#DUs	Existing	No Barrier	Increase over existing			Type	With Barrier	Noise Reduction			
			L <sub>Aeq</sub> 1h	L <sub>Aeq</sub> 1h	Calculated	Crit'n	Calculated	Crit'n	Impact	Calculated	Calculated	Goal	Calculated
									Sub'l Inc				Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB	
F-1	1	2	63.7	65.1	66	1.4	10	----	65.1	0.0	5	-5.0	
F-2	2	1	68.0	69.4	66	1.4	10	Snd Lvl	69.4	0.0	5	-5.0	
F-3	3	1	69.2	70.9	66	1.7	10	Snd Lvl	70.9	0.0	5	-5.0	
F-4	4	2	69.3	71.0	66	1.7	10	Snd Lvl	71.0	0.0	5	-5.0	
F-5	5	1	68.7	70.1	66	1.4	10	Snd Lvl	70.1	0.0	5	-5.0	
F-6	6	2	68.2	69.3	66	1.1	10	Snd Lvl	69.3	0.0	5	-5.0	
F-7	7	1	68.6	70.1	66	1.5	10	Snd Lvl	70.1	0.0	5	-5.0	
F-8	8	2	63.7	65.0	66	1.3	10	----	65.0	0.0	5	-5.0	
F-9	9	1	67.2	68.7	66	1.5	10	Snd Lvl	68.7	0.0	5	-5.0	
F-10	10	1	70.7	72.0	66	1.3	10	Snd Lvl	72.0	0.0	5	-5.0	
F-11	11	1	69.0	70.4	66	1.4	10	Snd Lvl	70.4	0.0	5	-5.0	
F-12	12	1	70.0	71.1	66	1.1	10	Snd Lvl	71.1	0.0	5	-5.0	
F-13	13	1	69.4	70.6	66	1.2	10	Snd Lvl	70.6	0.0	5	-5.0	
F-14	14	1	69.0	70.4	66	1.4	10	Snd Lvl	70.4	0.0	5	-5.0	
F-15	15	1	69.8	71.2	66	1.4	10	Snd Lvl	71.2	0.0	5	-5.0	
F-16	16	1	69.2	70.7	66	1.5	10	Snd Lvl	70.7	0.0	5	-5.0	
F-17	17	1	70.9	72.0	66	1.1	10	Snd Lvl	72.0	0.0	5	-5.0	
F-18	18	1	68.1	69.7	66	1.6	10	Snd Lvl	69.7	0.0	5	-5.0	
F-19	19	1	62.7	64.1	66	1.4	10	----	64.1	0.0	5	-5.0	
F-20	20	1	62.4	63.6	66	1.2	10	----	63.6	0.0	5	-5.0	
F-21	21	1	62.5	63.3	66	0.8	10	----	63.3	0.0	5	-5.0	
F-22	22	1	60.8	61.5	66	0.7	10	----	61.5	0.0	5	-5.0	
F-23	23	1	61.4	62.1	66	0.7	10	----	62.1	0.0	5	-5.0	
F-24	26	1	63.2	63.8	66	0.6	10	----	63.8	0.0	5	-5.0	



**RESULTS: SOUND LEVELS**

**PID 107714**

F-25	27	1	65.1	65.7	66	0.6	10	----	65.7	0.0	5	-5.0
F-26	28	1	65.3	66.0	66	0.7	10	Snd Lvl	66.0	0.0	5	-5.0
F-27	29	1	64.8	65.5	66	0.7	10	----	65.5	0.0	5	-5.0
F-28	30	1	65.0	65.6	66	0.6	10	----	65.6	0.0	5	-5.0
F-29	31	1	64.7	65.3	66	0.6	10	----	65.3	0.0	5	-5.0
F-30	32	1	65.8	66.5	66	0.7	10	Snd Lvl	66.5	0.0	5	-5.0
F-31	33	1	65.5	66.3	66	0.8	10	Snd Lvl	66.3	0.0	5	-5.0
F-32	34	1	64.5	65.1	66	0.6	10	----	65.1	0.0	5	-5.0
F-33	35	1	62.8	63.6	66	0.8	10	----	63.6	0.0	5	-5.0
F-34	36	1	66.6	67.9	66	1.3	10	Snd Lvl	67.9	0.0	5	-5.0
F-35	37	1	67.5	68.8	66	1.3	10	Snd Lvl	68.8	0.0	5	-5.0
F-36	38	1	64.6	65.7	66	1.1	10	----	65.7	0.0	5	-5.0
F-37	39	1	68.0	69.4	66	1.4	10	Snd Lvl	69.4	0.0	5	-5.0
F-38	40	1	71.6	72.8	66	1.2	10	Snd Lvl	72.8	0.0	5	-5.0
F-39	41	1	67.5	68.8	66	1.3	10	Snd Lvl	68.8	0.0	5	-5.0
F-40	42	1	61.7	62.7	66	1.0	10	----	62.7	0.0	5	-5.0
F-41	43	1	63.6	64.8	66	1.2	10	----	64.8	0.0	5	-5.0
F-42	44	1	65.2	65.5	66	0.3	10	----	65.5	0.0	5	-5.0
F-43	45	1	67.0	68.4	66	1.4	10	Snd Lvl	68.4	0.0	5	-5.0
F-44	47	1	61.7	62.9	66	1.2	10	----	62.9	0.0	5	-5.0
F-45	48	1	67.1	68.7	66	1.6	10	Snd Lvl	68.7	0.0	5	-5.0
F-46	49	1	70.0	71.3	66	1.3	10	Snd Lvl	71.3	0.0	5	-5.0
F-47	50	1	64.6	65.9	66	1.3	10	----	65.9	0.0	5	-5.0
F-48	51	1	73.1	74.2	66	1.1	10	Snd Lvl	74.2	0.0	5	-5.0
F-49	52	1	66.6	68.2	66	1.6	10	Snd Lvl	68.2	0.0	5	-5.0
F-50	53	1	68.3	70.1	66	1.8	10	Snd Lvl	70.1	0.0	5	-5.0
F-51	54	1	68.7	70.5	66	1.8	10	Snd Lvl	70.5	0.0	5	-5.0
F-52	55	1	73.0	74.2	66	1.2	10	Snd Lvl	74.2	0.0	5	-5.0
F-53	56	2	57.1	57.9	66	0.8	10	----	57.9	0.0	5	-5.0
F-54	57	2	58.2	59.1	66	0.9	10	----	59.1	0.0	5	-5.0
F-55	58	4	57.6	58.4	66	0.8	10	----	58.4	0.0	5	-5.0
F-56	59	2	60.4	61.4	66	1.0	10	----	61.4	0.0	5	-5.0
F-57	60	2	61.4	62.3	66	0.9	10	----	62.3	0.0	5	-5.0
F-58	61	2	63.5	64.6	66	1.1	10	----	64.6	0.0	5	-5.0
F-59	62	2	66.4	67.4	66	1.0	10	Snd Lvl	67.4	0.0	5	-5.0
F-60	63	2	72.0	72.6	66	0.6	10	Snd Lvl	72.6	0.0	5	-5.0
F-61	64	2	71.8	72.4	66	0.6	10	Snd Lvl	72.4	0.0	5	-5.0
F-62	65	2	70.1	71.1	66	1.0	10	Snd Lvl	71.1	0.0	5	-5.0
F-63	77	2	69.2	70.1	66	0.9	10	Snd Lvl	70.1	0.0	5	-5.0
F-64	68	2	66.0	66.7	66	0.7	10	Snd Lvl	66.7	0.0	5	-5.0
F-65	69	2	63.8	65.1	66	1.3	10	----	65.1	0.0	5	-5.0

**RESULTS: SOUND LEVELS**

**PID 107714**

F-66	70	3	61.9	62.8	66	0.9	10	----	62.8	0.0	5	-5.0
F-67	71	2	60.9	61.8	66	0.9	10	----	61.8	0.0	5	-5.0
F-68	72	3	57.2	58.3	66	1.1	10	----	58.3	0.0	5	-5.0
F-69	73	2	60.5	61.7	66	1.2	10	----	61.7	0.0	5	-5.0
F-70	74	3	60.2	61.6	66	1.4	10	----	61.6	0.0	5	-5.0
F-71	75	2	58.1	59.7	66	1.6	10	----	59.7	0.0	5	-5.0
F-72	76	2	58.4	60.0	66	1.6	10	----	60.0	0.0	5	-5.0
F-73	78	2	59.1	60.5	66	1.4	10	----	60.5	0.0	5	-5.0
F-74	79	1	61.9	63.0	66	1.1	10	----	63.0	0.0	5	-5.0
F-75	80	1	63.6	64.8	66	1.2	10	----	64.8	0.0	5	-5.0
F-76	81	1	65.3	66.7	66	1.4	10	Snd Lvl	66.7	0.0	5	-5.0
F-77	82	1	66.2	67.8	66	1.6	10	Snd Lvl	67.8	0.0	5	-5.0
F-78	83	1	66.6	68.4	66	1.8	10	Snd Lvl	68.4	0.0	5	-5.0
F-79	84	1	66.8	68.5	66	1.7	10	Snd Lvl	68.5	0.0	5	-5.0
F-80	85	1	67.0	68.7	66	1.7	10	Snd Lvl	68.7	0.0	5	-5.0
F-81	86	1	67.0	68.7	66	1.7	10	Snd Lvl	68.7	0.0	5	-5.0
F-82	87	1	67.2	68.9	66	1.7	10	Snd Lvl	68.9	0.0	5	-5.0
F-83	91	1	67.4	69.1	66	1.7	10	Snd Lvl	69.1	0.0	5	-5.0
F-84	92	1	66.2	67.9	66	1.7	10	Snd Lvl	67.9	0.0	5	-5.0
F-85	93	1	65.3	67.0	66	1.7	10	Snd Lvl	67.0	0.0	5	-5.0
F-86	94	1	62.5	63.9	66	1.4	10	----	63.9	0.0	5	-5.0
F-87	95	1	60.3	61.6	66	1.3	10	----	61.6	0.0	5	-5.0
F-88	96	1	56.0	56.9	66	0.9	10	----	56.9	0.0	5	-5.0
F-89	97	1	57.1	58.1	66	1.0	10	----	58.1	0.0	5	-5.0
F-90	98	1	60.4	61.2	66	0.8	10	----	61.2	0.0	5	-5.0
F-91	99	1	62.1	62.8	66	0.7	10	----	62.8	0.0	5	-5.0
F-92	100	1	61.8	62.6	66	0.8	10	----	62.6	0.0	5	-5.0
F-93	101	1	66.8	67.8	66	1.0	10	Snd Lvl	67.8	0.0	5	-5.0
F-94	103	1	62.5	63.6	66	1.1	10	----	63.6	0.0	5	-5.0
F-95	103	1	59.9	60.8	66	0.9	10	----	60.8	0.0	5	-5.0
F-96	106	1	56.7	57.6	66	0.9	10	----	57.6	0.0	5	-5.0
F-1ii	107	1	62.3	63.8	66	1.5	10	----	63.8	0.0	5	-5.0
F-8ii	108	1	62.1	63.4	66	1.3	10	----	63.4	0.0	5	-5.0
F-9ii	109	1	62.7	63.8	66	1.1	10	----	63.8	0.0	5	-5.0
F-10ii	110	1	59.5	60.8	66	1.3	10	----	60.8	0.0	5	-5.0
F-11ii	111	1	55.5	56.6	66	1.1	10	----	56.6	0.0	5	-5.0
F-12ii	112	1	59.7	61.0	66	1.3	10	----	61.0	0.0	5	-5.0
F-13ii	113	1	59.5	60.8	66	1.3	10	----	60.8	0.0	5	-5.0
F-14ii	114	1	59.5	60.8	66	1.3	10	----	60.8	0.0	5	-5.0
F-15ii	115	1	59.7	61.0	66	1.3	10	----	61.0	0.0	5	-5.0
F-16ii	116	1	59.7	60.9	66	1.2	10	----	60.9	0.0	5	-5.0

**RESULTS: SOUND LEVELS**

**PID 107714**

F-18ii	117	1	61.0	62.2	66	1.2	10	----	62.2	0.0	5	-5.0
F-19ii	118	1	58.7	59.8	66	1.1	10	----	59.8	0.0	5	-5.0
F-21ii	119	1	60.1	61.0	66	0.9	10	----	61.0	0.0	5	-5.0
F-23ii	120	1	59.5	60.3	66	0.8	10	----	60.3	0.0	5	-5.0
F-24ii	121	1	59.6	60.4	66	0.8	10	----	60.4	0.0	5	-5.0
F-25ii	122	1	59.7	60.5	66	0.8	10	----	60.5	0.0	5	-5.0
F-27ii	123	1	59.9	60.7	66	0.8	10	----	60.7	0.0	5	-5.0
F-28ii	124	1	60.0	60.7	66	0.7	10	----	60.7	0.0	5	-5.0
F-29ii	125	1	60.4	60.9	66	0.5	10	----	60.9	0.0	5	-5.0
F-30ii	126	1	60.4	61.0	66	0.6	10	----	61.0	0.0	5	-5.0
F-31ii	127	1	60.8	61.4	66	0.6	10	----	61.4	0.0	5	-5.0
F-32ii	129	1	61.0	61.7	66	0.7	10	----	61.7	0.0	5	-5.0
F-33ii	131	1	59.3	59.7	66	0.4	10	----	59.7	0.0	5	-5.0
F-34ii	132	1	61.5	62.3	66	0.8	10	----	62.3	0.0	5	-5.0
F-35ii	133	1	58.2	59.0	66	0.8	10	----	59.0	0.0	5	-5.0
F-36ii	134	1	61.1	61.9	66	0.8	10	----	61.9	0.0	5	-5.0
F-37ii	135	1	64.0	65.0	66	1.0	10	----	65.0	0.0	5	-5.0
F-39ii	136	1	65.9	67.2	66	1.3	10	Snd Lvl	67.2	0.0	5	-5.0
F-41ii	137	1	65.6	66.0	66	0.4	10	Snd Lvl	66.0	0.0	5	-5.0
F-43ii	138	1	61.5	62.4	66	0.9	10	----	62.4	0.0	5	-5.0
F-45ii	139	1	62.6	63.8	66	1.2	10	----	63.8	0.0	5	-5.0
F-46ii	140	1	63.6	64.9	66	1.3	10	----	64.9	0.0	5	-5.0
F-47ii	141	1	59.8	60.5	66	0.7	10	----	60.5	0.0	5	-5.0
F-48ii	142	1	65.1	66.7	66	1.6	10	Snd Lvl	66.7	0.0	5	-5.0
F-49ii	143	1	60.4	61.2	66	0.8	10	----	61.2	0.0	5	-5.0
F-50ii	144	1	61.2	62.1	66	0.9	10	----	62.1	0.0	5	-5.0
F-53ii	145	1	55.0	56.0	66	1.0	10	----	56.0	0.0	5	-5.0
F-55ii	146	5	55.8	56.7	66	0.9	10	----	56.7	0.0	5	-5.0
F-57ii	147	4	58.5	59.3	66	0.8	10	----	59.3	0.0	5	-5.0
F-58ii	148	4	61.6	62.2	66	0.6	10	----	62.2	0.0	5	-5.0
F-60ii	149	2	61.9	62.6	66	0.7	10	----	62.6	0.0	5	-5.0
F-67ii	150	3	58.8	59.8	66	1.0	10	----	59.8	0.0	5	-5.0
F-68ii	151	4	55.8	56.8	66	1.0	10	----	56.8	0.0	5	-5.0
F-69ii	152	2	57.7	59.1	66	1.4	10	----	59.1	0.0	5	-5.0
F-70ii	155	3	57.9	59.3	66	1.4	10	----	59.3	0.0	5	-5.0
F-71ii	157	4	55.7	56.9	66	1.2	10	----	56.9	0.0	5	-5.0
F-72ii	158	4	56.3	57.5	66	1.2	10	----	57.5	0.0	5	-5.0
F-73ii	159	2	58.2	59.7	66	1.5	10	----	59.7	0.0	5	-5.0
F-74ii	160	1	60.0	61.2	66	1.2	10	----	61.2	0.0	5	-5.0
F-77ii	161	1	58.2	59.1	66	0.9	10	----	59.1	0.0	5	-5.0
F-78ii	162	1	58.3	59.3	66	1.0	10	----	59.3	0.0	5	-5.0

**RESULTS: SOUND LEVELS**

**PID 107714**

F-79ii	163	1	58.2	59.2	66	1.0	10	----	59.2	0.0	5	-5.0
F-80ii	164	1	58.6	59.6	66	1.0	10	----	59.6	0.0	5	-5.0
F-82ii	165	1	58.5	59.5	66	1.0	10	----	59.5	0.0	5	-5.0
F-83ii	166	1	58.2	59.2	66	1.0	10	----	59.2	0.0	5	-5.0
F-87ii	167	1	58.9	60.0	66	1.1	10	----	60.0	0.0	5	-5.0
F-88ii	168	1	55.5	56.4	66	0.9	10	----	56.4	0.0	5	-5.0
F-89ii	169	1	57.6	58.7	66	1.1	10	----	58.7	0.0	5	-5.0
F-92ii	170	1	60.3	61.3	66	1.0	10	----	61.3	0.0	5	-5.0
F-93ii	171	1	61.0	61.8	66	0.8	10	----	61.8	0.0	5	-5.0
F-94ii	172	1	66.1	66.3	66	0.2	10	Snd Lvl	66.3	0.0	5	-5.0
F-95ii	173	1	65.9	66.0	66	0.1	10	Snd Lvl	66.0	0.0	5	-5.0
F-96ii	174	1	57.5	58.1	66	0.6	10	----	58.1	0.0	5	-5.0
F-1iii	177	1	60.8	62.1	66	1.3	10	----	62.1	0.0	5	-5.0
F-8iii	178	1	60.1	61.4	66	1.3	10	----	61.4	0.0	5	-5.0
F-9iii	179	1	58.8	60.3	66	1.5	10	----	60.3	0.0	5	-5.0
F-11iii	180	1	53.9	55.1	66	1.2	10	----	55.1	0.0	5	-5.0
F-12iii	181	1	54.4	55.4	66	1.0	10	----	55.4	0.0	5	-5.0
F-13iii	182	1	55.3	56.3	66	1.0	10	----	56.3	0.0	5	-5.0
F-15iii	183	1	53.8	54.8	66	1.0	10	----	54.8	0.0	5	-5.0
F-14iii	184	1	55.2	56.2	66	1.0	10	----	56.2	0.0	5	-5.0
F-16iii	185	1	54.4	55.5	66	1.1	10	----	55.5	0.0	5	-5.0
F-18iii	186	1	58.7	59.6	66	0.9	10	----	59.6	0.0	5	-5.0
F-19iii	187	1	57.6	58.5	66	0.9	10	----	58.5	0.0	5	-5.0
F-21iii	188	1	57.0	57.9	66	0.9	10	----	57.9	0.0	5	-5.0
F-25iii	189	1	56.3	57.0	66	0.7	10	----	57.0	0.0	5	-5.0
F-27iii	190	1	56.7	57.6	66	0.9	10	----	57.6	0.0	5	-5.0
F-28iii	191	1	56.7	57.6	66	0.9	10	----	57.6	0.0	5	-5.0
F-29iii	192	1	57.2	58.1	66	0.9	10	----	58.1	0.0	5	-5.0
F-30iii	193	1	57.8	58.5	66	0.7	10	----	58.5	0.0	5	-5.0
F-31iii	194	1	57.7	58.3	66	0.6	10	----	58.3	0.0	5	-5.0
F-32iii	195	1	58.3	58.6	66	0.3	10	----	58.6	0.0	5	-5.0
F-33iii	196	1	57.5	58.3	66	0.8	10	----	58.3	0.0	5	-5.0
F-34iii	197	1	60.8	61.6	66	0.8	10	----	61.6	0.0	5	-5.0
F-35iii	198	1	66.7	66.8	66	0.1	10	Snd Lvl	66.8	0.0	5	-5.0
F-36iii	199	1	59.8	60.7	66	0.9	10	----	60.7	0.0	5	-5.0
F-37iii	200	1	61.3	62.1	66	0.8	10	----	62.1	0.0	5	-5.0
F-39iii	201	1	63.1	64.2	66	1.1	10	----	64.2	0.0	5	-5.0
F-41iii	202	1	58.0	58.8	66	0.8	10	----	58.8	0.0	5	-5.0
F-45iii	203	1	60.8	61.3	66	0.5	10	----	61.3	0.0	5	-5.0
F-46iii	204	1	60.4	60.9	66	0.5	10	----	60.9	0.0	5	-5.0
F-48iii	205	1	59.6	60.5	66	0.9	10	----	60.5	0.0	5	-5.0

**RESULTS: SOUND LEVELS**

**PID 107714**

F-53iii	207	5	53.2	53.8	66	0.6	10	----	53.8	0.0	5	-5.0
F-55iii	209	5	54.3	55.3	66	1.0	10	----	55.3	0.0	5	-5.0
F-58iii	210	4	55.7	56.6	66	0.9	10	----	56.6	0.0	5	-5.0
F-60iii	211	2	61.3	62.1	66	0.8	10	----	62.1	0.0	5	-5.0
F-67iii	212	2	58.1	59.4	66	1.3	10	----	59.4	0.0	5	-5.0
F-68iii	213	9	54.6	56.1	66	1.5	10	----	56.1	0.0	5	-5.0
F-70iii	214	4	56.0	57.2	66	1.2	10	----	57.2	0.0	5	-5.0
F-72iii	215	4	54.9	56.1	66	1.2	10	----	56.1	0.0	5	-5.0
F-73iii	216	2	57.5	59.0	66	1.5	10	----	59.0	0.0	5	-5.0
F-74iii	217	1	57.5	58.8	66	1.3	10	----	58.8	0.0	5	-5.0
F-77iii	218	1	56.4	57.3	66	0.9	10	----	57.3	0.0	5	-5.0
F-79iii	219	2	53.3	54.3	66	1.0	10	----	54.3	0.0	5	-5.0
F-82iii	220	2	53.5	54.4	66	0.9	10	----	54.4	0.0	5	-5.0
F-83iii	221	1	56.7	57.7	66	1.0	10	----	57.7	0.0	5	-5.0
F-87iii	222	1	57.7	58.8	66	1.1	10	----	58.8	0.0	5	-5.0
F-89iii	223	1	57.2	58.0	66	0.8	10	----	58.0	0.0	5	-5.0
F-92iii	224	1	57.9	58.9	66	1.0	10	----	58.9	0.0	5	-5.0
F-93iii	225	1	58.5	59.5	66	1.0	10	----	59.5	0.0	5	-5.0
F-94iii	226	1	65.9	66.1	66	0.2	10	Snd Lvl	66.1	0.0	5	-5.0
F-1iv	227	2	59.7	60.9	66	1.2	10	----	60.9	0.0	5	-5.0
F-8iv	228	2	58.9	60.1	66	1.2	10	----	60.1	0.0	5	-5.0
F-9iv	229	1	57.0	58.6	66	1.6	10	----	58.6	0.0	5	-5.0
F-11iv	230	1	52.7	53.7	66	1.0	10	----	53.7	0.0	5	-5.0
F-12iv	231	1	53.4	54.4	66	1.0	10	----	54.4	0.0	5	-5.0
F-15iv	232	1	52.6	53.6	66	1.0	10	----	53.6	0.0	5	-5.0
F-18iv	233	1	58.1	59.1	66	1.0	10	----	59.1	0.0	5	-5.0
F-19iv	234	1	56.5	57.4	66	0.9	10	----	57.4	0.0	5	-5.0
F-21iv	235	1	56.9	57.8	66	0.9	10	----	57.8	0.0	5	-5.0
F-25iv	236	1	56.6	57.4	66	0.8	10	----	57.4	0.0	5	-5.0
F-27iv	238	1	55.9	56.8	66	0.9	10	----	56.8	0.0	5	-5.0
F-28iv	240	1	56.8	57.7	66	0.9	10	----	57.7	0.0	5	-5.0
F-29iv	241	1	54.6	55.4	66	0.8	10	----	55.4	0.0	5	-5.0
F-31iv	242	1	55.7	56.3	66	0.6	10	----	56.3	0.0	5	-5.0
F-33iv	243	1	57.3	58.1	66	0.8	10	----	58.1	0.0	5	-5.0
F-34iv	244	1	58.7	59.6	66	0.9	10	----	59.6	0.0	5	-5.0
F-36iv	245	1	58.4	59.0	66	0.6	10	----	59.0	0.0	5	-5.0
F-37iv	246	1	60.1	60.7	66	0.6	10	----	60.7	0.0	5	-5.0
F-39iv	247	1	61.9	63.0	66	1.1	10	----	63.0	0.0	5	-5.0
F-58iv	248	9	53.7	54.6	66	0.9	10	----	54.6	0.0	5	-5.0
F-60iv	249	5	60.2	60.8	66	0.6	10	----	60.8	0.0	5	-5.0
F-67iv	250	2	57.1	58.3	66	1.2	10	----	58.3	0.0	5	-5.0

**RESULTS: SOUND LEVELS**

**PID 107714**

F-70iv	251	10	54.1	55.4	66	1.3	10	----	55.4	0.0	5	-5.0
F-73iv	252	2	56.8	58.1	66	1.3	10	----	58.1	0.0	5	-5.0
F-74iv	253	1	56.2	57.7	66	1.5	10	----	57.7	0.0	5	-5.0
F-77iv	254	1	55.4	56.0	66	0.6	10	----	56.0	0.0	5	-5.0
F-83iv	255	1	55.7	56.7	66	1.0	10	----	56.7	0.0	5	-5.0
F-87iv	256	1	56.5	57.5	66	1.0	10	----	57.5	0.0	5	-5.0
F-89iv	257	1	56.2	57.0	66	0.8	10	----	57.0	0.0	5	-5.0
F-1v	258	1	58.5	59.8	66	1.3	10	----	59.8	0.0	5	-5.0
F-8v	259	1	58.1	59.3	66	1.2	10	----	59.3	0.0	5	-5.0
F-9v	260	1	55.9	57.2	66	1.3	10	----	57.2	0.0	5	-5.0
F-18v	261	1	56.3	57.3	66	1.0	10	----	57.3	0.0	5	-5.0
F-27v	262	1	54.8	55.3	66	0.5	10	----	55.3	0.0	5	-5.0
F-28v	263	1	56.2	57.1	66	0.9	10	----	57.1	0.0	5	-5.0
F-29v	264	1	56.0	56.6	66	0.6	10	----	56.6	0.0	5	-5.0
F-31v	265	1	56.6	57.4	66	0.8	10	----	57.4	0.0	5	-5.0
F-36v	266	1	58.5	59.4	66	0.9	10	----	59.4	0.0	5	-5.0
F-37v	267	1	58.9	59.6	66	0.7	10	----	59.6	0.0	5	-5.0
F-39v	269	1	60.4	61.5	66	1.1	10	----	61.5	0.0	5	-5.0
F-60v	272	5	59.0	59.9	66	0.9	10	----	59.9	0.0	5	-5.0
F-73v	273	2	56.2	57.5	66	1.3	10	----	57.5	0.0	5	-5.0
F-74v	274	1	55.2	56.4	66	1.2	10	----	56.4	0.0	5	-5.0
F-77v	275	2	54.0	54.9	66	0.9	10	----	54.9	0.0	5	-5.0
F-83v	276	1	55.1	55.9	66	0.8	10	----	55.9	0.0	5	-5.0
F-87v	277	1	54.8	55.8	66	1.0	10	----	55.8	0.0	5	-5.0
F-1vi	278	1	57.7	59.0	66	1.3	10	----	59.0	0.0	5	-5.0
F-8vi	279	1	56.9	58.0	66	1.1	10	----	58.0	0.0	5	-5.0
F-36vi	280	1	64.9	65.1	66	0.2	10	----	65.1	0.0	5	-5.0
F-37vi	281	1	58.0	58.9	66	0.9	10	----	58.9	0.0	5	-5.0
F-39vi	282	1	59.0	59.9	66	0.9	10	----	59.9	0.0	5	-5.0
F-60vi	283	4	56.6	57.7	66	1.1	10	----	57.7	0.0	5	-5.0
F-73vi	284	2	55.5	56.7	66	1.2	10	----	56.7	0.0	5	-5.0
F-77vi	285	1	53.5	54.6	66	1.1	10	----	54.6	0.0	5	-5.0
F-83vi	286	2	53.9	54.8	66	0.9	10	----	54.8	0.0	5	-5.0
F-87vi	287	2	54.8	55.7	66	0.9	10	----	55.7	0.0	5	-5.0
F-1vii	288	2	56.8	58.3	66	1.5	10	----	58.3	0.0	5	-5.0
F-8vii	289	2	56.0	57.1	66	1.1	10	----	57.1	0.0	5	-5.0
F-37vii	290	1	59.8	60.7	66	0.9	10	----	60.7	0.0	5	-5.0
F-60vii	291	4	55.5	56.6	66	1.1	10	----	56.6	0.0	5	-5.0
F-1viii	294	2	56.2	57.8	66	1.6	10	----	57.8	0.0	5	-5.0
F-8viii	299	2	55.3	56.4	66	1.1	10	----	56.4	0.0	5	-5.0
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									

**RESULTS: SOUND LEVELS**

PID 107714

			Min	Avg	Max							
			dB	dB	dB							
All Selected		399	0.0	0.0	0.0							
All Impacted		64	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							

RESULTS: SOUND LEVELS

PID 107714

ms consultants, inc. KLC 54200													29 March 2023 TNM 2.5 Calculated with TNM 2.5												
RESULTS: SOUND LEVELS PROJECT/CONTRACT:			PID 107714																						
RUN:			LOR-90 NSA G Design Year 2045																						
BARRIER DESIGN:			INPUT HEIGHTS						Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.																
ATMOSPHERICS:			68 deg F, 50% RH																						
Receiver																									
Name													No.	#DUs	Existing LAeq1h	No Barrier LAeq1h	Increase over existing		Type	With Barrier LAeq1h	Noise Reduction		Calculated	Goal	Calculated minus Goal
															Calculated	Crit'n	Calculated	Crit'n	Impact	Calculated	Calculated	Goal	Calculated		
															dB	dB	dB	dB		dB	dB	dB	dB	dB	
G-1	161	1	66.0	66.4	66	0.4	10	Snd Lvl	66.4	0.0	5	-5.0													
G-2	162	1	59.0	59.6	66	0.6	10	----	59.6	0.0	5	-5.0													
G-3	163	1	59.7	60.4	66	0.7	10	----	60.4	0.0	5	-5.0													
G-4	164	1	60.6	61.3	66	0.7	10	----	61.3	0.0	5	-5.0													
G-5	165	1	61.1	61.7	66	0.6	10	----	61.7	0.0	5	-5.0													
G-6	166	1	61.9	62.5	66	0.6	10	----	62.5	0.0	5	-5.0													
G-7	167	1	62.9	63.5	66	0.6	10	----	63.5	0.0	5	-5.0													
G-8	168	1	63.9	64.4	66	0.5	10	----	64.4	0.0	5	-5.0													
G-9	169	1	64.6	65.2	66	0.6	10	----	65.2	0.0	5	-5.0													
G-10	170	1	65.3	66.0	66	0.7	10	Snd Lvl	66.0	0.0	5	-5.0													
G-11	171	1	66.3	66.8	66	0.5	10	Snd Lvl	66.8	0.0	5	-5.0													
G-12	172	1	66.7	67.2	66	0.5	10	Snd Lvl	67.2	0.0	5	-5.0													
G-13	173	1	67.1	67.4	66	0.3	10	Snd Lvl	67.4	0.0	5	-5.0													
G-14	174	1	67.1	67.5	66	0.4	10	Snd Lvl	67.5	0.0	5	-5.0													
G-15	175	1	66.0	66.6	66	0.6	10	Snd Lvl	66.6	0.0	5	-5.0													
G-16	176	1	64.3	64.8	66	0.5	10	----	64.8	0.0	5	-5.0													
G-17	177	1	65.0	65.5	66	0.5	10	----	65.5	0.0	5	-5.0													
G-18	178	1	65.9	66.4	66	0.5	10	Snd Lvl	66.4	0.0	5	-5.0													
G-19	179	1	66.2	66.8	66	0.6	10	Snd Lvl	66.8	0.0	5	-5.0													
G-20	180	1	67.2	67.6	66	0.4	10	Snd Lvl	67.6	0.0	5	-5.0													
G-21	181	1	66.9	67.5	66	0.6	10	Snd Lvl	67.5	0.0	5	-5.0													
G-22	182	1	64.8	65.4	66	0.6	10	----	65.4	0.0	5	-5.0													
G-23	183	1	64.1	64.8	66	0.7	10	----	64.8	0.0	5	-5.0													
G-24	184	1	61.9	62.6	66	0.7	10	----	62.6	0.0	5	-5.0													



**RESULTS: SOUND LEVELS**

**PID 107714**

G-25	185	1	57.5	58.2	66	0.7	10	----	58.2	0.0	5	-5.0
G-26	186	1	61.7	62.3	66	0.6	10	----	62.3	0.0	5	-5.0
G-27	187	1	63.7	64.4	66	0.7	10	----	64.4	0.0	5	-5.0
G-28	188	1	67.4	68.1	66	0.7	10	Snd Lvl	68.1	0.0	5	-5.0
G-29	189	1	66.2	66.9	66	0.7	10	Snd Lvl	66.9	0.0	5	-5.0
G-30	190	1	63.8	64.6	66	0.8	10	----	64.6	0.0	5	-5.0
G-31	191	1	62.6	63.5	66	0.9	10	----	63.5	0.0	5	-5.0
G-32	192	1	63.5	64.5	66	1.0	10	----	64.5	0.0	5	-5.0
G-33	193	1	64.3	65.4	66	1.1	10	----	65.4	0.0	5	-5.0
G-34	194	1	65.0	66.1	66	1.1	10	Snd Lvl	66.1	0.0	5	-5.0
G-35	195	1	68.1	69.1	66	1.0	10	Snd Lvl	69.1	0.0	5	-5.0
G-36	196	1	70.2	71.1	66	0.9	10	Snd Lvl	71.1	0.0	5	-5.0
G-37	197	1	71.8	72.5	66	0.7	10	Snd Lvl	72.5	0.0	5	-5.0
G-38	198	1	72.4	73.1	66	0.7	10	Snd Lvl	73.1	0.0	5	-5.0
G-39	199	1	68.0	68.7	66	0.7	10	Snd Lvl	68.7	0.0	5	-5.0
G-40	200	1	66.1	67.3	66	1.2	10	Snd Lvl	67.3	0.0	5	-5.0
G-41	201	1	63.5	64.7	66	1.2	10	----	64.7	0.0	5	-5.0
G-42	202	1	65.6	66.3	66	0.7	10	Snd Lvl	66.3	0.0	5	-5.0
G-43	203	1	74.2	74.4	66	0.2	10	Snd Lvl	74.4	0.0	5	-5.0
G-44	204	1	73.7	74.0	66	0.3	10	Snd Lvl	74.0	0.0	5	-5.0
G-45	205	1	72.8	73.1	66	0.3	10	Snd Lvl	73.1	0.0	5	-5.0
G-46	206	1	72.2	72.5	66	0.3	10	Snd Lvl	72.5	0.0	5	-5.0
G-47	207	1	71.7	72.1	66	0.4	10	Snd Lvl	72.1	0.0	5	-5.0
G-48	209	1	63.5	64.3	66	0.8	10	----	64.3	0.0	5	-5.0
G-49	210	1	62.9	63.7	66	0.8	10	----	63.7	0.0	5	-5.0
G-50	211	1	62.2	63.0	66	0.8	10	----	63.0	0.0	5	-5.0
G-51	212	1	61.1	61.9	66	0.8	10	----	61.9	0.0	5	-5.0
G-52	213	1	59.9	60.8	66	0.9	10	----	60.8	0.0	5	-5.0
G-53	214	1	71.4	72.4	66	1.0	10	Snd Lvl	72.4	0.0	5	-5.0
G-54	215	1	73.1	74.2	66	1.1	10	Snd Lvl	74.2	0.0	5	-5.0
G-55	216	1	72.7	73.6	66	0.9	10	Snd Lvl	73.6	0.0	5	-5.0
G-56	217	1	72.8	73.6	66	0.8	10	Snd Lvl	73.6	0.0	5	-5.0
G-57	218	1	72.7	73.5	66	0.8	10	Snd Lvl	73.5	0.0	5	-5.0
G-58	219	1	71.9	72.9	66	1.0	10	Snd Lvl	72.9	0.0	5	-5.0
G-59	220	1	72.1	72.9	66	0.8	10	Snd Lvl	72.9	0.0	5	-5.0
G-60	221	1	72.0	72.9	66	0.9	10	Snd Lvl	72.9	0.0	5	-5.0
G-61	222	1	71.2	71.9	66	0.7	10	Snd Lvl	71.9	0.0	5	-5.0
G-62	223	1	72.0	72.5	66	0.5	10	Snd Lvl	72.5	0.0	5	-5.0
G-63	224	1	71.1	71.6	66	0.5	10	Snd Lvl	71.6	0.0	5	-5.0
G-64	225	1	71.4	71.9	66	0.5	10	Snd Lvl	71.9	0.0	5	-5.0
G-65	226	1	64.0	64.9	66	0.9	10	----	64.9	0.0	5	-5.0

**RESULTS: SOUND LEVELS**

**PID 107714**

G-66	227	1	61.2	61.9	66	0.7	10	----	61.9	0.0	5	-5.0
G-67	228	1	59.0	59.1	66	0.1	10	----	59.1	0.0	5	-5.0
G-68	229	1	59.8	59.9	66	0.1	10	----	59.9	0.0	5	-5.0
G-69	230	1	59.7	59.9	66	0.2	10	----	59.9	0.0	5	-5.0
G-70	231	1	57.9	58.5	66	0.6	10	----	58.5	0.0	5	-5.0
G-71	232	1	71.3	71.9	66	0.6	10	Snd Lvl	71.9	0.0	5	-5.0
G-72	233	1	58.9	59.6	66	0.7	10	----	59.6	0.0	5	-5.0
G-1ii	234	1	62.6	63.2	66	0.6	10	----	63.2	0.0	5	-5.0
G-9ii	235	1	61.1	61.8	66	0.7	10	----	61.8	0.0	5	-5.0
G-10ii	236	1	62.0	62.6	66	0.6	10	----	62.6	0.0	5	-5.0
G-11ii	237	1	62.9	63.5	66	0.6	10	----	63.5	0.0	5	-5.0
G-12ii	238	1	63.4	63.9	66	0.5	10	----	63.9	0.0	5	-5.0
G-13ii	239	1	64.3	64.8	66	0.5	10	----	64.8	0.0	5	-5.0
G-15ii	240	1	63.7	64.3	66	0.6	10	----	64.3	0.0	5	-5.0
G-16ii	241	1	59.8	60.4	66	0.6	10	----	60.4	0.0	5	-5.0
G-17ii	242	1	60.5	61.1	66	0.6	10	----	61.1	0.0	5	-5.0
G-18ii	243	1	61.3	61.9	66	0.6	10	----	61.9	0.0	5	-5.0
G-19ii	244	1	62.1	62.7	66	0.6	10	----	62.7	0.0	5	-5.0
G-22ii	245	1	62.1	62.8	66	0.7	10	----	62.8	0.0	5	-5.0
G-24ii	246	1	57.8	58.5	66	0.7	10	----	58.5	0.0	5	-5.0
G-25ii	247	1	54.9	55.7	66	0.8	10	----	55.7	0.0	5	-5.0
G-26ii	248	1	59.0	59.7	66	0.7	10	----	59.7	0.0	5	-5.0
G-28ii	249	1	57.8	58.6	66	0.8	10	----	58.6	0.0	5	-5.0
G-29ii	250	1	58.7	59.6	66	0.9	10	----	59.6	0.0	5	-5.0
G-31ii	251	1	59.1	60.1	66	1.0	10	----	60.1	0.0	5	-5.0
G-32ii	252	1	59.4	60.5	66	1.1	10	----	60.5	0.0	5	-5.0
G-33ii	253	1	59.3	60.6	66	1.3	10	----	60.6	0.0	5	-5.0
G-35ii	254	1	58.0	58.8	66	0.8	10	----	58.8	0.0	5	-5.0
G-36ii	255	1	64.6	65.3	66	0.7	10	----	65.3	0.0	5	-5.0
G-38ii	256	1	66.7	67.7	66	1.0	10	Snd Lvl	67.7	0.0	5	-5.0
G-43ii	257	1	62.0	63.4	66	1.4	10	----	63.4	0.0	5	-5.0
G-44ii	258	1	59.5	60.6	66	1.1	10	----	60.6	0.0	5	-5.0
G-47ii	259	1	64.4	65.1	66	0.7	10	----	65.1	0.0	5	-5.0
G-48ii	260	1	57.7	58.6	66	0.9	10	----	58.6	0.0	5	-5.0
G-49ii	261	1	57.1	58.0	66	0.9	10	----	58.0	0.0	5	-5.0
G-50ii	262	1	56.5	57.3	66	0.8	10	----	57.3	0.0	5	-5.0
G-53ii	263	1	60.1	60.9	66	0.8	10	----	60.9	0.0	5	-5.0
G-54ii	264	1	58.8	59.6	66	0.8	10	----	59.6	0.0	5	-5.0
G-55ii	265	1	62.3	63.1	66	0.8	10	----	63.1	0.0	5	-5.0
G-56ii	266	1	61.9	62.6	66	0.7	10	----	62.6	0.0	5	-5.0
G-57ii	261	1	61.7	62.4	66	0.7	10	----	62.4	0.0	5	-5.0

**RESULTS: SOUND LEVELS**

**PID 107714**

G-58ii	267	1	61.6	62.4	66	0.8	10	----	62.4	0.0	5	-5.0
G-59ii	268	1	61.6	62.3	66	0.7	10	----	62.3	0.0	5	-5.0
G-60ii	269	1	59.2	60.1	66	0.9	10	----	60.1	0.0	5	-5.0
G-61ii	270	1	59.0	59.9	66	0.9	10	----	59.9	0.0	5	-5.0
G-62ii	271	1	60.9	61.8	66	0.9	10	----	61.8	0.0	5	-5.0
G-63ii	272	1	61.6	62.6	66	1.0	10	----	62.6	0.0	5	-5.0
G-64ii	273	1	62.6	63.5	66	0.9	10	----	63.5	0.0	5	-5.0
G-65ii	274	1	59.8	60.6	66	0.8	10	----	60.6	0.0	5	-5.0
G-66ii	275	1	60.1	60.8	66	0.7	10	----	60.8	0.0	5	-5.0
G-9iii	276	1	58.8	59.4	66	0.6	10	----	59.4	0.0	5	-5.0
G-12iii	277	1	59.9	60.5	66	0.6	10	----	60.5	0.0	5	-5.0
G-13iii	278	1	61.7	62.3	66	0.6	10	----	62.3	0.0	5	-5.0
G-15iii	279	1	59.3	59.9	66	0.6	10	----	59.9	0.0	5	-5.0
G-16iii	280	1	56.7	57.3	66	0.6	10	----	57.3	0.0	5	-5.0
G-22iii	281	1	59.8	60.4	66	0.6	10	----	60.4	0.0	5	-5.0
G-24iii	282	1	56.9	57.6	66	0.7	10	----	57.6	0.0	5	-5.0
G-26iii	283	1	58.3	59.0	66	0.7	10	----	59.0	0.0	5	-5.0
G-35iii	284	1	57.5	58.4	66	0.9	10	----	58.4	0.0	5	-5.0
G-36iii	285	1	62.8	63.9	66	1.1	10	----	63.9	0.0	5	-5.0
G-43iii	286	1	60.7	62.0	66	1.3	10	----	62.0	0.0	5	-5.0
G-44iii	287	1	59.5	60.6	66	1.1	10	----	60.6	0.0	5	-5.0
G-47iii	288	1	58.9	59.8	66	0.9	10	----	59.8	0.0	5	-5.0
G-53iii	289	1	55.9	56.7	66	0.8	10	----	56.7	0.0	5	-5.0
G-55iii	290	1	58.2	59.0	66	0.8	10	----	59.0	0.0	5	-5.0
G-56iii	291	1	59.3	60.3	66	1.0	10	----	60.3	0.0	5	-5.0
G-57iii	292	1	58.8	59.8	66	1.0	10	----	59.8	0.0	5	-5.0
G-58iii	293	1	58.7	59.7	66	1.0	10	----	59.7	0.0	5	-5.0
G-59iii	294	1	58.1	59.0	66	0.9	10	----	59.0	0.0	5	-5.0
G-60iii	295	1	57.7	58.6	66	0.9	10	----	58.6	0.0	5	-5.0
G-62iii	296	1	57.1	57.9	66	0.8	10	----	57.9	0.0	5	-5.0
G-63iii	297	1	57.5	58.4	66	0.9	10	----	58.4	0.0	5	-5.0
G-64iii	298	1	58.7	59.6	66	0.9	10	----	59.6	0.0	5	-5.0
G-66iii	299	1	59.4	60.1	66	0.7	10	----	60.1	0.0	5	-5.0
G-9iv	300	1	58.8	59.4	66	0.6	10	----	59.4	0.0	5	-5.0
G-12iv	301	1	56.7	57.3	66	0.6	10	----	57.3	0.0	5	-5.0
G-26iv	302	1	56.1	57.0	66	0.9	10	----	57.0	0.0	5	-5.0
G-35iv	303	1	57.0	57.9	66	0.9	10	----	57.9	0.0	5	-5.0
G-36iv	304	1	61.2	62.1	66	0.9	10	----	62.1	0.0	5	-5.0
G-43iv	306	1	59.7	60.8	66	1.1	10	----	60.8	0.0	5	-5.0
G-55iv	307	1	57.3	58.1	66	0.8	10	----	58.1	0.0	5	-5.0
G-56iv	308	1	56.8	57.7	66	0.9	10	----	57.7	0.0	5	-5.0

**RESULTS: SOUND LEVELS**

**PID 107714**

G-62iv	309	1	56.8	57.6	66	0.8	10	----	57.6	0.0	5	-5.0
G-66iv	310	1	58.6	59.3	66	0.7	10	----	59.3	0.0	5	-5.0
G-35v	311	1	56.5	57.4	66	0.9	10	----	57.4	0.0	5	-5.0
G-36v	312	1	59.9	60.8	66	0.9	10	----	60.8	0.0	5	-5.0
G-43v	313	1	58.2	59.2	66	1.0	10	----	59.2	0.0	5	-5.0
G-55v	314	1	56.7	57.5	66	0.8	10	----	57.5	0.0	5	-5.0
G-66v	315	1	57.8	58.6	66	0.8	10	----	58.6	0.0	5	-5.0
G-35vi	316	1	56.5	57.4	66	0.9	10	----	57.4	0.0	5	-5.0
G-36vi	317	1	58.5	59.5	66	1.0	10	----	59.5	0.0	5	-5.0
G-36vii	318	1	57.8	58.8	66	1.0	10	----	58.8	0.0	5	-5.0
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									
			<b>Min</b>	<b>Avg</b>	<b>Max</b>							
			<b>dB</b>	<b>dB</b>	<b>dB</b>							
All Selected		157	0.0	0.0	0.0							
All Impacted		40	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							

**Appendix E2**

**TNM 2.5**

**Future Conditions Models**

**Year 2045**

**Roadway Output Sheets**

---

ms consultants, inc. KLC 54200				6 April 2023 TNM 2.5							
-----------------------------------	--	--	--	-------------------------	--	--	--	--	--	--	--

INPUT: ROADWAYS				Average pavement type shall be used unless							
PROJECT/CONTRACT: PID 107714				a State highway agency substantiates the use							
RUN: LOR-90 NSA A DY 2045 Barrier				of a different type with the approval of FHWA							

Roadway Name	Width	Points		Coordinates (pavement)			Flow Control			Segment	On Struct?
		Name	No.	X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected		
	ft			ft	ft	ft		mph	%		
90 WB B	12.0	54+00	3247	2,064,604.8	632,670.9	759.00				Average	
		52+00	3246	2,064,418.1	632,598.9	753.00				Average	
		50+00	3245	2,064,220.4	632,521.9	748.00				Average	
		48+00	3244	2,064,033.4	632,449.2	745.50				Average	
		46+00	3243	2,063,859.1	632,381.4	745.00				Average	
		44+00	3242	2,063,674.8	632,304.7	746.00				Average	
		42+00	3241	2,063,496.2	632,215.4	747.00				Average	
		40+00	3240	2,063,324.4	632,114.0	747.00				Average	
		38+00	3239	2,063,159.9	632,001.1	748.00				Average	
		36+00	3238	2,063,003.1	631,877.5	748.00				Average	
		34+00	3237	2,062,855.2	631,743.6	749.00				Average	
		32+00	3236	2,062,716.5	631,600.1	749.50				Average	
		30+00	3235	2,062,587.8	631,447.6	750.00				Average	
		28+00	3234	2,062,469.6	631,286.8	751.00				Average	
		26+00	3233	2,062,362.6	631,118.4	751.00				Average	
		24+00	3232	2,062,267.9	630,942.8	751.00				Average	
		22+00	3231	2,062,185.6	630,761.0	751.50				Average	
		20+00	3230	2,062,116.2	630,573.9	752.00				Average	
		18+00	3229	2,062,060.4	630,382.4	752.00				Average	
		16+00	3228	2,062,017.9	630,187.2	752.00				Average	
		14+00	3227	2,061,979.9	629,990.9	752.00				Average	
		12+00	3226	2,061,937.2	629,795.4	753.00				Average	
		10+00	3225	2,061,894.4	629,600.1	754.00				Average	
		8+00	3224	2,061,842.6	629,402.6	754.00				Average	
		6+00	3223	2,061,791.2	629,213.1	754.00				Average	

INPUT: ROADWAYS

PID 107714

		4+00	3222	2,061,739.8	629,019.9	756.00					
90 WB A	12.0	54+00	3289	2,064,600.5	632,682.1	759.00					Average
		52+00	3288	2,064,413.9	632,610.1	753.00					Average
		50+00	3287	2,064,216.0	632,533.1	748.00					Average
		48+00	3286	2,064,029.0	632,460.4	745.50					Average
		46+00	3285	2,063,854.6	632,392.6	745.00					Average
		44+00	3284	2,063,669.8	632,315.6	746.00					Average
		42+00	3283	2,063,490.5	632,226.0	747.00					Average
		40+00	3282	2,063,318.0	632,124.1	747.00					Average
		38+00	3281	2,063,152.8	632,010.8	748.00					Average
		36+00	3280	2,062,995.4	631,886.7	748.00					Average
		34+00	3279	2,062,846.9	631,752.2	749.00					Average
		32+00	3278	2,062,707.6	631,608.2	749.50					Average
		30+00	3277	2,062,578.4	631,455.1	750.00					Average
		28+00	3276	2,062,459.8	631,293.6	751.00					Average
		26+00	3275	2,062,352.4	631,124.4	751.00					Average
		24+00	3274	2,062,257.1	630,948.1	751.00					Average
		22+00	3273	2,062,174.5	630,765.6	751.50					Average
		20+00	3272	2,062,104.9	630,577.7	752.00					Average
		18+00	3271	2,062,048.6	630,385.3	752.00					Average
		16+00	3270	2,062,006.1	630,189.7	752.00					Average
		14+00	3269	2,061,968.1	629,993.3	752.00					Average
		12+00	3268	2,061,925.5	629,798.0	753.00					Average
		10+00	3267	2,061,882.6	629,602.7	754.00					Average
		8+00	3266	2,061,830.1	629,407.5	754.00					Average
		6+00	3265	2,061,779.8	629,216.6	754.00					Average
		4+00	3264	2,061,728.1	629,023.3	756.00					
90 EB A	24.0	4+00	2989	2,061,843.0	629,008.9	755.00	Toll	25.00	100		Average
		6+00	2988	2,061,887.5	629,203.4	754.00					Average
		8+00	2987	2,061,932.1	629,398.4	754.00					Average
		10+00	2986	2,061,976.9	629,593.2	754.00					Average
		12+00	2985	2,062,026.5	629,786.9	753.00					Average
		14+00	2984	2,062,076.0	629,980.7	752.00					Average
		16+00	2983	2,062,122.8	630,175.2	751.00					Average
		18+00	3204	2,062,170.6	630,369.2	751.00					Average
		19+50	3203	2,062,209.9	630,513.4	750.50					Average
		21+00	3202	2,062,258.1	630,655.4	750.00					Average
		23+00	3201	2,062,335.6	630,839.2	749.50					Average
		25+00	3200	2,062,428.1	631,016.0	748.50					Average

INPUT: ROADWAYS

PID 107714

		26+00	3199	2,062,479.5	631,101.4	748.00				Average	
		28+00	3198	2,062,588.2	631,268.9	748.00				Average	
		30+00	3197	2,062,706.6	631,429.4	748.00				Average	
		32+00	3196	2,062,838.9	631,577.9	747.00				Average	
		34+00	3195	2,062,984.6	631,715.3	746.50				Average	
		36+00	3194	2,063,134.2	631,847.5	746.50				Average	
		38+00	3193	2,063,292.9	631,968.2	745.50				Average	
		40+00	3192	2,063,463.1	632,072.1	744.50				Average	
		42+00	3191	2,063,639.2	632,166.1	744.50				Average	
		44+00	3309	2,063,820.1	632,250.3	744.50				Average	
		46+00	3308	2,064,005.8	632,324.7	745.00				Average	
		48+00	3307	2,064,192.5	632,396.2	746.00				Average	
		50+00	3306	2,064,379.0	632,468.5	751.00				Average	
		52+00	3305	2,064,565.5	632,540.8	752.50				Average	
		54+00	3304	2,064,752.0	632,613.0	755.50					
90 EB B	12.0	4+00	3188	2,061,831.2	629,011.1	755.00	Toll	25.00	100	Average	
		6+00	3187	2,061,875.9	629,206.1	754.00				Average	
		8+00	3186	2,061,920.5	629,401.1	754.00				Average	
		10+00	3185	2,061,965.2	629,596.1	754.00				Average	
		12+00	3184	2,062,014.9	629,789.9	753.00				Average	
		14+00	3183	2,062,064.4	629,983.6	752.00				Average	
		16+00	3182	2,062,111.1	630,178.1	751.00				Average	
		18+00	3219	2,062,159.1	630,372.4	751.00				Average	
		19+50	3218	2,062,198.5	630,516.9	750.50				Average	
		21+00	3217	2,062,246.9	630,659.6	750.00				Average	
		23+00	3216	2,062,324.9	630,844.2	749.50				Average	
		25+00	3215	2,062,417.6	631,021.9	748.50				Average	
		26+00	3214	2,062,469.2	631,107.8	748.00				Average	
		28+00	3213	2,062,578.4	631,275.8	748.00				Average	
		30+00	3212	2,062,697.4	631,437.0	748.00				Average	
		32+00	3211	2,062,830.2	631,586.3	747.00				Average	
		34+00	3210	2,062,976.5	631,724.1	746.50				Average	
		36+00	3209	2,063,126.6	631,856.8	746.50				Average	
		38+00	3208	2,063,286.1	631,978.1	745.50				Average	
		40+00	3207	2,063,457.2	632,082.6	744.50				Average	
		42+00	3206	2,063,634.0	632,176.8	744.50				Average	
		44+00	3315	2,063,815.8	632,261.4	744.50				Average	
		46+00	3314	2,064,001.4	632,335.9	745.00				Average	
		48+00	3313	2,064,188.1	632,407.4	746.00				Average	



**INPUT: ROADWAYS****PID 107714**

		50+00	3312	2,064,374.6	632,479.7	751.00				Average	
		52+00	3311	2,064,561.1	632,552.0	752.50				Average	
		54+00	3310	2,064,747.6	632,624.2	755.50					

INPUT: ROADWAYS

PID 107714

ms consultants, inc. KLC 54200					6 April 2023 TNM 2.5						
INPUT: ROADWAYS											
PROJECT/CONTRACT:	PID 107714									Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA	
RUN:	LOR-90 NSA B Design Year 2045 +										

Roadway Name	Width	Points Name	No.	Coordinates (pavement)			Flow Control			Segment	On Struct?
				X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected	Pvmt Type	
	ft			ft	ft	ft		mph	%		
Murray Ridge Rd	24.0	point1	1	2,064,873.0	634,954.6	746.00				Average	
		point2	2	2,064,870.4	634,768.5	740.00				Average	
		point3	3	2,064,867.5	634,568.5	740.00				Average	
		point4	4	2,064,864.6	634,368.6	740.00				Average	
		point5	5	2,064,861.9	634,168.6	741.40				Average	
		point6	6	2,064,859.0	633,968.6	742.00				Average	
		point7	7	2,064,856.1	633,768.6	742.00				Average	
		point8	8	2,064,853.4	633,568.6	742.10				Average	
		point9	9	2,064,850.5	633,368.6	742.00				Average	
		point10	10	2,064,847.6	633,168.7	742.00				Average	
		point11	11	2,064,844.8	632,968.7	742.00				Average	
		point12	12	2,064,842.0	632,768.7	744.70				Average	
		point13	13	2,064,839.1	632,568.8	740.60				Average	
		point14	14	2,064,836.2	632,368.8	740.00				Average	
		point15	15	2,064,833.5	632,168.8	740.00				Average	
		point16	16	2,064,830.6	631,968.8	740.00				Average	
		point17	17	2,064,827.8	631,768.8	740.00					
90 WB A	24.0	point18	18	2,067,353.0	633,032.1	737.10				Average	
		point19	19	2,067,325.6	633,034.0	738.00				Average	
		point20	20	2,067,126.1	633,047.5	737.60				Average	
		point21	21	2,066,926.6	633,061.0	740.00				Average	
		point22	22	2,066,727.5	633,078.4	742.00				Average	
		point23	23	2,066,528.2	633,095.8	748.00				Average	
		point24	24	2,066,328.8	633,112.4	754.00				Average	
		point25	25	2,066,128.6	633,121.4	760.90				Average	Y

INPUT: ROADWAYS

PID 107714

		point26	26	2,065,928.2	633,117.1	765.00				Average	Y
		point27	27	2,065,730.0	633,086.5	770.00				Average	
		point28	28	2,065,536.1	633,035.8	772.00				Average	
		point29	29	2,065,346.2	632,971.9	772.00				Average	
		point30	30	2,065,159.8	632,899.1	769.50				Average	
		point31	31	2,064,973.6	632,826.2	768.00				Average	Y
		point32	32	2,064,787.1	632,754.0	764.00				Average	
		point33	33	2,064,600.5	632,682.1	758.50				Average	
		point34	34	2,064,413.9	632,610.1	751.30				Average	
		point35	35	2,064,227.5	632,537.6	747.20				Average	
		point36	36	2,064,041.0	632,465.1	744.00				Average	
		point37	37	2,063,854.6	632,392.6	744.00				Average	
		point38	38	2,063,669.8	632,315.6	745.90				Average	
		point39	39	2,063,490.5	632,226.0	746.00				Average	
		point40	40	2,063,318.0	632,124.1	746.00				Average	
		point41	41	2,063,152.8	632,010.8	747.20				Average	
		point42	42	2,062,995.4	631,886.7	748.00				Average	
		point43	43	2,062,846.9	631,752.2	748.00				Average	
		point44	44	2,062,707.6	631,608.2	748.00				Average	
		point45	45	2,062,578.4	631,455.1	749.90					
90 WB B	24.0	point62	62	2,067,352.2	633,020.1	737.10				Average	
		point63	63	2,067,324.9	633,022.0	738.00				Average	
		point64	64	2,067,125.2	633,035.6	737.60				Average	
		point65	65	2,066,925.8	633,049.1	740.00				Average	
		point66	66	2,066,726.4	633,066.4	742.00				Average	
		point67	67	2,066,527.1	633,083.9	748.00				Average	
		point68	68	2,066,328.0	633,100.4	754.00				Average	
		point69	69	2,066,128.5	633,109.4	760.90				Average	Y
		point70	70	2,065,929.2	633,105.1	765.00				Average	Y
		point71	71	2,065,732.5	633,074.8	770.00				Average	
		point72	72	2,065,539.5	633,024.3	772.00				Average	
		point73	73	2,065,350.4	632,960.6	772.00				Average	
		point74	74	2,065,164.1	632,887.9	769.50				Average	
		point75	75	2,064,977.9	632,815.0	768.00				Average	Y
		point76	76	2,064,791.4	632,742.8	764.00				Average	
		point77	77	2,064,604.8	632,670.9	758.50				Average	
		point78	78	2,064,418.1	632,598.9	751.30				Average	
		point79	79	2,064,231.8	632,526.4	747.20				Average	
		point80	80	2,064,045.4	632,453.9	744.00				Average	

INPUT: ROADWAYS

PID 107714

		point81	81	2,063,859.1	632,381.4	744.00				Average	
		point82	82	2,063,674.8	632,304.7	745.90				Average	
		point83	83	2,063,496.2	632,215.4	746.00				Average	
		point84	84	2,063,324.4	632,114.0	746.00				Average	
		point85	85	2,063,159.9	632,001.1	747.20				Average	
		point86	86	2,063,003.1	631,877.5	748.00				Average	
		point87	87	2,062,855.2	631,743.6	748.00				Average	
		point88	88	2,062,716.5	631,600.1	748.00				Average	
		point89	89	2,062,587.8	631,447.6	749.90					
2 WB A	12.0	point192	192	2,067,353.0	633,057.2	738.00				Average	
		point191	191	2,067,191.2	633,074.2	738.00				Average	
		point190	190	2,066,993.6	633,102.9	738.60				Average	
		point189	189	2,066,796.9	633,137.8	740.00				Average	
		point188	188	2,066,601.8	633,180.7	738.30				Average	
		point187	187	2,066,408.0	633,229.2	742.00				Average	
		point186	186	2,066,216.2	633,285.2	742.00				Average	
		point185	185	2,066,025.8	633,345.3	742.00				Average	
		point184	184	2,065,838.5	633,414.9	741.40				Average	
		point183	183	2,065,653.8	633,490.9	743.00				Average	
		point182	182	2,065,470.8	633,571.1	746.00				Average	
		point181	181	2,065,291.4	633,658.9	749.60				Average	
		point180	180	2,065,115.2	633,753.1	754.00				Average	
		point179	179	2,064,943.1	633,854.4	758.00				Average	Y
		point178	178	2,064,773.4	633,959.9	764.00				Average	Y
		point177	177	2,064,606.2	634,069.5	768.00				Average	
		point176	176	2,064,441.0	634,182.1	768.70				Average	
		point175	175	2,064,274.8	634,293.4	771.00				Average	
		point174	174	2,064,108.4	634,404.3	771.80				Average	
		point173	173	2,063,941.9	634,515.2	770.00				Average	
		point172	172	2,063,775.5	634,626.1	770.00					
2 WB B	12.0	point213	213	2,067,351.8	633,045.2	738.00				Average	
		point212	212	2,067,189.9	633,062.2	738.00				Average	
		point211	211	2,066,991.8	633,091.1	738.60				Average	
		point210	210	2,066,794.5	633,126.0	740.00				Average	
		point209	209	2,066,599.0	633,169.0	738.30				Average	
		point208	208	2,066,404.9	633,217.7	742.00				Average	
		point207	207	2,066,212.8	633,273.8	742.00				Average	
		point206	206	2,066,021.9	633,333.9	742.00				Average	
		point205	205	2,065,834.1	633,403.7	741.40				Average	

INPUT: ROADWAYS

PID 107714

		point204	204	2,065,649.1	633,479.8	743.00				Average	
		point203	203	2,065,465.8	633,560.2	746.00				Average	
		point202	202	2,065,285.9	633,648.2	749.60				Average	
		point201	201	2,065,109.4	633,742.6	754.00				Average	
		point200	200	2,064,936.9	633,844.2	758.00				Average	Y
		point199	199	2,064,766.9	633,949.8	764.00				Average	Y
		point198	198	2,064,599.6	634,059.5	768.00				Average	
		point197	197	2,064,434.2	634,172.2	768.70				Average	
		point196	196	2,064,268.1	634,283.4	771.00				Average	
		point195	195	2,064,101.8	634,394.3	771.80				Average	
		point194	194	2,063,935.2	634,505.2	770.00				Average	
		point193	193	2,063,768.9	634,616.1	770.00					
90 EB A	24.0	point171	171	2,062,588.2	631,268.9	747.60				Average	
		point132	132	2,062,706.6	631,429.4	746.50				Average	
		point133	133	2,062,839.8	631,577.9	746.00				Average	
		point134	134	2,062,984.6	631,715.3	745.90				Average	
		point135	135	2,063,134.2	631,847.5	744.90				Average	
		point136	136	2,063,292.9	631,968.2	744.00				Average	
		point137	137	2,063,463.1	632,072.1	744.00				Average	
		point138	138	2,063,639.4	632,166.1	744.00				Average	
		point145	145	2,063,820.1	632,250.3	746.00				Average	
		point144	144	2,064,005.8	632,324.7	750.00				Average	
		point143	143	2,064,192.5	632,396.2	755.40				Average	
		point142	142	2,064,379.0	632,468.5	758.90				Average	
		point141	141	2,064,565.5	632,540.8	759.00				Average	
		point152	152	2,064,751.5	632,612.9	758.90				Average	Y
		point264	264	2,064,942.2	632,671.9	759.10				Average	Y
		point153	153	2,065,133.1	632,731.0	759.30				Average	
		point154	154	2,065,328.1	632,774.0	761.10				Average	
		point155	155	2,065,524.5	632,810.4	760.40				Average	
		point156	156	2,065,722.5	632,835.3	758.00				Average	
		point157	157	2,065,921.9	632,847.4	753.20				Average	
		point158	158	2,066,121.5	632,853.6	748.80				Average	
		point159	159	2,066,321.0	632,845.8	744.10					
90 EB B	24.0	point170	170	2,062,578.4	631,275.8	747.60				Average	
		point115	115	2,062,697.4	631,437.0	746.50				Average	
		point116	116	2,062,831.1	631,586.3	746.00				Average	
		point117	117	2,062,976.5	631,724.1	745.90				Average	
		point118	118	2,063,126.6	631,856.8	744.90				Average	

INPUT: ROADWAYS

PID 107714

		point119	119	2,063,286.1	631,978.1	744.00				Average	
		point120	120	2,063,457.2	632,082.6	744.00				Average	
		point121	121	2,063,634.0	632,176.8	744.00				Average	
		point151	151	2,063,815.8	632,261.4	746.00				Average	
		point150	150	2,064,001.4	632,335.9	750.00				Average	
		point149	149	2,064,188.1	632,407.4	755.40				Average	
		point148	148	2,064,374.6	632,479.7	758.90				Average	
		point147	147	2,064,561.1	632,552.0	759.00				Average	
		point160	160	2,064,748.0	632,624.3	758.90				Average	Y
		point265	265	2,064,939.0	632,683.5	759.10				Average	Y
		point161	161	2,065,130.1	632,742.6	759.30				Average	
		point162	162	2,065,325.8	632,785.8	761.10				Average	
		point163	163	2,065,522.6	632,822.2	760.40				Average	
		point164	164	2,065,721.4	632,847.2	758.00				Average	
		point165	165	2,065,921.2	632,859.4	753.20				Average	
		point166	166	2,066,121.5	632,865.6	748.80				Average	
		point167	167	2,066,321.5	632,857.8	744.10					
2 EB A	24.0	point241	241	2,063,703.2	634,591.8	770.00				Average	
		point240	240	2,063,868.6	634,479.2	770.00				Average	
		point239	239	2,064,034.0	634,366.8	771.20				Average	
		point238	238	2,064,199.5	634,254.6	772.00				Average	
		point237	237	2,064,365.2	634,142.5	772.00				Average	
		point236	236	2,064,530.9	634,030.5	768.00				Average	
		point235	235	2,064,698.2	633,920.9	765.00				Average	Y
		point234	234	2,064,863.8	633,808.8	760.00				Average	Y
		point233	233	2,065,029.0	633,696.1	756.00				Average	
		point232	232	2,065,194.6	633,584.0	751.00				Average	
		point231	231	2,065,360.8	633,472.5	745.50				Average	
		point230	230	2,065,526.9	633,361.2	744.00				Average	
		point229	229	2,065,693.5	633,250.3	744.30				Average	
		point245	245	2,065,865.5	633,147.6	744.00				Average	
		point244	244	2,066,041.2	633,051.8	741.70				Average	
		point243	243	2,066,226.4	632,974.8	741.10				Average	
		point257	257	2,066,417.5	632,913.4	741.10				Average	
		point258	258	2,066,612.2	632,868.4	740.00				Average	
		point263	263	2,066,612.8	632,868.2	740.00				Average	
		point262	262	2,066,810.9	632,839.5	739.80				Average	
		point261	261	2,067,011.0	632,827.3	739.20				Average	
		point260	260	2,067,211.2	632,831.8	738.00				Average	

INPUT: ROADWAYS

PID 107714

		point259	259	2,067,327.1	632,842.0	736.70					
2 EB B	24.0	point227	227	2,063,710.0	634,601.7	770.00				Average	
		point226	226	2,063,875.4	634,489.2	770.00				Average	
		point225	225	2,064,040.8	634,376.8	771.20				Average	
		point224	224	2,064,206.2	634,264.5	772.00				Average	
		point223	223	2,064,371.9	634,152.5	772.00				Average	
		point222	222	2,064,537.6	634,040.4	768.00				Average	
		point221	221	2,064,704.9	633,930.9	765.00				Average	Y
		point220	220	2,064,870.5	633,818.8	760.00				Average	Y
		point219	219	2,065,035.8	633,706.0	756.00				Average	
		point218	218	2,065,201.4	633,593.9	751.00				Average	
		point217	217	2,065,367.4	633,482.5	745.50				Average	
		point216	216	2,065,533.6	633,371.2	744.00				Average	
		point215	215	2,065,699.9	633,260.4	744.30				Average	
		point249	249	2,065,871.2	633,158.1	744.00				Average	
		point248	248	2,066,046.5	633,062.7	741.70				Average	
		point247	247	2,066,230.6	632,986.1	741.10				Average	
		point250	250	2,066,420.2	632,925.1	741.10				Average	
		point251	251	2,066,615.0	632,880.1	740.00				Average	
		point256	256	2,066,614.5	632,880.1	740.00				Average	
		point255	255	2,066,812.1	632,851.4	739.80				Average	
		point254	254	2,067,011.2	632,839.3	739.20				Average	
		point253	253	2,067,210.6	632,843.8	738.00				Average	
		point252	252	2,067,326.0	632,854.0	736.70					

INPUT: ROADWAYS

PID 107714

ms consultants, inc. KLC 54200	6 April 2023 TNM 2.5
INPUT: ROADWAYS PROJECT/CONTRACT: PID 107714 RUN: LOR-90 NSA C Design Year 2045	Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

Roadway Name	Width	Points		Coordinates (pavement)			Flow Control			Segment	On Struct?
		Name	No.	X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected		
	ft			ft	ft	ft		mph	%		
90 EB A	12.0	40+00	1	2,067,328.1	632,830.1	738.00				Average	
		0+00	2	2,067,407.5	632,836.8	737.00				Average	
		2+00	3	2,067,527.8	632,849.2	736.00				Average	
		4+00	4	2,067,726.2	632,869.9	734.00				Average	
		6+00	5	2,067,924.9	632,892.7	734.00				Average	
		8+00	6	2,068,123.2	632,911.4	734.00				Average	
		10+00	7	2,068,323.1	632,928.4	735.50				Average	
		12+00	8	2,068,522.5	632,944.9	738.00				Average	
		14+00	9	2,068,721.9	632,960.8	741.00				Average	
		16+00	10	2,068,921.2	632,976.8	744.00				Average	
		18+00	11	2,069,120.6	632,992.9	746.00				Average	
		20+00	12	2,069,319.9	633,009.8	746.00				Average	Y
		22+00	13	2,069,519.1	633,026.7	746.00				Average	
		24+00	14	2,069,718.4	633,043.6	746.00				Average	
		26+00	15	2,069,917.8	633,060.5	744.00				Average	
		28+00	16	2,070,117.0	633,077.4	743.50				Average	
		30+00	17	2,070,316.2	633,093.9	738.00				Average	
		32+00	18	2,070,515.6	633,110.6	734.00				Average	
		34+00	19	2,070,714.9	633,127.1	728.50				Average	
		36+00	20	2,070,914.2	633,143.7	723.00				Average	
		38+00	21	2,071,113.5	633,160.3	717.50				Average	
		40+00	22	2,071,312.9	633,177.0	712.00					
90 EB B	12.0	40+00	23	2,067,327.1	632,842.0	738.00				Average	
		0+00	24	2,067,406.4	632,848.8	737.00				Average	
		2+00	25	2,067,526.5	632,861.2	736.00				Average	



INPUT: ROADWAYS

PID 107714

		4+00	26	2,067,724.9	632,881.8	734.00				Average	
		6+00	27	2,067,923.6	632,904.6	734.00				Average	
		8+00	28	2,068,122.1	632,923.3	734.00				Average	
		10+00	29	2,068,322.1	632,940.4	735.50				Average	
		12+00	30	2,068,521.5	632,956.8	738.00				Average	
		14+00	31	2,068,720.9	632,972.8	741.00				Average	
		16+00	32	2,068,920.2	632,988.7	744.00				Average	
		18+00	33	2,069,119.6	633,004.9	746.00				Average	
		20+00	34	2,069,318.9	633,021.8	746.00				Average	Y
		22+00	35	2,069,518.1	633,038.7	746.00				Average	
		24+00	36	2,069,717.4	633,055.6	746.00				Average	
		26+00	37	2,069,916.8	633,072.5	744.00				Average	
		28+00	38	2,070,116.0	633,089.4	743.50				Average	
		30+00	39	2,070,315.2	633,105.9	738.00				Average	
		32+00	40	2,070,514.6	633,122.5	734.00				Average	
		34+00	41	2,070,713.9	633,139.1	728.50				Average	
		36+00	42	2,070,913.2	633,155.7	723.00				Average	
		38+00	43	2,071,112.5	633,172.3	717.50				Average	
		40+00	44	2,071,311.9	633,188.9	712.00					
90 WB B	12.0	38+00	45	2,071,341.1	633,286.1	717.00				Average	
		36+00	46	2,071,141.9	633,269.5	722.50				Average	
		34+00	47	2,070,942.5	633,253.1	728.00				Average	
		32+00	48	2,070,743.2	633,236.8	733.00				Average	
		30+00	49	2,070,543.9	633,220.1	738.00				Average	
		28+00	50	2,070,344.5	633,203.8	740.00				Average	
		26+00	51	2,070,145.2	633,187.6	744.00				Average	
		24+00	52	2,069,945.9	633,171.0	746.00				Average	
		22+00	53	2,069,746.6	633,154.3	746.00				Average	
		20+00	54	2,069,547.4	633,137.5	746.00				Average	Y
		18+00	55	2,069,348.0	633,120.8	746.00				Average	
		16+00	56	2,069,148.8	633,103.3	744.00				Average	
		14+00	57	2,068,949.5	633,086.6	742.00				Average	
		12+00	58	2,068,750.1	633,069.8	738.00				Average	
		10+00	59	2,068,550.9	633,053.9	736.00				Average	
		8+00	60	2,068,351.4	633,037.8	734.00				Average	
		6+00	61	2,068,151.6	633,025.6	734.00				Average	
		4+00	63	2,067,951.5	633,019.8	734.00				Average	
		2+00	64	2,067,751.4	633,019.7	736.00				Average	
		0+00	65	2,067,551.4	633,030.1	738.00				Average	

INPUT: ROADWAYS

PID 107714

		36+00 2B	66	2,067,351.9	633,045.2	738.70					
90 WB A	12.0	38+00	67	2,071,340.1	633,298.1	717.00				Average	
		36+00	68	2,071,140.9	633,281.4	722.50				Average	
		34+00	69	2,070,941.5	633,265.1	728.00				Average	
		32+00	70	2,070,742.2	633,248.8	733.00				Average	
		30+00	71	2,070,542.9	633,232.1	738.00				Average	
		28+00	72	2,070,343.6	633,215.7	740.00				Average	
		26+00	73	2,070,144.2	633,199.6	744.00				Average	
		24+00	74	2,069,944.9	633,182.9	746.00				Average	
		22+00	75	2,069,745.6	633,166.2	746.00				Average	
		20+00	76	2,069,546.4	633,149.4	746.00				Average	Y
		18+00	77	2,069,347.0	633,132.7	746.00				Average	
		16+00	78	2,069,147.8	633,115.2	744.00				Average	
		14+00	79	2,068,948.5	633,098.6	742.00				Average	
		12+00	80	2,068,749.2	633,081.8	738.00				Average	
		10+00	81	2,068,549.9	633,065.8	736.00				Average	
		8+00	82	2,068,350.5	633,049.8	734.00				Average	
		6+00	83	2,068,151.0	633,037.6	734.00				Average	
		4+00	85	2,067,951.4	633,031.8	734.00				Average	
		2+00	86	2,067,751.6	633,031.7	736.00				Average	
		0+00	87	2,067,552.1	633,042.1	738.00				Average	
		36+00 2B	88	2,067,352.8	633,057.2	738.70					
Lake NB	24.0	0+00	89	2,069,585.9	631,852.1	729.00				Average	
		2+50	90	2,069,556.4	632,104.1	729.00				Average	
		4+00	91	2,069,542.4	632,237.7	729.00				Average	
		4+25	92	2,069,536.5	632,304.5	729.00				Average	
		6+50	93	2,069,533.6	632,490.2	729.00				Average	
		9+00	94	2,069,532.4	632,744.9	728.00				Average	
		10+00	95	2,069,524.1	632,848.2	727.00				Average	
		11+00	96	2,069,511.0	632,930.4	727.00				Average	
		12+00	97	2,069,493.0	633,017.3	727.00				Average	
		14+00	98	2,069,442.2	633,165.6	728.00				Average	
		14+50	99	2,069,406.6	633,244.5	728.50				Average	
		15+00	100	2,069,366.0	633,320.1	729.00				Average	
		17+00	101	2,069,279.8	633,455.3	730.00				Average	
		19+00	102	2,069,162.2	633,590.8	730.00				Average	
		20+00	103	2,069,104.9	633,643.1	730.00				Average	
		21+00	104	2,069,039.1	633,699.2	730.00				Average	
		22+00	105	2,068,957.2	633,763.6	730.00				Average	

INPUT: ROADWAYS

PID 107714

		26+00	106	2,068,575.6	634,063.9	731.00					
Lake SB	24.0	26+00	107	2,068,561.0	634,057.3	731.00				Average	
		22+00	108	2,068,947.5	633,756.1	730.00				Average	
		21+00	109	2,069,031.4	633,691.6	730.00				Average	
		20+00	110	2,069,103.6	633,630.2	730.00				Average	
		19+00	111	2,069,157.4	633,577.6	730.00				Average	
		17+00	112	2,069,271.1	633,443.6	730.00				Average	
		15+00	113	2,069,354.1	633,317.9	729.00				Average	
		14+50	114	2,069,401.9	633,229.9	728.50				Average	
		14+00	115	2,069,434.5	633,159.5	728.00				Average	
		12+00	116	2,069,483.8	633,013.1	727.00				Average	
		11+00	117	2,069,502.0	632,925.1	727.00				Average	
		10+00	118	2,069,513.0	632,845.6	727.00				Average	
		9+00	119	2,069,519.6	632,745.2	728.00				Average	
		6+50	120	2,069,522.9	632,485.8	729.00				Average	
		4+25	121	2,069,521.5	632,298.1	729.00				Average	
		4+00	122	2,069,524.2	632,230.7	729.00				Average	
		2+50	123	2,069,537.9	632,097.1	729.00				Average	
		0+00	124	2,069,563.8	631,847.8	729.00					
90 EB C	12.0	40+00	543	2,067,326.0	632,854.0	738.00				Average	
		0+00	572	2,067,403.4	632,861.1	737.00				Average	
		2+00	542	2,067,525.4	632,873.1	736.00				Average	
		4+00	541	2,067,723.8	632,893.8	734.00				Average	
		6+00	540	2,067,922.2	632,916.6	734.00				Average	
		8+00	539	2,068,121.1	632,935.2	734.00				Average	
		10+00	538	2,068,321.1	632,952.3	735.50				Average	
		12+00	537	2,068,520.5	632,968.8	738.00				Average	
		14+00	536	2,068,713.4	632,984.2	741.00				Average	
		16+00	573	2,068,915.8	633,000.2	744.00				Average	
		18+00	535	2,069,118.2	633,016.2	746.00				Average	
		20+00	534	2,069,317.9	633,033.7	746.00				Average	Y
		22+00	533	2,069,517.1	633,050.7	746.00				Average	
		24+00	532	2,069,716.4	633,067.7	746.00				Average	
		26+00	531	2,069,915.6	633,084.6	744.00				Average	
		28+00	530	2,070,111.5	633,101.3	743.50				Average	
		30+00	529	2,070,314.2	633,118.6	738.00				Average	
		32+00	569	2,070,513.6	633,134.6	734.00				Average	
		34+00	568	2,070,712.9	633,151.1	728.50				Average	
		36+00	567	2,070,912.2	633,167.6	723.00				Average	

INPUT: ROADWAYS

PID 107714

		38+00	566	2,071,111.5	633,184.2	717.50				Average	
		40+00	571	2,071,309.9	633,200.8	712.00					
90 WB C	12.0	38+00	570	2,071,342.2	633,274.2	717.00				Average	
		36+00	551	2,071,142.9	633,257.5	722.50				Average	
		34+00	552	2,070,943.5	633,241.1	728.00				Average	
		32+00	553	2,070,744.2	633,224.8	733.00				Average	
		30+00	554	2,070,544.9	633,208.1	738.00				Average	
		28+00	555	2,070,345.5	633,191.8	740.00				Average	
		26+00	556	2,070,146.2	633,175.6	744.00				Average	
		24+00	557	2,069,946.9	633,159.0	746.00				Average	
		22+00	515	2,069,747.6	633,142.4	746.00				Average	
		20+00	516	2,069,548.4	633,125.6	746.00				Average	Y
		18+00	517	2,069,349.1	633,108.8	746.00				Average	
		16+00	518	2,069,149.8	633,091.4	744.00				Average	
		14+00	519	2,068,950.5	633,074.6	742.00				Average	
		12+00	520	2,068,751.1	633,057.9	738.00				Average	
		10+00	521	2,068,551.8	633,041.9	736.00				Average	
		8+00	522	2,068,352.2	633,025.8	734.00				Average	
		6+00	523	2,068,152.2	633,013.6	734.00				Average	
		4+00	524	2,067,951.8	633,007.8	734.00				Average	
		2+00	525	2,067,752.4	633,007.4	736.00				Average	
		0+00	526	2,067,550.5	633,018.1	738.00				Average	
		36+00 2B	527	2,067,351.0	633,033.3	738.70					

INPUT: ROADWAYS

PID 107714

ms consultants, inc. KLC 54200					6 April 2023 TNM 2.5					
-----------------------------------	--	--	--	--	-------------------------	--	--	--	--	--

INPUT: ROADWAYS						Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA				
PROJECT/CONTRACT:	PID 107714									
RUN:	LOR-90 NSA D Existing									

Roadway Name	Width	Points			Coordinates (pavement)			Flow Control			Segment	On Struct?				
		Name	No.	X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected							
										ft			ft	ft	mph	%
90 WB A	24.0	114+00	779	2,078,018.8	635,367.0	646.00				Average						
		112+00	132	2,077,930.5	635,187.7	644.00				Average						
		110+00	133	2,077,835.5	635,012.2	642.00				Average						
		108+00	134	2,077,726.1	634,845.3	642.50				Average						
		106+00	135	2,077,605.9	634,686.1	644.00				Average						
		104+00	136	2,077,474.4	634,536.0	651.00				Average						
		102+00	138	2,077,333.4	634,394.9	652.00				Average						
		100+00	139	2,077,181.5	634,265.5	656.00				Average						
		98+00	140	2,077,021.5	634,146.2	660.00				Average						
		96+00	141	2,076,853.5	634,038.4	664.00				Average						
		94+00	142	2,076,678.0	633,943.6	670.00				Average						
		92+00	143	2,076,495.8	633,862.4	672.00				Average						
		90+00	144	2,076,308.8	633,792.9	676.00				Average						
		88+00	145	2,076,117.0	633,737.4	680.00				Average						
		86+00	146	2,075,921.9	633,695.7	684.00				Average						
		84+00	147	2,075,724.5	633,666.2	688.00				Average						
		82+00	148	2,075,525.6	633,647.4	692.00				Average	Y					
		80+00	149	2,075,326.4	633,630.6	695.00										
90 WB B	24.0	114+00	781	2,078,029.5	635,361.8	646.00				Average						
		112+00	322	2,077,941.1	635,182.2	644.00				Average						
		110+00	323	2,077,845.8	635,006.0	642.00				Average						
		108+00	324	2,077,736.0	634,838.4	642.50				Average						
		106+00	325	2,077,615.1	634,678.5	644.00				Average						
		104+00	326	2,077,483.1	634,527.8	651.00				Average						
		102+00	328	2,077,341.5	634,386.1	652.00				Average						

INPUT: ROADWAYS

PID 107714

		100+00	329	2,077,189.0	634,256.1	656.00				Average
		98+00	330	2,077,028.2	634,136.4	660.00				Average
		96+00	331	2,076,859.6	634,028.1	664.00				Average
		94+00	332	2,076,683.2	633,932.9	670.00				Average
		92+00	333	2,076,500.2	633,851.2	672.00				Average
		90+00	334	2,076,312.5	633,781.6	676.00				Average
		88+00	335	2,076,120.0	633,725.8	680.00				Average
		86+00	336	2,075,924.1	633,683.9	684.00				Average
		84+00	337	2,075,726.0	633,654.3	688.00				Average
		82+00	338	2,075,526.6	633,635.5	692.00				Average
		80+00	339	2,075,327.4	633,618.6	695.00				
90 EB B	24.0	40+00	558	2,071,311.9	633,188.9	712.00				Average
		42+00	557	2,071,511.1	633,205.6	706.00				Average
		44+00	556	2,071,710.4	633,222.4	702.00				Average
		46+00	555	2,071,909.8	633,239.2	700.00				
90 EB A	24.0	40+00	757	2,071,312.9	633,177.0	712.00				Average
		42+00	756	2,071,512.1	633,193.7	706.00				Average
		44+00	755	2,071,711.5	633,210.5	702.00				Average
		46+00	754	2,071,910.8	633,227.2	700.00				
W River	12.0	27+58.34	789	2,076,119.6	632,171.5	690.00				Average
		26+00	790	2,076,044.1	632,310.7	690.00				Average
		24+00	791	2,075,948.6	632,486.3	692.00				Average
		22+00	792	2,075,849.5	632,660.0	692.00				Average
		20+00	793	2,075,750.5	632,833.7	691.00				Average
		18+00	794	2,075,651.4	633,007.4	690.00				Average
		16+00	795	2,075,552.4	633,181.2	688.00				Average
		14+00	796	2,075,453.6	633,355.2	680.00				Average
		12+00	797	2,075,354.6	633,528.9	673.50				Average
		10+00	798	2,075,255.6	633,702.7	666.00				Average
		8+00	799	2,075,158.1	633,877.4	662.00				Average
		6+00	800	2,075,062.1	634,053.2	664.00				Average
		4+00	801	2,074,980.6	634,236.2	676.00				Average
		2+00	802	2,074,904.5	634,421.2	684.00				Average
		0+00	803	2,074,831.0	634,607.3	684.00				
Lorain N	24.0	34+00	822	2,073,713.5	631,970.3	696.00				Average
		32+00	821	2,073,698.1	632,169.7	695.00				Average
		30+00	820	2,073,682.6	632,369.1	694.00				Average
		28+00	819	2,073,666.9	632,568.4	694.00				Average
		26+00	818	2,073,648.6	632,767.6	694.00				Average

INPUT: ROADWAYS

PID 107714

		24+00	817	2,073,630.5	632,966.8	694.00				Average
		22+00	816	2,073,610.9	633,165.6	692.00				Average
		20+00	815	2,073,587.2	633,357.0	692.00				
Lorain S	24.0	0+00	824	2,073,276.9	635,339.8	686.00				Average
		2+00	825	2,073,299.8	635,141.1	686.00				Average
		4+00	826	2,073,322.6	634,942.4	686.00				Average
		6+00	827	2,073,345.5	634,743.7	688.00				Average
		8+00	828	2,073,368.2	634,545.0	688.00				Average
		10+00	829	2,073,391.1	634,346.3	689.00				Average
		12+00	830	2,073,414.0	634,147.6	690.00				Average
		14+00	831	2,073,438.4	633,949.1	690.50				Average
		16+00	832	2,073,463.5	633,750.6	692.00				Average
		18+00	833	2,073,488.2	633,552.2	692.00				
90 WB On Ramp2	12.0	3+00	848	2,073,115.8	633,987.5	692.00				Average
		5+00	847	2,072,931.6	633,921.8	694.00				Average
		7+00	846	2,072,793.9	633,781.2	696.00				Average
		9+00	845	2,072,670.1	633,623.8	698.00				Average
		11+00	844	2,072,512.6	633,499.1	700.00				Average
		13+00	843	2,072,327.4	633,421.2	700.00				Average
		15+00	842	2,072,129.1	633,391.2	698.00				
90 WB On Ramp1	12.0	0+00	851	2,073,388.6	634,025.9	690.00				Average
		1+00	850	2,073,294.9	634,013.8	690.00				Average
		3+00	849	2,073,117.6	633,988.1	692.00				
90 WB On Ramp3	12.0	15+00	858	2,072,128.9	633,391.2	698.00				Average
		17+00	857	2,071,929.9	633,370.2	700.00				Average
		19+00	856	2,071,731.0	633,349.2	702.00				Average
		21+00	855	2,071,532.1	633,328.3	706.50				Average
		23+00	854	2,071,333.2	633,307.3	712.00				
90 EB Off Ramp	12.0	17+00	867	2,071,909.8	633,212.6	699.00				Average
		15+25.81	891	2,072,109.0	633,225.3	698.00				Average
		13+00	866	2,072,305.4	633,219.4	699.00				Average
		11+00	865	2,072,440.2	633,206.5	701.00				Average
		9+00	864	2,072,631.8	633,153.3	699.00				Average
		7+00	863	2,072,818.6	633,082.7	700.00				Average
		5+00	862	2,073,009.9	633,021.4	698.00				Average
		3+00	861	2,073,209.9	633,021.2	693.50				Average
		1+00	860	2,073,408.8	633,045.1	691.00				Average
		0.00	859	2,073,528.9	633,059.5	692.50				
90 EB On Ramp	12.0	0+00	868	2,073,649.5	633,102.0	693.00				Average

INPUT: ROADWAYS

PID 107714

		2+00	869	2,073,848.8	633,126.5	691.00				Average	
		4+00	870	2,074,034.1	633,200.9	694.00				Average	
		6+00	871	2,074,209.4	633,297.6	695.00				Average	
		8+00	872	2,074,391.5	633,377.0	700.50				Average	
		10+00	873	2,074,585.6	633,420.2	702.00				Average	
		12+00	874	2,074,784.2	633,439.2	701.00				Average	
		14+00	875	2,074,983.5	633,456.9	699.00				Average	
		16+00	876	2,075,179.8	633,480.8	696.00				Average	Y
		18+00	877	2,075,378.8	633,499.5	694.50				Average	Y
		19+14	878	2,075,500.9	633,511.2	692.00					
90 WB Off Ramp	12.0	20+00	889	2,075,399.9	633,645.7	693.00				Average	Y
		18+00	888	2,075,198.2	633,629.7	696.00				Average	Y
		16+00	887	2,074,999.2	633,617.4	698.00				Average	
		14+00	886	2,074,798.9	633,614.9	700.00				Average	
		12+00	885	2,074,598.6	633,629.5	701.50				Average	
		10+00	884	2,074,406.0	633,686.0	700.00				Average	
		8+00	883	2,074,235.5	633,792.0	699.00				Average	
		6+00	882	2,074,095.4	633,933.4	697.00				Average	
		4+00	881	2,073,935.4	634,046.4	692.00				Average	
		2+00	880	2,073,741.1	634,071.8	692.00				Average	
		0+00	879	2,073,543.4	634,048.3	690.00					
Lorain S-2	24.0	point893	893	2,073,488.2	633,552.2	692.00				Average	
		20+00	834	2,073,512.9	633,347.9	692.00				Average	
		22+00	835	2,073,533.8	633,154.9	692.00				Average	
		24+00	836	2,073,555.2	632,956.4	694.00				Average	
		26+00	837	2,073,574.1	632,757.1	694.00				Average	
		28+00	838	2,073,591.5	632,557.9	694.00				Average	
		30+00	839	2,073,607.1	632,358.5	694.00				Average	
		32+00	840	2,073,620.6	632,159.0	695.00				Average	
		34+00	841	2,073,631.0	632,005.0	696.00					
Lorain N-2	24.0	point894	894	2,073,587.2	633,358.3	692.00				Average	
		18+00	814	2,073,561.9	633,562.6	692.00				Average	
		16+00	813	2,073,537.2	633,761.1	692.00				Average	
		14+00	812	2,073,512.8	633,959.6	690.00				Average	
		12+00	810	2,073,487.0	634,157.8	690.00				Average	
		10+00	809	2,073,459.1	634,355.8	690.00				Average	
		8+00	808	2,073,431.4	634,553.9	688.00				Average	
		6+00	807	2,073,403.5	634,751.9	688.00				Average	
		4+00	806	2,073,375.8	634,950.0	687.00				Average	



INPUT: ROADWAYS

PID 107714

		2+00	805	2,073,348.0	635,148.1	686.00				Average	
		0+00	804	2,073,320.1	635,346.1	686.00					
90 WB A-2	24.0	point895	895	2,075,326.4	633,630.6	695.00				Average	Y
		78+00	150	2,075,127.0	633,614.1	696.00				Average	Y
		76+00	151	2,074,927.8	633,597.6	699.50				Average	
		74+00	152	2,074,728.4	633,580.7	702.00				Average	
		72+00	153	2,074,529.1	633,563.7	704.00				Average	
		70+00	154	2,074,329.9	633,546.6	704.00				Average	
		68+00	155	2,074,130.5	633,530.3	707.50				Average	
		66+00	156	2,073,931.1	633,514.2	710.00				Average	
		64+00	157	2,073,731.9	633,497.2	710.00				Average	Y
		62+00	158	2,073,532.6	633,480.7	711.00				Average	Y
		60+00	159	2,073,333.2	633,464.0	712.00				Average	Y
		58+00	160	2,073,134.0	633,447.4	710.00				Average	
		56+00	161	2,072,934.6	633,431.1	708.00				Average	
		54+00	162	2,072,735.4	633,413.8	704.00				Average	
		52+00	163	2,072,536.1	633,397.2	702.00				Average	
		50+00	164	2,072,336.8	633,380.8	700.00				Average	
		48+00	165	2,072,137.4	633,364.5	698.00				Average	
		46+00	166	2,071,938.1	633,348.3	700.00				Average	
		44+00	167	2,071,738.8	633,332.1	702.00				Average	
		42+00	168	2,071,539.4	633,315.4	706.50				Average	
		40+00	169	2,071,340.1	633,298.1	712.00					
90 WB B-2	24.0	point896	896	2,075,327.4	633,618.6	695.00				Average	Y
		78+00	340	2,075,128.0	633,602.2	696.00				Average	Y
		76+00	341	2,074,928.8	633,585.6	699.50				Average	
		74+00	342	2,074,729.4	633,568.8	702.00				Average	
		72+00	343	2,074,530.1	633,551.7	704.00				Average	
		70+00	344	2,074,330.9	633,534.7	704.00				Average	
		68+00	345	2,074,131.5	633,518.4	707.50				Average	
		66+00	346	2,073,932.1	633,502.2	710.00				Average	
		64+00	347	2,073,732.9	633,485.3	710.00				Average	Y
		62+00	348	2,073,533.6	633,468.8	711.00				Average	Y
		60+00	349	2,073,334.2	633,452.1	712.00				Average	Y
		58+00	350	2,073,135.0	633,435.5	710.00				Average	
		56+00	351	2,072,935.6	633,419.1	708.00				Average	
		54+00	352	2,072,736.4	633,401.9	704.00				Average	
		52+00	353	2,072,537.1	633,385.2	702.00				Average	
		50+00	354	2,072,337.8	633,368.9	700.00				Average	

INPUT: ROADWAYS

PID 107714

		48+00	355	2,072,138.4	633,352.6	698.00				Average	
		46+00	356	2,071,939.0	633,336.4	700.00				Average	
		44+00	357	2,071,739.8	633,320.2	702.00				Average	
		42+00	358	2,071,540.4	633,303.5	706.50				Average	
		40+00	359	2,071,341.1	633,286.1	712.00					
90 EB B-2	24.0	point897	897	2,075,497.1	633,538.8	692.00				Average	
		84+00	536	2,075,696.1	633,557.4	690.00				Average	
		86+00	535	2,075,894.5	633,583.4	687.00				Average	
		88+00	534	2,076,090.2	633,620.9	683.50				Average	
		90+00	533	2,076,283.0	633,672.4	679.50				Average	
		92+00	532	2,076,471.6	633,737.1	675.00				Average	
		94+00	531	2,076,655.1	633,815.5	671.50				Average	
		96+00	530	2,076,833.5	633,905.1	667.50				Average	
		98+00	529	2,077,004.9	634,007.3	664.00				Average	
		100+00	528	2,077,168.9	634,121.0	660.00				Average	
		102+00	527	2,077,324.5	634,246.0	655.00				Average	
		104+00	526	2,077,471.8	634,380.5	651.00				Average	
		106+00	525	2,077,609.1	634,525.3	648.00				Average	
		108+00	524	2,077,736.0	634,679.2	644.50				Average	
		110+00	523	2,077,852.4	634,841.2	644.00				Average	
		112+00	522	2,077,956.6	635,011.4	644.00				Average	
		114+00	521	2,078,051.5	635,187.2	646.00				Average	
		116+00	783	2,078,138.9	635,366.9	647.00					
90 EB A-2	24.0	point898	898	2,075,498.2	633,526.8	692.00				Average	
		84+00	735	2,075,697.5	633,545.6	690.00				Average	
		86+00	734	2,075,896.4	633,571.5	687.00				Average	
		88+00	733	2,076,092.9	633,609.2	683.50				Average	
		90+00	732	2,076,286.5	633,660.9	679.50				Average	
		92+00	731	2,076,476.0	633,725.9	675.00				Average	
		94+00	730	2,076,660.2	633,804.6	671.50				Average	
		96+00	729	2,076,839.2	633,894.6	667.50				Average	
		98+00	728	2,077,011.4	633,997.2	664.00				Average	
		100+00	727	2,077,176.0	634,111.4	660.00				Average	
		102+00	726	2,077,332.2	634,236.9	655.00				Average	
		104+00	725	2,077,480.2	634,371.9	651.00				Average	
		106+00	724	2,077,618.1	634,517.3	648.00				Average	
		108+00	723	2,077,745.5	634,671.9	644.50				Average	
		110+00	722	2,077,862.5	634,834.6	644.00				Average	
		112+00	721	2,077,967.1	635,005.5	644.00				Average	

INPUT: ROADWAYS

PID 107714

		114+00	720	2,078,062.1	635,181.8	646.00				Average	
		116+00	784	2,078,149.6	635,361.7	647.00					
90 EB A-2	24.0	point899	899	2,071,910.8	633,227.2	700.00				Average	
		48+00	753	2,072,110.0	633,243.9	698.00				Average	
		50+00	752	2,072,309.4	633,260.6	700.00				Average	
		52+00	751	2,072,508.6	633,277.2	702.00				Average	
		54+00	750	2,072,708.0	633,293.4	704.00				Average	
		56+00	749	2,072,907.4	633,309.8	706.50				Average	
		58+00	748	2,073,106.6	633,326.2	710.00				Average	
		60+00	747	2,073,306.1	633,342.6	710.00				Average	
		62+00	746	2,073,505.2	633,359.4	712.00				Average	Y
		64+00	745	2,073,704.5	633,376.3	712.00				Average	Y
		66+00	744	2,073,903.8	633,392.9	710.00				Average	
		68+00	743	2,074,103.1	633,409.5	708.00				Average	
		70+00	742	2,074,302.5	633,426.1	706.00				Average	
		72+00	741	2,074,501.8	633,442.6	704.00				Average	
		74+00	740	2,074,701.1	633,459.3	702.00				Average	
		76+00	739	2,074,900.4	633,475.8	700.00				Average	
		78+00	738	2,075,099.8	633,492.8	698.00				Average	
		80+00	737	2,075,299.0	633,509.7	695.00				Average	Y
		82+00	736	2,075,498.2	633,526.8	692.00					
90 EB B-2	24.0	point900	900	2,071,909.8	633,239.2	700.00				Average	
		48+00	554	2,072,109.0	633,255.9	698.00				Average	
		50+00	553	2,072,308.4	633,272.6	700.00				Average	
		52+00	552	2,072,507.6	633,289.1	702.00				Average	
		54+00	551	2,072,707.0	633,305.3	704.00				Average	
		56+00	550	2,072,906.4	633,321.8	706.50				Average	
		58+00	549	2,073,105.6	633,338.1	710.00				Average	
		60+00	548	2,073,305.1	633,354.6	710.00				Average	
		62+00	547	2,073,504.2	633,371.4	712.00				Average	Y
		64+00	546	2,073,703.5	633,388.2	712.00				Average	Y
		66+00	545	2,073,902.8	633,404.8	710.00				Average	
		68+00	544	2,074,102.1	633,421.4	708.00				Average	
		70+00	543	2,074,301.5	633,438.0	706.00				Average	
		72+00	542	2,074,500.8	633,454.6	704.00				Average	
		74+00	541	2,074,700.1	633,471.2	702.00				Average	
		76+00	540	2,074,899.4	633,487.8	700.00				Average	
		78+00	539	2,075,098.6	633,504.7	698.00				Average	
		80+00	538	2,075,298.0	633,521.7	695.00				Average	Y

INPUT: ROADWAYS

PID 107714

		82+00	537	2,075,497.1	633,538.8	692.00					
Roadway33	12.0	40+00	901	2,071,313.4	633,201.9	712.00				Average	
		42+00	902	2,071,506.5	633,217.3	706.00				Average	
		44+00	903	2,071,704.6	633,233.4	702.00				Average	
		46+00	904	2,071,904.0	633,250.3	700.00					
Roadway34	12.0	114+00	940	2,078,041.8	635,356.1	646.00				Average	
		112+00	941	2,077,954.6	635,179.1	644.00				Average	
		110+00	942	2,077,862.6	635,005.4	642.00				Average	
		108+00	943	2,077,750.2	634,834.8	642.50				Average	
		106+00	944	2,077,630.1	634,675.8	644.00				Average	
		104+00	945	2,077,498.1	634,523.4	651.00				Average	
		102+00	946	2,077,356.2	634,382.3	652.00				Average	
		100+00	947	2,077,203.1	634,249.6	656.00				Average	
		98+00	948	2,077,044.1	634,130.0	660.00				Average	
		96+00	949	2,076,876.2	634,021.8	664.00				Average	
		94+00	950	2,076,692.2	633,921.4	670.00				Average	
		92+00	951	2,076,509.6	633,840.6	672.00				Average	
		90+00	952	2,076,323.4	633,771.2	676.00				Average	
		88+00	953	2,076,126.8	633,715.0	680.00				Average	
		86+00	954	2,075,928.0	633,672.1	684.00				Average	
		84+00	955	2,075,727.8	633,641.9	688.00				Average	
		82+00	956	2,075,533.5	633,623.0	692.00				Average	
		80+00	957	2,075,333.2	633,606.8	695.00					
Roadway34-2	12.0	point979	979	2,075,333.2	633,606.8	695.00				Average	Y
		78+00	958	2,075,133.9	633,590.0	696.00				Average	Y
		76+00	959	2,074,935.8	633,573.9	699.50				Average	
		74+00	960	2,074,734.1	633,557.1	702.00				Average	
		72+00	961	2,074,534.6	633,539.5	704.00				Average	
		70+00	962	2,074,337.5	633,521.9	704.00				Average	
		68+00	963	2,074,137.4	633,505.8	707.50				Average	
		66+00	964	2,073,937.1	633,490.3	710.00				Average	
		64+00	965	2,073,739.8	633,472.8	710.00				Average	Y
		62+00	966	2,073,536.8	633,455.9	711.00				Average	Y
		60+00	967	2,073,338.6	633,439.8	712.00				Average	Y
		58+00	968	2,073,141.2	633,423.6	710.00				Average	
		56+00	969	2,072,939.6	633,406.8	708.00				Average	
		54+00	970	2,072,739.5	633,389.2	704.00				Average	
		52+00	971	2,072,543.5	633,372.3	702.00				Average	
		50+00	972	2,072,342.6	633,356.9	700.00				Average	

INPUT: ROADWAYS

PID 107714

		48+00	973	2,072,141.8	633,340.1	698.00				Average	
		46+00	974	2,071,943.6	633,324.4	700.00				Average	
		44+00	975	2,071,743.5	633,307.5	702.00				Average	
		42+00	976	2,071,545.4	633,290.7	706.50				Average	
		40+00	977	2,071,343.1	633,273.8	712.00					
Roadway33-2	12.0	point980	980	2,075,492.9	633,550.8	692.00				Average	
		84+00	923	2,075,693.1	633,569.1	690.00				Average	
		86+00	924	2,075,892.1	633,594.4	687.00				Average	
		88+00	925	2,076,088.2	633,631.6	683.50				Average	
		90+00	926	2,076,278.9	633,682.8	679.50				Average	
		92+00	927	2,076,466.5	633,747.7	675.00				Average	
		94+00	928	2,076,647.8	633,824.9	671.50				Average	
		96+00	929	2,076,828.9	633,916.2	667.50				Average	
		98+00	930	2,076,995.4	634,015.3	664.00				Average	
		100+00	931	2,077,160.9	634,130.7	660.00				Average	
		102+00	932	2,077,317.5	634,256.4	655.00				Average	
		104+00	933	2,077,464.6	634,389.8	651.00				Average	
		106+00	934	2,077,599.4	634,533.1	648.00				Average	
		108+00	935	2,077,728.5	634,687.1	644.50				Average	
		110+00	936	2,077,840.9	634,844.4	644.00				Average	
		112+00	937	2,077,945.5	635,018.1	644.00				Average	
		114+00	938	2,078,039.6	635,188.8	646.00				Average	
		116+00	939	2,078,127.4	635,371.6	647.00					
Roadway33-2	12.0	point981	981	2,071,904.0	633,250.3	700.00				Average	
		48+00	905	2,072,104.5	633,266.5	698.00				Average	
		50+00	906	2,072,302.6	633,284.8	700.00				Average	
		52+00	907	2,072,502.8	633,300.9	702.00				Average	
		54+00	908	2,072,703.6	633,316.4	704.00				Average	
		56+00	909	2,072,901.8	633,333.9	706.50				Average	
		58+00	910	2,073,101.5	633,349.4	710.00				Average	
		60+00	911	2,073,301.6	633,366.2	710.00				Average	Y
		62+00	912	2,073,499.0	633,383.8	712.00				Average	Y
		64+00	913	2,073,696.4	633,399.9	712.00				Average	Y
		66+00	914	2,073,898.5	633,414.6	710.00				Average	
		68+00	915	2,074,097.2	633,432.8	708.00				Average	
		70+00	916	2,074,297.4	633,449.7	706.00				Average	
		72+00	917	2,074,498.1	633,465.1	704.00				Average	
		74+00	918	2,074,696.1	633,483.4	702.00				Average	
		76+00	919	2,074,893.8	633,498.2	700.00				Average	

**INPUT: ROADWAYS****PID 107714**

		78+00	920	2,075,096.2	633,515.0	698.00				Average	
		80+00	921	2,075,296.8	633,532.6	695.00				Average	Y
		82+00	922	2,075,492.9	633,550.8	692.00					

ms consultants, inc. KLC 54200					6 April 2023 TNM 2.5					
INPUT: ROADWAYS										
PROJECT/CONTRACT:	PID 107714								Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA	
RUN:	LOR-90 NSA E DY 2045 Barrier									

Roadway Name	Width	Points Name	No.	Coordinates (pavement)			Flow Control			Segment	
				X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected	Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
Ford Road	24.0	point1	1	2,078,546.2	637,943.8	674.00				Average	
		point2	2	2,078,478.4	637,755.6	677.00				Average	
		point3	3	2,078,410.6	637,567.5	680.00				Average	
		point4	4	2,078,342.6	637,379.1	681.00				Average	
		point5	5	2,078,292.8	637,185.3	681.00				Average	
		point6	6	2,078,279.9	636,985.3	680.00				Average	
		point7	7	2,078,276.5	636,785.1	673.00				Average	
		point8	8	2,078,279.4	636,674.3	667.00				Average	
		point9	9	2,078,327.6	636,595.8	669.00				Average	
		point10	10	2,078,494.8	636,484.1	646.00				Average	
		point11	11	2,078,678.8	636,365.3	624.00				Average	
		point12	12	2,078,832.0	636,267.4	612.00				Average	
		point13	13	2,079,022.4	636,205.6	605.80				Average	
		point14	14	2,079,205.6	636,132.1	601.80				Average	
		point15	15	2,079,366.4	636,014.6	600.00				Average	
		point16	16	2,079,494.2	635,918.0	599.50					
Gulf Road	24.0	point17	17	2,079,431.0	638,348.1	675.00				Average	
		point18	18	2,079,482.6	638,154.7	679.50				Average	
		point19	19	2,079,547.9	637,964.8	684.00				Average	
		point20	20	2,079,684.2	637,817.7	686.00				Average	
		point21	21	2,079,831.2	637,681.8	688.00				Average	
		point22	22	2,079,932.0	637,586.7	690.00				Average	Y
		point23	23	2,080,125.2	637,410.5	692.00				Average	
		point24	24	2,080,272.2	637,274.9	694.00				Average	
		point25	25	2,080,419.6	637,139.7	692.00				Average	

INPUT: ROADWAYS

PID 107714

		point26	26	2,080,566.4	637,003.8	690.00				Average	
		point27	27	2,080,771.2	636,813.9	690.00					
90 WB A	24.0	176+00	818	2,082,533.4	639,342.5	671.00				Average	
		174+00	716	2,082,429.6	639,172.2	673.00				Average	
		172+00	717	2,082,313.1	639,010.4	675.50				Average	
		170+00	718	2,082,182.2	638,860.1	678.00				Average	
		168+00	719	2,082,037.8	638,722.7	680.50				Average	
		166+00	720	2,081,881.6	638,598.8	683.00				Average	
		164+00	721	2,081,716.1	638,487.5	685.00				Average	
		162+00	722	2,081,542.8	638,388.2	686.00				Average	
		160+00	723	2,081,366.9	638,293.3	686.00				Average	
		158+00	724	2,081,191.5	638,197.0	685.00				Average	
		156+00	725	2,081,015.8	638,101.7	684.00				Average	
		154+00	726	2,080,839.8	638,006.7	682.00				Average	
		152+00	727	2,080,663.6	637,911.9	680.50				Average	
		150+00	728	2,080,487.6	637,817.0	678.50				Average	
		148+00	729	2,080,311.6	637,722.0	678.00				Average	
		146+00	730	2,080,135.5	637,627.2	676.00				Average	
		144+00	731	2,079,959.4	637,532.4	673.90				Average	
		142+00	732	2,079,783.1	637,437.9	672.00				Average	
		140+00	733	2,079,607.5	637,342.1	670.00				Average	
		138+00	734	2,079,432.5	637,244.9	668.50				Average	
		136+00	735	2,079,260.9	637,141.8	667.40				Average	
		134+00	736	2,079,096.9	637,026.6	666.10				Average	
		132+00	737	2,078,943.9	636,897.1	664.80				Average	
		130+00	738	2,078,801.5	636,756.1	662.30				Average	
		128+00	739	2,078,671.8	636,603.3	660.40				Average	
		126+00	740	2,078,567.5	636,458.1	658.00				Average	Y
		124+00	741	2,078,453.2	636,267.9	656.00				Average	
		122+00	742	2,078,361.4	636,089.9	654.00				Average	
		120+00	743	2,078,276.8	635,908.6	652.00				Average	
		118+00	744	2,078,190.6	635,727.7	650.00				Average	
		116+00	745	2,078,104.9	635,547.4	648.00					
90 WB B	12.0	176+00	819	2,082,544.0	639,336.8	671.00				Average	
		174+00	526	2,082,439.6	639,165.6	673.00				Average	
		172+00	527	2,082,322.6	639,002.9	675.50				Average	
		170+00	528	2,082,190.9	638,851.8	678.00				Average	
		168+00	529	2,082,045.6	638,713.6	680.50				Average	
		166+00	530	2,081,888.6	638,589.1	683.00				Average	



INPUT: ROADWAYS

PID 107714

		164+00	531	2,081,722.4	638,477.3	685.00				Average	
		162+00	532	2,081,548.6	638,377.8	686.00				Average	
		160+00	533	2,081,372.6	638,282.8	686.00				Average	
		158+00	534	2,081,197.2	638,186.5	685.00				Average	
		156+00	535	2,081,021.5	638,091.1	684.00				Average	
		154+00	536	2,080,845.5	637,996.1	682.00				Average	
		152+00	537	2,080,669.4	637,901.4	680.50				Average	
		150+00	538	2,080,493.2	637,806.4	678.50				Average	
		148+00	539	2,080,317.2	637,711.4	678.00				Average	
		146+00	540	2,080,141.2	637,616.6	676.00				Average	
		144+00	541	2,079,965.1	637,521.8	673.90				Average	
		142+00	542	2,079,788.9	637,427.4	672.00				Average	
		140+00	543	2,079,613.2	637,331.6	670.00				Average	
		138+00	544	2,079,438.6	637,234.6	668.50				Average	
		136+00	545	2,079,267.4	637,131.8	667.40				Average	
		134+00	546	2,079,104.2	637,017.1	666.10				Average	
		132+00	547	2,078,952.0	636,888.3	664.80				Average	
		130+00	548	2,078,810.4	636,747.9	662.30				Average	
		128+00	549	2,078,681.2	636,595.9	660.40				Average	
		126+00	550	2,078,575.5	636,451.2	658.00				Average	Y
		124+00	551	2,078,463.8	636,262.1	656.00				Average	
		122+00	552	2,078,372.1	636,084.6	654.00				Average	
		120+00	553	2,078,287.6	635,903.4	652.00				Average	
		118+00	554	2,078,201.5	635,722.6	650.00				Average	
		116+00	555	2,078,115.6	635,542.2	648.00					
90 EB B	12.0	118+00	365	2,078,225.1	635,547.3	648.00				Average	
		120+00	364	2,078,311.2	635,727.8	650.00				Average	
		122+00	363	2,078,397.5	635,908.4	652.00				Average	
		124+00	362	2,078,484.4	636,088.6	654.00				Average	
		126+00	361	2,078,576.8	636,266.3	655.00				Average	Y
		128+00	360	2,078,684.1	636,435.6	657.00				Average	
		130+00	359	2,078,804.8	636,595.6	659.40				Average	
		132+00	358	2,078,938.8	636,744.6	661.20				Average	
		134+00	357	2,079,086.4	636,880.1	663.40				Average	
		136+00	356	2,079,244.8	637,003.0	665.30				Average	
		138+00	355	2,079,413.4	637,111.3	667.10				Average	
		140+00	354	2,079,587.6	637,209.8	668.90				Average	
		142+00	353	2,079,763.5	637,305.1	672.00				Average	
		144+00	352	2,079,939.2	637,400.5	672.00				Average	

INPUT: ROADWAYS

PID 107714

		146+00	351	2,080,115.2	637,495.6	674.00				Average	
		148+00	350	2,080,291.1	637,590.8	676.00				Average	
		150+00	349	2,080,467.0	637,686.0	678.00				Average	
		152+00	348	2,080,642.9	637,781.2	680.00				Average	
		154+00	347	2,080,818.8	637,876.4	682.00				Average	
		156+00	346	2,080,994.8	637,971.4	684.00				Average	
		158+00	345	2,081,170.8	638,066.6	684.00				Average	
		160+00	344	2,081,346.8	638,161.8	686.00				Average	
		162+00	343	2,081,522.5	638,257.1	686.00				Average	
		164+00	342	2,081,697.2	638,354.1	688.00				Average	
		166+00	340	2,081,867.5	638,458.2	684.50				Average	
		168+00	338	2,082,028.5	638,575.6	680.00				Average	
		170+00	337	2,082,178.6	638,706.9	678.00				Average	
		172+00	336	2,082,317.4	638,850.2	676.00				Average	
		174+00	335	2,082,444.0	639,004.1	673.50				Average	
		176+00	334	2,082,556.2	639,168.9	671.50				Average	
		180+00	333	2,082,653.6	639,342.9	669.00					
90 EB A	24.0	118+00	166	2,078,236.0	635,542.2	648.00				Average	
		120+00	165	2,078,322.1	635,722.6	650.00				Average	
		122+00	164	2,078,408.4	635,903.2	652.00				Average	
		124+00	163	2,078,495.1	636,083.2	654.00				Average	
		126+00	162	2,078,587.2	636,260.3	655.00				Average	Y
		128+00	161	2,078,694.0	636,428.8	657.00				Average	
		130+00	160	2,078,814.0	636,587.9	659.40				Average	
		132+00	159	2,078,947.2	636,736.2	661.20				Average	
		134+00	158	2,079,094.1	636,870.9	663.40				Average	
		136+00	157	2,079,251.8	636,993.2	665.30				Average	
		138+00	156	2,079,419.5	637,101.0	667.10				Average	
		140+00	155	2,079,593.4	637,199.3	668.90				Average	
		142+00	154	2,079,769.2	637,294.5	672.00				Average	
		144+00	153	2,079,945.0	637,389.9	672.00				Average	
		146+00	152	2,080,121.0	637,485.1	674.00				Average	
		148+00	151	2,080,296.9	637,580.2	676.00				Average	
		150+00	150	2,080,472.8	637,675.4	678.00				Average	
		152+00	149	2,080,648.6	637,770.7	680.00				Average	
		154+00	148	2,080,824.5	637,865.9	682.00				Average	
		156+00	147	2,081,000.5	637,960.9	684.00				Average	
		158+00	146	2,081,176.4	638,056.1	684.00				Average	
		160+00	145	2,081,352.5	638,151.2	686.00				Average	

INPUT: ROADWAYS

PID 107714

		162+00	144	2,081,528.2	638,246.6	686.00				Average	
		164+00	143	2,081,703.2	638,343.6	688.00				Average	
		166+00	141	2,081,874.0	638,448.1	684.50				Average	
		168+00	139	2,082,036.0	638,566.2	680.00				Average	
		170+00	138	2,082,186.9	638,698.2	678.00				Average	
		172+00	137	2,082,326.4	638,842.2	676.00				Average	
		174+00	136	2,082,453.6	638,996.9	673.50				Average	
		176+00	135	2,082,566.4	639,162.6	671.50				Average	
		180+00	134	2,082,664.2	639,337.6	669.00					
90 WB C	12.0	176+00	907	2,082,554.4	639,331.1	671.00				Average	
		174+00	824	2,082,451.8	639,161.4	673.00				Average	
		172+00	825	2,082,332.0	638,995.4	675.50				Average	
		170+00	826	2,082,199.5	638,843.4	678.00				Average	
		168+00	827	2,082,053.5	638,704.6	680.50				Average	
		166+00	828	2,081,895.8	638,579.4	683.00				Average	
		164+00	829	2,081,728.8	638,467.1	685.00				Average	
		162+00	830	2,081,554.5	638,367.3	686.00				Average	
		160+00	831	2,081,378.4	638,272.2	686.00				Average	
		158+00	832	2,081,203.0	638,175.9	685.00				Average	
		156+00	833	2,081,027.2	638,080.6	684.00				Average	
		154+00	834	2,080,851.1	637,985.6	682.00				Average	
		152+00	835	2,080,675.0	637,890.8	680.50				Average	
		150+00	836	2,080,499.0	637,795.9	678.50				Average	
		148+00	837	2,080,323.0	637,700.9	678.00				Average	
		146+00	838	2,080,146.9	637,606.0	676.00				Average	
		144+00	839	2,079,970.8	637,511.2	673.90				Average	
		142+00	840	2,079,794.5	637,416.8	672.00				Average	
		140+00	841	2,079,619.1	637,321.1	670.00				Average	
		138+00	842	2,079,444.6	637,224.2	668.50				Average	
		136+00	843	2,079,274.0	637,121.7	667.40				Average	
		134+00	844	2,079,111.6	637,007.6	666.10				Average	
		132+00	845	2,078,960.1	636,879.4	664.80				Average	
		130+00	846	2,078,819.1	636,739.8	662.30				Average	
		128+00	847	2,078,690.8	636,589.9	660.40				Average	
		126+00	848	2,078,587.2	636,443.8	658.00				Average	Y
		124+00	849	2,078,474.2	636,256.2	656.00				Average	
		122+00	850	2,078,382.9	636,079.3	654.00				Average	
		120+00	851	2,078,298.5	635,898.3	652.00				Average	
		118+00	852	2,078,212.4	635,717.4	650.00				Average	

INPUT: ROADWAYS

PID 107714

		116+00	853	2,078,126.5	635,537.1	648.00					
90 EB C	12.0	118+00	895	2,078,214.2	635,552.5	648.00				Average	
		120+00	894	2,078,300.5	635,733.0	650.00				Average	
		122+00	893	2,078,386.6	635,913.6	652.00				Average	
		124+00	892	2,078,473.6	636,093.8	654.00				Average	
		126+00	890	2,078,566.2	636,271.9	655.00				Average	Y
		128+00	889	2,078,674.0	636,442.0	657.00				Average	
		130+00	888	2,078,795.6	636,603.3	659.40				Average	
		132+00	887	2,078,930.5	636,753.3	661.20				Average	
		134+00	886	2,079,078.8	636,889.4	663.40				Average	
		136+00	885	2,079,237.8	637,012.7	665.30				Average	
		138+00	884	2,079,407.2	637,121.7	667.10				Average	
		140+00	883	2,079,581.9	637,220.4	668.90				Average	
		142+00	882	2,079,757.9	637,315.6	672.00				Average	
		144+00	881	2,079,933.6	637,411.1	672.00				Average	
		146+00	880	2,080,109.5	637,506.2	674.00				Average	
		148+00	879	2,080,285.5	637,601.2	676.00				Average	
		150+00	878	2,080,461.4	637,696.6	678.00				Average	
		152+00	877	2,080,637.1	637,791.8	680.00				Average	
		154+00	876	2,080,813.1	637,887.0	682.00				Average	
		156+00	875	2,080,989.1	637,981.9	684.00				Average	
		158+00	874	2,081,165.0	638,077.2	684.00				Average	
		160+00	873	2,081,341.1	638,172.2	686.00				Average	
		162+00	872	2,081,516.9	638,267.6	686.00				Average	
		164+00	871	2,081,691.4	638,364.5	688.00				Average	
		166+00	869	2,081,860.8	638,468.2	684.50				Average	
		168+00	867	2,082,021.1	638,585.0	680.00				Average	
		170+00	866	2,082,170.5	638,715.6	678.00				Average	
		172+00	865	2,082,308.5	638,858.2	676.00				Average	
		174+00	864	2,082,434.2	639,011.2	673.50				Average	
		176+00	909	2,082,546.5	639,174.4	671.50				Average	
		180+00	910	2,082,643.6	639,344.4	669.00					

**INPUT: ROADWAYS**

**PID 107714**

ms consultants, inc. KLC 54200					6 April 2023 TNM 2.5							
<b>INPUT: ROADWAYS</b>					<b>Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA</b>							
<b>PROJECT/CONTRACT:</b> PID 107714												
<b>RUN:</b> LOR-90 NSA EP DY 2045 Bike Bridge												

Roadway Name	Width	Points		Coordinates (pavement)			Flow Control			Segment	On Struct?
		Name	No.	X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected		
				ft	ft	ft		mph	%		
90 EB A	24.0	106+00	172	2,077,618.1	634,517.3	648.00				Average	
		108+00	171	2,077,745.5	634,671.9	644.40				Average	
		110+00	170	2,077,862.5	634,834.6	644.00				Average	
		112+00	169	2,077,967.1	635,005.5	643.90				Average	
		114+00	168	2,078,062.1	635,181.8	646.00				Average	
		116+00	167	2,078,149.6	635,361.7	647.10				Average	
		118+00	166	2,078,236.0	635,542.2	648.00				Average	Y
		120+00	165	2,078,322.1	635,722.6	650.00				Average	Y
		122+00	164	2,078,408.4	635,903.2	652.00				Average	
		124+00	163	2,078,495.1	636,083.2	654.00				Average	
		126+00	162	2,078,587.2	636,260.3	655.00				Average	Y
		128+00	161	2,078,694.0	636,428.8	657.00				Average	
		130+00	160	2,078,814.0	636,587.9	659.40				Average	
		132+00	159	2,078,947.2	636,736.2	661.20				Average	
		134+00	158	2,079,094.1	636,870.9	663.40				Average	
136+00	157	2,079,251.8	636,993.2	665.30				Average			
138+00	156	2,079,419.5	637,101.0	667.10				Average			
140+00	155	2,079,593.4	637,199.3	668.90				Average			
142+00	154	2,079,769.2	637,294.5	672.00				Average			
144+00	153	2,079,945.0	637,389.9	672.00							
90 EB B	12.0	106+00	371	2,077,609.1	634,525.3	648.00				Average	
		108+00	370	2,077,736.0	634,679.2	644.40				Average	
		110+00	369	2,077,852.4	634,841.2	644.00				Average	
		112+00	368	2,077,956.6	635,011.4	643.90				Average	
		114+00	367	2,078,051.5	635,187.2	646.00				Average	

INPUT: ROADWAYS

PID 107714

		116+00	366	2,078,138.9	635,366.9	647.10				Average	
		118+00	365	2,078,225.1	635,547.3	648.00				Average	Y
		120+00	364	2,078,311.2	635,727.8	650.00				Average	Y
		122+00	363	2,078,397.5	635,908.4	652.00				Average	
		124+00	362	2,078,484.4	636,088.6	654.00				Average	
		126+00	361	2,078,576.8	636,266.3	655.00				Average	Y
		128+00	360	2,078,684.1	636,435.6	657.00				Average	
		130+00	359	2,078,804.8	636,595.6	659.40				Average	
		132+00	358	2,078,938.8	636,744.6	661.20				Average	
		134+00	357	2,079,086.4	636,880.1	663.40				Average	
		136+00	356	2,079,244.8	637,003.0	665.30				Average	
		138+00	355	2,079,413.4	637,111.3	667.10				Average	
		140+00	354	2,079,587.6	637,209.8	668.90				Average	
		142+00	353	2,079,763.5	637,305.1	672.00				Average	
		144+00	352	2,079,939.2	637,400.5	672.00					
90 WB B	12.0	144+00	541	2,079,965.1	637,521.8	673.90				Average	
		142+00	542	2,079,788.9	637,427.4	672.00				Average	
		140+00	543	2,079,613.2	637,331.6	670.00				Average	
		138+00	544	2,079,438.6	637,234.6	668.50				Average	
		136+00	545	2,079,267.4	637,131.8	667.40				Average	
		134+00	546	2,079,104.2	637,017.1	666.10				Average	
		132+00	547	2,078,952.0	636,888.3	664.80				Average	
		130+00	548	2,078,810.4	636,747.9	662.30				Average	
		128+00	549	2,078,681.2	636,595.9	660.40				Average	
		126+00	550	2,078,570.2	636,440.3	658.00				Average	Y
		124+00	551	2,078,463.8	636,262.1	656.00				Average	
		122+00	552	2,078,372.1	636,084.6	654.00				Average	
		120+00	553	2,078,287.6	635,903.4	652.00				Average	Y
		118+00	554	2,078,201.5	635,722.6	650.00				Average	Y
		116+00	555	2,078,115.6	635,542.2	648.00				Average	
		114+00	556	2,078,029.5	635,361.8	646.00				Average	
		112+00	557	2,077,941.1	635,182.2	644.00				Average	
		110+00	558	2,077,845.8	635,006.0	642.00				Average	
		108+00	559	2,077,736.0	634,838.4	642.40				Average	
		106+00	560	2,077,615.1	634,678.5	644.00				Average	
		104+00	561	2,077,483.1	634,527.8	647.80					
90 WB A	24.0	144+00	731	2,079,959.4	637,532.4	673.90				Average	
		142+00	732	2,079,783.1	637,437.9	672.00				Average	
		140+00	733	2,079,607.5	637,342.1	670.00				Average	

INPUT: ROADWAYS

PID 107714

		138+00	734	2,079,432.5	637,244.9	668.50				Average	
		136+00	735	2,079,260.9	637,141.8	667.40				Average	
		134+00	736	2,079,096.9	637,026.6	666.10				Average	
		132+00	737	2,078,943.9	636,897.1	664.80				Average	
		130+00	738	2,078,801.5	636,756.1	662.30				Average	
		128+00	739	2,078,671.8	636,603.3	660.40				Average	
		126+00	740	2,078,559.5	636,446.2	658.00				Average	Y
		124+00	741	2,078,453.2	636,267.9	656.00				Average	
		122+00	742	2,078,361.4	636,089.9	654.00				Average	
		120+00	743	2,078,276.8	635,908.6	652.00				Average	Y
		118+00	744	2,078,190.6	635,727.7	650.00				Average	Y
		116+00	745	2,078,104.9	635,547.4	648.00				Average	
		114+00	746	2,078,018.8	635,367.0	646.00				Average	
		112+00	747	2,077,930.5	635,187.7	644.00				Average	
		110+00	748	2,077,835.5	635,012.2	642.00				Average	
		108+00	749	2,077,726.1	634,845.3	642.40				Average	
		106+00	750	2,077,605.9	634,686.1	644.00				Average	
		104+00	751	2,077,474.4	634,536.0	647.80					
Ford Road	24.0	point824	824	2,078,342.6	637,379.1	682.00				Average	
		point5	5	2,078,292.8	637,185.3	681.00				Average	
		point6	6	2,078,279.9	636,985.3	680.30				Average	
		point7	7	2,078,276.5	636,785.1	680.70				Average	
		point8	8	2,078,279.4	636,674.3	667.00				Average	
		point9	9	2,078,327.6	636,595.8	669.00				Average	
		point10	10	2,078,494.8	636,484.1	646.00				Average	
		point11	11	2,078,678.8	636,365.3	624.00				Average	
		point12	12	2,078,832.0	636,267.4	612.00				Average	
		point13	13	2,079,022.4	636,205.6	605.80				Average	
		point14	14	2,079,205.6	636,132.1	601.80				Average	
		point15	15	2,079,366.4	636,014.6	600.00				Average	
		point16	16	2,079,494.2	635,918.0	599.50					
Park Access Road	24.0	point825	825	2,078,045.9	636,390.8	600.00				Average	
		point826	826	2,078,138.5	636,333.1	600.00				Average	
		point827	827	2,078,179.4	636,276.9	600.00				Average	
		point828	828	2,078,191.2	636,210.7	600.00				Average	
		point829	829	2,078,171.8	636,144.6	600.00				Average	
		point830	830	2,078,079.5	636,030.6	600.00				Average	
		point831	831	2,078,058.9	635,973.1	600.00				Average	
		point832	832	2,078,074.0	635,880.9	600.00				Average	

INPUT: ROADWAYS

PID 107714

		point833	833	2,078,159.8	635,787.6	600.00				Average	
		point834	834	2,078,255.4	635,726.9	600.00				Average	
		point835	835	2,078,368.2	635,714.1	600.00				Average	
		point836	836	2,078,429.1	635,714.1	600.00				Average	
		point837	837	2,078,473.5	635,743.1	600.00				Average	
		point838	838	2,078,558.2	635,798.4	600.00				Average	
		point839	839	2,078,607.1	635,854.9	600.00				Average	
		point840	840	2,078,655.9	635,952.5	600.00				Average	
		point841	841	2,078,698.2	636,069.7	602.00				Average	
		point842	842	2,078,789.6	636,141.8	606.00				Average	
		point843	843	2,078,847.8	636,224.8	610.00					
Trail	10.0	point844	844	2,077,435.9	636,591.6	600.00				Average	
		point845	845	2,077,659.2	636,422.2	600.00				Average	
		point846	846	2,077,756.9	636,374.8	600.00				Average	
		point847	847	2,077,804.1	636,404.6	600.00				Average	
		point848	848	2,077,894.2	636,424.6	600.00				Average	
		point849	849	2,077,972.1	636,410.8	600.00				Average	
		point850	850	2,078,031.1	636,400.4	600.00				Average	
		point851	851	2,078,076.2	636,400.4	601.00				Average	
		point852	852	2,078,230.4	636,421.9	604.00				Average	
		point853	853	2,078,272.8	636,421.9	605.00				Average	
		point854	854	2,078,313.9	636,397.8	605.00				Average	
		point855	855	2,078,329.6	636,360.9	606.00				Average	
		point856	856	2,078,343.6	636,319.6	608.00				Average	
		point857	857	2,078,331.0	636,273.7	614.00				Average	
		point858	858	2,078,238.9	636,019.0	621.00				Average	
		point859	859	2,078,210.6	635,916.4	625.00				Average	
		point860	860	2,078,229.6	635,877.2	625.00				Average	
		point861	861	2,078,301.0	635,830.1	625.00				Average	
		point862	862	2,078,388.9	635,803.8	625.00				Average	Y
		point863	863	2,078,402.0	635,690.8	630.00				Average	Y
		point864	864	2,078,325.1	635,454.9	650.00				Average	
		point865	865	2,078,325.1	635,429.6	660.00				Average	
		point866	866	2,078,344.9	635,283.8	673.00				Average	
		point867	867	2,078,351.4	635,218.4	675.00				Average	
		point868	868	2,078,344.6	635,180.1	680.00				Average	
		point869	869	2,078,269.5	635,017.9	680.00				Average	
		point870	870	2,078,206.4	634,845.9	680.00				Average	
		point871	871	2,078,194.4	634,755.6	680.00					



INPUT: ROADWAYS

PID 107714

90 EB C	12.0	point952	952	2,077,600.1	634,533.3	648.00				Average	
		point951	951	2,077,726.5	634,686.5	644.40				Average	
		point950	950	2,077,842.2	634,847.7	644.00				Average	
		point949	949	2,077,946.2	635,017.5	643.90				Average	
		point948	948	2,078,040.9	635,192.9	646.00				Average	
		point947	947	2,078,128.1	635,372.2	647.10				Average	
		point946	946	2,078,214.2	635,552.5	648.00				Average	Y
		point945	945	2,078,300.5	635,733.0	650.00				Average	Y
		point944	944	2,078,386.6	635,913.6	652.00				Average	
		point943	943	2,078,473.6	636,093.8	654.00				Average	
		point941	941	2,078,566.2	636,271.9	655.00				Average	Y
		point940	940	2,078,674.0	636,442.0	657.00				Average	
		point939	939	2,078,795.6	636,603.3	659.40				Average	
		point938	938	2,078,930.5	636,753.3	661.20				Average	
		point937	937	2,079,078.8	636,889.4	663.40				Average	
		point936	936	2,079,237.8	637,012.7	665.30				Average	
		point935	935	2,079,407.2	637,121.7	667.10				Average	
		point934	934	2,079,581.9	637,220.4	668.90				Average	
		point933	933	2,079,757.9	637,315.6	672.00				Average	
		point932	932	2,079,933.6	637,411.1	672.00					
90 WB C	12.0	point890	890	2,079,970.8	637,511.2	673.90				Average	
		point891	891	2,079,794.5	637,416.8	672.00				Average	
		point892	892	2,079,619.1	637,321.1	670.00				Average	
		point893	893	2,079,444.6	637,224.2	668.50				Average	
		point894	894	2,079,274.0	637,121.7	667.40				Average	
		point895	895	2,079,111.6	637,007.6	666.10				Average	
		point896	896	2,078,960.1	636,879.4	664.80				Average	
		point897	897	2,078,819.1	636,739.8	662.30				Average	
		point898	898	2,078,690.8	636,588.5	660.40				Average	
		point899	899	2,078,580.9	636,435.4	658.00				Average	Y
		point900	900	2,078,474.2	636,256.2	656.00				Average	
		point901	901	2,078,382.9	636,079.3	654.00				Average	
		point902	902	2,078,298.5	635,898.3	652.00				Average	Y
		point903	903	2,078,212.4	635,717.4	650.00				Average	Y
		point904	904	2,078,126.5	635,537.1	648.00				Average	
		point905	905	2,078,040.4	635,356.5	646.00				Average	
		point906	906	2,077,951.8	635,176.7	644.00				Average	
		point907	907	2,077,856.1	634,999.9	642.00				Average	
		point908	908	2,077,745.8	634,831.5	642.40				Average	

**INPUT: ROADWAYS****PID 107714**

		point909	909	2,077,624.5	634,670.9	644.00				Average	
		point910	910	2,077,492.0	634,519.7	647.80					

ms consultants, inc. KLC 54200						6 April 2023 TNM 2.5					
INPUT: ROADWAYS PROJECT/CONTRACT: PID 107714 RUN: LOR-90 NSA F DY 2045 Barriers							Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA				

Roadway Name	Width	Points		Coordinates (pavement)			Flow Control			Segment	On Struct?
		Name	No.	X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected		
	ft			ft	ft	ft		mph	%		
90 EB A	12.0	192+00	100	2,082,919.2	640,699.9	656.00				Average	
		194+00	99	2,082,917.0	640,899.9	654.00				Average	
		196+00	98	2,082,913.9	641,099.9	652.00				Average	
		198+00	97	2,082,910.9	641,299.9	652.00				Average	
		200+00	96	2,082,908.8	641,499.9	650.00				Average	
		202+00	95	2,082,906.6	641,699.9	650.00				Average	
		204+00	94	2,082,904.6	641,899.9	650.00				Average	
		206+00	93	2,082,902.0	642,099.9	650.00				Average	
		208+00	92	2,082,898.1	642,299.8	650.00				Average	
		210+00	91	2,082,896.4	642,499.8	649.00				Average	
		212+00	90	2,082,894.6	642,699.8	648.00				Average	
		214+00	89	2,082,892.2	642,899.7	648.00				Average	
		216+00	88	2,082,896.8	643,099.3	648.00				Average	
		218+00	87	2,082,912.2	643,298.4	646.50				Average	
		220+00	86	2,082,937.9	643,496.4	646.00				Average	
		222+00	85	2,082,973.1	643,692.9	646.00				Average	
		224+00	84	2,083,019.0	643,887.2	645.00				Average	
		226+00	83	2,083,075.9	644,078.6	644.00				Average	
		228+00	81	2,083,141.6	644,267.1	643.00				Average	
		230+00	80	2,083,217.8	644,451.6	644.00				Average	
		232+00	79	2,083,302.9	644,632.2	643.00				Average	
		234+00	78	2,083,396.2	644,808.9	643.00				Average	
		236+00	77	2,083,494.0	644,983.2	642.00				Average	
		238+00	76	2,083,593.1	645,156.9	642.00				Average	
		240+00	75	2,083,691.2	645,331.2	643.00				Average	

INPUT: ROADWAYS

PID 107714

		242+00	74	2,083,790.4	645,504.9	642.00				Average	
		244+00	73	2,083,889.1	645,678.9	641.00				Average	
		246+00	72	2,083,987.4	645,853.1	641.00				Average	
		248+00	71	2,084,085.8	646,027.2	640.00				Average	
		250+00	70	2,084,184.0	646,201.4	640.00				Average	
		252+00	69	2,084,282.4	646,375.6	640.00				Average	
		254+00	68	2,084,380.8	646,549.7	639.00				Average	
		256+00	67	2,084,479.1	646,723.8	638.00				Average	
		258+00	66	2,084,577.8	646,897.8	638.00				Average	
		260+00	65	2,084,676.4	647,071.8	638.00				Average	
		262+00	63	2,084,774.8	647,245.9	638.00				Average	
		264+00	62	2,084,873.5	647,419.9	638.00				Average	
		266+00	61	2,084,971.6	647,594.1	638.00				Average	
		268+00	60	2,085,070.5	647,767.9	640.00				Average	
		270+00	59	2,085,169.4	647,941.8	638.00				Average	
		272+00	58	2,085,267.1	648,116.2	638.00				Average	
		274+00	57	2,085,365.9	648,290.2	638.00				Average	
		276+00	56	2,085,464.4	648,464.2	638.00				Average	
		278+00	54	2,085,563.1	648,638.1	636.50				Average	
		280+00	53	2,085,661.2	648,812.6	636.00				Average	
		282+00	52	2,085,759.2	648,986.9	636.00				Average	
		284+00	51	2,085,857.9	649,160.8	636.00				Average	
		286+00	50	2,085,956.5	649,334.8	634.00				Average	
		288+00	49	2,086,055.0	649,508.9	634.00				Average	
		290+00	48	2,086,153.5	649,682.9	634.00				Average	
		292+00	47	2,086,252.1	649,856.9	636.00				Average	
		294+00	46	2,086,350.8	650,030.9	639.00				Average	
		296+00	45	2,086,449.2	650,204.9	642.50				Average	
		298+00	44	2,086,549.5	650,377.9	646.00				Average	
		300+00	43	2,086,651.2	650,550.0	650.00					
90 EB B	24.0	192+00	299	2,082,907.2	640,699.9	656.00				Average	
		194+00	298	2,082,905.0	640,899.8	654.00				Average	
		196+00	297	2,082,901.9	641,099.8	652.00				Average	
		198+00	296	2,082,898.9	641,299.8	652.00				Average	
		200+00	295	2,082,896.8	641,499.8	650.00				Average	
		202+00	294	2,082,894.6	641,699.8	650.00				Average	
		204+00	293	2,082,892.6	641,899.8	650.00				Average	
		206+00	292	2,082,890.0	642,099.7	650.00				Average	
		208+00	291	2,082,886.1	642,299.7	650.00				Average	

INPUT: ROADWAYS

PID 107714

		210+00	290	2,082,884.4	642,499.7	649.00				Average	
		212+00	289	2,082,882.6	642,699.6	648.00				Average	
		214+00	288	2,082,880.2	642,899.8	648.00				Average	
		216+00	287	2,082,884.8	643,099.9	648.00				Average	
		218+00	286	2,082,900.2	643,299.6	646.50				Average	
		220+00	285	2,082,926.0	643,498.2	646.00				Average	
		222+00	284	2,082,961.4	643,695.3	646.00				Average	
		224+00	283	2,083,007.4	643,890.3	645.00				Average	
		226+00	282	2,083,064.4	644,082.2	644.00				Average	
		228+00	280	2,083,130.4	644,271.4	643.00				Average	
		230+00	279	2,083,206.8	644,456.5	644.00				Average	
		232+00	278	2,083,292.1	644,637.6	643.00				Average	
		234+00	277	2,083,385.8	644,814.6	643.00				Average	
		236+00	276	2,083,483.5	644,989.2	642.00				Average	
		238+00	275	2,083,582.6	645,162.9	642.00				Average	
		240+00	274	2,083,680.8	645,337.1	643.00				Average	
		242+00	273	2,083,779.9	645,510.9	642.00				Average	
		244+00	272	2,083,878.6	645,684.8	641.00				Average	
		246+00	271	2,083,977.0	645,858.9	641.00				Average	
		248+00	270	2,084,075.2	646,033.1	640.00				Average	
		250+00	269	2,084,173.6	646,207.2	640.00				Average	
		252+00	268	2,084,271.9	646,381.4	640.00				Average	
		254+00	267	2,084,370.2	646,555.6	639.00				Average	
		256+00	266	2,084,468.8	646,729.7	638.00				Average	
		258+00	265	2,084,567.4	646,903.7	638.00				Average	
		260+00	264	2,084,665.9	647,077.7	638.00				Average	
		262+00	262	2,084,764.4	647,251.8	638.00				Average	
		264+00	261	2,084,863.0	647,425.8	638.00				Average	
		266+00	260	2,084,961.1	647,600.0	638.00				Average	
		268+00	259	2,085,060.0	647,773.9	640.00				Average	
		270+00	258	2,085,158.9	647,947.7	638.00				Average	
		272+00	257	2,085,256.6	648,122.2	638.00				Average	
		274+00	256	2,085,355.5	648,296.1	638.00				Average	
		276+00	255	2,085,454.0	648,470.2	638.00				Average	
		278+00	253	2,085,552.8	648,644.1	636.50				Average	
		280+00	252	2,085,650.8	648,818.4	636.00				Average	
		282+00	251	2,085,748.9	648,992.8	636.00				Average	
		284+00	250	2,085,847.4	649,166.8	634.00				Average	
		286+00	249	2,085,946.0	649,340.7	634.00				Average	

INPUT: ROADWAYS

PID 107714

		288+00	248	2,086,044.5	649,514.8	634.00				Average	
		290+00	247	2,086,143.0	649,688.8	634.00				Average	
		292+00	246	2,086,241.8	649,862.8	636.00				Average	
		294+00	245	2,086,340.2	650,036.8	639.00				Average	
		296+00	244	2,086,438.9	650,210.9	642.50				Average	
		298+00	243	2,086,539.1	650,384.0	646.00				Average	
		300+00	784	2,086,641.0	650,556.2	650.00					
90 WB B	12.0	298+00	785	2,086,525.9	650,552.1	650.00				Average	
		296+00	627	2,086,425.5	650,379.2	646.00				Average	
		294+00	628	2,086,326.6	650,205.5	642.00				Average	
		292+00	629	2,086,228.4	650,031.2	638.00				Average	
		290+00	630	2,086,129.6	649,857.4	636.00				Average	
		288+00	631	2,086,031.2	649,683.2	634.00				Average	
		286+00	632	2,085,932.8	649,509.1	634.00				Average	
		284+00	633	2,085,834.4	649,335.0	634.00				Average	
		282+00	634	2,085,735.6	649,161.1	636.00				Average	
		280+00	635	2,085,637.2	648,987.0	636.00				Average	
		278+00	636	2,085,538.6	648,813.0	636.00				Average	
		276+00	637	2,085,440.2	648,638.9	637.00				Average	
		274+00	638	2,085,342.6	648,464.3	638.00				Average	
		272+00	639	2,085,243.2	648,290.8	638.00				Average	
		270+00	640	2,085,145.4	648,116.4	638.00				Average	
		268+00	641	2,085,046.6	647,942.4	638.00				Average	
		266+00	642	2,084,947.9	647,768.5	638.00				Average	
		264+00	643	2,084,849.6	647,594.3	638.00				Average	
		262+00	644	2,084,751.5	647,420.0	638.00				Average	
		260+00	645	2,084,652.9	647,246.0	638.00				Average	
		258+00	646	2,084,554.0	647,072.1	638.00				Average	
		256+00	647	2,084,455.2	646,898.2	638.00				Average	
		254+00	648	2,084,357.0	646,724.1	638.00				Average	
		252+00	649	2,084,258.9	646,549.8	640.00				Average	
		250+00	650	2,084,160.1	646,375.9	640.00				Average	
		248+00	651	2,084,061.9	646,201.7	640.00				Average	
		246+00	652	2,083,963.6	646,027.5	640.00				Average	
		244+00	653	2,083,864.9	645,853.5	641.00				Average	
		242+00	654	2,083,766.2	645,679.5	641.00				Average	
		240+00	655	2,083,667.5	645,505.6	642.00				Average	
		238+00	656	2,083,569.2	645,331.4	642.00				Average	
		236+00	657	2,083,470.5	645,157.4	642.00				Average	

INPUT: ROADWAYS

PID 107714

		234+00	658	2,083,372.0	644,983.4	644.00				Average	
		232+00	659	2,083,275.5	644,808.4	644.00				Average	
		230+00	660	2,083,183.0	644,631.4	644.00				Average	
		228+00	661	2,083,100.5	644,449.6	644.00				Average	
		226+00	662	2,083,026.6	644,264.0	645.00				Average	
		224+00	663	2,082,962.0	644,075.1	646.00				Average	
		222+00	664	2,082,907.1	643,883.1	646.00				Average	
		220+00	665	2,082,862.4	643,688.6	647.00				Average	
		218+00	666	2,082,828.1	643,491.8	647.00				Average	
		216+00	668	2,082,802.8	643,293.8	648.00				Average	
		214+00	669	2,082,788.9	643,094.6	648.00				Average	
		212+00	670	2,082,784.1	642,894.9	648.00				Average	
		210+00	671	2,082,786.2	642,695.0	648.00				Average	
		208+00	672	2,082,788.8	642,495.1	648.00				Average	
		206+00	673	2,082,790.8	642,295.1	650.00				Average	
		204+00	674	2,082,794.2	642,095.1	650.00				Average	
		202+00	675	2,082,796.2	641,895.1	650.00				Average	
		200+00	676	2,082,799.2	641,695.1	650.00				Average	
		198+00	677	2,082,801.4	641,495.1	652.00				Average	
		196+00	678	2,082,804.6	641,295.2	652.00				Average	
		194+00	679	2,082,807.0	641,095.2	652.00				Average	
		192+00	680	2,082,810.0	640,895.2	654.00				Average	
		190+00	681	2,082,812.5	640,695.2	656.00					
90 WB A	12.0	298+00	786	2,086,515.6	650,558.3	650.00				Average	
		296+00	437	2,086,415.1	650,385.2	646.00				Average	
		294+00	438	2,086,316.1	650,211.4	642.00				Average	
		292+00	439	2,086,218.0	650,037.2	638.00				Average	
		290+00	440	2,086,119.1	649,863.3	636.00				Average	
		288+00	441	2,086,020.9	649,689.1	634.00				Average	
		286+00	442	2,085,922.4	649,515.1	634.00				Average	
		284+00	443	2,085,824.0	649,340.9	634.00				Average	
		282+00	444	2,085,725.1	649,167.0	636.00				Average	
		280+00	445	2,085,626.8	648,992.9	636.00				Average	
		278+00	446	2,085,528.2	648,818.9	636.00				Average	
		276+00	447	2,085,429.8	648,644.8	637.00				Average	
		274+00	448	2,085,332.1	648,470.2	638.00				Average	
		272+00	449	2,085,232.8	648,296.6	638.00				Average	
		270+00	450	2,085,134.9	648,122.2	638.00				Average	
		268+00	451	2,085,036.2	647,948.3	638.00				Average	

INPUT: ROADWAYS

PID 107714

		266+00	452	2,084,937.4	647,774.4	638.00				Average	
		264+00	453	2,084,839.1	647,600.2	638.00				Average	
		262+00	454	2,084,741.1	647,425.9	638.00				Average	
		260+00	455	2,084,642.4	647,251.9	638.00				Average	
		258+00	456	2,084,543.6	647,078.1	638.00				Average	
		256+00	457	2,084,444.9	646,904.1	638.00				Average	
		254+00	458	2,084,346.5	646,729.9	638.00				Average	
		252+00	459	2,084,248.4	646,555.7	640.00				Average	
		250+00	460	2,084,149.6	646,381.8	640.00				Average	
		248+00	461	2,084,051.4	646,207.6	640.00				Average	
		246+00	462	2,083,953.1	646,033.4	640.00				Average	
		244+00	463	2,083,854.4	645,859.4	641.00				Average	
		242+00	464	2,083,755.9	645,685.4	641.00				Average	
		240+00	465	2,083,657.1	645,511.5	642.00				Average	
		238+00	466	2,083,558.8	645,337.3	642.00				Average	
		236+00	467	2,083,460.1	645,163.4	642.00				Average	
		234+00	468	2,083,361.5	644,989.3	644.00				Average	
		232+00	469	2,083,264.9	644,814.1	644.00				Average	
		230+00	470	2,083,172.1	644,636.7	644.00				Average	
		228+00	471	2,083,089.4	644,454.2	644.00				Average	
		226+00	472	2,083,015.4	644,268.2	645.00				Average	
		224+00	473	2,082,950.5	644,078.7	646.00				Average	
		222+00	474	2,082,895.5	643,886.1	646.00				Average	
		220+00	475	2,082,850.6	643,690.9	647.00				Average	
		218+00	476	2,082,816.2	643,493.7	647.00				Average	
		216+00	478	2,082,790.9	643,294.9	648.00				Average	
		214+00	479	2,082,776.9	643,095.2	648.00				Average	
		212+00	480	2,082,772.1	642,895.0	648.00				Average	
		210+00	481	2,082,774.2	642,694.9	648.00				Average	
		208+00	482	2,082,776.8	642,494.9	648.00				Average	
		206+00	483	2,082,778.8	642,294.9	650.00				Average	
		204+00	484	2,082,782.2	642,094.9	650.00				Average	
		202+00	485	2,082,784.2	641,894.9	650.00				Average	
		200+00	486	2,082,787.2	641,694.9	650.00				Average	
		198+00	487	2,082,789.4	641,495.0	652.00				Average	
		196+00	488	2,082,792.6	641,295.0	652.00				Average	
		194+00	489	2,082,795.0	641,095.0	652.00				Average	
		192+00	490	2,082,798.0	640,895.1	654.00				Average	
		190+00	491	2,082,800.5	640,695.1	656.00					



**INPUT: ROADWAYS**

**PID 107714**

French Creek Rd	12.0	0+00	787	2,084,912.8	649,782.5	630.00				Average	
		2+00	788	2,085,112.8	649,782.6	630.00				Average	
		4+00	789	2,085,312.8	649,782.8	633.50				Average	
		6+00	790	2,085,512.8	649,782.7	640.00				Average	
		8+00	791	2,085,712.8	649,782.5	648.00				Average	
		10+00	792	2,085,912.8	649,782.3	654.00				Average	Y
		12+00	793	2,086,112.8	649,782.1	655.00				Average	Y
		14+00	794	2,086,312.8	649,781.9	654.00				Average	
		16+00	795	2,086,512.8	649,781.7	650.00				Average	
		18+00	796	2,086,712.8	649,781.5	642.00				Average	
		20+00	797	2,087,553.6	649,781.3	634.00					
Abbe Rd	12.0	A	819	2,084,585.5	649,740.8	632.00				Average	
		B	818	2,084,587.2	649,742.6	632.00				Average	
		C	820	2,084,582.4	648,888.4	632.00				Average	
		0+00	798	2,084,577.5	648,452.4	632.00				Average	
		2+00	799	2,084,579.0	648,252.4	634.00				Average	
		4+00	801	2,084,590.8	648,052.2	639.50				Average	
		6+00	802	2,084,630.4	647,855.6	648.00				Average	
		8+00	803	2,084,694.5	647,665.8	656.00				Average	
		10+00	804	2,084,749.0	647,517.2	658.00				Average	Y
		12+00	805	2,084,835.4	647,291.3	658.00				Average	
		14+00	806	2,084,904.5	647,103.8	656.00				Average	
		16+00	807	2,084,963.2	646,913.4	648.00				Average	
		18+00	808	2,084,995.5	646,717.2	641.50				Average	
		19+00	822	2,084,999.9	646,594.4	640.00				Average	
		20+00	823	2,084,986.9	646,493.8	639.00				Average	
		21+00	824	2,084,942.9	646,363.5	638.00				Average	
		V	825	2,084,684.2	645,783.9	638.00				Average	
		W	826	2,084,651.2	645,710.5	638.00				Average	
		X	827	2,084,636.5	645,659.1	638.00				Average	
		Y	829	2,084,614.5	645,327.1	638.00				Average	
		Z	830	2,084,502.5	643,992.5	638.00					
90 EB C	12.0	point1047	1047	2,082,895.2	640,699.8	656.00				Average	
		point926	926	2,082,893.0	640,899.6	654.00				Average	
		point925	925	2,082,889.9	641,099.6	652.00				Average	
		point924	924	2,082,886.9	641,299.6	652.00				Average	
		point923	923	2,082,884.8	641,499.6	650.00				Average	
		point922	922	2,082,882.6	641,699.6	650.00				Average	
		point921	921	2,082,880.6	641,899.6	650.00				Average	

INPUT: ROADWAYS

PID 107714

		point920	920	2,082,878.0	642,099.4	650.00				Average	
		point919	919	2,082,874.1	642,299.4	650.00				Average	
		point918	918	2,082,872.4	642,499.6	649.00				Average	
		point917	917	2,082,870.8	642,699.5	648.00				Average	
		point916	916	2,082,868.2	642,899.6	648.00				Average	
		point915	915	2,082,872.9	643,100.5	648.00				Average	
		point914	914	2,082,888.2	643,300.8	646.50				Average	
		point913	913	2,082,914.1	643,500.1	646.00				Average	
		point912	912	2,082,949.6	643,697.8	646.00				Average	
		point911	911	2,082,995.8	643,893.2	645.00				Average	
		point910	910	2,083,053.0	644,085.9	644.00				Average	
		point908	908	2,083,119.1	644,275.6	643.00				Average	
		point907	907	2,083,195.8	644,461.2	644.00				Average	
		point906	906	2,083,281.5	644,643.1	643.00				Average	
		point905	905	2,083,375.2	644,820.4	643.00				Average	
		point904	904	2,083,473.1	644,995.1	642.00				Average	
		point903	903	2,083,572.2	645,168.7	642.00				Average	
		point902	902	2,083,670.4	645,343.1	643.00				Average	
		point901	901	2,083,769.4	645,516.9	642.00				Average	
		point900	900	2,083,868.2	645,690.7	641.00				Average	
		point899	899	2,083,966.5	645,864.8	641.00				Average	
		point898	898	2,084,064.9	646,039.0	640.00				Average	
		point897	897	2,084,163.1	646,213.2	640.00				Average	
		point896	896	2,084,261.5	646,387.3	640.00				Average	
		point895	895	2,084,359.8	646,561.5	639.00				Average	
		point894	894	2,084,458.2	646,735.6	638.00				Average	
		point893	893	2,084,556.9	646,909.6	638.00				Average	
		point892	892	2,084,655.6	647,083.6	638.00				Average	
		point890	890	2,084,753.9	647,257.7	638.00				Average	
		point889	889	2,084,852.6	647,431.7	638.00				Average	
		point888	888	2,084,950.8	647,605.9	638.00				Average	
		point887	887	2,085,049.6	647,779.8	640.00				Average	
		point886	886	2,085,148.5	647,953.6	638.00				Average	
		point885	885	2,085,246.2	648,128.1	638.00				Average	
		point884	884	2,085,345.2	648,302.4	638.00				Average	
		point1052	1052	2,085,444.5	648,477.9	638.00				Average	
		point883	883	2,085,543.9	648,653.4	636.50				Average	
		point1051	1051	2,085,641.1	648,826.0	636.00				Average	
		point882	882	2,085,738.4	648,998.6	636.00				Average	

INPUT: ROADWAYS

PID 107714

		point881	881	2,085,837.0	649,172.6	636.00				Average	
		point880	880	2,085,935.5	649,346.6	634.00				Average	
		point1050	1050	2,086,034.0	649,520.6	634.00				Average	
		point879	879	2,086,132.6	649,694.8	634.00				Average	
		point878	878	2,086,231.1	649,868.8	636.00				Average	
		point877	877	2,086,329.6	650,042.9	639.00				Average	
		point876	876	2,086,428.1	650,216.9	642.50				Average	
		point875	875	2,086,528.8	650,390.1	646.00				Average	
		point874	874	2,086,630.6	650,562.4	650.00					
90 WB C	12.0	point1048	1048	2,086,536.1	650,545.9	650.00				Average	
		point979	979	2,086,435.9	650,373.3	646.00				Average	
		point980	980	2,086,337.0	650,199.6	642.00				Average	
		point981	981	2,086,238.9	650,025.4	638.00				Average	
		point982	982	2,086,140.0	649,851.4	636.00				Average	
		point983	983	2,086,041.8	649,677.3	634.00				Average	
		point984	984	2,085,943.2	649,503.2	634.00				Average	
		point985	985	2,085,844.9	649,329.1	634.00				Average	
		point986	986	2,085,746.0	649,155.2	636.00				Average	
		point987	987	2,085,647.6	648,981.1	636.00				Average	
		point988	988	2,085,549.1	648,807.1	636.00				Average	
		point989	989	2,085,450.8	648,633.0	637.00				Average	
		point990	990	2,085,353.0	648,458.4	638.00				Average	
		point991	991	2,085,253.6	648,284.8	638.00				Average	
		point992	992	2,085,155.8	648,110.4	638.00				Average	
		point993	993	2,085,057.1	647,936.4	638.00				Average	
		point994	994	2,084,958.4	647,762.6	638.00				Average	
		point995	995	2,084,860.0	647,588.4	638.00				Average	
		point996	996	2,084,762.0	647,414.1	638.00				Average	
		point997	997	2,084,663.2	647,240.1	638.00				Average	
		point998	998	2,084,564.5	647,066.2	638.00				Average	
		point999	999	2,084,465.8	646,892.3	638.00				Average	
		point1000	1000	2,084,367.4	646,718.2	638.00				Average	
		point1001	1001	2,084,269.4	646,543.9	640.00				Average	
		point1002	1002	2,084,170.6	646,369.9	640.00				Average	
		point1003	1003	2,084,072.2	646,195.8	640.00				Average	
		point1004	1004	2,083,974.0	646,021.6	640.00				Average	
		point1005	1005	2,083,875.2	645,847.6	641.00				Average	
		point1006	1006	2,083,776.8	645,673.6	641.00				Average	
		point1007	1007	2,083,678.0	645,499.7	642.00				Average	

**INPUT: ROADWAYS**

**PID 107714**

		point1008	1008	2,083,579.6	645,325.5	642.00				Average
		point1009	1009	2,083,481.0	645,151.5	642.00				Average
		point1010	1010	2,083,382.5	644,977.6	644.00				Average
		point1011	1011	2,083,286.0	644,802.8	644.00				Average
		point1012	1012	2,083,193.8	644,626.1	644.00				Average
		point1013	1013	2,083,111.5	644,444.9	644.00				Average
		point1014	1014	2,083,037.9	644,259.9	645.00				Average
		point1015	1015	2,082,973.5	644,071.5	646.00				Average
		point1016	1016	2,082,918.8	643,880.1	646.00				Average
		point1017	1017	2,082,874.1	643,686.2	647.00				Average
		point1018	1018	2,082,840.0	643,489.9	647.00				Average
		point1020	1020	2,082,814.8	643,292.7	648.00				Average
		point1021	1021	2,082,800.9	643,094.1	648.00				Average
		point1022	1022	2,082,796.1	642,894.8	648.00				Average
		point1023	1023	2,082,798.2	642,695.2	648.00				Average
		point1024	1024	2,082,800.8	642,495.2	648.00				Average
		point1025	1025	2,082,802.8	642,295.2	650.00				Average
		point1026	1026	2,082,806.2	642,095.2	650.00				Average
		point1027	1027	2,082,808.2	641,895.2	650.00				Average
		point1028	1028	2,082,811.2	641,695.2	650.00				Average
		point1029	1029	2,082,813.4	641,495.3	652.00				Average
		point1030	1030	2,082,816.6	641,295.3	652.00				Average
		point1031	1031	2,082,819.0	641,095.3	652.00				Average
		point1032	1032	2,082,822.0	640,895.4	654.00				Average
		point1033	1033	2,082,824.5	640,695.3	656.00				

ms consultants, inc. KLC 54200						6 April 2023 TNM 2.5					
-----------------------------------	--	--	--	--	--	-------------------------	--	--	--	--	--

<b>INPUT: ROADWAYS</b>											<b>Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA</b>
<b>PROJECT/CONTRACT:</b>		<b>PID 107714</b>									
<b>RUN:</b>		<b>LOR-90 NSA G Design Year 2045</b>									

Roadway Name	Width	Points			Coordinates (pavement)			Flow Control			Segment		
		Name	No.		X	Y	Z	Control Device	Speed Constraint	Percent Vehicles Affected		Pvmt Type	On Struct?
					ft	ft	ft		mph	%			
French Creek Rd	24.0	0+00	1		2,084,912.8	649,782.5	630.00				Average		
		2+00	2		2,085,112.8	649,782.6	630.00				Average		
		4+00	3		2,085,312.8	649,782.8	634.00				Average		
		6+00	4		2,085,512.8	649,782.7	640.00				Average		
		8+00	5		2,085,712.8	649,782.5	648.00				Average		
		10+00	6		2,085,912.8	649,782.3	654.00				Average	Y	
		12+00	7		2,086,112.8	649,782.1	655.00				Average	Y	
		14+00	8		2,086,312.8	649,781.9	654.00				Average		
		16+00	9		2,086,512.8	649,781.7	650.00				Average		
		18+00	10		2,086,712.8	649,781.5	642.00				Average		
		20+00	11		2,086,853.4	649,781.3	634.00						
90 WB A	12.0	358+00	12		2,090,594.5	654,945.8	634.00				Average		
		356+00	13		2,090,442.9	654,815.0	634.00				Average		
		354+00	14		2,090,300.2	654,674.5	634.00				Average		
		352+00	15		2,090,160.4	654,531.5	634.00				Average		
		350+00	16		2,090,021.0	654,388.1	634.00				Average		
		348+00	17		2,089,881.2	654,244.9	634.00				Average		
		346+00	18		2,089,741.6	654,101.7	634.00				Average		
		344+00	19		2,089,602.8	653,957.8	634.00				Average		
		342+00	20		2,089,463.6	653,814.1	634.00				Average		
		340+00	21		2,089,324.0	653,670.9	633.00				Average		
		338+00	22		2,089,184.4	653,527.8	632.00				Average		
		336+00	23		2,089,045.4	653,383.9	632.00				Average		
		334+00	24		2,088,906.0	653,240.4	632.00				Average		
		332+00	25		2,088,766.6	653,097.1	630.00				Average		

INPUT: ROADWAYS

PID 107714

		330+00	26	2,088,627.5	652,953.4	630.00				Average	
		328+00	27	2,088,488.9	652,809.2	632.00				Average	
		326+00	28	2,088,350.0	652,665.3	634.00				Average	
		324+00	29	2,088,210.8	652,521.7	636.00				Average	
		322+00	30	2,088,071.1	652,378.1	640.00				Average	
		320+00	31	2,087,931.4	652,235.4	644.00				Average	
		318+00	32	2,087,791.6	652,092.4	648.00				Average	
		316+00	33	2,087,652.4	651,948.8	652.00				Average	
		314+00	34	2,087,513.4	651,805.1	656.00				Average	
		312+00	35	2,087,373.8	651,661.8	658.00				Average	
		310+00	36	2,087,234.9	651,517.4	660.00				Average	
		308+00	37	2,087,102.5	651,367.5	660.00				Average	
		306+00	38	2,086,973.1	651,214.8	660.00				Average	
		304+00	39	2,086,850.9	651,056.3	658.00				Average	
		302+00	40	2,086,732.6	650,894.7	656.00				Average	
		300+00	41	2,086,621.4	650,728.2	654.00				Average	
		298+00	42	2,086,515.6	650,558.3	650.00				Average	
		296+00	43	2,086,415.1	650,385.2	646.00				Average	
		294+00	44	2,086,316.1	650,211.4	642.00				Average	
		292+00	45	2,086,218.0	650,037.2	638.00				Average	
		290+00	46	2,086,119.1	649,863.3	636.00				Average	
		288+00	47	2,086,020.9	649,689.1	634.00				Average	
		286+00	48	2,085,922.4	649,515.1	634.00				Average	
		284+00	49	2,085,824.0	649,340.9	634.00				Average	
		282+00	50	2,085,725.1	649,167.0	636.00				Average	
		280+00	51	2,085,626.8	648,992.9	636.00					
90 WB B	12.0	358+00	52	2,090,602.1	654,936.5	634.00				Average	
		356+00	53	2,090,451.0	654,806.2	634.00				Average	
		354+00	54	2,090,308.8	654,666.1	634.00				Average	
		352+00	55	2,090,168.9	654,523.1	634.00				Average	
		350+00	56	2,090,029.5	654,379.7	634.00				Average	
		348+00	57	2,089,889.8	654,236.6	634.00				Average	
		346+00	58	2,089,750.2	654,093.4	634.00				Average	
		344+00	59	2,089,611.4	653,949.4	634.00				Average	
		342+00	60	2,089,472.2	653,805.8	634.00				Average	
		340+00	61	2,089,332.6	653,662.6	633.00				Average	
		338+00	62	2,089,193.0	653,519.4	632.00				Average	
		336+00	63	2,089,054.0	653,375.6	632.00				Average	
		334+00	64	2,088,914.6	653,232.1	632.00				Average	

INPUT: ROADWAYS

PID 107714

		332+00	65	2,088,775.2	653,088.8	630.00				Average	
		330+00	66	2,088,636.1	652,945.1	630.00				Average	
		328+00	67	2,088,497.5	652,800.9	632.00				Average	
		326+00	68	2,088,358.6	652,657.0	634.00				Average	
		324+00	69	2,088,219.4	652,513.3	636.00				Average	
		322+00	70	2,088,079.6	652,369.7	640.00				Average	
		320+00	71	2,087,940.0	652,227.1	644.00				Average	
		318+00	72	2,087,800.2	652,084.1	648.00				Average	
		316+00	73	2,087,661.0	651,940.5	652.00				Average	
		314+00	74	2,087,521.9	651,796.8	656.00				Average	
		312+00	75	2,087,382.4	651,653.4	658.00				Average	
		310+00	76	2,087,243.6	651,509.3	660.00				Average	
		308+00	77	2,087,111.5	651,359.7	660.00				Average	
		306+00	78	2,086,982.5	651,207.2	660.00				Average	
		304+00	79	2,086,860.4	651,049.1	658.00				Average	
		302+00	80	2,086,742.5	650,887.8	656.00				Average	
		300+00	81	2,086,631.5	650,721.8	654.00				Average	
		298+00	82	2,086,525.9	650,552.1	650.00				Average	
		296+00	83	2,086,425.5	650,379.2	646.00				Average	
		294+00	84	2,086,326.6	650,205.5	642.00				Average	
		292+00	85	2,086,228.4	650,031.2	638.00				Average	
		290+00	86	2,086,129.6	649,857.4	636.00				Average	
		288+00	87	2,086,031.2	649,683.2	634.00				Average	
		286+00	88	2,085,932.8	649,509.1	634.00				Average	
		284+00	89	2,085,834.4	649,335.0	634.00				Average	
		282+00	90	2,085,735.6	649,161.1	636.00				Average	
		280+00	91	2,085,637.2	648,987.0	636.00					
90 EB B	12.0	282+00	92	2,085,748.9	648,992.8	636.00				Average	
		284+00	93	2,085,847.4	649,166.8	634.00				Average	
		286+00	94	2,085,946.0	649,340.7	634.00				Average	
		288+00	95	2,086,044.5	649,514.8	634.00				Average	
		290+00	96	2,086,143.0	649,688.8	634.00				Average	
		292+00	97	2,086,241.8	649,862.8	636.00				Average	
		294+00	98	2,086,340.2	650,036.8	639.00				Average	
		296+00	99	2,086,438.9	650,210.9	642.50				Average	
		298+00	100	2,086,539.1	650,384.0	646.00				Average	
		300+00	101	2,086,641.0	650,556.2	650.00				Average	
		302+00	102	2,086,748.1	650,725.2	654.00				Average	
		304+00	103	2,086,861.6	650,890.2	656.00				Average	

INPUT: ROADWAYS

PID 107714

		306+00	104	2,086,981.9	651,050.3	658.00				Average	
		308+00	105	2,087,106.0	651,207.3	658.00				Average	
		310+00	106	2,087,237.0	651,358.6	658.00				Average	
		312+00	107	2,087,372.5	651,505.9	658.00				Average	
		314+00	108	2,087,511.0	651,650.3	656.00				Average	
		316+00	109	2,087,649.9	651,794.2	654.00				Average	
		318+00	110	2,087,789.2	651,937.8	650.00				Average	
		320+00	111	2,087,928.9	652,081.0	646.00				Average	
		322+00	112	2,088,067.6	652,224.9	642.50				Average	
		324+00	113	2,088,207.0	652,368.4	638.00				Average	
		326+00	114	2,088,346.2	652,512.0	635.50				Average	
		328+00	115	2,088,485.5	652,655.6	632.00				Average	
		330+00	116	2,088,624.8	652,799.1	630.00				Average	
		332+00	117	2,088,764.4	652,942.3	630.00				Average	
		334+00	118	2,088,904.1	653,085.4	632.00				Average	
		336+00	119	2,089,043.6	653,228.7	632.00				Average	
		338+00	120	2,089,183.2	653,371.9	632.00				Average	
		340+00	121	2,089,322.8	653,515.2	632.50				Average	
		342+00	122	2,089,462.4	653,658.4	634.00				Average	
		344+00	123	2,089,601.4	653,802.1	634.00				Average	
		346+00	124	2,089,740.5	653,945.9	634.50				Average	
		348+00	125	2,089,880.2	654,088.9	635.00				Average	
		350+00	126	2,090,019.8	654,232.2	635.50				Average	
		352+00	127	2,090,158.8	654,376.1	636.00				Average	
		354+00	128	2,090,297.9	654,519.8	634.00				Average	
		356+00	129	2,090,438.9	654,661.7	634.00				Average	
		358+00	130	2,090,584.0	654,799.9	632.00					
90 EB A	12.0	282+00	131	2,085,759.2	648,986.9	636.00				Average	
		284+00	132	2,085,857.9	649,160.8	634.00				Average	
		286+00	133	2,085,956.5	649,334.8	634.00				Average	
		288+00	134	2,086,055.0	649,508.9	634.00				Average	
		290+00	135	2,086,153.5	649,682.9	634.00				Average	
		292+00	136	2,086,252.1	649,856.9	636.00				Average	
		294+00	137	2,086,350.8	650,030.9	639.00				Average	
		296+00	138	2,086,449.2	650,204.9	642.50				Average	
		298+00	139	2,086,549.5	650,377.9	646.00				Average	
		300+00	140	2,086,651.2	650,550.0	650.00				Average	
		302+00	141	2,086,758.2	650,718.6	654.00				Average	
		304+00	142	2,086,871.4	650,883.2	656.00				Average	



INPUT: ROADWAYS

PID 107714

		306+00	143	2,086,991.4	651,043.0	658.00				Average	
		308+00	144	2,087,115.2	651,199.7	658.00				Average	
		310+00	145	2,087,246.0	651,350.7	658.00				Average	
		312+00	146	2,087,381.2	651,497.8	658.00				Average	
		314+00	147	2,087,519.6	651,642.0	656.00				Average	
		316+00	148	2,087,658.5	651,785.9	654.00				Average	
		318+00	149	2,087,797.9	651,929.4	650.00				Average	
		320+00	150	2,087,937.4	652,072.6	646.00				Average	
		322+00	151	2,088,076.2	652,216.6	642.50				Average	
		324+00	152	2,088,215.6	652,360.1	638.00				Average	
		326+00	153	2,088,354.9	652,503.6	635.50				Average	
		328+00	154	2,088,494.1	652,647.2	632.00				Average	
		330+00	155	2,088,633.2	652,790.8	630.00				Average	
		332+00	156	2,088,773.0	652,933.9	630.00				Average	
		334+00	157	2,088,912.8	653,077.0	632.00				Average	
		336+00	158	2,089,052.2	653,220.3	632.00				Average	
		338+00	159	2,089,191.8	653,363.6	632.00				Average	
		340+00	160	2,089,331.4	653,506.8	632.50				Average	
		342+00	161	2,089,471.0	653,650.1	634.00				Average	
		344+00	162	2,089,610.0	653,793.8	634.00				Average	
		346+00	163	2,089,749.1	653,937.6	634.50				Average	
		348+00	164	2,089,888.9	654,080.6	635.00				Average	
		350+00	165	2,090,028.4	654,223.9	635.50				Average	
		352+00	166	2,090,167.4	654,367.8	636.00				Average	
		354+00	167	2,090,306.5	654,511.3	634.00				Average	
		356+00	168	2,090,447.4	654,653.2	634.00				Average	
		358+00	169	2,090,591.9	654,790.9	632.00					
Off-Ramp	16.0	344+00	170	2,089,622.5	653,789.8	634.00				Average	
		346+00	171	2,089,759.4	653,929.6	634.00				Average	
		347+00	172	2,089,830.1	654,000.6	634.50				Average	
		348+00	173	2,089,899.6	654,070.0	634.50				Average	
		348+50	174	2,089,980.2	654,152.9	634.50				Average	
		350+00	175	2,090,048.0	654,211.9	634.50				Average	
		351+00	176	2,090,115.9	654,271.0	635.00				Average	
		352+00	177	2,090,200.8	654,335.6	635.50				Average	
		A	178	2,090,307.9	654,404.6	636.00				Average	
		B	179	2,090,449.5	654,459.1	637.00				Average	
		C	180	2,090,543.8	654,474.9	638.00				Average	
		D	181	2,090,638.1	654,490.6	639.00				Average	

INPUT: ROADWAYS

PID 107714

		E	182	2,090,750.5	654,498.1	640.50				Average
		F	183	2,090,858.8	654,508.7	642.00				Average
		G	184	2,090,952.0	654,541.0	643.00				Average
		H	185	2,091,043.5	654,609.3	644.00				
90 EB C	12.0	282+00	186	2,085,738.4	648,998.6	636.00				Average
		284+00	187	2,085,837.0	649,172.6	634.00				Average
		286+00	188	2,085,933.8	649,343.8	634.00				Average
		288+00	189	2,086,033.2	649,519.2	634.00				Average
		290+00	190	2,086,132.6	649,694.8	634.00				Average
		292+00	191	2,086,231.1	649,868.8	636.00				Average
		294+00	192	2,086,329.6	650,042.9	639.00				Average
		296+00	193	2,086,428.1	650,216.9	642.50				Average
		298+00	194	2,086,528.8	650,390.1	646.00				Average
		300+00	195	2,086,630.6	650,562.4	650.00				Average
		302+00	196	2,086,738.2	650,731.9	654.00				Average
		304+00	197	2,086,852.0	650,897.3	656.00				Average
		306+00	198	2,086,972.4	651,057.6	658.00				Average
		308+00	199	2,087,096.6	651,214.8	658.00				Average
		310+00	200	2,087,228.0	651,366.4	658.00				Average
		312+00	201	2,087,363.9	651,514.2	658.00				Average
		314+00	202	2,087,502.4	651,658.6	656.00				Average
		316+00	203	2,087,640.9	651,802.9	654.00				Average
		318+00	204	2,087,780.6	651,946.2	650.00				Average
		320+00	205	2,087,920.1	652,089.4	646.00				Average
		322+00	206	2,088,059.2	652,233.2	642.50				Average
		324+00	207	2,088,198.4	652,376.8	638.00				Average
		326+00	208	2,088,337.6	652,520.3	635.50				Average
		328+00	209	2,088,476.9	652,663.9	632.00				Average
		330+00	210	2,088,616.1	652,807.5	630.00				Average
		332+00	211	2,088,755.9	652,950.6	630.00				Average
		334+00	212	2,088,895.5	653,093.8	632.00				Average
		336+00	213	2,089,035.0	653,237.0	632.00				Average
		338+00	214	2,089,174.6	653,380.3	632.00				Average
		340+00	215	2,089,314.1	653,523.6	632.50				Average
		342+00	216	2,089,453.0	653,667.4	634.00				Average
		344+00	217	2,089,592.9	653,810.5	634.00				Average
		346+00	218	2,089,731.9	653,954.2	634.50				Average
		348+00	219	2,089,871.8	654,097.2	635.00				Average
		350+00	220	2,090,011.1	654,240.6	635.50				Average

INPUT: ROADWAYS

PID 107714

		352+00	221	2,090,149.8	654,384.8	636.00				Average	
		354+00	222	2,090,289.2	654,528.1	634.00				Average	
		356+00	223	2,090,430.1	654,670.4	634.00				Average	
		358+00	224	2,090,575.9	654,808.8	632.00					
90 WB C	12.0	358+00	225	2,090,609.8	654,927.2	634.00				Average	
		356+00	226	2,090,459.1	654,797.4	634.00				Average	
		354+00	227	2,090,317.2	654,657.6	634.00				Average	
		352+00	228	2,090,177.5	654,514.8	634.00				Average	
		350+00	229	2,090,038.1	654,371.3	634.00				Average	
		348+00	230	2,089,898.4	654,228.2	634.00				Average	
		346+00	231	2,089,758.9	654,085.0	634.00				Average	
		344+00	232	2,089,620.0	653,941.1	634.00				Average	
		342+00	233	2,089,480.9	653,797.4	634.00				Average	
		340+00	234	2,089,341.2	653,654.1	633.00				Average	
		338+00	235	2,089,201.6	653,511.1	632.00				Average	
		336+00	236	2,089,062.6	653,367.2	632.00				Average	
		334+00	237	2,088,923.2	653,223.8	632.00				Average	
		332+00	238	2,088,783.9	653,080.4	630.00				Average	
		330+00	239	2,088,644.8	652,936.7	630.00				Average	
		328+00	240	2,088,506.1	652,792.6	632.00				Average	
		326+00	241	2,088,367.2	652,648.7	634.00				Average	
		324+00	242	2,088,228.0	652,505.0	636.00				Average	
		322+00	243	2,088,088.2	652,361.3	640.00				Average	
		320+00	244	2,087,948.6	652,218.7	644.00				Average	
		318+00	245	2,087,808.9	652,075.7	648.00				Average	
		316+00	246	2,087,669.6	651,932.1	652.00				Average	
		314+00	247	2,087,530.5	651,788.4	656.00				Average	
		312+00	248	2,087,391.0	651,645.1	658.00				Average	
		310+00	249	2,087,252.5	651,501.2	660.00				Average	
		308+00	250	2,087,120.6	651,351.8	660.00				Average	
		306+00	251	2,086,991.8	651,199.7	660.00				Average	
		304+00	252	2,086,870.0	651,041.9	658.00				Average	
		302+00	253	2,086,752.4	650,880.9	656.00				Average	
		300+00	254	2,086,641.5	650,715.2	654.00				Average	
		298+00	255	2,086,536.1	650,545.9	650.00				Average	
		296+00	256	2,086,435.9	650,373.3	646.00				Average	
		294+00	257	2,086,337.0	650,199.6	642.00				Average	
		292+00	258	2,086,238.9	650,025.4	638.00				Average	
		290+00	259	2,086,140.0	649,851.4	636.00				Average	

**INPUT: ROADWAYS****PID 107714**

		288+00	260	2,086,041.8	649,677.3	634.00				Average	
		286+00	261	2,085,943.2	649,503.2	634.00				Average	
		284+00	262	2,085,844.9	649,329.1	634.00				Average	
		282+00	263	2,085,746.0	649,155.2	636.00				Average	
		280+00	264	2,085,647.6	648,981.1	636.00					

**Appendix F**

**TNM**

**Noise Barrier**

**Evaluations**

---

LOR-90 -- Noise Barrier Summary Table -- April 7, 2023

NSA/Barrier	Number of Units	Impacted Units	1st Row Units	Barrier Length	Barrier Height	Average IL	Average IL @ Impacted	# Impacted IL > 7dB	# Impacted w/ > 5db IL	% Impacted w/ > 5dB IL	Non-impacted Units > 5db IL	Total Benefited Units	Barrier Cost	Cost per Benefited Unit
NSA A Barrier A	51	3	28	1300	8	1.0	4.6	0	1	33%	0	1	\$363,995	n/a
	51	3	28	1300	10	1.6	6.7	1	3	100%	0	3	\$454,994	\$151,665
	51	3	28	1300	12	3.8	9.4	3	3	100%	14	17	\$545,993	\$32,117
	51	3	28	1300	14	4.8	10.5	3	3	100%	20	23	\$636,992	\$27,695
	51	3	28	1300	16	5.3	11.4	3	3	100%	23	26	\$727,990	\$28,000
	51	3	28	1300	18	5.7	12.1	3	3	100%	26	29	\$818,989	\$28,241
51	3	28	1300	20	6.0	12.7	3	3	100%	26	29	\$909,988	\$31,379	
NSA C Barrier C North	11	10	5	1675	8	2.6	2.8	0	1	10%	0	1	\$334,974	n/a
	11	10	5	1675	10	4.2	4.4	0	2	20%	0	2	\$418,717	n/a
	11	10	5	1675	12	5.4	5.5	1	6	60%	0	6	\$502,461	\$83,744
	11	10	5	1675	14	5.9	6.0	3	7	70%	0	7	\$586,205	\$83,744
	11	10	5	1675	16	6.3	6.4	4	8	80%	0	8	\$669,948	\$83,744
	11	10	5	1625	18	6.4	6.5	4	9	90%	0	9	\$731,243	\$81,249
11	10	5	1625	20	6.6	6.8	4	10	100%	1	11	\$812,493	\$73,863	
NSA C Barrier C South	22	7	11	1200	8	1.5	3.2	0	1	14%	0	1	\$395,074	n/a
	22	7	11	1200	10	2.1	4.4	0	2	29%	0	2	\$487,576	n/a
	22	7	11	1200	12	2.8	4.9	0	4	57%	0	4	\$585,089	n/a
	22	7	11	1250	14	3.1	5.4	0	5	71%	0	5	\$752,640	n/a
	22	7	11	1250	16	3.3	5.6	2	6	86%	0	6	\$860,160	\$143,360
	22	7	11	1200	18	3.3	5.7	2	6	86%	0	6	\$877,634	\$146,272
22	7	11	1175	20	3.3	5.7	2	6	86%	0	6	\$925,025	\$154,171	
NSA D Barrier D North	10	2	10	1094	8	1.3	2.9	0	0	0%	0	0	\$306,380	n/a
	10	2	10	1094	10	1.7	3.5	0	0	0%	0	0	\$382,975	n/a
	10	2	10	1094	12	2.2	4.1	0	1	50%	0	1	\$459,570	\$459,570
	10	2	10	1094	14	2.6	4.6	0	1	50%	0	1	\$536,165	\$536,165
	10	2	10	1094	16	2.8	4.9	0	1	50%	0	1	\$612,760	\$612,760
	10	2	10	1094	18	2.9	5.1	0	1	50%	0	1	\$689,356	\$689,356
10	2	10	1094	20	3.0	5.3	0	1	50%	0	1	\$765,951	\$765,951	
NSA D Barrier D South	68	32	67	1349	12	2.2	2.6	0	0	0%	0	0	\$566,565	n/a
	68	32	67	1349	14	2.7	3.0	0	18	56%	0	18	\$660,993	\$36,722
	68	32	67	1349	16	3.2	3.3	0	30	94%	0	30	\$755,420	\$25,181
	68	32	67	1349	18	3.6	3.6	0	30	94%	0	30	\$849,848	\$28,328
	68	32	67	1349	20	4.0	3.8	0	30	94%	30	60	\$944,275	\$15,738

NSA/Barrier	Number of Units	Impacted Units	1st Row Units	Barrier Length	Barrier Height	Average IL	Average IL @ Impacted	# Impacted IL > 7dB	# Impacted w/ > 5db IL	% Impacted w/ > 5dB IL	Non-impacted Units > 5db IL	Total Benefited Units	Barrier Cost	Cost per Benefited Unit
NSA D Barrier D South East	3	1	16	1101	8	0.9	1.0	0	0	0%	0	0	\$308,297	n/a
	3	1	16	1101	10	1.1	1.4	0	0	0%	0	0	\$385,371	n/a
	3	1	16	1101	12	1.6	2.1	0	0	0%	0	0	\$462,445	n/a
	3	1	16	1101	14	2.8	3.3	0	0	0%	0	0	\$539,519	n/a
	3	1	16	1101	16	3.5	4.7	0	0	0%	0	0	\$616,593	n/a
	3	1	16	1101	18	4.2	6.1	0	1	100%	0	1	\$693,667	\$693,667
	3	1	16	1101	20	4.5	6.8	0	1	100%	0	1	\$770,741	\$770,741
NSA D Barrier D HP High Point Apts.	33	20	17	1500	8	2.3	2.2	0	0	0%	0	0	\$420,002	n/a
	33	20	17	1500	10	3.4	3.4	0	6	30%	1	7	\$525,003	\$75,000
	33	20	17	1500	12	4.4	4.5	1	13	65%	1	14	\$630,003	\$45,000
	33	20	17	1500	14	5.4	5.6	2	14	70%	1	15	\$735,004	\$49,000
	33	20	17	1500	16	6.3	6.7	13	18	90%	1	19	\$840,004	\$44,211
	33	20	17	1500	18	7.2	7.6	14	19	95%	1	20	\$945,004	\$47,250
	33	20	17	1500	20	7.9	8.4	17	19	95%	1	20	\$1,050,005	\$52,500
NSA EP Barrier E Bikepath Bridge					8									
	19	19	1	1233	11	3.6	3.6	0	0	0%	0	0	\$814,366	n/a
	19	19	1	1233	12.5	3.9	3.9	0	0	0%	0	0	\$925,416	n/a
	19	19	1	851	14	5.0	5.0	0	19	100%	0	19	\$849,233	\$44,696
NSA EE Barrier E West	21	2	7	416	8	1.0	5.7	0	1	50%	0	1	\$116,505	n/a
	21	2	7	416	10	1.1	6.2	1	2	100%	0	2	\$145,631	\$72,816
	21	2	7	416	12	1.2	6.7	1	2	100%	0	2	\$174,757	\$87,379
	21	2	7	416	14	1.2	7.1	1	2	100%	0	2	\$203,883	\$101,942
	21	2	7	416	16	1.3	7.5	1	2	100%	0	2	\$233,009	\$116,505
	21	2	7	416	18	1.4	7.8	1	2	100%	0	2	\$262,136	\$131,068
	21	2	7	416	20	1.4	8.0	1	2	100%	0	2	\$291,262	\$145,631
NSA EE Barrier E East	129	49	27	2550	8	1.6	3.4	0	6	12%	0	6	\$713,984	n/a
	129	49	27	2550	10	2.1	4.3	4	22	45%	0	22	\$892,479	\$40,567
	129	49	27	2550	12	4.1	7.0	37	38	78%	13	51	\$1,070,975	\$21,000
	129	49	27	2550	14	5.6	8.9	39	48	98%	33	81	\$1,249,471	\$15,426
	129	49	27	2550	16	6.4	10.0	47	48	98%	46	94	\$1,427,967	\$15,191
	129	49	27	2550	18	7.1	10.9	47	48	98%	52	100	\$1,606,463	\$16,065
	129	49	27	2550	20	7.6	11.6	47	48	98%	56	104	\$1,784,959	\$17,163

NSA/Barrier	Number of Units	Impacted Units	1st Row Units	Barrier Length	Barrier Height	Average IL	Average IL @ Impacted	# Impacted IL > 7dB	# Impacted w/ > 5db IL	% Impacted w/ > 5dB IL	Non-impacted Units > 5db IL	Total Benefited Units	Barrier Cost	Cost per Benefited Unit
NSA F Barrier F West	15	1	3	1150	8	1.2	3.4	0	0	0%	0	0	\$321,990	n/a
	15	1	3	1150	10	1.3	3.9	0	0	0%	0	0	\$402,488	n/a
	15	1	3	1150	12	1.9	6.3	0	1	100%	0	1	\$482,985	\$482,985
	15	1	3	1150	14	2.1	7.0	1	1	100%	0	1	\$563,483	\$563,483
	15	1	3	1150	16	2.3	7.5	1	1	100%	0	1	\$643,980	\$643,980
	15	1	3	1150	18	2.4	7.8	1	1	100%	0	1	\$724,478	\$724,478
	15	1	3	1150	20	2.5	8.1	1	1	100%	0	1	\$804,976	\$804,976
NSA F Barrier F North	211	22	61	2800	8	2.0	3.3	0	4	18%	0	4	\$783,996	n/a
	211	22	61	2800	10	2.7	4.4	0	8	36%	0	8	\$979,994	\$122,499
	211	22	61	2800	12	4.4	6.3	8	18	82%	50	68	\$1,175,993	\$17,294
	211	22	61	2800	14	5.0	7.0	11	21	95%	113	134	\$1,371,992	\$10,239
	211	22	61	2800	16	5.4	7.6	16	21	95%	117	138	\$1,567,991	\$11,362
	211	22	61	2800	18	5.8	8.0	18	22	100%	118	140	\$1,763,990	\$12,600
	211	22	61	2800	20	6.1	8.4	18	22	100%	122	144	\$1,959,989	\$13,611
NSA F Barrier F South	167	37	56	6000	8	2.1	3.8	0	8	22%	0	8	\$1,679,985	n/a
	167	37	56	6000	10	3.0	5.4	7	24	65%	0	24	\$2,099,980	\$87,499
	167	37	56	6000	12	5.1	7.5	27	35	95%	50	85	\$2,519,976	\$29,647
	167	37	56	6000	14	5.9	8.4	32	35	95%	95	130	\$2,939,973	\$22,615
	167	37	56	6000	16	6.5	9.3	35	35	95%	98	133	\$3,359,971	\$25,263
	167	37	56	6000	18	7.0	10.0	35	35	95%	100	135	\$3,779,968	\$28,000
	167	37	56	6000	20	7.4	10.6	35	35	95%	100	135	\$4,199,960	\$31,111
NSA G Barrier G North	145	40	61	4552	8	2.8	4.9	2	20	50%	0	20	\$1,246,427	\$62,321
	145	40	61	4552	10	3.9	6.7	19	27	68%	0	27	\$1,558,033	\$57,705
	145	40	61	4552	12	5.7	8.6	29	38	95%	56	94	\$1,869,641	\$19,890
	145	40	61	4552	14	6.5	9.5	36	39	98%	76	115	\$2,181,248	\$18,967
	145	40	61	4552	16	7.0	10.3	36	40	100%	80	120	\$2,492,855	\$20,774
	145	40	61	4552	18	7.5	10.9	37	40	100%	81	121	\$2,804,460	\$23,177
	145	40	61	4552	20	7.9	11.4	37	40	100%	81	121	\$3,116,067	\$25,753
NSA G Barrier G South	6	1	1	475	20	1.2	3.7	0	0	0%	0	0	\$333,552	n/a
	6	1	1	475	14	1.1	3.3	0	0	0%	0	0	\$233,486	n/a
	6	1	1	800	20	2.9	7.1	1	1	0%	0	1	\$560,000	\$560,000



**RESULTS: SOUND LEVELS**

**PID 107714**

ms consultants, inc.			29 March 2023					
KLC 54200			TNM 2.5					
			Calculated with TNM 2.5					

<b>RESULTS: SOUND LEVELS</b>								
<b>PROJECT/CONTRACT:</b>			PID 107714					
<b>RUN:</b>			LOR-90 NSA A DY 2045 Barrier					
<b>BARRIER DESIGN:</b>			12'			Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.		
<b>ATMOSPHERICS:</b>			68 deg F, 50% RH					

Receiver													
Name	No.	#DUs	Existing			No Barrier		Increase over existing		Type	With Barrier		Calculated minus Goal
			LAeq1h	LAeq1h	Crit'n	Calculated	Crit'n	Calculated	Crit'n	Impact	LAeq1h	Noise Reduction	
			dB	dB	dB	dB	dB	dB			dB	dB	
A-8	597	1	49.2	52.2	66	3.0	10	----		51.9	0.3	5	-4.7
A-9	598	1	49.8	52.9	66	3.1	10	----		52.5	0.4	5	-4.6
A-10	599	1	50.1	53.2	66	3.1	10	----		52.8	0.4	5	-4.6
A-11	600	1	51.0	54.1	66	3.1	10	----		53.6	0.5	5	-4.5
A-12	601	1	51.8	55.0	66	3.2	10	----		54.3	0.7	5	-4.3
A-13	602	1	52.2	55.4	66	3.2	10	----		54.5	0.9	5	-4.1
A-14	603	1	53.1	56.3	66	3.2	10	----		54.9	1.4	5	-3.6
A-15	604	1	54.2	57.5	66	3.3	10	----		55.7	1.8	5	-3.2
A-16	605	1	55.4	58.9	66	3.5	10	----		56.4	2.5	5	-2.5
A-17	606	1	56.4	59.8	66	3.4	10	----		56.6	3.2	5	-1.8
A-18	607	1	58.0	61.4	66	3.4	10	----		57.0	4.4	5	-0.6
A-19	608	1	59.3	63.0	66	3.7	10	----		57.4	5.6	5	0.6
A-20	609	1	61.2	65.2	66	4.0	10	----		58.0	7.2	5	2.2
A-21	610	1	62.7	66.8	66	4.1	10	Snd Lvl		58.5	8.3	5	3.3
A-22	611	1	65.0	69.6	66	4.6	10	Snd Lvl		59.7	9.9	5	4.9
A-23	612	1	58.7	62.2	66	3.5	10	----		56.4	5.8	5	0.8
A-24	613	1	61.4	65.3	66	3.9	10	----		58.5	6.8	5	1.8
A-25	614	1	61.7	65.6	66	3.9	10	----		58.8	6.8	5	1.8
A-26	615	1	61.8	65.6	66	3.8	10	----		58.8	6.8	5	1.8
A-27	616	1	61.7	65.5	66	3.8	10	----		58.8	6.7	5	1.7
A-28	617	1	60.7	64.4	66	3.7	10	----		58.2	6.2	5	1.2
A-29	618	1	65.8	70.5	66	4.7	10	Snd Lvl		60.6	9.9	5	4.9
A-30	619	1	61.1	64.9	66	3.8	10	----		58.1	6.8	5	1.8
A-31	620	1	59.2	63.0	66	3.8	10	----		57.2	5.8	5	0.8

**RESULTS: SOUND LEVELS**

**PID 107714**

A-32	621	1	56.8	60.4	66	3.6	10	----	56.1	4.3	5	-0.7
A-33	622	1	55.4	58.8	66	3.4	10	----	55.6	3.2	5	-1.8
A-34	623	1	53.9	57.3	66	3.4	10	----	54.7	2.6	5	-2.4
A-35	624	1	52.6	55.8	66	3.2	10	----	53.9	1.9	5	-3.1
A-9ii	633	1	48.1	51.1	66	3.0	10	----	50.1	1.0	5	-4.0
A-10ii	634	1	48.7	51.7	66	3.0	10	----	50.7	1.0	5	-4.0
A-12ii	635	1	50.0	53.1	66	3.1	10	----	51.8	1.3	5	-3.7
A-13ii	636	1	50.6	53.6	66	3.0	10	----	52.1	1.5	5	-3.5
A-15ii	637	1	52.0	55.0	66	3.0	10	----	52.8	2.2	5	-2.8
A-17ii	638	1	53.6	56.7	66	3.1	10	----	53.4	3.3	5	-1.7
A-18ii	639	1	52.7	55.8	66	3.1	10	----	53.0	2.8	5	-2.2
A-20ii	640	1	56.5	59.9	66	3.4	10	----	54.8	5.1	5	0.1
A-25ii	641	1	55.4	58.6	66	3.2	10	----	53.1	5.5	5	0.5
A-29ii	642	1	59.7	63.1	66	3.4	10	----	57.4	5.7	5	0.7
A-30ii	643	1	57.3	60.7	66	3.4	10	----	55.7	5.0	5	0.0
A-31ii	644	1	55.5	58.7	66	3.2	10	----	54.4	4.3	5	-0.7
A-32ii	645	1	54.2	57.3	66	3.1	10	----	53.3	4.0	5	-1.0
A-33ii	646	1	53.3	56.3	66	3.0	10	----	52.9	3.4	5	-1.6
A-34ii	647	1	52.0	55.0	66	3.0	10	----	52.3	2.7	5	-2.3
A-35ii	648	1	51.2	54.2	66	3.0	10	----	51.9	2.3	5	-2.7
A-10iii	651	1	47.3	50.4	66	3.1	10	----	48.9	1.5	5	-3.5
A-13iii	652	1	48.8	52.0	66	3.2	10	----	50.3	1.7	5	-3.3
A-15iii	653	1	50.5	53.6	66	3.1	10	----	51.9	1.7	5	-3.3
A-18iii	655	1	50.6	53.7	66	3.1	10	----	51.4	2.3	5	-2.7
A-25iii	656	1	54.9	57.9	66	3.0	10	----	53.0	4.9	5	-0.1
A-31iii	657	1	53.4	56.6	66	3.2	10	----	52.4	4.2	5	-0.8
A-33iii	658	1	51.7	54.8	66	3.1	10	----	51.8	3.0	5	-2.0
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									
			<b>Min</b>	<b>Avg</b>	<b>Max</b>							
			<b>dB</b>	<b>dB</b>	<b>dB</b>							
All Selected		51	0.3	3.8	9.9							
All Impacted		3	8.3	9.4	9.9							
All that meet NR Goal		17	5.0	6.7	9.9							

**RESULTS: BARRIER DESCRIPTIONS**

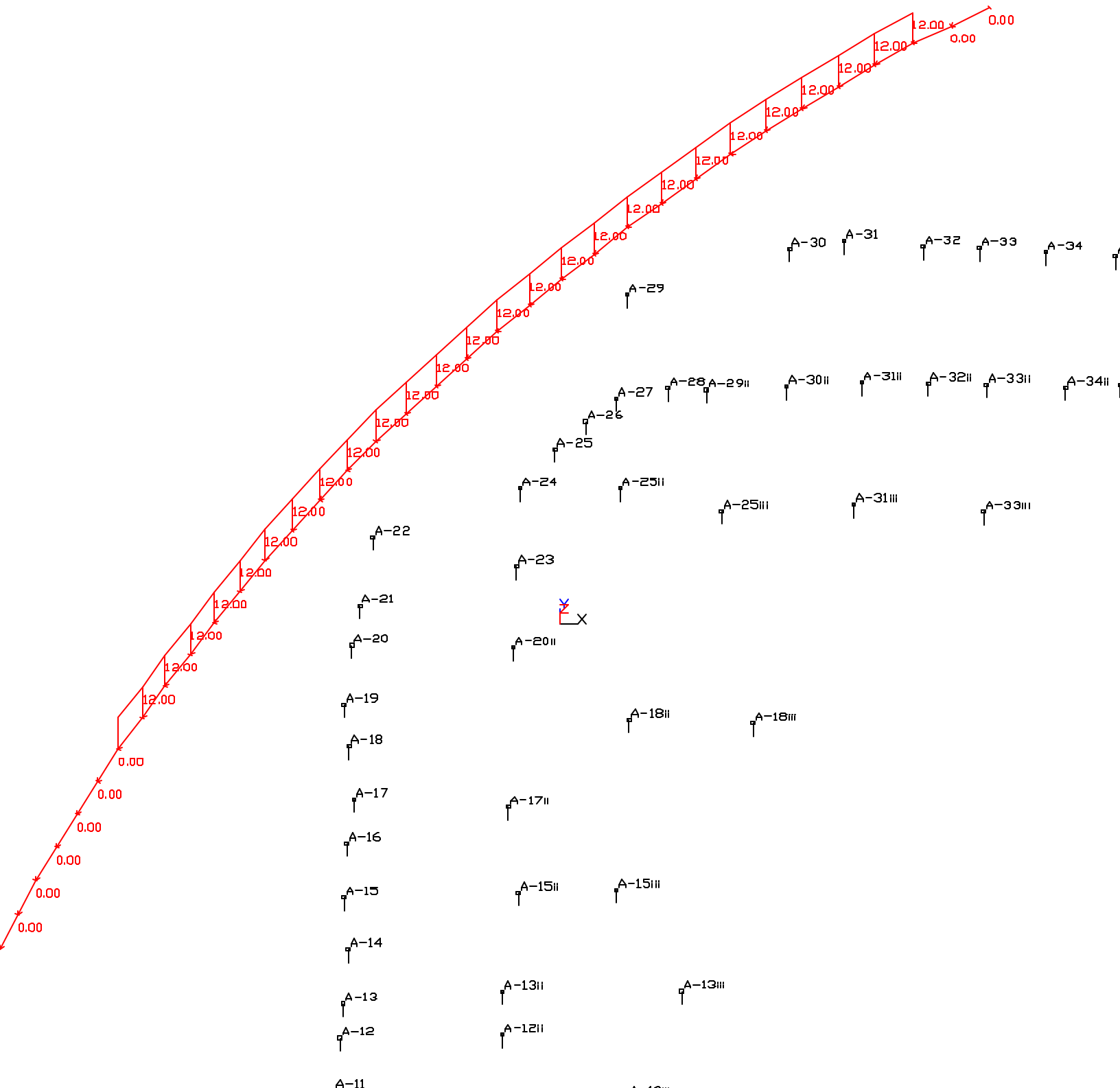
**PID 107714**

ms consultants, inc.				29 March 2023					
KLC 54200				TNM 2.5					

**RESULTS: BARRIER DESCRIPTIONS**

<b>PROJECT/CONTRACT:</b>	<b>PID 107714</b>
<b>RUN:</b>	<b>LOR-90 NSA A DY 2045 Barrier</b>
<b>BARRIER DESIGN:</b>	<b>12'</b>

Barriers										
Name	Type	Heights along Barrier			Length	If Wall		If Berm		Cost
		Min	Avg	Max		Area	Volume	Top Width	Run:Rise	
		ft	ft	ft	ft	sq ft	cu yd	ft	ft:ft	\$
Barrier A	W	12.00	12.00	12.00	1300	15600				545993
									Total Cost:	545993



LOR-90 NSA A DY 2045 Barrier		Sheet 1 of 1	29 Mar 2023
Barrier View-12'		ms consultants, inc.	
Run name: BAR_NSA_A		Project/Contract No. PID 107714	
Scale: <DNA - due to perspective>		TNM Version 2.5, Feb 2004	
		Analysis By: KLC 54200	
Roadway:	—————>	Ground Zone:	polygon
Receiver:	□	Tree Zone:	dashed polygon
Barrier:	—————>	Contour Zone:	polygon
Building Row:	—— ———	Parallel Barrier:	=====
Terrain Line:	—————	Skew Section:	—— —>

**RESULTS: SOUND LEVELS**

PID 107714

ms consultants, inc.													29 March 2023
KLC 54200													TNM 2.5
													Calculated with TNM 2.5

<b>RESULTS: SOUND LEVELS</b>													
<b>PROJECT/CONTRACT:</b>													
<b>RUN:</b>													
<b>BARRIER DESIGN:</b>													
<b>ATMOSPHERICS:</b>													

PID 107714  
LOR-90 NSA E DY 2045 Barriers  
EE 12

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

68 deg F, 50% RH

Receiver													
Name	No.	#DUs	Existing	No Barrier			Increase over existing		Type	With Barrier			
			L <sub>Aeq</sub> 1h	L <sub>Aeq</sub> 1h	Crit'n	Calculated	Crit'n	Impact	Calculated	Noise Reduction	Goal	Calculated minus Goal	
				Calculated	Crit'n	Calculated	Crit'n			Calculated	Goal	Calculated	
			dBA	dBA	dBA	dB	dB			dBA	dB	dB	dB
E-15	15	2	67.3	68.8	66	1.5	10	Snd Lvl	66.4	2.4	5	-2.6	
E-16	16	2	68.3	69.6	66	1.3	10	Snd Lvl	66.9	2.7	5	-2.3	
E-17	17	2	70.9	72.0	66	1.1	10	Snd Lvl	67.9	4.1	5	-0.9	
E-18	18	2	72.2	73.2	66	1.0	10	Snd Lvl	66.1	7.1	5	2.1	
E-19	19	2	71.4	72.3	66	0.9	10	Snd Lvl	65.1	7.2	5	2.2	
E-20	20	1	71.4	72.3	66	0.9	10	Snd Lvl	64.9	7.4	5	2.4	
E-21	21	1	71.4	72.2	66	0.8	10	Snd Lvl	64.7	7.5	5	2.5	
E-22	22	2	72.3	73.1	66	0.8	10	Snd Lvl	64.9	8.2	5	3.2	
E-23	23	2	71.8	72.5	66	0.7	10	Snd Lvl	64.3	8.2	5	3.2	
E-24	24	2	71.8	72.5	66	0.7	10	Snd Lvl	64.1	8.4	5	3.4	
E-25	25	2	71.2	71.9	66	0.7	10	Snd Lvl	63.7	8.2	5	3.2	
E-26	26	2	71.9	72.6	66	0.7	10	Snd Lvl	64.0	8.6	5	3.6	
E-27	27	2	72.1	72.8	66	0.7	10	Snd Lvl	64.1	8.7	5	3.7	
E-28	28	2	73.5	74.1	66	0.6	10	Snd Lvl	64.6	9.5	5	4.5	
E-29	29	2	72.2	73.0	66	0.8	10	Snd Lvl	64.1	8.9	5	3.9	
E-30	30	2	72.8	73.5	66	0.7	10	Snd Lvl	64.3	9.2	5	4.2	
E-31	31	2	73.1	73.7	66	0.6	10	Snd Lvl	64.3	9.4	5	4.4	
E-32	32	2	73.4	73.8	66	0.4	10	Snd Lvl	64.3	9.5	5	4.5	
E-33	33	2	75.1	75.1	66	0.0	10	Snd Lvl	64.8	10.3	5	5.3	
E-34	34	2	73.6	74.0	66	0.4	10	Snd Lvl	64.1	9.9	5	4.9	
E-35	35	2	74.6	74.7	66	0.1	10	Snd Lvl	64.1	10.6	5	5.6	
E-36	36	2	71.6	72.2	66	0.6	10	Snd Lvl	63.1	9.1	5	4.1	
E-37	37	1	68.6	69.2	66	0.6	10	Snd Lvl	61.9	7.3	5	2.3	
E-38	38	1	65.4	66.6	66	1.2	10	Snd Lvl	61.2	5.4	5	0.4	

**RESULTS: SOUND LEVELS**

**PID 107714**

E-39	39	1	67.1	67.9	66	0.8	10	Snd Lvl	63.3	4.6	5	-0.4
E-40	40	1	69.2	70.1	66	0.9	10	Snd Lvl	65.9	4.2	5	-0.8
E-41	41	1	70.0	70.9	66	0.9	10	Snd Lvl	67.8	3.1	5	-1.9
E-42	42	1	68.7	69.6	66	0.9	10	Snd Lvl	67.1	2.5	5	-2.5
E-15ii	65	1	59.6	60.6	66	1.0	10	----	59.5	1.1	5	-3.9
E-16ii	66	2	60.1	61.0	66	0.9	10	----	59.8	1.2	5	-3.8
E-17ii	67	1	60.9	61.8	66	0.9	10	----	60.4	1.4	5	-3.6
E-18ii	68	1	56.8	57.7	66	0.9	10	----	55.7	2.0	5	-3.0
E-19ii	69	1	57.3	58.0	66	0.7	10	----	54.7	3.3	5	-1.7
E-20ii	70	1	56.8	57.6	66	0.8	10	----	54.2	3.4	5	-1.6
E-21ii	71	1	61.4	62.2	66	0.8	10	----	59.2	3.0	5	-2.0
E-22ii	72	1	61.2	62.0	66	0.8	10	----	62.3	-0.3	5	-5.3
E-23ii	73	1	61.5	62.2	66	0.7	10	----	59.0	3.2	5	-1.8
E-24ii	74	1	61.5	62.1	66	0.6	10	----	59.9	2.2	5	-2.8
E-25ii	75	1	61.5	62.1	66	0.6	10	----	59.5	2.6	5	-2.4
E-26ii	76	1	61.5	62.1	66	0.6	10	----	59.9	2.2	5	-2.8
E-27ii	77	1	61.5	62.2	66	0.7	10	----	60.0	2.2	5	-2.8
E-28ii	78	1	61.8	62.5	66	0.7	10	----	60.0	2.5	5	-2.5
E-29ii	79	1	61.9	62.6	66	0.7	10	----	59.5	3.1	5	-1.9
E-30ii	80	1	62.0	62.7	66	0.7	10	----	58.9	3.8	5	-1.2
E-31ii	81	1	62.2	62.9	66	0.7	10	----	59.1	3.8	5	-1.2
E-32ii	82	1	62.5	63.2	66	0.7	10	----	59.2	4.0	5	-1.0
E-33ii	83	1	62.6	63.2	66	0.6	10	----	57.4	5.8	5	0.8
E-34ii	84	1	62.6	63.3	66	0.7	10	----	57.3	6.0	5	1.0
E-35ii	85	1	62.9	63.6	66	0.7	10	----	57.1	6.5	5	1.5
E-36ii	86	1	62.7	63.5	66	0.8	10	----	57.0	6.5	5	1.5
E-37ii	87	1	64.5	65.7	66	1.2	10	----	59.6	6.1	5	1.1
E-38ii	88	1	63.4	64.4	66	1.0	10	----	59.9	4.5	5	-0.5
E-39ii	89	1	55.9	56.7	66	0.8	10	----	54.9	1.8	5	-3.2
E-40ii	90	1	58.4	59.0	66	0.6	10	----	57.5	1.5	5	-3.5
E-41ii	91	1	60.0	60.9	66	0.9	10	----	60.0	0.9	5	-4.1
E-42ii	92	1	65.9	66.7	66	0.8	10	Snd Lvl	65.1	1.6	5	-3.4
E-16iii	105	1	56.8	57.5	66	0.7	10	----	56.2	1.3	5	-3.7
E-21iii	106	1	56.4	57.2	66	0.8	10	----	53.8	3.4	5	-1.6
E-22iii	107	1	56.1	57.0	66	0.9	10	----	53.5	3.5	5	-1.5
E-23iii	108	1	55.6	56.5	66	0.9	10	----	52.9	3.6	5	-1.4
E-24iii	109	1	54.5	55.4	66	0.9	10	----	51.9	3.5	5	-1.5
E-25iii	110	1	57.6	58.4	66	0.8	10	----	54.1	4.3	5	-0.7
E-26iii	111	1	57.4	58.2	66	0.8	10	----	53.6	4.6	5	-0.4
E-27iii	112	1	61.7	62.4	66	0.7	10	----	61.0	1.4	5	-3.6
E-28iii	113	1	62.0	62.6	66	0.6	10	----	61.0	1.6	5	-3.4

**RESULTS: SOUND LEVELS**

**PID 107714**

E-29iii	114	1	57.7	58.6	66	0.9	10	----	53.3	5.3	5	0.3
E-30iii	115	1	57.9	58.7	66	0.8	10	----	53.3	5.4	5	0.4
E-31iii	116	1	58.1	58.8	66	0.7	10	----	53.5	5.3	5	0.3
E-32iii	117	1	58.2	59.0	66	0.8	10	----	53.4	5.6	5	0.6
E-33iii	118	1	58.1	59.0	66	0.9	10	----	53.4	5.6	5	0.6
E-34iii	119	1	58.5	59.4	66	0.9	10	----	53.9	5.5	5	0.5
E-35iii	120	1	59.0	60.0	66	1.0	10	----	54.4	5.6	5	0.6
E-37iii	121	1	61.9	62.9	66	1.0	10	----	58.4	4.5	5	-0.5
E-38iii	122	1	61.3	62.0	66	0.7	10	----	58.7	3.3	5	-1.7
E-39iii	123	1	54.8	55.4	66	0.6	10	----	53.4	2.0	5	-3.0
E-40iii	124	1	56.5	57.2	66	0.7	10	----	55.8	1.4	5	-3.6
E-41iii	125	1	59.3	60.0	66	0.7	10	----	59.5	0.5	5	-4.5
E-42iii	126	1	64.4	65.4	66	1.0	10	----	64.1	1.3	5	-3.7
E-16iv	135	1	54.8	55.5	66	0.7	10	----	54.3	1.2	5	-3.8
E-21iv	136	1	53.0	53.8	66	0.8	10	----	52.1	1.7	5	-3.3
E-24iv	137	1	52.5	53.4	66	0.9	10	----	50.3	3.1	5	-1.9
E-26iv	138	1	53.9	54.8	66	0.9	10	----	51.0	3.8	5	-1.2
E-27iv	139	1	57.5	58.2	66	0.7	10	----	53.8	4.4	5	-0.6
E-28iv	140	1	58.1	58.8	66	0.7	10	----	53.6	5.2	5	0.2
E-30iv	141	1	54.2	55.0	66	0.8	10	----	50.6	4.4	5	-0.6
E-32iv	142	1	54.1	54.9	66	0.8	10	----	50.4	4.5	5	-0.5
E-34iv	143	1	54.5	55.6	66	1.1	10	----	51.2	4.4	5	-0.6
E-37iv	144	1	59.8	60.6	66	0.8	10	----	56.8	3.8	5	-1.2
E-38iv	145	1	59.9	60.7	66	0.8	10	----	57.7	3.0	5	-2.0
E-40iv	146	1	56.3	56.8	66	0.5	10	----	55.2	1.6	5	-3.4
E-41iv	147	1	58.3	58.8	66	0.5	10	----	58.3	0.5	5	-4.5
E-42iv	148	1	63.4	64.4	66	1.0	10	----	63.4	1.0	5	-4.0
E-27v	151	1	57.5	58.3	66	0.8	10	----	53.5	4.8	5	-0.2
E-30v	152	1	53.1	53.9	66	0.8	10	----	50.1	3.8	5	-1.2
E-37v	153	1	57.8	58.7	66	0.9	10	----	54.9	3.8	5	-1.2
E-38v	154	1	58.7	59.5	66	0.8	10	----	56.7	2.8	5	-2.2
E-40v	155	1	55.7	55.9	66	0.2	10	----	54.4	1.5	5	-3.5
E-41v	156	1	57.4	58.0	66	0.6	10	----	57.4	0.6	5	-4.4
E-42v	157	1	61.9	62.8	66	0.9	10	----	62.0	0.8	5	-4.2
E-37vi	158	1	56.8	57.7	66	0.9	10	----	53.8	3.9	5	-1.1
E-38vi	159	1	56.7	57.6	66	0.9	10	----	54.4	3.2	5	-1.8
E-40vi	160	1	55.1	55.6	66	0.5	10	----	53.8	1.8	5	-3.2
E-42vi	161	1	60.8	61.6	66	0.8	10	----	60.9	0.7	5	-4.3
E-37vii	162	1	54.0	55.0	66	1.0	10	----	51.5	3.5	5	-1.5
E-38vii	163	1	55.4	56.3	66	0.9	10	----	53.1	3.2	5	-1.8
E-40vii	164	1	53.6	54.6	66	1.0	10	----	53.5	1.1	5	-3.9

**RESULTS: SOUND LEVELS**

**PID 107714**

E-42vii	165	1	60.1	61.0	66	0.9	10	----	60.3	0.7	5	-4.3
E-42viii	166	1	57.1	58.2	66	1.1	10	----	57.7	0.5	5	-4.5
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									
			<b>Min</b>	<b>Avg</b>	<b>Max</b>							
			<b>dB</b>	<b>dB</b>	<b>dB</b>							
All Selected		129	-0.3	4.1	10.6							
All Impacted		49	1.6	7.0	10.6							
All that meet NR Goal		51	5.2	7.4	10.6							



**RESULTS: BARRIER DESCRIPTIONS**

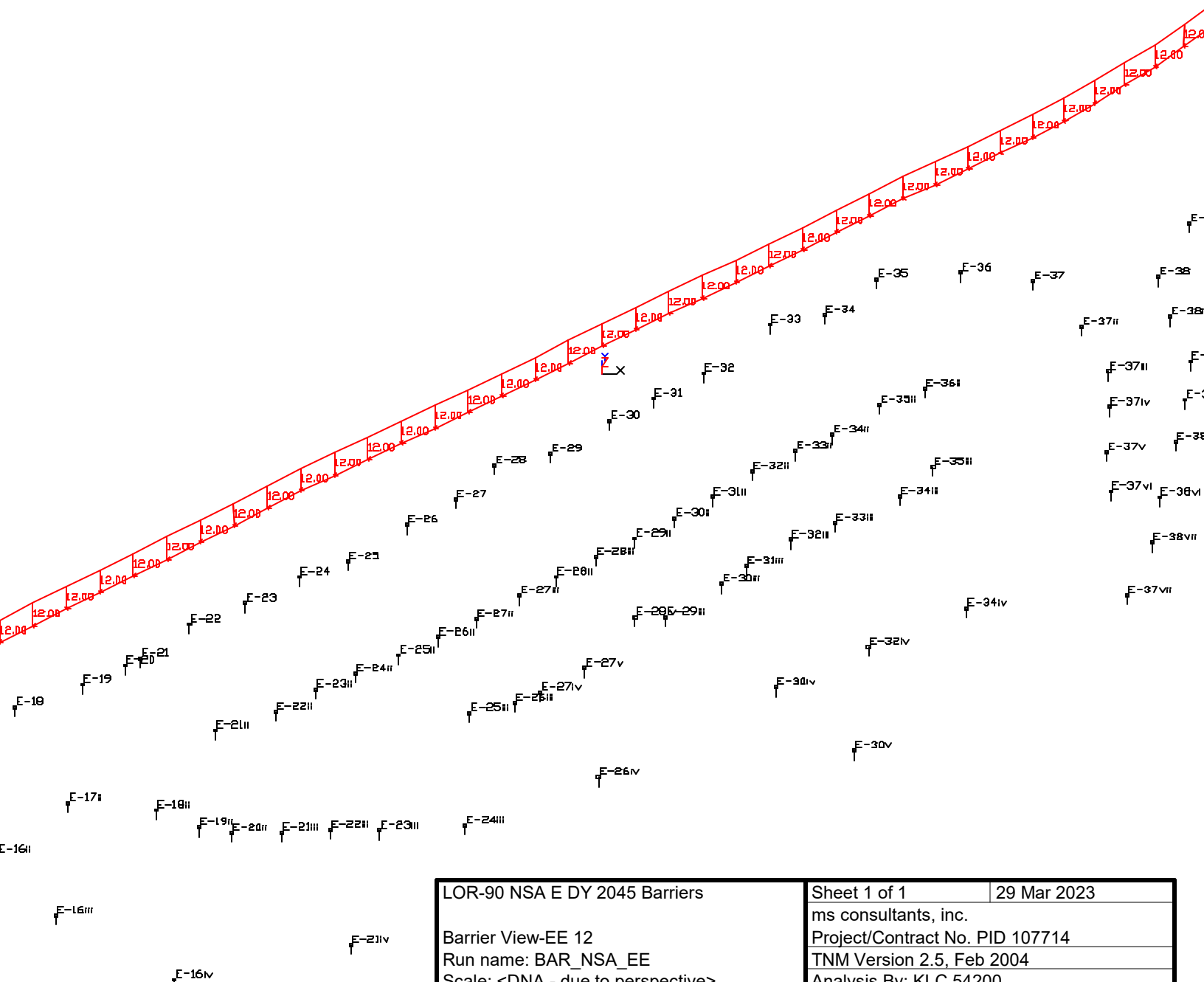
**PID 107714**

ms consultants, inc.				29 March 2023					
KLC 54200				TNM 2.5					

**RESULTS: BARRIER DESCRIPTIONS**

<b>PROJECT/CONTRACT:</b>	<b>PID 107714</b>
<b>RUN:</b>	<b>LOR-90 NSA E DY 2045 Barriers</b>
<b>BARRIER DESIGN:</b>	<b>EE 12</b>

<b>Barriers</b>										
<b>Name</b>	<b>Type</b>	<b>Heights along Barrier</b>			<b>Length</b>	<b>If Wall</b>		<b>If Berm</b>		<b>Cost</b>
		<b>Min</b>	<b>Avg</b>	<b>Max</b>		<b>Area</b>	<b>Volume</b>	<b>Top</b>	<b>Run:Rise</b>	
		ft	ft	ft	ft	sq ft	cu yd	ft	ft:ft	\$
Barrier EE South	W	12.00	12.00	12.00	2550	30599				1070975
									Total Cost:	1070975



LOR-90 NSA E DY 2045 Barriers		Sheet 1 of 1	29 Mar 2023
Barrier View-EE 12		ms consultants, inc.	
Run name: BAR_NSA_EE		Project/Contract No. PID 107714	
Scale: <DNA - due to perspective>		TNM Version 2.5, Feb 2004	
		Analysis By: KLC 54200	
Roadway:	—————>	Ground Zone:	polygon
Receiver:	□	Tree Zone:	dashed polygon
Barrier:	—————>	Contour Zone:	polygon
Building Row:	—— —	Parallel Barrier:	=====
Terrain Line:	—————	Skew Section:	—— —>



**RESULTS: SOUND LEVELS**

**PID 107714**

F-25	27	1	65.1	65.7	66	0.6	10	----	61.3	4.4	5	-0.6
F-26	28	1	65.3	65.9	66	0.6	10	----	60.8	5.1	5	0.1
F-27	29	1	64.8	65.4	66	0.6	10	----	60.4	5.0	5	0.0
F-28	30	1	65.0	65.6	66	0.6	10	----	60.5	5.1	5	0.1
F-29	31	1	64.7	65.3	66	0.6	10	----	60.8	4.5	5	-0.5
F-30	32	1	65.8	66.5	66	0.7	10	Snd Lvl	61.2	5.3	5	0.3
F-31	33	1	65.5	66.2	66	0.7	10	Snd Lvl	61.1	5.1	5	0.1
F-32	34	1	64.5	65.0	66	0.5	10	----	61.7	3.3	5	-1.7
F-33	35	1	62.8	63.5	66	0.7	10	----	58.1	5.4	5	0.4
F-34	36	1	66.6	67.3	66	0.7	10	Snd Lvl	61.3	6.0	5	1.0
F-35	37	1	67.5	68.1	66	0.6	10	Snd Lvl	61.2	6.9	5	1.9
F-36	38	1	64.6	65.4	66	0.8	10	----	59.0	6.4	5	1.4
F-37	39	1	68.0	68.5	66	0.5	10	Snd Lvl	61.3	7.2	5	2.2
F-38	40	1	71.6	71.1	66	-0.5	10	Snd Lvl	62.7	8.4	5	3.4
F-39	41	1	67.5	68.8	66	1.3	10	Snd Lvl	61.0	7.8	5	2.8
F-40	42	1	61.7	62.7	66	1.0	10	----	58.0	4.7	5	-0.3
F-41	43	1	63.6	64.6	66	1.0	10	----	59.1	5.5	5	0.5
F-42	44	1	65.2	65.5	66	0.3	10	----	64.6	0.9	5	-4.1
F-43	45	1	67.0	68.2	66	1.2	10	Snd Lvl	61.2	7.0	5	2.0
F-44	47	1	61.7	62.8	66	1.1	10	----	58.2	4.6	5	-0.4
F-45	48	1	67.1	68.5	66	1.4	10	Snd Lvl	61.4	7.1	5	2.1
F-46	49	1	70.0	71.0	66	1.0	10	Snd Lvl	62.6	8.4	5	3.4
F-47	50	1	64.6	65.8	66	1.2	10	----	60.0	5.8	5	0.8
F-48	51	1	73.1	73.7	66	0.6	10	Snd Lvl	63.5	10.2	5	5.2
F-49	52	1	66.6	67.9	66	1.3	10	Snd Lvl	61.0	6.9	5	1.9
F-50	53	1	68.3	69.5	66	1.2	10	Snd Lvl	61.7	7.8	5	2.8
F-51	54	1	68.7	70.0	66	1.3	10	Snd Lvl	62.6	7.4	5	2.4
F-52	55	1	73.0	74.2	66	1.2	10	Snd Lvl	64.0	10.2	5	5.2
F-1ii	107	1	62.3	63.8	66	1.5	10	----	59.7	4.1	5	-0.9
F-8ii	108	1	62.1	63.3	66	1.2	10	----	57.3	6.0	5	1.0
F-9ii	109	1	62.7	63.6	66	0.9	10	----	57.4	6.2	5	1.2
F-10ii	110	1	59.5	60.7	66	1.2	10	----	55.3	5.4	5	0.4
F-11ii	111	1	55.5	56.5	66	1.0	10	----	51.6	4.9	5	-0.1
F-12ii	112	1	59.7	60.8	66	1.1	10	----	55.5	5.3	5	0.3
F-13ii	113	1	59.5	60.7	66	1.2	10	----	55.2	5.5	5	0.5
F-14ii	114	1	59.5	60.7	66	1.2	10	----	55.1	5.6	5	0.6
F-15ii	115	1	59.7	60.8	66	1.1	10	----	55.1	5.7	5	0.7
F-16ii	116	1	59.7	60.8	66	1.1	10	----	55.1	5.7	5	0.7
F-18ii	117	1	61.0	62.1	66	1.1	10	----	56.9	5.2	5	0.2
F-19ii	118	1	58.7	59.7	66	1.0	10	----	55.2	4.5	5	-0.5
F-21ii	119	1	60.1	61.0	66	0.9	10	----	56.3	4.7	5	-0.3

**RESULTS: SOUND LEVELS**

**PID 107714**

F-23ii	120	1	59.5	60.3	66	0.8	10	----	56.0	4.3	5	-0.7
F-24ii	121	1	59.6	60.3	66	0.7	10	----	56.0	4.3	5	-0.7
F-25ii	122	1	59.7	60.5	66	0.8	10	----	55.9	4.6	5	-0.4
F-27ii	123	1	59.9	60.6	66	0.7	10	----	56.0	4.6	5	-0.4
F-28ii	124	1	60.0	60.5	66	0.5	10	----	55.9	4.6	5	-0.4
F-29ii	125	1	60.4	60.6	66	0.2	10	----	55.9	4.7	5	-0.3
F-30ii	126	1	60.4	60.8	66	0.4	10	----	56.0	4.8	5	-0.2
F-31ii	127	1	60.8	61.2	66	0.4	10	----	56.3	4.9	5	-0.1
F-32ii	129	1	61.0	61.5	66	0.5	10	----	56.5	5.0	5	0.0
F-33ii	131	1	59.3	59.2	66	-0.1	10	----	53.3	5.9	5	0.9
F-34ii	132	1	61.5	61.9	66	0.4	10	----	56.6	5.3	5	0.3
F-35ii	133	1	58.2	59.0	66	0.8	10	----	55.5	3.5	5	-1.5
F-36ii	134	1	61.1	62.0	66	0.9	10	----	56.7	5.3	5	0.3
F-37ii	135	1	64.0	64.7	66	0.7	10	----	61.4	3.3	5	-1.7
F-39ii	136	1	65.9	67.0	66	1.1	10	Snd Lvl	60.3	6.7	5	1.7
F-41ii	137	1	65.6	66.0	66	0.4	10	Snd Lvl	65.0	1.0	5	-4.0
F-43ii	138	1	61.5	62.3	66	0.8	10	----	59.0	3.3	5	-1.7
F-45ii	139	1	62.6	63.8	66	1.2	10	----	58.7	5.1	5	0.1
F-46ii	140	1	63.6	64.9	66	1.3	10	----	59.3	5.6	5	0.6
F-47ii	141	1	59.8	60.5	66	0.7	10	----	58.2	2.3	5	-2.7
F-48ii	142	1	65.1	66.4	66	1.3	10	Snd Lvl	60.3	6.1	5	1.1
F-49ii	143	1	60.4	61.2	66	0.8	10	----	58.2	3.0	5	-2.0
F-50ii	144	1	61.2	62.0	66	0.8	10	----	58.8	3.2	5	-1.8
F-1iii	177	1	60.8	62.2	66	1.4	10	----	58.7	3.5	5	-1.5
F-8iii	178	1	60.1	61.3	66	1.2	10	----	55.9	5.4	5	0.4
F-9iii	179	1	58.8	60.3	66	1.5	10	----	55.1	5.2	5	0.2
F-11iii	180	1	53.9	55.1	66	1.2	10	----	50.2	4.9	5	-0.1
F-12iii	181	1	54.4	55.4	66	1.0	10	----	50.7	4.7	5	-0.3
F-13iii	182	1	55.3	56.3	66	1.0	10	----	51.7	4.6	5	-0.4
F-15iii	183	1	53.8	54.8	66	1.0	10	----	50.2	4.6	5	-0.4
F-14iii	184	1	55.2	56.2	66	1.0	10	----	51.5	4.7	5	-0.3
F-16iii	185	1	54.4	55.4	66	1.0	10	----	50.7	4.7	5	-0.3
F-18iii	186	1	58.7	59.4	66	0.7	10	----	55.2	4.2	5	-0.8
F-19iii	187	1	57.6	58.5	66	0.9	10	----	54.0	4.5	5	-0.5
F-21iii	188	1	57.0	57.9	66	0.9	10	----	53.0	4.9	5	-0.1
F-25iii	189	1	56.3	56.9	66	0.6	10	----	51.9	5.0	5	0.0
F-27iii	190	1	56.7	57.2	66	0.5	10	----	51.9	5.3	5	0.3
F-28iii	191	1	56.7	57.3	66	0.6	10	----	52.1	5.2	5	0.2
F-29iii	192	1	57.2	57.8	66	0.6	10	----	52.3	5.5	5	0.5
F-30iii	193	1	57.8	58.0	66	0.2	10	----	52.4	5.6	5	0.6
F-31iii	194	1	57.7	58.0	66	0.3	10	----	52.4	5.6	5	0.6

**RESULTS: SOUND LEVELS**

**PID 107714**

F-32iii	195	1	58.3	58.5	66	0.2	10	----	52.7	5.8	5	0.8
F-33iii	196	1	57.5	58.0	66	0.5	10	----	53.3	4.7	5	-0.3
F-34iii	197	1	60.8	61.4	66	0.6	10	----	55.8	5.6	5	0.6
F-35iii	198	1	66.7	66.8	66	0.1	10	Snd Lvl	66.5	0.3	5	-4.7
F-36iii	199	1	59.8	60.6	66	0.8	10	----	55.7	4.9	5	-0.1
F-37iii	200	1	61.3	62.1	66	0.8	10	----	57.1	5.0	5	0.0
F-39iii	201	1	63.1	64.2	66	1.1	10	----	58.6	5.6	5	0.6
F-41iii	202	1	58.0	58.8	66	0.8	10	----	56.8	2.0	5	-3.0
F-45iii	203	1	60.8	61.2	66	0.4	10	----	59.9	1.3	5	-3.7
F-46iii	204	1	60.4	60.9	66	0.5	10	----	59.3	1.6	5	-3.4
F-48iii	205	1	59.6	60.4	66	0.8	10	----	57.4	3.0	5	-2.0
F-1iv	227	2	59.7	60.9	66	1.2	10	----	57.8	3.1	5	-1.9
F-8iv	228	2	58.9	60.1	66	1.2	10	----	55.0	5.1	5	0.1
F-9iv	229	1	57.0	58.5	66	1.5	10	----	53.7	4.8	5	-0.2
F-11iv	230	1	52.7	53.6	66	0.9	10	----	49.5	4.1	5	-0.9
F-12iv	231	1	53.4	54.4	66	1.0	10	----	49.8	4.6	5	-0.4
F-15iv	232	1	52.6	53.6	66	1.0	10	----	49.1	4.5	5	-0.5
F-18iv	233	1	58.1	59.1	66	1.0	10	----	54.5	4.6	5	-0.4
F-19iv	234	1	56.5	57.4	66	0.9	10	----	52.9	4.5	5	-0.5
F-21iv	235	1	56.9	57.8	66	0.9	10	----	52.8	5.0	5	0.0
F-25iv	236	1	56.6	57.2	66	0.6	10	----	52.1	5.1	5	0.1
F-27iv	238	1	55.9	56.7	66	0.8	10	----	51.6	5.1	5	0.1
F-28iv	240	1	56.8	57.4	66	0.6	10	----	52.0	5.4	5	0.4
F-29iv	241	1	54.6	55.0	66	0.4	10	----	51.3	3.7	5	-1.3
F-31iv	242	1	55.7	56.1	66	0.4	10	----	52.1	4.0	5	-1.0
F-33iv	243	1	57.3	58.1	66	0.8	10	----	54.7	3.4	5	-1.6
F-34iv	244	1	58.7	59.6	66	0.9	10	----	54.6	5.0	5	0.0
F-36iv	245	1	58.4	59.1	66	0.7	10	----	54.9	4.2	5	-0.8
F-37iv	246	1	60.1	60.7	66	0.6	10	----	58.6	2.1	5	-2.9
F-39iv	247	1	61.9	62.9	66	1.0	10	----	57.9	5.0	5	0.0
F-1v	258	1	58.5	59.9	66	1.4	10	----	57.0	2.9	5	-2.1
F-8v	259	1	58.1	59.2	66	1.1	10	----	54.5	4.7	5	-0.3
F-9v	260	1	55.9	57.3	66	1.4	10	----	52.6	4.7	5	-0.3
F-18v	261	1	56.3	57.2	66	0.9	10	----	53.1	4.1	5	-0.9
F-27v	262	1	54.8	55.2	66	0.4	10	----	53.4	1.8	5	-3.2
F-28v	263	1	56.2	56.8	66	0.6	10	----	51.5	5.3	5	0.3
F-29v	264	1	56.0	56.5	66	0.5	10	----	54.3	2.2	5	-2.8
F-31v	265	1	56.6	57.2	66	0.6	10	----	54.3	2.9	5	-2.1
F-36v	266	1	58.5	59.4	66	0.9	10	----	56.1	3.3	5	-1.7
F-37v	267	1	58.9	59.4	66	0.5	10	----	58.1	1.3	5	-3.7
F-39v	269	1	60.4	61.4	66	1.0	10	----	57.1	4.3	5	-0.7

**RESULTS: SOUND LEVELS**

**PID 107714**

F-1vi	278	1	57.7	59.0	66	1.3	10	----	56.2	2.8	5	-2.2
F-8vi	279	1	56.9	57.9	66	1.0	10	----	53.4	4.5	5	-0.5
F-36vi	280	1	64.9	65.1	66	0.2	10	----	64.5	0.6	5	-4.4
F-37vi	281	1	58.0	58.8	66	0.8	10	----	54.5	4.3	5	-0.7
F-39vi	282	1	59.0	59.9	66	0.9	10	----	57.2	2.7	5	-2.3
F-1vii	288	2	56.8	58.3	66	1.5	10	----	55.7	2.6	5	-2.4
F-8vii	289	2	56.0	57.1	66	1.1	10	----	52.6	4.5	5	-0.5
F-37vii	290	1	59.8	60.8	66	1.0	10	----	56.4	4.4	5	-0.6
F-1viii	294	2	56.2	57.7	66	1.5	10	----	55.4	2.3	5	-2.7
F-8viii	299	2	55.3	56.4	66	1.1	10	----	52.0	4.4	5	-0.6
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									
			<b>Min</b>	<b>Avg</b>	<b>Max</b>							
			<b>dB</b>	<b>dB</b>	<b>dB</b>							
All Selected		167	0.3	5.1	10.3							
All Impacted		37	0.3	7.5	10.3							
All that meet NR Goal		85	5.0	6.5	10.3							

**RESULTS: BARRIER DESCRIPTIONS**

**PID 107714**

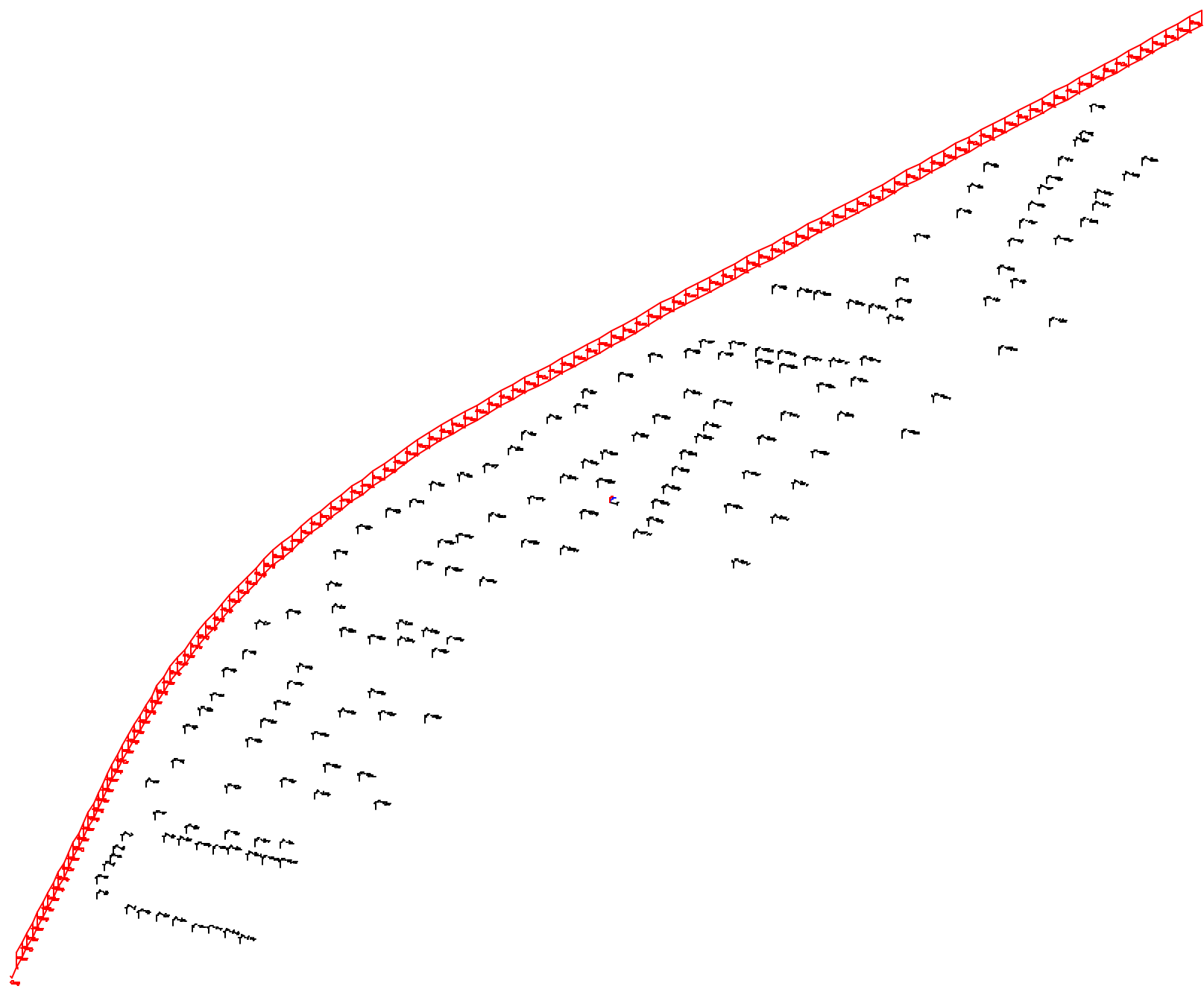
ms consultants, inc.				29 March 2023					
KLC 54200				TNM 2.5					

**RESULTS: BARRIER DESCRIPTIONS**

<b>PROJECT/CONTRACT:</b>	<b>PID 107714</b>
<b>RUN:</b>	<b>LOR-90 NSA F DY 2045 Barriers</b>
<b>BARRIER DESIGN:</b>	<b>FS 12</b>

<b>Barriers</b>										
<b>Name</b>	<b>Type</b>	<b>Heights along Barrier</b>			<b>Length</b>	<b>If Wall</b>		<b>If Berm</b>		<b>Cost</b>
		<b>Min</b>	<b>Avg</b>	<b>Max</b>		<b>Area</b>	<b>Volume</b>	<b>Top</b>	<b>Run:Rise</b>	
								<b>Width</b>		
		ft	ft	ft	ft	sq ft	cu yd	ft	ft:ft	\$
Barrier FS	W	12.00	12.00	12.00	6000	71999				2519976
									Total Cost:	2519976





LOR-90 NSA F DY 2045 Barriers		Sheet 1 of 1	29 Mar 2023
Barrier View-FS 12		ms consultants, inc.	
Run name: BAR_NSA_F		Project/Contract No. PID 107714	
Scale: <DNA - due to perspective>		TNM Version 2.5, Feb 2004	
Analysis By: KLC 54200			
Roadway:	—————>	Ground Zone:	polygon
Receiver:	□	Tree Zone:	dashed polygon
Barrier:	┆—————>	Contour Zone:	polygon
Building Row:	—— ———	Parallel Barrier:	=====
Terrain Line:	—————	Skew Section:	—— —>

RESULTS: SOUND LEVELS

PID 107714

ms consultants, inc. KLC 54200		29 March 2023 TNM 2.5 Calculated with TNM 2.5												
RESULTS: SOUND LEVELS PROJECT/CONTRACT: RUN: BARRIER DESIGN:		PID 107714 LOR-90 NSA F DY 2045 Barriers FN 12						Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.						
ATMOSPHERICS:		68 deg F, 50% RH												
Receiver														
Name	No.	#DUs	Existing			No Barrier		Increase over existing		Type	With Barrier		Calculated Goal	Calculated minus Goal
			L <sub>Aeq1h</sub>	L <sub>Aeq1h</sub>	Crit'n	Calculated	Crit'n	Calculated	Crit'n	Impact	L <sub>Aeq1h</sub>	Noise Reduction Calculated		
			dBA	dBA	dBA						dBA		dBA	
F-53	56	2	57.1	57.8	66	0.7	10	----		56.6	1.2	5	-3.8	
F-54	57	2	58.2	59.1	66	0.9	10	----		57.5	1.6	5	-3.4	
F-55	58	4	57.6	58.3	66	0.7	10	----		55.2	3.1	5	-1.9	
F-56	59	2	60.4	61.3	66	0.9	10	----		58.6	2.7	5	-2.3	
F-57	60	2	61.4	62.2	66	0.8	10	----		59.1	3.1	5	-1.9	
F-58	61	2	63.5	64.5	66	1.0	10	----		60.7	3.8	5	-1.2	
F-59	62	2	66.4	67.3	66	0.9	10	Snd Lvl		62.6	4.7	5	-0.3	
F-60	63	2	72.0	72.4	66	0.4	10	Snd Lvl		64.1	8.3	5	3.3	
F-61	64	2	71.8	72.2	66	0.4	10	Snd Lvl		63.6	8.6	5	3.6	
F-62	65	2	70.1	70.8	66	0.7	10	Snd Lvl		62.5	8.3	5	3.3	
F-63	77	2	69.2	69.7	66	0.5	10	Snd Lvl		62.0	7.7	5	2.7	
F-64	68	2	66.0	66.2	66	0.2	10	Snd Lvl		59.9	6.3	5	1.3	
F-65	69	2	63.8	64.5	66	0.7	10	----		58.9	5.6	5	0.6	
F-66	70	3	61.9	62.6	66	0.7	10	----		57.4	5.2	5	0.2	
F-67	71	2	60.9	61.6	66	0.7	10	----		56.6	5.0	5	0.0	
F-68	72	3	57.2	58.2	66	1.0	10	----		53.3	4.9	5	-0.1	
F-69	73	2	60.5	61.5	66	1.0	10	----		56.5	5.0	5	0.0	
F-70	74	3	60.2	61.4	66	1.2	10	----		56.4	5.0	5	0.0	
F-71	75	2	58.1	59.6	66	1.5	10	----		54.5	5.1	5	0.1	
F-72	76	2	58.4	59.9	66	1.5	10	----		54.9	5.0	5	0.0	
F-73	78	2	59.1	60.5	66	1.4	10	----		55.6	4.9	5	-0.1	
F-74	79	1	61.9	62.9	66	1.0	10	----		57.5	5.4	5	0.4	
F-75	80	1	63.6	64.6	66	1.0	10	----		58.9	5.7	5	0.7	
F-76	81	1	65.3	66.3	66	1.0	10	Snd Lvl		60.3	6.0	5	1.0	

**RESULTS: SOUND LEVELS**

**PID 107714**

F-77	82	1	66.2	67.3	66	1.1	10	Snd Lvl	61.2	6.1	5	1.1
F-78	83	1	66.6	68.1	66	1.5	10	Snd Lvl	61.9	6.2	5	1.2
F-79	84	1	66.8	68.3	66	1.5	10	Snd Lvl	62.3	6.0	5	1.0
F-80	85	1	67.0	68.6	66	1.6	10	Snd Lvl	62.5	6.1	5	1.1
F-81	86	1	67.0	68.6	66	1.6	10	Snd Lvl	62.7	5.9	5	0.9
F-82	87	1	67.2	68.8	66	1.6	10	Snd Lvl	63.1	5.7	5	0.7
F-83	91	1	67.4	69.2	66	1.8	10	Snd Lvl	63.5	5.7	5	0.7
F-84	92	1	66.2	67.8	66	1.6	10	Snd Lvl	63.1	4.7	5	-0.3
F-85	93	1	65.3	66.9	66	1.6	10	Snd Lvl	62.8	4.1	5	-0.9
F-86	94	1	62.5	63.9	66	1.4	10	----	60.3	3.6	5	-1.4
F-87	95	1	60.3	61.6	66	1.3	10	----	58.4	3.2	5	-1.8
F-53ii	145	1	55.0	55.9	66	0.9	10	----	53.4	2.5	5	-2.5
F-55ii	146	5	55.8	56.6	66	0.8	10	----	53.4	3.2	5	-1.8
F-57ii	147	4	58.5	59.2	66	0.7	10	----	55.9	3.3	5	-1.7
F-58ii	148	4	61.6	62.2	66	0.6	10	----	57.9	4.3	5	-0.7
F-60ii	149	2	61.9	62.6	66	0.7	10	----	58.2	4.4	5	-0.6
F-67ii	150	3	58.8	59.7	66	0.9	10	----	54.8	4.9	5	-0.1
F-68ii	151	4	55.8	56.7	66	0.9	10	----	51.4	5.3	5	0.3
F-69ii	152	2	57.7	58.9	66	1.2	10	----	53.8	5.1	5	0.1
F-70ii	155	3	57.9	59.2	66	1.3	10	----	54.1	5.1	5	0.1
F-71ii	157	4	55.7	56.9	66	1.2	10	----	51.5	5.4	5	0.4
F-72ii	158	4	56.3	57.3	66	1.0	10	----	52.3	5.0	5	0.0
F-73ii	159	2	58.2	59.7	66	1.5	10	----	54.8	4.9	5	-0.1
F-74ii	160	1	60.0	61.0	66	1.0	10	----	55.7	5.3	5	0.3
F-77ii	161	1	58.2	59.0	66	0.8	10	----	54.9	4.1	5	-0.9
F-78ii	162	1	58.3	59.3	66	1.0	10	----	55.2	4.1	5	-0.9
F-79ii	163	1	58.2	59.3	66	1.1	10	----	55.7	3.6	5	-1.4
F-80ii	164	1	58.6	59.5	66	0.9	10	----	55.8	3.7	5	-1.3
F-82ii	165	1	58.5	59.5	66	1.0	10	----	55.9	3.6	5	-1.4
F-83ii	166	1	58.2	59.2	66	1.0	10	----	56.0	3.2	5	-1.8
F-87ii	167	1	58.9	60.0	66	1.1	10	----	57.2	2.8	5	-2.2
F-53iii	207	5	53.2	53.7	66	0.5	10	----	51.3	2.4	5	-2.6
F-55iii	209	5	54.3	55.2	66	0.9	10	----	51.8	3.4	5	-1.6
F-58iii	210	4	55.7	56.6	66	0.9	10	----	52.9	3.7	5	-1.3
F-60iii	211	2	61.3	62.0	66	0.7	10	----	57.1	4.9	5	-0.1
F-67iii	212	2	58.1	59.1	66	1.0	10	----	54.2	4.9	5	-0.1
F-68iii	213	9	54.6	55.8	66	1.2	10	----	51.2	4.6	5	-0.4
F-70iii	214	4	56.0	57.1	66	1.1	10	----	51.7	5.4	5	0.4
F-72iii	215	4	54.9	56.1	66	1.2	10	----	51.2	4.9	5	-0.1
F-73iii	216	2	57.5	58.9	66	1.4	10	----	54.0	4.9	5	-0.1
F-74iii	217	1	57.5	58.7	66	1.2	10	----	54.3	4.4	5	-0.6

**RESULTS: SOUND LEVELS**

**PID 107714**

F-77iii	218	1	56.4	57.2	66	0.8	10	----	52.8	4.4	5	-0.6
F-79iii	219	2	53.3	54.2	66	0.9	10	----	51.4	2.8	5	-2.2
F-82iii	220	2	53.5	54.4	66	0.9	10	----	51.7	2.7	5	-2.3
F-83iii	221	1	56.7	57.7	66	1.0	10	----	55.1	2.6	5	-2.4
F-87iii	222	1	57.7	58.8	66	1.1	10	----	56.4	2.4	5	-2.6
F-58iv	248	9	53.7	54.6	66	0.9	10	----	51.3	3.3	5	-1.7
F-60iv	249	5	60.2	60.8	66	0.6	10	----	55.7	5.1	5	0.1
F-67iv	250	2	57.1	58.2	66	1.1	10	----	53.4	4.8	5	-0.2
F-70iv	251	10	54.1	55.2	66	1.1	10	----	50.7	4.5	5	-0.5
F-73iv	252	2	56.8	58.0	66	1.2	10	----	53.2	4.8	5	-0.2
F-74iv	253	1	56.2	57.6	66	1.4	10	----	53.0	4.6	5	-0.4
F-77iv	254	1	55.4	56.0	66	0.6	10	----	52.1	3.9	5	-1.1
F-83iv	255	1	55.7	56.7	66	1.0	10	----	54.4	2.3	5	-2.7
F-87iv	256	1	56.5	57.5	66	1.0	10	----	55.8	1.7	5	-3.3
F-60v	272	5	59.0	59.7	66	0.7	10	----	54.5	5.2	5	0.2
F-73v	273	2	56.2	57.4	66	1.2	10	----	52.7	4.7	5	-0.3
F-74v	274	1	55.2	56.4	66	1.2	10	----	52.1	4.3	5	-0.7
F-77v	275	2	54.0	54.8	66	0.8	10	----	51.9	2.9	5	-2.1
F-83v	276	1	55.1	55.9	66	0.8	10	----	54.1	1.8	5	-3.2
F-87v	277	1	54.8	55.8	66	1.0	10	----	54.9	0.9	5	-4.1
F-60vi	283	4	56.6	57.7	66	1.1	10	----	52.8	4.9	5	-0.1
F-73vi	284	2	55.5	56.6	66	1.1	10	----	52.1	4.5	5	-0.5
F-77vi	285	1	53.5	54.5	66	1.0	10	----	51.5	3.0	5	-2.0
F-83vi	286	2	53.9	54.8	66	0.9	10	----	52.9	1.9	5	-3.1
F-87vi	287	2	54.8	55.7	66	0.9	10	----	53.9	1.8	5	-3.2
F-60vii	291	4	55.5	56.5	66	1.0	10	----	52.0	4.5	5	-0.5
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									
			<b>Min</b>	<b>Avg</b>	<b>Max</b>							
			<b>dB</b>	<b>dB</b>	<b>dB</b>							
All Selected		211	0.9	4.4	8.6							
All Impacted		22	4.1	6.3	8.6							
All that meet NR Goal		68	5.0	5.8	8.6							

**RESULTS: BARRIER DESCRIPTIONS**

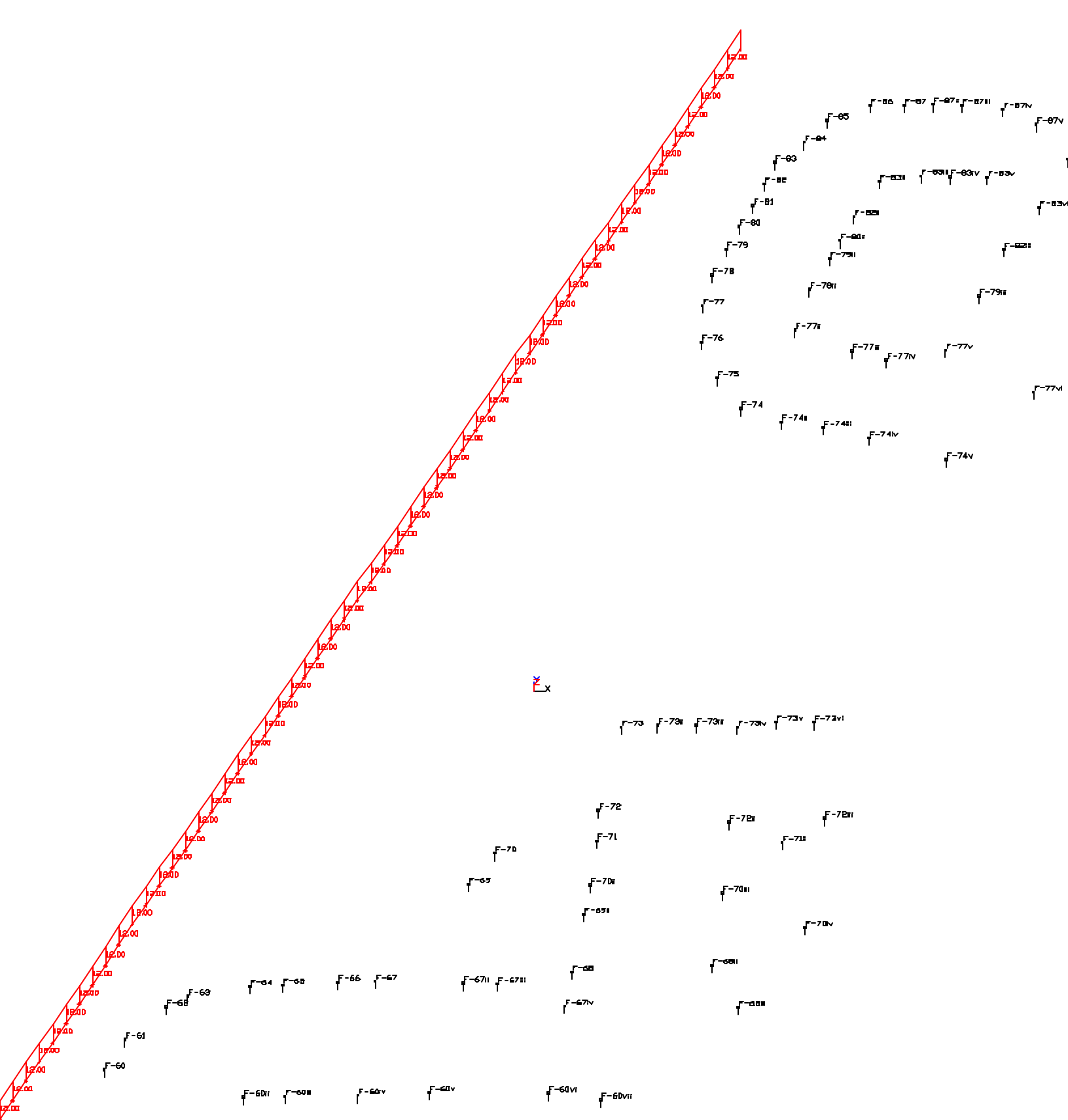
**PID 107714**

ms consultants, inc.				29 March 2023					
KLC 54200				TNM 2.5					

**RESULTS: BARRIER DESCRIPTIONS**

<b>PROJECT/CONTRACT:</b>	<b>PID 107714</b>
<b>RUN:</b>	<b>LOR-90 NSA F DY 2045 Barriers</b>
<b>BARRIER DESIGN:</b>	<b>FN 12</b>

Barriers										
Name	Type	Heights along Barrier			Length	If Wall		If Berm		Cost
		Min	Avg	Max		Area	Volume	Top Width	Run:Rise	
		ft	ft	ft	ft	sq ft	cu yd	ft	ft:ft	\$
Barrier FN	W	12.00	12.00	12.00	2800	33600				1175993
									Total Cost:	1175993



LOR-90 NSA F DY 2045 Barriers		Sheet 1 of 1	29 Mar 2023
Barrier View-FN 12		ms consultants, inc.	
Run name: BAR_NSA_F		Project/Contract No. PID 107714	
Scale: <DNA - due to perspective>		TNM Version 2.5, Feb 2004	
		Analysis By: KLC 54200	
Roadway:	—————>	Ground Zone:	polygon
Receiver:	□	Tree Zone:	dashed polygon
Barrier:	—————>	Contour Zone:	polygon
Building Row:	—— ———	Parallel Barrier:	=====
Terrain Line:	—————	Skew Section:	—— —>

**RESULTS: SOUND LEVELS**

**PID 107714**

ms consultants, inc. KLC 54200										29 March 2023			
										TNM 2.5			
										Calculated with TNM 2.5			

<b>RESULTS: SOUND LEVELS</b>													
<b>PROJECT/CONTRACT:</b>													
<b>RUN:</b>													
<b>BARRIER DESIGN:</b>													
<b>ATMOSPHERICS:</b>													

PID 107714  
LOR-90 NSA G Design Year 2045  
GN 12

Average pavement type shall be used unless  
a State highway agency substantiates the use  
of a different type with approval of FHWA.

Receiver												
Name	No.	#DUs	Existing	No Barrier		Increase over existing		Type	With Barrier		Noise Reduction	
			L <sub>Aeq</sub> 1h	L <sub>Aeq</sub> 1h	Crit'n	Crit'n	Impact		L <sub>Aeq</sub> 1h	Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
G-6	166	1	61.9	62.6	66	0.7	10	----	59.6	3.0	5	-2.0
G-7	167	1	62.9	63.6	66	0.7	10	----	59.9	3.7	5	-1.3
G-8	168	1	63.9	64.4	66	0.5	10	----	59.9	4.5	5	-0.5
G-9	169	1	64.6	65.1	66	0.5	10	----	60.2	4.9	5	-0.1
G-10	170	1	65.3	65.9	66	0.6	10	----	60.6	5.3	5	0.3
G-11	171	1	66.3	66.5	66	0.2	10	Snd Lvl	61.0	5.5	5	0.5
G-12	172	1	66.7	67.0	66	0.3	10	Snd Lvl	62.2	4.8	5	-0.2
G-13	173	1	67.1	67.5	66	0.4	10	Snd Lvl	62.9	4.6	5	-0.4
G-14	174	1	67.1	67.7	66	0.6	10	Snd Lvl	61.6	6.1	5	1.1
G-15	175	1	66.0	66.7	66	0.7	10	Snd Lvl	59.6	7.1	5	2.1
G-16	176	1	64.3	64.8	66	0.5	10	----	58.6	6.2	5	1.2
G-17	177	1	65.0	65.6	66	0.6	10	----	58.9	6.7	5	1.7
G-18	178	1	65.9	66.5	66	0.6	10	Snd Lvl	59.3	7.2	5	2.2
G-19	179	1	66.2	67.2	66	1.0	10	Snd Lvl	60.0	7.2	5	2.2
G-20	180	1	67.2	67.8	66	0.6	10	Snd Lvl	60.7	7.1	5	2.1
G-21	181	1	66.9	67.7	66	0.8	10	Snd Lvl	60.3	7.4	5	2.4
G-22	182	1	64.8	65.6	66	0.8	10	----	58.8	6.8	5	1.8
G-23	183	1	64.1	65.1	66	1.0	10	----	59.1	6.0	5	1.0
G-24	184	1	61.9	63.3	66	1.4	10	----	57.6	5.7	5	0.7
G-25	185	1	57.5	58.8	66	1.3	10	----	53.6	5.2	5	0.2
G-26	186	1	61.7	62.8	66	1.1	10	----	57.6	5.2	5	0.2
G-27	187	1	63.7	64.8	66	1.1	10	----	59.0	5.8	5	0.8
G-28	188	1	67.4	68.5	66	1.1	10	Snd Lvl	61.7	6.8	5	1.8
G-29	189	1	66.2	68.1	66	1.9	10	Snd Lvl	61.3	6.8	5	1.8

**RESULTS: SOUND LEVELS**

**PID 107714**

G-30	190	1	63.8	66.1	66	2.3	10	Snd Lvl	59.5	6.6	5	1.6
G-31	191	1	62.6	64.4	66	1.8	10	----	58.6	5.8	5	0.8
G-32	192	1	63.5	65.2	66	1.7	10	----	59.5	5.7	5	0.7
G-33	193	1	64.3	66.1	66	1.8	10	Snd Lvl	60.1	6.0	5	1.0
G-34	194	1	65.0	66.9	66	1.9	10	Snd Lvl	60.5	6.4	5	1.4
G-35	195	1	68.1	69.9	66	1.8	10	Snd Lvl	62.4	7.5	5	2.5
G-36	196	1	70.2	72.5	66	2.3	10	Snd Lvl	63.4	9.1	5	4.1
G-37	197	1	71.8	73.7	66	1.9	10	Snd Lvl	63.8	9.9	5	4.9
G-38	198	1	72.4	74.0	66	1.6	10	Snd Lvl	63.8	10.2	5	5.2
G-39	199	1	68.0	68.9	66	0.9	10	Snd Lvl	61.1	7.8	5	2.8
G-40	200	1	66.1	67.7	66	1.6	10	Snd Lvl	60.1	7.6	5	2.6
G-41	201	1	63.5	65.2	66	1.7	10	----	58.5	6.7	5	1.7
G-42	202	1	65.6	66.8	66	1.2	10	Snd Lvl	60.0	6.8	5	1.8
G-43	203	1	74.2	74.4	66	0.2	10	Snd Lvl	63.8	10.6	5	5.6
G-44	204	1	73.7	74.6	66	0.9	10	Snd Lvl	63.7	10.9	5	5.9
G-45	205	1	72.8	74.3	66	1.5	10	Snd Lvl	63.7	10.6	5	5.6
G-46	206	1	72.2	74.5	66	2.3	10	Snd Lvl	63.7	10.8	5	5.8
G-47	207	1	71.7	74.5	66	2.8	10	Snd Lvl	63.7	10.8	5	5.8
G-48	209	1	63.5	65.7	66	2.2	10	----	59.7	6.0	5	1.0
G-49	210	1	62.9	65.2	66	2.3	10	----	59.2	6.0	5	1.0
G-50	211	1	62.2	64.4	66	2.2	10	----	58.7	5.7	5	0.7
G-51	212	1	61.1	63.1	66	2.0	10	----	57.7	5.4	5	0.4
G-52	213	1	59.9	61.9	66	2.0	10	----	56.9	5.0	5	0.0
G-53	214	1	71.4	73.7	66	2.3	10	Snd Lvl	63.8	9.9	5	4.9
G-54	215	1	73.1	75.2	66	2.1	10	Snd Lvl	64.3	10.9	5	5.9
G-55	216	1	72.7	74.7	66	2.0	10	Snd Lvl	64.1	10.6	5	5.6
G-56	217	1	72.8	74.8	66	2.0	10	Snd Lvl	64.0	10.8	5	5.8
G-57	218	1	72.7	74.6	66	1.9	10	Snd Lvl	63.9	10.7	5	5.7
G-58	219	1	71.9	74.2	66	2.3	10	Snd Lvl	63.8	10.4	5	5.4
G-59	220	1	72.1	74.2	66	2.1	10	Snd Lvl	63.8	10.4	5	5.4
G-60	221	1	72.0	74.0	66	2.0	10	Snd Lvl	63.7	10.3	5	5.3
G-61	222	1	71.2	74.4	66	3.2	10	Snd Lvl	63.8	10.6	5	5.6
G-62	223	1	72.0	74.2	66	2.2	10	Snd Lvl	64.0	10.2	5	5.2
G-63	224	1	71.1	74.5	66	3.4	10	Snd Lvl	63.9	10.6	5	5.6
G-64	225	1	71.4	74.4	66	3.0	10	Snd Lvl	64.2	10.2	5	5.2
G-65	226	1	64.0	65.4	66	1.4	10	----	62.5	2.9	5	-2.1
G-66	227	1	61.2	62.3	66	1.1	10	----	60.9	1.4	5	-3.6
G-9ii	235	1	61.1	61.7	66	0.6	10	----	57.1	4.6	5	-0.4
G-10ii	236	1	62.0	62.5	66	0.5	10	----	57.5	5.0	5	0.0
G-11ii	237	1	62.9	63.4	66	0.5	10	----	58.3	5.1	5	0.1
G-12ii	238	1	63.4	63.8	66	0.4	10	----	58.7	5.1	5	0.1



**RESULTS: SOUND LEVELS**

**PID 107714**

G-13ii	239	1	64.3	64.7	66	0.4	10	----	59.1	5.6	5	0.6
G-15ii	240	1	63.7	64.2	66	0.5	10	----	58.3	5.9	5	0.9
G-16ii	241	1	59.8	60.5	66	0.7	10	----	54.9	5.6	5	0.6
G-17ii	242	1	60.5	61.1	66	0.6	10	----	55.5	5.6	5	0.6
G-18ii	243	1	61.3	62.0	66	0.7	10	----	56.1	5.9	5	0.9
G-19ii	244	1	62.1	62.7	66	0.6	10	----	56.9	5.8	5	0.8
G-22ii	245	1	62.1	62.9	66	0.8	10	----	57.0	5.9	5	0.9
G-24ii	246	1	57.8	59.0	66	1.2	10	----	53.7	5.3	5	0.3
G-25ii	247	1	54.9	56.0	66	1.1	10	----	51.4	4.6	5	-0.4
G-26ii	248	1	59.0	60.4	66	1.4	10	----	55.0	5.4	5	0.4
G-28ii	249	1	57.8	59.1	66	1.3	10	----	54.4	4.7	5	-0.3
G-29ii	250	1	58.7	60.0	66	1.3	10	----	55.4	4.6	5	-0.4
G-31ii	251	1	59.1	60.6	66	1.5	10	----	55.7	4.9	5	-0.1
G-32ii	252	1	59.4	60.8	66	1.4	10	----	55.8	5.0	5	0.0
G-33ii	253	1	59.3	61.2	66	1.9	10	----	55.6	5.6	5	0.6
G-35ii	254	1	58.0	59.3	66	1.3	10	----	54.4	4.9	5	-0.1
G-36ii	255	1	64.6	65.8	66	1.2	10	----	58.7	7.1	5	2.1
G-38ii	256	1	66.7	68.6	66	1.9	10	Snd Lvl	60.4	8.2	5	3.2
G-43ii	257	1	62.0	64.1	66	2.1	10	----	57.4	6.7	5	1.7
G-44ii	258	1	59.5	61.2	66	1.7	10	----	56.0	5.2	5	0.2
G-47ii	259	1	64.4	66.7	66	2.3	10	Snd Lvl	60.1	6.6	5	1.6
G-48ii	260	1	57.7	59.2	66	1.5	10	----	54.7	4.5	5	-0.5
G-49ii	261	1	57.1	58.6	66	1.5	10	----	54.1	4.5	5	-0.5
G-50ii	262	1	56.5	57.8	66	1.3	10	----	53.6	4.2	5	-0.8
G-53ii	263	1	60.1	62.1	66	2.0	10	----	56.9	5.2	5	0.2
G-54ii	264	1	58.8	60.5	66	1.7	10	----	55.7	4.8	5	-0.2
G-55ii	265	1	62.3	64.8	66	2.5	10	----	58.7	6.1	5	1.1
G-56ii	266	1	61.9	64.3	66	2.4	10	----	58.3	6.0	5	1.0
G-57ii	261	1	61.7	64.1	66	2.4	10	----	58.3	5.8	5	0.8
G-58ii	267	1	61.6	63.8	66	2.2	10	----	58.1	5.7	5	0.7
G-59ii	268	1	61.6	63.6	66	2.0	10	----	58.5	5.1	5	0.1
G-60ii	269	1	59.2	60.6	66	1.4	10	----	57.4	3.2	5	-1.8
G-61ii	270	1	59.0	60.2	66	1.2	10	----	57.4	2.8	5	-2.2
G-62ii	271	1	60.9	62.0	66	1.1	10	----	59.3	2.7	5	-2.3
G-63ii	272	1	61.6	62.8	66	1.2	10	----	60.1	2.7	5	-2.3
G-64ii	273	1	62.6	63.9	66	1.3	10	----	61.1	2.8	5	-2.2
G-65ii	274	1	59.8	60.7	66	0.9	10	----	59.4	1.3	5	-3.7
G-66ii	275	1	60.1	61.2	66	1.1	10	----	59.9	1.3	5	-3.7
G-9iii	276	1	58.8	59.3	66	0.5	10	----	54.9	4.4	5	-0.6
G-12iii	277	1	59.9	60.4	66	0.5	10	----	55.3	5.1	5	0.1
G-13iii	278	1	61.7	62.2	66	0.5	10	----	56.4	5.8	5	0.8

**RESULTS: SOUND LEVELS**

**PID 107714**

G-15iii	279	1	59.3	60.0	66	0.7	10	----	54.4	5.6	5	0.6
G-16iii	280	1	56.7	57.3	66	0.6	10	----	52.0	5.3	5	0.3
G-22iii	281	1	59.8	60.5	66	0.7	10	----	54.7	5.8	5	0.8
G-24iii	282	1	56.9	58.1	66	1.2	10	----	53.0	5.1	5	0.1
G-26iii	283	1	58.3	59.5	66	1.2	10	----	54.5	5.0	5	0.0
G-35iii	284	1	57.5	58.7	66	1.2	10	----	53.9	4.8	5	-0.2
G-36iii	285	1	62.8	64.2	66	1.4	10	----	57.4	6.8	5	1.8
G-43iii	286	1	60.7	62.7	66	2.0	10	----	56.5	6.2	5	1.2
G-44iii	287	1	59.5	60.9	66	1.4	10	----	55.7	5.2	5	0.2
G-47iii	288	1	58.9	60.6	66	1.7	10	----	55.3	5.3	5	0.3
G-53iii	289	1	55.9	57.1	66	1.2	10	----	53.0	4.1	5	-0.9
G-55iii	290	1	58.2	59.8	66	1.6	10	----	55.2	4.6	5	-0.4
G-56iii	291	1	59.3	61.2	66	1.9	10	----	57.2	4.0	5	-1.0
G-57iii	292	1	58.8	60.6	66	1.8	10	----	56.8	3.8	5	-1.2
G-58iii	293	1	58.7	60.2	66	1.5	10	----	56.7	3.5	5	-1.5
G-59iii	294	1	58.1	59.4	66	1.3	10	----	56.3	3.1	5	-1.9
G-60iii	295	1	57.7	58.8	66	1.1	10	----	56.0	2.8	5	-2.2
G-62iii	296	1	57.1	58.1	66	1.0	10	----	56.6	1.5	5	-3.5
G-63iii	297	1	57.5	58.3	66	0.8	10	----	57.1	1.2	5	-3.8
G-64iii	298	1	58.7	59.5	66	0.8	10	----	58.3	1.2	5	-3.8
G-66iii	299	1	59.4	60.4	66	1.0	10	----	59.2	1.2	5	-3.8
G-9iv	300	1	58.8	59.3	66	0.5	10	----	54.8	4.5	5	-0.5
G-12iv	301	1	56.7	57.3	66	0.6	10	----	52.4	4.9	5	-0.1
G-26iv	302	1	56.1	57.4	66	1.3	10	----	52.6	4.8	5	-0.2
G-35iv	303	1	57.0	58.2	66	1.2	10	----	53.5	4.7	5	-0.3
G-36iv	304	1	61.2	62.6	66	1.4	10	----	56.4	6.2	5	1.2
G-43iv	306	1	59.7	61.3	66	1.6	10	----	55.6	5.7	5	0.7
G-55iv	307	1	57.3	58.8	66	1.5	10	----	54.4	4.4	5	-0.6
G-56iv	308	1	56.8	58.1	66	1.3	10	----	55.1	3.0	5	-2.0
G-62iv	309	1	56.8	57.6	66	0.8	10	----	56.3	1.3	5	-3.7
G-66iv	310	1	58.6	59.5	66	0.9	10	----	58.4	1.1	5	-3.9
G-35v	311	1	56.5	57.7	66	1.2	10	----	53.1	4.6	5	-0.4
G-36v	312	1	59.9	61.3	66	1.4	10	----	55.5	5.8	5	0.8
G-43v	313	1	58.2	59.6	66	1.4	10	----	54.8	4.8	5	-0.2
G-55v	314	1	56.7	58.2	66	1.5	10	----	55.0	3.2	5	-1.8
G-66v	315	1	57.8	58.8	66	1.0	10	----	57.6	1.2	5	-3.8
G-35vi	316	1	56.5	57.6	66	1.1	10	----	53.4	4.2	5	-0.8
G-36vi	317	1	58.5	59.8	66	1.3	10	----	54.5	5.3	5	0.3
G-36vii	318	1	57.8	59.1	66	1.3	10	----	54.1	5.0	5	0.0
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									
			<b>Min</b>	<b>Avg</b>	<b>Max</b>							

**RESULTS: SOUND LEVELS****PID 107714**

			<b>dB</b>	<b>dB</b>	<b>dB</b>							
All Selected		145	1.1	5.7	10.9							
All Impacted		40	4.6	8.6	10.9							
All that meet NR Goal		94	5.0	6.9	10.9							

**RESULTS: BARRIER DESCRIPTIONS**

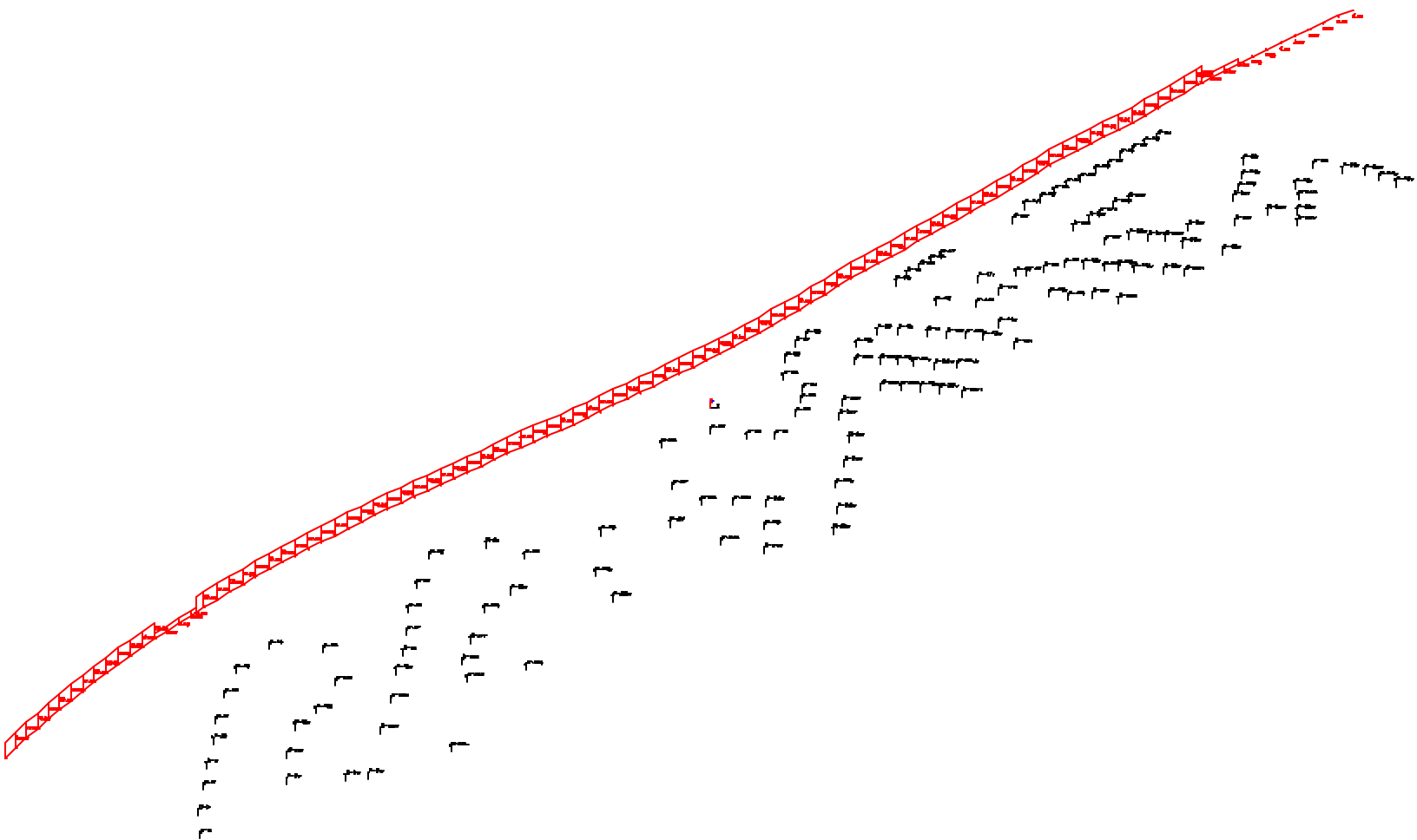
**PID 107714**

ms consultants, inc.				29 March 2023					
KLC 54200				TNM 2.5					

**RESULTS: BARRIER DESCRIPTIONS**

<b>PROJECT/CONTRACT:</b>	<b>PID 107714</b>
<b>RUN:</b>	<b>LOR-90 NSA G Design Year 2045</b>
<b>BARRIER DESIGN:</b>	<b>GN 12</b>

<b>Barriers</b>										
Name	Type	Heights along Barrier			Length	If Wall		If Berm		Cost
		Min	Avg	Max		Area	Volume	Top Width	Run:Rise	
		ft	ft	ft	ft	sq ft	cu yd	ft	ft:ft	\$
Barrier G1	W	12.00	12.00	12.00	655	7860				275097
Barrier G RR Bridge	W	3.50	3.50	3.50	163	569				0
Barrier G2	W	12.00	12.00	12.00	3797	45558				1594544
Barrier G Stream Bridge	W	3.00	3.34	3.50	136	454				0
Barrier G3	W	0.00	0.00	0.00	0	0				0
									Total Cost:	1869640



LOR-90 NSA G Design Year 2045		Sheet 1 of 1	29 Mar 2023
Barrier View-GN 12		ms consultants, inc.	
Run name: BAR_NSA_G		Project/Contract No. PID 107714	
Scale: <DNA - due to perspective>		TNM Version 2.5, Feb 2004	
Analysis By: KLC 54200			
Roadway:	—————>	Ground Zone:	polygon
Receiver:	□	Tree Zone:	dashed polygon
Barrier:	┆—————>	Contour Zone:	polygon
Building Row:	— — — — —	Parallel Barrier:	=====
Terrain Line:	—————	Skew Section:	— — — — —>

**Appendix G**

**Benefited**

**Receiver**

**Addresses**

## **NSA A**

<b>Receiver</b>	<b>Property Address</b>
A-19	6986 FREELAND DR
A-20	6978 FREELAND DR
A-20ii	6985 FREELAND DR
A-21	6968 FREELAND DR
A-22	6960 FREELAND DR
A-23	6945 FREELAND DR
A-24	6945 FREELAND DR
A-25	43011 43015 CRESTLANE DR
A-25ii	43008 HAVEN DR
A-26	43011 43015 CRESTLANE DR
A-27	43001 CRESTLANE DR
A-28	43005 CRESTLANE DR
A-29	43002 CRESTLANE DR
A-29ii	42991 CRESTLANE DRIVE
A-30	42990-42992 CRESTLANE DR
A-30ii	42987 CRESTLANE DR
A-31	42980 CRESTLANE DR

## NSA E EAST

<b>Receiver</b>	<b>Property Address</b>
E-15	102 HEMLOCK DR
E-16	106 HEMLOCK DR
E-17	114 HEMLOCK DR
E-18	120-122 HEMLOCK DR
E-19	126 HEMLOCK DR
E-20	132 HEMLOCK DR
E-21	132 HEMLOCK DR
E-22	144 HILLCREST DR
E-23	140-142 HEMLOCK DR
E-24	750 SUGAR LN
E-25	148-150 HEMLOCK DR
E-26	152 HEMLOCK DR
E-27	5321 MEADOW LANE CT #6
E-28	160-162 HEMLOCK DR
E-28iii	169 HEMLOCK DR
E-29	164-166 HEMLOCK DR
E-29ii	171 HEMLOCK
E-30	168 HEMLOCK DRIVE
E-30ii	175 HEMLOCK DR
E-31	172 HEMLOCK DR
E-31ii	177 HEMLOCK DR
E-32	176-178 HEMLOCK DR
E-32ii	181 HEMLOCK DR
E-33	180 82 HEMLOCK DR
E-33ii	183 HEMLOCK DR
E-34	10301 ASPEN CT
E-34ii	187 HEMLOCK DR
E-35	188-190 HEMLOCK DR
E-35ii	191 HEMLOCK DR
E-36	192 HEMLOCK DR
E-36ii	197 HEMLOCK DR
E-37	196 HEMLOCK DR
E-38	361 LOYOLA DR
E-39	357 LOYOLA DR
E-40	353 LOYOLA DR
E-41	116 ANTONETTE ST
E-42	347 LOYOLA DR
E-42ii	341 LOYOLA DR
E-43D	12882 DIAGONAL RD
E-43Dii	12882 DIAGONAL RD



## NSA F

<b>Receiver</b>	<b>Property Address</b>
F-2	5200 PARKHURST DR
F-3	5202-5204 PARKHURST DR
F-4	5206 PARKHURST DR
F-5	5201 PARKHURST DR
F-6	5203-5205 PARKHURST DR
F-7	5207 PARKHURST DR
F-8	5211 PARKHURST DR
F-8ii	5213-5215 PARKHURST DR
F-8iii	5217 PARKHURST DR
F-8iv	5221 PARKHURST DR
F-9	4408 WESTMONT DRIVE
F-9ii	5202 CEDARVILLE AVE
F-9iii	5210 CEDARVILLE AVE
F-10	4404 WESTMONT DR
F-10ii	5203 CEDARVILLE AVE
F-11	4400 WESTMONT DR
F-12	4398 WESTMONT DR
F-12ii	4397 WESTMONT DR
F-13	4390 WESTMONT DR
F-13ii	4393 WESTMONT DR
F-14	4380 WESTMONT DR
F-14ii	4385 WESTMONT DR
F-15	4370 WESTMONT DR
F-15ii	4375 WESTMONT DR
F-16	4360 WESTMONT DR
F-16ii	5200 MALONE AV
F-17	4350 WESTMONT DR
F-18	5201 MALONE AVE
F-18ii	5205 MALONE AVE
F-19	5190 BERKELEY ST
F-20	5188 BERKELEY ST
F-21	5178 BERKELEY DR
F-21iv	5215 BERKELEY DR
F-22	4256 BERKELEY DR
F-23	4246 BERKELEY DR
F-25iii	5222 LEANN CT
F-25iv	4820 DETROIT AV
F-26	4218 BERKELEY DR
F-27	4216 BERKLEY DR
F-27iii	5223 LEANN CT
F-27iv	4214 BERKELEY ST
F-28	4210 BERKELEY ST
F-28iii	4205 BERKELEY ST

F-28iv	1130 LAKE BREEZE
F-28v	4212 BERKELEY DR
F-29iii	4204 BERKELEY DR
F-30	4192 BERKELEY DR
F-30iii	4190 BERKELEY DR
F-31	4186 BERKELEY ST
F-31iii	4182 BERKELEY ST
F-32ii	4171 BERKELEY ST
F-32iii	4166 BERKELEY DR
F-33	4164 BERKELEY DR
F-33ii	4138 BERKELEY DR
F-34	4040 BERKELEY ST
F-34ii	4155 BERKELEY DR
F-34iii	4116 BERKELEY DR
F-34iv	4111 BERKELEY DR
F-35	4051 BERKELEY DR
F-35iii	4095 ABBE RD
F-36	4061 BERKELEY DR
F-36ii	4071 BERKELEY DR
F-37	5240 KEVIN ST
F-37iii	5260 KEVIN ST
F-37vii	4020 ABBE RD
F-38	5251 KEVIN ST
F-39	5261 KEVIN ST
F-39ii	5271 KEVIN ST
F-39iii	5281 KEVIN ST
F-39iv	5291 KEVIN ST
F-41	3960 OLD ABBE RD
F-41ii	3955 ABBE RD
F-43	OLD ABBE RD
F-45	3910 OLD ABBE RD
F-45ii	3939 ABBE RD
F-46	3810 OLD ABBE RD
F-46ii	3917 ABBE RD
F-47	3887 OLD ABBE RD
F-48	4409 TENNYSON AVE
F-48ii	3835 OLD ABBE RD
F-49	3803 ABBE ROAD
F-50	3785 OLD ABBE RD
F-51	3773 OLD ABBE RD
F-52	3763 ABBE RD
F-74	5410 HAWKS NEST CIR
F-74ii	5412 HAWKS NEST CIR
F-77	5404 HAWKS NEST CIR
F-83	5392 HAWKS NEST CIR
F-59	

F-60  
F-60iv  
F-60v  
F-61  
F-62  
F-63  
F-64  
F-65  
F-66  
F-67  
F-68ii  
F-69  
F-69ii  
F-70  
F-70ii  
F-70iii  
F-71  
F-71ii  
F-72  
F-72ii  
F-73v  
F-75  
F-76  
F-78  
F-79  
F-80  
F-81  
F-82  
F-84  
F-85

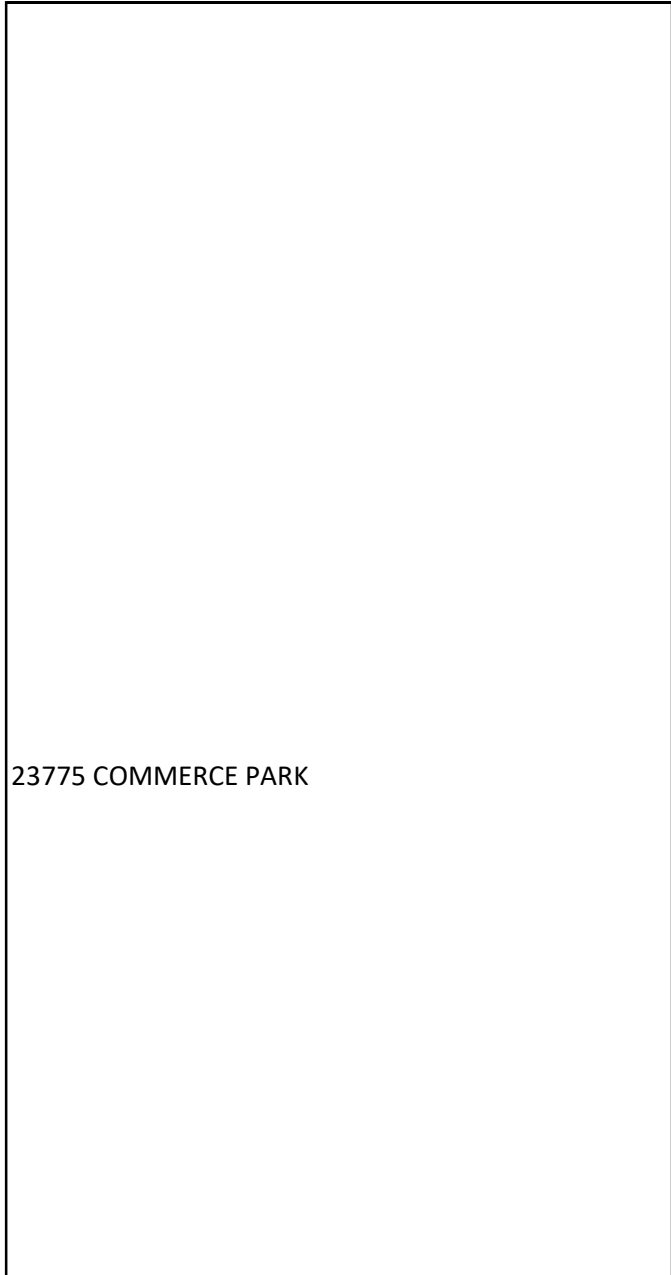
PO BOX 2475

## NSA G

<b>Receiver</b>	<b>Property Address</b>
G-9ii	2547 DAEGAN DR
G-10ii	2537 DAEGAN DR
G-10	2526 DAEGAN DR
G-11	2516 DAEGAN DR
G-11ii	2527 DAEGAN DR
G-12	2506 DAEGAN DR
G-12ii	2517 DAEGAN DR
G-12iii	2528 FAIRFIELD DR
G-13	2496 DEAGAN DR
G-13ii	2507 DAEGAN DR
G-13iii	2508 FAIRFIELD DR
G-14	2486 DAEGAN DR
G-15	2499 DAEGAN DR
G-15ii	2498 FAIRFIELD DR
G-15iii	2497 FAIRFIELD DR
G-16	2488 FAIRFIELD DR
G-16ii	2487 FAIRFIELD DR
G-16iii	331 W STREETSBORO ROAD
G-17	2478 FAIRFIELD DR
G-17ii	2477 FAIRFIELD DR
G-18	2468 FAIRFIELD DR
G-18ii	2463 FAIRFIELD DR
G-19	2458 FAIRFIELD DR
G-19ii	2457 FAIRFIELD DR
G-20	2448 FAIRFIELD DR
G-21	2447 FAIRFIELD DR
G-22	2451 FAIRFIELD DR
G-22ii	39371 STONEFIELD PL
G-22iii	39363 STONEFIELD DR
G-23	39379 STONEFIELD PL
G-24	39360 STONEFIELD PLACE
G-24ii	39352 STONEFIELD PL
G-24iii	2438 DEERFIELD DR
G-25	2432 DEERFIELD DR
G-26	39357 LORRETO CT
G-26ii	39345 LORRETO CT
G-26iii	2428 DEERFIELD DR
G-27	39363 LORRETO CT
G-28	39364 LORRETO CT
G-29	39356 LORRETO CT
G-30	39348 LORRETO CT
G-31	2418 DEERFIELD
G-32	2396 DEERFIELD DR

G-32ii 23775 COMMERCE PARK  
G-33 2390 DEERFIELD DR  
G-33ii 23775 COMMERCE PARK  
G-34 2384 DEERFIELD DR  
G-35 2378 DEERFIELD DR  
G-36 2372 DEERFIELD DR  
G-36ii 38830 CORONADO AVE  
G-36iii 38826 CORONADO AVE  
G-36iv 38820 CORONADO AVE  
G-36v 38816 CORONADO AVE  
G-36vi 38810 CORONADO AVE  
G-36vii 38806 CORONADO AVE  
G-37 2366 DEERFIELD DR  
G-38 2360 DEERFIELD DR

G-38ii  
G-39  
G-40  
G-41  
G-42  
G-43  
G-43ii  
G-43iii  
G-43iv  
G-44  
G-44ii  
G-44iii  
G-45  
G-46  
G-47  
G-47ii  
G-47iii  
G-48  
G-49  
G-50  
G-51  
G-52  
G-53  
G-54  
G-55  
G-55ii  
G-56  
G-56ii  
G-56iii  
G-57  
G-57ii  
G-58  
G-58ii



23775 COMMERCE PARK

G-59  
G-59ii  
G-60  
G-62  
G-61  
G-63  
G-64



**Appendix H**

**Sign & Utility**

**Conflict**

**Maps**

---

**Noise Barriers**  
— Recommended  
— Not Recommended  
— Noise Study Area

**NSA A**

**Barrier A**  
Edge of Shoulder  
12' Height  
1,300' Length

Possible Light Poles  
Conflict Every 250'



CRESTLANE

HAVEN

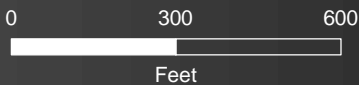
WOODHILL

FREELAND

EMERALD

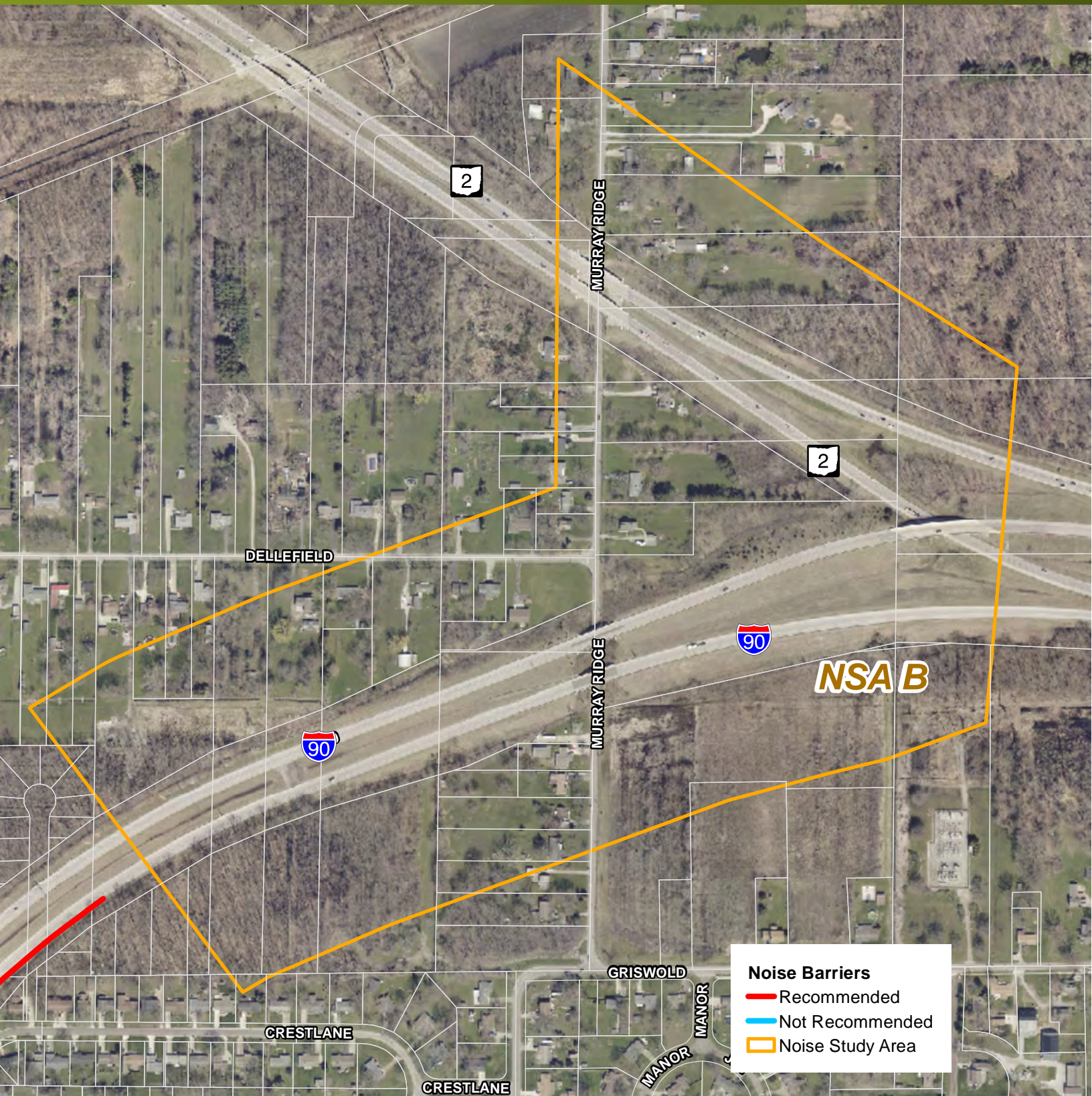
IMPERIAL

GALAXY






**NSA A**

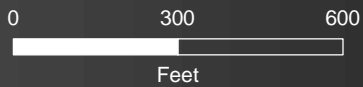




**NSA B**

- Noise Barriers**
-  Recommended
  -  Not Recommended
  -  Noise Study Area

**NSA B**



NSA C



**NSA D**

Barrier D HP  
16' Height  
1,250' Length

Possible Sign Conflict

Possible Sign Conflict

Possible Sign Conflict

Possible Overhead  
Sign Conflict

Possible Sign Conflict

FOXES LAIR APTS

- Recommended
- Not Recommended
- Noise Study Area



0 500 1,000  
Feet

**NSA D**



**Noise Barriers**  
- Recommended  
- Not Recommended  
- Noise Study Area

NSA E - Park



**Noise Barriers**

- Recommended
- Not Recommended
- Noise Study Area

# NSA E East

Barrier EE Shoulder  
Edge of Shoulder  
12' Height  
2,550' Length

Possible Overhead  
Utility Lines Conflict

Possible Sign Conflict

Two Possible  
Sign Conflicts

Possible Sign Conflict

## NSA E - East



**Noise Barriers**

- Recommended
- Not Recommended
- Noise Study Area

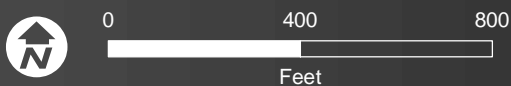


NSA F



**Noise Barriers**

- Recommended
- Not Recommended
- Noise Study Area



NSA G