Appendix I – Screening Level Noise Analysis Technical Report

Job No. 100512, Walnut Ridge – Missouri State Line (Future I-57) P.E.



Prepared by Garver for the Arkansas Department of Transportation In cooperation with the Federal Hwy Administration

This report was funded in part by the Federal Hwy Administration, U.S. Department of Transportation. The views and opinions of the authors expressed herein do not necessarily state or reflect those of the U.S. Department of Transportation.





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Chapter 1 – Introduction

Project Overview

The Federal Highway Administration (FHWA) has established standards for evaluating traffic noise in compliance with 23 United States Code (USC) of Federal Regulations Section 109(h) and (i). These standards are found in 23 Code of Federal Regulations (CFR) Part 772. ARDOT's *Policy on Highway Traffic Noise Abatement* (ARDOT Noise Policy) was developed in accordance with requirements of these FHWA Noise Standards. This Noise Screening Analysis was completed in accordance with the ARDOT Noise Policy for proposed improvements to the United States Highway (Hwy.) 67 corridor in northeastern Arkansas between Walnut Ridge and the Missouri State line.

This Noise Screening Analysis serves to provide the following:

- An overview of the existing and future noise environment
- Predict the potential effects the project would have on the noise environment

1.1 What is the Proposed Project?

The purpose of the project (ARDOT job number 100512) is to enhance connectivity and continuity of the National Highway System, provide a more resilient roadway, and provide for increased opportunity for economic development in northeast Arkansas. The study area is located in Clay, Greene, Lawrence, and Randolph counties in northeast Arkansas. Construction of the connection would complete the improvements of Future I-57 within Arkansas.

The August 2015 Highway 67 Improvement Study prepared by ARDOT, the Executive Summary of which is available in Appendix B of the Final Environmental Impact Statement (FEIS), evaluated five alternative corridors to improve Hwy. 67. The study recommended three action alternatives be carried forward into any future NEPA studies and documented the reason why each alternative was or was not recommended to be carried forward. The three recommended alternative corridors, which were later renumbered in the EIS study, consisted of:

- upgrading existing Hwy. 67 and included bypasses around Pocahontas and Corning;
- an alternative on new location located mostly north of the Dave Donaldson Black River Wildlife Management Area (Black River WMA); and
- an alternative on new location that primarily parallels Hwy. 90 and is south of the Black River WMA.

The Supplementary Notice of Intent (SNOI) was prepared for the Future I-57 project in June 2021 and is available within Appendix A of the FEIS. Figure 1 of the 23 USC Section 139 Coordination Plan within the SNOI document, shows four build alternatives within the Future I-57 Study Area. Three of the alternative corridors are the three corridors recommended by the2015 Highway 67 Improvement Study and the fourth is an alignment entirely along existing Hwy. 67. Because the latter was not retained for further study in the 2015 ARDOT Improvement Study and would not meet the project purpose and need, it was not included in the EIS study. Thus, the three action alternatives considered for the Future I-57 Project were renumbered as Alternatives 1-3 and consisted of the following.

- Alternative 1 Upgrade existing Hwy. 67 to interstate standards and construct bypasses around Pocahontas and Corning
- Alternative 2 New location interstate located east and south of existing Hwy. 67 and north of the Black River WMA
- Alternative 3 New location interstate parallel to and south of Hwy. 90



As documented in Section 2.3 of the FEIS, results of the alternative screening process predicted Alternative 1 would have substantial environmental and community impacts. Therefore, Alternative 1 was eliminated from further consideration and was not carried forward for detailed analysis in the EIS Study.

Alternatives 2 and 3, as shown in **Figure 1**, were retained and considered and evaluated in this noise screening analysis. Several interchange locations are also proposed. Three Missouri Connector Alternatives (Alternatives A-C) were also evaluated. These action alternatives are primarily 400 feet in width; however, the auditory study area extends outward from the proposed travel lanes up to 675 feet. The alternatives evaluated include:

- No Action Alternative (Existing Hwy. 67)
- Alternative 2 (Central alignment on new location 39 miles)
- Alternative 3 (Eastern alignment on new location 41 miles)
- Alternative A (Western Missouri connector on new location 2.5 miles)
- Alternative B (Middle Missouri connector partially on existing Hwy. 67 2.3 miles)
- Alternative C (Eastern Missouri connector on new location 2.8 miles)

The No Action Alternative would not involve the construction of Hwy. 67 but would include normal activities that involve providing for the safety and maintenance of local roadways. The No Action Alternative was compared to the action alternatives developed for this project.

1.2 Why Were Noise Impacts Assessed for This Project?

It is the intent of the ARDOT to evaluate predicted, future traffic sound levels from highway traffic noise that could result in traffic noise impacts for federal Type I projects. Type I projects include those that meet the following criteria:

- Substantially alter the existing horizontal and vertical alignments and topography
- Add through traffic lanes
- Add and relocate interchanges or ramps

According to ARDOT Noise Policy, a screening level noise analysis (screening analysis) may be performed for projects that are unlikely to cause noise impacts and/or where noise abatement measures are likely to be unfeasible for acoustical or engineering reasons. Factors common to these types of projects include low traffic volumes, slower speeds, the presence of few or no receptors, and the need for roadway access points (e.g., driveways, roadway intersections, etc.).

1.3 Resources Evaluated in This Technical Report?

This technical report includes the evaluation of the following sensitive noise receivers. It should be noted that there are receptors located within the proposed right of way, which are considered relocations for the purposes of this noise screening and not counted as impacted. A total of 200 receptors were evaluated.

- Single family residential properties
- Cemeteries
- Places of worship
- Section 4(f) public recreation properties
- Commercial properties with outdoor seating





Figure 1 - Project Overview



Chapter 2 – What is the Existing Noise Environment?

This section provides background information on traffic noise, screening criteria, and how potential impacts are determined. For the purposes of the noise screening, vehicular traffic is considered the primary source of noise in the project area.

2.1 How is Noise Defined?

Noise is defined as unwanted or excessive sound. The three basic parameters of how noise affects people are summarized below.

Intensity is determined by the level of sound expressed in units of decibels (dB). A 3 dB change in sound level is barely perceptible to most people in typical outdoor settings. However, a 5 dB increase presents a noticeable change, and a 9-10 dB increase in sound level is typically judged to be twice as loud as the original sound, while a 9-10 dB reduction is half as loud. Outdoor conversation at normal levels at a distance of 3 feet becomes difficult when the sound level exceeds the mid-60 dBA range.

Frequency is related to the tone or pitch of the sound. The amplification or attenuation of different frequencies of sound to correspond to the way the human ear hears these frequencies is referred to as "A-weighting." The A-weighted sound level in decibels is expressed as dBA.

Variation with time occurs because most noise fluctuates from moment to moment. A single level called the equivalent sound level (Leq) is used to compensate for this fluctuation. The Leq is a steady sound level containing the same amount of sound energy as the actual time-varying sound evaluated over the same time period. The Leq averages the louder and quieter moments but gives more weight to the louder moments.

For highway noise assessment purposes, Leq is typically evaluated over the worst 1-hour period. The Leq commonly describes sound levels at locations of outdoor human use and activity and reflects the conditions that will typically produce the worst traffic noise (e.g., the highest traffic volumes traveling at the highest possible speeds). Doubling the number of sources (i.e., vehicles) increases the hourly equivalent sound level (Leq) by approximately 3 dB, which is usually the smallest change that people can detect without specifically listening for the change.

2.2 What Factors Affect Traffic Noise Levels?

Many factors affect traffic noise levels, including distance, topography, land cover, buildings, traffic volumes and speeds, and vehicle type. For example, the Leq would generally decrease by 4.5 dBA for doubling of distances when the ground cover is grass, pasture, or other sound absorbing cover. When hard ground cover such as gravel, paved surfaces, and water is encountered, noise levels can be expected to decrease typically by 3 dBA for doubling of distances.

Vehicles classified by FHWA as medium and heavy trucks generate greater sound levels. Higher truck volumes combined with higher highway speeds will produce greater potential for noise impacts. In general, speed increases from 30 to 45 mph will increase sound by 5 to 6 dBA and by another 3dBA with speed increases to 55 mph. Quiet daytime noise levels in rural areas with no significant noise sources might be in the 30 to 40 dBA range, while quiet daytime noise levels in suburban areas might be in the 40 to 50 dBA range.



2.3 How are Noise Levels Predicted?

The FHWA Traffic Noise Model Version 2.5 (TNM) software program is used to predict existing and future Leq(h) traffic noise levels. The TNM straight line model used in the screening level analysis uses the existing year and design year traffic and roadway information. This modeling allows for reasonable estimates of traffic noise using varying offset distances from the highway. Traffic inputs into TNM are further discussed in below.

Noise studies may use the terms "receptor" and "receiver" that are similar but distinct. A receptor can represent a noise-sensitive area, such as the backyard of a single family, restaurant seating area or a park bench. A receptor can also represent the location of a group of receptors with similar land uses. Receivers are described as a TNM modeling point that can represent a single receptor site or a group of receptor sites with similar land uses. TNM receivers may representative several receptors where common noise environments exist.

2.4 What is a Noise Impact?

Traffic noise impacts are determined by comparing design year worst noise hour Leq(h) values to: (1) a set of Noise Abatement Criteria (NAC) defined by the Federal Highway Administration (FHWA) for different land use categories; and (2) existing Leq(h) values. **Table 1** shows the land uses classified as Activity Categories A through G and their corresponding NACs. A noise impact occurs when at a given receptor future noise levels approach by one decibel, meet, or exceed FHWA NAC for its activity category for the design year. A substantial increase occurs when the future noise levels exceed existing noise levels by 10 dB (A) at a given receptor. For screening analysis purposes, the ARDOT noise policy requires determining noise levels within 4 dBA of the NAC value. The screening analysis threshold would therefore be 63 dBA for Activity Categories B and C.

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

Table 1 – Noise	Abatement	Criteria	(NAC)
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*Includes undeveloped lands permitted for this activity category.



2.5 What if Noise Impacts are Identified?

Screening analysis results represent a worst-case scenario with higher sound levels than would be expected in detailed modeling. The results may be used to determine the need for detailed analysis if noise impacts are likely and the placement of noise barriers is feasible. If noise impacts are identified as a result of the noise screening, a detailed evaluation of the feasibility of abatement would be conducted in accordance with ARDOT's noise policy and FHWA noise standards (23 CFR 772). Abatement considerations determined to be feasible and reasonable would trigger the need for a detailed noise analysis.

Feasibility refers to one of two criteria defined in the ARDOT noise policy used to evaluate noise abatement and includes a combination of acoustical and engineering factors in the ability of an abatement measure to achieve a substantial noise reduction.

Reasonableness is the second abatement criteria in evaluation of noise abatement and includes the combination of social, economic, and environmental factors, and weighs the amount of a noise barrier against the benefits it would provide.

2.6 How were Noise Study Areas (NSA) Defined?

The identification of noise impacts is grouped according to noise study areas (NSA) as defined according to ARDOT's screening level noise analysis process. Impacts are identified by receptor type which involves using a straight line TNM model. For straight line modeling purposes, the receiver placement represents a modeling point in the TNM model at which noise levels are predicted, that is initially used to identify noise buffer zones (NBZ). The straight-line model incrementally places receivers perpendicular to the modeled roadway at 50-foot intervals to determine the distances to which noise impacts and noise levels within 4 dBA of the NAC extend away from the roadway. The NBZ's identify the distance from the centerline of the roadway where the 63 dBA and 66 dBA sound level would occur. The NSAs and associated potential receptors are delineated based on the NBZ and consideration of the Activity Categories as identified in **Table 1**. The NSA locations for each alternative are identified below in **Table 2** and shown in **Figure 2**. NSAs for this project were identified according to the proposed changes in traffic volumes along each alternative. The number following "NSA" identifies the action alternative and the following letter represents the segment of that alternative (i.e., NSA 2A = "Alternative 2", "Segment A").

NBZs are assigned to areas that could experience noise levels of 63 dBA. The tenth value was used for rounding the decibel levels (e.g., 63.3 dBA reported as 63 dBA). Existing and proposed impacts were determined to occur at 66 dBA. The NBZ's for Alternative 2 are shown in **Attachment A**, NBZ's for Alternative 3 are shown in **Attachment B**, NBZ's for Alternatives A, B, and C are shown in **Attachment C**, and NBZ's for the No Action Alternative are shown in **Attachment D**. The different shaded areas were determined based on the predicted distance from the center of the lanes associated with the nearest direction of travel for the proposed action alternatives and from the center of the existing highway for the No Action Alternative. Substantial increase impacts were also evaluated in the same way.



	Alternative 2
NSA 2A	Located between the interchange of Hwy. 412 and Hwy. 67 near Walnut Ridge and extends north to a proposed interchange at Hwy. 304
NSA 2B	Hwy. 304 to Hwy. 67 West of Corning
NSA 2C	Hwy. 67 West of Corning to Hwy. 67 N of Corning
NSA 2D	Hwy. 67 North of Corning to Alternatives A, B, and C
	Alternative 3
NSA 3A-1	Hwy. 412 & Hwy. 67 to Delaplaine
NSA 3A-2	Delaplaine to Hwy. 90 East of Knobel
NSA 3B-1	Hwy. 90 North approximately 2,500 feet
NSA 3B-2	Approximately 2,500 feet North of Hwy. 90 to Hwy. 67 West of Corning
NSA 3C	Hwy. 67 West of Corning to Hwy. 67 North of Corning
NSA 3D	Hwy. 67 to Missouri State Line
	Alternative A
NSA A	South of Clay County Road 155 to the State Line
	Alternative B
NSA B	South of Clay County Road 155 to the State Line
	Alternative C
NSA C	South of Clay County Road 155 to the State Line
	No Action Alternative
NSA NA-A	Hwy. 67 and Hwy 412 to County Line
NSA NA-1	County Line to Hwy 304
NSA NA-2	Hwy. 304 to Hwy. 90
NSA NA-B	Hwy. 90 to Hwy. 67 Business (south of Biggers)
NSA NA-C	Hwy. 67 Business to Hwy. 211
NSA NA-3	Hwy. 211 to Clay County Road 139
NSA NA-D	Clay County Road 139 to Hwy 67 North (N. Missouri Ave.)
NSA NA-4-1	From Hwy. 67 North (N. Missouri Ave.) to Clay County Road 140
NSA NA-4-2	Clay County Road 140 to the State Line

Table 2 – Noise Study Area (NSA) General Locations for Action Alternatives





Figure 2 - Ambient Noise Measurement Locations and NSA Segments



Chapter 3 – How was the Project Modeled and What were the Results?

This section summarizes results of the screening analysis. TNM results tables are provided in **Attachment E**. Screening analysis results represent a worst-case scenario with higher sound levels than would be expected in detailed modeling. The results may be used to determine the need for detailed analysis if noise impacts are likely and the placement of noise barriers is feasible. It may also be used for projects that lack receptors in order to assess impacts on undeveloped land for future land use planning purposes.

3.1 How was the Project Modeled?

Ambient noise measurements were collected on March 2 and 3, 2021 for 15 minutes at five representative locations along Alternative 2 and Alternative 3 that represent the ambient or background noise environment for these two alternatives and for Alternatives A and C, which are utilized in determining if there would be a substantial increase (\geq 10 dBA). Upon coordination with ARDOT, it was determined that applying one conservative ambient reading to identify any substantial increase impacts for Alternative 2 and Alternative 3 would provide a more realistic prediction of the noise environment in an area where the land use along both alternatives is consistent. TNM modeling results determined that the distance to the 66 dBA contour and the distance to identify substantial increase impacts was reasonably uniform along Alternative 2 and Alternative 3. Existing ambient sound levels were compared to the TNM predicted sound levels for each evaluated alternative.

Traffic data prepared for the project was applied to the TNM models developed for each NSA and included proposed 2040 traffic for the action alternatives and both existing 2018 and proposed 2040 traffic for the No Action Alternative. Traffic data used in this screening analysis is included in **Attachment E**. The typical section associated with the action alternatives is included in **Attachment F**.

3.2 What were the Field Measurement Results?

Ambient field measurement locations are shown on Figure 2 and results are provided in Table 3.

Field Measurement Site	General Location	Recorded dB	Segment	Latitude	Longitude
Alt2_A1	Clay Co Road 125	40.7	C & D	36.372449°	-90.677335°
Alt2_A5	Randolph Co Gazaway Road	42.5	В	36.296970°	-90.827700°
Alt3_A2	Lawrence Co Road 611	49.4	A-1	36.120750°	-90.868960°
Alt3_A3	Peach Orchard, Clay Co Elm Street	46.4	A-2	36.272680°	-90.660940°
Alt3_A4	Clay Co. Bond Cemetery - Road 250	56.5	В	36.329220°	-90.587490°

Table 3 – Ambient Noise Measurements and Location

Five ambient noise measurements as identified in **Table 3** were collected throughout various locations of the action alternatives. Based on rural nature of the study area, the conservative ambient measurement of 42.5 dB was applied to all action alternatives. This conservative measurement provides the most likely scenario for determination of potential substantial increase impacts along the action alternatives. Based on coordination with ARDOT, the 15-minute ambient noise measurements collected on March 2 and 3, 2021 are still within the ARDOT noise policy on rural projects with scattered noise receptors, modeling of existing noise levels along the entire project is not always necessary. For new alignment roadways where no major roadways are present, ambient



measurements are used to determine the existing noise environment; therefore, the noise conditions along the new alignment alternatives were evaluated by using a conservative ambient reading.

3.3 NSA 2A Modeling Results

As shown in **Attachment A**, NSA 2A is located between the interchange of Hwy. 412 and Hwy. 67 and Hwy. 90., NSA 2A contains very few residences, which would be the primary noise sensitive receptors. The predicted build noise levels range from 63 dBA at 225 feet to 66 dBA at a distance of 170 feet. Substantial increases (59.4 dBA) can be anticipated at 560 feet. Three receptors (shown on detail sheets 2 and 5 of 24 in **Attachment A**) are predicted to experience future noise levels equal to or exceeding substantial noise level increases of ≥ 10 dBA.

3.4 NSA 2B Modeling Results

NSA 2B is located between a proposed interchange at Hwy. 304 and Hwy. 67 west of Corning and also contains very few receptors. The predicted 63 dBA and 66 dBA build noise levels in this NSA are also anticipated to range from 225 feet to 170 feet respectively. Substantial increases (encountered at 52.5 dBA) could be experienced out to a distance of approximately 550 feet from the nearest direction of travel. Four receptors (shown on detail sheets 12, 15, and 18 in **Attachment A**) are predicted to experience future noise levels equal to or exceeding substantial noise level increases of \geq 10 dBA, one of which falls within the 63 dBA NBZ.

3.5 NSA 2C Modeling Results

NSA 2C is located between Hwy. 67 west of Corning and Hwy. 67 north of Corning. No receptors are located within this NSA. The predicted 63 dBA and 66 dBA build noise levels in this NSA are also anticipated to range from 210 feet to 162 feet respectively. Substantial increases (encountered at 52.5 dBA) could be experienced out to a distance of approximately 550 feet from the nearest direction of travel. No receptors are located within the 63 NBZ, be impacted by meeting or exceeding the NAC 66 dBA threshold or would be affected substantial increases of ≥ 10 dBA.

3.6 NSA 2D Modeling Results

NSA 2D is located between a proposed interchange on Hwy. 67 north of Corning and Alternatives A and C. This NSA contains one receptor. The predicted 63 dBA and 66 dBA build noise levels in this NSA are also anticipated to range from 225 feet to 170 feet respectively. Substantial increases (encountered at 52.5 dBA) could be experienced out to a distance of approximately 600 feet from the nearest direction of travel. The single receptor (shown in detail sheet 24 in **Attachment A**) located in this NSA would be affected by a substantial increase of ≥ 10 dBA.

Alternative 2 noise level results for compatibility planning are provided in **Table 4**.



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	70	8T	7040			NAC	NAC Impacted	NAC	Impacted
Location	Distance	Leq(h),	Distance	Leq(h),	Ambient Measurements	Impacted Receptors	Receptors Proposed 66dB	Receptors Within	Receptors by
	(feet)*	dBA**	(feet)*	dBA**	(dBA)	Existing 66dB NBZ	NBZ	Future 63dB NBZ	Substantial Increase
	1		50	72.5					
	ł		100	69.2					
	-		170	66.1					
	1		225	63.0					
	1		250	61.8					
Segment 2A	1	N/A	310	59.5	42.5 dB	0	0	0	£
			335	58.6					
			400	56.7					
			450	55.4					
			500	54.2					
			560	52.9					
	1		50	72.4					
	1		100	69.1					
	-		170	66.0					
	-		225	62.8					
	1		250	61.6					
Segment 2B	-	N/A	300	59.5	42.5 dB	0	0	1	4
	1		340	58.1					
	1		400	56.3					
	-		450	55.0					
	-		500	53.8					
	1		550	52.7					
	-		50	72.0					
	1		100	68.6					
	1		150	66.5					
C transit	1	2/17	210	63.1	101 97 9 67	c	c	c	c
Jeginent zu	I		250	61.1	(TY) an C.74	D	þ	D	D
	1		300	59.1					
	1		350	57.3					
	1		425	55.2					

- Alternative 2 Table 4 – Noise Level Results for Compatibility Planning – Chapter 3 How was the Project Modeled and What were the Results?

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	Decentors hu	Substantial	Increase												~	Ŧ						
NAC	Receptors	Within	Future 63dB NBZ												c	D						
NAC Impacted	Receptors	Proposed 66dB	NBZ												c	D						
NAC	Impacted	Receptors	Existing 66dB NBZ	o																		
	Ambient	Measurements	(dBA)	42.5 dB																		
0		Leq(h),	dBA**	54.5	53.3	52.2	51.2	50.7	72.5	69.1	66.1	63.0	61.8	59.8	58.2	56.1	55.2	54.3	53.2	52.2	51.2	50.7
204		Distance	(feet)*	450	200	250	009	625	20	100	170	225	250	300	350	425	460	200	550	009	650	675
18		Leq(h),	dBA**												N1 / N	E/N						
20		Distance	(feet)*	ł	1	1	ł	1	1	1	-	I	1	1	-	I	1	1	1	1	-	I
		Location														Segment 2D						

* Perpendicular to centerline of Alternative in each direction. ** Rounded to tenth value.

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3.7 NSA 3A-1 Modeling Results

NSA 3A-1 is located between the interchange of Hwy. 412 and Hwy. 67 and Delaplaine. The predicted 63 dBA and 66 dBA build noise levels in this NSA are also anticipated to range from 215 feet to 165 feet respectively. Substantial increases (encountered at 52.5 dBA) could be experienced out to a distance of approximately 560 feet from the nearest direction of travel. Four receptors (shown on detail sheets 4, 7, and 10 in **Attachment B**) are predicted to experience future noise levels equal to or exceeding substantial noise level increases of ≥ 10 dBA.

3.8 NSA 3A-2 Modeling Results

NSA 3A-2 is located between Delaplaine and Hwy. 90 east of Delaplaine. The predicted 63 dBA and 66 dBA build noise levels in this NSA are also anticipated to range from 215 feet to 165 feet respectively. Substantial increases (encountered at 52.5 dBA) could be experienced out to a distance of approximately 550 feet from the nearest direction of travel. Three receptors (shown on detail sheets 15 and 16 in **Attachment B**) are predicted to experience future noise levels equal to or exceeding substantial noise level increases of ≥ 10 dBA.

3.9 NSA 3B-1 Modeling Results

NSA 3B-1 is located north of Hwy. 90 east of Delaplaine and extends adjacent to Clay County Road 250 for approximately 2,500 feet. The predicted 63 dBA and 66 dBA build noise levels in this NSA are anticipated to range from 220 feet to 166 feet respectively. Substantial increases would be encountered out to a distance of approximately 550 feet from the nearest direction of travel. Two receptors (shown on detail sheet 17 in **Attachment B**) are predicted to experience future noise levels within the 63 dBA NBZ. No substantial increase impacts are anticipated within this segment.

3.10 NSA 3B-2 Modeling Results

NSA 3B-2 extends from approximately 2,500 feet north of Hwy. 90 east of Knobel to a proposed interchange at existing Hwy. 67 west of Corning. The predicted 63 dBA and 66 dBA build noise levels in this NSA are also anticipated to range from 220 feet to 166 feet respectively. Substantial increases (encountered at 52.5 dBA) could be experienced out to a distance of approximately 550 feet from the nearest direction of travel. No receptors are located within the 63 NBZ, be impacted by meeting or exceeding the NAC 66 dBA threshold or would be affected substantial increases of \geq 10 dBA.

3.11 NSA 3C Modeling Results

NSA 3C is located between Hwy. 67 west of Corning and Alternatives A, B, and C. No receptors are located within this NSA. The predicted 63 dBA and 66 dBA build noise levels in this NSA are also anticipated to range from 215 feet to 163 feet respectively. Substantial increases (encountered at 52.5 dBA) could be experienced out to a distance of approximately 550 feet from the nearest direction of travel. No receptors are located within the 63 NBZ, be impacted by meeting or exceeding the NAC 66 dBA threshold or would be affected substantial increases of ≥ 10 dBA.

3.12 NSA 3D Modeling Results

NSA 3D is located between a proposed interchange on Hwy. 67 north of Corning and Alternatives A and C. This NSA contains no receptors. The predicted 63 dBA and 66 dBA build noise levels in this NSA are also anticipated to range from 220 feet to 166 feet respectively. Substantial increases (encountered at 52.5 dBA) could be experienced out to a distance of approximately 550 feet from the nearest



direction of travel. No receptors are located within the 63 NBZ, be impacted by meeting or exceeding the NAC 66 dBA threshold or would be affected substantial increases of ≥ 10 dBA.

Alternative 3 noise level results for compatibility planning are provided in **Table 5**.

Leq(h), dBA** 2018 Distance (feet)*

2040

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54.9 53.7 52.6



Impacted

NAC

NAC Impacted

NAC Impacted

5



* Perpendicular to centerline of Alternative in each direction. ** Rounded to tenth value.

Chapter 3 How was the Project Modeled and What were the Results?



3.13 NSA A Modeling Results

NSA A is located between the ending point of south of Clay County Road 155 and the state line. A total of four receptors were modeled for this NSA. Noise level comparisons of the existing and future 63 dBA and future 66 dBA noise levels in this NSA are anticipated to range from 225 feet to 170 feet from the center of the nearest direction lane of travel. Substantial increases (encountered at 52.5 dBA) could be experienced out to a distance of approximately 600 feet from the nearest direction of travel. No receptors are located within the 63 NBZ or be impacted by meeting or exceeding the NAC 66 dBA threshold.

A temporary connector corridor on the north end of Alternative A was necessary to include a four-lane roadway that would tie the alternative back to Hwy. 67. The interim connector road would be replaced within the planned interchange at County Road 278 at a later time. The addition of the connector did not result in the need to model any other receptors. Noise level comparisons of the existing and future 63 dBA and future 66 dBA noise levels in this NSA are anticipated to range from 160 feet to 215 feet from the center of the interim connector. Substantial increases (encountered at 52.5 dBA) could be experienced out to a distance of approximately 600 feet from the center of the interim connector.

3.14 NSA B Modeling Results

NSA B is located between the ending point of south of Clay County Road 155 and the Missouri state line on existing Hwy. 67. A total of three receptors were modeled for this NSA. Noise level comparisons of the existing and future 63 dBA and future 66 dBA noise levels in this NSA are anticipated to range from 220 feet to 166 feet from the center of the nearest direction lane of travel. Three receptors are located within the 63 dBA NBZ. Substantial increases (encountered at 52.5 dBA) could be experienced out to a distance of approximately 600 feet from the nearest direction of travel.

3.15 NSA C Modeling Results

NSA C is located south of Clay County Road 155 and extends to the state line. A total of three receptors were modeled for this NSA. The ambient noise level in this area was 40.7 dBA. Noise level comparisons of the existing and future 63 dBA and future 66 dBA noise levels in this NSA are anticipated to range from 220 feet to 166 feet from the center of the nearest direction lane of travel. Substantial increases (encountered at 52.5 dBA) could be experienced out to a distance of approximately 550 feet from the nearest direction of travel. No receptors are located within the 63 NBZ or be impacted by meeting or exceeding the NAC 66 dBA threshold.

A temporary connector road on the north end of Alternative C was necessary to include a four-lane roadway that would tie the alternative back to Hwy. 67. The interim connector road would be replaced within the planned interchange at County Road 278 at a later time. The addition of the connector did not result in the need to model any other receptors. Noise level comparisons of the existing and future 63 dBA and future 66 dBA noise levels in this NSA are anticipated to range from 150 feet to 200 feet from the center of the interim connector. Substantial increases (encountered at 52.5 dBA) could be experienced out to a distance of approximately 600 feet from the center of the interim connector.

Alternatives A, B, and C noise level results for compatibility planning are provided in **Table 6**.

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Tal	ble 6 – Noise I	Level Result	s for Compatibi	lity Planning	– Alternatives A, I	3, and C (Including	Connector Road	s for A and C)	
	201	8	2040	0		NAC Impacted	NAC Impacted		Impacted
Location	Distance (feet)*	Leq(h), dBA**	Distance (feet)*	Leq(h), dBA**	Ambient Measurements (dBA)	Receptors Existing 66dB NBZ	Receptors Proposed 66dB NBZ	NAC Receptors Within Future 63dB NBZ	Receptors by Substantial Increase
	-		50	72.5					
	1	•	100	69.1					
	-		170	66.1					
	-		225	63.0					
	-		250	61.8					
	-		300	59.8					
Alternative A	-	N/A	350	58.2	42.5 dB	-	0	0	ε
	-		425	56.1					
	-		460	55.2					
	-		500	54.3					
			550	53.2					
	1		600	52.2					
	-		650	51.2					
	36	65.8	50	71.7					
	68	62.7	100	68.3					
	06	61.4	160	65.9					
	100	60.8	215	62.9					
Altomotive A	150	58.8	250	61.3					
Alternative A Connoctor Dood	175	57.5	300	59.4	42.5 dB	0	0	0	0
CUILIECTUI VUAU	200	56.1	350	57.9					
	250	53.9	425	56.0					
	290	52.4	460	55.2					
	350	50.6	500	54.4					
	600	45.7	600	52.5					

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B

	100								
	107				Ambient	NAC Impacted	NAC Impacted	NAC Recentors	Impacted
Location	Distance (feet)*	Leq(h), dBA**	Distance (feet)*	Leq(h), dBA**	Measurements (dBA)	Receptors Existing 66dB NBZ	Receptors Proposed 66dB NBZ	Within Future 63dB NBZ	Receptors by Substantial Increase
	1		50	72.5					
	1		100	69.1					
	I	-	166	66.3					
	I	-	220	63.2					
	1	<u> </u>	250	61.8					
A Itomotive D	1	V 1 V	300	59.8		c	c	ç	c
	I	A/N	350	58.2	C.24	D	D	n	л
	1	<u>.</u>	400	56.7					
	I	-	450	55.4					
	1	<u>.</u>	500	54.3					
	1	<u> </u>	550	53.2					
	I		600	52.2					
	1		50	72.2					
	1		100	68.8					
	I	-	166	66.0					
	1		220	62.9					
	I		250	61.5					
	-		300	59.5					
Alternative C	-	N/A	350	57.8	42.5	0	0	0	S
	I		400	56.4					
	1		450	55.1					
	1		500	54.0					
	ł		550	52.9					
	-		600	51.9					
	1		660	50.7					

Impacted	Receptors by Substantial Increase									c	D							
	NAC Receptors Within Future 63dB NBZ									c	D							
NAC Impacted	Receptors Proposed 66dB NBZ									c	D							
NAC Impacted	Receptors Existing 66dB NBZ									c	Þ							
	Ambient Measurements (dBA)									L C 7	C.24							
0	Leq(h), dBA**	71.4	69.4	51.3	68.8	68.0	42.5	65.9	;	63.3	61.0	59.1	57.6	56.2	55.1	54.1	53.1	52.2
204(Distance (feet)*	50	75	85	85	100	125	150	:	200	250	300	350	400	450	500	550	600
8	Leq(h), dBA**	69.0	67.0	-	66.1	65.6	:	63.5	62.5	60.9	57.3	56.3	54.6	53.1	51.3	50.7		
201	Distance (feet)*	50	75	1	06	100	1	150	175	200	275	300	350	400	475	500		
	Location									Alternative C Interim	Connector							

* Perpendicular to centerline of Alternative in each direction. ** Rounded to tenth value.

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3.16 NSA NA-A Modeling Results

NSA NB-A is located between the interchange of Hwy. 412 and Hwy. 67 and the Lawrence/Clay County Line. A total of 17 receptors were modeled for this NSA. Noise level comparisons of the existing and future 66 dBA noise levels in this NSA are anticipated to range from 140 feet to 155 feet from the center of the roadway. The 63 dBA NBZ is anticipated to extend out to 260 feet from the center of the roadway and include seven receptors. Existing noise levels ranged from 71.4 dBA to 55.9 dBA, exposing 10 receptors to noise levels equal to or exceeding NAC B and C criteria. The TNM predicted noise levels would range from 71.9 dBA to 56.4 dBA and not expose any additional receptors to the residential NAC criteria.

3.17 NSA NA-1 Modeling Results

NSA NA-1 is located between the Lawrence/Clay County Line to Hwy. 304. A total of 27 receptors were modeled for this NSA. Noise level comparisons of the existing and future 66 dBA noise levels in this NSA are anticipated to range from 145 feet to 162 feet from the center of the roadway. The 63 dBA NBZ is anticipated to extend out to 260 feet from the center of the roadway and includes 12 receptors. Existing noise levels ranged from 71.4 dBA to 57.6 dBA, exposing 14 receptors to noise levels equal to or exceeding NAC B and C criteria. The TNM predicted noise levels would range from 72 dBA to 58.1 dBA and exposes one additional receptor to the NAC B and C criteria.

3.18 NSA NA-2 Modeling Results

NSA NA-2 is located between Hwy. 304 and Hwy. 90. A total of six receptors were modeled for this NSA. Noise level comparisons of the existing and future 66 dBA noise levels in this NSA are anticipated to range from 110 feet to 125 feet from the center of the roadway. The 63 dBA NBZ is anticipated to extend out to 210 feet from the center of the roadway and includes one receptor. Existing noise levels ranged from 70.2 dBA to 56.2 dBA, exposing five receptors to noise levels equal to or exceeding NAC B and C criteria. The TNM predicted noise levels would range from 70.7 dBA to 56.7 dBA and not expose any additional receptors to the NAC B and C criteria.

3.19 NSA NA-B Modeling Results

NSA NA-B is located between Hwy. 90 and Hwy. 67 Business south of Biggers. A total of seven receptors were modeled for this NSA. Noise level comparisons of the existing and future 66 dBA noise levels in this NSA are anticipated to range from 50 feet to 60 feet from the center of the roadway. The 63 dBA NBZ is anticipated to extend out to 110 feet from the center of the roadway and includes five receptors. Existing noise levels ranged from 69.7 dBA to 53.4 dBA, exposing two receptors to noise levels equal to or exceeding NAC B and C criteria. The TNM predicted noise levels would range from 70.2 dBA to 53.9 dBA and not expose any additional receptors to the residential NAC criteria.

3.20 NSA NA-C Modeling Results

NSA NA-C is located between Hwy. 67 Business and Hwy. 211. A total of 16 receptors were modeled for this NSA. Noise level comparisons of the existing and future 66 dBA noise levels in this NSA are anticipated to range from 75 feet to 85 feet from the center of the roadway. The 63 dBA NBZ is anticipated to extend out to 155 feet from the center of the roadway and includes 15 receptors. Existing noise levels ranged from 68.1 dBA to 52.8 dBA, exposing no receptors to noise levels equal to or exceeding NAC B and C criteria. The TNM predicted noise levels would range from 68.7 to 53.4 and expose one receptor to the residential NAC criteria.



3.21 NSA NA-3 Modeling Results

NSA NA-3 is located from Hwy. 211 to Clay County Road 139. A total of 33 receptors were modeled for this NSA. Noise level comparisons of the existing and future 66 dBA noise levels in this NSA are anticipated to range from 66 feet to 85 feet from the center of the roadway. The 63 dBA NBZ is anticipated to extend out to 150 feet from the center of the roadway and includes 27 receptors. Existing noise levels ranged from 68.0 dBA to 51.0 dBA, exposing six receptors to noise levels equal to or exceeding NAC B and C criteria. The TNM predicted noise levels would range from 68.5 dBA to 51.5 dBA and not expose any additional receptors to the NAC B and C criteria.

3.22 NSA NA-D Modeling Results

NSA NA-D is located from Clay County Road 139 to Hwy. 67 North (N. Missouri Avenue in Corning). A total of 25 receptors were modeled for this NSA. Noise level comparisons of the existing and future 66 dBA noise levels in this NSA are anticipated to range from 50 feet to 60 feet from the center of the roadway. The 63 dBA NBZ is anticipated to extend out to 110 feet from the center of the roadway and includes 24 receptors. Existing noise levels ranged from 69.7 dBA to 50.4 dBA, exposing one receptor to noise levels equal to or exceeding NAC B and C criteria. The TNM predicted noise levels would range from 70.3 to 51.0 and not expose any additional receptors to the NAC B and C criteria.

3.23 NSA NA-4-1 Modeling Results

NSA NA-4-1 is located from Hwy. 67 North (N. Missouri Avenue) to Clay County Road 140. A total of four receptors were modeled for this NSA. Noise level comparisons of the existing and future 66 dBA noise levels in this NSA are anticipated to range from 35 feet to 38 feet from the center of the roadway. The 63 dBA NBZ is anticipated to extend out to 70 feet from the center of the roadway and includes four receptors. Existing noise levels ranged from 67.8 dBA to 50.7 dBA, exposing no receptors to noise levels equal to or exceeding NAC B and C criteria. The TNM predicted noise levels would range from 68.3 dBA to 51.2 dBA; however, no receptors are anticipated to be impacted within the NAC B and C criteria.

3.24 NSA NA-4-2 Modeling Results

NSA NA-4-2 is located from Clay County Road 140 to the State Line. A total of 40 receptors were modeled for this NSA. Noise level comparisons of the existing and future 66 dBA noise levels in this NSA are anticipated to range from 90 feet to 100 feet from the center of the roadway. The 63 dBA NBZ is anticipated to extend out to 175 feet from the center of the roadway and includes 33 receptors. Existing noise levels ranged from 69.0 dBA to 53.1 dBA, exposing seven receptors to noise levels equal to or exceeding NAC B and C criteria. The TNM predicted noise levels would range from 69.5 to 53.6 and not expose any additional receptors to the NAC B and C criteria.

The No Action Alternative noise level results for compatibility planning are provided in **Table 7**.



	Impacted	Receptors by Substantial Increase				0							c	Ð							0						c	5		
	NAC Bacantore	Within Future 63dB NBZ				7							ç	77							1						L	n		
	NAC Impacted	Receptors Proposed 66dB NBZ				10							Ļ	ĊŢ							ß						Ċ	7		
,	NAC Impacted	Receptors Existing 66dB NBZ				10							7	14							ß						ſ	7		
	Amhiant	Measurements (dBA)				NA							010	AN							NA							AN		
	0	Leq(h), dBA**	71.9	68.4	66.6	66.1	64.6	63.5	63.1	72.0	6.69	68.5	66.5	65.9	64.7	63.6	63.2	70.7	68.6	66.6	66.0	65.0	63.3	63.0	70.2	66.7	65.9	64.8	63.6	62.9
	2040	Distance (feet)*	50	100	140	155	200	240	260	50	75	100	145	162	200	240	260	50	75	110	125	150	200	210	25	50	60	75	95	110
	80	Leq(h), dBA**	71.4	67.9	66.1	65.5	64.1	63.0	62.5	71.4	69.4	67.9	65.9	65.3	64.1	63.1	62.6	70.2	68.1	66.2	65.5	64.5	62.9	62.6	69.7	66.2	65.3	64.3	63.1	62.4
	201	Distance (feet)*	50	100	140	155	200	240	260	50	75	100	145	162	200	240	260	50	75	110	125	150	200	210	25	20	60	75	56	110
		Location				Segment NA-A								Segment NA-1							Segment NA-2							Segment NA-b		_

Table 7 – Noise Level Results for Compatibility Planning – No Action Alternative

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location	2018	80	204(0	Ambient	NAC Impacted Receptors	NAC Impacted Receptors	NAC Receptors Within Enture	Impacted Receptors by
	Distance (feet)*	Leq(h), dBA**	Distance (feet)*	Leq(h), dBA**	(dBA)	Existing 66dB NBZ	Proposed 66dB NBZ	63dB NBZ	Substantial Increase
	50	68.1	50	68.7					
	75	66.1	75	66.7					
	85	65.5	85	66.1		c	7	Ľ	c
Segment NA-C	100	64.7	100	65.3	E L	D	Ŧ	Ċ	D
	140	63.0	140	63.6					
	155	62.4	155	63.0					
	50	68.0	50	68.5					
	75	66.0	75	66.6					
Segment NA-3	85	65.4	85	65.9	NA	6	9	27	0
	100	64.6	100	65.1					
	150	62.5	150	63.0					
	25	69.7	25	70.3					
C VIA tacamara	50	66.2	50	66.8	V IV	•	7	× c	c
Jegilielli INA-D	60	65.3	60	65.9		Ŧ	1	24	þ
	110	62.4	110	63.0					
	25	67.8	25	68.3					
	35	66.0	35	66.5					
Commut NA 4 1	38	65.5	38	66.1	VIV	c	c	~	c
T-4-WI HIGHIGAC	50	64.2	50	64.7		þ	þ	t	þ
	70	62.6	70	63.1					
	100	60.8	100	61.3					
	50	69.0	50	69.5					
	75	67.0	75	67.6					
C C VI The second VI A 1 2	90	66.1	06	66.7	V IV	٢	٢	ç,	c
Jeginenu wa-4-2	100	65.6	100	66.1		,		сс С	þ
	150	63.5	150	64.0					
	175	62.5	175	63.0					

* Perpendicular to centerline of Alternative in each direction. ** Rounded to tenth value.

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The Black River WMA was considered a recreation area and the WMA's Master Plan was reviewed during this noise analysis, which indicates that the highest public use for the WMA is waterfowl hunting within five Greentree Reservoirs (See page 10 and Map 4 on page 18 of the WMA's Master Plan). Based on TNM screening results, the common places of gathering within the WMA would not be impacted. Therefore, no public lands would be impacted by the action alternatives.

Cultural historic sites were also considered in completion of the noise screening. No historic sites would be impacted by noise, Refer to Section 3.16 of the FEIS for further information regarding historic properties.



Chapter 4 – How are Feasibility and Reasonableness Evaluated?

Consideration of noise abatement measures is required when the NAC value is approached or exceeded, or when a substantial increase is predicted. Noise barriers (e.g., walls or berms) are the most common noise abatement measures and are considered feasible when the following criteria are met.

- *Constructability* a barrier must be able to be physically constructed according to common engineering practices and materials.
- *Noise reduction* ARDOT defines noise reduction as being at least 5 dBA and must be met for a minimum of one impacted receptor.
- *Safety and maintenance considerations* a barrier must be accessible for maintenance while not restricting access to other highway components. Flood-prone areas and areas with severe drainage problems may dictate whether a noise barrier is feasible.
- Access and utility requirements Sufficient access from adjacent properties and utility corridors are required, which includes driveway access and would not typically be feasible to construct effective noise barriers.

ARDOT noise policy considers noise barriers reasonable when the following criteria are met:

- *Noise reduction* At least one benefited receptor receives a minimum noise level reduction of 8 dBA (i.e., noise reduction design goal).
- *Public input* The viewpoints of benefited property owners and residents are solicited and consensus (greater than 50%) of support for or against a noise barrier is achieved.
- *Cost effectiveness* The total cost for the proposed noise barrier does not exceed \$36,000 average allowance per benefited receptor.

Feasibility and preliminary reasonableness determinations are identified for each NSA in which impacted receptors were identified and are summarized below.

Twenty-four potential noise barrier locations were evaluated for the I-57 project where anticipated impacts were identified. The estimated cost of each barrier was based on a consistent height of eight feet with the length based on a distance four times longer than the distance from the receptor to the nearest travel lane. A barrier evaluation that results in exceeding an estimated cost per benefitted receptor (CPBR) of \$36,000 would not be considered reasonable to construct according to ARDOT Noise Policy. The cost of \$35.00 per square foot for reflective barriers was used in this screening report to determine the estimated CPBR.

The following figures show the barrier locations and identifies the edges of pavement in each travel direction. The distance to the 66 dB buffer for Alternative 2 ranges between 150 to 170 feet from the centerline of the two travel lanes in each direction. **Figure 3** shows the barrier analysis locations.







Figure 3 – Barrier Analysis Locations



4.1 NSA 2A

Three receptors (shown on detail sheets 2 and 5 in Attachment A and in Figure 4 and Figure 5) are predicted to experience future noise levels equal to or exceeding substantial noise level increases of \geq 10 dBA. Two of the impacted receptors are residential properties and located along the east side of a private access road. The western receptor would require a barrier 1,032 feet in length at a cost of \$288,960. The receptor closest to Hwy. 34 would require a barrier 852 feet in length and cost \$238,560. The distance between these receptors is 1,000 feet. The third receptor is located along Fender Road and would require a barrier 1,220 feet in length at a cost of \$341,600. Based on ARDOT noise policy, each barrier would exceed the CPBR and would not be considered reasonable to construct.



Figure 4 – NSA 2A Impacted Receptors

Figure 5 – NSA 2A Impacted Receptors





4.2 NSA 2B

Four receptors (shown on detail sheets 12, 15, and 18 in **Attachment A** and in **Figures 6, 7,** and **8** are predicted to experience future noise levels equal to or exceeding substantial noise level increases of ≥ 10 dBA. The impacted receptor near the proposed interchange at Gazaway Road could require a noise barrier approximately 730 feet in length and cost \$204,400. Based on ARDOT noise policy, each barrier would exceed the CPBR and would not be considered reasonable to construct.



Figure 6 – NSA 2B Impacted Receptors

Figure 7 – NSA 2B Impacted Receptors



The impacted receptor along Vinegar Hill Road as shown in **Figure 8** would require a noise barrier that is over 1,300 feet in length and cost \$364,000. Based on ARDOT noise policy, this barrier would exceed the CPBR and would not be considered reasonable to construct.

The impacted receptor along Quapaw Trail is on the edge of the substantial increase impact zone and a noise barrier that is approximately 2,100 feet in length and cost \$588,00. Based on ARDOT noise policy, this barrier would exceed the CPBR and would not be considered reasonable to construct.









Figure 9 – NSA 2B Impacted Receptors

The impacted receptor along Clay County Road 125 as shown in **Figure 9** would require a noise barrier that is over 1,500 feet in length and cost \$420,000. Based on ARDOT noise policy, this barrier would exceed the CPBR and would not be reasonable to construct. A noise barrier of the height and length to achieve the noise reduction design goal would not prove reasonable due to costs incurred to construct such a barrier.

4.3 NSA 2D

One receptor is predicted to experience future noise levels equal to or exceeding substantial noise level increases of ≥ 10 dBA. Detail sheet 24 in **Attachment A** and **Figure 10** show the location of the impacted receptor, which could require a noise barrier approximately 2,200 feet in length and cost \$616,000. Based on ARDOT noise policy, this barrier would exceed the CPBR and would not be considered reasonable to construct.



Figure 10 – NSA 2D Impacted Receptors



4.4 NSA 3A-1

Four receptors (shown on detail sheets 4, 7, and 10 in Attachment B and in Figures 11, 12, and **13**) are predicted to experience future noise levels equal to or exceeding substantial noise level increases of ≥ 10 dBA. The impacted receptors along Lawrence County Road 611 could require a noise barrier 1,100 feet in length and cost \$308,000. The impacted receptor located northeast of Lawrence County Road 234 could require a noise barrier that is approximately 675 feet in length and cost \$189,000. The receptor located between Clark Street and Hwy. 34 would require a barrier length of 1,700 feet and cost \$476,000. Based on ARDOT noise policy, each barrier would exceed the CPBR and would not be considered reasonable to construct.





Figure 11 – NSA 3A-1 Impacted Receptors



1,500 Feet Edge of Pavement Traffic Segment Impacted Receptor Proposed 66 dBA (width varies) Proposed 63 dBA (width varies) Substantial Increase Offset (width varies)

Figure 13 – NSA 3A-1 Impacted Receptors

4.5 NSA 3A-2

Three receptors are predicted to experience future noise levels equal to or exceeding substantial noise level increases of ≥ 10 dBA. One receptor, shown on detail sheet 15 in **Attachment B** and **Figure 14**, is located along Clay County 218 Road. The required barrier length would be approximately 1,300 feet and cost \$364,000. Two receptors (shown on detail sheet 16 in **Attachment B** and in **Figures 14**, **15**,

and **16**) are predicted to experience future noise levels equal to or exceeding substantial noise level increases of ≥ 10 dBA. The impacted receptor along Clay County 223 Road could require a noise barrier approximately 1,300 feet in length and would likely not be reasonable due to cost of \$364,000. The impacted receptor located east of Clay County Road 227 could require a noise barrier that is over 1,000 feet in length at a cost of \$280,000. Based on ARDOT noise policy, each barrier would exceed the CPBR and would not be considered reasonable to construct.



Figure 14 – NSA 2B Impacted Receptors





Figure 16 – NSA 3A-2 Impacted Receptors




4.6 NSA 3B-1

Two receptors (shown on detail sheet 17 in **Attachment B** and in **Figure 17 and 18**) are predicted to experience future noise levels equal to or exceeding substantial noise level increases of \geq 10 dBA. One receptor is the Bond Cemetery along Clay County Road 250 and was evaluated for a barrier. The barrier would be 5,120 feet and cost \$179,000. This barrier would not be considered reasonable to construct because it would exceed the CPBR per ARDOT policy. Additionally, a barrier at this location would not be feasible due to the county road located between Alternative 3 and the receptor. The northernmost receptor on the east side of the highway would require a barrier approximately 1,378 feet in length and cost \$385,280. Based on ARDOT noise policy, these barriers would exceed the CPBR and would not be considered reasonable to construct.



4.7 NSA 3D

One receptor located along Clay County 151 Road shown on detail sheet 25 in **Attachment B** is predicted to experience future noise levels equal to or exceeding substantial noise level increases of \geq 10 dBA. The receptor would require a noise barrier approximately 2,200 feet in length and cost \$616,000. Based on ARDOT noise policy, this barrier would exceed the CPBR and would not be considered reasonable to construct.

4.8 NSA A

Three receptors (shown in **Attachment C**) are predicted to experience future noise levels equal to or exceeding substantial noise level increases of ≥ 10 dBA. The impacted receptor along Clay County Road 155 could require a noise barrier over 2,100 feet in length and cost \$588,000. The impacted receptor along Clay County Road 154 could require a noise barrier approximately 1,000 feet in length and cost \$280,000. The impacted receptor to the north of Clay County 154 Road and north of Hwy. 67 would require a noise barrier approximately 1,500 feet in length and cost \$420,000. Based on ARDOT noise policy, each barrier would exceed the CPBR and would not be considered reasonable to construct.



4.9 NSA B

Nine receptors (shown in **Attachment B** and **Figure 19**) are predicted to experience future noise levels equal to or exceeding substantial noise level increases of ≥ 10 dBA. The impacted receptor along Clay County Road 155 could require a noise barrier over 2,100 feet in length and cost approximately \$588,000.

Two receptors located on the south side of Clay County 154 Road are predicted to experience future noise levels equal to or exceeding substantial noise level increases of ≥ 10 dBA. The receptor located between Alternative A and Alternative B would require a barrier approximately 1,000 feet in length and cost \$280,000. The receptor located east of the Alternative and approximately 900 feet south of Clay 154 Road would require a barrier approximately 1,480 feet in length and cost \$414,400.

One other receptor is located east of the Alternative and north of Clay County 154 Road and would require a barrier approximately 744 feet in length and cost \$208,320.

A group of five noise receptors on the east side of Highway 67 are predicted to experience future noise levels equal to or exceeding substantial noise level increases of ≥ 10 dBA. The noise barrier would be over 2,300 feet in length and cost \$644,000. The CPBR would be \$128,800. Based on ARDOT noise policy, this barrier would exceed the CPBR and would not be considered reasonable to construct.



Figure 19 – NSA B Impacted Receptors



4.10 NSA C

Three receptors (shown in **Attachment C**) are predicted to experience future noise levels equal to or exceeding substantial noise level increases of ≥ 10 dBA. The impacted receptor along Clay County Road 155 could require a noise barrier over 1,500 feet in length and cost \$420,000. The two impacted receptors along Clay County Road 1541 could require a noise barrier almost 2,000 feet in length and cost \$560,000. Based on ARDOT noise policy, each barrier would exceed the CPBR and would not be considered reasonable to construct.

4.11 No Action NSAs

As previously noted, access points such as driveways and intersections are needed along the No Action Alternative, it would not be possible to construct an effective noise barrier accommodating these access points. Major utilities, drainage structures, and other structures would require relocation as a result of the placement of any noise barriers along the existing Hwy. 67. Receptors are shown in detail sheets located in **Attachment D**.



Chapter 5 – How is Construction Noise Handled?

Project construction operations typically increase noise levels. These increases would be temporary and have minimal to minor adverse effects on land uses and activities in the project area. Local ordinances may prohibit temporary construction activities or restrict noise levels or high noise levels between certain time periods (e.g., nighttime and/or weekend work). Construction noise impacts to passing traffic and people living and working near the project can be expected as a result of clearing and grubbing, earth moving activities, and paving operations. Equipment will be maintained with appropriate mufflers to aid in minimizing construction noise levels. Depending on project construction and timing there may be brief construction noise impacts in excess of the substantial increase criteria which will occur during daytime hours.



Chapter 6 – What are the Conclusions of this Noise Screening Analysis?

Activity Categories identified within and adjacent to the alternative corridors include B, C, E, F, and G receptors. Only NAC B and C receptors were specifically identified in the screening analysis for consideration of potential noise barriers for the action alternatives. The project will result in substantial increase (≥ 10 dBA) and NAC impacts as noted below **Table 8**. However, a detailed noise study is not warranted based on the results of the screening level analysis in that the anticipated costs per benefited receptor would prove unreasonable given the sparse nature of the impacted receptors and constructing noise barriers of the length and height required to achieve feasibility and reasonableness criteria.

NCA	NAC Impacted	NAC Impacted	NAC Receptors	Impacted Receptors by
NSA	66dB NBZ	66dB NBZ	63dB NBZ	Substantial Increase
NSA 2A	0	0	0	3
NSA 2B	0	0	1	4
NSA 2C	0	0	0	0
NSA 2D	0	0	0	1
NSA 3A-1	0	0	0	4
NSA 3A-2	0	0	0	3
NSA 3B-1	0	0	1	2
NSA 3B-2	0	0	0	0
NSA 3C	0	0	0	0
NSA 3D	0	0	0	1
NSA A	0	0	0	3
NSA A Interim	0	0	0	0
	0	0	2	0
	0	0	5	2
NSA C NSA C Intorim	0	0	0	3
Connector	0	0	0	0
NSA NB-A	10	10	7	0
NSA NB-1	14	15	12	0
NSA NB-2	5	5	1	0
NSA NB-B	2	2	5	0
NSA NB-C	0	1	15	0
NSA NB-3	6	6	27	0
NSA NB-D	1	1	24	0
NSA NB-4-1	0	0	4	0
NSA NB-4-2	7	7	33	0

Table 8 – Noise Level Results Summary

Chapter 7 – Has Coordination Occurred with Local Officials for Future Noise Levels on Undeveloped Lands?

The ARDOT encourages local communities and developers to practice noise compatibility planning. As presented in **Table 9**, noise level predictions for future build conditions at which 66 dBA or higher noise levels could be experienced were made at incremental distances as measured from the centerline of the direction of travel lanes for the action alternatives. As previously described, rural Activity Categories B and C exterior areas would be impacted within variable distances as a result of substantial increases. However, these predictions do not represent noise levels at every location at a particular distance back from the roadway. Noise levels will vary with changes in terrain and other site conditions.

This information is included to inform local officials and planners of anticipated noise levels so that future development will be compatible. In compliance with federal guidelines, a copy of this screening analysis will be transmitted to the cities and towns located along the alternative corridors for land use planning purposes. Guidance documents on noise compatible land use planning are available from FHWA.

NSA	66 dBA Contour Distance (ft) from Nearest	
	Direction of Travel	
NSA 2A	170	
NSA 2B	170	
NSA 2C	162	
NSA 2D	170	
NSA 3A-1	165	
NSA 3A-2	165	
NSA 3B-1	166	
NSA 3B-2	166	
NSA 3C	163	
NSA 3D	166	
NSA A	170	
NSA B	166	
NSA C	166	
NSA NB-A	155	
NSA NB-1	162	
NSA NB-2	125	
NSA NB-B	60	
NSA NB-C	85	
NSA NB-3	85	
NSA NB-D	60	
NSA NB-4-1	38	
NSA NB-4-2	100	
Alternative A Connector Road	160	
Alternative C Connector Road	205	

Table 9 – Noise Level Results for Compatibility Planning



Chapter 8 – What is the Likelihood Noise Barriers would be Constructed?

Based on the screening level noise analysis results, noise barriers would not prove cost effective as a result of the sparse singular locations of the impacted receptors along the action alternatives. Based on ARDOT noise policy, each barrier would exceed the \$36,000 CPBR and would not be considered reasonable to construct.



ATTACHMENT A — ALTERNATIVE 2 NOISE SCREENING DETAIL SHEETS





500 1,000 Feet E





Impacted Receptor Proposed 66 dBA (width varies) Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed Alignment 2

Detail 1 of 24





Detail 2 of 24







Proposed 63 dBA (width varies)

Substantial Increase

Offset (width varies)

Edge of Pavement

Noise Screening Analysis Proposed Alignment 2

Detail 4 of 24





Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase

Offset (width varies)

Alternative 2

Traffic Segment

Edge of Pavement

500

Feet

1,000

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed Alignment 2

Detail 5 of 24







500

Feet





Impacted Receptor Proposed 66 dBA (width varies) Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed Alignment 2

Detail 6 of 24





Proposed 63 dBA (width varies)

Substantial Increase

Offset (width varies)

Feet

E

Traffic Segment

Edge of Pavement

Noise Screening Analysis Proposed Alignment 2

AR DDi

Detail 7 of 24



Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase

Offset (width varies)

Alternative 2

Traffic Segment

Edge of Pavement

500

Feet

1,000

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed Alignment 2

Detail 8 of 24





Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase

Offset (width varies)

Alternative 2

Traffic Segment

Edge of Pavement

1,000

500

Feet

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

> Noise Screening Analysis Proposed Alignment 2

Detail 9 of 24





Substantial Increase Offset (width varies)

Detail 10 of 24









Proposed ROW



ERI

1,000

- Alternative 2
 - Wildlife Management Area



Impacted Receptor Proposed 66 dBA (width varies) Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed Alignment 2

Detail 12 of 24







500

Feet

EII



- Wildlife Management Area Traffic Segment
 - Edge of Pavement



Impacted Receptor Proposed 66 dBA (width varies) Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed Alignment 2

Detail 13 of 24





Proposed ROW



Alternative 2 Green-tree Resevoirs Wildlife Management Area — - Traffic Segment Edge of Pavement Impacted Receptor Proposed 66 dBA (width varies) Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE 1-57)

(FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

> Noise Screening Analysis Proposed Alignment 2

Detail 14 of 24







500

Feet

Edge of Pavement

Detail 15 of 24









Traffic Segment



Impacted Receptor Proposed 66 dBA (width varies) Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed Alignment 2

Detail 16 of 24





1,000

500 Feet

E



Detail 17 of 24













0

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed Alignment 2

Detail 18 of 24





ullet

Substantial Increase Offset (width varies)

Alternative 2

Traffic Segment

Edge of Pavement

500

Feet

EII

1,000

WALNUT RIDGE - MISSOURI STATE LINE Impacted Receptor (FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties Proposed 66 dBA (width varies) Proposed 63 dBA (width varies)

Noise Screening Analysis Proposed Alignment 2

ARDD

Detail 19 of 24



Impacted Receptor Alternative 2 Proposed 66 dBA (width varies) Traffic Segment Edge of Pavement

500

Feet

1,000

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed Alignment 2







Impacted Receptor

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase

Offset (width varies)

Alternative 2

Traffic Segment

Edge of Pavement

500

Feet

1,000

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed Alignment 2

Detail 21 of 24





500 1,000 Feet



Edge of Pavement



Impacted Receptor Proposed 66 dBA (width varies) Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed Alignment 2

Detail 22 of 24









Substantial Increase Offset (width varies)

Edge of Pavement

Ken

Noise Screening Analysis Proposed Alignment 2

Detail 24 of 24





ATTACHMENT B — ALTERNATIVE 3 NOISE SCREENING DETAIL SHEETS





Edge of Pavement

Traffic Segment

Noise Screening Analysis Proposed Alignment 3

Detail 1 of 25

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)







Substantial Increase Offset (width varies)






0







BI

Alternative 3 . Edge of Pavement Traffic Segment



Impacted Receptor Proposed 66 dBA (width varies) Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed Alignment 3

Detail 5 of 25





Feet

Edge of Pavement

Traffic Segment

(FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed Alignment 3

Detail 6 of 25

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)











- Alternative 3 .
- Edge of Pavement
- Traffic Segment D
- Impacted Receptor Proposed 66 dBA (width varies) Proposed 63 dBA (width varies)

•

Substantial Increase Offset (width varies)

Detail 8 of 25

(FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties Noise Screening Analysis Proposed Alignment 3











- 500 1,000 Feet
- Alternative 3 .
- Edge of Pavement
 - Traffic Segment
- Proposed 66 dBA (width varies) Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed Alignment 3

Detail 10 of 25





Proposed ROW

500 1,000 Feet

0

- Alternative 3 . Edge of Pavement Traffic Segment
- •

Impacted Receptor Proposed 66 dBA (width varies) Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed Alignment 3

Detail 11 of 25





Detail 12 of 25

Substantial Increase Offset (width varies)

AR



Proposed ROW



IEII

- Alternative 3 Edge of Pavement
 - Traffic Segment
- Impacted Receptor Proposed 66 dBA (width varies) Proposed 63 dBA (width varies)

•

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed Alignment 3

Detail 13 of 25





Detail 14 of 25





Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

Feet

Edge of Pavement

Traffic Segment

(FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed Alignment 3

Detail 15 of 25





Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

Alternative 3

Edge of Pavement

Traffic Segment

.

D

500

Feet

ŧ,

1,000

(FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

> Noise Screening Analysis Proposed Alignment 3

Detail 16 of 25





Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

Alternative 3

Edge of Pavement

Traffic Segment

.

500

Feet

N

1,000

(FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

> Noise Screening Analysis Proposed Alignment 3

Detail 17 of 25







500

Feet











EII

Alternative 3 Edge of Pavement Traffic Segment



Impacted Receptor Proposed 66 dBA (width varies) Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed Alignment 3

Detail 20 of 25









500 1,000 Feet

0

- Alternative 3 . Edge of Pavement
- Traffic Segment
- Impacted Receptor Proposed 66 dBA (width varies) Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed Alignment 3

Detail 22 of 25





Proposed ROW



- Alternative 3 2 Edge of Pavement Traffic Segment



Impacted Receptor Proposed 66 dBA (width varies) Proposed 63 dBA (width varies) Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed Alignment 3

Detail 23 of 25





Proposed ROW

- 500 1,000 Feet
- Alternative 3 .
 - Edge of Pavement ٦
 - Traffic Segment
- Impacted Receptor Proposed 66 dBA (width varies) Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed Alignment 3

Detail 24 of 25





Detail 25 of 25





ATTACHMENT C — ALTERNATIVE A, B, AND C NOISE SCREENING DETAIL SHEETS





Proposed 63 dBA (width varies)

Substantial Increase Offset (width varies)

Alternative B

Alternative C

Edge of Pavement

Traffic Segment

0

Noise Screening Analysis Proposed Alignments A, B, C

Detail 1 of 2







ATTACHMENT D — NO ACTION ALTERNATIVE NOISE SCREENING DETAIL SHEETS









No Action

500

Feet

1,000

- Traffic Segments
 - Existing 66 dBA (width varies) Proposed 66 dBA (width varies) Proposed 63 dBA (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed No Action Alignment

Detail 2 of 28









N

Existing 66 dBA (width varies) Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Detail 5 of 28

ARDD



Receptor

Traffic Segments

Existing 66 dBA (width varies) Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

500

Feet

N

1,000

No Action

(FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed No Action Alignment

Detail 6 of 28







No Action

Receptor

Traffic Segments Existing 66 dBA (width varies) Proposed 66 dBA (width varies) Proposed 63 dBA (width varies)

(FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed No Action Alignment

Detail 7 of 28



N

Feet



Traffic Segments
Existing 66 dBA (width varies)
Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Noise Screening Analysis Proposed No Action Alignment

Detail 8 of 28





Existing 66 dBA (width varies)

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Noise Screening Analysis Proposed No Action Alignment

Detail 9 of 28








Feet

Existing Road Centerline

No Action

Impacted Receptor



Traffic Segments Existing 66 dBA (width varies)

Proposed 66 dBA (width varies) Proposed 63 dBA (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed No Action Alignment

Detail 12 of 28





Feet

Existing Road Centerline

No Action

Impacted Receptor Receptor

Traffic Segments

Existing 66 dBA (width varies) Proposed 66 dBA (width varies) Proposed 63 dBA (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed No Action Alignment

Detail 13 of 28





Feet

Existing Road Centerline

No Action

Receptor Traffic Segments Existing 66 dBA (width varies)

Proposed 66 dBA (width varies) Proposed 63 dBA (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed No Action Alignment

Detail 14 of 28







Existing Road Centerline

No Action

- Impacted Receptor Receptor
- Traffic Segments Existing 66 dBA (width varies) Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed No Action Alignment

Detail 15 of 28





500

Feet

Existing Road Centerline

No Action

Receptor

Traffic Segments Existing 66 dBA (width varies) Proposed 66 dBA (width varies) Proposed 63 dBA (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed No Action Alignment

Detail 16 of 28







Feet

Existing Road Centerline

No Action

Receptor Traffic Segments

Existing 66 dBA (width varies) Proposed 66 dBA (width varies) Proposed 63 dBA (width varies)

Impacted Receptor

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed No Action Alignment

Detail 17 of 28





Existing Road Centerline

Feet

No Action

Receptor

Traffic Segments Existing 66 dBA (width varies) Proposed 66 dBA (width varies) Proposed 63 dBA (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed No Action Alignment

Detail 18 of 28





Feet

Existing Road Centerline

No Action

Impacted Receptor

Receptor Traffic Segments

Existing 66 dBA (width varies) Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed No Action Alignment

Detail 19 of 28







Existing Road Centerline

No Action

- Receptor
 - Traffic Segments Existing 66 dBA (width varies) Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)



Noise Screening Analysis Proposed No Action Alignment

Detail 20 of 28





2

Proposed 66 dBA (width varies) Detail 21 of 28

ARDDI



Existing 66 dBA (width varies)

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

ZI

Noise Screening Analysis Proposed No Action Alignment

Detail 22 of 28





Traffic Segments

Existing 66 dBA (width varies)

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

No Action

Feet

ZI

Noise Screening Analysis Proposed No Action Alignment

Detail 23 of 28





Existing 66 dBA (width varies)

Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

Ν

Noise Screening Analysis Proposed No Action Alignment

Detail 24 of 28





500

Feet

Z

No Action

Receptor

Traffic Segments

Existing 66 dBA (width varies) Proposed 66 dBA (width varies) Proposed 63 dBA (width varies)

Detail 25 of 28



Noise Screening Analysis Proposed No Action Alignment





500

Feet

Existing Road Centerline

No Action

Impacted Receptor

Receptor

Traffic Segments Existing 66 dBA (width varies) Proposed 66 dBA (width varies)

Proposed 63 dBA (width varies)

WALNUT RIDGE - MISSOURI STATE LINE (FUTURE I-57) Randolph, Clay, Greene and Lawrence Counties

Noise Screening Analysis Proposed No Action Alignment

Detail 27 of 28





Proposed 63 dBA (width varies)





ATTACHMENT E — TRAFFIC DATA AND TNM RESULTS



			NOISE	DATA WO	RKSHEET	r					
Job No: 100512											
Job Name: I-57 Walnut Ridge to Missour	ri State Line										
Roadway Reference:	7 Alt2 Segment A -	Both Directior	ns - Hwy 4	12 & Hwy 67	to Black Riv	/er]				
County: Lawrence, Randolph, Clay											
Design Year:	2040										
Year(s) To Be Modeled:	2018 2040										
	1										
Roadway Cross-Sections:	Divided	4-lane - 12' la	ines, 10' o	utside sh, 6' i	nside sh.		Note:				
	2040	PPOPOS	-0							curina in desi	an hour
	2040	11101 001						D - Directi	onal Distribu	tion	girnoui
Operating Speed:		75				Kfactor	8%	D	52%		
Traffic Data:		YEAR	ADT	%TRUCK	DHV	CARS	MT	HT	CARS/2	MT/2	HT/2
							2.8%	48.2%			
		2018	7 100	E10/	E00	420	0	142	215	E	70
		2040	7,100	51%	580	429	8	143	215	3	12

Garver Ryan Mountain								22-Sep-2 TNM 2.5 Calculated	1 d with TNM	2.5			
RESULTS: SOL PROJECT/CON RUN: BARRIER DESI ATMOSPHERIC	JND LEVE NTRACT: IGN: CS:	I-57 AF Alt2_Se INPUT 68 deg	RDOT N egment HEIGH	o. 10051 A ITS 6 RH	2				Average a State hi of a differ	pavement typ ghway agen ent type with	be shall be used u cy substantiates tl approval of FHW	nless he use 'A.	
Receiver Name	No.	#DUs	Exis LAe	sting N eq1h L C	lo Barrier Aeq1h Calculated	l Crit'n	Increase ov Calculated	ver existing Crit'n Sub'l Inc	Type Impact	With Barrie Calculated LAeq1h	r Noise Reduction Calculated Goal	Calculated minus Goal	I
			dBA	A d	IBA	dBA	dB	dB		dBA	dB dB	dB	
	50 100	1 2	1 1	0.0 0.0	72.50 69.20	6 6	6 72.5 6 69.5	5 1(2 1(0 Snd Lvl 0 Snd Lvl	72.5 69.2	0 0	8 8	-8 -8
	170 225	3 4	1 1	0.0 0.0	66.10 63.00	6 6	6 66. 6 63	1 1(3 1(0 Snd Lvl 0	66.1 63	0 0	8 8	-8 -8
	250 310 335 400 450	5 6 7 8 11	1 1 1 1	0.0 0.0 0.0 0.0 0.0	61.80 59.50 58.60 56.70 55.40	6 6 6 6	6 61.8 6 59.9 6 58.0 6 56.7 6 55.4	3 10 5 10 6 10 7 10 4 10	0 0 0 0 0	61.8 59.5 58.6 56.7 55.4	0 0 0 0	8 8 8 8 8	-8 -8 -8 -8 -8
	500 560	12 40	1	0.0	54.20	6	6 54.2	2 10 2 10	0	54.2 52.9	0	8	-8 -8
Dwelling Units	000	# DUs	, Mir dB	ise Redu	iction Avg dB	Max dB	UZ.			52.5	v	0	-0
All Selected All Impacted All that meet N	R Goal		11 3 0	0 0 0	0 0 0		0 0 0						

					NOISE D		RKSHEET	•					
Job No:	100512	2											
Job Name:	I-57 W	alnut Ridge to	Missouri Sta	ate Line			Ι						
Roadway Referenc	e:	I-57 Alt	2 Segment	B - Both Dir	ections - Bla	ick River to I	Hwy 62 Wes	t of Corning	1]			
County:	Lawrer	nce, Randolph,	Clay										
Design Year:		2040											
Year(s) To Be Mod	eled:	2018	2040										
Roadway Cross-Se	ections:		Divided 4	<mark>1-lane - 12'</mark>	lanes, 10' o	utside sh, 6'	inside sh.		Note:	DHV = (A DDHV =	ADT)(K) (ADT)(K)(D)	
			2040	PROPO	SED					K - Percer D - Direct	nt of ADT o	, ccuring in desi	ign hour
Operating Speed:				75]	Kfactor	8%	D	62%		
Traffic Data:				YEAR	ADT	%TRUCK	DHV	CARS	MT	HT	CARS/2	MT/2	HT/2
				2018					2.5%	39.5%			
				2040	8,700	42%	701	577	7	116	289	4	59
Garver Ryan Mountain							2-May-2 TNM 2.5 Calculated	1 with TNM 2	.5]
RESULTS: SOUND PROJECT/CONTRA RUN: BARRIER DESIGN:	LEVELS ACT:	I-57 AR Alt2_Se INPUT	DOT No. 10 gment B HEIGHTS	0512				Average p a State bi	pavement ty	/pe shall be	e used unles	SS ISE	
ATMOSPHERICS:		68 deg	F, 50% RH					of a differ	ent type wit	h approval	of FHWA.		
Receiver Name	No.	#DUs	Existing LAeq1h	No Barri LAeq1h Calculat	er ed Crit'n	Increase o Calculated	ver existing Crit'n Sub'l Inc	Type Impact	With Barri Calculate LAeq1h	ier d Noise Red Calculated	duction d Goal	Calculated minus Goal	
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB	
	50 100	1	1	0 72	.4 6	6 72.4	1	0 Snd Lvl	72.4	4 (3 -8	3
	170	3	1	0 66	.0 6	6 66	1	0 Snd Lvl	66	6 (-6	3
	225 250	4 5	1	0 62	.8 6 .6 6	6 62.8 6 61.6	1	0	62.8 61.6	6 (3 C	з -8 3 -8	3
	300 340	6 7	1	0 59	.5 6	6 59.5 6 58.1	1	0	59.5	5 (3 C	3 E	3
	400	8	1	0 56	.3 6	6 56.3	1	0	56.3	3 (5 C	-6 -8	3
	450 500	11	1	0 55	.0 6	6 55 6 52 9	1	0	55	5 (3 C	3-8	3
	550	31	1	0 52	.0 6	6 52.7	1	0	53.8	7 (5 C	-8 -8	3
Dwelling Units		# DUs	Noise R Min dB	eduction Avg dB	Max dB								
All Selected All Impacted All that meet NR Go	oal		11 3 0	0 0 0	0 0 0	0 0 0							

					NOISE	DATA WO	ORKSHEE	Т					
Job No:	100512												
Job Name:	I-57 Wal	nut Ridge to Mis	souri State I	_ine			Ι						
Roadway Refere	ence:	I-57 Alt 2	2 Segment C	C - Both Dire	ctions - Hv	vy 62 to Con	nectors]					
County:	Lawrenc	e, Randolph, Cla	ау										
Design Year:		2040											
Year(s) To Be M	odeled:	2018	2040	Ι									
Roadway Cross	-Sections:		Divided 4	<mark>-lane - 12' la</mark>	<mark>anes, 10' o</mark>	utside sh, 6'	inside sh.		Note:	DHV = (A	DT)(K))	
			2040	PROPOS	ED]		K - Percer	nt of ADT of	, ccuring in desi	gn hour
Operating Speed	d:			75			Ι	Kfactor	8%	D - Directi D	55%		
Traffic Data:				YEAR	ADT	%TRUCK	DHV	CARS	MT	HT	CARS/2	MT/2	HT/2
				2018	0.500				2.1%	38.9%	071		50
				2040	8,500	41%	650	541	6	104	271	3	52
Ryan Mountain & RESULTS: SOUN PROJECT/CONT RUN: BARRIER DESIG	Dave Bednar ND LEVELS RACT: GN:	I-57 ARE Alt2_Seg INPUT I	DOT No. 100 gment C HEIGHTS	0512			TNM 2.5 Calculated v	with TNM 2 Average p a State bi	2.5 pavement ty	pe shall be	used unles	55 Se	
ATMOSPHERICS	S:	68 deg l	F, 50% RH					of a differ	ent type with	approval o	of FHWA.	50	
Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	d Crit'n	Increase o Calculated	ver existing Crit'n Sub'l Inc	Type Impact	With Barrie Calculated LAeq1h	er I Noise Rec Calculated	luction I Goal	Calculated minus Goal	
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB	
	50 100	1	1	0 72.0) 6	6 72 6 68 6	10 10	Snd Lvl	72 68 6	0	8	8 -8 8 -8	
	162	3	1	0 66.1	6	6 66.1 6 63.1	10	Snd Lvl	66.1 63.1	0	8	-8 -8	
	250 300 350 425 450 500	5 6 7 8 11 12 31	1 1 1 1	0 61.1 0 59.1 0 57.3 0 55.2 0 54.5 0 53.3		6 61.1 6 59.1 6 57.3 6 55.2 6 54.5 6 53.3 6 52.2	10 10 10 10 10 10 10	 	61.1 59.1 57.3 55.2 54.5 53.3		8 6 8 8 8 8 8 8		
	600 625	33 34	1	0 51.2	2 6	6 51.2 6 50.7	10))	51.2	0	8	3 -8 3 _8	
Dwelling Units		# DUs	Noise Re Min dB	eduction Avg dB	Max dB				55.7			0	
All Selected All Impacted All that meet NR	Goal	1	13 3 0	0 0 0 0 0 0))	0 0 0]

					NOI	SE D	ATA WO	RKSHEE	Г					
Job No:	100512													
Job Name:	I-57 Walnut I	Ridge to Mi	ssouri State	Line										
Roadway Reference:		I-57 Alt	2 Segment D	- Both D	irections -	Hwy	67 N. of Cc	orning to Cor	nnectors					
County:	Lawrence, R	andolph, Cl	ay											
Design Year:		2040)											
Year(s) To Be Modelec	d:	2018	2040											
Roadway Cross-Section	ons:		2040	PROP	2' lanes, 1	0' out	side sh, 6' i	nside sh.	7	Note:	DHV = (A DDHV = (K - Percer	(ADT)(K) (ADT)(K)(D) at of ADT or) ccuring in des	sian hour
			2040	7.						0.01	D - Directi	onal Distrib	ution	sign nour
Operating Speed:				/5					Kfactor	8%	D	53%	1	
Traffic Data:				YEA	R AD	т	%TRUCK	DHV	CARS	MT 3.2%	HT 51.8%	CARS/2	MT/2	HT/2
				201	3	00	EE0/	500	267	0	150	104	E	75
				204) 6,3	00	55%	526	367	9	150	184	5	75
0								0.14 04						7
Garver Ryan Mountain & David	l Bednar							2-May-21 TNM 2.5						
RESULTS: SOUL	NDIEVELS							Calculated v	with TNM 2	.5				
PROJECT/CONTRACT		I-57 AR	DOT No. 10	0512										
RUN: BARRIER DESIGN:		Alt2_Se INPUT	egment D HEIGHTS						Average p	pavement ty	/pe shall be	used unles	S	
		69 dog							a State hi	ghway ager	ncy substan	tiates the u	se	
ATMOSPHERICS:		68 deg	F, 30% KH						of a differ	ent type wit	n approvar o			
Receiver Name	No.	#DUs	Existing	No Bar	rier					With Barri	er			
			LAeq1h	LAeq1			Increase ov	ver existing	Type	Calculated	d Noise Red	duction	Calavilated	
				Calcula	ilea Chi n		Calculated	Sub'l Inc	Impact	LAeqIn	Calculated	Goal	minus Goal	
			dBA	dBA	dBA		dB	dB		dBA	dB	dB	dB	
	50	1	1	0 7	2.5	66 66	72.5	10) Snd Lvl	72.5	5 0	8	-	8
1	70	3	1	0 6	6.1	66	66.1	10) Snd Lvl	66.1) 8	, -	8
22	25 50	4	1	0 6	3.0 1.8	66 66	63 61 P	10)	63	3 0	8	-	8
30	00	6	1	0 5	9.8	66	59.8	10)	59.8	3 0 3 0) 8	-	8
3	50	7	1	0 5	8.2	66	58.2	10)	58.2	2 0	8		8
4	25	8	1	0 5	6.1 5.2	66 66	56.1	10)	56.1) 8	- -	8
50	00	12	1	0 5	5.2 4.3	66	54.3	10)	54.3	20) 8	, - ; -	8
5	50	31	1	0 5	3.2	66	53.2	10)	53.2	2 0	8 (8	; -	8
60	00	33	1	0 5	2.2	66	52.2	10)	52.2	2 0	8 (- 1	8
6	50 75	34 36	1	0 5	1.2 0.7	66 66	51.2 50.7	10)	51.2 50.7	207) 8) 8	-	8
0	75	50	1	0 0	0.7	00	50.7		,	50.7	0	, 0	-	0
Dwelling Units		# DUs	Noise R Min dB	eduction Avg dB	Max dB									
All Selected			14	0	0	0								
All Impacted			3	0	0	0								
All that meet NR Goal			0	0	0	0								

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		N	OISE DAT	A WORK	SHEET					
Job No: 100512										
Job Name: I-57 Walnut Ridge to Missouri Stat	e Line									
Roadway Reference: I-57 Alt3 Segment A-	1 - Both Dire	ections - H	wy 412 & 67	'Interchange	e to Delaplai	ne	I			
County: Lawrence, Randolph, Clay]									
Design Year: 2040										
Year(s) To Be Modeled: 2018 2040]									
Roadway Cross-Sections: Divided 4	<mark>lane - 12' la</mark>	<mark>nes, 10' οι</mark>	utside sh, 6'	inside sh.		Note:	DHV = (A DDHV = (DT)(K) ADT)(K)(D)		
2040	PROPOSE	D]		K - Percer	t of ADT oc	curing in desi	gn hour
Operating Speed:	75				Kfactor	8%	D - Directi	52%		
Traffic Data:	YEAR	ADT	%TRUCK	DHV	CARS	МТ	HT	CARS/2	MT/2	HT/2
	2018					2.8%	48.2%			
	2010	6,400	51%	523	387	7	129	194	4	65
		,								

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Gar∖ Ryai	∕er n Mounta						20- TNM Calc	Jun-21 1 2.5 ulated	with TNM	2.5			
RES PRC RUN BAR	SULTS: S DJECT/C I: RIER DI	I-57 / Alt3_ INPI	ARDOT N Segment UT HEIGH	lo. 100512 А-1 HTS 4 РН					Average p a State hi	pavement typ ghway agen	be shall be used cy substantiates	unless the use	
AIN		00 U	eg F, 505	[∞] κπ					of a differ	ent type with		WA.	
Rece Nam	eiver ne No.	#DU:	s Exi LAe	sting No eq1h LAe Cal	Barrier eq1h culated Crit'r	Incr n Cal	rease over exi culated Crit'ı Sub'	sting n I Inc	Type Impact	With Barrie Calculated LAeq1h	r Noise Reductior Calculated Goal	n Calculate minus Goal	d
			dB	A dB/	A dBA	dB	dB			dBA	dB dB	dB	
	50 100	1 2	1 1	0.0 0.0	72.10 68.70	66 66	72.1 68.7	10 10	Snd Lvl Snd Lvl	72.1 68.7	0 0	8 8	-8 -8
	165 215	3 4	1 1	0.0 0.0	66.00 63.10	66 66	66 63.1	10 10	Snd Lvl	66 63.1	0 0	8 8	-8 -8
	250 300 325 400 450 500	5 6 7 8 11 12	1 1 1 1 1	0.0 0.0 0.0 0.0 0.0 0.0	61.40 59.40 58.50 56.20 54.90 53.80	66 66 66 66 66 66	61.4 59.4 58.5 56.2 54.9 53.8	10 10 10 10 10 10	 	61.4 59.4 58.5 56.2 54.9 53.8	0 0 0 0 0	8 8 8 8 8	-8 -8 -8 -8 -8 -8
	550	31	1	0.0	52.70	66	52.7	10		52.7	0	8	-8
Dwe	elling Units	# DI	Js No Mi dB	oise Reduct n Av dB	ion g Max dB	¢							
aii s Aii i Aii t	Selected mpacted hat meet NR G	ioal	11 3 0	0 0 0	0 0 0	0 0 0							

			N	OISE DAT	A WORK	SHEET					
Job No: 100512											
Job Name: I-57 Walnut Ridge to	Missouri State	e Line									
Roadway Reference: I-57 Alt	3 Segment A-2	2 - Both Dire	ections - D	elaplaine to	Hwy 90]					
County: Lawrence, Randolph	, Clay										
Design Year: 2040)										
Year(s) To Be Modeled: 2018	3 2040										
		1011	4.01	· · · · · · · · · · · · · · · · · · ·							
Roadway Cross-Sections:	Divided 4-I	ane - 12' la	nes, 10' ol	itside sh, 6' i	nside sh.		Note:	DHV = (A	DT)(K)		
	40	PROPOS	-			1					
	2040	PROPUSE	-D]		K - Percer	11 OF AD I OC	curing in desig	gn nour
Operating Speed:		75				Kfaator	00/			luon	
Operating Speed:		75				Nacior	0 70	U	52%		
Traffic Data:		YEAR	ADT	%TRUCK	DHV	CARS	МТ	HT	CARS/2	MT/2	HT/2
							2.8%	48.2%			
		2018									
		2040	6,400	51%	523	387	7	129	194	4	65
	-			•		•		•			

Garver								6-Aug-21						
Ryan Mounta								TNM 2.5						
								Calculated	with TNM	2.5				
RESULTS: S														
	I-57	о т												
	ARDO	51												
	1005	12												
RUN	Alt3	Seament	A-2											
BARRIER DI	INPL	JT HEIGH	ITS						Average	pavement ty	γpe shall be ι	used unless		
									a State h	ighway ager	ncy substanti	ates the use		
ATMOSPHE	68 de	eg F, 50%	6 RH						of a differ	ent type wit	h approval of	f FHWA.		
Receiver														
Name No.	#DUs	s Exis	sting N	lo Barrier						With Barri	er			
		LAe	eq1h L	Aeq1h	.	In	crease ove	er existing	Туре	Calculated	Noise Redu	iction		
			С	alculated	Crit'n	С	alculated	Crit'n	Impact	LAeq1h	Calculated	Goal	Calculated	
								SubTinc					minus Goal	
		dBA	A di	BA	dBA	d	В	dB		dBA	dB	dB	dB	
50	1	1	0.0	72.10		66	72.1	10	Snd Lvl	72.1	0	8		-8
96	2	1	0.0	68.90		66	68.9	10	Snd Lvl	68.9	0	8		-8
165	3	1	0.0	66.00		66	66	10	Snd Lvl	66	5 O	8		-8
215	4	1	0.0	63.10		66	61.4	10		63.1	0	8		8- ە
200	5	1	0.0	59.40		66	50 /	10		50 /	0	0		-0
325	7	1	0.0	58 50		66	58.5	10		58.5	5 0	8		-8
400	8	1	0.0	56.20		66	56.2	10		56.2	2 0	8		-8
450	11	1	0.0	54.90		66	54.9	10		54.9	0	8		-8
500	12	1	0.0	53.80		66	53.8	10		53.8	8 0	8		-8
550	31	1	0.0	52.70		66	52.7	10		52.7	0	8		-8
Dwelling Units	# DU	Js No	ise Redu	ction										
Ũ		Mir	ו A	Avg	Max									
		dB	d	βB	dB									
All Selected		11	0	0		0								
All Impacted		3	0	0		0								
All that meet NR	Goal	0	0	0		0								

					NOIS		VORKSHE	ET						
Job No:	100512													
Job Name:	I-57 Walnut Ridge	to Missouri Sta	ate Line]							
Roadway Re	ference:	I-57 Alt 3 Seg	gment B-1 -	Both Direc	tions - Hwy	/ 90 to 2,50) feet north (a	adjacent to	existing roa	adway)				
County:	Lawrence, Randol	oh, Clay		1										
Design Year:	· · · · · · · · ·	2040	7	-										
Year(s) To B	e Modeled:	2018	2040	1										
				1										
Roadway Cro	oss-Sections:		Divided 4-	lane - 12' l	anes, 10' o	<mark>utside sh, 6</mark>	' inside sh.		Note:	DHV = (A DDHV =	DT)(K) (ADT)(K)(D)			
			2040	PROPOS	ED					K - Percei	nt of ADT oc	curing in des	ign hour	
Operating Sp	beed:			75			I	Kfactor	8%	D - Direct	62%			
Traffic Data:				YEAR	ADT	%TRUC	C DHV	CARS	MT	HT	CARS/2	MT/2	HT/2	
				2018	7.500	400/			2.1%	43.3%				
				2040	7,500	46%	604	476	8	120	239	4	61	_
	Garver Ryan Mountain and	d David Bedna	r					24-Jul-21 TNM 2.5	1					
	RESULTS: SOUNI	D LEVELS						Calculated	d with TNN	12.5				
	PROJECT/CONTR	RACT:	I-57 ARDO	OT No. 100	512									
	BARRIER DESIGN	1:	INPUT H	EIGHTS					Average	pavement ty	/pe shall be	used unless		
	ATMOSPHERICS:		68 deg F,	50% RH					a State h of a diffe	ighway agei rent type wit	ncy substant h approval c	iates the use of FHWA.		
	Receiver													
	Name	No.	#DUs	Existing LAeq1h	No Barrie LAeg1h	er	Increase ov	er existing	Туре	With Barri Calculated	er d Noise Red	uction		
					Calculate	d Crit'n	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated minus	
				dBA	dBA	dBA	dB	dB		dBA	dB	dB	Goal dB	
	F		1 1	42,1	30,1		3 70 () Conditud	30,1		45		0
	100) 2	1 1 2 1	() 72.) 68.	2 60 8 60	68.8 68.8	2 10 3 10) Snd Lvl	68.8	2 0 3 0	6	3	-0 -8
	160	6 ()	31 41	(60 - 62	6 60 9 60	66 62 9	6 10 9 10) Snd Lvl	66 62 9	600 6000	8	; }	-8 -8
	250) {	5 1	() 61.	4 60	61.4	4 10)	61.4	0	8	3	-8
	300	5	5 1 7 1	() 59.) 58.	4 60 5 60	5 59.4 5 58.5	1 10 5 10)	59.4 58.5	L 0 5 0	٤ ع	; -	-8 -8
	400) 8	3 1	(56.	2 60	5 56.2	2 10)	56.2	2 0	8	} .	-8
	450) 1 [.]	1 1	(54.	9 60	54.9) 10)	54.9	0	8		-8
	500	$\frac{1}{3}$	2 1 1 1	() 53.) 52	7 61 6 61	53.1 52.6	7 10 5 10)	53.7 52 f	y 0 3 0	۲ ۲	;	-8 -8
	600) 3	3 1	() 51.	6 6	5 51.6	5 10 5 10)	51.6	5 0	6	3	-8
	650) 34	4 1	(50.	6 6	50.6	6 10)	50.6	6 0	8	} .	-8
	Dwelling Units		# DUs	Noise Re	duction									
				Min dB	Avg dB	Max dB								
	All Selected		13	. ()	0 ()							
	All Impacted		3	()	0 0)							
	All that meet NR C	Goal	0	()	0 ()							
	All that meet NR C	JUAI	0	(J	U (J							

					NOI	SE DATA V	VORKSHE	ET					
Job No:	100512												
Job Name:	I-57 Walnu	t Ridge to N	lissouri State	Line									
Roadway Re	eference:	I-57 A	lt 3 Segment	B-2 - Both D)irections -	2,500 feet no	rth of Hwy 9	0 to Hwy 6	2 W. of Corr	ning (new a	lignment)]	
County:	Lawrence,	Randolph, (Clay										
Design Year	:	204	10										
Year(s) To B	e Modeled:	201	8 2040										
Roadway Cr	oss-Sections:		Divided	4-lane - 12'	lanes, 10' o	outside sh, 6'	inside sh.		Note:	DHV = (A	.DT)(K) (מחד)(א)		
			2040	PROPOS	SED					K - Percer	nt of ADT oc	curing in desi	gn hour
Operating S	peed:			75				Kfactor	8%	D - Directi D	62%		
Traffic Data:				YEAR	ADT	%TRUCK	DHV	CARS	MT	HT	CARS/2	MT/2	HT/2
				2018	7.500	100/		170	2.7%	43.3%			
				2040	7,500	46%	604	476	8	120	239	4	61
RESULTS: S PROJECT/C RUN: BARRIER DE ATMOSPHEI Receiver	OUND LEVELS ONTRACT: ESIGN: RICS:	I-57 A Alt3_6 INPU 68 de	RDOT No. 1 Segment B-2 T HEIGHTS bg F, 50% RH	00512 I			Calculated v	with TNM 2 Average p a State hi of a differ	2.5 pavement ty ghway ager ent type with	pe shall be וכץ substan ו approval מ	used unless tiates the us of FHWA.	s se	
Name	No.	#DUs	Existing LAeq1h	y No Barrie LAeq1h Calculate	er ed Crit'n	Increase o Calculated	ver existing Crit'n Sub'l Inc	Type Impact	With Barrie Calculated LAeq1h	er I Noise Rec Calculatec	luction d Goal	Calculated minus Goal	
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB	
	50 100	1	1 1	0 72.	26	6 72.2	10 10	Snd Lvl	72.2	0	8	-8 -8	
	166	3	1	0 66.	0 6	6 66 66	10	Snd Lvl	66	0	8	-8	
	250	5	1	0 61.	4 6	6 61.4	10		61.4	0	8	-o -8	
	300 340	6 7	1 1	0 59. 0 58.	4 6 0 6	56 59.4 56 58	10 10		59.4 58	0	8	-8 -8	
	400	8	1	0 56.	2 6	6 56.2	10		56.2	0	8	-8	
	450 500	12	1	0 54. 0 53.	.9 C	6 53.7	10		54.9 53.7	0	8	-o -8	
	550	31	1	0 52.	6 6	6 52.6	10		52.6	0	8	-8	
	650	33 34	1	0 51. 0 50.	6 6	6 51.6 6 50.6	10		51.6 50.6	0	8	-8 -8	
Dwelling Uni	ts	# DU	s Noise I Min dB	Reduction Avg dB	Max dB								
All Selected			13 3	0	0	0							
All that meet	NR Goal		0	0	0	0							

Ige to Missouri State	Line									
lge to Missouri State 57 Alt 3 Segment C -	Line									
57 Alt 3 Segment C -										
	Both Direc	tions - Hw	/ 62 to Hwy	67 N. of Co	rning					
idolph, Clay										
2040										
2018 2040										
Divided 4-la	ane - 12' lar	nes, 10' ou	tside sh, 6' i	nside sh.		Note:	DHV = (A DDHV = (DT)(K) ADT)(K)(D)		
2040	PROPOSE	D]		K - Percen	t of ADT occ	curing in desig	n hour
	75				Kfactor	8%	D	55%		
[YEAR	ADT	%TRUCK	DHV	CARS	МТ	HT	CARS/2	MT/2	HT/2
1	2018					2.3%	43.7%			
	2040	7,500	46%	573	452	6	115	227	4	58
	2040 2018 2040 Divided 4-la 2040	2040 2018 2040 Divided 4-lane - 12' lar 2040 PROPOSE 75 YEAR 2018 2040	2040 2018 2040 Divided 4-lane - 12' lanes, 10' ou 2040 PROPOSED 75 YEAR ADT 2018 2018 2040 7,500	2040 2018 2040 Divided 4-lane - 12' lanes, 10' outside sh, 6' i 2040 PROPOSED 75 YEAR ADT %TRUCK 2018 2018 2018 2018 2018 46%	2040 2018 2040 Divided 4-lane - 12' lanes, 10' outside sh, 6' inside sh. 2040 PROPOSED 75 YEAR ADT %TRUCK DHV 2018 2018 2018 2040	2040 2018 2040 Divided 4-lane - 12' lanes, 10' outside sh, 6' inside sh. 2040 PROPOSED 75 Kfactor YEAR ADT %TRUCK DHV CARS 2018 2018 46% 573 452	2040 2018 2040 2018 2040 Divided 4-lane - 12' lanes, 10' outside sh, 6' inside sh. Note: 2040 PROPOSED	2040 2018 2040 2018 2040 Divided 4-lane - 12' lanes, 10' outside sh, 6' inside sh. Note: DHV = (A DDHV = (QDHV = (QDHV = (QDHV = (2040 PROPOSED K - Percen D - Direction 75 Kfactor 8% D YEAR ADT %TRUCK DHV CARS MT HT Q018 Q040 7,500 46% 573 452 6 115	2040 2018 2040 Divided 4-lane - 12' lanes, 10' outside sh, 6' inside sh. Note: DHV = (ADT)(K) DDHV = (ADT)(K)(D) 2040 PROPOSED K- Percent of ADT occ D - Directional Distribu 75 Kfactor 8% D 55% YEAR ADT %TRUCK DHV CARS MT HT CARS/2 2018 2040 7,500 46% 573 452 6 115 227	2040 2018 2040 Divided 4-lane - 12' lanes, 10' outside sh, 6' inside sh. Note: DHV = (ADT)(K) DDHV = (ADT)(K)(D) 2040 PROPOSED K - Percent of ADT occuring in desig D - Directional Distribution 75 Kfactor 8% D 55% YEAR ADT %TRUCK DHV CARS MT HT CARS/2 MT/2 2018 2.3% 43.7% 43.7% 2018 452 6 115 227 4

Receiver														
Name	No.	#DUs	s Existi LAeq	ing No 1h L/	o Barrier Aeq1h		Increase	over existing	Туре	With Barri Calculate	ier d Noise Re	eduction		
				C	alculated	Crit'n	Calculate	d Crit'n Sub'l Inc	Impact	LAeq1h	Calculate	ed Goal	Calculate minus	ed
			dBA	dE	BA	dBA	dB	dB		dBA	dB	dB	dB	
	50	1	1	0	72.0	66	7	2 10	Snd Lvl	72	2	0	8	-8
	100	2	1	0	68.6	66	68.	6 10	Snd Lvl	68.6	3	0	8	-8
	163	3	1	0	66.0	66	6	6 10	Snd Lvl	66	3	0	8	-8
	215	4	1	0	62.9	66	62.	9 10		62.9	9	0	8	-8
	250	5	1	0	61.2	66	61.	2 10		61.2	2	0	8	-8
	300	6	1	0	59.2	66	59.	2 10		59.2	2	0	8	-8
	350	7	1	0	57.5	66	57.	5 10		57.5	5	0	8	-8
	425	8	1	0	55.3	66	55.	3 10		55.3	3	0	8	-8
	450	11	1	0	54.7	66	54.	7 10		54.7	7	0	8	-8
	500	12	1	0	53.5	66	53.	5 10		53.5	5	0	8	-8
	550	31	1	0	52.4	66	52.	4 10		52.4	1	0	8	-8
	600	33	1	0	51.4	66	51.	4 10		51.4	1	0	8	-8
	635	34	1	0	50.7	66	50.	7 10		50.7	7	0	8	-8
Dwelling L	Inits	# DL	Js Nois	e Reduc	tion									
-			Min	A	vg	Max								
			dB	d	В	dB								
All Selecte	ed		13	0	0	0)							
All Impacte	ed		3	0	0	0)							
All that me	et NR Goal		0	0	0	0)							
1														

					N	OISE DAT	A WORKS	HEET					
Job No:	100512]											
Job Name:	I-57 Walr	ut Ridge to	o Missouri S	state Line]						
Roadway Referer	nce:	I-57 Alt3	Segment D	- Both Dire	ctions - Hv	wy 67 to Alter	native A or C	;					
County:	Lawrence	e, Randolpl	h, Clay										
Design Year:		2040											
Year(s) To Be Mo	deled:	2018	2040										
Poadway Cross	Soctions:		Divided 4	lane 12'	anos 10'	outside sh. 6'	inside sh		Note:				
Roduway Cross-C	Sections.		Divided 4		anes, to t			_	Note.	DHV = (A DDHV = ((ADT)(K) (ADT)(K)(D)	
			2040	PROPOS	SED					K - Percer D - Directi	nt of ADT og onal Distrib	ccuring in desig ution	n hour
Operating Speed	:			75]	Kfactor	8%	D	53%]	
Traffic Data:				YEAR	ADT	%TRUCK	DHV	CARS	МТ	HT	CARS/2	MT/2	HT/2
				0040					3.2%	50.8%			
				2018	6,000	54%	501	355	9	137	178	5	69
Garver Ryan Mountain an	d David Bed	nar					20-Jun-2 ⁻ TNM 2.5 Calculated	1 with TNM 2	.5				
RESULTS: SOUN				1512									
RUN:	VACT.	Alt3_Seg	ment D	1012									
BARRIER DESIG	N:	INPUT F	IEIGHTS					Average p	pavement ty	ype shall be	used unles	S	
ATMOSPHERICS	:	68 deg F	⁼ , 50% RH					of a differ	gnway age ent type wit	ncy substan th approval (tiates the upper terms of FHWA.	se	
Receiver													
Name	No.	#DUs	Existing	No Barrie	er	Increase	over existing	Type	With Barr	ier d Noise Rec	luction		
			LACYIII	Calculate	d Crit'n	Calculated	d Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated minus Goal	
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB	

			dBA	dBA	dBA	dB	dB		dBA dB	dB	dB	
	50	1	1	0	72.2	66	72.2	10 Snd Lvl	72.2	0	8	-8
	100	2	1	0	68.8	66	68.8	10 Snd Lvl	68.8	0	8	-8
	166	3	1	0	66.0	66	66	10 Snd Lvl	66	0	8	-8
	220	4	1	0	62.9	66	62.9	10	62.9	0	8	-8
	250	5	1	0	61.5	66	61.5	10	61.5	0	8	-8
	300	6	1	0	59.5	66	59.5	10	59.5	0	8	-8
	350	7	1	0	57.8	66	57.8	10	57.8	0	8	-8
	400	8	1	0	56.4	66	56.4	10	56.4	0	8	-8
	450	11	1	0	55.1	66	55.1	10	55.1	0	8	-8
	500	12	1	0	54.0	66	54	10	54	0	8	-8
	550	31	1	0	52.9	66	52.9	10	52.9	0	8	-8
	600	33	1	0	51.9	66	51.9	10	51.9	0	8	-8
	660	34	1	0	50.7	66	50.7	10	50.7	0	8	-8
Dwelling) Units	# D	Us Noise	e Reductio	n							
			Min	Avg	Max							
			dB	dB	dB							
All Selec	cted		13	0	0	0						
All Impa	cted		3	0	0	0						
All that r	neet NR Goal		0	0	0	0						

					N	IOISE DA		SHEET					
Job No:	100512												
Job Name:	I-57 Walnu	t Ridge to N	/lissouri Stat	te Line			Т						
Roadway Re	eference [.]	L-57 Alter	native A - B	oth Directio	ne				Т				
					115				1				
County:	Lawrence,	Randolph,	Clay	1									
Design Year	r:	2040											
Year(s) To E	Be Modeled:	2018	2040]									
Roadway Cr	ross-Section	IS:	Divided 4	<mark>-lane - 12' la</mark>	anes, 10' o	outside sh, 6	<mark>' inside sh.</mark>		Note:	DHV = (A	DT)(K)		
			2040	PROPOS	ED					DDHV = (K - Percer	(ADT)(K)(D nt of ADT o) ccuring in desi	gn hour
Operating S	speed:		-	75			Ţ	Kfactor	8%	D - Directi	onal Distrik	oution	
	,poour												117/0
I ramic Data:	:			YEAR	ADT	%IRUCK		CARS	3.2%	51.8%	CARS/2	M1/2	H1/Z
				2018 2040	6 300	55%	526	367	9	150	184	5	75
					0,000	0070	020	00.	Ŭ			, ,	
Garver Rvan Mounta	air						20-Jul-21	I					
							Calculated	with TNM 2	2.5				
RESULTS: S PROJECT/C	SC C	I-57 ARD	OT No. 100	512									
		Proposed	d Alternative	A				Average	avomont ti	no chall bo			
BARRIER DI	E	INPUTE	IEIGH I S					a State hi	ghway age	ncy substan	tiates the u	use	
ATMOSPHE	R	68 deg F	⁻ , 50% RH					of a differe	ent type wit	h approval o	of FHWA.		
Receiver													
Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h	•	Increase of	over existing	Туре	With Barr Calculate	ier d Noise Rec	luction		
				Calculated	d Crit'n	Calculated	d Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	dGoal	Calculated minus	
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB	
50	1	1	0	72.5	66	72.5	10	Snd Lvl	72.5	0	8	-8	
100 170	2	1	0	69.1 66.1	66 66	69.1 66.1	10 10	Snd Lvi Snd Lvi	69.1 66.1	0	8	-8 -8	
225	4	1	0	63.0	66	63	10		63	0	8	-8	
250 300	5	1	0	61.8 59.8	66 66	61.8 59.8	10 10		61.8 59.8	0	8 8	-8 -8	
350	7	1	0	58.2	66	58.2	10		58.2	0	8	-8	
425	8	1	0	56.1	66	56.1	10		56.1	0	8	-8	
460	11	1	0	55.2	66	55.2	10		55.2	0	8	-8	
550	1∠ 31	1	0	53.2	66 66	53 2	10		53 2	0	о 8	-o -8	
600	33	1	0	52.2	66	52.2	10		52.2	0	8	-8	
650	34	1	0	51.2	66	51.2	10		51.2	0	8	-8	
675	36	1	0	50.7	66	50.7	10		50.7	0	8	-8	
Dwelling Un	iits	# DUs	Noise Re Min	duction Avg	Max								
			dB	dB	dB								
All Selected		1	4 () O)	0							
All Impacted			3 () 0		0							
All that mee	UNK GOAI			, u		U							

					NOI	SE DATA	WORKS	HEET					
Job No:	100512												
Job Nam	el-57 Walnut F	Ridge to Mis	souri State	Line]						
Roadway	Reference:	I-57 Alter	native A Co	nnector (E	xisting from	NB Segme	nt 4-2)						
County:	Lawrence, Ra	ndolph, Cla	ıy]									
Design Y	'ear:	2040											
Year(s) T	o Be Modeled	2018	2040]									
Roadway	/ Cross-Sectio	ns:	Two 12' tr	avel lanes	with 8' pave	ed shoulders	5		Note:	DHV = (Al	DT)(K)		
			2018 EXI	STING						DDHV = (A K - Percen	ADT)(K)(D) It of ADT oc	curing in desi	gn hour
Operatin	g Speed:			55]	Kfactor	8%	D - Directi	onal Distrib	oution	
Traffic Da	ata:			YEAR	ADT	%TRUCK	DHV	CARS	МТ	НТ	CARS/2	MT/2	HT/2
				2019	6 800	20%		FOO	3.2%	51.8%	500	4	42
				2018	0,800	29%	555	509	0	45	509	4	43
Garver							8-Jan-22	2]
Ryall WOL	11						Calculated	d with TNM 2	.5				
RESULTS: PROJECT/ RUN: BARRIER I	SOUND LEVELS 'CONTRACT: DESIGN:	5 I-57 ARD 57-NB-S INPUT H	OT No. 1005 eg.4-2 for E: EIGHTS	512 xisting Con	nector A			Average pav	vement type	e shall be us	ed unless		
ATMOSPH	41	68 deg F	, 50% RH					a State high of a differen	way agency It type with	v substantia approval o	tes the use f FHWA.		
Receiver Name	No.	#DUs	Existing LAeq1h	No Barrie LAeq1h Calculate	r d Crit'n	Increase o Calculated	ver existin	g Type Impact	With Barr Calculate LAeq1h	ier d Noise Red Calculated	uction I Goal	Calculated	
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	minus Goal dB	
50	1	1	0	CO O		60	10	Conditud	C 0	0	0	0	
50 75	1 2	1	0	69.0 67.0	66	69 67	10 10	Snd Lvi Snd Lvi	69 67	0	8	-8 -8	
90	3	1	0	66.1	66	66.1	10	Snd Lvl	66.1	0	8	-8	
100	4	1	0	65.6	66 66	65.6	10		65.6	0	8	-8	
175	6	1	0	62.5	66	62.5	10		62.5	0	8	-8	
200	7	1	0	60.9	66	60.9	10		60.9	0	8	-8	
275	8	1	0	57.3	66	57.3	10		57.3	0	8	-8	
300	11	1	0	56.3	66 66	56.3	10		56.3	0	8	-8	
400	31	1	0	54.0 53.1	66	54.0 53.1	10		54.0 53.1	0	8	-8 -8	
475	33	1	0	51.3	66	51.3	10		51.3	0	8	-8	
500	36	1	0	50.7	66	50.7	10		50.7	0	8	-8	
Dwelling	Units	# DHs	vise Reduc	tion									
Dweinig	onics	1 203	Min	Avg	Max								
			dB	dB	dB								
All Select	ed	1	3 0	0	0								
All Impac	ted	_	3 0	0	0								
All that n	neet NR Goal		0 0	0	0								

						NOISE DA	TA WORK	SHEET					
Job No:	100512												
Job Name:	I-57 Walnu	t Ridge to N	/lissouri Stat	te Line									
Roadway R	Reference:	I-57 Alter	mative A Inte	erim Conne	ector]				
County:	Lawrence,	Randolph,	Clay]									
Design Yea	ar:	2040											
Year(s) To	Be Modeled:	2018	2040]									
Roadway C	cross-Section	IS:	Two 12' tr	avel lanes	with 8' pa	ved shoulder	rs		Note:	DHV = (/	ADT)(K)))	
			2040	PROPOS	ED]		K - Perce	ent of ADT c	occuring in desi	gn hour
Operating	Speed:			55]	Kfactor	8%	D - Direc	53%		
Traffic Data	a:			YEAR	ADT	%TRUC	K DHV	CARS	МТ	HT	CARS	МТ	HT
				2018					3.2%	51.8%			
				2040	6,300	55%	526	367	9	150	367	10	150
													1
Garver Ryan Moun	tair						6-Jan-22 TNM 2.5	2					
RESULTS:	SOUND LEVE	ELS					Calculated	with TNM 2	.5				
PROJECT/0	CONTRACT:	I-57 ARD	OT No. 100	512 A Connoc	tor								
BARRIER D	DESIGN:	INPUT F	EIGHTS	ACOINEC				Average p	pavement ty	ype shall b	e used unle	SS	
ATMOSPHE	ERICS:	68 deg F	⁻ , 50% RH					a State hig of a differe	ghway age ent type wit	ncy substa th approval	of FHWA.	use	
Receiver													
Name	NO.	#DUS	LAeq1h	LAeq1h Calculate	r d Crit'n	Increase Calculate	over existing d Crit'n Sub'l Inc	Type Impact	Calculate	d Noise Re Calculate	duction d Goal	Calculated minus	
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	Goal dB	
50	1	1	0	71.7	66	71.7	10	Snd Lvl	71.7	0	8	-8	
100	2	1	0	68.3 65.9	66 66	68.3 65.9	10 10	Snd Lvi	68.3 65.9	0	8	-8 -8	
215	4	1	0	62.9	66	62.9	10		62.9	0	8	-8	
250 300	5	1	0	61.3	66 66	61.3	10 10		61.3	0	8	-8 8	
350	7	1	0	57.9	66	57.9	10		57.9	0	8	-8	
425	8	1	0	56.0	66	56	10		56	0	8	-8	
460	11	1	0	55.2	66 66	55.2	10 10		55.2	0	8	-8 8	
550	31	1	0	53.4	66	53.4	10		53.4	0	8	-8	
600	33	1	0	52.5	66	52.5	10		52.5	0	8	-8	
650 675	34 36	1	0	51.7 51.2	66 66	51.7 51.2	10 10		51.7 51.2	0	8 8	-8 -8	
Dwalling Ll	nito	# DU 6		duction	00	01.2	10		01.2	Ŭ	0	°,	
Dweiling Of	Tills	# DOS	Min dB	Avg dB	Max dB								
All Selected	d	1	4 0) ()	0							
All Impacte	d		2 () ()	0							
All that mee	et NK Goal		υ (J (J	U							

					I	NOISE DA	TA WORK	SHEET					
Job No:	100512												
Job Name:	I-57 Walnu	It Ridge to N	/lissouri Sta	te Line]						
Roadway R	eference:	I-57 Alter	native B - B	oth Directio	ons]				
County:	Lawrence,	Randolph,	Clay]									
Design Yea	r:	2040											
Year(s) To I	Be Modeled:	2018	2040	٦									
				_									
Roadway C	ross-Section	IS:	Divided 4	<mark>-lane - 12' l</mark>	<mark>anes, 10'</mark>	<mark>outside sh, 6</mark>	' inside sh.		Note:	DHV = (A DDHV = (.DT)(K) (ADT)(K)(C))	
			2040	PROPOS	ED					K - Percer D - Directi	nt of ADT o onal Distrit	occuring in desi	gn hour
Operating S	Speed:			75]	Kfactor	8%	D	53%]	
Traffic Data	:			YEAR	ADT	%TRUCK		CARS	MT	HT	CARS/2	MT/2	HT/2
				2018	6 200	EE9/	E26	267	0.270	150	104	E	75
				2040	6,300	55%	520	307	9	150	184	5	75
Garver Rvan Mount	air						22-Sep-27 TNM 2 5	I					
							Calculated	with TNM 2	.5				
PROJECT/C	SC 20	I-57 ARD	OT No. 100)512									
RUN: BARRIER D	E	Proposed INPUT F	d Alternative	в				Average p	pavement t	ype shall be	used unle	SS	
ATMOSPHE	R	68 dea F	50% RH					a State hi	ghway age ent type wi	ncy substan	ntiates the ເ of FHWA	use	
Peceiver			,										
Name	No.	#DUs	Existing	No Barrie	r			_	With Barr	ier			
			LAeqin	Calculate	d Crit'n	Calculate	d Crit'n	i ype Impact	LAeq1h	Calculated	d Goal	Calculated	
							Sub'l Inc					minus Goal	
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB	
50 100	1	1 1	0	72.5 69 1	66 66	72.5 69 1	10 10	Snd Lvl Snd Lvl	72.5 69 1	0	8 8	-8 -8	
166	3	1	0	66.3	66	66.3	10	Snd Lvl	66.3	0	8	-8	
220 250	4 5	1	0	63.2 61.8	66 66	63.2 61.8	10		63.2 61.8	0	8	-8 -8	
300 350	6 7	1 1	0 0	59.8 58.2	66 66	59.8 58.2	10 10		59.8 58.2	0 0	8 8	-8 -8	
400	8	1	0	56.7	66	56.7	10		56.7	0	8	-8	
450	11 10	1	0	55.4	66	55.4	10		55.4	0	8	-8	
550	31	1	0	53.2	66	53.2	10		53.2	0	8	-0 -8	
600	33	1	0	52.2	66	52.2	10		52.2	0	8	-8	
660	34	1	0	51.0	66	51	10		51	0	8	-8	
Dwelling Un	nits	# DUs	Noise Re Min dB	eduction Avg dB	Max dB								
All Selected	1	1	3 (0 0	D	0							
All Impacted	d MR Gool		3 () (1 4	ך ר	0							
All that mee	et NR Goal		0 0	D ()	0							

				Ν	IOISE	DATA	NORKS	HEET					
Job No: 100512													
Job Name: I-57 Wal	nut Ridge to M	lissouri Stat	e Line										
Roadway Reference:	I-57 Alter	native C - B	oth Directio	ns					Ι				
County: Lawrence	æ, Randolph, (Clay	Ι										
Design Year:	2040												
Year(s) To Be Modele	d: 2018	2040	Ι										
Roadway Cross-Secti	ons:	Divided 4-	lane - 12' la	anes, 10' d	outside	sh. 6' insid	de sh.		Note:	DHV = (A	DT)(K)		
,		2040	PROPOS	ED				1		DDHV = (K - Percen	ADT)(K)(D)) ccurina in desi	an hour
Operating Speed:			75					Kfactor	8%	D - Directio	onal Distrib 53%	ution	
Traffic Data:			YEAR	ADT	%TF		DHV	CARS	MT	HT	CARS/2		HT/2
			2018						3.2%	50.8%			
			2040	6,000	54	1%	501	355	9	137	178	5	69
													1
Garver Byon Mountain						2 TNI	20-Jul-21						
						Cal	culated v	vith TNM 2	2.5				
PROJECT/CONTRACT	T: I-57 ARD	OT No. 100	512										
RUN: BARRIER DE	Proposed INPUT H	EIGHTS	С					Average	pavement ty	vpe shall be	used unles	s	
ATMOSPHER	68 deg F	, 50% RH						a State hi of a differ	ghway ager ent type witl	ncy substan h approval c	tiates the u of FHWA.	se	
Receiver													
Name No.	#DUs	Existing LAeq1h	No Barrier LAeq1h		Incre	ase over e	existing	Туре	With Barri Calculated	er d Noise Red	uction		
			Calculated	l Crit'n	Calc	ulated Crit Sub	'n o'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated minus	
		dBA	dBA	dBA	dB	dB			dBA	dB	dB	Goal dB	
50	1	1 0	72.2	6	6	72.2	10	Snd Lvl	72.2	2 0	8	-8	
100 166	2 3	1 0 1 0	68.8 66.0	6	6 6	68.8 66	10 10	Snd Lvl Snd Lvl	68.8 66	6 0 6 0	8	-8 -8	
220 250	4 · · · · · · · · · · · · · · · · · · ·	1 0 1 0	62.9 61.5	6	6 6	62.9 61.5	10 10		62.9 61.5	0 0 5 0	8 8	-8 -8	
300	6	1 0	59.5	6	6	59.5	10		59.5	6 O	8	-8	
400	8	1 0	56.4	6	6	57.8 56.4	10		57.0	5 0 4 0	o 8	-o -8	
450	11	1 0	55.1	6	6	55.1	10		55.1	0	8	-8	
550	31	1 0	52.9	6	6	52.9	10		52.9) 0	8	-o -8	
600 660	33 34	1 0 1 0	51.9 50.7	6	6 6	51.9 50.7	10 10		51.9 50.7	0	8 8	-8 -8	
Dwelling Units	# DUs	Noise Re	duction										
		Min dB	Avg dB	Max dB									
All Selected	1:	3 0	0		0								
All Impacted		3 0	0		0								
AII IIIAI IIIEEI NK GUAI	,	, 0	Ū		0								

					NOI	SE DATA	WORKS	HEET					
Job No: 10	00512]											
Job Name: I-	57 Waln	ut Ridge to	Missouri S	tate Line									
Roadway Refe	rence	I-57 Alter	native C Co	nnector (Exis	ting fron	n NB Segmer	nt 4-2)]				
County: La	awrence	, Randolph	ı, Clay]									
Design Year:		2040											
Year(s) To Be I	Modeleo	2018	2040]									
Roadway Cros	s-Sectio	ons:	Two 12' tr	avel lanes wi	th 8' pav	ed shoulders	;		Note:	DHV = (AD	DT)(K)		
			2018 EVI	STING				7		DDHV = (A	ADT)(K)(D)	couring in doci	an hour
			2010 EXI							D - Directio	onal Distri	ibution	gii noui
Operating Spe	ed:			55				Kfactor	8%	D	53%		
Traffic Data:				YEAR	ADT	%TRUCK	DHV	CARS	MT	HT	CARS	MT	HT
				2019	6 900	20%		500	3.2%	51.8%	500	4	42
				2018	0,800	29%	555	0	4	45	0	0	43
				L L									
Carvor							9 Jan 22	•					1
Garver Rvan Mountain	and Dav	vid Bednar	Jr.				8-Jan-22 TNM 2.5	1					
nyan mountain							Calculated	d with TNM	2.5				
RESULTS: SOUN	ND LEVEL	_S											
PROJECT/CONT	RACT:	I-57 ARD	OT No. 1005	512 isting Connor	ator C								
BARRIER DESIG	N	INPUT H	g.4-2 for ex FIGHTS	isting conne	LIOPC			Average n	avement t	vne shall be	used unle	255	
BARREN DESIG	IN.	INFOTTI	LIGHTS					a State hig	ghway ager	ncy substant	iates the	use	
ATMOSPHERICS	S:	68 deg F,	, 50% RH					of a differ	ent type w	ith approval	of FHWA		
Receiver													
Name No	0.	#DUs	Existing	No Barrier					With Barr	ier			
			LAeq1h	LAeq1h		Increase ov	ver existing	gТуре	Calculated	d Noise Redu	uction		
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	Impact	LAeq1h	Calculated	Goal	Calculated minus	
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB	
50	1	1	0	69	66	69	10	Snd Lvl	69	0	8	-8	
75	2	1	0	67	66	67	10	Snd Lvl	67	0	8	-8	
90	3	1	0	66.1	66	66.1	10	Snd Lvl	66.1	0	8	-8	
100	4 ⊑	1	0	65.6	66 66	65.6	10		65.6	0	8 0	-8 o	
175	6	1	0	62.5	66	62.5	10		62.5	0	8	-8	
200	7	1	0	60.9	66	60.9	10		60.9	0	8	-8	
275*	8	1	0	57.3	66	57.3	10		57.3	0	8	-8	
300	11	1	0	56.3	66	56.3	10		56.3	0	8	-8	
350	12	1	0	54.6	66	54.6	10		54.6	0	8	-8	
400	33	1	0	53.1 51.3	66	53.1 51.3	10		53.1 51.3	0	8 8	-ð -8	
500	36	1	0	50.7	66	50.7	10		50.7	0	8	-8	
Dwelling Units		# Di le	jise Reduc	tion									
Sweining Units		# D03	Min	Avg	Max								
			dB	dB	dB								
All Selected													
All Impacted		13	()	0	0								
An impacted		13	0 3 (0 0	0	0							

					N	OISE DAT	A WORKS	HEET					
Job No:	100512												
Job Name:	I-57 Walnut	Ridge to M	lissouri Stat	e Line]						
Roadway Refer	ence:	I-57 Alter	native C Co	nnector Fu	iture Cond	litions							
County:	Lawrence, F	Randolph, (Clay										
Design Year:		2040											
Year(s) To Be N	lodeled:	2018	2040										
Roadway Cross	s-Sections:		Two 12' tr	avel lanes	with 8' pa	ved shoulders	5		Note:	DHV = (ADT)(K)		
			2040	PROPOS	SED			1		DDHV = K - Perce	: (ADT)(K)(D ent of ADT o) ccuring in desi	gn hour
Operating Spee	ed:			55			1	Kfactor	8%	D - Direc	tional Distrib	oution	
Traffic Data:				YEAR	ADT	%TRUCK		CARS	MT	HT	CARS	MT	HT
				2018					3.2%	50.8%			
				2040	6,000) 54%	501	355	9	137	355	9	138
L													
Garver Rvan Mountain							8-Jan-22						
							Calculated	with TNM 2	.5				
PROJECT/CON	TRACT:	I-57 ARD	OT No. 100	512									
RUN: BARRIER DESI	GN:	INPUT F	EIGHTS	C Connec	tor			Average p	avement ty	ype shall b	e used unles	s	
ATMOSPHERIC	S:	68 deg F	⁼ , 50% RH					a State hig of a differe	ghway age ent type wit	ncy substa h approva	ntiates the u I of FHWA.	se	
Receiver													
Name	No.	#DUs	Existing LAeq1h	No Barrie LAeq1h	er	Increase of	over existing	Туре	With Barr Calculate	ier d Noise Re	eduction		
				Calculate	ed Crit'n	Calculated	d Crit'n Sub'l Inc	Impact	LAeq1h	Calculate	ed Goal	Calculated minus	
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB	
50	1	1	0	71.4	66	71.4	10	Snd Lvl	71.4	0	8	-8	
75 - R-5 85 - R-6	3	י 1	42.5 51.3	69.4 68.8	66	26.9 17.5	10	Both	69.4 68.8	0	8 8	-8	
100 - R-3	4	1	57.3	68.0	66	10.7	10	Both	68	0	8	-8	
125 - R-4 150	5 6	1 1	42.5	65.9	66	∠4.4 65.9	10		65.9	0	8	-8	
200	7	1	0	63.3	66	63.3	10		63.3	0	8	-8	
250 300	8 11	1 1	U 0	61.0 59.1	66 66	б1 59.1	10 10		61 59.1	0 0	8 8	-8 -8	
350	12	1	0	57.6	66	57.6	10		57.6	0	8	-8	
400	31 29	1	0	56.2	66 66	56.2	10		56.2	0	8 2	-8	
500	39	1	0	54.1	66	54.1	10		54.1	0	8	-8	
550	41	1	0	53.1	66	53.1	10		53.1	0	8	-8	
Dwelling Units	42	# DUs	Noise Re	oz.2	00	52.2	10		52.2	U	ð	-ŏ	
			Min dB	Avg dB	Max dB								
All Selected		1	5 ()	0	0							
All Impacted All that meet NF	R Goal		5 (0 ()	0 0	0 0							


ATTACHMENT F — ACTION ALTERNATIVES TYPICAL SECTION



This is what the typical section will look like. (2) 12' lanes, 10' outside, 6' inside shoulder, 60' median, 30' clearzone at 6:1 and 3:1 slope outside the clearzone.



I-57 typical section as of 2-8-2021