NOISE TECHNICAL REPORT

I-57 and IL 17 Interchange Reconstruction

Kankakee, Kankakee County, Illinois

SECTION (46-3)R HBK, 5HBR, 6HBR
KANKAKEE COUNTY, ILLINOIS
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GLOSSARY OF ACRONYMS

CFR	Code of Federal Regulations
CNE	Common Noise Environment
dB	Decibel
dB(A)	Decibels, A-Weighted
DHV	Design Hourly Volume
FHWA	Federal Highway Administration
I-57	Interstate 57
IDOT	Illinois Department of Transportation
IL 17	Illinois 17
Leq(h)	Equivalent Steady State Sound Level
NAC	Noise Abatement Criteria
NSA	Noise Sensitive Area
ROW	Right-of-Way
SPUI	Single Point Urban Intersection
TNM	Traffic Noise Model
TNM 2.5	FHWA Traffic Noise Model Version 2.5

1.0 INTRODUCTION

This Noise Technical Report describes the analysis and evaluation of traffic noise for the proposed reconstruction of the existing interchange at Interstate 57 (I-57) and Illinois 17 (IL 17) in the City of Kankakee, Kankakee County, Illinois. The project alignment is approximately 1.9 miles long and extends from south of the Norfolk-Southern Railway to south of Waldron Road. Proposed improvements on IL 17 are anticipated to extend from west of St. Joseph Avenue to east of Oakdale Avenue (see Exhibit A - Location Map).

1.1 Project Description

The proposed project is the replacement of the existing interchange with a Single Point Urban Interchange (SPUI). The project includes the work necessary to transition the existing I-57 alignment to accommodate a four-lane typical section, as well as the design of alignment modifications on I-57 to accommodate possible future six-lane typical sections. The typical section includes four 12-foot lanes plus a median varying from 27 feet to 40 feet and open drainage. The design year for the proposed project is 2040.

1.2 Existing Land Use

The existing land use pattern within the proposed project improvements is one of suburban development. Properties are mostly single family residential and institutional, with areas of commercial and industrial properties (see Exhibit B, Land Use/Zoning Map). Some areas are incorporated into the city and zoned, but are undeveloped or in agricultural use.

The land use adjacent to the proposed improvements along the I-57 southbound lanes consists of residential neighborhoods, as well as a pocket of commercial land use at the interchange with IL 17, a cemetery, undeveloped land, and a golf course. The area adjacent to the I-57 northbound lanes is a combination of undeveloped land, institutional (Kankakee Junior High School and Mark Twain Elementary) uses, a multi-family high rise building, and industrial uses.

Land use adjacent to IL 17 is typical of a principal arterial roadway for a city, consisting of commercial uses intermixed with office uses.

1.3 Zoning and Comprehensive Land Use Plan Designations

The area along the project corridor is a mix of mostly City of Kankakee incorporated areas and a small section of unincorporated Kankakee County. According to the online City of Kankakee Zoning Map[1], the municipal boundaries extend throughout most of the project area. A section of unincorporated Kankakee County lies in an area 0.5 mile south of IL 17 along I-57, and 0.74 mile east of I-57 along IL 17. Incorporated areas are zoned for single and multi-family residential; neighborhood, central, and service commercial; and light and heavy industrial. The City of Kankakee's 1997 Comprehensive Plan outlines potential annexation areas consisting of unincorporated parcels adjacent to the City.

The 2030 Kankakee County Comprehensive Plan[2] designates the land southwest, southeast, and northeast of the I-57/IL 17 intersection as incorporated areas. Land northeast of the intersection is designated as industrial. Extending further to the east of the intersection, which is now agricultural land, are areas designated residential.

2.0 NOISE BACKGROUND AND REGULATIONS

2.1 Noise Background

Noise is unwanted sound and is composed of different frequencies, each of which is perceived differently by the human ear. Human hearing is not as sensitive to low and very high frequencies. To compensate for low-end and high-end frequency insensitivity and render noise levels readings more meaningful, an "A-weighting" scale is used to approximate the response of the human ear. The A-weighted decibel (dB(A)) unit measures perceptible sound energy and factors out the fringe frequencies.

Typically, an observer can barely perceive an increase of sound level of 3 dB. Research has indicated that a difference of 10 dB is perceived half as loud, or twice as loud, to an average listener. In addition, the listener typically has difficulty determining if the sound had changed at all when the difference was only 1 dB, and the two observations were separated by an interlude of a few seconds of quiet.

The Federal Highway Administration (FHWA) Traffic Noise Model (TNM®) Version 2.5 (TNM 2.5) represents noise levels as $L_{eq}(h)$. L_{eq} is defined as the equivalent steady-state sound level that, in a stated period, contains the same acoustic energy as the time-varying sound level during the same time period. $L_{eq}(h)$ is the hourly value of L_{eq}, and is based on the more commonly known dB and dB(A) units. Decibels are logarithmic units as opposed to the more common linear units. Consequently, a 1 dB increase in sound energy results in a much larger increase in magnitude than normally expected. For instance, an increase in 3 dB from a noise source results in a doubling of sound energy.

2.2 Federal Regulations

This noise analysis was conducted in accordance with Title 23, Code of Federal Regulations (CFR), Part 772, U.S. Department of Transportation, entitled *Procedures for Abatement of Highway Traffic Noise and Construction Noise* [3] and the Illinois Department of Transportation's (IDOT) Highway Traffic Noise Assessment Manual [4]. The TNM 2.5 traffic noise model was used to assess the current (construction year 2020) traffic noise along the I-57/IL 17 corridor and predict the noise levels for the future (2040) No-Build and Build Alternative conditions. Detailed TNM 2.5 model input information and results from this noise assessment are presented in the following sections.

The FHWA policies and procedures, as promulgated in 23 CFR 772, served as the procedural guidelines for this analysis. Noise Abatement Criteria (NAC) designated in 23 CFR 772 are based on the type of land use and activities performed at the respective sites. The FHWA defines seven noise activity categories (see Table 1) based on land uses and existing sound levels. Each land use type has its own NAC. Traffic noise impacts occur when traffic noise levels approach, meet, or exceed the NAC, or if there are substantial increases in traffic noise over existing conditions, independent of the NAC.

Table 1 - FHWA Noise Criteria Hourly "A-Weighted" Sound Level - Decibels (dB(A))

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

[1]Includes undeveloped lands permitted for this activity category.
Source: FHWA, 23 CFR, Part 772 [3]

It should be noted that the NAC are not used as goals for noise attenuation design criteria or design targets. Instead, the NAC are noise impact thresholds for considering abatement when they are approached, met, or exceeded. Noise abatement measures are required to be considered as part of the project if impacts are identified.

2.3 State Policy

The FHWA has deferred to the State agencies to define the noise level that "approaches" the NAC and to define a substantial increase in traffic noise levels. The IDOT Highway Traffic Noise Assessment Manual [4] defines noise impacts as follows:

- Design-year (typically 20 years into the future) traffic noise levels are predicted to approach, meet, or exceed the NAC, with approach defined as 1 dB(A) less than the NAC; or
- Design-year (typically 20 years into the future) traffic noise levels are predicted to substantially increase (15 dB(A) or greater) over the existing traffic generated noise levels.

Based on the approach definition determined by IDOT, Table 2 provides the noise levels at which a traffic noise impact would occur and would require consideration of traffic noise abatement for the design year.

Table 2 - IDOT Traffic Noise Levels Warranting Abatement Evaluation

Activity Category	$L_{eq}(h)$	Description of Activity Category
A	56 dB(A) (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need, and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	66 dB(A) (Exterior)	Residential.
C	66 dB(A) (Exterior)	Active sports 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 structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	51 dB(A) (Interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio stations, recording studios, schools, and television studios.
E	71 dB(A) (Exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D.
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.

Source: IDOT Highway Traffic Noise Assessment Manual [4]

3.0 NOISE RECEPTOR SELECTION

Receptor locations have been identified as any land use (owner-occupied, rented, or leased) where frequent exterior human use occurs and where a lowered noise level would be of benefit. Common Noise Environments (CNEs) are areas that consist of a group of receptors with the following characteristics:

- Similar land use (i.e., all single family residential, etc.)
- Similar distance to roadway
- Same basic topography
- Similar traffic characteristics (speed, volume, composition)

Land uses within 500 feet of the edges of the project area were reviewed for use as CNEs. This distance of 500 feet is based on FHWA's 2010 performance evaluation of the TNM. For modeling, a CNE is defined as a location where noise levels were calculated using TNM 2.5. For this noise analysis, 18 CNEs were selected based on I-57/IL 17 roadway section traffic volumes, distance from the Build Alternative, and land use characteristics. As mentioned above, each modeled CNE represents an area, group, or cluster of similar receptors.

A receptor is a specific location within each CNE for which the model will calculate existing and projected noise levels. A total of 270 noise sensitive receptors were identified in the project area within the 18 CNEs. These were evaluated to determine the Existing Condition (represents current

geometries, features, and available 2020 traffic data), Design Year (2040), and the No-Build (2040) scenarios. The location of CNEs and selected individual receptor sites are shown in Exhibits C-1 through C-5.

4.0 NOISE MONITORING AND MODEL COMPARISON

4.1 Purpose

The assessment of traffic noise impacts requires the use of predictive models to quantify the likely noise levels for a variety of scenarios. To use numerical modeling to predict traffic noise levels, it must first be demonstrated that the use of approved noise prediction methods satisfactorily estimate the noise levels. This is accomplished by comparing field measured values to predicted values. The measure of satisfactory comparison is if the measured and predicted values differ by no more than 3 dB(A). A favorable comparison indicates the noise source is predominantly from highways (at least at the time of the measurements), and the model results represent valid predictions suitable for use in assessing impacts. This section describes the field monitoring and model validation conducted for the project.

4.2 Field Noise Measurement Methodology

The current approved model for prediction of traffic noise, TNM 2.5, was used for the comparison to the measured data and for all other modeling in the noise study. Prior to using the model, the official TNM 2.5 test case was run and compared to the FHWA certified output. The results duplicated the published output.

Per IDOT Noise Policy guidance, 25 to 50 percent of representative receptors must be field monitored for model validation. Field measurements for model validation were collected at six locations within the study area. These locations are shown on Exhibits C-1 through C-5. A Quest 2900 sound level meter was used to measure and record sound levels at closely spaced (1 second) intervals over a period of 15 minutes at each location. The meter was calibrated with the manufacturer-supplied standard before use, and was also checked before each sound level measurement session. No adjustments to the calibration were required during any of the monitoring. Noise monitoring was conducted between the hours of 8 am to 12 pm, and 1 pm to 6 pm, in an attempt to monitor the peak-hour noise conditions.

The microphone was protected by a wind screen and was fixed to a tripod approximately five feet above the ground surface. Determinations were also made of representative speeds and the mix of vehicle types.

Meteorological data, such as wind, temperature, and general weather conditions was recorded during each field measuring event at each location. Noise sources other than traffic noise were also noted. Winds were observed to be 8 to 12 miles per hour and no precipitation occurred during the noise level monitoring periods (pavements were dry).

4.3 Results

Measured and predicted noise levels are shown in Table 3. TNM model output files for model validation are presented in Exhibit F. The difference in the measured and predicted value noise levels fell within 3 dB(A) at all validation sites except for Location 6. The measured noise values for Location 6 were higher than the modeled value due to a train horn that occurred during the measuring interval. However, the remaining events were representative of modeled conditions,

and therefore, the TNM 2.5 model is a valid method for predicting highway traffic noise within the acceptable +/- 3 dB(A) range. The measurement locations were used for model validation purposes only and do not represent areas of frequent human use. Consequently, the locations used for validation are not used for the evaluation of impacts.

Table 3 - Model Validation Summary

Location[1]	Distance from Existing I-57/IL 17 Edge of Pavement (Feet)	General Propagation Path Characteristics	2013 Measured Sound Levels / 2013 TNM 2.5 Model Validation Sound Level (dB(A))	Variation (dB(A))
1	63	No Obstructions, Grass/Pavement	70 / 72	2
2	48	No Obstructions, Grass/Pavement	75 / 74	1
3	28	No Obstructions, Grass/Pavement	68 / 68	0
4	46	No Obstructions, Grass/Pavement	69 / 69	0
5	53	No Obstructions, Grass/Pavement	71 / 73	2
6	60	No Obstructions, Grass/Pavement	76 / 72	4

[1]See Exhibits C-1 through C-5 for model validation locations.

5.0 NOISE ANALYSIS METHODOLOGY

Traffic noise levels were predicted with FHWA's TNM 2.5, the current approved model for predicting and analyzing traffic noise. Three scenarios (Existing Condition, No-Build Alternative, and the Build Alternative) were analyzed. The Existing Condition represents current geometries, features, and traffic (based on available 2020 traffic data) along the project area. The No-Build scenario represents the traffic noise conditions likely to exist in the future (2040) if no highway modifications are instituted. The final scenario is the prediction of traffic noise levels if the proposed action is constructed with projected traffic volumes (2040). Inputs into the TNM 2.5 include representations of roadway geometry, traffic volume and composition, speeds and controls, and receptor locations.

5.1 Roadway Geometry and Physical Features

Roadway geometry (year of construction and proposed) was obtained from project geometric plans. Ground zones, building location, and elevation data were obtained from project specific mapping, aerial photography, and field reconnaissance.

5.2 Traffic Volume, Composition, and Speeds

Traffic information includes vehicle type, volume of flow, and control devices such as signals and speed limits. Traffic data used for the assessment of existing traffic conditions (2020) and the project future (2040) noise exposure, including peak hour volumes, were derived from data provided by Lochmueller Group, Inc. from IDOT. Vehicle mix was based on percentages provided by IDOT and field reconnaissance. Traffic control devices generally consist of signalization, stop signals, speed limits, etc. Traffic speed was the speed limit that is posted on IL 17 and I-57 at various points throughout the study corridor.

The IDOT Highway Traffic Noise Assessment Manual states "the objective of the traffic noise analysis is to predict the worst hour traffic noise conditions." This is typically represented by design hourly volume (DHV). Table 4 illustrates the DHV and the composition (cars, medium trucks, and heavy trucks) used in the TNM 2.5 noise model.

The roadways used in the TNM models include:

- IL 17 West of I-57
- IL 17 East of I-57 / West of Eastridge Avenue
- IL 17 East of Eastridge Avenue
- I-57 North of IL 17
- I-57 South of IL 17
- I-57 Off Ramps
- I-57 On Ramps

Table 4 - Traffic Design Hourly Volume, Composition, and Speed Limit

	Existing (2020) DHV				Projected (2040) DHV			
Roadway Segment:	**IL 17 West of I-57**							
DHV	**EB**		**WB**		**EB**		**WB**	
	Veh /hr	**Speed, mph**	**Veh/ hr**	**Speed, mph**	**Veh/ hr**	**Speed, mph**	**Veh/ hr**	**Speed, mph**
Autos	715	30	671	30	853	30	797	30
Medium Trucks	48	30	45	30	57	30	53	30
Heavy Trucks	32	30	30	30	38	30	35	30
Roadway Segment:	**IL 17 East of I-57 / West of Eastridge Avenue**							
DHV	**EB**		**WB**		**EB**		**WB**	
	Veh /hr	**Speed, mph**	**Veh/ hr**	**Speed, mph**	**Veh/ hr**	**Speed, mph**	**Veh/ hr**	**Speed, mph**
Autos	558	30	536	30	771	30	741	30
Medium Trucks	44	30	42	30	61	30	58	30
Heavy Trucks	25	30	24	30	35	30	33	30

	Existing (2020) DHV				Projected (2040) DHV			
Roadway Segment:	**IL 17 East of Eastridge Avenue**							
DHV	**EB**		**WB**		**EB**		**WB**	
	Veh /hr	**Speed, mph**	**Veh/ hr**	**Speed, mph**	**Veh/ hr**	**Speed, mph**	**Veh/ hr**	**Speed, mph**
Autos	407	40	335	40	486	40	401	40
Medium Trucks	25	40	21	40	30	40	25	40
Heavy Trucks	70	40	58	40	84	40	69	40
Roadway Segment:	**I-57 North of IL 17**							
DHV	**NB**		**SB**		**NB**		**SB**	
	Veh /hr	**Speed, mph**	**Veh/ hr**	**Speed, mph**	**Veh/ hr**	**Speed, mph**	**Veh/ hr**	**Speed, mph**
Autos	931	70	923	70	1231	70	1220	70
Medium Trucks	55	70	53	70	72	70	71	70
Heavy Trucks	383	70	361	70	507	70	477	70
Roadway Segment:	**I-57 South of IL 17**							
DHV	**NB**		**SB**		**NB**		**SB**	
	Veh /hr	**Speed, mph**	**Veh/ hr**	**Speed, mph**	**Veh/ hr**	**Speed, mph**	**Veh/ hr**	**Speed, mph**
Autos	862	70	833	70	1140	70	1090	70
Medium Trucks	49	70	34	70	64	70	45	70
Heavy Trucks	304	70	274	70	402	70	358	70
Roadway Segment:	**I-57 Off Ramps**							
DHV	**NB**		**SB**		**NB**		**SB**	
	Veh /hr	**Speed, mph**	**Veh/ hr**	**Speed, mph**	**Veh/ hr**	**Speed, mph**	**Veh/ hr**	**Speed, mph**
Autos	104	50	271	35	148	50	359	50
Medium Trucks	17	50	22	35	24	50	29	50
Heavy Trucks	30	50	22	35	43	50	29	50
Roadway Segment:	**I-57 On Ramps**							
DHV	**NB**		**SB**		**NB**		**SB**	
	Veh /hr	**Speed, mph**	**Veh/ hr**	**Speed, mph**	**Veh/ hr**	**Speed, mph**	**Veh/ hr**	**Speed, mph**
Autos	242	20	158	15	345	50	206	50
Medium Trucks	33	20	21	15	47	50	27	50
Heavy Trucks	27	20	11	15	39	50	15	50

Source: IDOT

5.3 Receptors

A total of 19 modeled representative receptor locations were identified in the project area for evaluation. These locations represented 267 receptor locations equating to 546 receptor units within 19 CNEs. Representative receptor locations were based on review of aerial photography, topographic mapping, and field observations. Receptor locations for dwelling units were chosen to represent a likely location of outdoor activity. In order to generate conservative values and be more protective of the noise sensitive receptors, receptor locations were placed at street-facing outdoor locations, rather than backyard areas where most outdoor activity is usually assumed to occur.

Receptor position is defined by coordinates. The coordinates used in the model were obtained from the plan sheets for the project; thus, assuring the coordinate values used in the noise modeling are consistent with other project uses. Receptors are shown on Exhibits C-1 through C-5 and are listed on Table 5.

5.4 Receptor Distances and Elevation

The representative noise sensitive receptors at locations around the IL 17 and I-57 interchange and the surrounding roadways range from 619 to 666 feet above sea level. They are at-grade, or below, the existing and proposed roadway elevations. Table 5 includes the distances of each representative noise sensitive receptor from the roadway edge-of-pavement for each scenario. Representative noise sensitive receptors for the Existing and No-Build scenarios range from 76 to 545 feet from the existing modeled roadway's edge-of-pavement. For the Build Alternative scenario, representative noise sensitive receptors are located at distances ranging from 68 to 694 feet from the proposed modeled roadway's edge-of-pavement. This data does not include the one residence anticipated to be relocated as part of the proposed improvements.

6.0 NOISE MODEL RESULTS

As previously described, existing noise levels for sensitive receptors were determined by modeling. These values were used for comparison to models of proposed changes to determine if predicted noise levels created by the Build Alternative would approach, meet, or exceed the NAC. The TNM 2.5 model output files for each scenario are presented in Exhibit F. Model results are summarized in Table 5 below.

6.1 Existing Condition

The Existing TNM noise model results for each representative noise receptors were compared to the NAC (Table 5). Existing noise levels range from 57 dB(A) at receptors SFR 4 to 74 dB(A) at SFR 5.

6.2 No-Build Alternative

This scenario uses existing roadway geometry with projected traffic increases (20-year projection). Comparison of the Existing to the No-Build conditions indicates that the predicted noise levels increase by 1 to 2 dB(A) along the project corridor under this scenario.

6.3 Build Alternative

The Build (2040) TNM 2.5 noise model results for each representative noise receptors were compared to the NAC (Table 5). Projected Build 2040 exterior noise levels range from 59 dB(A) (SFR 4) to 77 dB(A) (SFR 5); this does not include the residence anticipated to be relocated as part of this project. CNEs A, B, E, F, G, and M through R (representing 469 receptors) will meet or exceed the NAC under this scenario. None of the receptors will experience a substantial increase of 15 dB(A) or greater.

Table 5 - Noise Impact Summary

Common Noise Environment ID	Representative Receptor ID (TNM ID)	IDOT Approach Criterion dB(A)	No. of Receptors Represented	Existing		2040 No-Build Alternative	2040 Build Alternative			
				Dist. to I-57 / IL 17 Nearest Edge of Pavement (ft.)	Noise Level dB(A)	Noise Level dB(A)	Dist. to I-57 / IL 17 Nearest Edge of Pavement (ft.)	Noise Level dB(A)	Increase/ (decrease)	Impact (Yes/No)[1]
CNE A	SFR 1 (A-17)	66	127	112	72	74	131	75	3	**Yes**
CNE B	SFR 2 (B-8)	66	8	146	66	68	253	68	2	**Yes**
CNE C	SFR 3 (C-1)	66	6	441	62	63	556	64	2	No
CNE D	SFR 4 (D-1)	66	3	436	57	58	436	59	2	No
CNE E	MFR 3 (E-1)	66	56	76	69	70	69	68	(1)	**Yes**
CNE F	MFR 1 (F-5)	66	90	315	70	71	245	73	3	**Yes**
CNE G	MFR 2 (G-1)	66	132	125	67	68	125	67	0	**Yes**
CNE H	Playground 2 (H-3)	66	24	545	68	69	694	70	2	**Yes**
CNE I	SFR 11 (I-1)	66	1	79	65	66	N/A	65	0	Relocated*
CNE J	Playground 3 (J-1)	66	1	220	60	61	205	61	1	No
CNE K	SFR 10 (K-7)	66	7	101	65	66	90	65	0	No
CNE L	SFR 8 (L-14)	66	34	88	65	66	88	66	1	No
CNE M	SFR 9 (M-9)	66	13	256	67	68	240	69	2	**Yes**
CNE N	SFR 5 (N-29)	66	29	81	74	76	68	77	3	**Yes**
CNE O	Playground 1 (O-1)	66	1	123	73	74	110	75	2	**Yes**
CNE P	SFR 7 (P-3)	66	3	311	66	67	302	68	2	**Yes**
CNE Q	SFR 6 (Q-1)	66	9	94	73	74	94	74	1	**Yes**
CNE R	Cemetery 1 (R-1)	66	1	101	66	67	90	66	0	**Yes**
CNE S	Church (S-1)	66	1	185	62	63	152	60	(2)	No

[1] Noise Level under Build Alternative meets or exceeds approach criterion of 66 dB(A).
SFR=Single Family Residential, MFR=Multi-Family Residential
N/A = Not Applicable because the receptor is displaced in the Build Condition.
*Anticipated to be relocated as part of the proposed improvements.

7.0 ABATEMENT EVALUATION

Based on the modeling results summarized in Section 6, the NAC for build noise levels were met or exceeded at 12 of the 19 receptors evaluated. Per IDOT Noise Policy [5], noise abatement must be considered when traffic noise impacts are identified. Potential noise abatement measures include traffic management measures, alteration of horizontal and vertical alignments, acquisition of property rights for construction of noise barriers, acquisition of undeveloped land for buffer zones, and the construction of noise barriers. Construction of noise barriers is the most commonly used noise abatement measure. Due to the project conditions along the corridor, noise barriers are the most viable option.

Noise barriers are usually either noise walls or earth berms. Landscaped berms are the preferred abatement solution because of the relatively low cost and aesthetic nature of berms; however, available right-of-way (ROW) along the study area precludes the use of berms for noise abatement.

Noise walls placed adjacent to the roadway will attenuate traffic-related noise and are the most practical and commonly used measure to abate noise impacts. To be effective, a noise barrier must break the line of sight between the highest point of a noise source and a receiver. It also must be long enough to prevent noise from passing around the ends, having no openings such as driveways, and be dense enough so the noise would not be transmitted through it.

7.1 Noise Abatement Criterion

IDOT policy identifies the following criteria that must be met before a noise barrier shall be recommended for implementation.

Feasibility:
Feasibility generally addresses the engineering aspects of implementing a noise barrier such as consideration for safety, drainage, and utilities. If these factors cannot be accommodated in providing the minimum noise reduction, noise abatement will be deemed not feasible. In order to be considered acoustically feasible, a noise abatement measure must also achieve the traffic noise reduction feasibility criterion of at least 5 dB(A) for at least two impacted receptors.

Reasonableness:
The following three reasonableness evaluation criteria must be met in order for noise abatement to be considered reasonable:

1) Noise Reduction Design Goal - Noise abatement measures must achieve at least an 8 dB(A) traffic noise reduction for at least one benefited receptor. In order to be considered benefited, a receptor must have a noise reduction of at least 5 dB(A). Both impacted and non-impacted receptors can be considered benefited.
2) Economic Reasonability - The overall cost of the noise barrier must not exceed the allowable cost per benefited receptor comparison. The base value for the allowable noise abatement cost is $30,000 per benefited receptor.

Other reasonableness factors may be considered to potentially adjust the allowable noise abatement base value cost of $30,000 per benefited receptor (Table 6). These factors include:

- The absolute noise level of the benefited receptors in the design year build scenario before noise abatement.

- The incremental increase in noise level between the existing noise level at the benefited receptor and the predicted build noise level before noise abatement.
- The date of development compared to the construction date of the highway.

If the estimated build cost of noise abatement per benefited receptor is less than the adjusted allowable noise abatement cost per benefited receptor, then the noise abatement measure achieves the cost-effective reasonableness criterion.

Table 6 - Factors for Adjusting the Allowable Noise Abatement Cost per Benefited Receptor Base Value of $30,000

Absolute Noise Level Consideration	
Predicted Build Noise Level Before Noise Abatement	**Dollars Added to Base Value Cost per Benefited Receptor**
Less than 70 dB(A)	$0
70 to 74 dB(A)	$1,000
75 to 79 dB(A)	$2,500
80 dB(A) or greater	$5,000
Increase in Noise Level Consideration	
Incremental Increase in Noise Level Between the Existing Noise Level and the Predicted Build Noise Level Before Noise Abatement	**Dollars Added to Base Value Cost per Benefited Receptor**
Less than 5 dB(A)	$0
5 to 9 dB(A)	$1,000
10 to 14 dB(A)	$2,500
15 dB(A) or greater	$5,000
New Alignment / Construction Date Consideration	
Project is on New Alignment OR the Receptor Existed Prior to the Original Construction of the Highway	**Dollars Added to Base Value Cost per Benefited Receptor**
No for both	$0
Yes for either	$5,000

3) Viewpoints of Benefited Receptors - Viewpoints of benefited receptors must be considered for noise abatement measures that are determined to be feasible and achieve the first two reasonableness factors. The goal is to obtain responses from at least one-third (33%) of the potential number of votes for each noise abatement measure. If responses from one-third of the potential votes cast are not received after the first attempt, a second attempt shall be made. The voting result can be determined after viewpoints from at least one-third of the potential votes have been received, or after two attempts have been made to obtain the responses. If after the second attempt there are still less than one-third of the potential votes received, the voting result will be determined based on the responses received. If no votes are received, the barrier will not be recommended for construction.

For noise abatement to be considered reasonable, more than 50 percent of the responses (weighted totals) must be in favor of the noise abatement measure. A response from front row benefited receptors (receptors or properties adjacent to a proposed barrier), the status of which will be reviewed by IDOT, will be counted and weighted compared to non-front row receptor responses as shown in Table 7.

Table 7 - Votes per Benefited Receptor

Receptor Location	Rental Property		Owner Occupied Property: Number of Votes Per Unit
	Owner: Number of Votes Per Unit	Renter: Number of Votes Per Unit	
Front Row	2	2	4
Non-Front Row	1	1	2

The viewpoint solicitation process has not been completed at this time and will be the final element needed to determine whether a noise wall may meet reasonableness.

7.2 Barrier Assessments

TNM 2.5 was used to perform the noise wall feasibility and reasonability analysis for impacted receptors along the project corridor. A barrier cost of $30 per square foot of wall was used to estimate the cost to construct the barrier. Additionally, locations with a reduction of at least 5 dB(A) were considered benefited receptors and were counted as one unit when evaluating cost per benefited receptor. The results of the barrier assessments are discussed below and summarized in Tables 8 and 9. The locations of the potential barriers are shown in Exhibits D-1 through D-4.

Barriers A1, A2

A TNM 2.5 barrier analysis (identified as Barriers A1 and A2 on Exhibits D-1 and D-2) was performed for CNE A. This CNE is located northwest of the I-57 / IL 17 interchange, along the southbound traffic lanes of I-57, and consists of 127 single family homes. Consideration of the three reasonableness adjustment factors result in a potential maximum allowable noise abatement cost of $30,500 per benefited receptor. This determination is based upon the average adjusted allowable cost per receptor due to the absolute noise level consideration.

Feasible:

Acoustically Feasible: Yes, at least two impacted receptors reduced by at least 5 dB(A).
Engineering Feasibility: Drainage from the backyards of residences within CNE A will need to be accommodated by providing small drainage holes along sections of the base of Barrier Wall A2. Due to the ditch at the ROW limits, Barrier Wall A2 may need additional ROW west of the ditch. Otherwise, it could be relocated to the east side of the ditch, closer to the road mainline. Barrier Wall A1 would be located on the east side of the ditch due to roadway design elevation changes.

Reasonable:

Noise Reduction Design Goal Achieved: Yes, at least one benefited receptor reduced by at least 8 dB(A).
Economically Reasonable: Yes, cost per benefited receptor <= $30,500

Viewpoints of Benefited Receptors: To be solicited as part of the public involvement process in Phase II.

Likely to be Implemented:

Yes.

Barrier A/B/E

A TNM 2.5 barrier analysis (identified as Barrier A/B/E on Exhibits D-1 and D-2) was performed for CNEs A, B, and E. These CNEs are located north of the I-57/IL 17 interchange, along the southbound traffic lanes of I-57, and consists 135 single family homes and one two-story, 56-unit multi-family building with a common area (56 receptors). Consideration of the three reasonableness adjustment factors result in a potential maximum allowable noise abatement cost of $31,000 per benefited receptor. This determination is based upon the average adjusted allowable cost per receptor due to the absolute noise level consideration.

Feasible:

Acoustically Feasible: Yes, at least two impacted receptors reduced by at least 5 dB(A).
Engineering Feasibility: Drainage from the backyards of residences within CNE A will need to be accommodated by providing small drainage holes along sections of the base of the Barrier Wall A/B/E. Due to the ditch at the ROW limits, Barrier Wall A/B/E may need additional ROW.

Reasonable:

Noise Reduction Design Goal Achieved: Yes, at least one benefited receptor reduced by at least 8 dB(A).
Economically Reasonable: Yes, cost per benefited receptor <=$31,000.
Viewpoints of Benefited Receptors: To be solicited as part of the public involvement process in Phase II.

Likely to be Implemented:

Yes.

Barrier F

A TNM 2.5 barrier analysis (identified as Barrier F on Exhibits D-1, D-2, and D-3) was performed for CNE F. This CNE is located northeast of the I-57/IL 17 interchange, along the northbound traffic lanes of I-57, and consists of six two-story, multi-family buildings with 90 units with access to a common area (90 receptors). Consideration of the three reasonableness adjustment factors result in a potential maximum allowable noise abatement cost of $31,000 per benefited receptor. This determination is based upon the average adjusted allowable cost per receptor due to the absolute noise level consideration.

Feasible:

Acoustically Feasible: Yes, at least two impacted receptors reduced by at least 5 dB(A).
Engineering Feasibility: Wall would be constructed on top of the concrete barrier along the entrance ramp to I-57 north.

Reasonable:

Noise Reduction Design Goal Achieved: Yes, at least one benefited receptor reduced by at least 8 dB(A).

Economically Reasonable: Yes, cost per benefited receptor <=$31,000.
Viewpoints of Benefited Receptors: To be solicited as part of the public involvement process in Phase II.

Likely to be Implemented:
Yes.

Barrier G

A TNM 2.5 barrier analysis (identified as Barrier G on Exhibits D-1 and D-3) was performed for CNE G. This CNE is located southeast of the I-57/IL 17 interchange along the eastbound traffic lanes of IL 17 and consists of a 132-unit multi-family building with a common area (132 receptors). Consideration of the three reasonableness adjustment factors result in a potential maximum allowable noise abatement cost of $30,000 per benefited receptor. This determination is based upon no adjustment factors added to the base value cost per benefited receptor.

Feasible:
Acoustically Feasible: Yes, at least two impacted receptors reduced by at least 5 dB(A).
Engineering Feasibility: To be effective and due to ROW restrictions, barriers would be placed adjacent to road shoulder and I-57 bridge shoulder, potentially decreasing road safety.

Reasonable:
Noise Reduction Design Goal Achieved: No, benefited receptors not reduced by at least 8 dB(A).
Economically Reasonable: Yes, cost per benefited receptor <=$30,000.

Likely to be Implemented:
No.

Barrier H

A TNM 2.5 barrier analysis (identified as Barrier H on Exhibits D-1 and D-3) was performed for CNE H. This CNE is located southeast of the I-57/IL 17 interchange, along the northbound traffic lanes of I-57, and consists of a school playground (24 receptors). Consideration of the three reasonableness adjustment factors result in a potential maximum allowable noise abatement cost of $31,000 per benefited receptor. This determination is based upon the average adjusted allowable cost per receptor due to the absolute noise level consideration.

Feasible:
Acoustically Feasible: Yes, at least two impacted receptors reduced by at least 5 dB(A).
Engineering Feasibility: Drainage from the fields within CNE H may need to be accommodated by providing small drainage holes along sections of the base of Barrier Wall H.

Reasonable:
Noise Reduction Design Goal Achieved: No, benefited receptors not reduced by at least 8 dB(A).
Economically Reasonable: Yes, cost per benefited receptor <=$31,000.

Likely to be Implemented:

No.

Barriers M, N

A TNM 2.5 barrier analysis (identified as Barriers M, N on Exhibits D-1 and D-4) was performed for CNEs M and N. These CNEs are located southwest of the I-57/IL 17 interchange, along the southbound traffic lanes of I-57, and consist of 42 single family homes. Consideration of the three reasonableness adjustment factors result in a potential maximum allowable noise abatement cost of $31,000 per benefited receptor. This determination is based upon the average adjusted allowable cost per receptor due to the absolute noise level consideration.

Feasible:

Acoustically Feasible: Yes, at least two impacted receptors reduced by at least 5 dB(A).
Engineering Feasibility: Barrier N would be placed close to road due to ROW and drainage issues, potentially decreasing road safety.

Reasonable:

Noise Reduction Design Goal Achieved: Yes, at least one benefited receptor reduced by at least 8 dB(A).
Economically Reasonable: Yes, cost per benefited receptor <=$31,000.
Viewpoints of Benefited Receptors: To be solicited as part of the public involvement process in Phase II.

Likely to be Implemented:

Yes.

Barrier N

A TNM 2.5 barrier analysis (identified as Barrier N on Exhibits D-1 and D-4) was performed for CNE N. This CNE is located southwest of the I-57/IL 17 interchange, along the southbound traffic lanes of I-57, and consist of 29 single family homes. Consideration of the three reasonableness adjustment factors result in a potential maximum allowable noise abatement cost of $31,500 per benefited receptor. This determination is based upon the average adjusted allowable cost per receptor due to the absolute noise level consideration.

Feasible:

Acoustically Feasible: Yes, at least two impacted receptors reduced by at least 5 dB(A).
Engineering Feasibility: Barrier would be placed close to road due to ROW and drainage issues, potentially decreasing road safety.

Reasonable:

Noise Reduction Design Goal Achieved: Yes, at least one benefited receptor reduced by at least 8 dB(A).
Economically Reasonable: Yes, cost per benefited receptor <=$31,500.
Viewpoints of Benefited Receptors: To be solicited as part of the public involvement process in Phase II.

Likely to be Implemented:

Yes.

Barrier O/P/Q

A TNM 2.5 barrier analysis (identified as Barrier O/P/Q on Exhibits D-1 and D-4) was performed for CNEs O, P, and Q. These CNEs are located southeast of the I-57/IL 17 interchange, along the northbound traffic lanes of I-57, and consists of 12 single family homes and one church playground. Consideration of the three reasonableness adjustment factors result in a potential maximum allowable noise abatement cost of $30,500 per benefited receptor. This determination is based upon the average adjusted allowable cost per receptor due to the absolute noise level consideration.

Feasible:

Acoustically Feasible: Yes, at least two impacted receptors reduced by at least 5 dB(A).
Engineering Feasibility: Barrier would be placed close to road due to ROW and drainage issues, potentially decreasing road safety.

Reasonable:

Noise Reduction Design Goal Achieved: Yes, at least one benefited receptor reduced by at least 8 dB(A).
Economically Reasonable: No, cost per benefited receptor >= $30,500.

Likely to be Implemented:

No.

Barrier O/P/Q – Ext.

A TNM 2.5 barrier analysis (identified as Barrier O/P/Q Ext. on Exhibits D-1 and D-4) was performed for CNEs O, P, and Q and extending south to the end of the residential area, beyond the project limits, which is a logical terminus for the noise barrier. These CNEs are located southeast of the I-57/IL 17 interchange, along the northbound traffic lanes of I-57, and consists of 26 single family homes and one church playground. Consideration of the three reasonableness adjustment factors result in a potential maximum allowable noise abatement cost of $30,500 per benefited receptor. This determination is based upon the average adjusted allowable cost per receptor due to the absolute noise level consideration.

Feasible:

Acoustically Feasible: Yes, at least two impacted receptors reduced by at least 5 dB(A).
Engineering Feasibility: Barrier would be placed close to road due to ROW and drainage issues, potentially decreasing road safety.

Reasonable:

Noise Reduction Design Goal Achieved: Yes, at least one benefited receptor reduced by at least 8 dB(A).
Economically Reasonable: No, cost per benefited receptor >=$30,500.

Likely to be Implemented:

No.

Barrier R

A TNM 2.5 barrier analysis (identified as Barrier R on Exhibits D-1 and D-2) was performed for CNE R. This CNE is located southwest of the I-57/IL 17 interchange, along the southbound traffic

lanes of I-57, and consists of a cemetery (1 receptor). Consideration of the three reasonableness adjustment factors result in a potential maximum allowable noise abatement cost of $30,000 per benefited receptor. This determination is based upon no adjustment factors added to the base value cost per benefited receptor.

Feasible:

Acoustically Feasible: No, no impacted receptors reduced by at least 5 dB(A).
Engineering Feasibility: Wall would potentially reduce pedestrian sidewalk area.

Reasonable:

Noise Reduction Design Goal Achieved: No, no benefited receptors.
Economically Reasonable: N/A. No benefitted receptors.

Likely to be Implemented:

No.

Table 8 - Benefited Receptors by CNE

Barrier ID	CNE	Description of Receptors	Benefited Receptors (Impacted and non-impacted receptors reduced by at Least 5 dB(A))	Total Receptors
Barriers A1, A2	A	SFR	104	127
Barriers A/B/E	A	SFR	56	127
	B	SFR	0	8
	E	MFR	0	56
Barrier F	F	MFR	35	90
Barrier G	G	MFR	132	132
Barrier H	H	School Soccer Field	18	24
Barriers M, N	M	SFR	13	13
	N	SFR	26	29
Barrier N	N	SFR	20	29
Barriers O/P/Q	O	Playground	0	1
	P	SFR	0	3
	Q	SFR	9	9
Barriers O/P/Q Ext.	O	Playground	1	1
	P	SFR	3	3
	Q Ext.	SFR	19	23
Barrier R	R	Cemetery	0	1

SFR=Single Family Residential, MFR=Multi-Family Residential

Table 9 - Barrier Analysis

Barrier ID	Receptor	Avg. Wall Height (ft)	Wall Length (ft)	Noise Reduction L_{eq} (dB(A))	Cost	Benefited Receptors	Cost per Benefited Receptor	Adjusted Allowable Cost per Benefited Receptor	Recommendation
Barriers A1, A2	CNE A	16	3,715	0 - 11	$1,801,020	104	$17,318	$30,500	*Feasible*: Five 5 dB(A) noise reduction for at least two impacted receptors. *Reasonable*: Eight (8) dB(A) noise reduction design goal obtained. *Economically reasonable*: ≤$30,500
Barriers A/B/E	CNEs A, B, E	14	3,520	0 - 10	$1,477,440	56	$26,383	$31,000	*Feasible*: Five 5 dB(A) noise reduction for at least two impacted receptors. *Reasonable*: Eight (8) dB(A) noise reduction design goal obtained. *Economically reasonable*: ≤$31,000
Barrier F	CNE F	18	800	2 - 8	$432,690	35	$12,363	$31,000	*Feasible*: Five 5 dB(A) noise reduction for at least two impacted receptors. *Reasonable*: Eight (8) dB(A) noise reduction design goal obtained. *Economically reasonable*: ≤$31,000
Barrier G	CNE G	28	670	7	$ 562,800	132	$4,264	$30,000	*Not reasonable*: Eight (8) dB(A) noise reduction design goal not obtained.

Barrier ID	Receptor	Avg. Wall Height (ft)	Wall Length (ft)	Noise Reduction L_{eq} (dB(A))	Cost	Benefited Receptors	Cost per Benefited Receptor	Adjusted Allowable Cost per Benefited Receptor	Recommendation
Barrier H		28	650	0 - 7	$546,000	18	$30,333	$31,000	*Not reasonable*: Eight (8) dB(A) noise reduction design goal not obtained.
Barriers M/N	CNEs M and N	20.5	1,905	2 - 14	$1,120,020	39	$28,718	$31,000	*Feasible*: Five 5 dB(A) noise reduction for at least two impacted receptors. *Reasonable*: Eight (8) dB(A) noise reduction design goal obtained. *Economically reasonable*: ≤$31,000.
Barrier N	CNE N	18	1,170	1 - 12	$625,980	20	$31,299	$31,500	*Feasible*: Five 5 dB(A) noise reduction for at least two impacted receptors. *Reasonable*: Eight (8) dB(A) noise reduction design goal obtained. *Economically reasonable*: ≤$31,500
Barrier O/P/Q	CNEs O, P, Q	14.5	1,145	2 - 12	$498,810	9	$55,423	$30,500	*Not reasonable*: Barrier exceeds the $30,500 cost per benefited receptor.
Barriers O/P/Q Ext.	CNEs O, P, Q and SFRs outside project limits	20	2,060	0 - 12	$1,236,000	23	$53,739	$30,500	*Not reasonable*: Barrier exceeds the $30,500 cost per benefited receptor.
Barrier R	CNE R	28	385	3	$323,400	0	N/A	$30,000	*Not feasible:* No benefitted receptors

7.3 Likelyhood Statement

Based on the traffic noise analysis and the noise abatement evaluation conducted, highway traffic noise abatement measures are likely to be implemented based on preliminary design. The noise barriers were determined to meet the feasibility criteria, the noise reduction design goal, and the cost effectiveness criteria as identified in Table 9. In order to determine if noise barrier(s) will be implemented, viewpoints solicitation still needs to occur. Viewpoints solicitation will occur after the project's final design is approved. If the project's final design is different from the preliminary design, IDOT will determine if revisions to the traffic noise analysis are necessary. A final decision on noise abatement will not be made until the project's final design is approved and the public involvement processes is complete.

8.0 CONSTRUCTION NOISE

Trucks, heavy machinery, and other equipment used during construction produce noise which may affect some land uses and activities during the construction period. Residents along the alignment will, at some time, experience perceptible construction noise from implementation of the project. To minimize or eliminate the effect of construction noise on these receptors, mitigation measures have been incorporated into the IDOT Standard Specifications for Road and Bridge Construction as Article 107.35[6].

9.0 COORDINATION WITH LOCAL GOVERNMENT OFFICIALS

As identified in Section 1.3, undeveloped land in the study corridor is planned for future commercial and residential land uses. Noise contours were developed for undeveloped lands along the project corridor. A map depicting the noise contours will be provided to the appropriate planning/zoning official for their use (Exhibit E).

10.0 SUMMARY

This traffic noise analysis has been conducted to evaluate potential traffic noise impacts for the proposed improvements to the I-57/IL 17 interchange in the City of Kankakee, Kankakee County, Illinois. Traffic noise was evaluated at a total of 19 modeled locations in the project area. These locations represented 267 receptor locations equating to 546 receptor units within 19 CNEs. Traffic noise levels were evaluated for the existing and projected (2040) traffic volumes for the No-Build and Build Alternatives.

CNEs A, B, E, F, G, and M through R (representing 189 single-family residential receptors, 278 multi-family residential receptors, one cemetery receptor, and 25 playground receptors) approach, meet, or exceed the NAC and are, therefore, considered impacted due to an increase in traffic volumes. None of the receptors will experience a substantial increase of 15 dB(A) or greater. Since the receptors are impacted in the build scenario, a noise barrier abatement analysis was performed.

Ten barrier wall locations were analyzed. Five location (Barriers A1 and A2, Barriers A/B/E, Barrier F, Barriers M/N and Barrier N), based on the guidelines and definitions set forth in IDOT's *Highway Traffic Noise Assessment Manual,* May 2017, were found to meet feasibility and reasonableness criteria (pending the viewpoint solicitation), and are likely to be implemented.

The final component of reasonableness is the results of the viewpoint solicitation of the benefited receptors. The viewpoints of benefited receptors will be solicited in Phase II for the noise barriers.

11.0 REFERENCES

[1] City of Kankakee Zoning Map. City of Kankakee Planning and Zoning website accessed January 10, 2020. https://citykankakee-il.gov/planningzoning.php.

[2] 2030 Kankakee County Comprehensive Plan. HNTB Corporation. November 2005.

[3] Procedures for Abatement of Highway Traffic and Construction Noise, 23 CFR 772. Federal Highway Administration, July 13, 2010.

[4] Highway Traffic Noise Assessment Manual, Illinois Department of Transportation, May 2017.

[5] IDOT Bureau of Design and Environment Manual, “Noise Policy”, Chapter 26-6.

[6] Standard Specifications for Road and Bridge Construction, Illinois Department of Transportation, 2006.

EXHIBIT A

LOCATION MAP

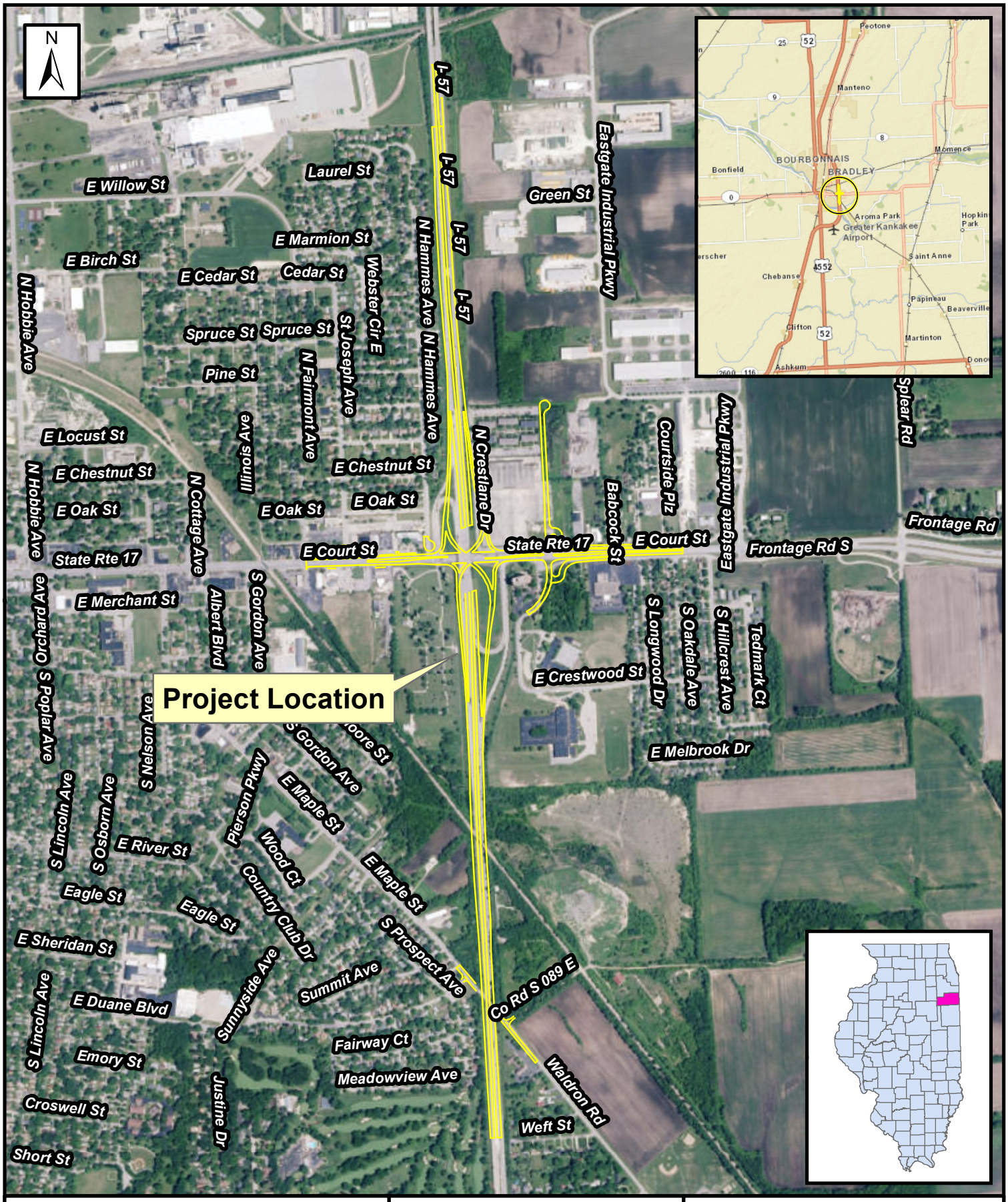

EXHIBIT A
Location Map
IL 57 / IL-17 Interchange Improvements - Noise Analysis
Kankakee County, Illinois

0 500 1,000 2,000
Feet

Kaskaskia Engineering Group, LLC
208 East Main Street, Suite 100
Belleville, Illinois 62220
618.233.5877 *phone*
618.233.5977 *fax*
www.kaskaskiaeng.com

Path: Y:\Projects\11-1017 - IL57\mxd\Exhibit A Location Map10.0.mxd **Date:** 3/10/2016

EXHIBIT B

LAND USE / ZONING MAP

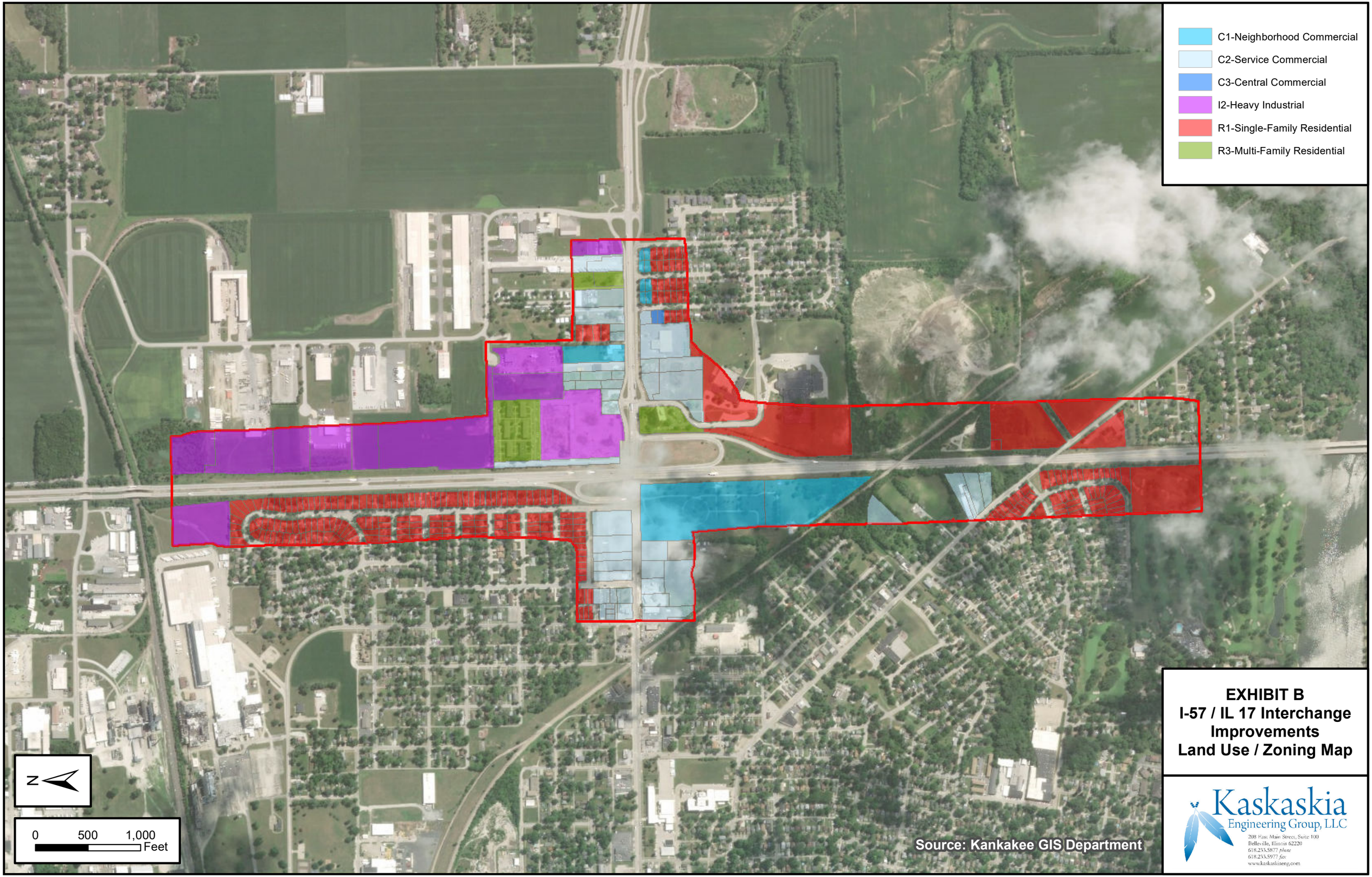

EXHIBIT B
I-57 / IL 17 Interchange Improvements
Land Use / Zoning Map

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EXHIBIT C

NOISE ANALYSIS ELEMENTS

LEGEND

- Validation Points

Representative Receptors

- Impacted
- Non-Impacted
- CNE
- Project Alignment

Note: The receptor at CNE I will be removed as a result of the project.

Exhibit C-3

Exhibit C-5

Exhibit C-2

Exhibit C-4

N

0 500 1,000 Feet

EXHIBIT C-1
I-57 / IL 17 Interchange Improvements
Noise Analysis Elements

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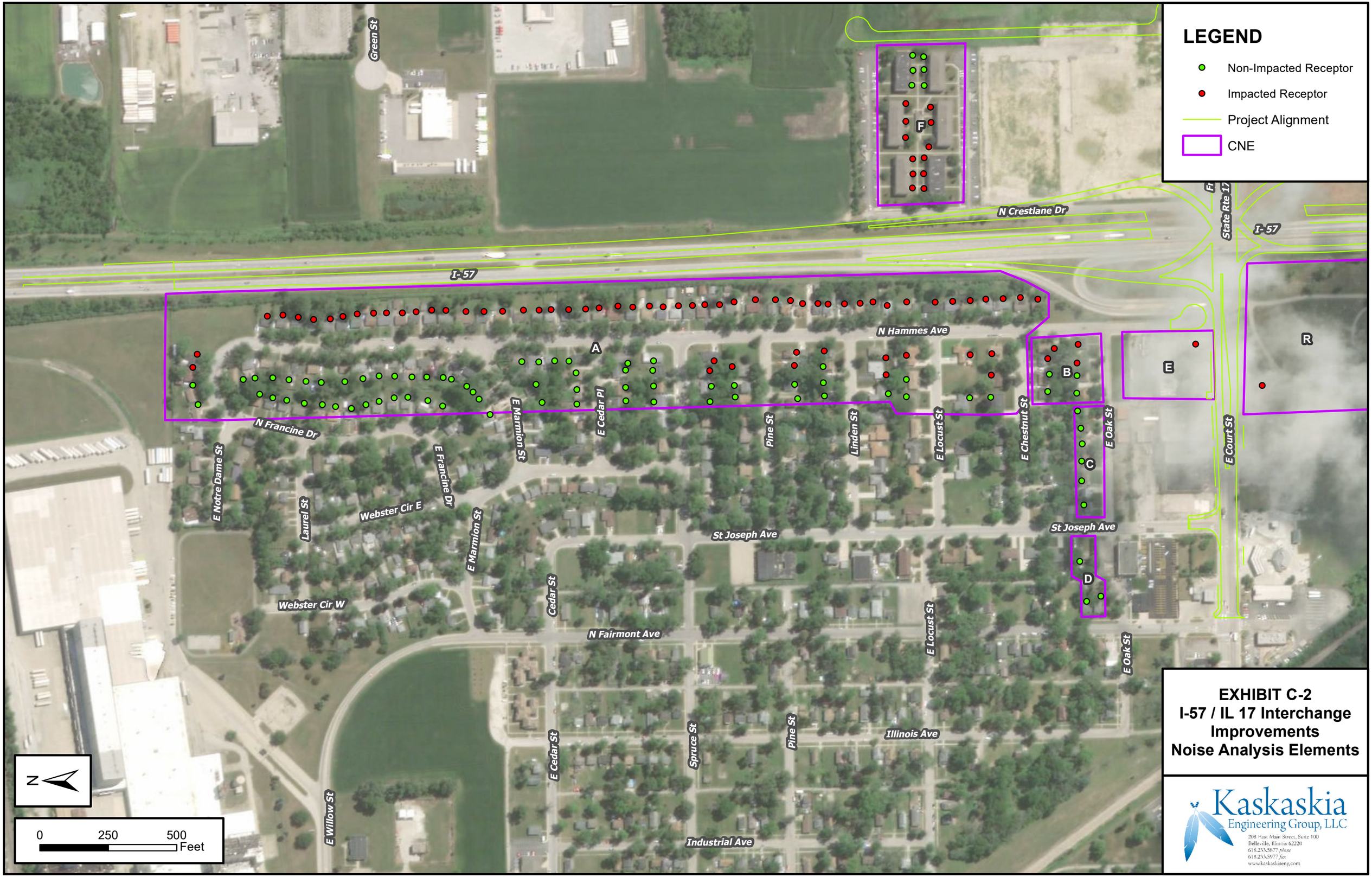
LEGEND
Non-Impacted Receptor
Impacted Receptor
Project Alignment
CNE
A
B
C
D
E
F
R
I- 57
N Crestlane Dr
State Rte 17
N Hammes Ave
N Francine Dr
E Marmion St
E Cedar Pl
Pine St
Linden St
E Locust St
E Chestnut St
E Oak St
E Court St
E Notre Dame St
E Francine Dr
Laurel St
Webster Cir E
Webster Cir W
St Joseph Ave
Cedar St
N Fairmont Ave
Spruce St
Illinois Ave
E Willow St
Industrial Ave
N
0
250
500
Feet
EXHIBIT C-2
I-57 / IL 17 Interchange
Improvements
Noise Analysis Elements
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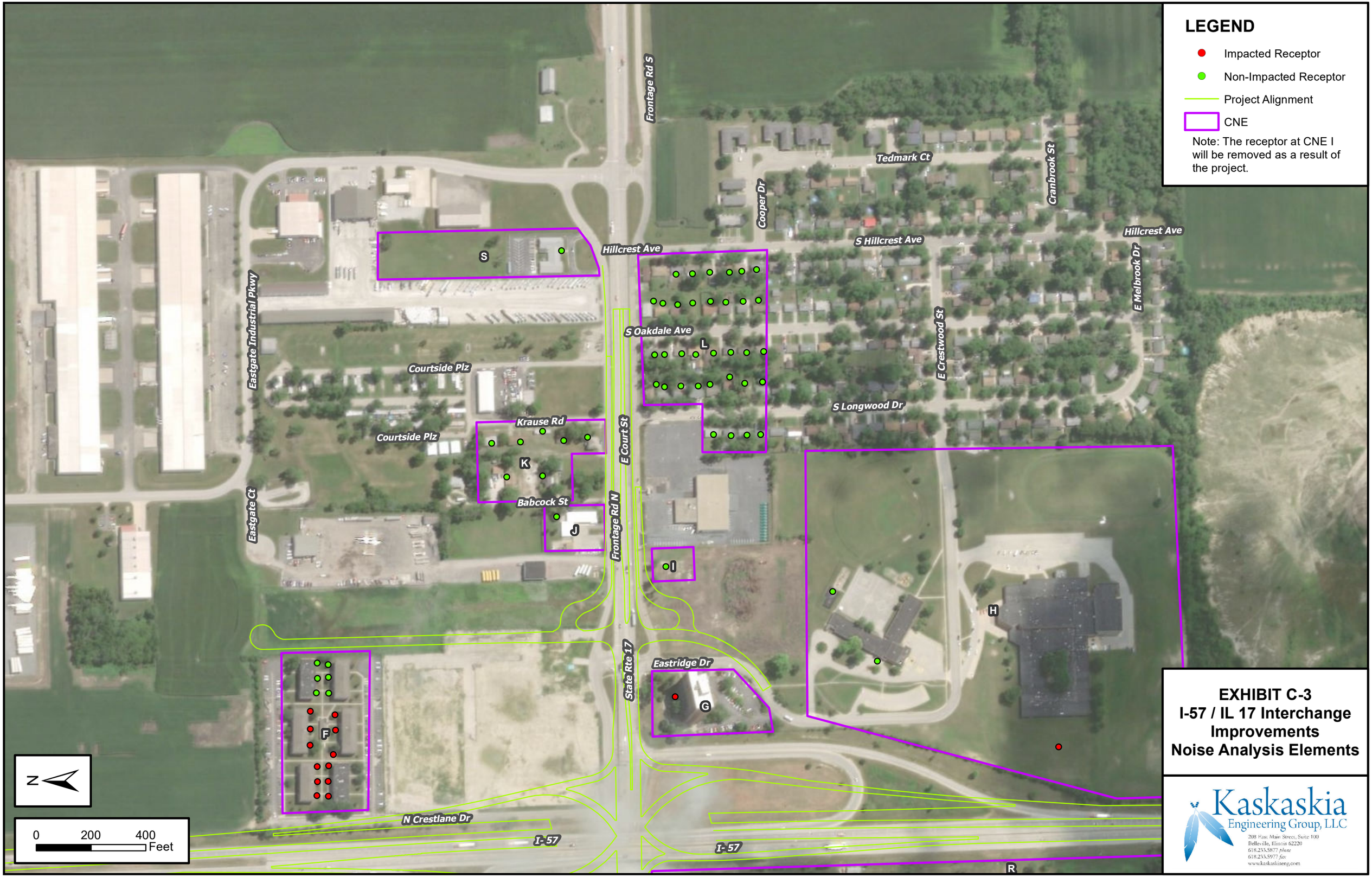
LEGEND
Impacted Receptor
Non-Impacted Receptor
Project Alignment
CNE
Note: The receptor at CNE I will be removed as a result of the project.
Frontage Rd S
Tedmark Ct
Cooper Dr
Cranbrook St
Hillcrest Ave
S Hillcrest Ave
E Melbrook Dr
Eastgate Industrial Pkwy
S Oakdale Ave
E Crestwood St
Courtside Plz
S Longwood Dr
Krause Rd
E Court St
Eastgate Ct
Babcock St
Frontage Rd N
State Rte 17
Eastridge Dr
N Crestlane Dr
I- 57
I- 57
S
L
K
J
I
H
G
F
R
N
0 200 400 Feet
EXHIBIT C-3
I-57 / IL 17 Interchange
Improvements
Noise Analysis Elements
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EXHIBIT C-4
I-57 / IL 17 Interchange Improvements
Noise Analysis Elements

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EXHIBIT C-5
I-57 / IL 17 Interchange Improvements
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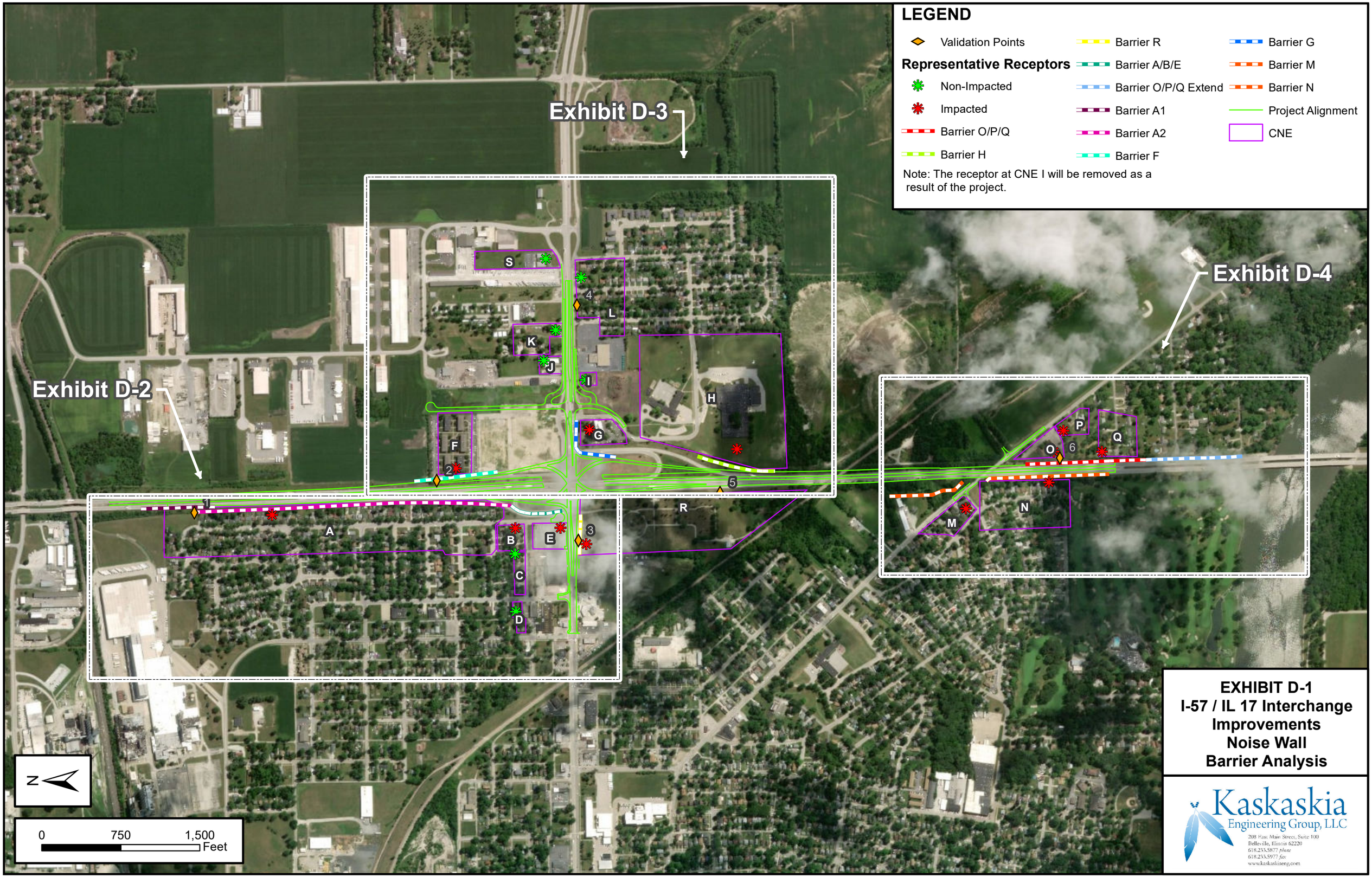
EXHIBIT D

BARRIER ANALYSIS ELEMENTS



LEGEND

- Validation Points
- **Representative Receptors**
- Non-Impacted
- Impacted
- Barrier O/P/Q
- Barrier H
- Barrier R
- Barrier A/B/E
- Barrier O/P/Q Extend
- Barrier A1
- Barrier A2
- Barrier F
- Barrier G
- Barrier M
- Barrier N
- Project Alignment
- CNE

Note: The receptor at CNE I will be removed as a result of the project.

EXHIBIT D-1
I-57 / IL 17 Interchange Improvements
Noise Wall Barrier Analysis

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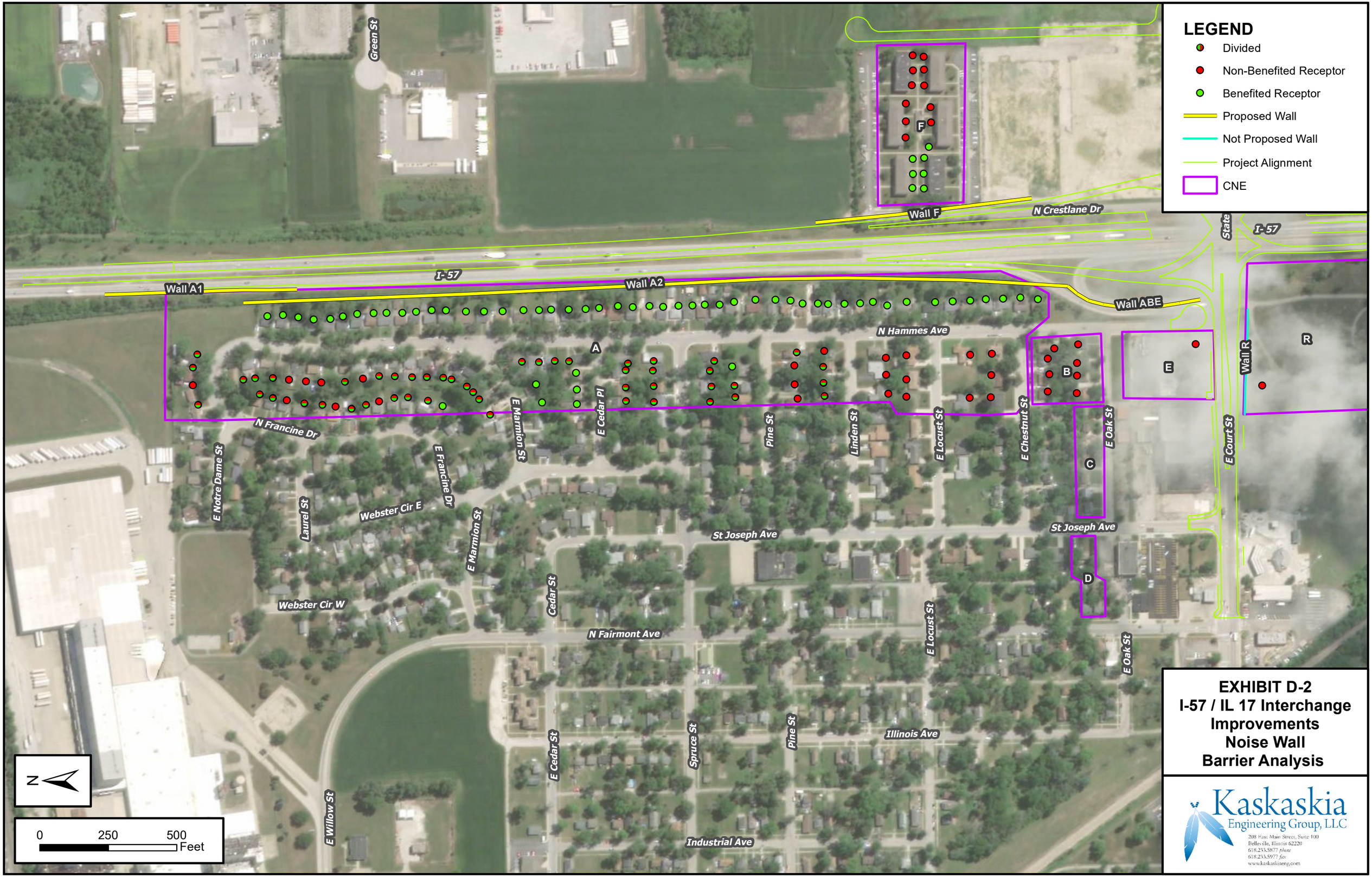
LEGEND
Divided
Non-Benefited Receptor
Benefited Receptor
Proposed Wall
Not Proposed Wall
Project Alignment
CNE
Green St
F
Wall F
N Crestlane Dr
State
I- 57
I- 57
Wall A1
Wall A2
Wall ABE
N Hammes Ave
A
B
E
R
Wall R
N Francine Dr
E Notre Dame St
E Francine Dr
E Marmion St
E Cedar Pl
Pine St
Linden St
E Locust St
E Chestnut St
E Oak St
E Court St
C
Webster Cir E
Laurel St
St Joseph Ave
St Joseph Ave
D
Webster Cir W
Cedar St
N Fairmont Ave
E Locust St
E Oak St
E Cedar St
Spruce St
Pine St
Illinois Ave
E Willow St
Industrial Ave
N
0
250
500
Feet
EXHIBIT D-2
I-57 / IL 17 Interchange
Improvements
Noise Wall
Barrier Analysis
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Belleville, Illinois 62220
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618.233.5977 fax
www.kaskaskiaeng.com

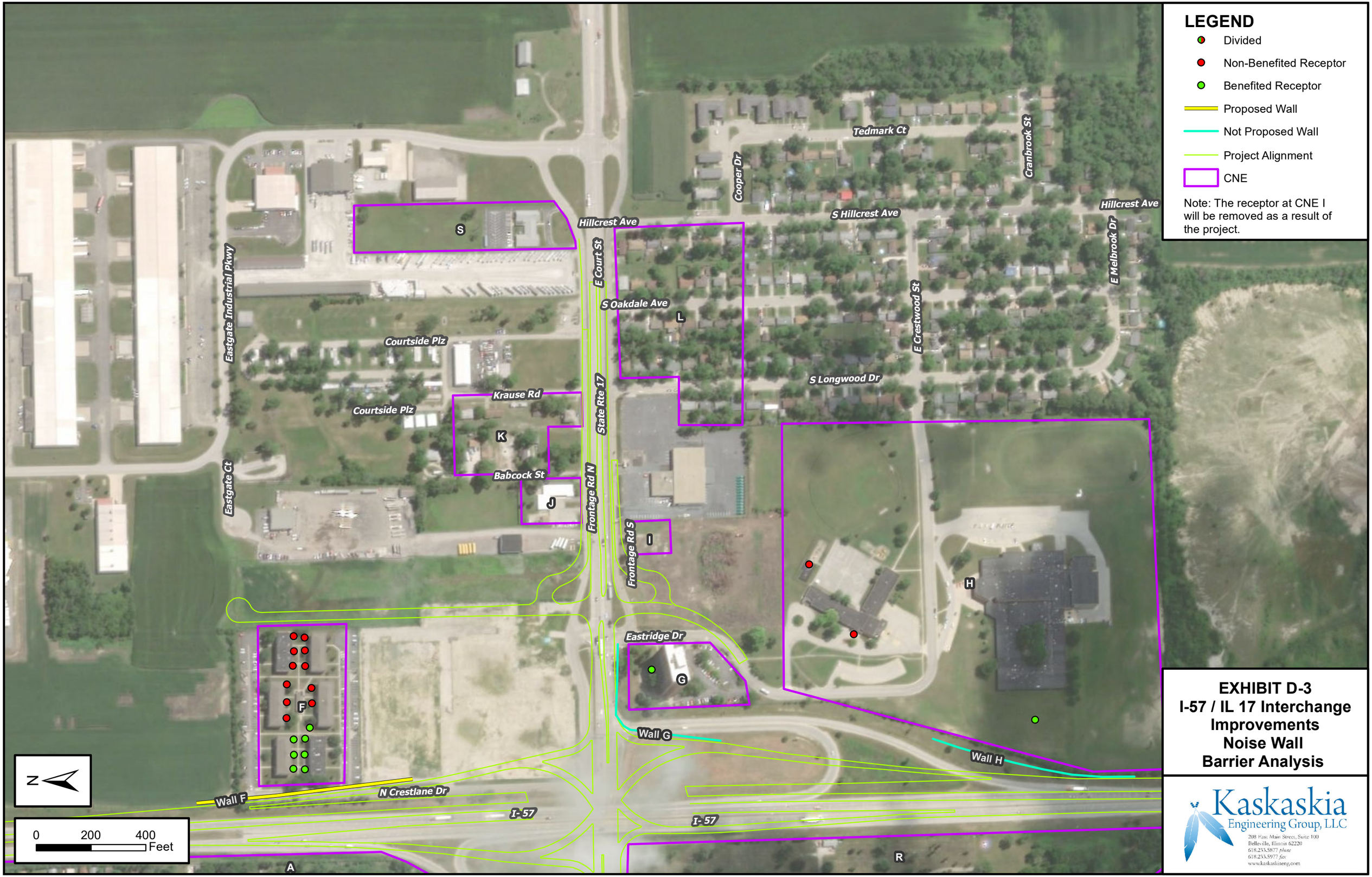

EXHIBIT D-3
I-57 / IL 17 Interchange Improvements
Noise Wall Barrier Analysis

Kaskaskia Engineering Group, LLC
208 East Main Street, Suite 100
Belleville, Illinois 62220
618.233.5877 phone
618.233.5977 fax
www.kaskaskiaeng.com

EXHIBIT D-4
I-57 / IL 17 Interchange Improvements
Noise Wall Barrier Analysis

Kaskaskia Engineering Group, LLC
208 East Main Street, Suite 100
Belleville, Illinois 62220
618.233.5877 phone
618.233.5977 fax
www.kaskaskiaeng.com

EXHIBIT E

NOISE CONTOURS FOR PUBLIC OFFICIALS

Design Year: 2040

66 dBa anticipated

71 dBa anticipated

N

0 490 980 Feet

EXHIBIT E
I-57 / IL 17 Interchange Improvements
Noise Contours for Public Officials

Kaskaskia Engineering Group, LLC
208 East Main Street, Suite 100
Belleville, Illinois 62220
618.233.5877 phone
618.233.5977 fax
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EXHIBIT F

TNM 2.5 VALIDATION AND MODEL DATA

F1 – TNM VALIDATION DATA

IDOT
Kaskaskia Engineering Group
21 October 2013
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: IL 57 - Kankakee County
RUN: Validation - 1
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

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

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Increase over existing Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Validation Site 1	21	1	0.0	72.2	66	72.2	10	Snd Lvl	72.2	0.0	8	-8.0
Validation Site 2	22	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Validation Site 3	23	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Validation Site 4	24	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Validation Site 5	25	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Validation Site 6	26	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	6	0.0	0.0	0.0
All Impacted	1	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

IDOT
Kaskaskia Engineering Group
21 October 2013
TNM 2.5
Calculated with TNM 2.5
RESULTS: SOUND LEVELS
PROJECT/CONTRACT: IL 57 - Kankakee County
RUN: Validation - 2
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH
Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Noise Reduction Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Validation Site 1	21	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Validation Site 2	22	1	0.0	73.9	66	73.9	10	Snd Lvl	73.9	0.0	8	-8.0
Validation Site 3	23	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Validation Site 4	24	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Validation Site 5	25	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Validation Site 6	26	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	6	0.0	0.0	0.0
All Impacted	1	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

IDOT
Kaskaskia Engineering Group
21 October 2013
TNM 2.5
Calculated with TNM 2.5
RESULTS: SOUND LEVELS
PROJECT/CONTRACT: IL 57 - Kankakee County
RUN: Validation - 3
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH
Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Noise Reduction Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Validation Site 1	21	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Validation Site 2	22	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Validation Site 3	23	1	0.0	68.2	66	68.2	10	Snd Lvl	68.2	0.0	8	-8.0
Validation Site 4	24	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Validation Site 5	25	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Validation Site 6	26	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	6	0.0	0.0	0.0
All Impacted	1	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

IDOT
Kaskaskia Engineering Group
21 October 2013
TNM 2.5
Calculated with TNM 2.5
RESULTS: SOUND LEVELS
PROJECT/CONTRACT: IL 57 - Kankakee County
RUN: Validation - 4
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH
Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Validation Site 1	21	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Validation Site 2	22	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Validation Site 3	23	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Validation Site 4	24	1	0.0	68.9	66	68.9	10	Snd Lvl	68.9	0.0	8	-8.0
Validation Site 5	25	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Validation Site 6	26	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	6	0.0	0.0	0.0
All Impacted	1	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

IDOT
Kaskaskia Engineering Group

21 October 2013
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: IL 57 - Kankakee County
RUN: Validation - 5
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

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

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Increase over existing Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Noise Reduction Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Validation Site 1	21	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Validation Site 2	22	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Validation Site 3	23	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Validation Site 4	24	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Validation Site 5	25	1	0.0	72.8	66	72.8	10	Snd Lvl	72.8	0.0	8	-8.0
Validation Site 6	26	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	6	0.0	0.0	0.0
All Impacted	1	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

IDOT
Kaskaskia Engineering Group
21 October 2013
TNM 2.5
Calculated with TNM 2.5
RESULTS: SOUND LEVELS
PROJECT/CONTRACT: IL 57 - Kankakee County
RUN: Validation - 6
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH
Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Validation Site 1	21	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Validation Site 2	22	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Validation Site 3	23	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Validation Site 4	24	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Validation Site 5	25	1	0.0	0.0	66	0.0	10	inactive	0.0	0.0	8	0.0
Validation Site 6	26	1	0.0	72.4	66	72.4	10	Snd Lvl	72.4	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	6	0.0	0.0	0.0
All Impacted	1	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

F2 – TNM BARRIER DATA

IDOT 9 January 2020
KEG TNM 2.5
Calculated with TNM 2.5
RESULTS: SOUND LEVELS
PROJECT/CONTRACT: IL 57/17
RUN: Barrier A
BARRIER DESIGN: Barrier A_2020-1-09
ATMOSPHERICS: 68 deg F, 50% RH

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

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	With Barrier Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Noise Reduction Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
A - 1	1	1	67.2	68.2	66	1.0	10	Snd Lvl	62.6	5.6	8	-2.4
A - 2	2	1	65.7	66.8	66	1.1	10	Snd Lvl	61.8	5.0	8	-3.0
A - 3	3	1	64.2	65.5	66	1.3	10	----	60.7	4.8	8	-3.2
A - 5	5	1	72.6	73.5	66	0.9	10	Snd Lvl	62.1	11.4	8	3.4
A - 6	6	1	72.6	74.2	66	1.6	10	Snd Lvl	62.5	11.7	8	3.7
A - 7	7	1	72.4	74.3	66	1.9	10	Snd Lvl	63.3	11.0	8	3.0
A - 8	8	1	71.9	74.3	66	2.4	10	Snd Lvl	63.8	10.5	8	2.5
A - 9	9	1	71.8	74.2	66	2.4	10	Snd Lvl	63.9	10.3	8	2.3
A - 10	10	1	72.2	74.6	66	2.4	10	Snd Lvl	64.1	10.5	8	2.5
A - 11	11	1	72.6	75.0	66	2.4	10	Snd Lvl	64.4	10.6	8	2.6
A - 12	12	1	72.4	75.1	66	2.7	10	Snd Lvl	64.5	10.6	8	2.6
A - 13	13	1	72.5	75.0	66	2.5	10	Snd Lvl	64.5	10.5	8	2.5
A - 14	14	1	72.6	74.9	66	2.3	10	Snd Lvl	64.4	10.5	8	2.5
A - 15	15	1	72.5	75.0	66	2.5	10	Snd Lvl	64.4	10.6	8	2.6
A - 16	16	1	73.0	74.9	66	1.9	10	Snd Lvl	64.4	10.5	8	2.5
A - 17	65	1	72.6	74.9	66	2.3	10	Snd Lvl	64.4	10.5	8	2.5
A - 18	18	1	72.4	74.6	66	2.2	10	Snd Lvl	64.3	10.3	8	2.3
A - 19	19	1	72.4	74.5	66	2.1	10	Snd Lvl	64.1	10.4	8	2.4
A - 20	20	1	72.3	74.4	66	2.1	10	Snd Lvl	64.0	10.4	8	2.4
A - 21	21	1	72.2	74.5	66	2.3	10	Snd Lvl	64.2	10.3	8	2.3
A - 22	22	1	72.2	74.5	66	2.3	10	Snd Lvl	64.4	10.1	8	2.1
A - 23	23	1	72.3	74.5	66	2.2	10	Snd Lvl	64.3	10.2	8	2.2
A - 24	24	1	71.8	74.3	66	2.5	10	Snd Lvl	64.0	10.3	8	2.3
A - 25	25	1	71.9	74.2	66	2.3	10	Snd Lvl	63.7	10.5	8	2.5

A - 26	26	1	72.2	74.3	66	2.1	10	Snd Lvl	63.6	10.7	8	2.7
A - 27	27	1	72.3	74.5	66	2.2	10	Snd Lvl	63.7	10.8	8	2.8
A - 28	28	1	71.9	74.1	66	2.2	10	Snd Lvl	63.7	10.4	8	2.4
A - 29	29	1	71.8	74.2	66	2.4	10	Snd Lvl	63.8	10.4	8	2.4
A - 30	30	1	71.8	73.9	66	2.1	10	Snd Lvl	63.9	10.0	8	2.0
A - 31	31	1	71.8	74.2	66	2.4	10	Snd Lvl	64.0	10.2	8	2.2
A - 32	32	1	71.8	74.2	66	2.4	10	Snd Lvl	64.1	10.1	8	2.1
A - 33	33	1	71.8	74.1	66	2.3	10	Snd Lvl	64.0	10.1	8	2.1
A - 34	34	1	71.6	73.8	66	2.2	10	Snd Lvl	63.8	10.0	8	2.0
A - 35	35	1	71.9	74.1	66	2.2	10	Snd Lvl	63.7	10.4	8	2.4
A - 36	36	1	72.1	74.2	66	2.1	10	Snd Lvl	63.6	10.6	8	2.6
A - 37	37	1	72.2	73.8	66	1.6	10	Snd Lvl	63.4	10.4	8	2.4
A - 38	38	1	71.9	73.5	66	1.6	10	Snd Lvl	63.4	10.1	8	2.1
A - 39	39	1	71.4	73.2	66	1.8	10	Snd Lvl	63.7	9.5	8	1.5
A - 40	40	1	71.3	73.1	66	1.8	10	Snd Lvl	63.9	9.2	8	1.2
A - 41	41	1	71.5	72.9	66	1.4	10	Snd Lvl	64.0	8.9	8	0.9
A - 42	42	1	71.4	72.8	66	1.4	10	Snd Lvl	64.3	8.5	8	0.5
A - 43	43	1	71.5	72.8	66	1.3	10	Snd Lvl	64.3	8.5	8	0.5
A - 44	44	1	71.8	73.0	66	1.2	10	Snd Lvl	64.3	8.7	8	0.7
A - 45	45	1	71.0	72.6	66	1.6	10	Snd Lvl	64.3	8.3	8	0.3
A - 46	46	1	71.2	72.5	66	1.3	10	Snd Lvl	64.4	8.1	8	0.1
A - 47	47	1	71.1	72.0	66	0.9	10	Snd Lvl	64.6	7.4	8	-0.6
A - 48	48	1	71.1	71.9	66	0.8	10	Snd Lvl	64.6	7.3	8	-0.7
A - 49	49	1	71.0	71.6	66	0.6	10	Snd Lvl	64.4	7.2	8	-0.8
A - 50	50	1	71.0	71.6	66	0.6	10	Snd Lvl	64.3	7.3	8	-0.7
A - 51	51	1	70.9	71.6	66	0.7	10	Snd Lvl	64.3	7.3	8	-0.7
A - 52	52	1	71.2	71.5	66	0.3	10	Snd Lvl	64.2	7.3	8	-0.7
A - 53	53	1	70.8	71.1	66	0.3	10	Snd Lvl	64.7	6.4	8	-1.6
A - 54	54	1	62.9	64.0	66	1.1	10	----	59.2	4.8	8	-3.2
A - 55	55	1	62.2	63.5	66	1.3	10	----	58.1	5.4	8	-2.6
A - 56	56	1	62.1	63.4	66	1.3	10	----	58.4	5.0	8	-3.0
A - 57	57	1	61.9	63.6	66	1.7	10	----	58.6	5.0	8	-3.0
A - 58	58	1	61.9	63.7	66	1.8	10	----	59.0	4.7	8	-3.3
A - 59	59	1	61.6	63.5	66	1.9	10	----	58.6	4.9	8	-3.1
A - 60	60	1	61.1	63.0	66	1.9	10	----	58.1	4.9	8	-3.1
A - 61	61	1	61.0	62.9	66	1.9	10	----	58.1	4.8	8	-3.2
A - 65	66	1	61.5	63.5	66	2.0	10	----	57.8	5.7	8	-2.3
A - 66	67	1	61.3	63.3	66	2.0	10	----	57.5	5.8	8	-2.2
A - 67	68	1	61.5	63.3	66	1.8	10	----	57.4	5.9	8	-2.1
A - 68	69	1	60.9	62.9	66	2.0	10	----	57.1	5.8	8	-2.2
A - 69	70	1	60.9	62.9	66	2.0	10	----	56.9	6.0	8	-2.0

A - 70	71	1	60.7	62.8	66	2.1	10	----	56.8	6.0	8	-2.0
A - 71	72	1	60.3	62.5	66	2.2	10	----	56.7	5.8	8	-2.2
A - 72	73	1	61.7	64.0	66	2.3	10	----	57.6	6.4	8	-1.6
A - 73	74	1	62.1	64.3	66	2.2	10	----	58.1	6.2	8	-1.8
A - 74	75	1	62.3	64.6	66	2.3	10	----	59.2	5.4	8	-2.6
A - 75	76	1	62.5	64.6	66	2.1	10	----	58.6	6.0	8	-2.0
A - 76	77	1	62.4	64.5	66	2.1	10	----	59.7	4.8	8	-3.2
A - 77	78	1	62.2	64.4	66	2.2	10	----	58.0	6.4	8	-1.6
A - 78	79	1	62.1	64.3	66	2.2	10	----	58.4	5.9	8	-2.1
A - 79	80	1	62.3	64.5	66	2.2	10	----	59.7	4.8	8	-3.2
A - 80	81	1	62.3	64.7	66	2.4	10	----	59.2	5.5	8	-2.5
A - 81	82	1	62.5	64.8	66	2.3	10	----	59.3	5.5	8	-2.5
A - 82	83	1	63.1	64.9	66	1.8	10	----	59.6	5.3	8	-2.7
A - 83	84	1	63.5	65.0	66	1.5	10	----	59.5	5.5	8	-2.5
A - 84	85	1	63.7	65.2	66	1.5	10	----	59.6	5.6	8	-2.4
A - 88	89	1	61.7	63.6	66	1.9	10	----	58.4	5.2	8	-2.8
A - 89	89	1	62.7	64.7	66	2.0	10	----	58.3	6.4	8	-1.6
A - 90	90	1	61.8	63.9	66	2.1	10	----	57.0	6.9	8	-1.1
A - 91	91	1	61.1	63.1	66	2.0	10	----	57.0	6.1	8	-1.9
A - 92	92	1	62.8	65.0	66	2.2	10	----	58.7	6.3	8	-1.7
A - 93	93	1	61.6	63.8	66	2.2	10	----	57.1	6.7	8	-1.3
A - 94	94	1	61.2	63.3	66	2.1	10	----	58.3	5.0	8	-3.0
A - 95	95	1	62.0	64.1	66	2.1	10	----	58.4	5.7	8	-2.3
A - 96	96	1	62.9	64.8	66	1.9	10	----	59.2	5.6	8	-2.4
A - 98	98	1	62.3	64.1	66	1.8	10	----	58.7	5.4	8	-2.6
A - 99	99	1	63.3	65.2	66	1.9	10	----	59.0	6.2	8	-1.8
A - 100	100	1	62.1	64.1	66	2.0	10	----	57.8	6.3	8	-1.7
A - 101	101	1	61.2	63.2	66	2.0	10	----	57.0	6.2	8	-1.8
A - 102	102	1	61.8	64.0	66	2.2	10	----	58.1	5.9	8	-2.1
A - 103	103	1	63.1	65.2	66	2.1	10	----	59.2	6.0	8	-2.0
A - 104	104	1	64.3	66.5	66	2.2	10	Snd Lvl	60.4	6.1	8	-1.9
A - 105	105	1	65.4	67.6	66	2.2	10	Snd Lvl	61.4	6.2	8	-1.8
A - 106	106	1	64.5	66.6	66	2.1	10	Snd Lvl	59.7	6.9	8	-1.1
A - 107	107	1	62.5	64.6	66	2.1	10	----	58.2	6.4	8	-1.6
A - 108	108	1	61.6	63.7	66	2.1	10	----	57.4	6.3	8	-1.7
A - 109	109	1	62.9	65.0	66	2.1	10	----	60.6	4.4	8	-3.6
A - 110	110	1	64.3	66.5	66	2.2	10	Snd Lvl	61.8	4.7	8	-3.3
A - 112	112	1	66.3	68.4	66	2.1	10	Snd Lvl	63.6	4.8	8	-3.2
A - 113	113	1	64.3	66.3	66	2.0	10	Snd Lvl	60.6	5.7	8	-2.3
A - 114	114	1	62.8	65.0	66	2.2	10	----	59.7	5.3	8	-2.7
A - 115	115	1	62.5	65.3	66	2.8	10	----	62.5	2.8	8	-5.2

A - 116	116	1	63.8	66.7	66	2.9	10	Snd Lvl	63.7	3.0	8	-5.0
A - 117	117	1	65.7	67.8	66	2.1	10	Snd Lvl	64.5	3.3	8	-4.7
A - 118	118	1	65.9	68.1	66	2.2	10	Snd Lvl	64.4	3.7	8	-4.3
A - 119	119	1	63.6	66.0	66	2.4	10	Snd Lvl	62.7	3.3	8	-4.7
A - 120	120	1	62.2	64.8	66	2.6	10	----	62.0	2.8	8	-5.2
A - 121	121	1	62.5	64.7	66	2.2	10	----	63.7	1.0	8	-7.0
A - 122	122	1	66.1	67.9	66	1.8	10	Snd Lvl	65.9	2.0	8	-6.0
A - 123	123	1	62.4	65.0	66	2.6	10	----	64.4	0.6	8	-7.4
A - 124	124	1	64.1	66.4	66	2.3	10	Snd Lvl	64.9	1.5	8	-6.5
A - 125	125	1	66.3	67.9	66	1.6	10	Snd Lvl	66.0	1.9	8	-6.1
A - 126	223	1	61.6	63.7	66	2.1	10	----	60.0	3.7	8	-4.3
A - 127	224	1	61.8	64.0	66	2.2	10	----	59.4	4.6	8	-3.4
A - 4	4	1	62.6	63.7	66	1.1	10	----	59.0	4.7	8	-3.3
A - 62	62	1	61.1	62.9	66	1.8	10	----	58.0	4.9	8	-3.1
A - 63	63	1	61.4	63.1	66	1.7	10	----	58.0	5.1	8	-2.9
A - 64	64	1	61.5	63.3	66	1.8	10	----	58.2	5.1	8	-2.9
A - 97	97	1	62.3	64.1	66	1.8	10	----	59.4	4.7	8	-3.3
A - 111	111	1	66.0	68.3	66	2.3	10	Snd Lvl	62.5	5.8	8	-2.2
A - 86	87	1	62.2	63.7	66	1.5	10	----	58.7	5.0	8	-3.0
A - 87	88	1	62.1	63.5	66	1.4	10	----	58.5	5.0	8	-3.0
A - 85	86	1	62.0	63.7	66	1.7	10	----	59.2	4.5	8	-3.5

Dwelling Units	**# DUs**	**Noise Reduction**		
		Min	**Avg**	**Max**
		dB	**dB**	**dB**
All Selected	127	0.6	6.9	11.7
All Impacted	65	1.5	8.4	11.7
All that meet NR Goal	42	8.1	10.1	11.7

IDOT **10 January 2020**
KEG **TNM 2.5**

RESULTS: BARRIER DESCRIPTIONS
PROJECT/CONTRACT: **IL 57/17**
RUN: **Barrier A**
BARRIER DESIGN: **Barrier A_2020-1-09**

Barriers

Name	Type	Heights along Barrier			Length	If Wall	If Berm			Cost
		Min	Avg	Max		Area	Volume	Top Width	Run:Rise	
		ft	ft	ft	ft	sq ft	cu yd	ft	ft:ft	$
Barrier A-2	W	16.00	16.53	18.00	3013	49810				1494290
Barrier A-1	W	14.00	14.57	16.00	702	10224				306719
									Total Cost:	1801010

IDOT 12 June 2020
KEG TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: IL 57/17
RUN: Barrier ABE
BARRIER DESIGN: Wall_A3
ATMOSPHERICS: 68 deg F, 50% RH

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

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
A - 1	1	1	72.1	68.2	66	-3.9	10	Snd Lvl	67.8	0.4	8	-7.6
A - 2	2	1	66.6	66.7	66	0.1	10	Snd Lvl	66.5	0.2	8	-7.8
A - 3	3	1	60.8	65.3	66	4.5	10	----	64.9	0.4	8	-7.6
A - 4	234	1	57.5	63.6	66	6.1	10	----	63.3	0.3	8	-7.7
A - 5	235	1	73.7	73.2	66	-0.5	10	Snd Lvl	67.4	5.8	8	-2.2
A - 6	236	1	71.8	74.0	66	2.2	10	Snd Lvl	66.9	7.1	8	-0.9
A - 7	237	1	65.3	74.1	66	8.8	10	Snd Lvl	66.8	7.3	8	-0.7
A - 8	238	1	71.9	74.1	66	2.2	10	Snd Lvl	66.5	7.6	8	-0.4
A - 9	239	1	58.1	74.0	66	15.9	10	Both	66.0	8.0	8	0.0
A - 10	240	1	66.7	74.3	66	7.6	10	Snd Lvl	65.7	8.6	8	0.6
A - 11	241	1	65.4	74.8	66	9.4	10	Snd Lvl	65.7	9.1	8	1.1
A - 12	242	1	60.4	74.8	66	14.4	10	Both	65.5	9.3	8	1.3
A - 13	243	1	65.6	74.8	66	9.2	10	Snd Lvl	65.5	9.3	8	1.3
A - 14	244	1	64.8	74.6	66	9.8	10	Snd Lvl	65.4	9.2	8	1.2
A - 15	245	1	64.8	74.7	66	9.9	10	Snd Lvl	65.3	9.4	8	1.4
A - 16	246	1	66.9	74.7	66	7.8	10	Snd Lvl	65.2	9.5	8	1.5
A - 17	249	1	68.7	74.7	66	6.0	10	Snd Lvl	65.1	9.6	8	1.6
A - 18	250	1	65.1	74.4	66	9.3	10	Snd Lvl	65.0	9.4	8	1.4
A - 19	251	1	0.0	74.2	66	74.2	10	Snd Lvl	64.8	9.4	8	1.4
A - 20	252	1	0.0	74.2	66	74.2	10	Snd Lvl	64.7	9.5	8	1.5
A - 21	253	1	0.0	74.3	66	74.3	10	Snd Lvl	64.9	9.4	8	1.4
A - 22	254	1	0.0	74.3	66	74.3	10	Snd Lvl	65.2	9.1	8	1.1
A - 23	255	1	0.0	74.2	66	74.2	10	Snd Lvl	65.1	9.1	8	1.1
A - 24	256	1	0.0	74.0	66	74.0	10	Snd Lvl	65.0	9.0	8	1.0

A - 25	257	1	0.0	74.0	66	74.0	10	Snd Lvl	65.0	9.0	8	1.0
A - 26	259	1	0.0	74.0	66	74.0	10	Snd Lvl	65.0	9.0	8	1.0
A - 27	260	1	0.0	74.2	66	74.2	10	Snd Lvl	65.2	9.0	8	1.0
A - 28	261	1	0.0	73.9	66	73.9	10	Snd Lvl	65.3	8.6	8	0.6
A - 29	262	1	0.0	74.0	66	74.0	10	Snd Lvl	65.5	8.5	8	0.5
A - 30	263	1	0.0	73.7	66	73.7	10	Snd Lvl	65.6	8.1	8	0.1
A - 31	264	1	0.0	73.9	66	73.9	10	Snd Lvl	65.8	8.1	8	0.1
A - 32	265	1	0.0	74.0	66	74.0	10	Snd Lvl	65.9	8.1	8	0.1
A - 33	266	1	0.0	73.8	66	73.8	10	Snd Lvl	65.8	8.0	8	0.0
A - 34	267	1	0.0	73.6	66	73.6	10	Snd Lvl	65.5	8.1	8	0.1
A - 35	268	1	0.0	73.9	66	73.9	10	Snd Lvl	65.4	8.5	8	0.5
A - 36	269	1	0.0	73.9	66	73.9	10	Snd Lvl	65.0	8.9	8	0.9
A - 37	270	1	0.0	73.6	66	73.6	10	Snd Lvl	64.6	9.0	8	1.0
A - 38	271	1	0.0	73.2	66	73.2	10	Snd Lvl	64.5	8.7	8	0.7
A - 39	272	1	0.0	72.9	66	72.9	10	Snd Lvl	64.7	8.2	8	0.2
A - 40	273	1	0.0	72.8	66	72.8	10	Snd Lvl	64.9	7.9	8	-0.1
A - 41	274	1	0.0	72.6	66	72.6	10	Snd Lvl	65.0	7.6	8	-0.4
A - 42	275	1	0.0	72.5	66	72.5	10	Snd Lvl	65.3	7.2	8	-0.8
A - 43	276	1	0.0	72.5	66	72.5	10	Snd Lvl	65.1	7.4	8	-0.6
A - 44	277	1	0.0	72.7	66	72.7	10	Snd Lvl	65.0	7.7	8	-0.3
A - 45	278	1	0.0	72.3	66	72.3	10	Snd Lvl	65.2	7.1	8	-0.9
A - 46	279	1	0.0	72.2	66	72.2	10	Snd Lvl	65.1	7.1	8	-0.9
A - 47	280	1	0.0	71.7	66	71.7	10	Snd Lvl	65.3	6.4	8	-1.6
A - 48	281	1	0.0	71.6	66	71.6	10	Snd Lvl	65.1	6.5	8	-1.5
A - 49	282	1	0.0	71.3	66	71.3	10	Snd Lvl	64.9	6.4	8	-1.6
A - 50	283	1	0.0	71.3	66	71.3	10	Snd Lvl	64.6	6.7	8	-1.3
A - 51	284	1	0.0	71.3	66	71.3	10	Snd Lvl	64.5	6.8	8	-1.2
A - 52	285	1	0.0	71.2	66	71.2	10	Snd Lvl	64.3	6.9	8	-1.1
A - 53	286	1	0.0	70.8	66	70.8	10	Snd Lvl	63.7	7.1	8	-0.9
A - 54	287	1	0.0	63.8	66	63.8	10	----	63.1	0.7	8	-7.3
A - 55	288	1	0.0	63.2	66	63.2	10	----	62.2	1.0	8	-7.0
A - 56	289	1	0.0	63.1	66	63.1	10	----	62.0	1.1	8	-6.9
A - 57	290	1	0.0	63.3	66	63.3	10	----	61.9	1.4	8	-6.6
A - 58	291	1	0.0	63.4	66	63.4	10	----	62.0	1.4	8	-6.6
A - 59	292	1	0.0	63.1	66	63.1	10	----	61.5	1.6	8	-6.4
A - 60	293	1	0.0	62.6	66	62.6	10	----	60.5	2.1	8	-5.9
A - 61	294	1	0.0	62.5	66	62.5	10	----	60.1	2.4	8	-5.6
A - 62	295	1	0.0	62.6	66	62.6	10	----	60.0	2.6	8	-5.4
A - 63	296	1	0.0	62.9	66	62.9	10	----	60.6	2.3	8	-5.7
A - 64	297	1	0.0	63.1	66	63.1	10	----	60.3	2.8	8	-5.2
A - 65	298	1	0.0	63.1	66	63.1	10	----	59.3	3.8	8	-4.2

A - 66	299	1	0.0	62.9	66	62.9	10	----	58.9	4.0	8	-4.0
A - 67	300	1	0.0	62.9	66	62.9	10	----	58.9	4.0	8	-4.0
A - 68	301	1	0.0	62.5	66	62.5	10	----	58.5	4.0	8	-4.0
A - 69	302	1	0.0	62.5	66	62.5	10	----	58.3	4.2	8	-3.8
A - 70	303	1	0.0	62.4	66	62.4	10	----	58.1	4.3	8	-3.7
A - 71	304	1	0.0	62.1	66	62.1	10	----	57.9	4.2	8	-3.8
A - 72	305	1	0.0	63.6	66	63.6	10	----	59.1	4.5	8	-3.5
A - 73	306	1	0.0	63.9	66	63.9	10	----	59.8	4.1	8	-3.9
A - 74	307	1	0.0	64.2	66	64.2	10	----	61.2	3.0	8	-5.0
A - 75	308	1	0.0	64.2	66	64.2	10	----	61.0	3.2	8	-4.8
A - 76	309	1	0.0	64.1	66	64.1	10	----	61.4	2.7	8	-5.3
A - 77	310	1	0.0	64.0	66	64.0	10	----	61.0	3.0	8	-5.0
A - 78	311	1	0.0	63.9	66	63.9	10	----	61.5	2.4	8	-5.6
A - 79	312	1	0.0	64.1	66	64.1	10	----	62.2	1.9	8	-6.1
A - 80	313	1	0.0	64.3	66	64.3	10	----	62.5	1.8	8	-6.2
A - 81	314	1	0.0	64.4	66	64.4	10	----	62.9	1.5	8	-6.5
A - 82	315	1	0.0	64.5	66	64.5	10	----	63.2	1.3	8	-6.7
A - 83	316	1	0.0	64.7	66	64.7	10	----	63.5	1.2	8	-6.8
A - 84	317	1	0.0	64.9	66	64.9	10	----	63.8	1.1	8	-6.9
A - 85	318	1	0.0	63.5	66	63.5	10	----	60.5	3.0	8	-5.0
A - 86	319	1	0.0	63.9	66	63.9	10	----	60.8	3.1	8	-4.9
A - 87	320	1	0.0	63.7	66	63.7	10	----	60.7	3.0	8	-5.0
A - 88	321	1	0.0	63.2	66	63.2	10	----	59.2	4.0	8	-4.0
A - 89	322	1	0.0	64.3	66	64.3	10	----	59.4	4.9	8	-3.1
A - 90	323	1	0.0	63.5	66	63.5	10	----	58.1	5.4	8	-2.6
A - 91	324	1	0.0	62.7	66	62.7	10	----	57.9	4.8	8	-3.2
A - 92	325	1	0.0	64.5	66	64.5	10	----	59.7	4.8	8	-3.2
A - 93	326	1	0.0	63.4	66	63.4	10	----	58.2	5.2	8	-2.8
A - 94	327	1	0.0	62.8	66	62.8	10	----	59.5	3.3	8	-4.7
A - 95	328	1	0.0	63.7	66	63.7	10	----	59.9	3.8	8	-4.2
A - 96	329	1	0.0	64.4	66	64.4	10	----	60.6	3.8	8	-4.2
A - 97	330	1	0.0	63.7	66	63.7	10	----	60.6	3.1	8	-4.9
A - 98	331	1	0.0	63.7	66	63.7	10	----	59.8	3.9	8	-4.1
A - 99	332	1	0.0	64.9	66	64.9	10	----	60.6	4.3	8	-3.7
A - 100	333	1	0.0	63.8	66	63.8	10	----	59.6	4.2	8	-3.8
A - 101	334	1	0.0	62.8	66	62.8	10	----	58.8	4.0	8	-4.0
A - 102	335	1	0.0	63.6	66	63.6	10	----	60.0	3.6	8	-4.4
A - 103	336	1	0.0	64.8	66	64.8	10	----	61.0	3.8	8	-4.2
A - 104	337	1	0.0	66.1	66	66.1	10	Snd Lvl	61.8	4.3	8	-3.7
A - 105	338	1	0.0	67.3	66	67.3	10	Snd Lvl	62.7	4.6	8	-3.4
A - 106	339	1	0.0	66.3	66	66.3	10	Snd Lvl	61.3	5.0	8	-3.0

A - 107	340	1	0.0	64.2	66	64.2	10	----	60.2	4.0	8	-4.0
A - 108	341	1	0.0	63.3	66	63.3	10	----	59.6	3.7	8	-4.3
A - 109	342	1	0.0	64.7	66	64.7	10	----	61.6	3.1	8	-4.9
A - 110	343	1	0.0	66.2	66	66.2	10	Snd Lvl	62.6	3.6	8	-4.4
A - 111	344	1	0.0	68.0	66	68.0	10	Snd Lvl	65.2	2.8	8	-5.2
A - 112	345	1	0.0	68.1	66	68.1	10	Snd Lvl	64.3	3.8	8	-4.2
A - 113	346	1	0.0	66.0	66	66.0	10	Snd Lvl	61.6	4.4	8	-3.6
A - 114	347	1	0.0	64.6	66	64.6	10	----	60.7	3.9	8	-4.1
A - 115	348	1	0.0	64.9	66	64.9	10	----	63.0	1.9	8	-6.1
A - 116	349	1	0.0	66.3	66	66.3	10	Snd Lvl	64.5	1.8	8	-6.2
A - 117	350	1	0.0	67.5	66	67.5	10	Snd Lvl	65.1	2.4	8	-5.6
A - 118	351	1	0.0	67.7	66	67.7	10	Snd Lvl	65.3	2.4	8	-5.6
A - 119	352	1	0.0	65.6	66	65.6	10	----	63.4	2.2	8	-5.8
A - 120	353	1	0.0	64.5	66	64.5	10	----	62.5	2.0	8	-6.0
A - 121	354	1	0.0	64.4	66	64.4	10	----	63.9	0.5	8	-7.5
A - 122	355	1	0.0	67.5	66	67.5	10	Snd Lvl	66.1	1.4	8	-6.6
A - 123	356	1	0.0	64.7	66	64.7	10	----	64.3	0.4	8	-7.6
A - 124	357	1	0.0	66.1	66	66.1	10	Snd Lvl	65.2	0.9	8	-7.1
A - 125	358	1	0.0	67.5	66	67.5	10	Snd Lvl	66.2	1.3	8	-6.7
B - 1	359	1	0.0	64.5	66	64.5	10	----	64.2	0.3	8	-7.7
B - 2	360	1	0.0	65.6	66	65.6	10	----	65.1	0.5	8	-7.5
B - 3	361	1	0.0	66.7	66	66.7	10	Snd Lvl	65.8	0.9	8	-7.1
B - 4	362	1	0.0	67.6	66	67.6	10	Snd Lvl	66.3	1.3	8	-6.7
B - 8	363	1	0.0	67.8	66	67.8	10	Snd Lvl	65.8	2.0	8	-6.0
B - 5	364	1	0.0	66.4	66	66.4	10	Snd Lvl	65.4	1.0	8	-7.0
B - 6	365	1	0.0	65.6	66	65.6	10	----	65.0	0.6	8	-7.4
B - 7	366	1	0.0	64.7	66	64.7	10	----	64.2	0.5	8	-7.5
C - 1	367	1	0.0	63.8	66	63.8	10	----	63.4	0.4	8	-7.6
C - 6	368	1	0.0	62.8	66	62.8	10	----	62.6	0.2	8	-7.8
C - 2	369	1	0.0	62.0	66	62.0	10	----	61.8	0.2	8	-7.8
C - 3	370	1	0.0	61.3	66	61.3	10	----	61.0	0.3	8	-7.7
C - 4	371	1	0.0	60.5	66	60.5	10	----	60.2	0.3	8	-7.7
C - 5	372	1	0.0	59.4	66	59.4	10	----	59.2	0.2	8	-7.8
D - 1	373	1	0.0	58.9	66	58.9	10	----	58.7	0.2	8	-7.8
D - 2	374	1	0.0	58.2	66	58.2	10	----	58.1	0.1	8	-7.9
D - 3	375	1	0.0	58.5	66	58.5	10	----	58.4	0.1	8	-7.9
A - 126	456	1	0.0	63.3	66	63.3	10	----	60.6	2.7	8	-5.3
A - 127	457	1	0.0	63.6	66	63.6	10	----	60.3	3.3	8	-4.7
N - 27	469	1	0.0	68.1	66	68.1	10	Snd Lvl	68.1	0.0	8	-8.0
E - 1	479	1	0.0	68.1	66	68.1	10	Snd Lvl	68.1	0.0	8	-8.0

Dwelling Units	**# DUs**	**Noise Reduction**

		Min	Avg	Max
		dB	dB	dB
All Selected	146	0.0	4.3	9.6
All Impacted	70	0.0	6.4	9.6
All that meet NR Goal	31	8.0	8.9	9.6

IDOT 31 March 2016
KEG TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: IL 57/17
RUN: Barrier F
BARRIER DESIGN: Barrier F-3
ATMOSPHERICS: 68 deg F, 50% RH

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

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Noise Reduction Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
F - 10	254	1	0.0	64.5	66	64.5	10	----	61.9	2.6	8	-5.4
F - 11	255	1	0.0	65.1	66	65.1	10	----	62.2	2.9	8	-5.1
F - 12	256	1	0.0	65.9	66	65.9	10	----	62.7	3.2	8	-4.8
F - 13	257	1	0.0	64.5	66	64.5	10	----	61.9	2.6	8	-5.4
F - 14	258	1	0.0	65.2	66	65.2	10	----	62.3	2.9	8	-5.1
F - 15	259	1	0.0	65.9	66	65.9	10	----	62.7	3.2	8	-4.8
F - 16	266	1	0.0	68.8	66	68.8	10	Snd Lvl	64.3	4.5	8	-3.5
F - 17	267	1	0.0	67.8	66	67.8	10	Snd Lvl	63.7	4.1	8	-3.9
F - 18	268	1	0.0	66.8	66	66.8	10	Snd Lvl	63.2	3.6	8	-4.4
F - 1	1	1	0.0	69.5	66	69.5	10	Snd Lvl	64.2	5.3	8	-2.7
F - 2	2	1	0.0	73.7	66	73.7	10	Snd Lvl	65.0	8.7	8	0.7
F - 3	3	1	0.0	72.0	66	72.0	10	Snd Lvl	65.1	6.9	8	-1.1
F - 4	234	1	0.0	70.7	66	70.7	10	Snd Lvl	64.7	6.0	8	-2.0
F - 5	238	1	0.0	73.9	66	73.9	10	Snd Lvl	64.7	9.2	8	1.2
F - 6	239	1	0.0	71.9	66	71.9	10	Snd Lvl	64.8	7.1	8	-0.9
F - 7	240	1	0.0	70.5	66	70.5	10	Snd Lvl	64.5	6.0	8	-2.0
F - 8	244	1	0.0	67.9	66	67.9	10	Snd Lvl	63.6	4.3	8	-3.7
F - 9	245	1	0.0	67.0	66	67.0	10	Snd Lvl	63.2	3.8	8	-4.2

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	18	2.6	4.8	9.2
All Impacted	12	3.6	5.8	9.2

All that meet NR Goal		2	8.7	9.0	9.2							

IDOT				**31 March 2016**						
KEG				**TNM 2.5**						
RESULTS: BARRIER DESCRIPTIONS										
PROJECT/CONTRACT:	**IL 57/17**									
RUN:	**Barrier F**									
BARRIER DESIGN:	**Barrier F-3**									
Barriers										
Name	**Type**	**Heights along Barrier**			**Length**	**If Wall**	**If Berm**			**Cost**
		Min	**Avg**	**Max**		**Area**	**Volume**	**Top Width**	**Run:Rise**	
		ft	ft	ft	ft	sq ft	cu yd	ft	ft:ft	$
Barrier F	W	18.00	18.00	18.00	801	14423				360572
									Total Cost:	360572

IDOT 30 March 2016
KEG TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: IL 57/17
RUN: Barrier G
BARRIER DESIGN: BarrierG
ATMOSPHERICS: 68 deg F, 50% RH

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

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Increase over existing Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Noise Reduction Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
G - 1	245	1	66.9	67.3	66	0.4	10	Snd Lvl	60.4	6.9	8	-1.1

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	1	6.9	6.9	6.9
All Impacted	1	6.9	6.9	6.9
All that meet NR Goal	0	0.0	0.0	0.0

IDOT				**30 March 2016**						
KEG				**TNM 2.5**						
RESULTS: BARRIER DESCRIPTIONS										
PROJECT/CONTRACT:	**IL 57/17**									
RUN:	**Barrier G**									
BARRIER DESIGN:	**BarrierG**									
Barriers										
Name	**Type**	**Heights along Barrier**			**Length**	**If Wall**	**If Berm**			**Cost**
		Min	**Avg**	**Max**		**Area**	**Volume**	**Top Width**	**Run:Rise**	
		ft	ft	ft	ft	sq ft	cu yd	ft	ft:ft	$
Barrier6	W	28.00	28.00	28.00	668	18694				467361
									Total Cost:	467361

IDOT 12 June 2020
KEG TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: IL 57/17
RUN: Barrier H
BARRIER DESIGN: Barrier_H
ATMOSPHERICS: 68 deg F, 50% RH

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

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Increase over existing Crit'n Sub'l Inc	With Barrier Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Noise Reduction Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
H - 1	516	1	0.0	60.0	66	60.0	10	----	59.9	0.1	8	-7.9
H - 2	517	1	0.0	64.2	66	64.2	10	----	63.9	0.3	8	-7.7
H - 3	518	1	0.0	69.8	66	69.8	10	Snd Lvl	62.8	7.0	8	-1.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	3	0.1	2.5	7.0
All Impacted	1	7.0	7.0	7.0
All that meet NR Goal	0	0.0	0.0	0.0

IDOT 30 March 2016
KEG TNM 2.5
Calculated with TNM 2.5
RESULTS: SOUND LEVELS
PROJECT/CONTRACT: IL 57/17
RUN: Barrier M_N
BARRIER DESIGN: Barrier_M_N
ATMOSPHERICS: 68 deg F, 50% RH

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

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Increase over existing Crit'n Sub'l Inc	With Barrier Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Noise Reduction Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
M - 1	143	1	62.5	61.4	66	-1.1	10	----	59.2	2.2	8	-5.8
M - 2	144	1	61.9	62.3	66	0.4	10	----	59.2	3.1	8	-4.9
M - 3	145	1	63.2	62.1	66	-1.1	10	----	59.6	2.5	8	-5.5
M - 4	146	1	63.2	62.3	66	-0.9	10	----	59.4	2.9	8	-5.1
M - 5	147	1	65.3	65.7	66	0.4	10	----	61.2	4.5	8	-3.5
M - 6	148	1	63.6	64.1	66	0.5	10	----	60.4	3.7	8	-4.3
M - 7	149	1	60.6	61.0	66	0.4	10	----	57.8	3.2	8	-4.8
M - 8	150	1	66.0	67.2	66	1.2	10	Snd Lvl	62.5	4.7	8	-3.3
M - 9	151	1	66.1	67.5	66	1.4	10	Snd Lvl	63.2	4.3	8	-3.7
M - 10	152	1	58.7	59.5	66	0.8	10	----	56.4	3.1	8	-4.9
M - 11	153	1	59.6	60.0	66	0.4	10	----	56.8	3.2	8	-4.8
N - 1	154	1	61.8	63.2	66	1.4	10	----	57.0	6.2	8	-1.8
N - 2	155	1	63.1	64.1	66	1.0	10	----	58.0	6.1	8	-1.9
N - 4	157	1	71.1	74.2	66	3.1	10	Snd Lvl	65.2	9.0	8	1.0
N - 5	158	1	71.8	75.6	66	3.8	10	Snd Lvl	64.7	10.9	8	2.9
N - 6	159	1	72.6	76.5	66	3.9	10	Snd Lvl	63.9	12.6	8	4.6
N - 7	160	1	72.5	76.7	66	4.2	10	Snd Lvl	63.4	13.3	8	5.3
N - 8	161	1	72.8	76.9	66	4.1	10	Snd Lvl	63.2	13.7	8	5.7
N - 9	162	1	72.6	76.9	66	4.3	10	Snd Lvl	62.8	14.1	8	6.1
N - 10	163	1	71.9	75.8	66	3.9	10	Snd Lvl	62.3	13.5	8	5.5
N - 11	164	1	72.4	76.5	66	4.1	10	Snd Lvl	62.5	14.0	8	6.0
N - 12	165	1	73.3	77.5	66	4.2	10	Snd Lvl	63.4	14.1	8	6.1
N - 13	166	1	73.1	77.1	66	4.0	10	Snd Lvl	63.1	14.0	8	6.0
N - 29	167	1	73.7	77.6	66	3.9	10	Snd Lvl	63.4	14.2	8	6.2

N - 14	168	1	71.4	73.4	66	2.0	10	Snd Lvl	60.8	12.6	8	4.6
N - 15	169	1	70.3	72.1	66	1.8	10	Snd Lvl	59.9	12.2	8	4.2
N - 19	228	1	55.8	57.9	66	2.1	10	----	54.3	3.6	8	-4.4
N - 20	229	1	57.0	58.4	66	1.4	10	----	54.1	4.3	8	-3.7
N - 21	230	1	63.5	66.7	66	3.2	10	Snd Lvl	57.1	9.6	8	1.6
N - 22	231	1	64.1	67.2	66	3.1	10	Snd Lvl	57.6	9.6	8	1.6
N - 23	232	1	64.0	67.3	66	3.3	10	Snd Lvl	57.6	9.7	8	1.7
N - 24	233	1	61.5	65.1	66	3.6	10	----	56.9	8.2	8	0.2
N - 25	234	1	69.4	72.6	66	3.2	10	Snd Lvl	62.0	10.6	8	2.6
N - 26	235	1	67.3	70.3	66	3.0	10	Snd Lvl	59.8	10.5	8	2.5
N - 27	236	1	65.1	68.1	66	3.0	10	Snd Lvl	58.5	9.6	8	1.6
N - 28	237	1	64.8	67.7	66	2.9	10	Snd Lvl	58.7	9.0	8	1.0
M - 12	238	1	60.8	61.1	66	0.3	10	----	57.8	3.3	8	-4.7
M - 13	239	1	65.6	65.1	66	-0.5	10	----	61.7	3.4	8	-4.6
N - 16	250	1	0.0	64.8	66	64.8	10	----	58.0	6.8	8	-1.2
N - 17	251	1	0.0	54.7	66	54.7	10	----	53.3	1.4	8	-6.6
N - 18	252	1	0.0	56.6	66	56.6	10	----	52.8	3.8	8	-4.2
N - 3	156	1	70.6	72.2	66	1.6	10	Snd Lvl	65.2	7.0	8	-1.0

Dwelling Units	**# DUs**	**Noise Reduction**		
		Min	**Avg**	**Max**
		dB	**dB**	**dB**
All Selected	42	1.4	7.8	14.2
All Impacted	23	4.3	11.0	14.2
All that meet NR Goal	21	8.2	11.7	14.2

IDOT **30 March 2016**

KEG **TNM 2.5**

RESULTS: BARRIER DESCRIPTIONS

PROJECT/CONTRACT: **IL 57/17**

RUN: **Barrier M_N**

BARRIER DESIGN: **Barrier_M_N**

Barriers

Name	Type	Heights along Barrier			Length	If Wall	If Berm			Cost
		Min	Avg	Max		Area	Volume	Top Width	Run:Rise	
		ft	ft	ft	ft	sq ft	cu yd	ft	ft:ft	$
BarrierN	W	22.00	22.00	22.00	1170	25738				643444
BarrierM	W	14.00	15.81	18.00	733	11596				289900
Retaining Wall	W	18.00	18.00	18.00	222	3999				0
									Total Cost:	933344

IDOT 12 June 2020
KEG TNM 2.5
Calculated with TNM 2.5
RESULTS: SOUND LEVELS
PROJECT/CONTRACT: IL 57/17
RUN: Barrier N
BARRIER DESIGN: Barrier_N-only
ATMOSPHERICS: 68 deg F, 50% RH

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

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h		Increase over existing		With Barrier Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Noise Reduction Calculated minus Goal
				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc					
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
M - 1	516	1	0.0	65.0	66	65.0	10	----	64.8	0.2	8	-7.8
M - 2	518	1	0.0	64.5	66	64.5	10	----	63.9	0.6	8	-7.4
M - 3	519	1	0.0	65.8	66	65.8	10	----	65.6	0.2	8	-7.8
M - 4	520	1	0.0	65.7	66	65.7	10	----	65.4	0.3	8	-7.7
M - 5	521	1	0.0	68.0	66	68.0	10	Snd Lvl	67.6	0.4	8	-7.6
M - 6	522	1	0.0	65.9	66	65.9	10	----	65.3	0.6	8	-7.4
M - 7	523	1	0.0	63.0	66	63.0	10	----	62.2	0.8	8	-7.2
M - 8	524	1	0.0	68.7	66	68.7	10	Snd Lvl	68.2	0.5	8	-7.5
M - 9	525	1	0.0	68.8	66	68.8	10	Snd Lvl	68.1	0.7	8	-7.3
M - 10	526	1	0.0	60.7	66	60.7	10	----	59.3	1.4	8	-6.6
M - 11	527	1	0.0	61.5	66	61.5	10	----	60.1	1.4	8	-6.6
N - 1	528	1	0.0	64.2	66	64.2	10	----	61.6	2.6	8	-5.4
N - 2	529	1	0.0	65.5	66	65.5	10	----	63.3	2.2	8	-5.8
N - 3	530	1	0.0	74.3	66	74.3	10	Snd Lvl	72.1	2.2	8	-5.8
N - 4	531	1	0.0	74.8	66	74.8	10	Snd Lvl	70.7	4.1	8	-3.9
N - 5	532	1	0.0	75.5	66	75.5	10	Snd Lvl	69.4	6.1	8	-1.9
N - 6	533	1	0.0	75.9	66	75.9	10	Snd Lvl	67.3	8.6	8	0.6
N - 7	534	1	0.0	76.0	66	76.0	10	Snd Lvl	66.2	9.8	8	1.8
N - 8	535	1	0.0	76.1	66	76.1	10	Snd Lvl	65.3	10.8	8	2.8
N - 9	536	1	0.0	76.1	66	76.1	10	Snd Lvl	64.8	11.3	8	3.3
N - 10	537	1	0.0	75.0	66	75.0	10	Snd Lvl	64.3	10.7	8	2.7
N - 11	538	1	0.0	75.6	66	75.6	10	Snd Lvl	64.3	11.3	8	3.3
N - 12	539	1	0.0	76.7	66	76.7	10	Snd Lvl	64.6	12.1	8	4.1
N - 13	540	1	0.0	76.2	66	76.2	10	Snd Lvl	64.6	11.6	8	3.6

N - 29	541	1	0.0	76.7	66	76.7	10	Snd Lvl	64.5	12.2	8	4.2
N - 14	542	1	0.0	72.3	66	72.3	10	Snd Lvl	62.3	10.0	8	2.0
N - 15	543	1	0.0	71.2	66	71.2	10	Snd Lvl	62.6	8.6	8	0.6
N - 16	544	1	0.0	65.9	66	65.9	10	----	63.3	2.6	1	-5.4
N - 17	545	1	0.0	55.2	66	55.2	10	----	54.0	1.2	8	-6.8
N - 18	546	1	0.0	56.4	66	56.4	10	----	53.9	2.5	8	-5.5
N - 19	547	1	0.0	58.4	66	58.4	10	----	56.9	1.5	8	-6.5
N - 20	548	1	0.0	59.2	66	59.2	10	----	57.5	1.7	8	-6.3
N - 21	549	1	0.0	66.3	66	66.3	10	Snd Lvl	60.4	5.9	8	-2.1
N - 22	550	1	0.0	66.7	66	66.7	10	Snd Lvl	60.8	5.9	8	-2.1
N - 23	551	1	0.0	66.9	66	66.9	10	Snd Lvl	60.9	6.0	8	-2.0
N - 24	552	1	0.0	64.5	66	64.5	10	----	59.4	5.1	8	-2.9
N - 25	553	1	0.0	72.3	66	72.3	10	Snd Lvl	67.1	5.2	8	-2.8
N - 26	554	1	0.0	70.2	66	70.2	10	Snd Lvl	64.6	5.6	8	-2.4
N - 27	555	1	0.0	68.1	66	68.1	10	Snd Lvl	62.8	5.3	8	-2.7
N - 28	556	1	0.0	67.8	66	67.8	10	Snd Lvl	62.8	5.0	8	-3.0
M - 12	557	1	0.0	62.6	66	62.6	10	----	61.1	1.5	8	-6.5
M - 13	558	1	0.0	68.5	66	68.5	10	Snd Lvl	67.7	0.8	8	-7.2

Dwelling Units	**# DUs**	**Noise Reduction**		
		Min	**Avg**	**Max**
		dB	**dB**	**dB**
All Selected	42	0.2	4.7	12.2
All Impacted	25	0.4	6.8	12.2
All that meet NR Goal	11	8.6	10.6	12.2

IDOT 30 March 2016
KEG TNM 2.5
Calculated with TNM 2.5
RESULTS: SOUND LEVELS
PROJECT/CONTRACT: IL 57/17
RUN: Barrier O P Q
BARRIER DESIGN: Barrier_O_P_Q
ATMOSPHERICS: 68 deg F, 50% RH

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

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	With Barrier Type Impact	Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Q - 1	170	1	72.0	69.7	66	-2.3	10	Snd Lvl	61.5	8.2	8	0.2
Q - 2	171	1	67.9	66.9	66	-1.0	10	Snd Lvl	60.5	6.4	8	-1.6
Q - 3	172	1	65.0	64.8	66	-0.2	10	----	59.1	5.7	8	-2.3
Q - 4	173	1	62.8	62.9	66	0.1	10	----	57.5	5.4	8	-2.6
Q - 9	174	1	71.8	72.8	66	1.0	10	Snd Lvl	62.9	9.9	8	1.9
Q - 5	175	1	68.2	69.9	66	1.7	10	Snd Lvl	61.3	8.6	8	0.6
Q - 6	176	1	65.3	67.2	66	1.9	10	Snd Lvl	60.1	7.1	8	-0.9
Q - 7	177	1	63.2	65.0	66	1.8	10	----	58.8	6.2	8	-1.8
Q - 8	178	1	62.1	64.0	66	1.9	10	----	58.2	5.8	8	-2.2
P - 1	179	1	63.3	66.1	66	2.8	10	Snd Lvl	64.2	1.9	8	-6.1
P - 2	180	1	64.0	66.9	66	2.9	10	Snd Lvl	62.7	4.2	8	-3.8
P - 3	181	1	65.3	68.6	66	3.3	10	Snd Lvl	66.4	2.2	8	-5.8
O - 1	182	1	71.9	75.5	66	3.6	10	Snd Lvl	72.9	2.6	8	-5.4

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	13	1.9	5.7	9.9
All Impacted	9	1.9	5.7	9.9
All that meet NR Goal	3	8.2	8.9	9.9

IDOT				**30 March 2016**						
KEG				**TNM 2.5**						
RESULTS: BARRIER DESCRIPTIONS										
PROJECT/CONTRACT:	**IL 57/17**									
RUN:	**Barrier O P Q**									
BARRIER DESIGN:	**Barrier_O_P_Q**									
Barriers										
Name	**Type**	**Heights along Barrier**			**Length**	**If Wall**	**If Berm**			**Cost**
		Min	**Avg**	**Max**		**Area**	**Volume**	**Top Width**	**Run:Rise**	
		ft	ft	ft	ft	sq ft	cu yd	ft	ft:ft	$
Barrier6	W	10.00	14.53	16.00	1144	16627				415673
									Total Cost:	415673

IDOT 12 June 2020
KEG TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: IL 57/17
RUN: OPQ Extended
BARRIER DESIGN: Barrier_OPQ_extended
ATMOSPHERICS: 68 deg F, 50% RH

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

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	With Barrier Type Impact	Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Q - 1	516	1	0.0	73.9	66	73.9	10	Snd Lvl	61.8	12.1	8	4.1
Q - 2	517	1	0.0	70.6	66	70.6	10	Snd Lvl	60.8	9.8	8	1.8
Q - 3	518	1	0.0	67.9	66	67.9	10	Snd Lvl	59.6	8.3	8	0.3
Q - 4	519	1	0.0	65.6	66	65.6	10	----	58.3	7.3	8	-0.7
Q - 9	520	1	0.0	72.9	66	72.9	10	Snd Lvl	61.6	11.3	8	3.3
Q - 5	521	1	0.0	70.2	66	70.2	10	Snd Lvl	60.3	9.9	8	1.9
Q - 6	522	1	0.0	67.6	66	67.6	10	Snd Lvl	59.3	8.3	8	0.3
Q - 7	523	1	0.0	65.5	66	65.5	10	----	58.3	7.2	8	-0.8
Q - 8	524	1	0.0	64.6	66	64.6	10	----	57.8	6.8	8	-1.2
P - 1	525	1	0.0	66.1	66	66.1	10	Snd Lvl	60.6	5.5	8	-2.5
P - 2	526	1	0.0	66.6	66	66.6	10	Snd Lvl	60.6	6.0	8	-2.0
P - 3	527	1	0.0	68.2	66	68.2	10	Snd Lvl	62.4	5.8	8	-2.2
O - 1	528	1	0.0	75.0	66	75.0	10	Snd Lvl	70.1	4.9	8	-3.1
EX - 1	529	1	0.0	74.8	66	74.8	10	Snd Lvl	62.5	12.3	8	4.3
EX - 2	530	1	0.0	70.2	66	70.2	10	Snd Lvl	61.0	9.2	8	1.2
EX - 3	531	1	0.0	67.3	66	67.3	10	Snd Lvl	59.6	7.7	8	-0.3
EX - 4	532	1	0.0	65.7	66	65.7	10	----	58.8	6.9	8	-1.1
EX - 5	533	1	0.0	64.9	66	64.9	10	----	60.0	4.9	8	-3.1
EX - 6	534	1	0.0	66.8	66	66.8	10	Snd Lvl	61.2	5.6	8	-2.4
EX - 7	535	1	0.0	68.7	66	68.7	10	Snd Lvl	62.1	6.6	8	-1.4
EX - 9	536	1	0.0	74.5	66	74.5	10	Snd Lvl	64.0	10.5	8	2.5
EX - 10	537	1	0.0	71.3	66	71.3	10	Snd Lvl	65.4	5.9	8	-2.1
EX - 8	538	1	0.0	71.2	66	71.2	10	Snd Lvl	63.5	7.7	8	-0.3
EX - 11	539	1	0.0	65.2	66	65.2	10	----	62.0	3.2	8	-4.8

EX - 14	540	1	0.0	63.0	66	63.0	10	----	62.2	0.8	8	-7.2
EX - 13	541	1	0.0	66.5	66	66.5	10	Snd Lvl	65.7	0.8	8	-7.2
EX - 12	542	1	0.0	72.1	66	72.1	10	Snd Lvl	71.7	0.4	8	-7.6

Dwelling Units	**# DUs**	**Noise Reduction**		
		Min	**Avg**	**Max**
		dB	**dB**	**dB**
All Selected	27	0.4	6.9	12.3
All Impacted	20	0.4	7.4	12.3
All that meet NR Goal	9	8.3	10.2	12.3

IDOT 12 June 2020
KEG TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: IL 57/17
RUN: Barrier R
BARRIER DESIGN: Barrier_R
ATMOSPHERICS: 68 deg F, 50% RH

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

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	With Barrier Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
E - 1	479	1	0.0	68.0	66	68.0	10	Snd Lvl	67.8	0.2	8	-7.8
R - 1	480	1	0.0	66.5	66	66.5	10	Snd Lvl	62.8	3.7	8	-4.3

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	2	0.2	1.9	3.7
All Impacted	2	0.2	1.9	3.7
All that meet NR Goal	0	0.0	0.0	0.0

F3 – NOISE ANALYSIS RECEPTOR SUMMARY

Exhibit F

Noise Analysis Receptor Summary
Existing and Future Scenarios

Noise Level Comparison	
XX	Approaches or Exceeds Noise Abatement Criteria
XX	Substantial Increase (≥15 dBA Leq)

Receptor		FHWA Noise Abatement Criteria		2020 Existing Condition	2045 No Build Conditions	Δ Existing, No Build	2045 Build Conditions	Δ Existing, Build
ID	Dwelling Units	Activity Category	Activity Criteria $L_{eq}(h)$	L_{eq}	L_{eq}	L_{eq}	L_{eq}	L_{eq}
A - 1	1	B	67	66.8	68.0	1.2	68.1	1.3
A - 2	1	B	67.0	65.4	66.6	1.2	66.7	1.3
A - 3	1	B	67.0	63.8	65.1	1.3	65.3	1.5
A - 4	1	B	67.0	62.2	63.4	1.2	63.5	1.3
A - 5	1	B	67.0	72.4	73.6	1.2	72.9	0.5
A - 6	1	B	67.0	72.4	73.6	1.2	73.6	1.2
A - 7	1	B	67.0	72.2	73.4	1.2	73.7	1.5
A - 8	1	B	67.0	71.7	72.9	1.2	73.4	1.7
A - 9	1	B	67.0	71.6	72.8	1.2	73.5	1.9
A - 10	1	B	67.0	72.0	73.2	1.2	73.9	1.9
A - 11	1	B	67.0	72.3	73.6	1.3	74.5	2.2
A - 12	1	B	67.0	72.1	73.3	1.2	74.5	2.4
A - 13	1	B	67.0	72.3	73.5	1.2	74.5	2.2
A - 14	1	B	67.0	72.3	73.5	1.2	74.4	2.1
A - 15	1	B	67.0	72.3	73.5	1.2	74.6	2.3
A - 16	1	B	67.0	72.7	73.9	1.2	74.5	1.8
A - 17	1	B	67.0	72.4	73.6	1.2	74.7	2.3
A - 18	1	B	67.0	72.1	73.3	1.2	74.3	2.2
A - 19	1	B	67.0	72.1	73.3	1.2	74.2	2.1
A - 20	1	B	67.0	72.0	73.2	1.2	74.1	2.1
A - 21	1	B	67.0	72.0	73.2	1.2	74.2	2.2
A - 22	1	B	67.0	72.0	73.2	1.2	74.2	2.2
A - 23	1	B	67.0	72.0	73.3	1.3	74.2	2.2
A - 24	1	B	67.0	71.5	72.8	1.3	74.0	2.5
A - 25	1	B	67.0	71.6	72.9	1.3	74.0	2.4
A - 26	1	B	67.0	71.9	73.1	1.2	74.0	2.1
A - 27	1	B	67.0	72.1	73.3	1.2	74.2	2.1
A - 28	1	B	67.0	71.7	72.9	1.2	73.8	2.1
A - 29	1	B	67.0	71.6	72.8	1.2	73.9	2.3
A - 30	1	B	67.0	71.6	72.8	1.2	73.6	2.0
A - 31	1	B	67.0	71.6	72.8	1.2	73.7	2.1
A - 32	1	B	67.0	71.5	72.7	1.2	73.7	2.2
A - 33	1	B	67.0	71.5	72.8	1.3	73.6	2.1
A - 34	1	B	67.0	71.4	72.6	1.2	73.4	2.0
A - 35	1	B	67.0	71.6	72.9	1.3	73.7	2.1
A - 36	1	B	67.0	71.9	73.1	1.2	73.9	2.0
A - 37	1	B	67.0	71.9	73.1	1.2	73.7	1.8
A - 38	1	B	67.0	71.7	72.9	1.2	73.4	1.7
A - 39	1	B	67.0	71.1	72.3	1.2	72.9	1.8
A - 40	1	B	67.0	71.1	72.3	1.2	72.8	1.7
A - 41	1	B	67.0	71.2	72.4	1.2	72.6	1.4
A - 42	1	B	67.0	71.2	72.4	1.2	72.5	1.3

Exhibit F

Noise Analysis Receptor Summary
Existing and Future Scenarios

Noise Level Comparison	
XX	Approaches or Exceeds Noise Abatement Criteria
XX	Substantial Increase (≥15 dBA Leq)

Receptor		FHWA Noise Abatement Criteria		2020 Existing Condition	2045 No Build Conditions	Δ Existing, No Build	2045 Build Conditions	Δ Existing, Build
ID	Dwelling Units	Activity Category	Activity Criteria $L_{eq}(h)$	L_{eq}	L_{eq}	L_{eq}	L_{eq}	L_{eq}
A - 43	1	B	67.0	71.3	72.5	1.2	72.5	1.2
A - 44	1	B	67.0	71.6	72.8	1.2	72.7	1.1
A - 45	1	B	67.0	70.8	72.0	1.2	72.3	1.5
A - 46	1	B	67.0	71.0	72.2	1.2	72.2	1.2
A - 47	1	B	67.0	70.9	72.1	1.2	71.7	0.8
A - 48	1	B	67.0	70.8	72.0	1.2	71.7	0.9
A - 49	1	B	67.0	70.7	71.9	1.2	71.3	0.6
A - 50	1	B	67.0	70.8	72.0	1.2	71.3	0.5
A - 51	1	B	67.0	70.6	71.8	1.2	71.3	0.7
A - 52	1	B	67.0	70.9	72.1	1.2	71.2	0.3
A - 53	1	B	67.0	70.5	71.7	1.2	70.9	0.4
A - 54	1	B	67.0	62.6	63.8	1.2	63.8	1.2
A - 55	1	B	67.0	61.8	63.0	1.2	63.1	1.3
A - 56	1	B	67.0	61.8	63.0	1.2	63.0	1.2
A - 57	1	B	67.0	61.6	62.8	1.2	63.1	1.5
A - 58	1	B	67.0	61.5	62.7	1.2	63.3	1.8
A - 59	1	B	67.0	61.3	62.5	1.2	63.0	1.7
A - 60	1	B	67.0	60.7	61.9	1.2	62.5	1.8
A - 61	1	B	67.0	60.7	61.9	1.2	62.4	1.7
A - 62	1	B	67.0	60.8	62.0	1.2	62.5	1.7
A - 63	1	B	67.0	61.1	62.3	1.2	62.9	1.8
A - 64	1	B	67.0	61.2	62.4	1.2	63.0	1.8
A - 65	1	B	67.0	61.2	62.4	1.2	63.0	1.8
A - 66	1	B	67.0	61.0	62.2	1.2	62.8	1.8
A - 67	1	B	67.0	61.2	62.4	1.2	62.8	1.6
A - 68	1	B	67.0	60.5	61.7	1.2	62.4	1.9
A - 69	1	B	67.0	60.5	61.7	1.2	62.4	1.9
A - 70	1	B	67.0	60.3	61.5	1.2	62.3	2.0
A - 71	1	B	67.0	59.9	61.2	1.3	61.9	2.0
A - 72	1	B	67.0	61.3	62.5	1.2	63.5	2.2
A - 73	1	B	67.0	61.8	63.0	1.2	63.9	2.1
A - 74	1	B	67.0	61.9	63.1	1.2	64.2	2.3
A - 75	1	B	67.0	62.1	63.3	1.2	64.2	2.1
A - 76	1	B	67.0	62.0	63.2	1.2	64.0	2.0
A - 77	1	B	67.0	61.8	63.1	1.3	64.0	2.2
A - 78	1	B	67.0	61.7	62.9	1.2	63.9	2.2
A - 79	1	B	67.0	61.9	63.1	1.2	64.0	2.1
A - 80	1	B	67.0	61.9	63.1	1.2	64.2	2.3
A - 81	1	B	67.0	62.1	63.4	1.3	64.3	2.2
A - 82	1	B	67.0	62.7	63.9	1.2	64.4	1.7
A - 83	1	B	67.0	63.1	64.3	1.2	64.6	1.5
A - 84	1	B	67.0	63.3	64.5	1.2	64.8	1.5

Exhibit F

Noise Analysis Receptor Summary
Existing and Future Scenarios

Noise Level Comparison	
XX	Approaches or Exceeds Noise Abatement Criteria
XX	Substantial Increase (≥15 dBA Leq)

Receptor		FHWA Noise Abatement Criteria		2020 Existing Condition	2045 No Build Conditions	Δ Existing, No Build	2045 Build Conditions	Δ Existing, Build
ID	Dwelling Units	Activity Category	Activity Criteria $L_{eq}(h)$	L_{eq}	L_{eq}	L_{eq}	L_{eq}	L_{eq}
A - 85	1	B	67.0	61.7	62.9	1.2	63.5	1.8
A - 86	1	B	67.0	61.9	63.1	1.2	63.8	1.9
A - 87	1	B	67.0	61.8	63.0	1.2	63.7	1.9
A - 88	1	B	67.0	61.3	62.5	1.2	63.1	1.8
A - 89	1	B	67.0	62.3	63.5	1.2	64.2	1.9
A - 90	1	B	67.0	61.4	62.6	1.2	63.4	2.0
A - 91	1	B	67.0	60.7	61.9	1.2	62.6	1.9
A - 92	1	B	67.0	62.4	63.6	1.2	64.5	2.1
A - 93	1	B	67.0	61.2	62.4	1.2	63.4	2.2
A - 94	1	B	67.0	60.8	62.0	1.2	62.8	2.0
A - 95	1	B	67.0	61.6	62.8	1.2	63.7	2.1
A - 96	1	B	67.0	62.6	63.8	1.2	64.4	1.8
A - 97	1	B	67.0	62.0	63.2	1.2	63.6	1.6
A - 98	1	B	67.0	62.0	63.2	1.2	63.6	1.6
A - 99	1	B	67.0	63.0	64.2	1.2	64.8	1.8
A - 100	1	B	67.0	61.8	63.0	1.2	63.7	1.9
A - 101	1	B	67.0	60.8	62.0	1.2	62.8	2.0
A - 102	1	B	67.0	61.4	62.6	1.2	63.5	2.1
A - 103	1	B	67.0	62.7	63.9	1.2	64.8	2.1
A - 104	1	B	67.0	64.0	65.2	1.2	66.1	2.1
A - 105	1	B	67.0	65.1	66.3	1.2	67.2	2.1
A - 106	1	B	67.0	64.2	65.4	1.2	66.3	2.1
A - 107	1	B	67.0	62.1	63.3	1.2	64.2	2.1
A - 108	1	B	67.0	61.2	62.4	1.2	63.2	2.0
A - 109	1	B	67.0	62.5	63.7	1.2	64.6	2.1
A - 110	1	B	67.0	64.0	65.2	1.2	66.1	2.1
A - 111	1	B	67.0	65.7	66.9	1.2	67.9	2.2
A - 112	1	B	67.0	66.0	67.2	1.2	67.9	1.9
A - 113	1	B	67.0	64.0	65.2	1.2	65.9	1.9
A - 114	1	B	67.0	62.4	63.7	1.3	64.6	2.2
A - 115	1	B	67.0	62.1	63.4	1.3	64.9	2.8
A - 116	1	B	67.0	63.5	64.7	1.2	66.2	2.7
A - 117	1	B	67.0	65.4	66.6	1.2	67.3	1.9
A - 118	1	B	67.0	65.6	66.8	1.2	67.6	2.0
A - 119	1	B	67.0	63.2	64.4	1.2	65.5	2.3
A - 120	1	B	67.0	61.9	63.1	1.2	64.3	2.4
A - 121	1	B	67.0	62.1	63.3	1.2	64.2	2.1
A - 122	1	B	67.0	65.8	67.0	1.2	67.4	1.6
A - 123	1	B	67.0	62.0	63.2	1.2	64.5	2.5
A - 124	1	B	67.0	63.8	65.0	1.2	66.0	2.2
A - 125	1	B	67.0	66.0	67.2	1.2	67.5	1.5
A - 126	1	B	67.0	61.2	62.4	1.2	63.2	2.0

Exhibit F

Noise Analysis Receptor Summary
Existing and Future Scenarios

Noise Level Comparison	
XX	Approaches or Exceeds Noise Abatement Criteria
XX	Substantial Increase (≥15 dBA Leq)

Receptor		FHWA Noise Abatement Criteria		2020 Existing Condition	2045 No Build Conditions	Δ Existing, No Build	2045 Build Conditions	Δ Existing, Build
ID	Dwelling Units	Activity Category	Activity Criteria $L_{eq}(h)$	L_{eq}	L_{eq}	L_{eq}	L_{eq}	L_{eq}
A - 127	1	B	67.0	61.4	62.6	1.2	63.6	2.2
B - 1	1	B	67.0	62.3	63.5	1.2	64.4	2.1
B - 2	1	B	67.0	63.4	64.7	1.3	65.6	2.2
B - 3	1	B	67.0	64.9	66.1	1.2	66.6	1.7
B - 4	1	B	67.0	66.2	67.4	1.2	67.5	1.3
B - 5	1	B	67.0	64.6	65.9	1.3	66.3	1.7
B - 6	1	B	67.0	63.7	64.9	1.2	65.6	1.9
B - 7	1	B	67.0	62.5	63.8	1.3	64.6	2.1
B - 8	1	B	67.0	66.3	67.6	1.3	67.8	1.5
C - 1	1	B	67.0	61.6	62.8	1.2	63.6	2.0
C - 2	1	B	67.0	59.7	60.9	1.2	61.7	2.0
C - 3	1	B	67.0	59.0	60.2	1.2	61.0	2.0
C - 4	1	B	67.0	58.4	59.6	1.2	60.2	1.8
C - 5	1	B	67.0	57.5	58.7	1.2	59.2	1.7
C - 6	1	B	67.0	60.6	61.8	1.2	62.6	2.0
D - 1	1	B	67.0	57.2	58.3	1.1	58.7	1.5
D - 2	1	B	67.0	56.9	58.0	1.1	58.0	1.1
D - 3	1	B	67.0	57.5	58.5	1.0	58.3	0.8
E - 1	56	B	67.0	68.7	69.6	0.9	68.0	-0.7
F - 1	5	B	67.0	66.2	67.4	1.2	69.1	2.9
F - 2	5	B	67.0	69.8	71.0	1.2	73.3	3.5
F - 3	5	B	67.0	68.5	69.7	1.2	71.5	3.0
F - 4	5	B	67.0	67.2	68.4	1.2	70.2	3.0
F - 5	5	B	67.0	69.9	71.1	1.2	73.4	3.5
F - 6	5	B	67.0	68.4	69.6	1.2	71.5	3.1
F - 7	5	B	67.0	67.0	68.3	1.3	70.0	3.0
F - 8	5	B	67.0	64.6	65.8	1.2	67.5	2.9
F - 9	5	B	67.0	63.8	65.0	1.2	66.6	2.8
F - 10	5	B	67.0	61.6	62.8	1.2	64.1	2.5
F - 11	5	B	67.0	62.1	63.3	1.2	64.7	2.6
F - 12	5	B	67.0	62.8	64.0	1.2	65.4	2.6
F - 13	5	B	67.0	61.4	62.6	1.2	64.0	2.6
F - 14	5	B	67.0	62.1	63.3	1.2	64.8	2.7
F - 15	5	B	67.0	62.7	64.0	1.3	65.4	2.7
F - 16	5	B	67.0	65.6	66.8	1.2	68.4	2.8
F - 17	5	B	67.0	64.6	65.8	1.2	67.3	2.7
F - 18	5	B	67.0	63.6	64.9	1.3	66.3	2.7
G - 1	132	B	67.0	66.9	68.1	1.2	66.8	-0.1
H - 1	2	C	67.0	58.3	59.5	1.2	60.1	1.8
H - 2	4	C	67.0	62.0	63.3	1.3	64.3	2.3
H - 3	18	C	67.0	67.5	68.8	1.3	70.1	2.6
I - 1	1	B	67.0	64.7	65.7	1.0	64.8	NA

Exhibit F

Noise Analysis Receptor Summary
Existing and Future Scenarios

Noise Level Comparison	
XX	Approaches or Exceeds Noise Abatement Criteria
XX	Substantial Increase (≥15 dBA Leq)

Receptor		FHWA Noise Abatement Criteria		2020 Existing Condition	2045 No Build Conditions	Δ Existing, No Build	2045 Build Conditions	Δ Existing, Build
ID	Dwelling Units	Activity Category	Activity Criteria $L_{eq}(h)$	L_{eq}	L_{eq}	L_{eq}	L_{eq}	L_{eq}
J - 1	1	B	67.0	60.3	61.3	1.0	61.2	0.9
K - 1	1	B	67.0	58.2	59.2	1.0	58.8	0.6
K - 2	1	B	67.0	57.0	58.1	1.1	58.2	1.2
K - 3	1	B	67.0	61.1	62.0	0.9	61.2	0.1
K - 4	1	B	67.0	59.9	60.9	1.0	60.2	0.3
K - 5	1	B	67.0	58.1	59.1	1.0	59.2	1.1
K - 6	1	B	67.0	59.7	60.7	1.0	59.8	0.1
K - 7	1	B	67.0	64.7	65.6	0.9	64.9	0.2
L - 1	1	B	67.0	61.0	61.9	0.9	59.9	-1.1
L - 2	1	B	67.0	59.2	60.1	0.9	58.2	-1.0
L - 3	1	B	67.0	57.9	58.9	1.0	57.1	-0.8
L - 4	1	B	67.0	56.6	57.6	1.0	56.1	-0.5
L - 5	1	B	67.0	55.6	56.5	0.9	55.2	-0.4
L - 6	1	B	67.0	54.5	55.5	1.0	54.3	-0.2
L - 7	1	B	67.0	54.3	55.3	1.0	53.8	-0.5
L - 8	1	B	67.0	55.0	56.0	1.0	54.4	-0.6
L - 9	1	B	67.0	56.0	56.9	0.9	55.3	-0.7
L - 10	1	B	67.0	57.3	58.2	0.9	56.6	-0.7
L - 11	1	B	67.0	58.9	59.8	0.9	58.0	-0.9
L - 12	1	B	67.0	60.6	61.5	0.9	59.6	-1.0
L - 13	1	B	67.0	63.2	64.1	0.9	62.5	-0.7
L - 14	1	B	67.0	65.3	66.2	0.9	65.5	0.2
L - 15	1	B	67.0	63.1	64.0	0.9	62.7	-0.4
L - 16	1	B	67.0	60.9	61.9	1.0	60.1	-0.8
L - 17	1	B	67.0	58.7	59.7	1.0	58.5	-0.2
L - 18	1	B	67.0	57.2	58.2	1.0	57.4	0.2
L - 19	1	B	67.0	56.1	57.1	1.0	56.5	0.4
L - 20	1	B	67.0	55.4	56.5	1.1	56.0	0.6
L - 21	1	B	67.0	65.0	65.9	0.9	65.1	0.1
L - 22	1	B	67.0	63.2	64.1	0.9	62.9	-0.3
L - 23	1	B	67.0	61.1	62.1	1.0	60.3	-0.8
L - 24	1	B	67.0	59.1	60.1	1.0	58.5	-0.6
L - 25	1	B	67.0	58.1	59.1	1.0	57.8	-0.3
L - 26	1	B	67.0	56.7	57.7	1.0	57.0	0.3
L - 27	1	B	67.0	55.5	56.5	1.0	55.7	0.2
L - 28	1	B	67.0	54.9	55.9	1.0	55.4	0.5
L - 29	1	B	67.0	54.8	55.9	1.1	55.5	0.7
L - 30	1	B	67.0	55.8	56.9	1.1	57.0	1.2
L - 31	1	B	67.0	56.3	57.4	1.1	57.3	1.0
L - 32	1	B	67.0	57.2	58.2	1.0	57.8	0.6
L - 33	1	B	67.0	58.6	59.6	1.0	58.7	0.1
L - 34	1	B	67.0	65.0	65.9	0.9	65.3	0.3

Exhibit F

Noise Analysis Receptor Summary
Existing and Future Scenarios

Noise Level Comparison	
XX	Approaches or Exceeds Noise Abatement Criteria
XX	Substantial Increase (≥15 dBA Leq)

Receptor		FHWA Noise Abatement Criteria		2020 Existing Condition	2045 No Build Conditions	Δ Existing, No Build	2045 Build Conditions	Δ Existing, Build
ID	Dwelling Units	Activity Category	Activity Criteria $L_{eq}(h)$	L_{eq}	L_{eq}	L_{eq}	L_{eq}	L_{eq}
M - 1	1	B	67.0	63.1	64.3	1.2	65.0	1.9
M - 2	1	B	67.0	62.6	63.8	1.2	64.5	1.9
M - 3	1	B	67.0	63.8	65.0	1.2	65.8	2.0
M - 4	1	B	67.0	63.7	65.0	1.3	65.7	2.0
M - 5	1	B	67.0	65.9	67.1	1.2	68.0	2.1
M - 6	1	B	67.0	64.2	65.4	1.2	65.9	1.7
M - 7	1	B	67.0	61.3	62.5	1.2	63.0	1.7
M - 8	1	B	67.0	66.5	67.7	1.2	68.6	2.1
M - 9	1	B	67.0	66.7	67.9	1.2	68.7	2.0
M - 10	1	B	67.0	59.4	60.6	1.2	60.8	1.4
M - 11	1	B	67.0	60.2	61.4	1.2	61.6	1.4
M - 12	1	B	67.0	61.3	62.5	1.2	62.6	1.3
M - 13	1	B	67.0	66.2	67.4	1.2	68.5	2.3
N - 1	1	B	67.0	62.5	63.7	1.2	64.2	1.7
N - 2	1	B	67.0	63.8	65.0	1.2	65.5	1.7
N - 3	1	B	67.0	71.2	72.5	1.3	74.0	2.8
N - 4	1	B	67.0	71.7	72.9	1.2	74.6	2.9
N - 5	1	B	67.0	72.4	73.6	1.2	75.4	3.0
N - 6	1	B	67.0	73.2	74.4	1.2	75.9	2.7
N - 7	1	B	67.0	73.2	74.4	1.2	75.7	2.5
N - 8	1	B	67.0	73.5	74.7	1.2	76.0	2.5
N - 9	1	B	67.0	73.3	74.5	1.2	76.1	2.8
N - 10	1	B	67.0	72.6	73.8	1.2	75.1	2.5
N - 11	1	B	67.0	73.2	74.4	1.2	75.6	2.4
N - 12	1	B	67.0	74.0	75.3	1.3	76.5	2.5
N - 13	1	B	67.0	73.9	75.1	1.2	76.2	2.3
N - 14	1	B	67.0	72.1	73.3	1.2	73.7	1.6
N - 15	1	B	67.0	71.1	72.3	1.2	72.4	1.3
N - 16	1	B	67.0	64.0	65.2	1.2	65.9	1.9
N - 17	1	B	67.0	53.4	54.6	1.2	55.2	1.8
N - 18	1	B	67.0	54.3	55.5	1.2	56.4	2.1
N - 19	1	B	67.0	56.5	57.7	1.2	58.4	1.9
N - 20	1	B	67.0	57.6	58.8	1.2	59.3	1.7
N - 21	1	B	67.0	64.3	65.5	1.2	66.3	2.0
N - 22	1	B	67.0	64.8	66.1	1.3	66.8	2.0
N - 23	1	B	67.0	64.8	66.0	1.2	66.9	2.1
N - 24	1	B	67.0	62.3	63.5	1.2	64.5	2.2
N - 25	1	B	67.0	70.0	71.2	1.2	72.3	2.3
N - 26	1	B	67.0	68.0	69.2	1.2	70.2	2.2
N - 27	1	B	67.0	65.8	67.0	1.2	68.1	2.3
N - 28	1	B	67.0	65.6	66.8	1.2	67.8	2.2
N - 29	1	B	67.0	74.4	75.7	1.3	76.7	2.3

Exhibit F

Noise Analysis Receptor Summary
Existing and Future Scenarios

Noise Level Comparison	
XX	Approaches or Exceeds Noise Abatement Criteria
XX	Substantial Increase (≥15 dBA Leq)

Receptor		FHWA Noise Abatement Criteria		2020 Existing Condition	2045 No Build Conditions	Δ Existing, No Build	2045 Build Conditions	Δ Existing, Build
ID	Dwelling Units	Activity Category	Activity Criteria $L_{eq}(h)$	L_{eq}	L_{eq}	L_{eq}	L_{eq}	L_{eq}
O - 1	1	C	67.0	72.5	73.7	1.2	74.7	2.2
P - 1	1	B	67.0	64.1	65.3	1.2	65.8	1.7
P - 2	1	B	67.0	64.7	65.9	1.2	66.5	1.8
P - 3	1	B	67.0	66.0	67.2	1.2	67.8	1.8
Q - 1	1	B	67.0	72.7	73.9	1.2	74.3	1.6
Q - 2	1	B	67.0	68.9	70.1	1.2	70.6	1.7
Q - 3	1	B	67.0	66.2	67.4	1.2	67.8	1.6
Q - 4	1	B	67.0	64.1	65.3	1.2	65.7	1.6
Q - 5	1	B	67.0	68.8	70.1	1.3	70.6	1.8
Q - 6	1	B	67.0	66.1	67.3	1.2	67.6	1.5
Q - 7	1	B	67.0	64.1	65.3	1.2	65.6	1.5
Q - 8	1	B	67.0	63.0	64.2	1.2	64.6	1.6
Q - 9	1	B	67.0	72.3	73.5	1.2	74.3	2.0
R - 1	1	C	67.0	66.3	67.2	0.9	66.4	0.1
S - 1	1	C	67.0	61.6	62.5	0.9	59.8	-1.8

F4 – NOISE BARRIER ANALYSIS

Noise Level Comparison	
XX	Approaches or Exceeds FHWA Noise Abatement Criteria

Exhibit F

Noise Barrier Analysis

Table 1

Build Noise Barrier Cost Effectiveness - Wall A1/A2.1 - <16> Foot Noise Barrier at 3715 feet

Noise Barrier	Receptor	Land Use	Dwelling Units	L_{eq} Noise Level (dBA)			Noise Reduction (dBA)	Total Benefited Receptors	Acoustically Feasible	Reasonableness Design Goal Reduction	Height of Barrier (ft)	Length of Barrier (ft)	Barrier Area (sq ft)	Total Cost of Barrier ($30/sq ft)	Cost Per Benefited Receptor	Noise Barrier Results
				FHWA Criteria (dBA)	Build Year 2045 (No Barrier)	Build Year 2045 (With Barrier)										
Wall A1/A2.1	A - 1	B	1	67	68	63	**5**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 2	B	1	67	67	62	**5**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 3	B	1	67	65	61	4	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 4	B	1	67	64	59	**5**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 5	B	1	67	73	62	**11**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 6	B	1	67	74	63	**11**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 7	B	1	67	74	63	**11**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 8	B	1	67	73	64	**9**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 9	B	1	67	74	64	**10**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 10	B	1	67	74	64	**10**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 11	B	1	67	75	64	**11**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 12	B	1	67	75	65	**10**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 13	B	1	67	75	65	**10**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 14	B	1	67	74	64	**10**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 15	B	1	67	75	64	**11**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 16	B	1	67	75	64	**11**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 17	B	1	67	75	64	**11**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 18	B	1	67	74	64	**10**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 19	B	1	67	74	64	**10**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 20	B	1	67	74	64	**10**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 21	B	1	67	74	64	**10**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 22	B	1	67	74	64	**10**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 23	B	1	67	74	64	**10**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 24	B	1	67	74	64	**10**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 25	B	1	67	74	64	**10**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 26	B	1	67	74	64	**10**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 27	B	1	67	74	64	**10**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 28	B	1	67	74	64	**10**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 29	B	1	67	74	64	**10**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 30	B	1	67	74	64	**10**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 31	B	1	67	74	64	**10**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 32	B	1	67	74	64	**10**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 33	B	1	67	74	64	**10**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 34	B	1	67	73	64	**9**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 35	B	1	67	74	64	**10**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 36	B	1	67	74	64	**10**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 37	B	1	67	74	63	**11**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 38	B	1	67	73	63	**10**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct

Noise Level Comparison	
XX	Approaches or Exceeds FHWA Noise Abatement Criteria

Exhibit F

Noise Barrier Analysis

Wall A1/A2.1	A - 39	B	1	67	73	64	**9**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 40	B	1	67	73	64	**9**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 41	B	1	67	73	64	**9**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 42	B	1	67	73	64	**9**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 43	B	1	67	73	64	**9**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 44	B	1	67	73	64	**9**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 45	B	1	67	72	64	**8**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 46	B	1	67	72	64	**8**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 47	B	1	67	72	65	**7**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 48	B	1	67	72	65	**7**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 49	B	1	67	71	64	**7**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 50	B	1	67	71	64	**7**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 51	B	1	67	71	64	**7**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 52	B	1	67	71	64	**7**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 53	B	1	67	71	65	**6**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 54	B	1	67	64	59	**5**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 55	B	1	67	63	58	**5**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 56	B	1	67	63	58	**5**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 57	B	1	67	63	59	4	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 58	B	1	67	63	59	4	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 59	B	1	67	63	59	4	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 60	B	1	67	63	58	**5**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 61	B	1	67	62	58	4	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 62	B	1	67	63	58	**5**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 63	B	1	67	63	58	**5**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 64	B	1	67	63	58	**5**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 65	B	1	67	63	58	**5**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 66	B	1	67	63	58	**5**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 67	B	1	67	63	57	**6**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 68	B	1	67	62	57	**5**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 69	B	1	67	62	57	**5**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 70	B	1	67	62	57	**5**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 71	B	1	67	62	57	**5**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 72	B	1	67	64	58	**6**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 73	B	1	67	64	58	**6**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 74	B	1	67	64	59	**5**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 75	B	1	67	64	59	**5**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 76	B	1	67	64	60	4	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 77	B	1	67	64	58	**6**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 78	B	1	67	64	58	**6**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 79	B	1	67	64	60	4	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 80	B	1	67	64	59	**5**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 81	B	1	67	64	59	**5**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 82	B	1	67	64	60	4	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct

Noise Level Comparison	
XX	Approaches or Exceeds FHWA Noise Abatement Criteria

Exhibit F

Noise Barrier Analysis

Wall A1/A2.1	A - 83	B	1	67	65	60	**5**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 84	B	1	67	65	60	**5**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 85	B	1	67	64	59	**5**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 86	B	1	67	64	59	**5**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 87	B	1	67	64	59	**5**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 88	B	1	67	63	58	**5**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 89	B	1	67	64	58	**6**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 90	B	1	67	63	57	**6**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 91	B	1	67	63	57	**6**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 92	B	1	67	65	59	**6**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 93	B	1	67	63	57	**6**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 94	B	1	67	63	58	**5**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 95	B	1	67	64	58	**6**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 96	B	1	67	64	59	**5**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 97	B	1	67	64	59	**5**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 98	B	1	67	64	59	**5**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 99	B	1	67	65	59	**6**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 100	B	1	67	64	58	**6**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 101	B	1	67	63	57	**6**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 102	B	1	67	64	58	**6**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 103	B	1	67	65	59	**6**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 104	B	1	67	66	60	**6**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 105	B	1	67	67	61	**6**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 106	B	1	67	66	60	**6**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 107	B	1	67	64	58	**6**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 108	B	1	67	63	57	**6**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 109	B	1	67	65	61	4	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 110	B	1	67	66	62	4	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 111	B	1	67	68	63	**5**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 112	B	1	67	68	64	4	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 113	B	1	67	66	61	**5**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 114	B	1	67	65	60	**5**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 115	B	1	67	65	63	2	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 116	B	1	67	66	64	2	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 117	B	1	67	67	65	2	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 118	B	1	67	68	64	4	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 119	B	1	67	66	63	3	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 120	B	1	67	64	62	2	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 121	B	1	67	64	64	0	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 122	B	1	67	67	66	1	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 123	B	1	67	65	64	1	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 124	B	1	67	66	65	1	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 125	B	1	67	68	66	2	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 126	B	1	67	63	60	3	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct
Wall A1/A2.1	A - 127	B	1	67	64	59	**5**	104	Yes	Yes	<16>	3,715	60,034	$1,801,020	$17,317.50	Propose to Construct

Noise Level Comparison	
XX	Approaches or Exceeds FHWA Noise Abatement Criteria

Exhibit F

Noise Barrier Analysis

Table 2

Build Noise Barrier Cost Effectiveness - Wall A/B/E.1 - 14 Foot Noise Barrier at 3520 feet

Noise Barrier	Receptor	Land Use	Dwelling Units	Leq Noise Level (dBA)			Noise Reduction (dBA)	Total Benefited Receptors	Acoustically Feasible	Reasonableness Design Goal Reduction	Height of Barrier (ft)	Length of Barrier (ft)	Barrier Area (sq ft)	Total Cost of Barrier ($30/sq ft)	Cost Per Benefited Receptor	Noise Barrier Results
				FHWA Noise Standard	Build Year 2045 No Noise Barrier	Build Year 2045 With Noise Barrier										
Wall A/B/E.1	A - 1	B	1	67	68	68	0	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 2	B	1	67	67	67	0	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 3	B	1	67	65	65	0	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 4	B	1	67	64	63	1	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 5	B	1	67	73	67	**6**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 6	B	1	67	74	67	**7**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 7	B	1	67	74	67	**7**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 8	B	1	67	73	67	**6**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 9	B	1	67	74	66	**8**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 10	B	1	67	74	66	**8**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 11	B	1	67	75	66	**9**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 12	B	1	67	75	66	**9**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 13	B	1	67	75	66	**9**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 14	B	1	67	74	65	**9**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 15	B	1	67	75	65	**10**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 16	B	1	67	75	65	**10**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 17	B	1	67	75	65	**10**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 18	B	1	67	74	65	**9**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 19	B	1	67	74	65	**9**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 20	B	1	67	74	65	**9**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 21	B	1	67	74	65	**9**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 22	B	1	67	74	65	**9**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 23	B	1	67	74	65	**9**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 24	B	1	67	74	65	**9**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 25	B	1	67	74	65	**9**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 26	B	1	67	74	65	**9**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 27	B	1	67	74	65	**9**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 28	B	1	67	74	65	**9**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 29	B	1	67	74	66	**8**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 30	B	1	67	74	66	**8**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 31	B	1	67	74	66	**8**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 32	B	1	67	74	66	**8**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 33	B	1	67	74	66	**8**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 34	B	1	67	73	66	**7**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 35	B	1	67	74	65	**9**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 36	B	1	67	74	65	**9**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 37	B	1	67	74	65	**9**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 38	B	1	67	73	65	**8**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 39	B	1	67	73	65	**8**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct

Noise Level Comparison	
XX	Approaches or Exceeds FHWA Noise Abatement Criteria

Exhibit F

Noise Barrier Analysis

Wall A/B/E.1	A - 40	B	1	67	73	65	**8**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 41	B	1	67	73	65	**8**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 42	B	1	67	73	65	**8**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 43	B	1	67	73	65	**8**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 44	B	1	67	73	65	**8**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 45	B	1	67	72	65	**7**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 46	B	1	67	72	65	**7**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 47	B	1	67	72	65	**7**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 48	B	1	67	72	65	**7**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 49	B	1	67	71	65	**6**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 50	B	1	67	71	65	**6**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 51	B	1	67	71	65	**6**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 52	B	1	67	71	64	**7**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 53	B	1	67	71	64	**7**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 54	B	1	67	64	63	1	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 55	B	1	67	63	62	1	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 56	B	1	67	63	62	1	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 57	B	1	67	63	62	1	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 58	B	1	67	63	62	1	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 59	B	1	67	63	62	1	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 60	B	1	67	63	61	2	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 61	B	1	67	62	60	2	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 62	B	1	67	63	60	3	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 63	B	1	67	63	61	2	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 64	B	1	67	63	60	3	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 65	B	1	67	63	59	4	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 66	B	1	67	63	59	4	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 67	B	1	67	63	59	4	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 68	B	1	67	62	59	3	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 69	B	1	67	62	58	4	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 70	B	1	67	62	58	4	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 71	B	1	67	62	58	4	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 72	B	1	67	64	59	**5**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 73	B	1	67	64	60	4	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 74	B	1	67	64	61	3	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 75	B	1	67	64	61	3	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 76	B	1	67	64	61	3	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 77	B	1	67	64	61	3	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 78	B	1	67	64	62	2	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 79	B	1	67	64	62	2	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 80	B	1	67	64	63	1	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 81	B	1	67	64	63	1	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 82	B	1	67	64	63	1	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 83	B	1	67	65	64	1	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 84	B	1	67	65	64	1	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct

Noise Level Comparison	
XX	Approaches or Exceeds FHWA Noise Abatement Criteria

Exhibit F

Noise Barrier Analysis

Wall A/B/E.1	A - 85	B	1	67	64	61	3	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 86	B	1	67	64	61	3	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 87	B	1	67	64	61	3	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 88	B	1	67	63	59	4	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 89	B	1	67	64	59	**5**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 90	B	1	67	63	58	**5**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 91	B	1	67	63	58	**5**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 92	B	1	67	65	60	**5**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 93	B	1	67	63	58	**5**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 94	B	1	67	63	60	3	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 95	B	1	67	64	60	4	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 96	B	1	67	64	61	3	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 97	B	1	67	64	61	3	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 98	B	1	67	64	60	4	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 99	B	1	67	65	61	4	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 100	B	1	67	64	60	4	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 101	B	1	67	63	59	4	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 102	B	1	67	64	60	4	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 103	B	1	67	65	61	4	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 104	B	1	67	66	62	4	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 105	B	1	67	67	63	4	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 106	B	1	67	66	61	**5**	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 107	B	1	67	64	60	4	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 108	B	1	67	63	60	3	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 109	B	1	67	65	62	3	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 110	B	1	67	66	63	3	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 111	B	1	67	68	65	3	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 112	B	1	67	68	64	4	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 113	B	1	67	66	62	4	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 114	B	1	67	65	61	4	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 115	B	1	67	65	63	2	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 116	B	1	67	66	65	1	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 117	B	1	67	67	65	2	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 118	B	1	67	68	65	3	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 119	B	1	67	66	63	3	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 120	B	1	67	64	63	1	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 121	B	1	67	64	64	0	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 122	B	1	67	67	66	1	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 123	B	1	67	65	64	1	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct

Noise Level Comparison	
XX	Approaches or Exceeds FHWA Noise Abatement Criteria

Exhibit F

Noise Barrier Analysis

Wall A/B/E.1	A - 124	B	1	67	66	65	1	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 125	B	1	67	68	66	2	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 126	B	1	67	63	61	2	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	A - 127	B	1	67	64	60	4	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	B - 1	B	1	67	64	64	0	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	B - 2	B	1	67	66	65	1	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	B - 3	B	1	67	67	66	1	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	B - 4	B	1	67	68	66	2	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	B - 8	B	1	67	68	66	2	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	B - 5	B	1	67	66	65	1	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	B - 6	B	1	67	66	65	1	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	B - 7	B	1	67	65	64	1	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct
Wall A/B/E.1	E - 1	B	56	67	68	68	0	56	Yes	Yes	14	3,520	49,248	$1,477,440	$26,382.86	Propose to Construct

Table 3

Build Noise Barrier Cost Effectiveness - Wall F.1 - 18 Foot Noise Barrier at 800 feet

Noise Barrier	Receptor	Land Use	Dwelling Units	Leq Noise Level (dBA)			Noise Reduction (dBA)	Total Benefited Receptors	Acoustically Feasible	Reasonableness Design Goal Reduction	Height of Barrier (ft)	Length of Barrier (ft)	Barrier Area (sq ft)	Total Cost of Barrier ($30/sq ft)	Cost Per Benefited Receptor	Noise Barrier Results
				FHWA Noise Standard	Build Year 2045 No Noise Barrier	Build Year 2045 With Noise Barrier										
Wall F.1	F - 1	B	5	67	69	64	**5**	35	Yes	Yes	18	800	14,423	$432,690	$12,362.57	Propose to Construct
Wall F.1	F - 2	B	5	67	73	65	**8**	35	Yes	Yes	18	800	14,423	$432,690	$12,362.57	Propose to Construct
Wall F.1	F - 3	B	5	67	72	65	**7**	35	Yes	Yes	18	800	14,423	$432,690	$12,362.57	Propose to Construct
Wall F.1	F - 4	B	5	67	70	65	**5**	35	Yes	Yes	18	800	14,423	$432,690	$12,362.57	Propose to Construct
Wall F.1	F - 5	B	5	67	73	65	**8**	35	Yes	Yes	18	800	14,423	$432,690	$12,362.57	Propose to Construct
Wall F.1	F - 6	B	5	67	72	65	**7**	35	Yes	Yes	18	800	14,423	$432,690	$12,362.57	Propose to Construct
Wall F.1	F - 7	B	5	67	70	65	**5**	35	Yes	Yes	18	800	14,423	$432,690	$12,362.57	Propose to Construct
Wall F.1	F - 8	B	5	67	68	64	4	35	Yes	Yes	18	800	14,423	$432,690	$12,362.57	Propose to Construct
Wall F.1	F - 9	B	5	67	67	63	4	35	Yes	Yes	18	800	14,423	$432,690	$12,362.57	Propose to Construct
Wall F.1	F - 10	B	5	67	64	62	2	35	Yes	Yes	18	800	14,423	$432,690	$12,362.57	Propose to Construct
Wall F.1	F - 11	B	5	67	65	62	3	35	Yes	Yes	18	800	14,423	$432,690	$12,362.57	Propose to Construct
Wall F.1	F - 12	B	5	67	65	63	2	35	Yes	Yes	18	800	14,423	$432,690	$12,362.57	Propose to Construct
Wall F.1	F - 13	B	5	67	64	62	2	35	Yes	Yes	18	800	14,423	$432,690	$12,362.57	Propose to Construct
Wall F.1	F - 14	B	5	67	65	62	3	35	Yes	Yes	18	800	14,423	$432,690	$12,362.57	Propose to Construct
Wall F.1	F - 15	B	5	67	65	63	2	35	Yes	Yes	18	800	14,423	$432,690	$12,362.57	Propose to Construct
Wall F.1	F - 16	B	5	67	68	64	4	35	Yes	Yes	18	800	14,423	$432,690	$12,362.57	Propose to Construct
Wall F.1	F - 17	B	5	67	67	64	3	35	Yes	Yes	18	800	14,423	$432,690	$12,362.57	Propose to Construct
Wall F.1	F - 18	B	5	67	66	63	3	35	Yes	Yes	18	800	14,423	$432,690	$12,362.57	Propose to Construct

Noise Level Comparison	
XX	Approaches or Exceeds FHWA Noise Abatement Criteria

Exhibit F

Noise Barrier Analysis

Table 4

Build Noise Barrier Cost Effectiveness - Wall G.1 - 28 Foot Noise Barrier at 670 feet

Noise Barrier	Receptor	Land Use	Dwelling Units	Leq Noise Level (dBA)			Noise Reduction (dBA)	Total Benefited Receptors	Acoustically Feasible	Reasonableness Design Goal Reduction	Height of Barrier (ft)	Length of Barrier (ft)	Barrier Area (sq ft)	Total Cost of Barrier ($30/sq ft)	Cost Per Benefited Receptor	Noise Barrier Results
				FHWA Noise Standard	Build Year 2045 No Noise Barrier	Build Year 2045 With Noise Barrier										
Wall G.1	G - 1	B	132	67	67	60	**7**	132	Yes	No	28	670	18,760	$562,800	NA	Does Not Meet Noise Reduction Design Goal

Table 5

Build Noise Barrier Cost Effectiveness - Wall H.1 - 28 Foot Noise Barrier at 650 feet

Noise Barrier	Receptor	Land Use	Dwelling Units	Leq Noise Level (dBA)			Noise Reduction (dBA)	Total Benefited Receptors	Acoustically Feasible	Reasonableness Design Goal Reduction	Height of Barrier (ft)	Length of Barrier (ft)	Barrier Area (sq ft)	Total Cost of Barrier ($30/sq ft)	Cost Per Benefited Receptor	Noise Barrier Results
				FHWA Noise Standard	Build Year 2045 No Noise Barrier	Build Year 2045 With Noise Barrier										
Wall H.1	H - 1	C	2	67	60	60	0	18	Yes	No	28	650	18,200	$546,000	NA	Does Not Meet Noise Reduction Design Goal
Wall H.1	H - 2	C	4	67	64	64	0	18	Yes	No	28	650	18,200	$546,000	NA	Does Not Meet Noise Reduction Design Goal
Wall H.1	H - 3	C	18	67	70	63	**7**	18	Yes	No	28	650	18,200	$546,000	NA	Does Not Meet Noise Reduction Design Goal

Table 6

Build Noise Barrier Cost Effectiveness - Wall M/N.1 - <20.5> Foot Noise Barrier at 1905 feet

Noise Barrier	Receptor	Land Use	Dwelling Units	Leq Noise Level (dBA)			Noise Reduction (dBA)	Total Benefited Receptors	Acoustically Feasible	Reasonableness Design Goal Reduction	Height of Barrier (ft)	Length of Barrier (ft)	Barrier Area (sq ft)	Total Cost of Barrier ($30/sq ft)	Cost Per Benefited Receptor	Noise Barrier Results
				FHWA Noise Standard	Build Year 2045 No Noise Barrier	Build Year 2045 With Noise Barrier										
Wall M/N.1	M - 1	B	1	67	65	59	**6**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	M - 2	B	1	67	65	59	**6**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	M - 3	B	1	67	66	60	**6**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	M - 4	B	1	67	66	59	**7**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	M - 5	B	1	67	68	61	**7**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	M - 6	B	1	67	66	60	**6**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	M - 7	B	1	67	63	58	**5**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	M - 8	B	1	67	69	63	**6**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	M - 9	B	1	67	69	63	**6**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	M - 10	B	1	67	61	56	**5**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	M - 11	B	1	67	62	57	**5**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	M - 12	B	1	67	63	58	**5**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	M - 13	B	1	67	69	62	**7**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	N - 1	B	1	67	64	57	**7**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	N - 2	B	1	67	66	58	**8**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	N - 3	B	1	67	74	65	**9**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	N - 4	B	1	67	75	65	**10**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	N - 5	B	1	67	75	65	**10**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	N - 6	B	1	67	76	64	**12**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	N - 7	B	1	67	76	63	**13**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct

Noise Level Comparison	
XX	Approaches or Exceeds FHWA Noise Abatement Criteria

Exhibit F

Noise Barrier Analysis

Wall M/N.1	N - 8	B	1	67	76	63	**13**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	N - 9	B	1	67	76	63	**13**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	N - 10	B	1	67	75	62	**13**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	N - 11	B	1	67	76	63	**13**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	N - 12	B	1	67	77	63	**14**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	N - 13	B	1	67	76	63	**13**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	N - 14	B	1	67	74	61	**13**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	N - 15	B	1	67	72	60	**12**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	N - 16	B	1	67	66	58	**8**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	N - 17	B	1	67	55	53	2	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	N - 18	B	1	67	56	53	3	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	N - 19	B	1	67	58	54	4	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	N - 20	B	1	67	59	54	**5**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	N - 21	B	1	67	66	57	**9**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	N - 22	B	1	67	67	58	**9**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	N - 23	B	1	67	67	58	**9**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	N - 24	B	1	67	65	57	**8**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	N - 25	B	1	67	72	62	**10**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	N - 26	B	1	67	70	60	**10**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	N - 27	B	1	67	68	59	**9**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	N - 28	B	1	67	68	59	**9**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct
Wall M/N.1	N - 29	B	1	67	77	63	**14**	39	Yes	Yes	<20.5>	1,905	37,334	$1,120,020	$28,718.46	Propose to Construct

Noise Level Comparison	
XX	Approaches or Exceeds FHWA Noise Abatement Criteria

Exhibit F

Noise Barrier Analysis

Table 7

Build Noise Barrier Cost Effectiveness - Wall N.1 - <18> Foot Noise Barrier at 1170 feet

Noise Barrier	Receptor	Land Use	Dwelling Units	Leq Noise Level (dBA)			Noise Reduction (dBA)	Total Benefited Receptors	Acoustically Feasible	Reasonableness Design Goal Reduction	Height of Barrier (ft)	Length of Barrier (ft)	Barrier Area (sq ft)	Total Cost of Barrier ($30/sq ft)	Cost Per Benefited Receptor	Noise Barrier Results
				FHWA Noise Standard	Build Year 2045 No Noise Barrier	Build Year 2045 With Noise Barrier										
Wall N.1	N - 1	B	1	67	64	62	2	20	Yes	Yes	<18>	1,170	20,866	$625,980	$31,299.00	Propose to Construct
Wall N.1	N - 2	B	1	67	66	63	3	20	Yes	Yes	<18>	1,170	20,866	$625,980	$31,299.00	Propose to Construct
Wall N.1	N - 3	B	1	67	74	72	2	20	Yes	Yes	<18>	1,170	20,866	$625,980	$31,299.00	Propose to Construct
Wall N.1	N - 4	B	1	67	75	71	4	20	Yes	Yes	<18>	1,170	20,866	$625,980	$31,299.00	Propose to Construct
Wall N.1	N - 5	B	1	67	75	69	**6**	20	Yes	Yes	<18>	1,170	20,866	$625,980	$31,299.00	Propose to Construct
Wall N.1	N - 6	B	1	67	76	67	**9**	20	Yes	Yes	<18>	1,170	20,866	$625,980	$31,299.00	Propose to Construct
Wall N.1	N - 7	B	1	67	76	66	**10**	20	Yes	Yes	<18>	1,170	20,866	$625,980	$31,299.00	Propose to Construct
Wall N.1	N - 8	B	1	67	76	65	**11**	20	Yes	Yes	<18>	1,170	20,866	$625,980	$31,299.00	Propose to Construct
Wall N.1	N - 9	B	1	67	76	65	**11**	20	Yes	Yes	<18>	1,170	20,866	$625,980	$31,299.00	Propose to Construct
Wall N.1	N - 10	B	1	67	75	64	**11**	20	Yes	Yes	<18>	1,170	20,866	$625,980	$31,299.00	Propose to Construct
Wall N.1	N - 11	B	1	67	76	64	**12**	20	Yes	Yes	<18>	1,170	20,866	$625,980	$31,299.00	Propose to Construct
Wall N.1	N - 12	B	1	67	77	65	**12**	20	Yes	Yes	<18>	1,170	20,866	$625,980	$31,299.00	Propose to Construct
Wall N.1	N - 13	B	1	67	76	65	**11**	20	Yes	Yes	<18>	1,170	20,866	$625,980	$31,299.00	Propose to Construct
Wall N.1	N - 14	B	1	67	74	62	**12**	20	Yes	Yes	<18>	1,170	20,866	$625,980	$31,299.00	Propose to Construct
Wall N.1	N - 15	B	1	67	72	63	**9**	20	Yes	Yes	<18>	1,170	20,866	$625,980	$31,299.00	Propose to Construct
Wall N.1	N - 16	B	1	67	66	63	3	20	Yes	Yes	<18>	1,170	20,866	$625,980	$31,299.00	Propose to Construct
Wall N.1	N - 17	B	1	67	55	54	1	20	Yes	Yes	<18>	1,170	20,866	$625,980	$31,299.00	Propose to Construct
Wall N.1	N - 18	B	1	67	56	54	2	20	Yes	Yes	<18>	1,170	20,866	$625,980	$31,299.00	Propose to Construct
Wall N.1	N - 19	B	1	67	58	57	1	20	Yes	Yes	<18>	1,170	20,866	$625,980	$31,299.00	Propose to Construct
Wall N.1	N - 20	B	1	67	59	58	1	20	Yes	Yes	<18>	1,170	20,866	$625,980	$31,299.00	Propose to Construct
Wall N.1	N - 21	B	1	67	66	60	**6**	20	Yes	Yes	<18>	1,170	20,866	$625,980	$31,299.00	Propose to Construct
Wall N.1	N - 22	B	1	67	67	61	**6**	20	Yes	Yes	<18>	1,170	20,866	$625,980	$31,299.00	Propose to Construct
Wall N.1	N - 23	B	1	67	67	61	**6**	20	Yes	Yes	<18>	1,170	20,866	$625,980	$31,299.00	Propose to Construct
Wall N.1	N - 24	B	1	67	65	59	**6**	20	Yes	Yes	<18>	1,170	20,866	$625,980	$31,299.00	Propose to Construct
Wall N.1	N - 25	B	1	67	72	67	**5**	20	Yes	Yes	<18>	1,170	20,866	$625,980	$31,299.00	Propose to Construct
Wall N.1	N - 26	B	1	67	70	65	**5**	20	Yes	Yes	<18>	1,170	20,866	$625,980	$31,299.00	Propose to Construct
Wall N.1	N - 27	B	1	67	68	63	**5**	20	Yes	Yes	<18>	1,170	20,866	$625,980	$31,299.00	Propose to Construct
Wall N.1	N - 28	B	1	67	68	63	**5**	20	Yes	Yes	<18>	1,170	20,866	$625,980	$31,299.00	Propose to Construct
Wall N.1	N - 29	B	1	67	77	65	**12**	20	Yes	Yes	<18>	1,170	20,866	$625,980	$31,299.00	Propose to Construct

Noise Level Comparison	
XX	Approaches or Exceeds FHWA Noise Abatement Criteria

Exhibit F

Noise Barrier Analysis

Table 8

Build Noise Barrier Cost Effectiveness - Wall O/P/Q.1 - <14.5> Foot Noise Barrier at 1145 feet

Noise Barrier	Receptor	Land Use	Dwelling Units	Leq Noise Level (dBA)			Noise Reduction (dBA)	Total Benefited Receptors	Acoustically Feasible	Reasonableness Design Goal Reduction	Height of Barrier (ft)	Length of Barrier (ft)	Barrier Area (sq ft)	Total Cost of Barrier ($30/sq ft)	Cost Per Benefited Receptor	Noise Barrier Results
				FHWA Noise Standard	Build Year 2045 No Noise Barrier	Build Year 2045 With Noise Barrier										
Wall O/P/Q.1	O - 1	C	1	67	75	73	2	9	Yes	Yes	<14.5>	1,145	16,627	$498,810	$55,423.33	Not Cost Effective
Wall O/P/Q.1	P - 1	B	1	67	66	64	2	9	Yes	Yes	<14.5>	1,145	16,627	$498,810	$55,423.33	Not Cost Effective
Wall O/P/Q.1	P - 2	B	1	67	67	63	4	9	Yes	Yes	<14.5>	1,145	16,627	$498,810	$55,423.33	Not Cost Effective
Wall O/P/Q.1	P - 3	B	1	67	68	66	2	9	Yes	Yes	<14.5>	1,145	16,627	$498,810	$55,423.33	Not Cost Effective
Wall O/P/Q.1	Q - 1	B	1	67	74	62	**12**	9	Yes	Yes	<14.5>	1,145	16,627	$498,810	$55,423.33	Not Cost Effective
Wall O/P/Q.1	Q - 2	B	1	67	71	61	**10**	9	Yes	Yes	<14.5>	1,145	16,627	$498,810	$55,423.33	Not Cost Effective
Wall O/P/Q.1	Q - 3	B	1	67	68	59	**9**	9	Yes	Yes	<14.5>	1,145	16,627	$498,810	$55,423.33	Not Cost Effective
Wall O/P/Q.1	Q - 4	B	1	67	66	58	**8**	9	Yes	Yes	<14.5>	1,145	16,627	$498,810	$55,423.33	Not Cost Effective
Wall O/P/Q.1	Q - 5	B	1	67	71	61	**10**	9	Yes	Yes	<14.5>	1,145	16,627	$498,810	$55,423.33	Not Cost Effective
Wall O/P/Q.1	Q - 6	B	1	67	68	60	**8**	9	Yes	Yes	<14.5>	1,145	16,627	$498,810	$55,423.33	Not Cost Effective
Wall O/P/Q.1	Q - 7	B	1	67	66	59	**7**	9	Yes	Yes	<14.5>	1,145	16,627	$498,810	$55,423.33	Not Cost Effective
Wall O/P/Q.1	Q - 8	B	1	67	65	58	**7**	9	Yes	Yes	<14.5>	1,145	16,627	$498,810	$55,423.33	Not Cost Effective
Wall O/P/Q.1	Q - 9	B	1	67	74	63	**11**	9	Yes	Yes	<14.5>	1,145	16,627	$498,810	$55,423.33	Not Cost Effective

Noise Level Comparison	
XX	Approaches or Exceeds FHWA Noise Abatement Criteria

Exhibit F

Noise Barrier Analysis

Table 9

Build Noise Barrier Cost Effectiveness - Wall O/P/Q-Ext.3 - 20 Foot Noise Barrier at 2060 feet

Noise Barrier	Receptor	Land Use	Dwelling Units	Leq Noise Level (dBA)			Noise Reduction (dBA)	Total Benefited Receptors	Acoustically Feasible	Reasonableness Design Goal Reduction	Height of Barrier (ft)	Length of Barrier (ft)	Barrier Area (sq ft)	Total Cost of Barrier ($30/sq ft)	Cost Per Benefited Receptor	Noise Barrier Results
				FHWA Noise Standard	Build Year 2045 No Noise Barrier	Build Year 2045 With Noise Barrier										
Wall O/P/Q-Ext.3	O - 1	C	1	67	75	70	**5**	23	Yes	Yes	20	2,060	41,200	$1,236,000	$53,739.13	Not Cost Effective
Wall O/P/Q-Ext.3	P - 1	B	1	67	66	61	**5**	23	Yes	Yes	20	2,060	41,200	$1,236,000	$53,739.13	Not Cost Effective
Wall O/P/Q-Ext.3	P - 2	B	1	67	67	61	**6**	23	Yes	Yes	20	2,060	41,200	$1,236,000	$53,739.13	Not Cost Effective
Wall O/P/Q-Ext.3	P - 3	B	1	67	68	62	**6**	23	Yes	Yes	20	2,060	41,200	$1,236,000	$53,739.13	Not Cost Effective
Wall O/P/Q-Ext.3	Q - 1	B	1	67	74	62	**12**	23	Yes	Yes	20	2,060	41,200	$1,236,000	$53,739.13	Not Cost Effective
Wall O/P/Q-Ext.3	Q - 2	B	1	67	71	61	**10**	23	Yes	Yes	20	2,060	41,200	$1,236,000	$53,739.13	Not Cost Effective
Wall O/P/Q-Ext.3	Q - 3	B	1	67	68	60	**8**	23	Yes	Yes	20	2,060	41,200	$1,236,000	$53,739.13	Not Cost Effective
Wall O/P/Q-Ext.3	Q - 4	B	1	67	66	58	**8**	23	Yes	Yes	20	2,060	41,200	$1,236,000	$53,739.13	Not Cost Effective
Wall O/P/Q-Ext.3	Q - 5	B	1	67	71	60	**11**	23	Yes	Yes	20	2,060	41,200	$1,236,000	$53,739.13	Not Cost Effective
Wall O/P/Q-Ext.3	Q - 6	B	1	67	68	59	**9**	23	Yes	Yes	20	2,060	41,200	$1,236,000	$53,739.13	Not Cost Effective
Wall O/P/Q-Ext.3	Q - 7	B	1	67	66	58	**8**	23	Yes	Yes	20	2,060	41,200	$1,236,000	$53,739.13	Not Cost Effective
Wall O/P/Q-Ext.3	Q - 8	B	1	67	65	58	**7**	23	Yes	Yes	20	2,060	41,200	$1,236,000	$53,739.13	Not Cost Effective
Wall O/P/Q-Ext.3	Q - 9	B	1	67	74	62	**12**	23	Yes	Yes	20	2,060	41,200	$1,236,000	$53,739.13	Not Cost Effective
Wall O/P/Q-Ext.3	EX - 1	B	1	67	75	63	**12**	23	Yes	Yes	20	2,060	41,200	$1,236,000	$53,739.13	Not Cost Effective
Wall O/P/Q-Ext.3	EX - 2	B	1	67	70	61	**9**	23	Yes	Yes	20	2,060	41,200	$1,236,000	$53,739.13	Not Cost Effective
Wall O/P/Q-Ext.3	EX - 3	B	1	67	67	60	**7**	23	Yes	Yes	20	2,060	41,200	$1,236,000	$53,739.13	Not Cost Effective
Wall O/P/Q-Ext.3	EX - 4	B	1	67	66	59	**7**	23	Yes	Yes	20	2,060	41,200	$1,236,000	$53,739.13	Not Cost Effective
Wall O/P/Q-Ext.3	EX - 5	B	1	67	65	60	**5**	23	Yes	Yes	20	2,060	41,200	$1,236,000	$53,739.13	Not Cost Effective
Wall O/P/Q-Ext.3	EX - 6	B	1	67	67	61	**6**	23	Yes	Yes	20	2,060	41,200	$1,236,000	$53,739.13	Not Cost Effective
Wall O/P/Q-Ext.3	EX - 7	B	1	67	68	62	**6**	23	Yes	Yes	20	2,060	41,200	$1,236,000	$53,739.13	Not Cost Effective
Wall O/P/Q-Ext.3	EX - 8	B	1	67	71	64	**7**	23	Yes	Yes	20	2,060	41,200	$1,236,000	$53,739.13	Not Cost Effective
Wall O/P/Q-Ext.3	EX - 9	B	1	67	74	64	**10**	23	Yes	Yes	20	2,060	41,200	$1,236,000	$53,739.13	Not Cost Effective
Wall O/P/Q-Ext.3	EX - 10	B	1	67	71	65	**6**	23	Yes	Yes	20	2,060	41,200	$1,236,000	$53,739.13	Not Cost Effective
Wall O/P/Q-Ext.3	EX - 11	B	1	67	65	62	3	23	Yes	Yes	20	2,060	41,200	$1,236,000	$53,739.13	Not Cost Effective
Wall O/P/Q-Ext.3	EX - 12	B	1	67	72	72	0	23	Yes	Yes	20	2,060	41,200	$1,236,000	$53,739.13	Not Cost Effective
Wall O/P/Q-Ext.3	EX - 13	B	1	67	66	66	0	23	Yes	Yes	20	2,060	41,200	$1,236,000	$53,739.13	Not Cost Effective
Wall O/P/Q-Ext.3	EX - 14	B	1	67	63	62	1	23	Yes	Yes	20	2,060	41,200	$1,236,000	$53,739.13	Not Cost Effective

Table 10

Build Noise Barrier Cost Effectiveness - Wall R.1 - 28 Foot Noise Barrier at 385 feet

Noise Barrier	Receptor	Land Use	Dwelling Units	Leq Noise Level (dBA)			Noise Reduction (dBA)	Total Benefited Receptors	Acoustically Feasible	Reasonableness Design Goal Reduction	Height of Barrier (ft)	Length of Barrier (ft)	Barrier Area (sq ft)	Total Cost of Barrier ($30/sq ft)	Cost Per Benefited Receptor	Noise Barrier Results
				FHWA Noise Standard	Build Year 2045 No Noise Barrier	Build Year 2045 With Noise Barrier										
Wall R.1	R - 1	C	1	67	66	63	3	0	No	No	28	385	10,780	$323,400	NA	Not Acoustically Effective