October 2019

Christopher B. Burke Engineering, Ltd.

DEERFIELD ROAD
PHASE I ENGINEERING STUDY

(MILWAUKEE AVENUE TO SAUNDERS/RIVERWOODS ROAD)

TRAFFIC NOISE ANALYSIS REPORT

LakeCounty
Division of Transportation

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1.0 INTRODUCTION

1.1 PROJECT OVERVIEW

This traffic noise study was prepared to evaluate the effect of the proposed roadway improvements on traffic noise along Deerfield Road and cross streets within the project limits. Traffic noise was assessed using the typical procedures outlined in Chapter 26-6.05(c) (Traffic Noise Analysis) of the Illinois Department of Transportation (IDOT) Bureau of Design and Environment (BDE) Manual and the IDOT Highway Traffic Noise Assessment Manual (2017).

The project is located along Deerfield Road (County Highway [CH] 11) with a western terminus at Milwaukee Avenue (US 45/IL 21) and an eastern terminus at Saunders/Riverwood Road (CH 58), a distance of approximately 2 miles (see Figure 1). Deerfield Road is an existing two-lane roadway (one 11 to 12 feet wide through lane in each direction) within the project limits. Deerfield Road is a five-lane roadway (two through lanes in each direction) both west of Milwaukee Avenue and east of Saunders/ Riverwoods Road. Deerfield Road lies within the municipal boundaries of the Village of Riverwoods through a majority of the corridor from Milwaukee Avenue to Saunders/Riverwoods Road. West of Milwaukee Avenue, Deerfield Road is within the municipal boundaries of the Village of Buffalo Grove. East of Saunders/Riverwoods Road, Deerfield Road is within the Village of Deerfield.

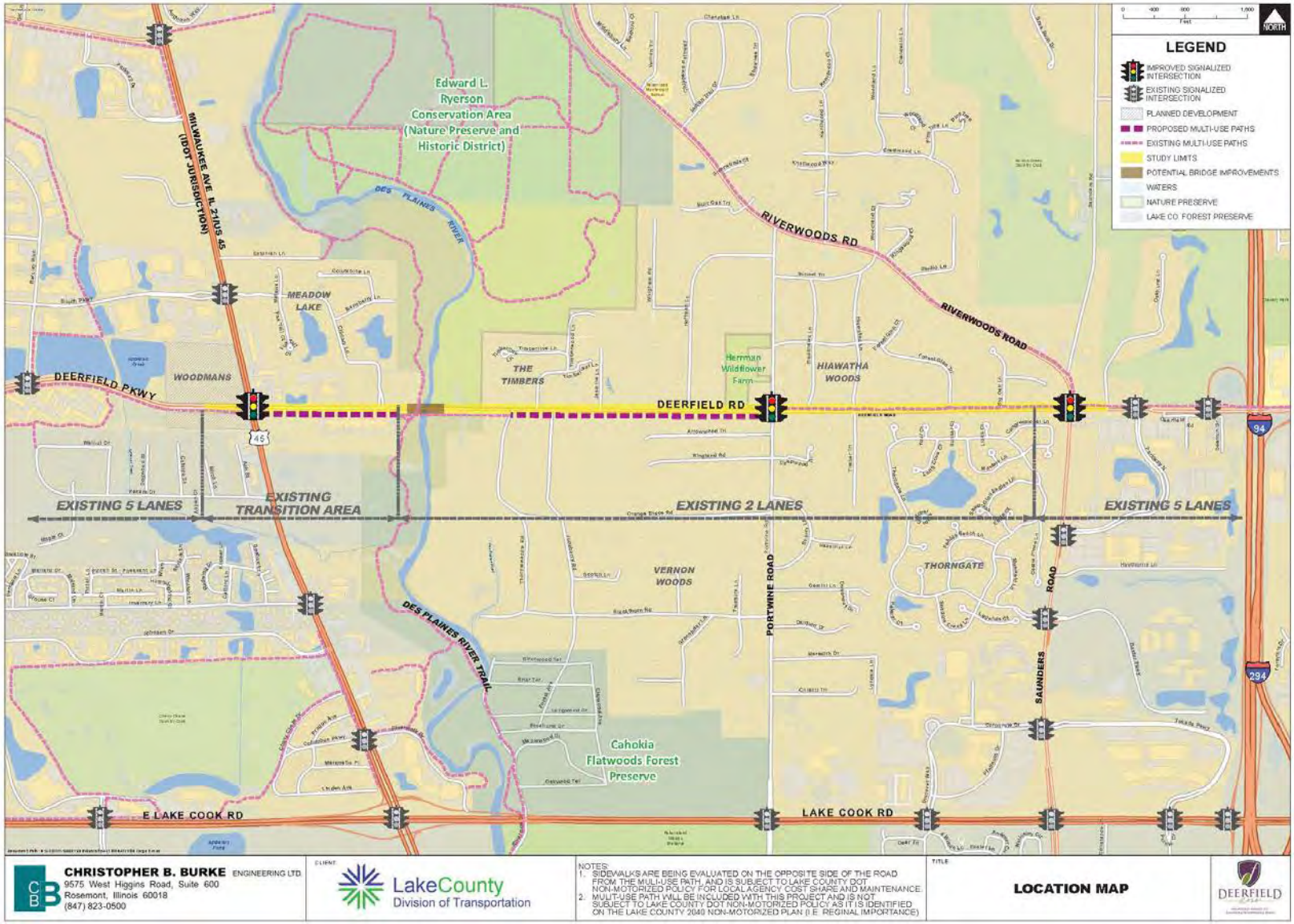
The proposed improvements will reconstruct and widen Deerfield Road from a 2-lane rural section with shoulder to a 3-lane urban section with curb and gutter (i.e., adding a center turn lane through the Deerfield Road corridor) between the Milwaukee Avenue intersection and Saunders/Riverwoods Road intersection. More substantial improvements are proposed at the Milwaukee Avenue and Deerfield Road intersection where the roadway will be widened from four existing lanes to eight lanes. Minor improvements are proposed at the two other signalized intersections within the project study area: Portwine Road and Saunders/Riverwoods Road. Northbound/southbound left turn lanes are proposed to be added at Portwine Road and a northbound right turn lane is proposed at Saunders/Riverwoods Road.

The project is considered a Type I noise project since the proposed improvements include roadway reconstruction with the addition of through traffic lanes at Milwaukee Avenue and the addition of a center turn lane throughout the length of the Deerfield Road corridor (2 miles). The study evaluated existing and future traffic noise conditions, and potential noise abatement options, as appropriate.

The traffic noise study was completed using the Federal Highway Administration (FHWA) approved Traffic Noise Model (TNM) Version 2.5. This modeling program is the only model currently approved by FHWA and is used on all FHWA approved traffic noise analyses throughout the country.

The federal and state noise regulations are discussed in Section 1.3. The identified noise sensitive receptors are discussed in Section 2.0. The noise analysis methodology, field noise measurement results, and TNM results are discussed in Section 3.0. The noise abatement analysis is discussed in Section 4.0. Construction noise is discussed in Section 5.0. A summary (with conclusions) is provided in Section 6.0.

Figure 1. Location Map



1.2 TRAFFIC NOISE DEFINITION

Sound is produced when pressure waves generated by a vibrating source travel through the air and are of sufficient strength to be capable of causing an auditory response in the human ear and brain. Sound is composed of a wide range of frequencies. However, the human ear is not uniformly sensitive to all frequencies. Therefore, the "A" weighted decibel scale was devised to correspond with the ear's sensitivity. The resulting unit of measurement is the dB(A).

The equivalent sound level is the steady-state, A-weighted sound level, which contains the same amount of acoustic energy as the actual time-varying, A-weighted sound level over a specified period of time. If the time period is 1 hour, the descriptor is the hourly equivalent sound level or $L_{eq}(h)$, which is widely used by state highway agencies as a descriptor of traffic noise. $L_{eq}(h)$ is based on the energy average, not a noise level average. Highway traffic noise can be relatively constant, but does contain peaks and valleys over a specified period of time depending on the vehicle composition, spacing, and other variables.

For the average human with normal hearing, a 3 dB(A) change in noise level is barely discernable, especially if the change occurs gradually over time. A 5 dB(A) change in noise level is perceptible if the change occurs within a short span of time, but less discernible if the change occurs gradually over a longer span of time. A 10 dB(A) increase or decrease within a short span of time is discernible and subjectively described by most humans as “twice as loud” or “twice as soft” as the original level.

1.3 TRAFFIC NOISE REGULATIONS

Traffic noise analyses are required for all Type I projects. The federal regulations define Type I projects as one of the following:

- The construction of a highway on new location;
- The physical alteration of an existing highway where there is either (1) a substantial horizontal alteration (i.e., a project that halves the distance between the traffic noise source and the closest receptor between the existing condition to the future build condition); or (2) a substantial vertical alteration (i.e., a project that removes shielding – therefore, exposing the line-of-sight between the receptor and the traffic noise source);
- The addition of a through-traffic lane(s). This includes the addition of a through-traffic lane that functions as a High Occupancy Vehicle (HOV) lane, High Occupancy Toll (HOT) lane, bus lane, or truck climbing lane;
- The addition of an auxiliary lane, except when the auxiliary lane is a turn lane;
- The addition or relocation of interchange lanes or ramps added to a quadrant to complete an existing partial interchange;
- Restriping existing pavement for the purpose of adding a through-traffic lane or an auxiliary lane; or
- The addition of a new or substantial alteration of a weigh station, rest stop, ride-share lot or toll plaza.

If any part of a project is determined to be a Type I noise project, then the entire project area (as described in the project's environmental documentation) is a Type I noise project. This project would be considered a Type I noise project since the proposed improvements include roadway reconstruction with the addition of through traffic lanes at Milwaukee Avenue.

Traffic noise levels for Type I noise projects are predicted using the FHWA approved TNM, as required by FHWA regulations. The use of TNM is the only FHWA approved method for determining future traffic noise levels. TNM 2.5 is the latest version currently approved by FHWA. Field noise measurements are required as part of the analysis to validate the noise levels predicted using TNM for the existing scenario. If the field noise measurements are within 3 dB(A) of the TNM results for the existing scenario, then the noise model is considered to be validated.

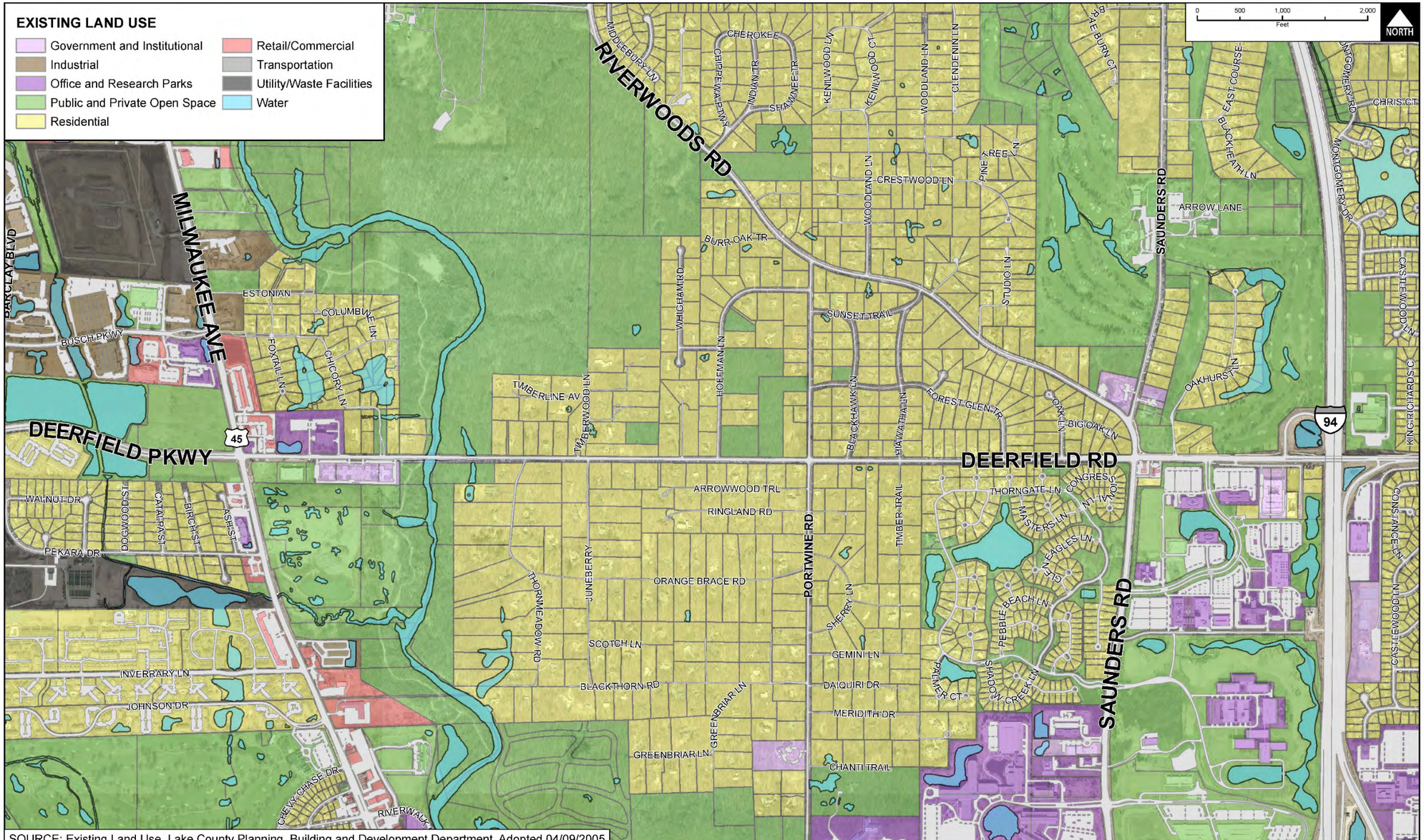
The federal regulations also establish noise levels where noise abatement should be evaluated. Separate noise abatement criteria (NAC) based upon land use are used by FHWA to assess potential noise impacts. A traffic noise impact occurs when build noise levels approach, meet, or exceed the NAC listed in Table 1. In determining the applicable noise activity category for the study area, existing land use was reviewed. Figure 2-1 and Figure 2-2 depict the existing and anticipated future land use.

Table 1. Noise Abatement Criteria – Hourly Weighted Sound Level

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

1. From Figure 2-1 and Figure 2-2: Government and Institutional = Category C or F; Industrial = Category F; Office and Research Parks = Category E; Public and Private Open Space = Category C or G; Residential = Category B; Retail/Commercial = Category E or F; Transportation = Category F; Utility/Waste Facilities = Category F; Water = Category G.

Figure 2-1. Existing Land Use



SOURCE: Existing Land Use, Lake County Planning, Building and Development Department, Adopted 04/09/2005.

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CLIENT: LakeCounty Division of Transportation

NO	DATE	NATURE OF REVISION	CHKD

DSGN.	
DWN:	DRW
CHKD.	
SCALE:	1:12,000
MODEL:	ArcGIS 10.6
PLOT DATE	8/14/2018
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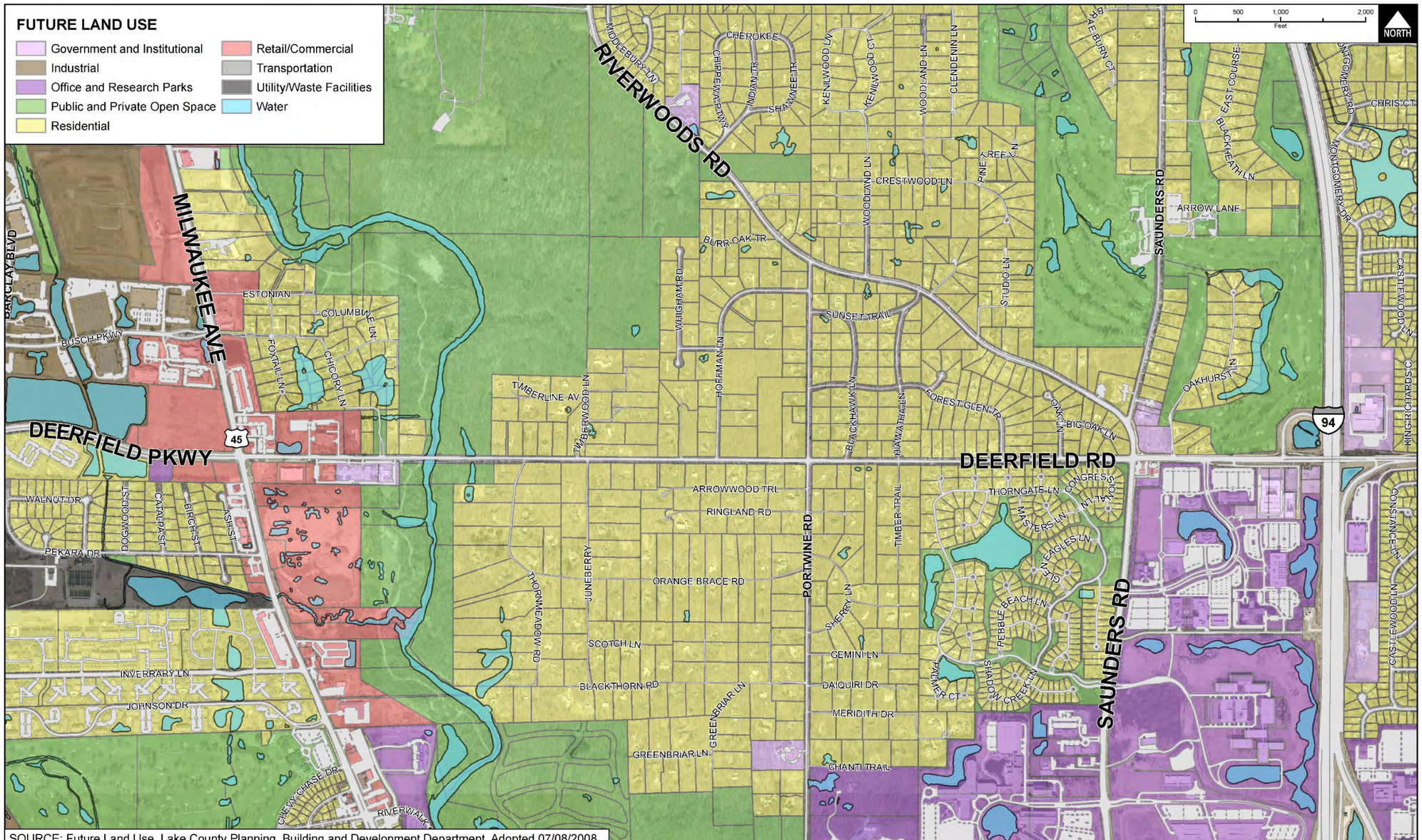
TITLE: **EXISTING LAND USE**

PROJ. NO.	150331
DATE:	08/09/2018
SHEET	0 OF 0
DRAWING NO.	**FIGURE 2-1**

Figure 2-2. Future Land Use



SOURCE: Future Land Use, Lake County Planning, Building and Development Department, Adopted 07/08/2008.

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DSGN.:
DWN: DRW
CHKD.:
SCALE: 1:12,000
MODEL: ArcGIS 10.8
PLOT DATE: 8/14/2018

TITLE: **FUTURE LAND USE**

PROJ. NO. 150331
DATE: 08/09/2018
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FIGURE 2-2

Based on the FHWA regulations, State Highway Authorities are allowed to establish the noise level determined to approach the NAC and the increase in noise levels determined to be a substantial increase. IDOT defines noise impacts as follows:

- Design-year 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 traffic noise levels are predicted to substantially increase (15 dB(A) or greater) over existing noise levels.

Although Phase I Engineering is being led by the Lake County Division of Transportation (LCDOT), the roadways to be improved by this project are under the jurisdiction of multiple agencies:

- Deerfield Road and Saunders/Riverwood Road are under the jurisdiction of LCDOT;
- Milwaukee Avenue is under the jurisdiction of IDOT; and
- Portwine Road is under the jurisdiction of the Village of Riverwoods

Phase I Engineering is using federal funding and federal funding is also anticipated to be used for subsequent phases of project development and construction. To be eligible for federal funds, the Phase I study (including this Traffic Noise Study) will follow IDOT policy.

2.0 NOISE RECEPTOR SELECTION

The existing land use adjacent to the proposed improvements is predominantly single family residential with larger wooded lots from the Des Plaines River to Saunders/Riverwoods Road. Near the Des Plaines River, the Lake County Forest Preserve District (LCFPD) has two holdings adjacent to Deerfield Road. West of the Des Plaines River and east of Saunders/Riverwoods Road, the land use is predominately retail/commercial and office/research parks. The existing land use is shown in Figure 2-1.

Undeveloped areas were reviewed to determine if there are any existing permits for development. The future land use is shown in Figure 2-2. Private development, including a retail/commercial area with restaurants, is under construction at the southwest quadrant of the Deerfield Road and Milwaukee Avenue intersection (see Figure 3-1 and Figure 3-4). The plans for the retail/commercial area depict several restaurants with patios. The patios were evaluated as receptor locations. The Village of Riverwoods owns the parcel in the southeast corner of the Milwaukee Avenue intersection. This parcel currently includes a floodplain compensatory storage area. There is potential for additional storm water management practice(s) at this location. The large undeveloped parcels located a couple hundred feet south of Deerfield Road along the east side of Milwaukee Avenue have a retail/commercial future land use (see Figure 2-2). However, the Village and County have indicated that no permit applications have been submitted for the parcels, as there are no known near-term plans.

Along the project corridor, the land use between Milwaukee Avenue and Saunders/Riverwoods Road is predominantly low density residential, and no changes in land use are anticipated. There is an existing gas station, a coffee shop, some vacant parcels, and a large office and research park at the southeast corner of the Saunders/Riverwoods Road intersection. The office and research park is not fully built-out yet, and a

parking lot and multi-story commercial building are proposed immediately adjacent to the proposed roadway improvements at Saunders Road. Based on coordination with the Village of Riverwoods, plans depicting a potential restaurant have been submitted for an outlot located just south of the existing gas station, but the owner of the property has also mentioned other potential uses and no formal submittal has been received to date (see Figure 3-3).

Based on the existing land use along the project corridor, receptor locations were selected to represent the land uses with established noise abatement criteria (NAC). For this project, receptors include residential areas (land use activity category B); community areas (e.g., medical facilities, parks/recreational areas - land use activity category C); and medical offices and restaurants (land use activity category E). The current construction projects adjacent to the Deerfield Road and Milwaukee Avenue intersection were included in this evaluation. The other commercial properties located along the project corridor are characterized as land use activity category E or F. A receptor location was not designated at commercial properties (activity category E) that did not appear to have an exterior area of anticipated gathering (e.g., picnic tables, benches) at the time of this evaluation. Activity category F does not have an established NAC. Unpermitted vacant/undeveloped land (activity category G) also does not have an established NAC. Activity categories and their descriptions are included in Table 1 (above).

The traffic noise study evaluates the project corridor using CNEs. Within each of the CNEs, the receptor located closest to the roadway was selected to represent the CNE, thereby representing the worst-case traffic noise condition (see the footnote at Table 2 for an exception). The represented receptors within the CNEs will have similar traffic noise levels as the selected receptor. CNEs and noise receptors were located a maximum of 500 feet from the edge of the nearest existing roadway with proposed improvements, as roadway noise impacts (if present) are typically within this distance.

Fifteen (15) potential representative receptors were selected along the project corridor. Table 2 lists the receptor and CNE number, the receptor type, the FHWA activity category and NAC associated with the receptor, and the approximate distance to the nearest existing roadway edge of pavement (with proposed improvements). Figure 3-1 through Figure 3-4 include an aerial photograph of the project corridor with the representative receptors and CNEs. Representative receptor locations are between 36 feet and 307 feet from the existing roadway edge of pavement and represent potential exterior human use areas. Generally, if noise monitoring is to be completed, between 25% and 50% of the receptor locations selected for noise modeling purposes should be evaluated by noise monitoring. As part of this study, noise monitoring was completed at seven receptors (***bolded and italicized*** in Table 2), in order to include 47% of the receptor locations. The selected receptors are spread from west to east throughout the project corridor.

At the time of our field visit to the project corridor on October 23, 2018, construction activities were occurring at the Deerfield Road and Milwaukee Avenue intersection. To minimize the potential effect of construction noise on the monitoring, no monitoring locations were designated at the CNEs located immediately adjacent to the construction activities.

Table 2. Noise Receptor Locations

Receptor/ CNE [1]	Receptor Type [2]	Activity Category/ NAC, dB(A)	Distance from Nearest Existing Project Roadway Edge of Pavement, ft	Nearest Existing Project Roadway
R1	Restaurant	E/72	103	Deerfield Parkway
R2	SFR	B/67	307	Deerfield Parkway
R3	Restaurant	E/72	188	Milwaukee Avenue
R4	Restaurant and Medical Office	E/72	75	Deerfield Road
R5	Medical Facility	C/67	87	Deerfield Road
R6	***SFR***	***B/67***	***123***	***Deerfield Road***
R7	***SFR***	***B/67***	***54***	***Deerfield Road***
R8	***SFR***	***B/67***	***60***	***Deerfield Road***
R9	***SFR***	***B/67***	***57***	***Deerfield Road***
R10-3 [3]	***SFR***	***B/67***	***126***	***Deerfield Road***
R11	***SFR***	***B/67***	***36***	***Deerfield Road***
R12	***SFR***	***B/67***	***78***	***Deerfield Road***
R13	Restaurant	E/72	218	Saunders Road
R14	Park/Recreational Area	C/67	103	Deerfield Road
R15	SFR	B/67	97	Deerfield Road

1. Proposed noise monitoring locations are ***bolded and italicized.***
2. SFR = Single-Family Residence.
3. R10-1 is approximately 101 feet from the roadway edge of pavement and was used for noise monitoring. A berm exists between Deerfield Road and CNE 10. R10-3 is located near the east end of the berm and is further from Deerfield Road than R10-1. Due to its location with respect to the berm, R10-3 experiences a higher sound level than R10-1 under existing conditions and was used as the representative receptor.

Figure 3-1. Noise Receptor Locations

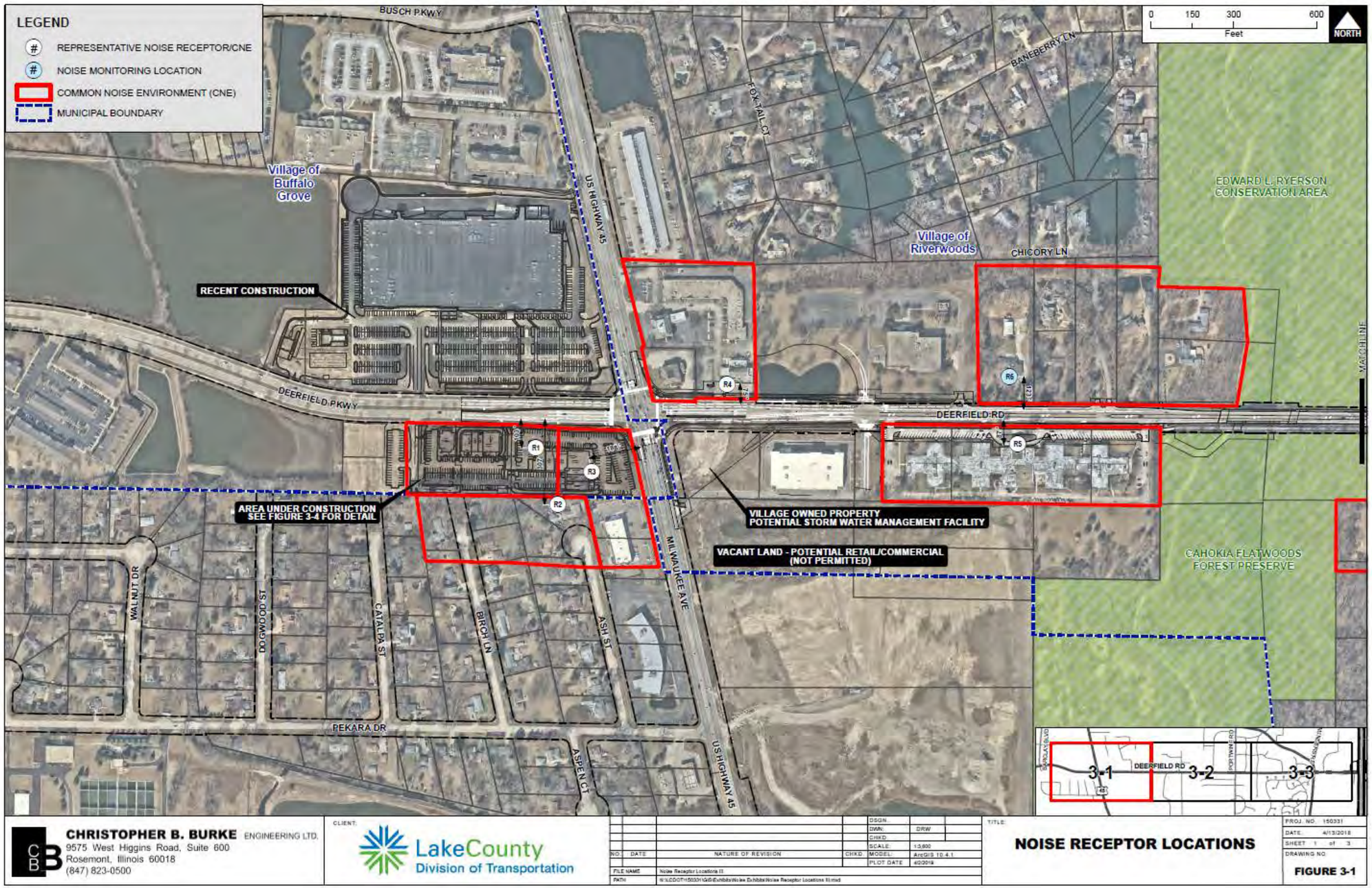


Figure 3-2. Noise Receptor Locations (continued)

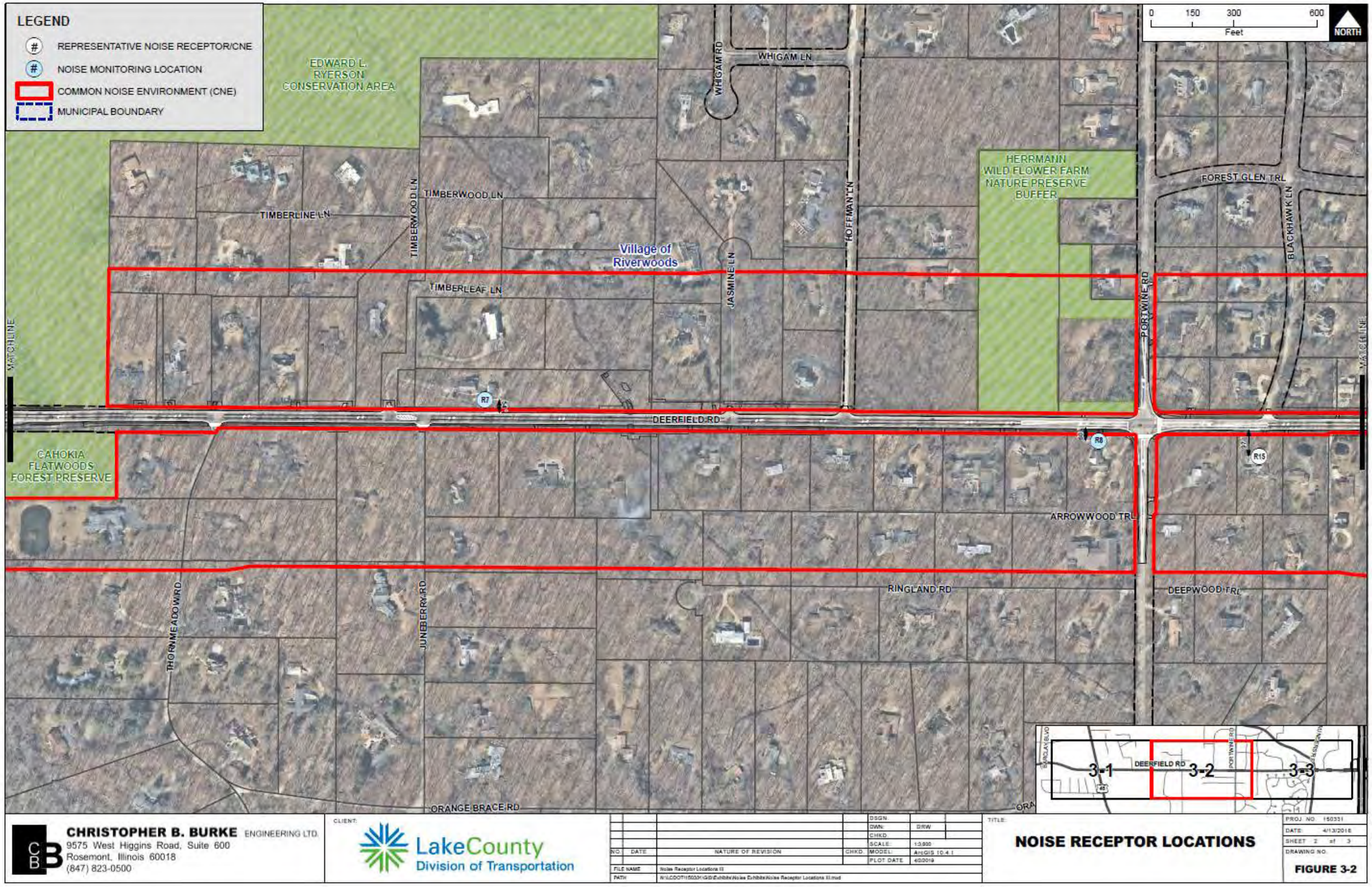


Figure 3-3. Noise Receptor Locations (continued)

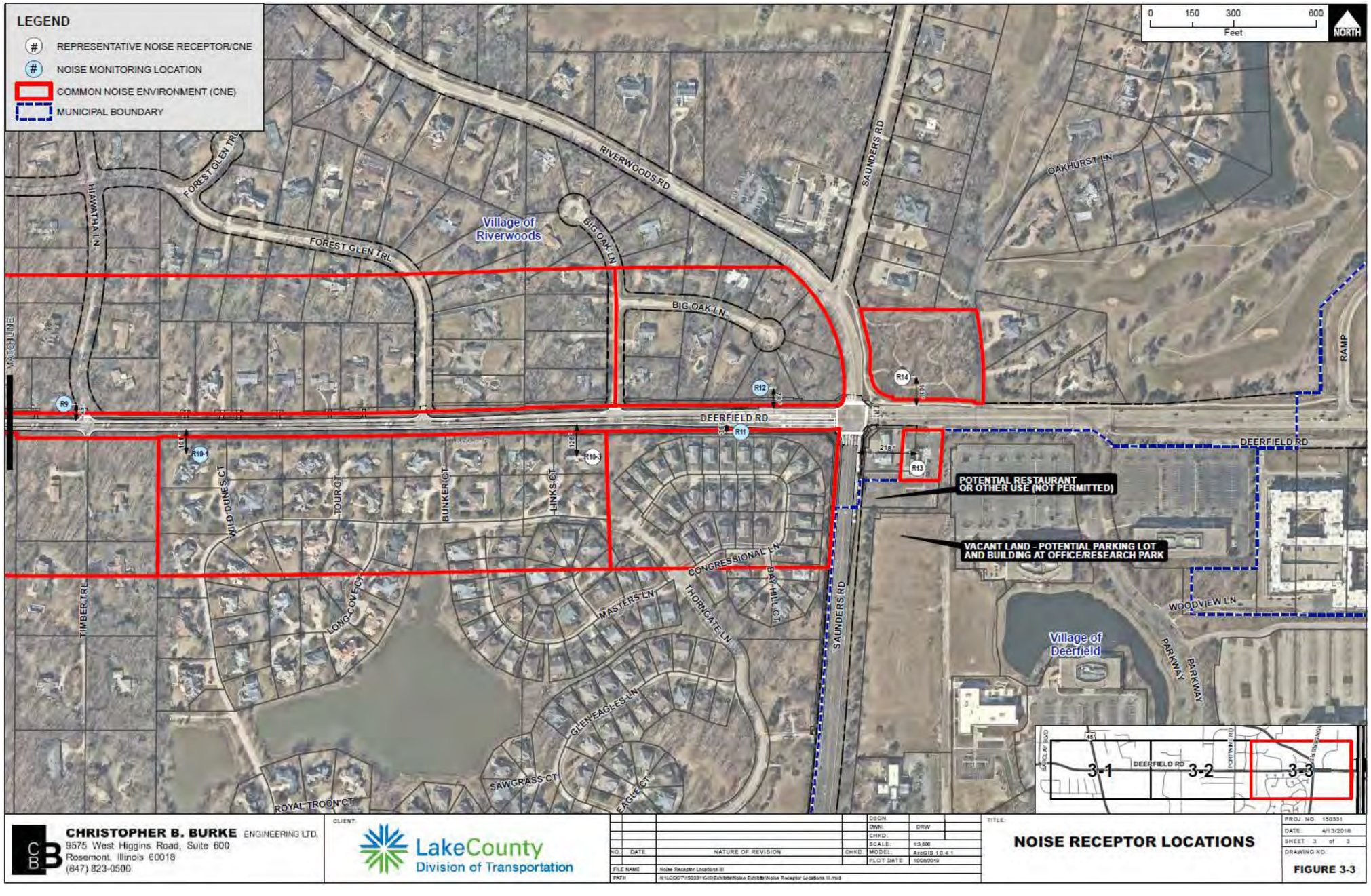
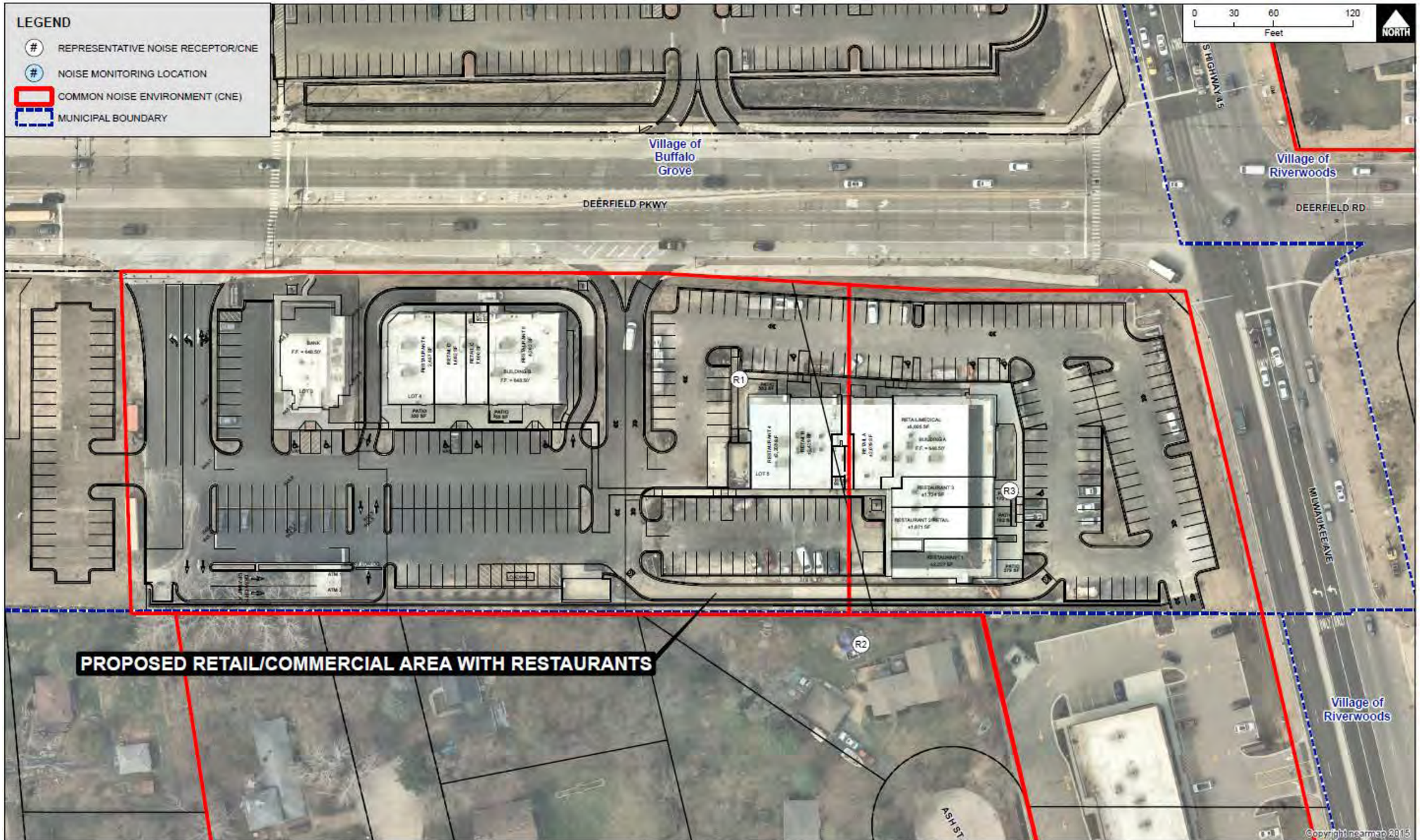


Figure 3-4. Noise Receptor Locations (continued)



3.0 NOISE ANALYSIS

3.1 FIELD NOISE MEASUREMENTS

Noise level measurements at representative locations are used to characterize existing noise conditions and are used to validate the TNM for analysis of future No-Build and Build conditions. Traffic noise levels recorded during field measurement are representative of the traffic characteristics (volume, speed and composition) for the time period measured, and need to be considered when evaluating noise levels as typical for the area. In addition, the noise levels are also influenced by other noise sources in the area other than the traffic noise and the characteristics of the location, such as existing berms or structures blocking sound. Noise monitoring was completed at receptors R6, R7, R8, R9, R10-1, R11, and R12 in order to include 47% of the receptor locations. The seven selected receptors are spread throughout the project corridor and include seven residential (single-family) receptor locations.

3.1.1 Instrumentation

A Larson Davis 831 Class I precision sound level meter was used for monitoring the actual noise level. The L_{eq} was recorded for the "A" weighted scale. L_{eq} is the equivalent level of sound (in decibels or dB(A)) which represents the level of sound held constant over a specified period of time. This reflects the same amount of energy as the actual fluctuating noise over that time period. The sound level meter was positioned on a tripod approximately five (5) feet above the ground surface and at least 10 feet from any reflecting surface. The sound level meter was set in a location where outdoor human activity would typically occur. One 12-minute noise measurement was taken at each receptor. The sound level meter was calibrated before and after each use.

3.1.2 Traffic Volumes

Traffic volumes along the nearest project corridor roadways were counted during field monitoring at receptors R6, R7, R8, R9, R10-1, R11, and R12. The number of cars and trucks were recorded separately along with any other noise sources observed during monitoring. The traffic volumes were counted for each direction during the 12-minute noise monitoring period. The traffic volumes counted were extrapolated from the 12-minute volumes to an hour (60 minutes) to estimate the hourly traffic. The resulting traffic volumes were compared to the traffic counts used in TNM (see Section 3.2.1).

3.1.3 Time and Day for Measurements

Noise monitoring is attempted during periods of peak travel times when volumes are higher, but not necessarily during stop and go traffic. Traffic may be stop and go during a typical rush-hour period at a reduced travel speed or stopped and therefore not producing peak noise. Noise monitoring was completed at receptors R6, R7, R8, R9, R10-1, R11, and R12 on Tuesday, October 23, 2018 between the hours of 8 AM to 3 PM (with a break between noon and 1 PM). Traffic was moving steadily through the corridor during the measurements.

3.1.4 Weather Conditions

The weather conditions during the field noise monitoring are shown in Table 3. Weather conditions can affect the noise measurement readings. Monitoring cannot be performed when there is snow cover or when the pavement is wet due to rain or snow. Noise measurements should not be taken if the wind speed exceeds 12 mph. A wind screen was used at all times during the monitoring to reduce potential wind noise. The conditions during the monitoring are summarized as follows:

Table 3. Weather Conditions During the Noise Monitoring

Condition	Required	Actual [1]
Pavement	Dry	Dry
Relative Humidity	5% to 90%	36% to 60%
Temperature	14° to 122° F	42° to 51° F
Wind Speed	Less than 12 mph	1 to 3 mph

1. Actual data was collected during field measurements on October 23, 2018.

The weather conditions during the noise monitoring were within the recommended ranges for all parameters listed.

3.1.5 Noise Monitoring Results

Table 4 summarizes the noise monitoring results for the seven locations monitored in the field. The monitored noise levels ranged from 56 dB(A) to 66 dB(A). The monitoring results were compared to the existing conditions TNM results to validate the TNM model for use in analyzing the 2050 No-Build and Build conditions. In general, noise monitoring results should be within ±3 dB(A) of the TNM generated results for the model to be considered validated. Refer to Section 3.3.1 for further discussion on the validation. The impact analysis and abatement evaluation were completed using the 2050 Build TNM results.

Table 4. Noise Monitoring Results

Receptor	Distance from Nearest Existing Project Roadway Edge of Pavement, ft	Nearest Existing Project Roadway	Monitored Noise Level, dB(A) [1]
R6	123	Deerfield Road	58
R7	54	Deerfield Road	63
R8	60	Deerfield Road	62
R9	57	Deerfield Road	64
R10-1	101	Deerfield Road	56
R11	36	Deerfield Road	66
R12	78	Deerfield Road	62

1. Rounded to nearest whole dB(A).

3.2 NOISE ANALYSIS METHODOLOGY

Modeling of the traffic noise levels at the 15 receptors located within the project limits was completed using TNM. Prediction of noise levels is one step in assessing potential noise impacts and abatement strategies. Traffic noise levels for the 15 receptor sites were predicted using existing (2016) and future (2050) traffic volumes.

Inputs into TNM include traffic volume, traffic mix (cars, medium trucks, and heavy trucks), receptor distance, elevation, and operating traffic speeds during free-flowing conditions. Information sources used in the analysis are briefly described in the following subsections.

3.2.1 Traffic Volumes

Project area roadway AM and PM peak hour traffic volumes for existing (2016) conditions were obtained from traffic counts completed by Terra Engineering, Ltd in May 2016. The travel pattern along Deerfield Road is predominantly eastbound in the AM and westbound in the PM. The total hourly traffic volumes for Deerfield Road were greater during the AM peak hour compared to the PM. Congestion was the greatest along westbound Deerfield Road from Saunders/Riverwoods Road to Milwaukee Avenue in the PM. Peak hour traffic volumes were extrapolated to 2050 No-Build and 2050 Build conditions using Chicago Metropolitan Agency for Planning (CMAP) Average Daily Traffic (ADT) volumes and projections.

The objective of the traffic noise analysis is to predict the worst hour traffic noise conditions. The traffic data that should be used are the highest volumes of traffic that can travel at the highest possible speed for the particular roadway, which is generally approximated by Level of Service (LOS) “C” conditions. This is typically represented by the Design Hourly Volume (DHV). The DHV traffic data was input into TNM.

The traffic volume estimates from the noise monitoring sessions were compared to the DHV used for the noise modeling. The automobile volumes counted during the monitoring ranged from 59% to 142% of the estimated peak-hourly volumes used in the TNM existing scenario model. The medium truck volumes ranged from 156% to 500% of the estimated peak-hourly volumes used in the TNM existing scenario model. The heavy truck volumes ranged from 63% to 167% of the estimated peak-hourly volumes used in the TNM existing scenario model. Totaling the sites, the number of vehicles estimated from the noise monitoring was approximately 82% of the TNM existing scenario model traffic counts. Trucks accounted for approximately 4% of the traffic during noise monitoring and approximately 2% of the traffic during the traffic counts used in the model.

3.2.2 Traffic Composition

Three types of vehicles, including cars, medium trucks, and heavy trucks, are input into TNM. Truck composition for the project corridor roadways was determined based the May 2016 traffic counts. Passenger cars were the predominate vehicle type observed during the traffic counts (approximately 98% overall). Medium and heavy trucks accounted for about 2% of the traffic. Truck traffic was approximately 52% medium trucks and 48% heavy trucks.

3.2.3 Receptor Distance/ Elevation

The selected representative receptors include a mixture of residential, restaurant, medical office, medical facility, and park/recreational uses. Table 2 includes the distances of the receptors from the existing edge of pavement of project area roadways. These distances vary from 36 feet at Receptor R11 to 307 feet at Receptor R2. The distance and elevation of each receptor directly affects the predicted traffic noise level.

3.2.4 Speed Conditions

The operating speed during free flow conditions was used for the noise analysis and has been input into the model as the posted speed limit. The existing posted speed limit is 40 mph for Deerfield Road and Milwaukee Avenue; 25 mph for Portwine Road; 35 mph for Riverwoods Road; and 45 mph for Saunders Road. Field observations during noise monitoring confirmed free-flowing traffic moving at approximately the posted speed limit. The posted speed limits are not anticipated to vary from existing conditions.

3.3 TNM RESULTS

Based on the above methodology, Existing (2016), No-Build (2050), and Build (2050) traffic noise levels were predicted for the 15 receptor sites using TNM.

3.3.1 Existing Conditions and TNM Validation

The TNM existing scenario output results were compared to the traffic noise monitoring results for the seven monitored receptors to validate the accuracy of the TNM model, which is shown in Table 5. Since the monitored noise levels are within 3 dB(A) of the TNM predicted noise levels for existing conditions,

the TNM model is validated. The difference between the modeled and monitored results range from -3 to 2 dB(A).

Table 5. Noise Monitoring Results and TNM Validation

Receptor	Distance from Nearest Existing Project Roadway Edge of Pavement, ft	Nearest Existing Project Roadway	Modeled Existing Noise Level, dB(A) [1, 2]	Monitored Noise Level, dB(A) [1]	Difference Between Modeled and Monitored Noise Levels, dB(A)
R6	123	Deerfield Road	58	58	0
R7	54	Deerfield Road	64	63	-1
R8	60	Deerfield Road	65	62	-3
R9	57	Deerfield Road	62	64	2
R10-1	101	Deerfield Road	56	56	0
R11	36	Deerfield Road	68	66	-2
R12	78	Deerfield Road	61	62	1

1. Rounded to the nearest whole dB(A).
2. Based on traffic data collected during the noise monitoring. The noise levels above may vary from other Existing Model TNM results.

3.3.2 2050 No-Build and Build Conditions

Table 6 presents the projected 2050 No-Build and Build condition noise levels for the 15 receptor sites, along with the predicted noise levels for existing conditions.

The predicted existing noise levels range from 57 dB(A) at R2 to 66 dB(A) at R11. The projected 2050 No-Build traffic noise levels range from 58 dB(A) at R2 to 68 dB(A) at R11. Generally, receptor noise levels increase an average of 1 dB(A) from the existing scenario to the No-Build scenario due to an increase in traffic volumes.

The projected 2050 Build traffic noise levels range from 58 dB(A) at R2 to 69 dB(A) at R4 and R11. Generally, receptor noise levels increase an average of 2 dB(A) from the existing scenario due to an increase in traffic volumes and construction of additional traffic lanes. Three receptor locations approach, meet, or exceed the FHWA NAC, and therefore warrant a noise abatement analysis. In addition to traffic noise levels approaching the NAC, a noise abatement analysis is warranted if traffic noise levels increase 15 dB(A) or more between the existing and build scenarios at a receptor, regardless if the NAC is approached. None of the receptors meet this criterion as the largest increase is 4 dB(A).

Table 6. Noise Impact Summary – TNM Modeling Results

Receptor/ CNE	Distance from Nearest Existing Project Roadway Centerline, ft	Nearest Existing Project Roadway	Existing Noise Level, dB(A)	2050 No-Build Noise Level, dB(A)	2050 Build Noise Level, dB(A)	Build Increase Over Existing, dB(A)	Impacted [1, 2]
R1	103	Deerfield Parkway	62	63	63	1	No
R2	307	Deerfield Parkway	57	58	58	1	No
R3	188	Milwaukee Avenue	62	63	63	1	No
R4	75	Deerfield Road	65	66	69	4	No
R5	87	Deerfield Road	61	63	64	3	No
R6	123	Deerfield Road	59	61	63	4	No
R7	54	Deerfield Road	65	66	67	2	***Yes***
R8	60	Deerfield Road	64	66	66	2	***Yes***
R9	57	Deerfield Road	63	64	65	2	No
R10-3	126	Deerfield Road	58	59	60	2	No
R11	36	Deerfield Road	66	68	69	3	***Yes***
R12	78	Deerfield Road	62	64	65	3	No
R13	218	Saunders Road	60	60	62	2	No
R14	103	Deerfield Road	62	62	64	2	No
R15	97	Deerfield Road	59	60	61	2	No

1. "***Yes***" indicates the noise levels approach, meet or exceed the NAC in the 2050 Build condition.
2. See Table 2 for "Receptor Type" and NAC. See Figure 3-1 through Figure 3-4 for receptor location.

3.4 REVIEW OF POTENTIAL DEVELOPMENT AND INFORMATION FOR LOCAL OFFICIALS

Based on coordination with the Village of Riverwoods and Lake County, besides the construction project at the southwest corner of Deerfield Road and Milwaukee Avenue, there are no existing permits for development of the vacant/undeveloped lands within the project limits. In accordance with IDOT guidance, undeveloped lands for which no permit has been obtained were evaluated for traffic noise under the 2050 Build condition. The 66 dB(A) noise level contour was estimated for undeveloped activity category B and C potential land uses and the 71 dB(A) noise level contour was estimated for undeveloped activity category E potential land uses. The purpose of the evaluation is to determine the traffic noise levels if the land were to be developed so that local officials can take traffic noise into consideration during planning of the development. Coordination with local officials having jurisdiction over vacant/undeveloped land within the project limits will occur near the Public Hearing to present the results of the traffic noise study, including the estimated future noise levels as shown in the noise contour exhibits at Appendix B.

Figure 2-1 and Figure 2-2 depict existing and future land use along the project corridor, and Figure 3-1 through Figure 3-4 depict the vacant/undeveloped lands. As discussed in Section 2.0, there is the potential for future development of the vacant/undeveloped land located near the southeast and southwest project limits, including: a storm water management facility, a retail/commercial development, a restaurant (or other use), and a parking lot and building at an office/research park. These types of land uses typically belong to FHWA activity category E or F. Activity category E is described above; activity category F does not have an associated NAC hourly weighted sound level.

4.0 NOISE ABATEMENT ANALYSIS

4.1 ABATEMENT ALTERNATIVES

Traffic noise abatement measures were considered for the three impacted receptors listed in Table 6 that approach, meet, or exceed the appropriate FHWA NAC.

The most feasible noise abatement measure for this project would be a noise barrier wall based on the substantially greater right-of-way (ROW) width required to accommodate an earthen berm, or to accommodate the depth and density of landscaping that would be required to provide noise abatement. Noise barriers placed adjacent to the roadway would attenuate traffic-related noise and would be the most practical noise abatement measure for this project. An effective noise barrier must be tall enough to break the line-of-sight between the receptor and source. The length of an effective noise barrier typically extends beyond the last receptor four times the distance between the receptor and noise barrier. Noise barriers have a zone of effectiveness, or shadow zone, which is generally within 200 feet of the noise barrier. Therefore, less noise reduction is achieved as the distance between the receptor and the noise barrier increases.

TNM was used to perform the noise barrier feasibility and reasonability evaluation for the impacted receptors. When determining if an abatement measure is feasible and reasonable, the noise reduction achieved, number of benefited receptors, total cost, and total cost per benefited receptor are considered.

4.2 FEASIBILITY AND REASONABILITY

Noise abatement options were analyzed in conformance with FHWA requirements at Title 23 Code of Federal Regulations Part 772 for each of the impacted receptors. In order for a noise abatement option to be constructed, it must meet both the feasibility and reasonability criterion, described below.

4.2.1 Feasibility

The feasibility evaluation of a noise abatement measure considers a combination of acoustical and engineering factors. The acoustical portion of the IDOT policy, as required by FHWA regulations, considers noise abatement to be feasible if it can be constructed and would achieve at least a 5 dB(A) traffic noise reduction for at least two impacted receptors.

4.2.2 Reasonability

Per FHWA regulations, a noise abatement measure is determined to be reasonable when all three of the following factors are met:

- Reasonableness Criterion 1 - IDOT's traffic noise reduction design goal of at least 8 dB(A) for at least one benefited receptor is achieved;
- Reasonableness Criterion 2 - The highway traffic noise abatement measure is cost effective; and
- Reasonableness Criterion 3 - The viewpoints of the benefited receptors (property owners and residents) are considered, if all other criteria are achieved.

A noise abatement measure is considered cost-effective to construct if the noise wall construction cost per benefited receptor is less than the allowable cost per benefited receptor. A benefited receptor is the recipient of an abatement measure that receives a noise reduction of 5 dB(A) or greater. The FHWA regulations allow each State Highway Authority to establish cost criteria for determining cost effectiveness.

IDOT policy establishes the actual cost per benefited receptor. The current unit cost used by IDOT to determine the estimated build cost for noise barriers is $30 per square foot, which includes engineering, materials, and installation. The estimated build cost does not include utility relocation, drainage, and ROW costs to accommodate the barriers. The base value for the allowable noise abatement cost is $30,000 per benefited receptor, which can be increased based on three factors as summarized below:

- 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; and
- The date of development compared to the construction date of the highway.

These factors are considered for all benefited receptors. Table 7, Table 8, and Table 9 present the allowable adjustments for each factor.

Table 7. 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

Table 8. 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

Table 9. 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

Note: No single optional reasonableness factor shall be used to determine that a noise abatement measure is unreasonable.

If a noise abatement option is feasible, achieves the IDOT noise reduction design goal, and achieves the cost-effective criterion, then the benefited receptors will be solicited for their opinion on the construction of the noise wall.

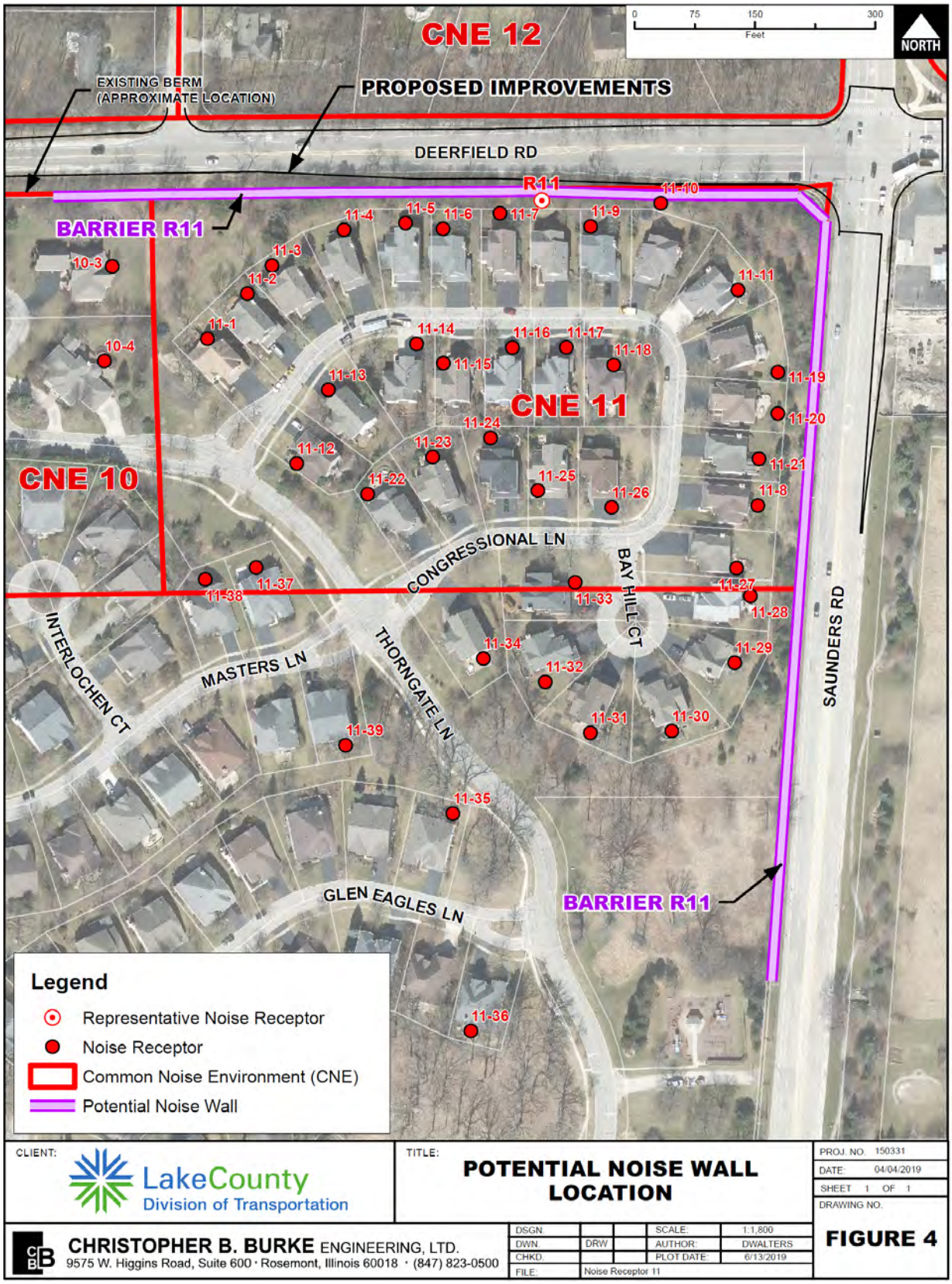
4.3 NOISE WALL ANALYSIS

TNM was used to perform the noise wall feasibility and reasonability check for the impacted receptors. Noise abatement was considered at the three impacted receptors: R7, R8, and R11 (see Table 6).

Noise abatement was not considered feasible at R7 and R8 because under the 2050 Build condition, only one receptor was impacted in each respective CNE. Therefore, the traffic noise reduction feasibility criterion of at least 5 dB(A) for at least two impacted receptors was not achieved within the CNE.

Noise abatement was considered feasible at R11. The location of the potential noise wall that was evaluated is shown in Figure 4. When determining if an abatement measure is feasible and reasonable, the noise reduction achieved, number of benefited receptors, total cost, and total cost per benefited receptor are considered.

Figure 4. Potential Noise Wall Location



Generally, a proposed noise abatement measure should provide traffic noise reduction to as many impacted receptors as possible and provide as much noise reduction as possible while remaining within the economic reasonability criterion. The noise barrier may be extended beyond the project limits to maintain continuity. A receptor does not need to be impacted to receive a benefit from a noise barrier, and an extended noise barrier may provide benefits to receptors that are not impacted. Consequently, the R11 noise barrier cost analysis was extended to include the benefited receptors just beyond the west and south ends of CNE 11.

The R11 Barrier was considered feasible since a 5 dB(A) traffic noise reduction was achieved for at least two impacted receptors. The R11 Barrier was also considered reasonable with respect to the traffic noise reduction design goal of at least 8 dB(A) for at least one benefited receptor. The R11 Barrier was evaluated for cost-effectiveness (see Table 10 and Table 11). It should be noted that one receptor location was placed at an exterior use area for each single-family residence (e.g., deck, playset), and that some of these receptor locations are within Homeowner Association property (i.e., beyond the homeowner's property) located immediately adjacent to Deerfield Road.

Table 10. R11 Barrier Adjusted Cost Per Benefited Receptor Calculations

Benefited Receptor Number	Build Noise Level, dB(A)	Increase in Noise Existing to Build, dB(A)	Homes Built Before Roadway, Yes/No	Absolute Noise Level Adjustment Factor	Increase in Noise Adjustment Factor	New Alignment/ Const. Date Adjustment Factor	Cumulative Reasonableness Adjustment Factors	Total Adjusted Allowable Cost Per Receptor
R10-3	60	2	No	$0	$0	$0	$0	$30,000
R10-4	55	3	No	$0	$0	$0	$0	$30,000
R11	69	3	No	$0	$0	$0	$0	$30,000
R11-1	57	3	No	$0	$0	$0	$0	$30,000
R11-2	59	3	No	$0	$0	$0	$0	$30,000
R11-3	60	2	No	$0	$0	$0	$0	$30,000
R11-4	64	3	No	$0	$0	$0	$0	$30,000
R11-5	65	3	No	$0	$0	$0	$0	$30,000
R11-6	64	3	No	$0	$0	$0	$0	$30,000
R11-7	67	4	No	$0	$0	$0	$0	$30,000
R11-8	63	1	No	$0	$0	$0	$0	$30,000
R11-9	66	4	No	$0	$0	$0	$0	$30,000
R11-10	69	3	No	$0	$0	$0	$0	$30,000
R11-11	64	2	No	$0	$0	$0	$0	$30,000
R11-12	53	2	No	$0	$0	$0	$0	$30,000
R11-13	56	3	No	$0	$0	$0	$0	$30,000
R11-14	58	3	No	$0	$0	$0	$0	$30,000
R11-15	58	4	No	$0	$0	$0	$0	$30,000
R11-16	59	3	No	$0	$0	$0	$0	$30,000
R11-17	59	3	No	$0	$0	$0	$0	$30,000
R11-18	60	3	No	$0	$0	$0	$0	$30,000
R11-19	65	2	No	$0	$0	$0	$0	$30,000
R11-20	65	2	No	$0	$0	$0	$0	$30,000
R11-21	64	2	No	$0	$0	$0	$0	$30,000
R11-22	53	2	No	$0	$0	$0	$0	$30,000
R11-23	55	3	No	$0	$0	$0	$0	$30,000
R11-24	56	3	No	$0	$0	$0	$0	$30,000
R11-25	56	3	No	$0	$0	$0	$0	$30,000

Benefited Receptor Number	Build Noise Level, dB(A)	Increase in Noise Existing to Build, dB(A)	Homes Built Before Roadway, Yes/No	Absolute Noise Level Adjustment Factor	Increase in Noise Adjustment Factor	New Alignment/ Const. Date Adjustment Factor	Cumulative Reasonableness Adjustment Factors	Total Adjusted Allowable Cost Per Receptor
R11-26	57	2	No	$0	$0	$0	$0	$30,000
R11-27	62	1	No	$0	$0	$0	$0	$30,000
R11-28	63	1	No	$0	$0	$0	$0	$30,000
R11-29	63	2	No	$0	$0	$0	$0	$30,000
R11-30	59	1	No	$0	$0	$0	$0	$30,000
R11-31	56	2	No	$0	$0	$0	$0	$30,000
R11-32	55	2	No	$0	$0	$0	$0	$30,000
R11-33	55	1	No	$0	$0	$0	$0	$30,000
R11-34	53	2	No	$0	$0	$0	$0	$30,000
Average for Noise Barrier				$0	$0	$0	$0	$30,000

Table 11. R11 Barrier Cost Reasonableness Evaluation

Benefited Receptors [1]	Barrier Length, ft	Average Barrier Height, ft	Estimated Noise Wall Cost [2]	ROW/Easement Cost Required for Construction of Noise Barrier	Estimated Total Noise Wall Cost	Estimated Cost per Benefited Receptor	Average Allowable Cost per Benefited Receptor	Likely to be Implemented
37	1,927	14.7	$849,150	$143,250	$992,400	$26,822	$30,000	Yes

1. Includes the outdoor use areas anticipated to receive at least a 5 dB(A) reduction.
2. Based on the IDOT policy value of $30 per square foot.

Based on the evaluation of the R11 Barrier presented in Table 10 and Table 11, the potential noise wall is considered cost-effective since the actual cost per benefited receptor does not exceed the average adjusted allowable cost per benefited receptor (assuming $30 per square foot of noise wall). This is in large part because of the relatively high density of the homes within the subdivision.

The feasible and cost-effective noise wall being considered for CNE 11 was presented to the benefited receptors to solicit their viewpoints. A noise forum (i.e., public meeting summarizing the potential noise barrier to be voted on) was held on September 19, 2019 (see Appendix C). IDOT approved the viewpoints solicitation package (i.e., voting packet, see Appendix C) on October 1, 2019 and viewpoint solicitation packages were sent to the benefited receptors via certified mail on October 4, 2019. The viewpoint response due date was October 18, 2019 (first attempt).

There are 37 benefited receptors at CNE 11. Benefited receptors include both property owners and renters/leasers residing on the benefited property. While as many responses as possible are desired, the goal was to obtain responses from at least one-third (33%) of the potential number of votes. As shown by the results in Table 12, more than 33% of the benefited receptors responded after the first attempt. The voting result can be determined after viewpoints from at least 33% of the potential votes have been received. Therefore, a second round of viewpoints solicitation was not completed.

For a potential noise abatement measure to be implemented, greater than 50% of the responses must be in favor of the measure. Viewpoints were tallied for the potential noise barrier being considered. A response from the first row of homes located adjacent to the potential noise barrier were counted as four votes, and a response from properties located further back from the roadway (i.e., not adjacent to the potential noise barrier) were counted as two votes.

Table 12. Benefited Receptor Viewpoint Solicitation Results

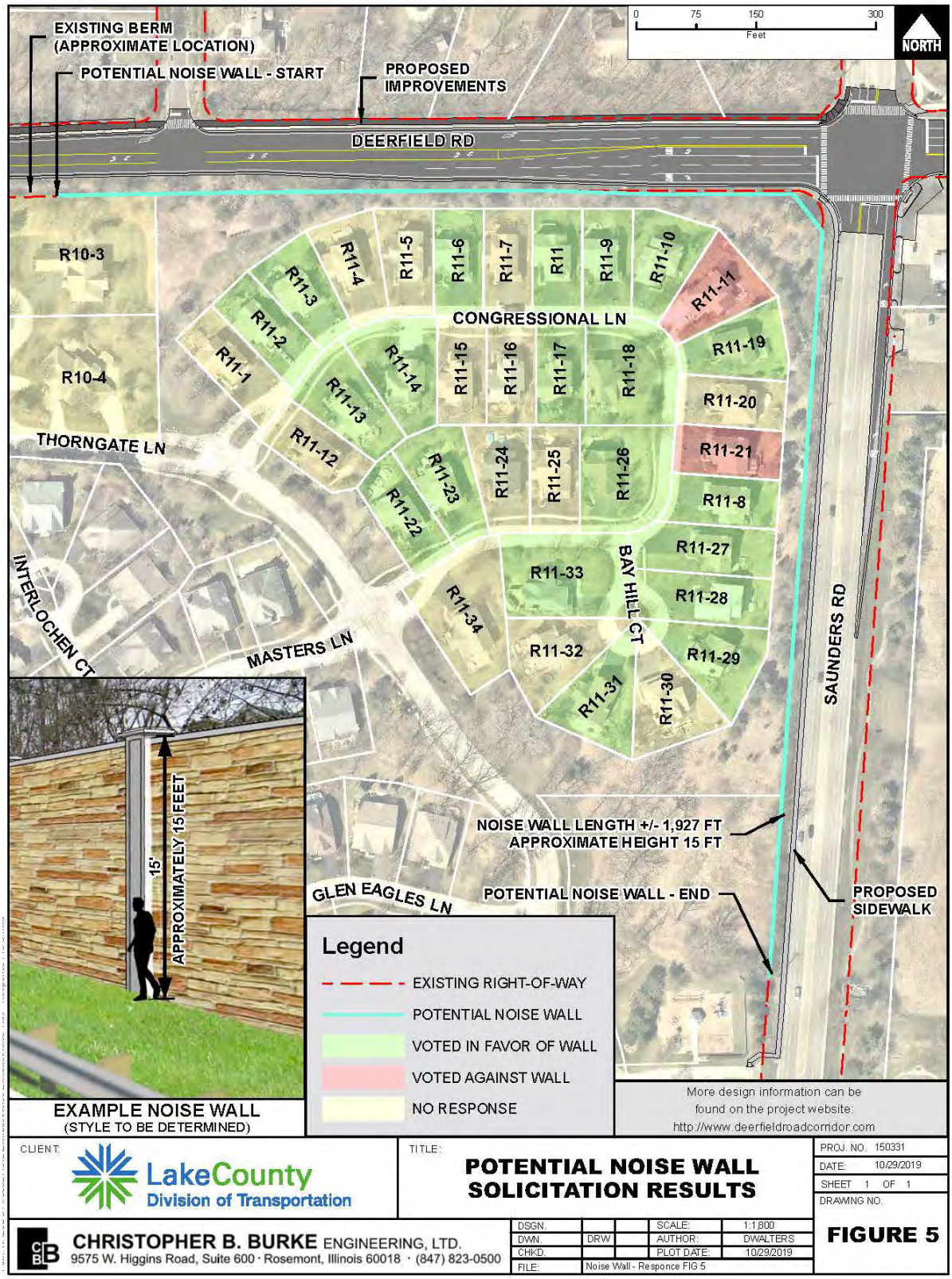
Benefited Receptor Number	Front Row?	Voting Points	Vote Response [1] (Yes/No/NA)	"Yes" Points [2]	"No" Points [2]
R10-3	Yes	4	NA	--	--
R10-4	No	2	NA	--	--
R11	Yes	4	Yes	4	--
R11-1	Yes	4	NA	--	--
R11-2	Yes	4	Yes	4	--
R11-3	Yes	4	Yes	4	--
R11-4	Yes	4	NA	--	--
R11-5	Yes	4	NA	--	--
R11-6	Yes	4	Yes	4	--
R11-7	Yes	4	NA	--	--
R11-8	Yes	4	Yes	4	--
R11-9	Yes	4	Yes	4	--
R11-10	Yes	4	Yes	4	--
R11-11	Yes	4	No	--	4
R11-12	No	2	NA	--	--
R11-13	No	2	Yes	2	--
R11-14	No	2	Yes	2	--
R11-15	No	2	NA	--	--
R11-16	No	2	NA	--	--
R11-17	No	2	Yes	2	--
R11-18	No	2	Yes	2	--
R11-19	Yes	4	Yes	4	--
R11-20	Yes	4	NA	--	--
R11-21	Yes	4	No	--	4
R11-22	No	2	Yes	2	--
R11-23	No	2	Yes	2	--

Benefited Receptor Number	Front Row?	Voting Points	Vote Response [1] (Yes/No/NA)	"Yes" Points [2]	"No" Points [2]
R11-24	No	2	NA	--	--
R11-25	No	2	NA	--	--
R11-26	No	2	Yes	2	--
R11-27	Yes	4	Yes	4	--
R11-28	Yes	4	Yes	4	--
R11-29	Yes	4	Yes	4	--
R11-30	Yes	4	NA	--	--
R11-31	No	2	Yes	2	--
R11-32	No	2	NA	--	--
R11-33	No	2	Yes	2	--
R11-34	No	2	NA	--	--
Total	20	114	70/114 (61%) [3]	62	8

1. NA = "Not Applicable" since no response was submitted by the benefited receptor.
2. Greater than 50% of the vote points received must be in favor of the potential noise abatement measure for it to be implemented.
3. Totals are based on voting points.

As shown by the results in Table 12 and Figure 5, more than 50 percent of the vote responses were in favor of the potential noise wall. Since the potential noise wall meets the feasibility and reasonability criteria, including the viewpoints solicitation criterion, the potential noise wall will likely be implemented as part of the project. To assist the Phase II Engineer with detailed design and preparation of final contract plans, the top of barrier elevations for the potential noise wall are included at Appendix D.

Figure 5. Potential Noise Wall Solicitation Results



5.0 CONSTRUCTION NOISE

Trucks and machinery used for construction produce noise that 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 IDOT's Standard Specifications for Road and Bridge Construction as Article 107.35.

6.0 SUMMARY AND CONCLUSION

Along the corridor, the predicted existing noise levels range from 57 dB(A) at R2 to 66 dB(A) at R11. The projected 2050 No-Build traffic noise levels range from 58 dB(A) at R2 to 68 dB(A) at R11. Generally, receptor noise levels increase an average of 1 dB(A) from the existing scenario to the No-Build scenario due to an increase in traffic volumes. The projected 2050 Build traffic noise levels range from 58 dB(A) at R2 to 69 dB(A) at R4 and R11. Generally, receptor noise levels increase an average of 2 dB(A) from the existing scenario due to an increase in traffic volumes and construction of additional traffic lanes. Three receptor locations (R7, R8, and R11) approach, meet, or exceed the FHWA NAC, and therefore warranted a noise abatement analysis. In addition to traffic noise levels approaching the NAC, a noise abatement analysis is warranted if traffic noise levels increase more than 14 dB(A) between the existing and build scenarios at a receptor, regardless if the NAC is approached. None of the receptors meet this criterion as the largest increase is 4 dB(A).

Noise abatement was not considered feasible at R7 and R8 because under the 2050 Build condition, only one receptor was impacted in each respective CNE. Within CNE 11, the existing 2016 noise levels range from 48 dB(A) to 66 dB(A). The projected 2050 Build traffic noise levels range from 50 dB(A) to 69 dB(A). Noise abatement at CNE 11 was considered feasible since a 5 dB(A) traffic noise reduction was achieved for at least two impacted receptors. The R11 Barrier was also considered reasonable with respect to the traffic noise reduction design goal of at least 8 dB(A) for at least one benefited receptor. The R11 Barrier was evaluated for cost-effectiveness. Based on the evaluation of the R11 Barrier, the potential noise wall is considered cost-effective since the actual cost per benefited receptor does not exceed the average adjusted allowable cost per benefited receptor. Benefited receptor viewpoints were solicited, and the majority of responses were in favor of a noise wall.

Based on the traffic noise analysis and noise abatement evaluation conducted, highway traffic noise abatement measures are likely to be implemented based on preliminary design. The noise barrier determined to meet the feasibility and reasonableness criteria is identified in Table 11. If it subsequently develops during final design that constraints not foreseen in the preliminary design or public input substantially change, the abatement measures may need to be modified or removed from the project plans. A final decision on the installation of abatement measure(s) will be made upon completion of the project's final design and the public involvement process.

Coordination with local officials having jurisdiction over vacant/undeveloped land within the project limits will occur near the Public Hearing to present the results of the traffic noise study.

Appendix A

TNM Output Files

CBBEL
Pete Knysz/Ryan Duffy

4 April 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Deerfield Road
RUN: Validation
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	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
R6	16	1	0.0	58.4	66	58.4	10	----	58.4	0.0	8	-8.0
R8	19	1	0.0	64.9	66	64.9	10	----	64.9	0.0	8	-8.0
R9	21	1	0.0	62.2	66	62.2	10	----	62.2	0.0	8	-8.0
R11	24	1	0.0	67.8	66	67.8	10	Snd Lvl	67.8	0.0	8	-8.0
R12	25	1	0.0	61.3	66	61.3	10	----	61.3	0.0	8	-8.0
R7	34	1	0.0	64.1	66	64.1	10	----	64.1	0.0	8	-8.0
R10-1	38	1	0.0	56.3	66	56.3	10	----	56.3	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	7	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

CBBEL
Pete Knysz/Ryan Duffy

5 April 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Deerfield Road
RUN: Existing
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

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

Receiver Name	No.	#DUs	Existing 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
R1	6	1	0.0	61.6	66	61.6	10	----	61.6	0.0	8	-8.0
R2	9	1	0.0	57.3	66	57.3	10	----	57.3	0.0	8	-8.0
R3	10	1	0.0	62.3	66	62.3	10	----	62.3	0.0	8	-8.0
R4	12	1	0.0	64.6	66	64.6	10	----	64.6	0.0	8	-8.0
R5	14	1	0.0	61.4	66	61.4	10	----	61.4	0.0	8	-8.0
R6	16	1	0.0	59.4	66	59.4	10	----	59.4	0.0	8	-8.0
R8	19	1	0.0	64.1	66	64.1	10	----	64.1	0.0	8	-8.0
R9	21	1	0.0	62.7	66	62.7	10	----	62.7	0.0	8	-8.0
R12	25	1	0.0	61.8	66	61.8	10	----	61.8	0.0	8	-8.0
R13	26	1	0.0	59.7	66	59.7	10	----	59.7	0.0	8	-8.0
R14	27	1	0.0	62.0	66	62.0	10	----	62.0	0.0	8	-8.0
R10-2	33	1	0.0	54.6	66	54.6	10	----	54.6	0.0	8	-8.0
R7	35	1	0.0	64.6	66	64.6	10	----	64.6	0.0	8	-8.0
R10-1	37	1	0.0	54.1	66	54.1	10	----	54.1	0.0	8	-8.0
R15	39	1	0.0	58.7	66	58.7	10	----	58.7	0.0	8	-8.0
R11	41	1	0.0	65.7	66	65.7	10	----	65.7	0.0	8	-8.0
R11-1	72	1	0.0	53.7	66	53.7	10	----	53.7	0.0	8	-8.0
R11-2	73	1	0.0	56.3	66	56.3	10	----	56.3	0.0	8	-8.0
R11-3	74	1	0.0	58.0	66	58.0	10	----	58.0	0.0	8	-8.0
R11-4	75	1	0.0	60.8	66	60.8	10	----	60.8	0.0	8	-8.0
R11-5	76	1	0.0	61.6	66	61.6	10	----	61.6	0.0	8	-8.0
R11-6	77	1	0.0	61.0	66	61.0	10	----	61.0	0.0	8	-8.0
R11-7	78	1	0.0	63.3	66	63.3	10	----	63.3	0.0	8	-8.0

R11-8	79	1	0.0	61.8	66	61.8	10	----	61.8	0.0	8	-8.0
R11-9	80	1	0.0	62.3	66	62.3	10	----	62.3	0.0	8	-8.0
R11-10	81	1	0.0	65.9	66	65.9	10	----	65.9	0.0	8	-8.0
R11-11	82	1	0.0	62.1	66	62.1	10	----	62.1	0.0	8	-8.0
R11-12	111	1	0.0	50.5	66	50.5	10	----	50.5	0.0	8	-8.0
R11-13	112	1	0.0	52.5	66	52.5	10	----	52.5	0.0	8	-8.0
R11-14	113	1	0.0	54.6	66	54.6	10	----	54.6	0.0	8	-8.0
R11-15	114	1	0.0	54.2	66	54.2	10	----	54.2	0.0	8	-8.0
R11-16	115	1	0.0	55.5	66	55.5	10	----	55.5	0.0	8	-8.0
R11-17	116	1	0.0	56.2	66	56.2	10	----	56.2	0.0	8	-8.0
R11-18	117	1	0.0	57.0	66	57.0	10	----	57.0	0.0	8	-8.0
R11-19	118	1	0.0	62.6	66	62.6	10	----	62.6	0.0	8	-8.0
R11-20	120	1	0.0	62.6	66	62.6	10	----	62.6	0.0	8	-8.0
R11-21	121	1	0.0	62.2	66	62.2	10	----	62.2	0.0	8	-8.0
R11-22	130	1	0.0	50.8	66	50.8	10	----	50.8	0.0	8	-8.0
R11-23	131	1	0.0	52.1	66	52.1	10	----	52.1	0.0	8	-8.0
R11-24	132	1	0.0	53.2	66	53.2	10	----	53.2	0.0	8	-8.0
R11-25	133	1	0.0	53.2	66	53.2	10	----	53.2	0.0	8	-8.0
R11-26	134	1	0.0	55.3	66	55.3	10	----	55.3	0.0	8	-8.0
R11-27	135	1	0.0	61.2	66	61.2	10	----	61.2	0.0	8	-8.0
R11-28	136	1	0.0	62.1	66	62.1	10	----	62.1	0.0	8	-8.0
R11-29	137	1	0.0	61.4	66	61.4	10	----	61.4	0.0	8	-8.0
R11-30	138	1	0.0	57.9	66	57.9	10	----	57.9	0.0	8	-8.0
R11-31	139	1	0.0	54.2	66	54.2	10	----	54.2	0.0	8	-8.0
R11-32	140	1	0.0	52.6	66	52.6	10	----	52.6	0.0	8	-8.0
R11-33	141	1	0.0	54.0	66	54.0	10	----	54.0	0.0	8	-8.0
R11-34	142	1	0.0	51.4	66	51.4	10	----	51.4	0.0	8	-8.0
R11-35	144	1	0.0	49.5	66	49.5	10	----	49.5	0.0	8	-8.0
R11-36	145	1	0.0	49.0	66	49.0	10	----	49.0	0.0	8	-8.0
R11-37	149	1	0.0	48.7	66	48.7	10	----	48.7	0.0	8	-8.0
R11-38	150	1	0.0	48.1	66	48.1	10	----	48.1	0.0	8	-8.0
R11-39	151	1	0.0	48.4	66	48.4	10	----	48.4	0.0	8	-8.0
R10-3	153	1	0.0	57.9	66	57.9	10	----	57.9	0.0	8	-8.0
R10-4	154	1	0.0	52.2	66	52.2	10	----	52.2	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction		
		Min	Avg	Max
		dB	dB	dB
All Selected	57	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

CBBEL
Pete Knysz/Ryan Duffy

5 April 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Deerfield Road
RUN: No Build
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	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
R1	6	1	0.0	62.9	66	62.9	10	----	62.9	0.0	8	-8.0
R2	9	1	0.0	58.2	66	58.2	10	----	58.2	0.0	8	-8.0
R3	10	1	0.0	63.0	66	63.0	10	----	63.0	0.0	8	-8.0
R4	12	1	0.0	65.5	66	65.5	10	----	65.5	0.0	8	-8.0
R5	14	1	0.0	62.9	66	62.9	10	----	62.9	0.0	8	-8.0
R6	16	1	0.0	61.0	66	61.0	10	----	61.0	0.0	8	-8.0
R8	19	1	0.0	65.8	66	65.8	10	----	65.8	0.0	8	-8.0
R9	21	1	0.0	63.7	66	63.7	10	----	63.7	0.0	8	-8.0
R12	25	1	0.0	63.6	66	63.6	10	----	63.6	0.0	8	-8.0
R13	26	1	0.0	60.0	66	60.0	10	----	60.0	0.0	8	-8.0
R14	27	1	0.0	62.0	66	62.0	10	----	62.0	0.0	8	-8.0
R10-2	33	1	0.0	55.6	66	55.6	10	----	55.6	0.0	8	-8.0
R7	35	1	0.0	66.4	66	66.4	10	Snd Lvl	66.4	0.0	8	-8.0
R10-1	37	1	0.0	55.2	66	55.2	10	----	55.2	0.0	8	-8.0
R15	39	1	0.0	60.2	66	60.2	10	----	60.2	0.0	8	-8.0
R11	41	1	0.0	67.8	66	67.8	10	Snd Lvl	67.8	0.0	8	-8.0
R10-3	108	1	0.0	59.2	66	59.2	10	----	59.2	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	17	0.0	0.0	0.0
All Impacted	2	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

CBBEL
Pete Knysz/Ryan Duffy

5 April 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Deerfield Road
RUN: Build
BARRIER DESIGN: INPUT HEIGHTS

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

ATMOSPHERICS: 68 deg F, 50% RH

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h 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
R1	1	1	0.0	63.1	66	63.1	10	----	63.1	0.0	8	-8.0
R2	2	1	0.0	58.2	66	58.2	10	----	58.2	0.0	8	-8.0
R3	3	1	0.0	63.2	66	63.2	10	----	63.2	0.0	8	-8.0
R4	4	1	0.0	68.6	66	68.6	10	Snd Lvl	68.6	0.0	8	-8.0
R5	5	1	0.0	63.5	66	63.5	10	----	63.5	0.0	8	-8.0
R13	13	1	0.0	61.6	66	61.6	10	----	61.6	0.0	8	-8.0
R14	14	1	0.0	63.9	66	63.9	10	----	63.9	0.0	8	-8.0
R10-1	15	1	0.0	55.9	66	55.9	10	----	55.9	0.0	8	-8.0
R15	17	1	0.0	61.4	66	61.4	10	----	61.4	0.0	8	-8.0
R7-1	19	1	0.0	61.7	66	61.7	10	----	61.7	0.0	8	-8.0
R7-2	20	1	0.0	62.6	66	62.6	10	----	62.6	0.0	8	-8.0
R7-3	21	1	0.0	62.1	66	62.1	10	----	62.1	0.0	8	-8.0
R7-4	22	1	0.0	60.8	66	60.8	10	----	60.8	0.0	8	-8.0
R8-1	23	1	0.0	59.3	66	59.3	10	----	59.3	0.0	8	-8.0
R8-2	24	1	0.0	62.0	66	62.0	10	----	62.0	0.0	8	-8.0
R8-3	25	1	0.0	53.9	66	53.9	10	----	53.9	0.0	8	-8.0
R8-4	26	1	0.0	56.8	66	56.8	10	----	56.8	0.0	8	-8.0
R8-5	27	1	0.0	57.7	66	57.7	10	----	57.7	0.0	8	-8.0
R8-6	28	1	0.0	54.9	66	54.9	10	----	54.9	0.0	8	-8.0
R8-7	29	1	0.0	61.1	66	61.1	10	----	61.1	0.0	8	-8.0
R8-8	30	1	0.0	59.1	66	59.1	10	----	59.1	0.0	8	-8.0
R8-9	31	1	0.0	61.3	66	61.3	10	----	61.3	0.0	8	-8.0
R8-10	32	1	0.0	59.3	66	59.3	10	----	59.3	0.0	8	-8.0

R8-11	33	1	0.0	60.3	66	60.3	10	----	60.3	0.0	8	-8.0
R8-12	34	1	0.0	63.2	66	63.2	10	----	63.2	0.0	8	-8.0
R9-1	35	1	0.0	61.9	66	61.9	10	----	61.9	0.0	8	-8.0
R9-2	36	1	0.0	63.4	66	63.4	10	----	63.4	0.0	8	-8.0
R9-3	37	1	0.0	58.2	66	58.2	10	----	58.2	0.0	8	-8.0
R9-4	38	1	0.0	63.4	66	63.4	10	----	63.4	0.0	8	-8.0
R9-5	39	1	0.0	59.5	66	59.5	10	----	59.5	0.0	8	-8.0
R9-6	40	1	0.0	60.4	66	60.4	10	----	60.4	0.0	8	-8.0
R9-7	41	1	0.0	58.8	66	58.8	10	----	58.8	0.0	8	-8.0
R9-8	42	1	0.0	58.4	66	58.4	10	----	58.4	0.0	8	-8.0
R9-9	43	1	0.0	59.5	66	59.5	10	----	59.5	0.0	8	-8.0
R9-10	44	1	0.0	57.8	66	57.8	10	----	57.8	0.0	8	-8.0
R9-11	45	1	0.0	61.8	66	61.8	10	----	61.8	0.0	8	-8.0
R9-12	46	1	0.0	59.8	66	59.8	10	----	59.8	0.0	8	-8.0
R9-13	47	1	0.0	62.8	66	62.8	10	----	62.8	0.0	8	-8.0
R6	59	1	0.0	63.2	66	63.2	10	----	63.2	0.0	8	-8.0
R7	64	1	0.0	66.6	66	66.6	10	Snd Lvl	66.6	0.0	8	-8.0
R8	66	1	0.0	66.2	66	66.2	10	Snd Lvl	66.2	0.0	8	-8.0
R9	68	1	0.0	65.0	66	65.0	10	----	65.0	0.0	8	-8.0
R10-2	70	1	0.0	56.4	66	56.4	10	----	56.4	0.0	8	-8.0
R12	72	1	0.0	65.0	66	65.0	10	----	65.0	0.0	8	-8.0
R11	73	1	0.0	68.6	66	68.6	10	Snd Lvl	68.6	0.0	8	-8.0
R9-14	94	1	0.0	60.0	66	60.0	10	----	60.0	0.0	8	-8.0
R7-5	113	1	0.0	52.6	66	52.6	10	----	52.6	0.0	8	-8.0
R10-3	119	1	0.0	59.7	66	59.7	10	----	59.7	0.0	8	-8.0

Dwelling Units	**# DUs**	**Noise Reduction**		
		Min	**Avg**	**Max**
		dB	**dB**	**dB**
All Selected	48	0.0	0.0	0.0
All Impacted	4	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

CBBEL
Pete Knysz/Ryan Duffy

5 April 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Deerfield Road
RUN: Noise Wall
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.

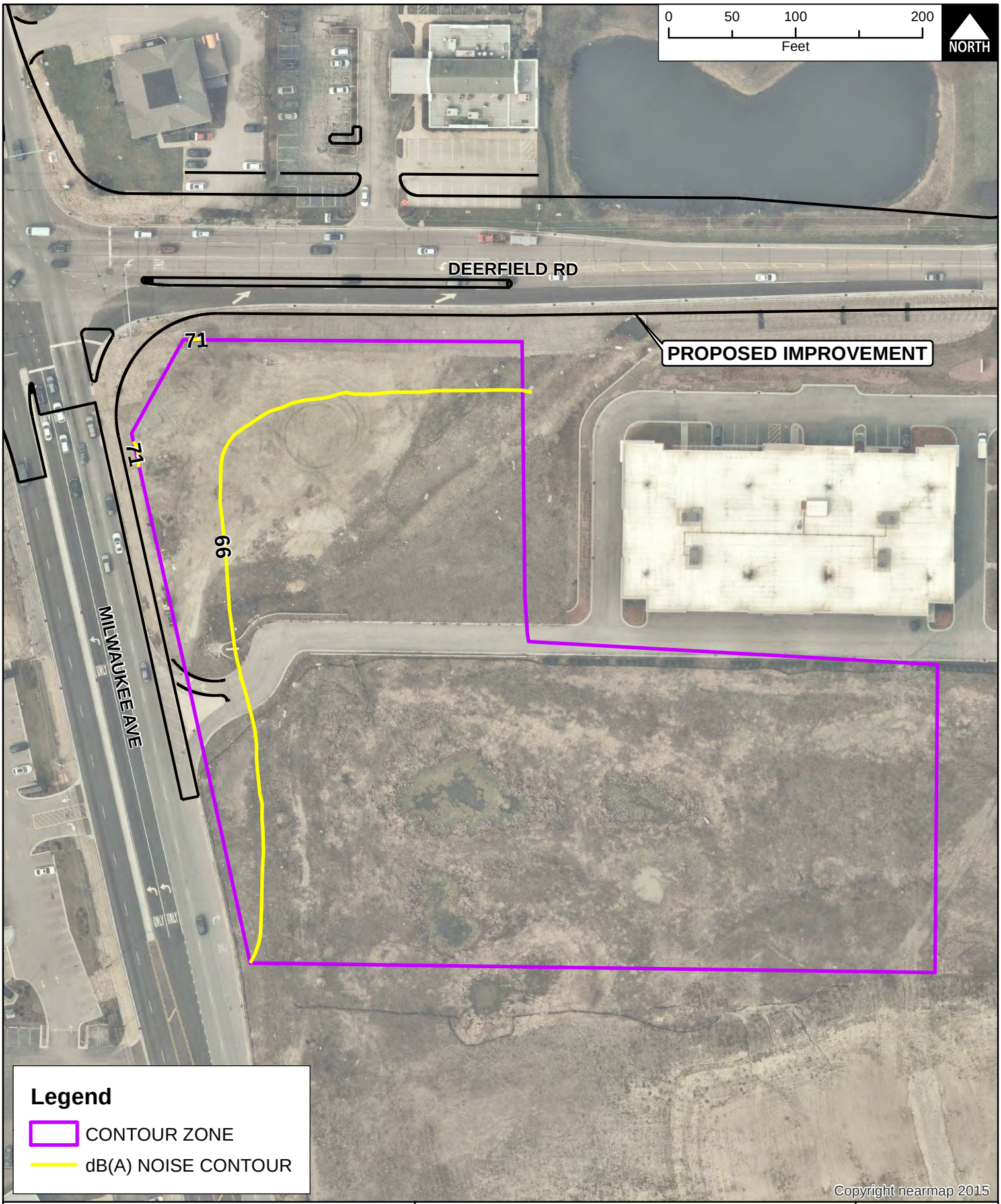
Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
R11-1	48	1	0.0	56.7	66	56.7	10	----	50.7	6.0	8	-2.0
R11-2	49	1	0.0	58.8	66	58.8	10	----	52.0	6.8	8	-1.2
R11-3	50	1	0.0	60.4	66	60.4	10	----	52.8	7.6	8	-0.4
R11-4	51	1	0.0	63.5	66	63.5	10	----	53.9	9.6	8	1.6
R11-5	52	1	0.0	64.7	66	64.7	10	----	54.4	10.3	8	2.3
R11-6	53	1	0.0	64.4	66	64.4	10	----	54.2	10.2	8	2.2
R11-7	54	1	0.0	66.5	66	66.5	10	Snd Lvl	54.5	12.0	8	4.0
R11-8	55	1	0.0	62.5	66	62.5	10	----	53.4	9.1	8	1.1
R11-9	56	1	0.0	65.9	66	65.9	10	----	54.9	11.0	8	3.0
R11-10	57	1	0.0	68.8	66	68.8	10	Snd Lvl	54.9	13.9	8	5.9
R11-11	58	1	0.0	64.4	66	64.4	10	----	54.7	9.7	8	1.7
R11-12	102	1	0.0	53.0	66	53.0	10	----	48.2	4.8	8	-3.2
R11-13	103	1	0.0	55.5	66	55.5	10	----	49.5	6.0	8	-2.0
R11-14	104	1	0.0	57.9	66	57.9	10	----	50.7	7.2	8	-0.8
R11-15	105	1	0.0	57.5	66	57.5	10	----	50.6	6.9	8	-1.1
R11-16	106	1	0.0	58.5	66	58.5	10	----	51.2	7.3	8	-0.7
R11-17	107	1	0.0	59.1	66	59.1	10	----	51.7	7.4	8	-0.6
R11-18	108	1	0.0	59.6	66	59.6	10	----	52.1	7.5	8	-0.5
R11-19	109	1	0.0	65.3	66	65.3	10	----	54.8	10.5	8	2.5
R11-20	112	1	0.0	65.1	66	65.1	10	----	54.5	10.6	8	2.6
R11-21	122	1	0.0	63.8	66	63.8	10	----	53.9	9.9	8	1.9
R11	123	1	0.0	68.7	66	68.7	10	Snd Lvl	53.6	15.1	8	7.1
R11-22	124	1	0.0	53.4	66	53.4	10	----	48.2	5.2	8	-2.8

R11-23	125	1	0.0	54.8	66	54.8	10	----	49.0	5.8	8	-2.2
R11-24	126	1	0.0	55.7	66	55.7	10	----	49.6	6.1	8	-1.9
R11-25	127	1	0.0	55.7	66	55.7	10	----	49.9	5.8	8	-2.2
R11-26	128	1	0.0	56.7	66	56.7	10	----	50.6	6.1	8	-1.9
R11-27	129	1	0.0	62.3	66	62.3	10	----	53.3	9.0	8	1.0
R11-28	130	1	0.0	63.4	66	63.4	10	----	53.5	9.9	8	1.9
R11-29	131	1	0.0	63.0	66	63.0	10	----	53.2	9.8	8	1.8
R11-30	132	1	0.0	59.3	66	59.3	10	----	51.5	7.8	8	-0.2
R11-31	134	1	0.0	56.2	66	56.2	10	----	49.8	6.4	8	-1.6
R11-32	135	1	0.0	54.7	66	54.7	10	----	49.1	5.6	8	-2.4
R11-33	136	1	0.0	55.3	66	55.3	10	----	49.7	5.6	8	-2.4
R11-34	137	1	0.0	52.8	66	52.8	10	----	48.1	4.7	8	-3.3
R11-35	139	1	0.0	51.7	66	51.7	10	----	47.5	4.2	8	-3.8
R11-36	140	1	0.0	49.8	66	49.8	10	----	45.9	3.9	8	-4.1
R11-37	144	1	0.0	50.6	66	50.6	10	----	46.9	3.7	8	-4.3
R11-38	145	1	0.0	50.1	66	50.1	10	----	46.6	3.5	8	-4.5
R11-39	146	1	0.0	50.0	66	50.0	10	----	46.1	3.9	8	-4.1
R10-3	148	1	0.0	59.8	66	59.8	10	----	54.4	5.4	8	-2.6
R10-4	149	1	0.0	55.1	66	55.1	10	----	50.5	4.6	8	-3.4

Dwelling Units	**# DUs**	**Noise Reduction**		
		Min	**Avg**	**Max**
		dB	**dB**	**dB**
All Selected	42	3.5	7.5	15.1
All Impacted	3	12.0	13.7	15.1
All that meet NR Goal	15	9.0	10.7	15.1

Appendix B

TNM 2050 Noise Contours for Coordination with Local Officials



CLIENT: LakeCounty Division of Transportation

TITLE: 2050 BUILD SCENARIO- PROJECTED NOISE CONTOURS

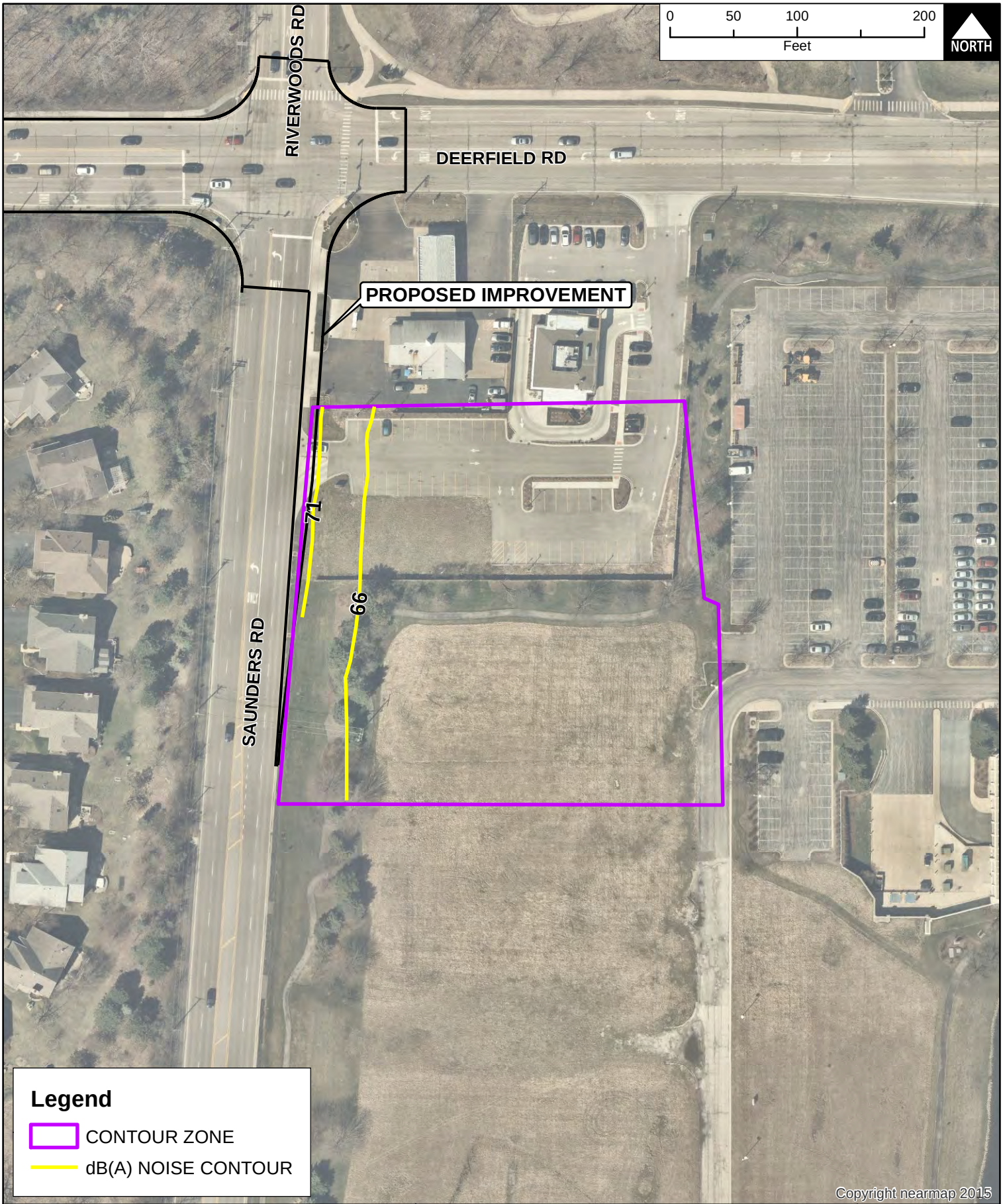
PROJ. NO.	150331
DATE:	04/15/2019
SHEET	1 of 2
DRAWING NO.	

FIGURE B-1

CHRISTOPHER B. BURKE ENGINEERING, LTD.
9575 W. Higgins Road, Suite 600 · Rosemont, Illinois 60018 · (847) 823-0500

DSGN.			SCALE:	1:1,200
DWN.	DRW		AUTHOR:	DWALTERS
CHKD.			PLOT DATE:	5/7/2019
FILE:	Noise Contours			

Path: N:\LCDOT\150331\GIS\Exhibits\Noise Exhibits\Noise Contours.mxd



CLIENT: LakeCounty Division of Transportation

TITLE: 2050 BUILD SCENARIO- PROJECTED NOISE CONTOURS

PROJ. NO.	150331
DATE:	04/15/2019
SHEET	2 of 2
DRAWING NO.	

FIGURE B-2

CHRISTOPHER B. BURKE ENGINEERING, LTD.
9575 W. Higgins Road, Suite 600 · Rosemont, Illinois 60018 · (847) 823-0500

DSGN.				SCALE:	1:1,200
DWN.	DRW			AUTHOR:	DWALTERS
CHKD.				PLOT DATE:	5/7/2019
FILE:	Noise Contours				

Path: N:\LCDOT\150331\GIS\ExhibitsNoise ExhibitsNoise Contours.mxd

Appendix C

Noise Forum &
Viewpoints Solicitation

September 19, 2019

DEERFIELD Road

DEERFIELD ROAD
PHASE I ENGINEERING STUDY

(MILWAUKEE AVENUE TO SAUNDERS/RIVERWOODS ROAD)

Noise Forum

LakeCounty
Division of Transportation

Table of Contents

1 SUMMARY

A Noise Forum was held for the proposed installation of a noise wall at the southwest corner of Deerfield Road and Saunders Road intersection in conjunction with the planned roadway improvements. The Noise Forum for the proposed noise wall was held on Thursday, September 19, 2019, between 7:00 and 9:00 p.m. with a formal PowerPoint presentation, Q&A and open house at Village of Riverwoods Village Hall, 300 Portwine Road, Riverwoods, IL 60015. The purpose of the meeting was to inform residents of the Thorngate subdivision that are benefitted by the wall about the traffic noise analysis process and have an opportunity to ask questions. This is the only noise wall proposed with the project. Viewpoint solicitation packages were not provided at the meeting and were sent out via certified mail on October 4, 2019.

This meeting was part of the overall Phase I Engineering Study process which LCDOT is currently conducting for the proposed federally-funded improvement of Deerfield Road from Milwaukee Avenue to Saunders Road, Lake County, Illinois. The improvements include reconstruction and widening Deerfield Road to provide a center two-way left turn lane, new shared-use path, new sidewalks (select locations), and intersection improvements at Milwaukee Avenue, Portwine Road, and Saunders Road. The proposed improvements will address capacity, safety, mobility, and operational deficiencies, and improve non-motorized accommodations and connectivity in the region. Construction is anticipated to begin in 2023.

LCDOT and the study team made a formal PowerPoint presentation that covered highway traffic noise fundamentals, policies, the noise analysis methodology, and findings for this project. A Q&A session was held following the presentation to answer any questions. Exhibits were on display following the formal presentation and Q&A and LCDOT/project team members were available to discuss the findings of the traffic noise analysis and proposed improvement in more detail. A comment form was available for attendees to provide comments. All material presented at the Noise Forum were posted to the project website (www.deerfieldroadcorridor.com) immediately following the meeting.

A total of 41 invited letters were sent out to tenants/owners of the 37 benefitted receptor properties. The meeting was attended by 11 people representing 9 properties. Village of Riverwoods President John Norris was present during the meeting. A total of 0 formal written comments were received at or following the meeting, however, numerous questions were asked during the meeting.

2 MEETING NOTIFICATIONS

2.1 MAILING

LCDOT sent our 41 letters to tenants/owners of 37 benefitted receptor properties. The mailing package was provided to Thorngate Homeowners Association (HOA) President Kathryn Romanelli to alert the remainder of the Thorngate subdivision. Village of Riverwoods Mayor Norris, Village of Riverwoods Trustee Hollander and Village Engineering Pat Glenn were notified of the meeting.

Division of Transportation

Shane E. Schneider, P.E.
Director of Transportation/County Engineer

600 West Winchester Road
Libertyville, Illinois 60048-1381
Phone 847 377 7400
Fax 847 984 5888

August 27, 2019

«Taxpayer__First_Name» «Taxpayer__Last_Name»
«Property_Address__Street_Number»
«Property_Address__City», «Property_Address__State» «Property_Address__Zip_Code»

Property Index Number (PIN): «PIN»

RE: Noise Wall Information Meeting – **September 19, 2019 at 7:00 PM**
Deerfield Road Improvements from Milwaukee Avenue to Saunders Road

Dear «Taxpayer__First_Name» «Taxpayer__Last_Name»:

The Lake County Division of Transportation (LCDOT) cordially invites you to attend a special meeting to discuss the potential installation of a noise wall at the southwest corner of the Deerfield Road and Saunders Road intersection in conjunction with the planned roadway improvements. **You are highly encouraged to attend as your opinion, along with others benefited by the potential noise wall, will determine whether or not the noise wall is recommended for installation as part of the Deerfield Road improvements.**

You are invited to an upcoming special meeting regarding the traffic noise analysis:

Date:	**September 19, 2019**
Time:	**7:00 PM to 9:00 PM**
Location:	**Village of Riverwoods**
	300 Portwine Road
	Riverwoods, Illinois 60015

At this meeting, you will learn more about the traffic noise analysis process, have the opportunity to ask questions and provide a viewpoint (i.e. vote) on the potential noise wall. A short presentation will be provided that covers highway traffic noise fundamentals, policies, the noise analysis methodology, and findings for this project. Exhibits will be on display. LCDOT and consultant representatives will be available to discuss the findings and answer questions. Additional project study information can be found at: **http://deerfieldroadcorridor.com/**

Background
LCDOT is currently conducting Preliminary Engineering and Environmental (Phase I) studies for the proposed federally-funded improvement of Deerfield Road from Milwaukee Avenue to Saunders Road, Lake County, Illinois. The improvements include reconstruction and widening Deerfield Road to provide a center two-way left turn lane, new shared-use path, new sidewalks (select locations), and intersection improvements at Milwaukee Avenue, Portwine Road, and Saunders Road. The proposed improvements will address capacity, safety, mobility, and operational deficiencies, and improve non-motorized accommodations and connectivity in the region. Construction is anticipated to begin in 2023.

Highway Traffic Noise Analysis

As part of the environmental study for this project following the federal project development process, traffic noise was evaluated along Deerfield Road. Based on applicable state and federal noise policies, noise walls were determined to be feasible and reasonable at one location within the project study area. The location of the potential noise wall is shown on the attached exhibit with an inset of an example noise wall rendering to show relative height. Your property is identified on the attached exhibit by its address and PIN (listed near the top of this letter).

Solicitation of Viewpoints of Benefited Receptors

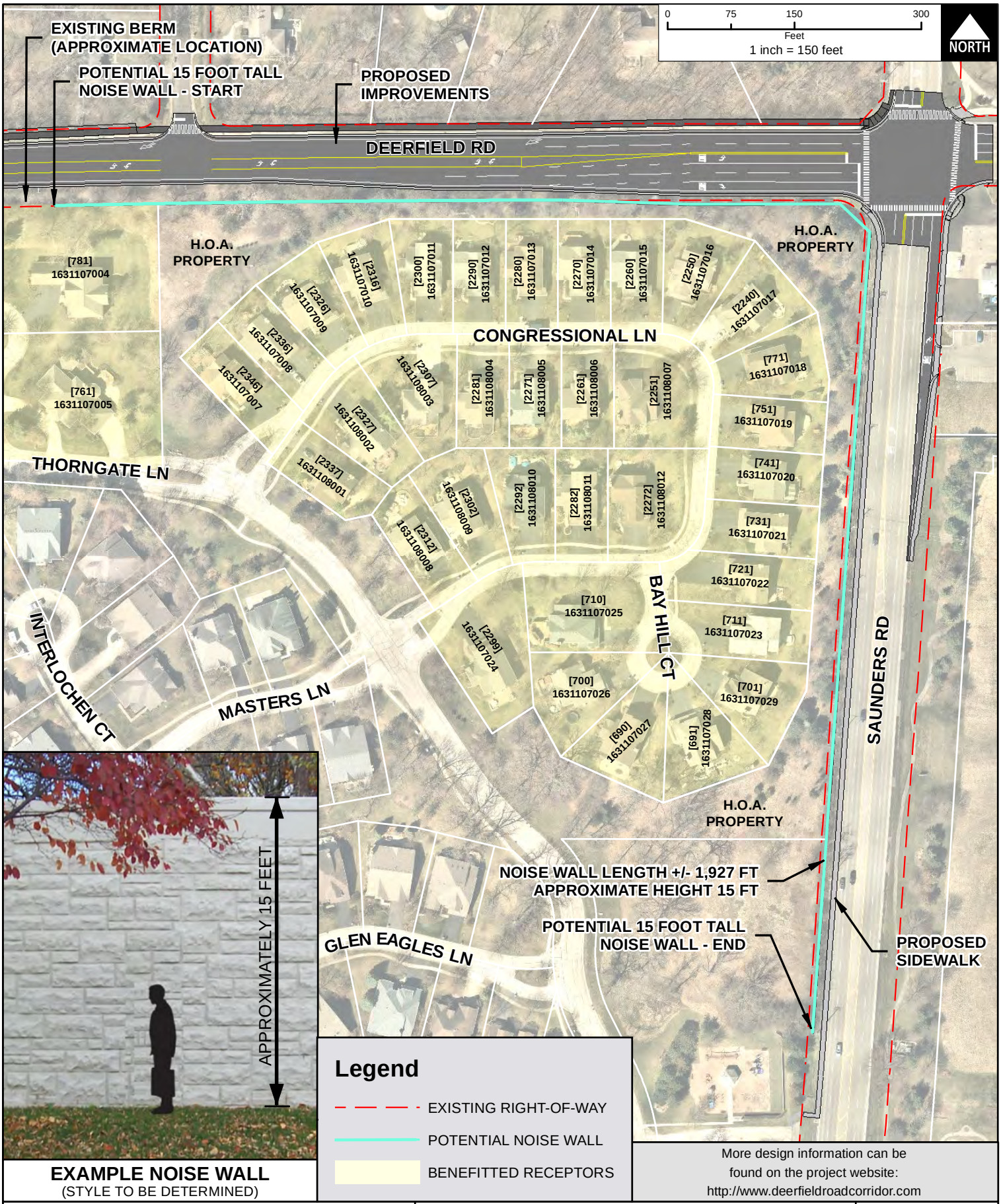
This letter has been provided to all property owners and tenants who would be "benefited receptors." A property is benefited by a noise wall when the potential wall results in a noticeable reduction in noise level, which is defined as five decibels or more. Please know that only "benefited" property owners and tenants can submit viewpoints. Village ordinances or HOA rules have no effect on whether or not the noise wall will be installed. Additional guidance regarding viewpoint solicitation will be provided at the special meeting on September 19, 2019. If you cannot attend the special meeting, the viewpoint solicitation will also be sent to you via certified mail. Based on the consensus of the viewpoints received, the noise wall may or may not be included with this project.

If you are unable to attend this meeting, please contact me at cgleason@lakecountyil.gov or 847-377-7447. Please include your full name and address in any correspondence you provide.

Sincerely,

Chuck Gleason
Project Manager
Lake County Division of Transportation

Enclosure



EXAMPLE NOISE WALL
(STYLE TO BE DETERMINED)

Legend

- EXISTING RIGHT-OF-WAY
- POTENTIAL NOISE WALL
- BENEFITTED RECEPTORS

More design information can be found on the project website:
http://www.deerfieldroadcorridor.com

CLIENT: LakeCounty Division of Transportation

TITLE: POTENTIAL NOISE WALL LOCATION

PROJ. NO.	150331
DATE:	8/22/2019
SHEET	1 OF 1
DRAWING NO.	EXH

CHRISTOPHER B. BURKE ENGINEERING, LTD.
9575 W. Higgins Road, Suite 600 · Rosemont, Illinois 60018 · (847) 823-0500

DSGN.				SCALE:	1:1,800
DWN.	DRW			AUTHOR:	DWALTERS
CHKD.				PLOT DATE:	8/22/2019
FILE:	Noise Wall				

Path: N:\LCDOT\150331\GIS\Exhibits\Noise Exhibits\Noise Wall.mxd

PIN	Property Address - Street Number	Property Address - City	Property Address - State	Property Address - Zip Code	Taxpayer - First Name	Taxpayer - Middle Initial or Second Name	Taxpayer - Last Name	Taxpayer - Street Number	Taxpayer - City	Taxpayer - State	Taxpayer - Zip Code
1631107004	781 LINKS CT	RIVERWOODS	ILL	60015	JOSE		RODRIGUEZ	781 LINKS CT	RIVERWOODS	IL	60015-3820
1631107005	761 LINKS CT	RIVERWOODS	ILL	60015	MICHAEL &	JOSEPHINE	LEPORE	761 LINKS CT	RIVERWOODS	IL	60015-3820
1631107007	2346 CONGRESSIONAL LN	RIVERWOODS	ILL	60015-3806	VERA		SMOLOV	2346 CONGRESSIONAL LN	RIVERWOODS	IL	60015-3806
1631107008	2336 CONGRESSIONAL LN	RIVERWOODS	ILL	60015	JAMES M &	SUZANNE M	SANTOS	2336 CONGRESSIONAL LN	RIVERWOODS	IL	60015-3806
1631107009	2326 CONGRESSIONAL LN	RIVERWOODS	ILL	60015	PHILLIP	E	LAYDEN	2326 CONGRESSIONAL LN	RIVERWOODS	IL	60015-3806
1631107010	2316 CONGRESSIONAL LN	RIVERWOODS	ILL	60015	SHERYLE	N	TRAYBER	2316 CONGRESSIONAL LN	RIVERWOODS	IL	60015-3806
1631107011	2300 CONGRESSIONAL LN	RIVERWOODS	ILL	60015	DANNY	S	DONLEY	1013 Maleventum Way	Springhill	TN	37174
							CURRENT RESIDENT	2300 CONGRESSIONAL LN	RIVERWOODS	ILL	60015
1631107012	2290 CONGRESSIONAL LN	RIVERWOODS	ILL	60015	BRIAN T &	CHRISTINE A	BRADFORD	2290 CONGRESSIONAL LN	RIVERWOODS	IL	60015-3803
1631107013	2280 CONGRESSIONAL LN	RIVERWOODS	ILL	60015	LINYI FAN & NI MA			2550 WATERVIEW DR	NORTHBROOK	IL	60062
1631107013	2280 CONGRESSIONAL LN	RIVERWOODS	ILL	60015			CURRENT RESIDENT	2280 CONGRESSIONAL LN	RIVERWOODS	ILL	60015
1631107014	2270 CONGRESSIONAL LN	RIVERWOODS	ILL	60015-3803	SHAUN		GOLDFARB	245 Park Lane	Deerfield	IL	60015
1631107015	2260 CONGRESSIONAL LN	RIVERWOODS	ILL	60015-3803	YOUSSEF &	PARICHEHR	YOMTOOB	2384 GLEN EAGLES LN	RIVERWOODS	IL	60015-3895
1631107015	2260 CONGRESSIONAL LN	RIVERWOODS	ILL	60015-3803			CURRENT RESIDENT	2260 CONGRESSIONAL LN	RIVERWOODS	ILL	60015-3803
1631107016	2250 CONGRESSIONAL LN	RIVERWOODS	ILL	60015-3803	SHIRLEY		KATZ	2250 CONGRESSIONAL LN	RIVERWOODS	IL	60015-3803
1631107017	2240 CONGRESSIONAL LN	RIVERWOODS	ILL	60015	PAUL	& LAUREN	BROWN	2240 CONGRESSIONAL LN	RIVERWOODS	IL	60015-3803
1631107018	771 CONGRESSIONAL LN	RIVERWOODS	ILL	60015-5704	MICHAEL &	LINDSEY	BONGIORNO	771 CONGRESSIONAL LN	RIVERWOODS	IL	60015-5704
1631107019	751 CONGRESSIONAL LN	RIVERWOODS	ILL	60015	MATTHEW &	HEATHER	ADAMS	751 CONGRESSIONAL LN	RIVERWOODS	IL	60015-5704
1631107020	741 CONGRESSIONAL LN	RIVERWOODS	ILL	60015	TOM		DENISON	741 CONGRESSIONAL LN	RIVERWOODS	IL	60015-5704
1631107021	731 CONGRESSIONAL LN	RIVERWOODS	ILL	60015	RONALD &	NATALIE	MOY	731 CONGRESSIONAL LN	RIVERWOODS	IL	60015-5704
1631107022	721 CONGRESSIONAL LN	RIVERWOODS	ILL	60015	GLANNIE	A	CHAN	721 CONGRESSIONAL LN	RIVERWOODS	IL	60015-5704
1631107023	711 BAY HILL CT	RIVERWOODS	ILL	60015	LEV &	YULIA	GURMAN	711 BAY HILL CT	RIVERWOODS	IL	60015-3870
1631107024	2299 CONGRESSIONAL LN	RIVERWOODS	ILL	60015-5705	ROBERT	V	JOSEPH	2299 CONGRESSIONAL LN	RIVERWOODS	IL	60015-5705
1631107025	710 BAY HILL CT	RIVERWOODS	ILL	60015	ALAN &	CARON	BLITZ	710 BAY HILL CT	RIVERWOODS	IL	60015-3870
1631107026	700 BAY HILL CT	RIVERWOODS	ILL	60015	JOHN R &	SUSAN E	JENSEN	700 BAY HILL CT	RIVERWOODS	IL	60015-3870
1631107027	690 BAY HILL CT	RIVERWOODS	ILL	60015	SUSAN		COREN	690 BAY HILL CT	RIVERWOODS	IL	60015-3870
1631107028	691 BAY HILL CT	RIVERWOODS	ILL	60015	JASON		DILLAS	691 BAY HILL CT	RIVERWOODS	IL	60015-3870
1631107029	701 BAY HILL CT	RIVERWOODS	ILL	60015	ADAM &	MELISSA	JOFFE	701 BAY HILL CT	RIVERWOODS	IL	60015-3870
1631108001	2337 CONGRESSIONAL LN	RIVERWOODS	ILL	60015	MARK &	NANCY	HELLER	2337 CONGRESSIONAL LN	RIVERWOODS	IL	60015-3811
1631108002	2327 CONGRESSIONAL LN	RIVERWOODS	ILL	60015	ANDREW	N	EVANS	2327 CONGRESSIONAL LN	RIVERWOODS	IL	60015-3811
1631108003	2307 CONGRESSIONAL LN	RIVERWOODS	ILL	60015	KEVIN &	JESSICA	BERGER	2307 CONGRESSIONAL LN	RIVERWOODS	IL	60015-3811
1631108004	2281 CONGRESSIONAL LN	RIVERWOODS	ILL	60015	JORDAN D &	ALEXA L	GILMAN	2281 CONGRESSIONAL LN	RIVERWOODS	IL	60015-3871
1631108005	2271 CONGRESSIONAL LN	RIVERWOODS	ILL	60015	ANATOLIY		YUDOVICH	2271 CONGRESSIONAL LN	RIVERWOODS	IL	60015-3871
1631108006	2261 CONGRESSIONAL LN	RIVERWOODS	ILL	60015	ROMAN &	SVETLANA	BERGER	2261 CONGRESSIONAL LN	RIVERWOODS	IL	60015-3871
1631108007	2251 CONGRESSIONAL LN	RIVERWOODS	ILL	60015	YUVAL &	DROR	ROTH	2251 CONGRESSIONAL LN	RIVERWOODS	IL	60015-3871
1631108008	2312 CONGRESSIONAL LN	RIVERWOODS	ILL	60015	DAVID A &	LISA E	HAAS	2312 CONGRESSIONAL LN	RIVERWOODS	IL	60015-5707
1631108009	2302 CONGRESSIONAL LN	RIVERWOODS	ILL	60015	RODNEY V &	DAWN	PYE	2302 CONGRESSIONAL LN	RIVERWOODS	IL	60015-5707
1631108010	2292 CONGRESSIONAL LN	RIVERWOODS	ILL	60015-5706	MELINDA	J	LA FLAMME	2292 CONGRESSIONAL LN	RIVERWOODS	IL	60015-5706
1631108011	2282 CONGRESSIONAL LN	RIVERWOODS	ILL	60015	JOHN	& JAMI	DONOHUE	2282 CONGRESSIONAL LN	RIVERWOODS	IL	60015-5706
1631108012	2272 CONGRESSIONAL LN	RIVERWOODS	ILL	60015	CYNTHIA	G	WOLF	2272 CONGRESSIONAL LN	RIVERWOODS	IL	60015-5706

= Owner varies from Tenant

3 ATTACHMENTS

DEERFIELD

DEERFIELD ROAD (IL 21 TO SAUNDERS/RIVERWOODS ROAD)
PHASE I ENGINEERING STUDY

SIGN-IN SHEET

MEETING PURPOSE: Noise Forum
MEETING DATE: September 19, 2019
MEETING TIME: 7:00 PM
LOCATION: Village of Riverwoods

NAME	PROPERTY ADDRESS	E-MAIL ADDRESS
1) YOSSEF YOMTOOB	2260 Congressional Ln.	[redacted]
2) Suzanne Santos	2336 Congressional Dr.	
3) Kathryn Romanelli	3314 Glen Eagle Lane	
4) Bob Levy	2270 Congressional	
5) Shirley Katz	2250 Congressional	
6) Cindy Wolf	2272 Congressional	
7) Caron Blitz	710 Bay Hill Ct.	
8) Alan Blitz	710 Bay Hill Ct.	

DEERFIELD

DEERFIELD ROAD (IL 21 TO SAUNDERS/RIVERWOODS ROAD)
PHASE I ENGINEERING STUDY

SIGN-IN SHEET

NAME	PROPERTY ADDRESS	E-MAIL ADDRESS
~~53~~ 9 Christine Bradford	2290 Congressional Ln	[redacted]
~~54~~ 10 Brian Bradford	"	
~~55~~ 11 Roman Berger	2261 Congress	
56)		
57)		
58)		
59)		
60)		
61)		
62)		
63)		

LakeCounty

CHRISTOPHER B. BURKE ENGINEERING, LTD.
9575 W Higgins Road, Suite 600 Rosemont, Illinois 60018-4920 Tel (847) 823-0500 Fax (847) 823-0520

DEERFIELD Road
Milwaukee Avenue to Saunders/Riverwoods Road

Welcome!

Deerfield Road Phase I

Engineering and Environmental Study

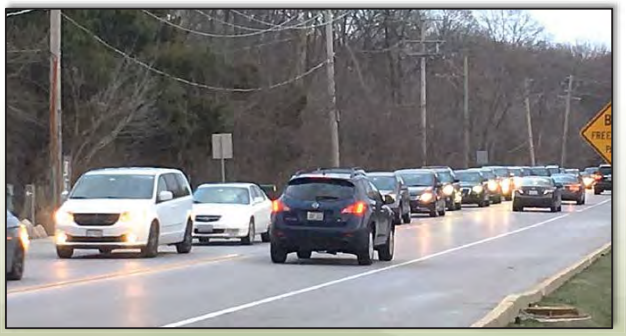
Noise Forum

September 19, 2019

DEERFIELD Road
Milwaukee Avenue to Saunders/Riverwoods Road

Meeting Agenda

- Presentation (7:00 – 7:45pm)
  - Introductions
  - Project Purpose & Limits
  - Preliminary Preferred Improvement
  - Traffic Noise Study Overview
  - Project Schedule & Next Steps
- Q & A (7:45 – 8:00pm)
- Open House (8:00 – 9:00pm)



Introductions

LCDOT

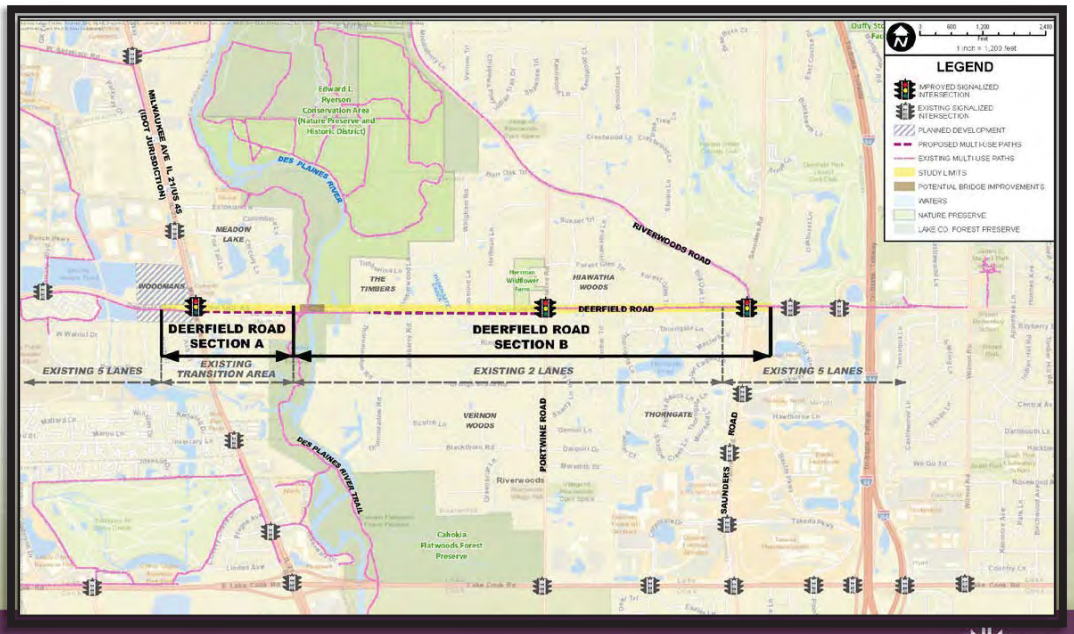
- Kevin Carrier, Director of Planning and Programming
- Chuck Gleason, Project Manager

Project Consultants

- Matt Huffman (CBBEL)
- Pete Knysz (CBBEL)
- Ryan Duffy (CBBEL)

Project Purpose & Limits

The project purpose it to address capacity, safety, accessibility, and non-motorized connection deficiencies along Deerfield Road between Milwaukee Avenue (US 45/IL 21) and Saunders/Riverwoods Road.



DEERFIELD Road
Milwaukee Avenue to Saunders/Riverwoods Road

Preliminary Preferred Improvement

Deerfield Road Near Saunders Road

- Focus On East End of Project near Saunders/Riverwoods & Deerfield Road Intersection
- Deerfield Road Improvements
- Saunders Road Improvements
- Potential Noise Wall

LakeCounty Division of Transportation

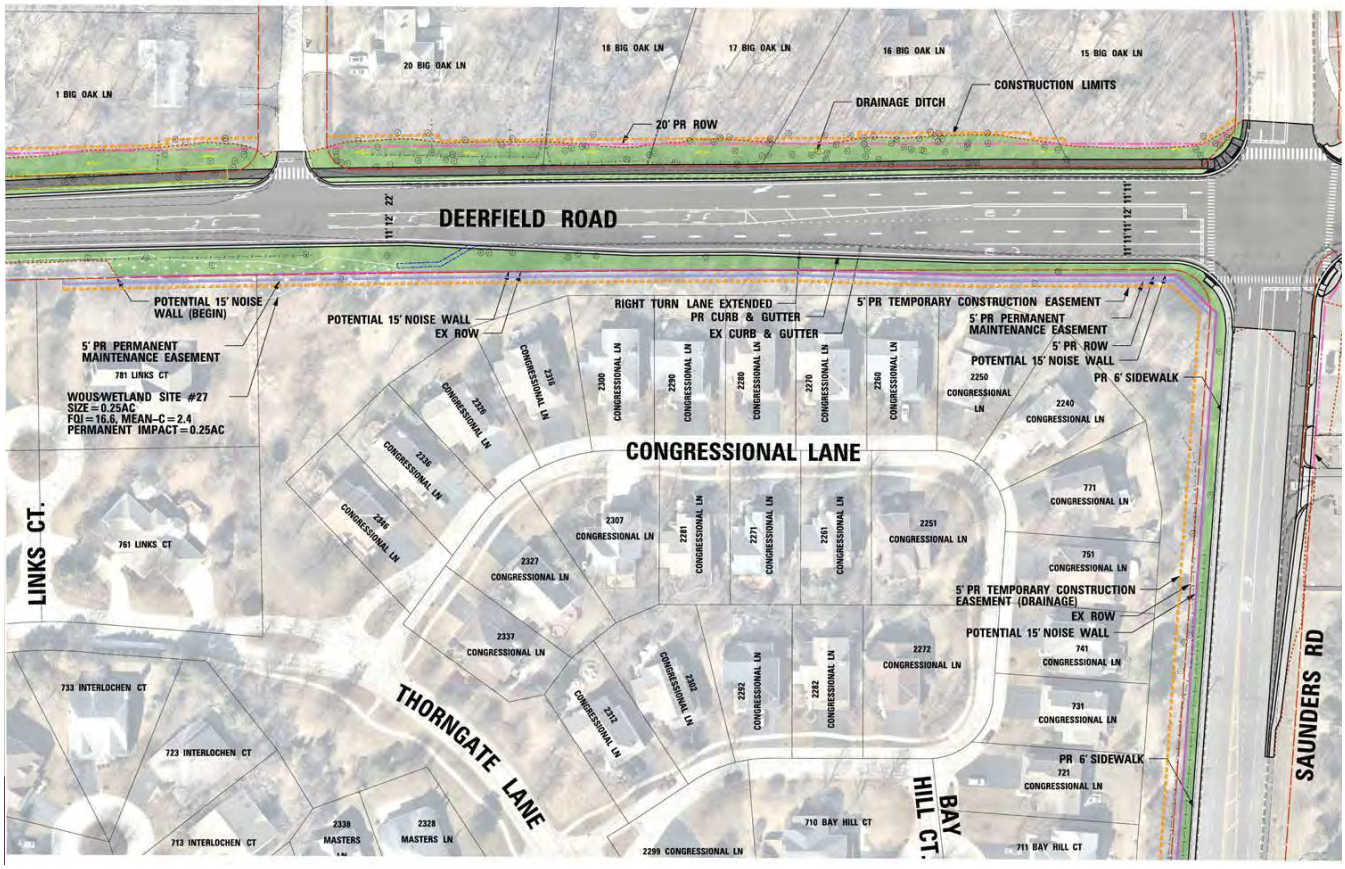
DEERFIELD Road

Preliminary Preferred Improvement

Deerfield Road Near Saunders Road – Existing Conditions

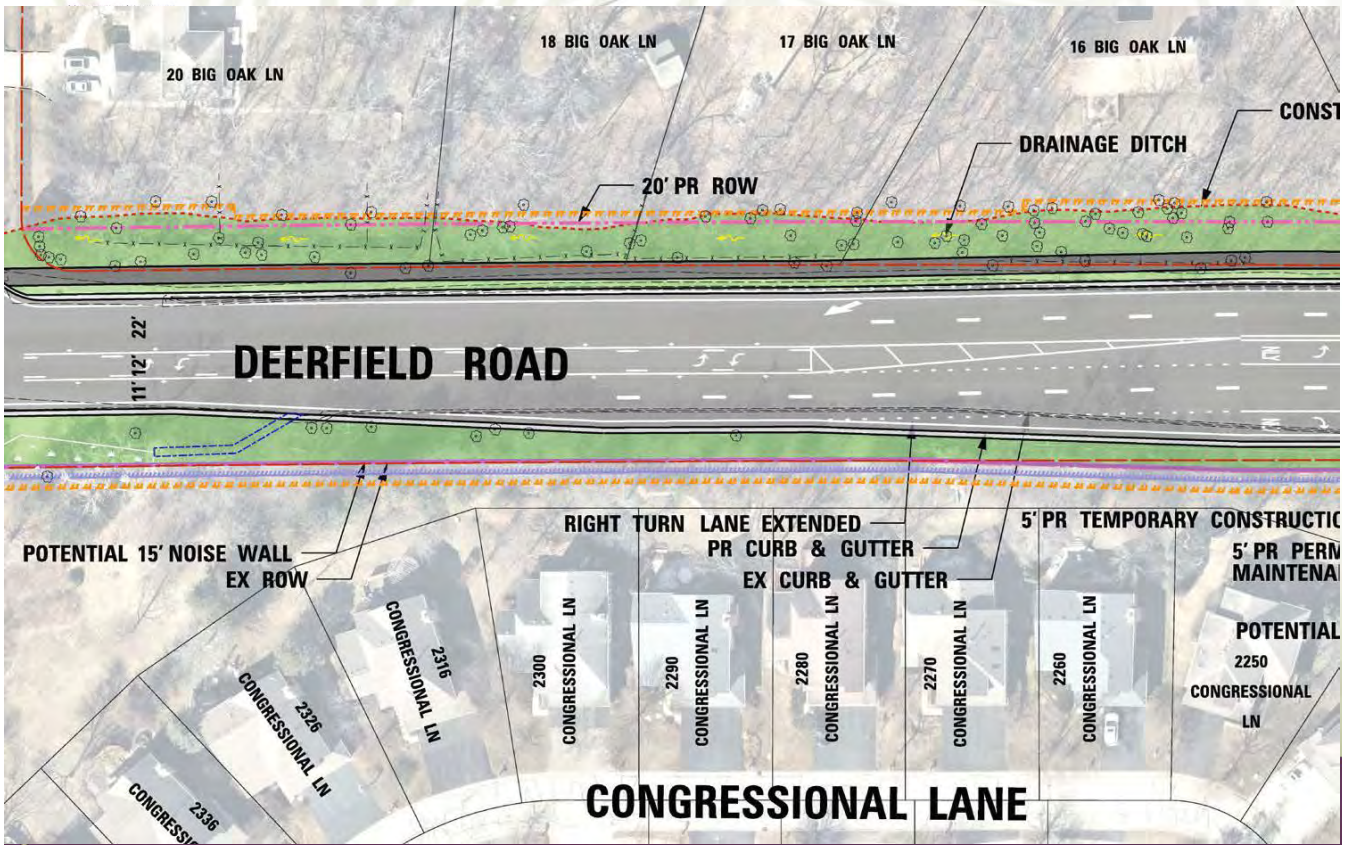
Preliminary Preferred Improvement

Deerfield Road Near Saunders Road – Proposed Improvement



Preliminary Preferred Improvement

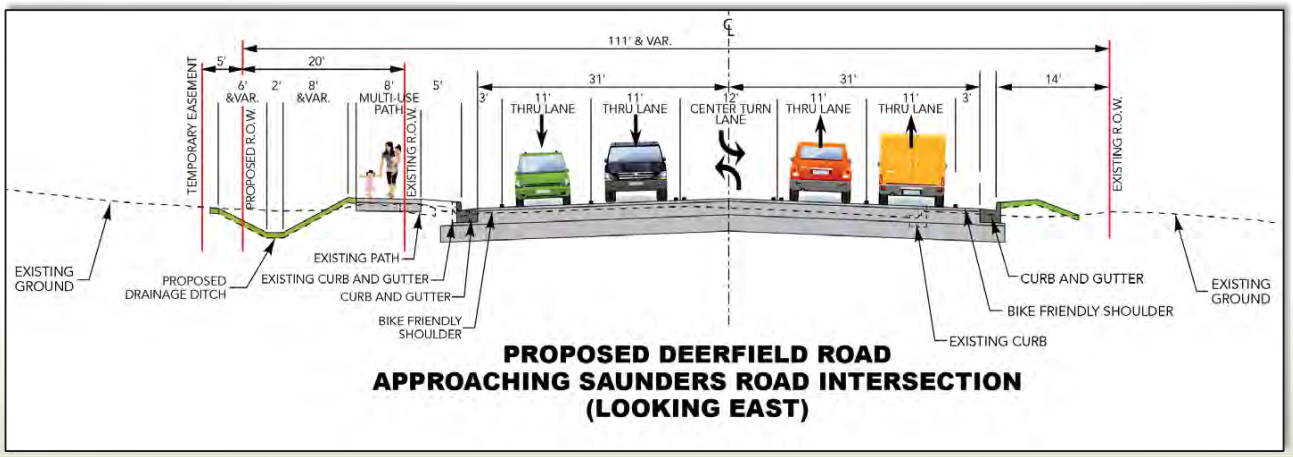
Deerfield Road Near Saunders Road – Proposed Improvement



DEERFIELD Road
MILWAUKEE AVENUE TO SAUNDERS/RIVERWOODS ROAD

Preliminary Preferred Improvement

Deerfield Road Typical Section



LakeCounty Division of Transportation

DEERFIELD Road
MILWAUKEE AVENUE TO SAUNDERS/RIVERWOODS ROAD

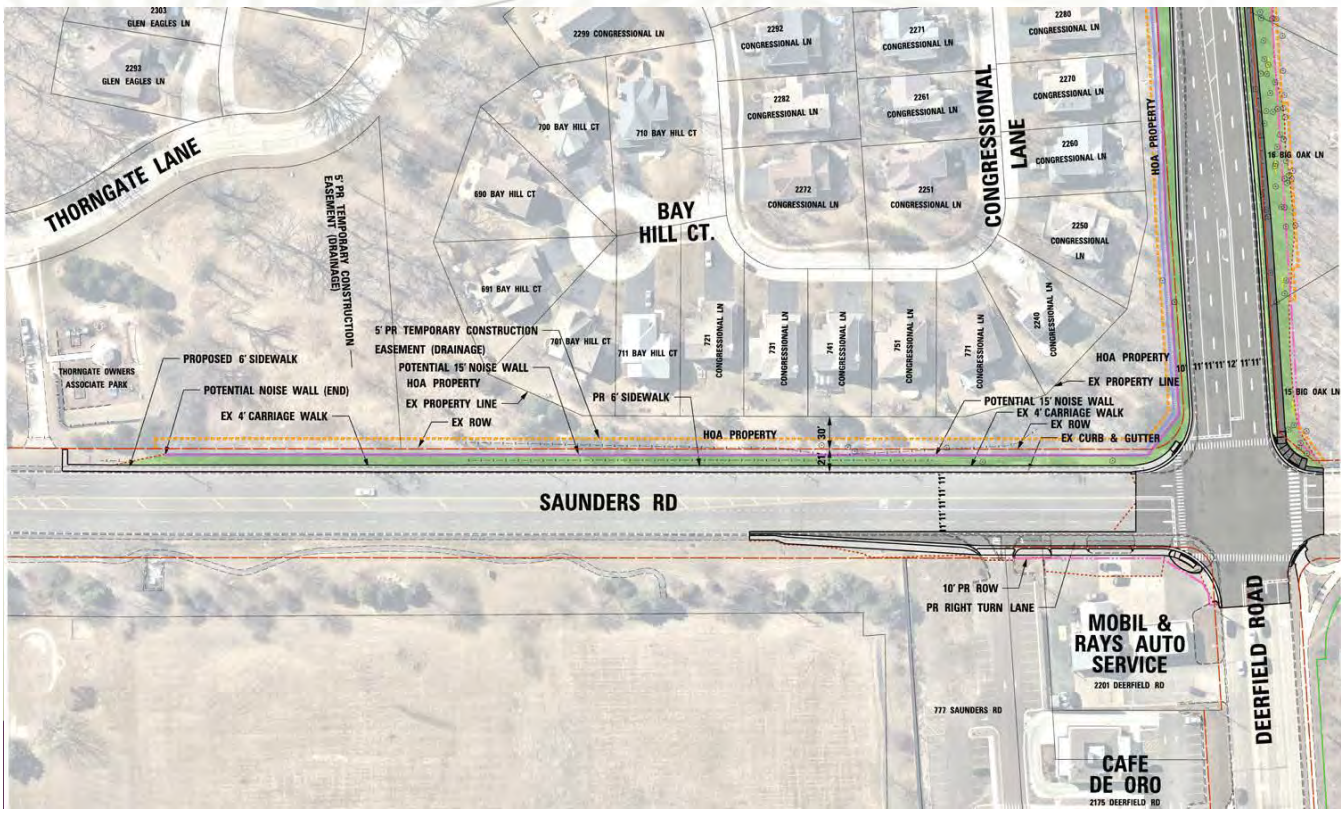
Preliminary Preferred Improvement

Saunders Road Near Deerfield Road – Existing Conditions

DEERFIELD Road
MILWAUKEE AVENUE TO SAUNDERS/RIVERWOODS ROAD

Preliminary Preferred Improvement

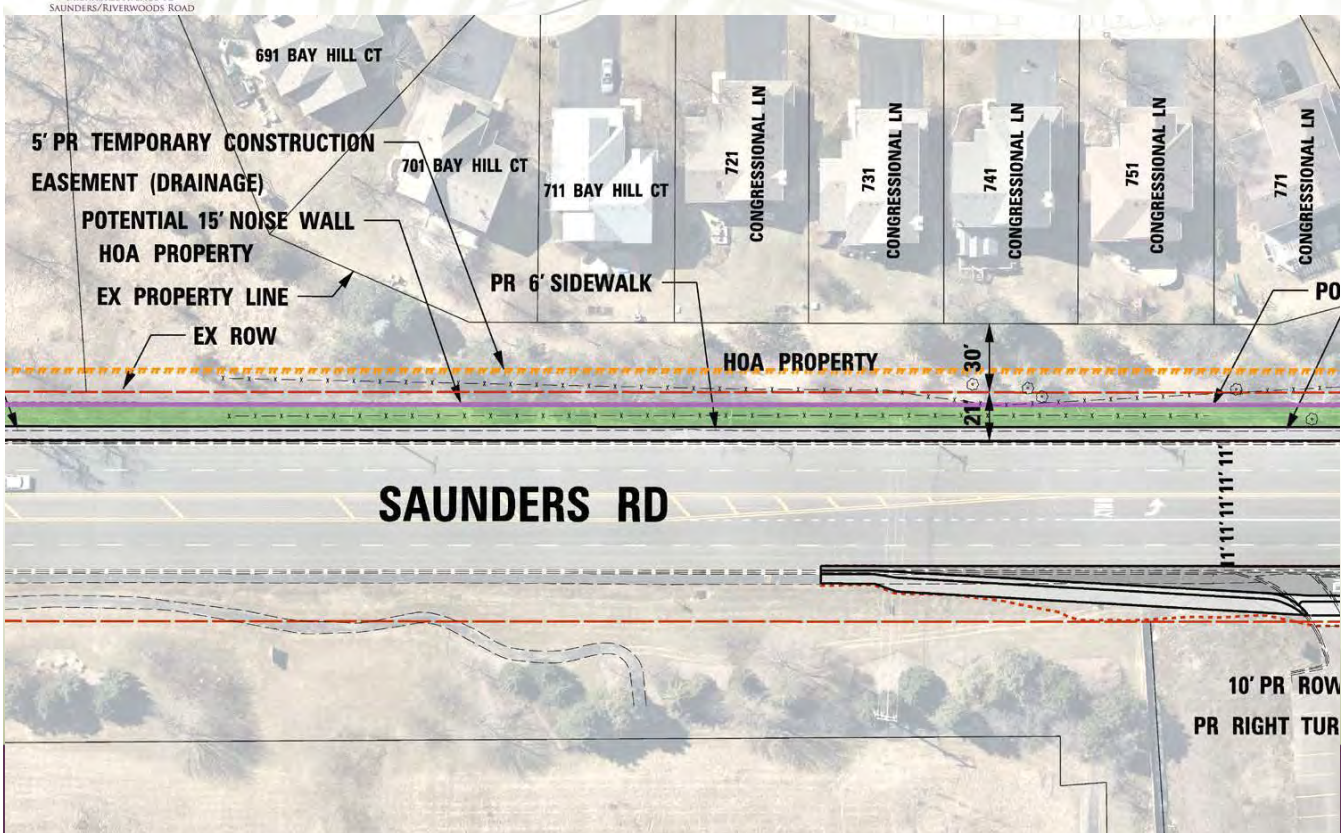
Saunders Road Near Deerfield Road – Proposed Improvement



DEERFIELD Road
MILWAUKEE AVENUE TO SAUNDERS/RIVERWOODS ROAD

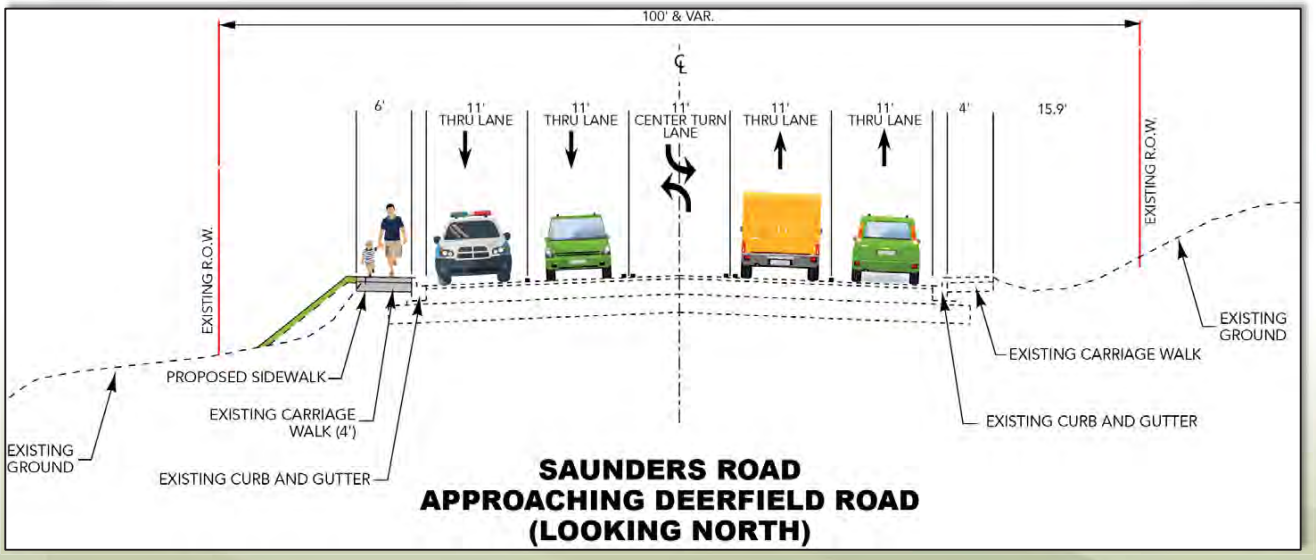
Preliminary Preferred Improvement

Saunders Road Near Deerfield Road – Proposed Improvement



Preliminary Preferred Improvement

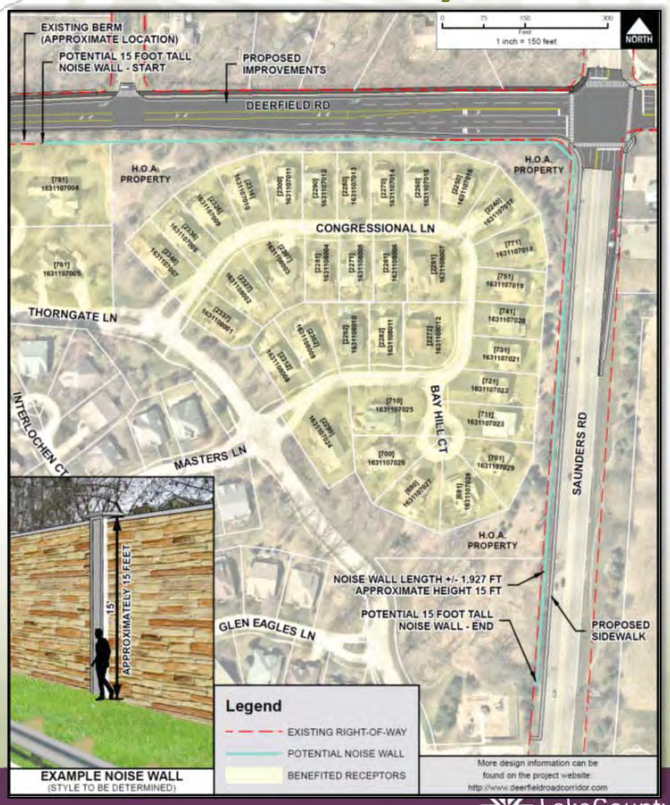
Saunders Road Typical Section



DEERFIELD Road
Milwaukee Avenue to Saunders/Riverwoods Road

Meeting Agenda – Traffic Noise Study Overview

- Policy & Procedures
- Results
- Potential Noise Walls
- Viewpoint Solicitation (i.e., Voting)



Traffic Noise Study Overview – Policy & Procedures

Purpose of a Traffic Noise Study

- Comply with IDOT and FHWA policy
- Required if adding a travel lane or a significant alignment or elevation change
- Predict worst hour traffic noise conditions
- Identify and evaluate potential traffic noise impacts for the entire project area
- Evaluate feasibility and reasonableness of potential traffic noise reduction techniques

DEERFIELD Road
Milwaukee Avenue to Saunders/Riverwoods Road

Traffic Noise Study Overview – Policy & Procedures

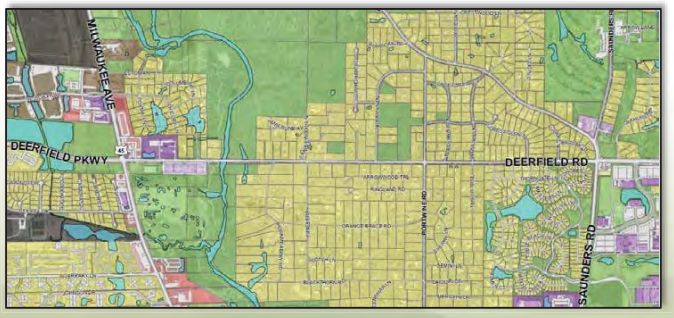
Traffic Noise Studies

- Identify Common Noise Environments (CNEs) and noise receptors
- Conduct noise monitoring and validate existing model
- Perform computer modeling
- Complete traffic noise abatement analysis
- Determine traffic noise abatement feasibility and reasonableness per IDOT and FHWA policy
- Obtain benefited receptor viewpoints

Traffic Noise Study Overview – Policy & Procedures

CNEs/Receptor Locations

- Review land use
- Divide corridor into CNEs based on FHWA Activity Categories
- CNE = Group of receptors with:
  - Similar land use
  - Similar traffic characteristics (e.g., traffic volume, traffic mix)
  - Same basic topography



DEERFIELD Road
Traffic Noise Study Overview – Policy & Procedures

FHWA Noise Abatement Criteria (NAC) – Used to identify CNEs and determine impacts

Activity Category	dB(A)	Description of Activity Category
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance
B	**67 (Exterior)**	**Residential ***
C	67 (Exterior)	Cemeteries, day care centers, hospitals, libraries, medical facilities, parks/recreation areas, picnic areas, places of worship, schools
D	52 (Interior)	Day care centers, hospitals, libraries, medical facilities, places of worship, schools (only when no exterior activities) – **not for residential**
E	72 (Exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands not included in Categories A-D or F
F	---	Agriculture, industrial, maintenance facilities, manufacturing, retail facilities, warehousing
G	---	Undeveloped lands that are not permitted

* Noise abatement is considered when the noise level, at a given receptor, approaches [within 1 dB(A)], meets, or exceeds the NAC in the Build Condition

DEERFIELD Road
MILWAUKEE AVENUE TO SAUNDERS/RIVERWOODS ROAD

Traffic Noise Study Overview – Policy & Procedures

FHWA Noise Abatement Criteria is 67 dB(A) for Residential Area

Similar to Conversational Speech at 3 feet

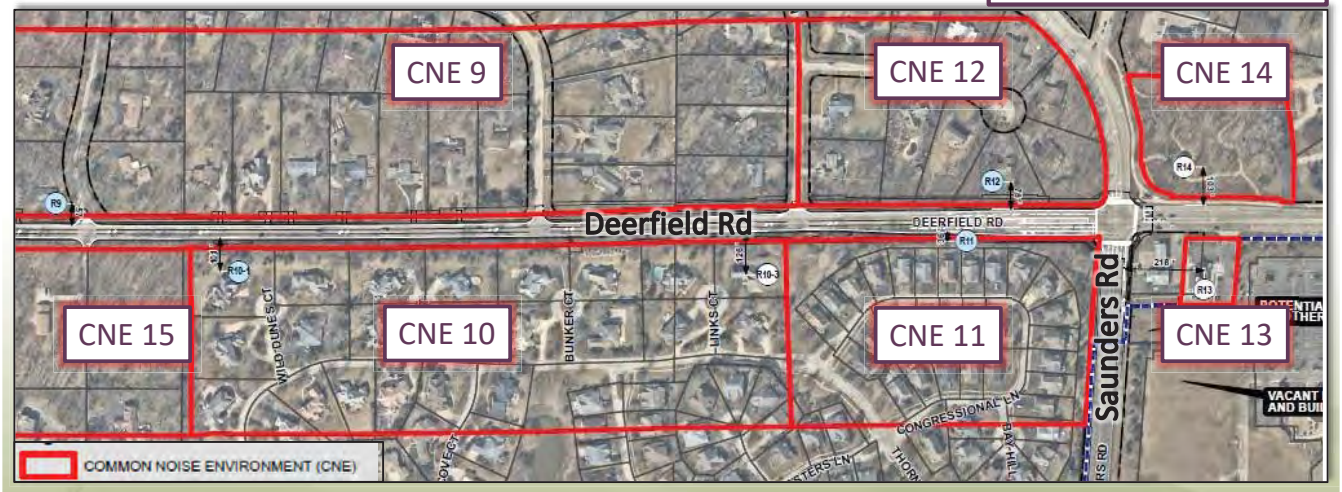
DEERFIELD Road
MILWAUKEE AVENUE TO SAUNDERS/RIVERWOODS ROAD

Traffic Noise Study Overview – Policy & Procedures

CNEs/Receptor Locations

- 15 CNEs were identified along the Project Corridor

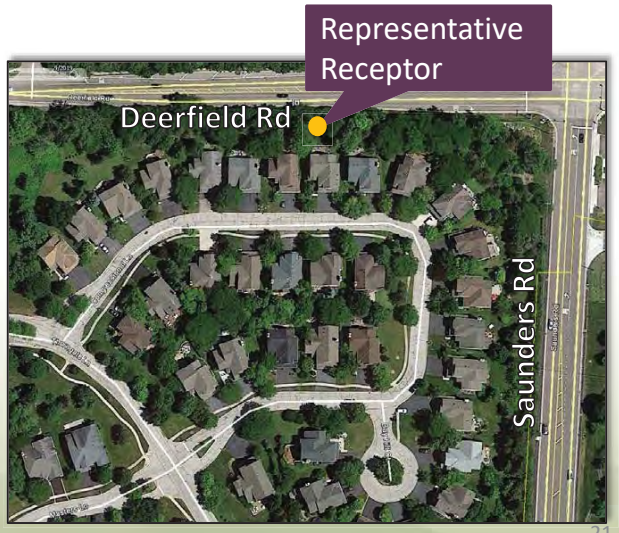
Portions of 7 CNEs are shown below



Traffic Noise Study Overview – Policy & Procedures

Common Noise Environment Receptor Location #11

- One representative receptor per CNE
- Typically – Exterior location of frequent human use
- Represents the worst case noise condition for the CNE
- This receptor is studied to determine if there is an impact



DEERFIELD Road
Milwaukee Avenue to Saunders/Riverwoods Road

Traffic Noise Study Overview – Policy & Procedures

Noise Monitoring

- Used to validate Existing Condition Traffic Noise Model
- At 25-50% of Representative Receptors
- Measure existing sound levels for 8-15 minutes
- Record weather data
- Collect traffic data (e.g., traffic counts and approx. speed)

Traffic Noise Study Overview – Policy & Procedures

Traffic Noise Model

- Input
  - Traffic volumes, speed, and composition
  - Roadway alignment (horizontal and vertical)
  - Receptor location and elevation
  - Terrain lines
  - Traffic control devices (e.g., traffic signals)
- Scenarios Modeled
  - Existing Condition
  - Year 2050 Traffic with No Improvement (No-Build Condition)
  - Year 2050 Traffic with Improvement (Build Condition)

Traffic Noise Study Overview – Results

- Impact = NAC is
  - Approached (within 1 dB(A))
  - Met
  - Exceeded
  - B = Residential; Impact = 66 dB(A)
- Impact pertains to Build Condition
- 3 CNEs impacted under Build Condition (★)
- R11 "approached" NAC under Existing Condition

CNE/ Receptor #	Activity Category/ NAC	Noise Level at the Representative Receptor dB(A)		
		Existing	No-Build (Year 2050)	Build (Year 2050)
R1	E/72	62	63	63
R2	B/67	57	58	58
R3	E/72	62	63	63
R4	E/72	65	66	69
R5	C/67	61	63	64
R6	B/67	59	61	63
R7	B/67	65	66	67 ★
R8	B/67	64	66	66 ★
R9	B/67	63	64	65
R10-3	B/67	58	59	60
R11	**B/67**	**66**	**68**	**69** ★
R12	B/67	62	64	65
R13	E/72	60	60	62
R14	C/67	62	62	64
R15	B/67	59	60	61

No Wall

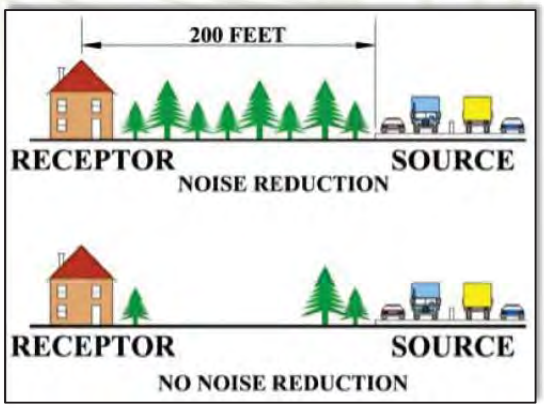
Thorngate Subdivision

Traffic Noise Study Overview – Results

How much of a Change?

Change in Noise Level	Perception of Change
±3 dB(A)	**Barely Perceivable Change**
±5 dB(A)	Readily Perceivable Change
±10 dB(A)	Doubling/Halving Noise Loudness

Traffic Noise Study Overview – Potential Noise Wall



- Earth Berms
  - Earth berms require a large footprint
  - 15 ft high = ~90 ft footprint (3H:1V slope)
  - Not feasible due to property impact
- Landscaping (Vegetation)
  - Not recognized by FHWA as noise abatement
  - Generally, 100-200 feet wide; 16-18 feet tall; and dense understory
- Noise Walls
  - Most effective when close to the road or homes
  - Loses effectiveness with breaks for driveways/side roads
  - Much smaller footprint (~1 ft wide) than an earth berm

Traffic Noise Study Overview – Potential Noise Wall

Abatement is considered for residential receptors with traffic noise levels ≥66 dB(A) in the Build Condition

- Feasible
  - Noise barrier can be built, and
  - Achieve at least 5 dB(A) reduction for at least 2 impacted receptors

- **Noise barrier feasible at 1 CNE (R11)**

- Noise barrier not feasible at 2 CNEs (R7 and R8)

DEERFIELD Road
Milwaukee Avenue to Saunders/Riverwoods Road

Traffic Noise Study Overview – Potential Noise Wall

How much of a Change?

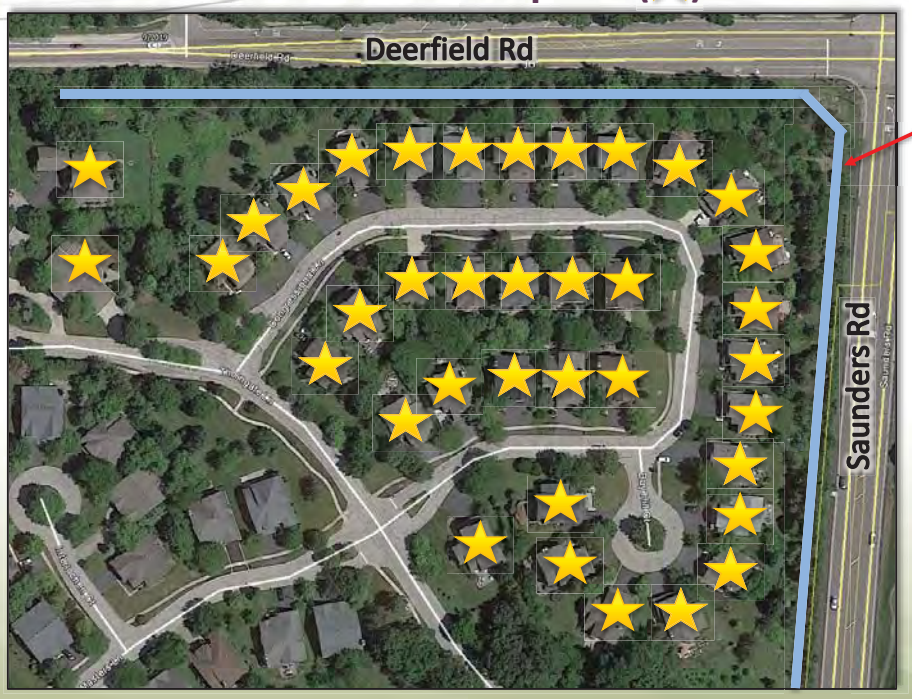
Change in Noise Level	Perception of Change
±3 dB(A)	Barely Perceivable Change
±5 dB(A)	**Readily Perceivable Change**
±10 dB(A)	Doubling/Halving Noise Loudness

- Benefited Receptor
  - Receives ≥5 dB(A) noise reduction
  - Does not need to be impacted

DEERFIELD Road
Milwaukee Avenue to Saunders/Riverwoods Road

Traffic Noise Study Overview – Potential Noise Wall

37 Benefited Receptors (★)



Potential Noise Wall
(approx. location – not to scale)

DEERFIELD Road
Milwaukee Avenue to Saunders/Riverwoods Road

Traffic Noise Study Overview – Potential Noise Wall

- Reasonable
  - At least 8 dB(A) reduction for at least 1 benefited receptor
  - Cost effective (IDOT policy - $30,000/benefited receptor), and
  - Desired by the majority of benefited receptors

- Abatement will reduce noise levels…but noise will still be present

www.deerfieldroadcorridor.com
LakeCounty Division of Transportation

DEERFIELD Road
MILWAUKEE AVENUE TO SAUNDERS/RIVERWOODS ROAD

Traffic Noise Study Overview – Potential Noise Wall

CNE 11

Estimated Total Noise Wall Cost (including ROW/ easement) = $992,400

Estimated Cost per Benefited Receptor = $26,822

Adjusted Allowable Cost per Benefited Receptor = $30,000

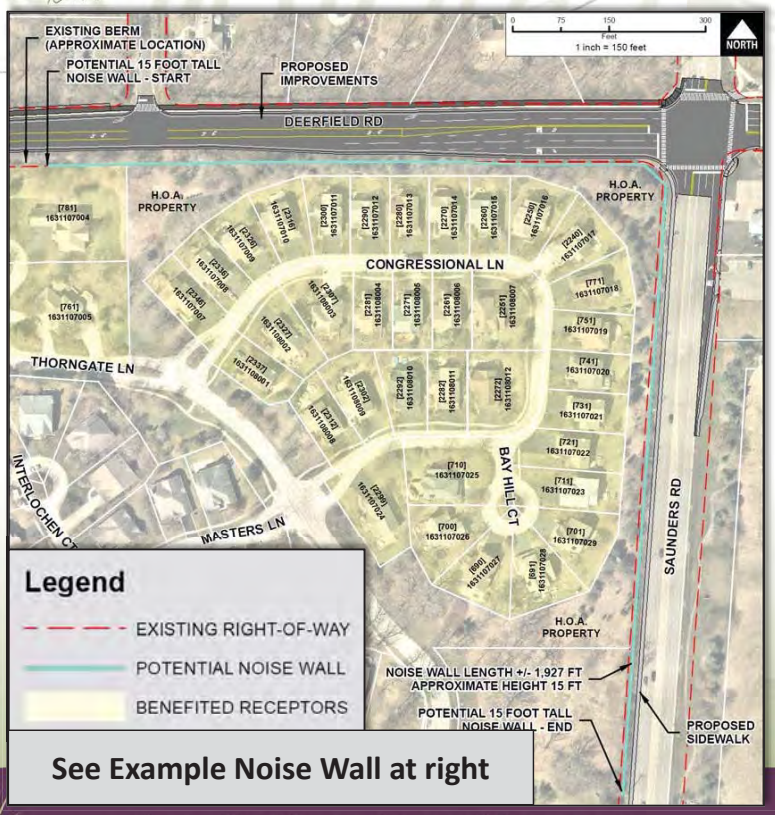
$26,822 (less than) $30,000

- A noise wall is considered feasible and reasonable for CNE 11 since the estimated cost does not exceed the adjusted allowable cost per benefited receptor…pending viewpoint solicitation

LakeCounty Division of Transportation

DEERFIELD Road

Traffic Noise Study Overview – Potential Noise Wall



See Example Noise Wall at right

EXAMPLE NOISE WALL
(STYLE TO BE DETERMINED)

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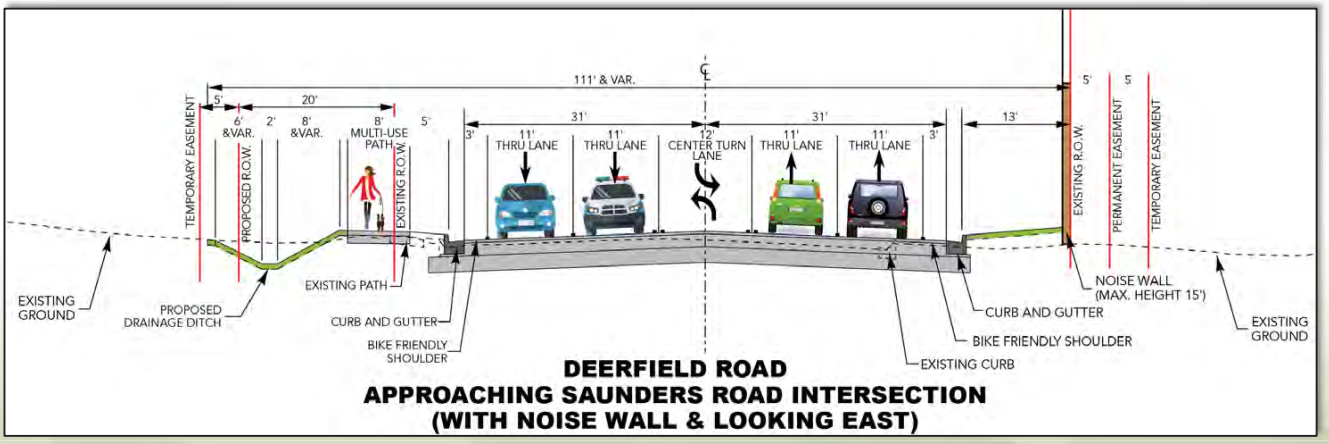
LakeCounty Division of Transportation

Traffic Noise Study Overview – Potential Noise Wall

View looking east along Deerfield Road



DEERFIELD Road

Traffic Noise Study Overview – Potential Noise Wall

Deerfield Road looking east

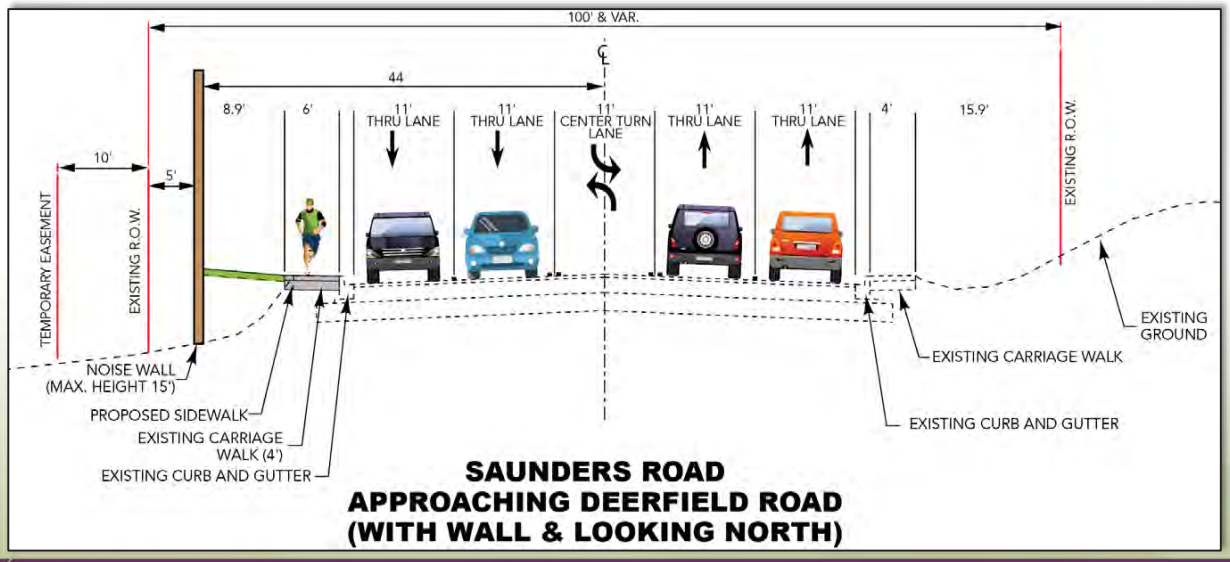
For informational purposes only – Dimensions are approximate; Style to be determined

Traffic Noise Study Overview – Potential Noise Wall

Sample Noise Wall Panel - For informational purposes only – Style to be determined

Traffic Noise Study Overview – Potential Noise Wall

View looking north along Saunders Road



DEERFIELD Road

Traffic Noise Study Overview – Potential Noise Wall

Saunders Road looking south

For informational purposes only – Dimensions are approximate; Style to be determined

Note: From roadway perspective, Noise Wall is ±11 ft tall along road and ±15 ft tall behind wall (see Typical Section)

DEERFIELD Road

MILWAUKEE AVENUE TO SAUNDERS/RIVERWOODS ROAD

Traffic Noise Study Overview – Potential Noise Wall

From Rear Yard of Residential Home Along Deerfield Road

Before Noise Wall

After Noise Wall

For informational purposes only – Dimensions are approximate; Style to be determined

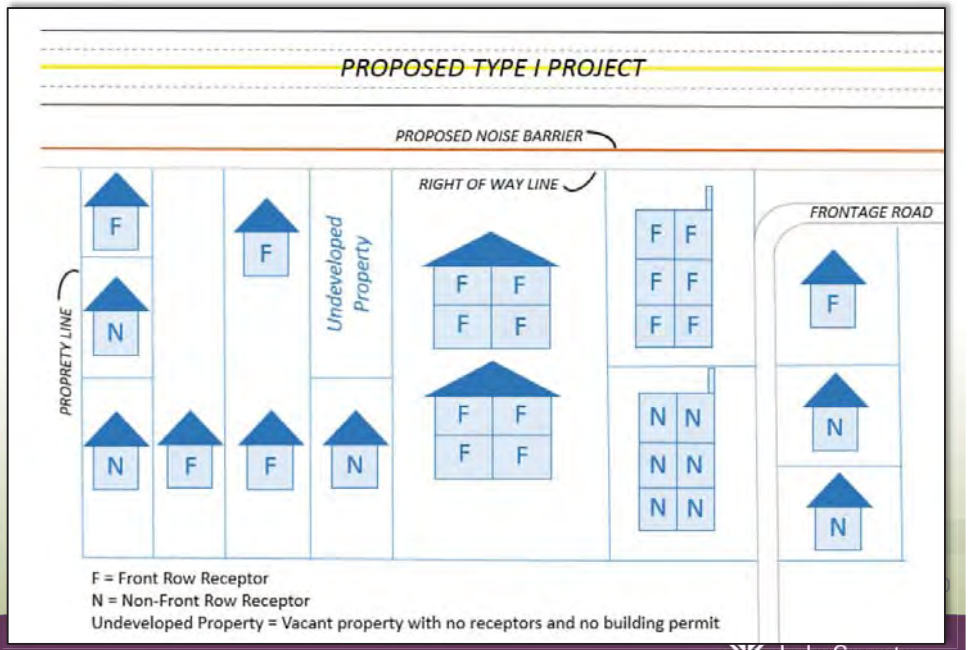
Traffic Noise Study Overview – Viewpoint Solicitation (i.e., Voting)

- Benefited Receptors Vote (LCDOT and Village do not vote)
- Goal is to obtain **at least 1/3** of potential vote points
- Up to two attempts (mailings) to achieve goal
- If 1/3 vote points are not received after 2 attempts…use results received
- **Do not double count…only allowed to vote once**
- Results are based on the majority of vote points received
- If no votes are received…noise wall will not be recommended
- **If greater than 50% of the vote points received are in favor of the noise wall, it will be recommended for construction**

Traffic Noise Study Overview – Viewpoint Solicitation (i.e., Voting)

Votes are Weighted

- Front Row versus Non-Front Row
- Front Row property is adjacent to the potential noise wall



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LakeCounty Division of Transportation

Traffic Noise Study Overview – Viewpoint Solicitation (i.e., Voting)

Votes are Weighted

- Owner versus Renter (37 residences)
- Both the Owner and the Renter are provided the opportunity to vote
- Same number of vote points

TABLE 4-5
NUMBER OF VOTES PER BENEFITED RECEPTOR

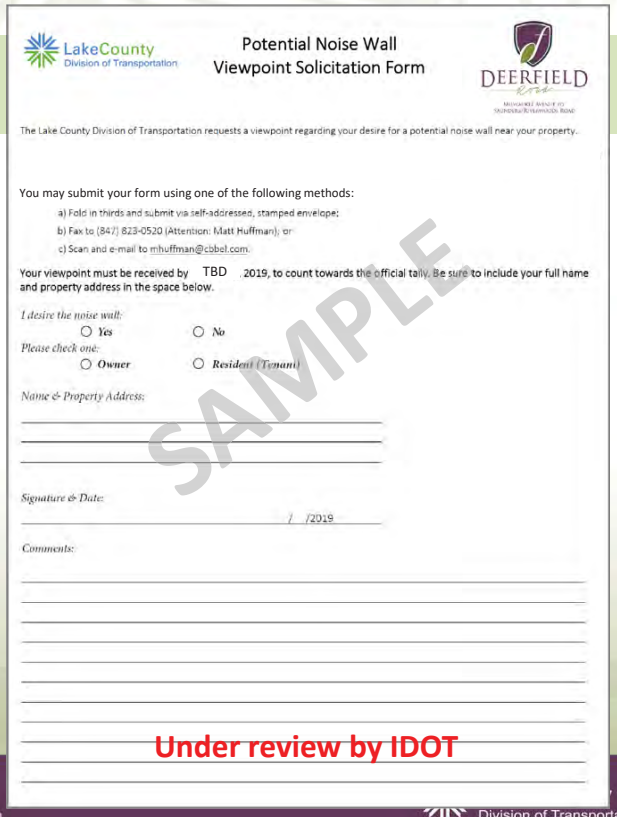
Receptor Location	*Rental Property*		*Owner Occupied Property: Number of Votes Per Unit*
	Owner: Number of Votes Per Unit	*Renter: Number of Votes Per Unit*	
Front Row	2	2	4
Non-Front Row	1	1	2

From IDOT Highway Traffic Noise Assessment Manual, 2017

Traffic Noise Study Overview – Viewpoint Solicitation (i.e., Voting)

Voting Options

- Submit the Viewpoint Solicitation form via self-addressed, stamped envelope
- Fax the Viewpoint Solicitation form to (847) 823-0520
  Attn: Matt Huffman
- Scan the Viewpoint Solicitation form and e-mail to mhuffman@cbbel.com



LakeCounty Division of Transportation

Potential Noise Wall
Viewpoint Solicitation Form

DEERFIELD Road

The Lake County Division of Transportation requests a viewpoint regarding your desire for a potential noise wall near your property.

You may submit your form using one of the following methods:

a) Fold in thirds and submit via self-addressed, stamped envelope;
b) Fax to (847) 823-0520 (Attention: Matt Huffman); or
c) Scan and e-mail to mhuffman@cbbel.com.

Your viewpoint must be received by TBD, 2019, to count towards the official tally. Be sure to include your full name and property address in the space below.

I desire the noise wall:
○ *Yes* ○ *No*

Please check one:
○ *Owner* ○ *Resident (Tenant)*

Name & Property Address:

Signature & Date:
/ /2019

Comments:

SAMPLE

Under review by IDOT

DEERFIELD Road
Milwaukee Avenue to Saunders/Riverwoods Road

Project Schedule & Next Steps

- **You will receive Viewpoint Solicitation Form when Voting Period begins (waiting for IDOT approval)**
- Votes must be received within 2 weeks (after start of voting period - 1st Attempt)
- If necessary, 2nd Attempt to obtain 1/3 of potential vote points
- Submit Traffic Noise Report (with voting results to IDOT): October/early November 2019 (anticipated)
- Public Hearing: Late 2019/Early 2020
- Anticipated Phase I Design Approval: Spring 2020
- Based on available funding…Construction could begin in 2023

DEERFIELD Road
Milwaukee Avenue to Saunders/Riverwoods Road

Question and Answer Session

Thank You!

Visit the Project Website at:
www.deerfieldroadcorridor.com

Division of Transportation

Shane E. Schneider, P.E.
Director of Transportation/County Engineer

600 West Winchester Road
Libertyville, Illinois 60048-1381
Phone 847 377 7400
Fax 847 984 5888

October 4, 2019

«Taxpayer__First_Name» «Taxpayer__Last_Name»
«Property_Address__Street_Number»
«Property_Address__City», «Property_Address__State» «Property_Address__Zip_Code»

Property Index Number (PIN): «PIN» («Property_Address__Street_Number»)

RE: Noise Wall Viewpoint Solicitation (First Notice)
Deerfield Road Improvements from Milwaukee Avenue to Saunders Road

Dear «Taxpayer__First_Name» «Taxpayer__Last_Name»:

The Lake County Division of Transportation (LCDOT) is conducting Preliminary Engineering and Environmental (Phase I) studies for the proposed federally-funded improvement of Deerfield Road from Milwaukee Avenue to Saunders Road, Lake County, Illinois. The improvements include reconstruction and widening Deerfield Road to provide a center two-way left turn lane, new shared-use path, new sidewalks (select areas), and intersection improvements at Milwaukee Avenue, Portwine Road, and Saunders Road. The proposed improvements will address capacity, safety, mobility, and operational deficiencies, and improve non-motorized accommodations and connectivity in the region. Construction is anticipated to begin in 2023.

As part of the environmental studies for this project, traffic noise is being evaluated following federal and state project development procedures for the proposed improvements as well as the No-Build, or do-nothing option. The analysis found that, due to the proposed improvements, predicted future noise levels in your area justify the installation of a noise wall. The enclosed exhibit shows the location of the noise wall, which is located at the southwest corner of the Deerfield Road and Saunders Road intersection. The exhibit also lists the approximate length and average height of the wall and includes an inset with an example noise wall rendering to show relative height. The actual style would be determined during the next phase of engineering.

To help inform affected residents about the potential noise wall, a Noise Forum Meeting was held on September 19, 2019. A formal presentation was made with a Q&A and Open House following the presentation. All information shown at the Noise Forum Meeting, including the presentation, is available on the project website at: https://deerfieldroadcorridor.com/info_center/meeting_materials.aspx.

Per State and Federal noise analysis policy, affected resident's opinion is taken into account before a final decision is made on the inclusion of the noise wall in the proposed improvement. Only each property "benefited" by a noise wall may vote in favor of or against the wall. A property is benefited by a wall when the potential wall results in a noticeable reduction in noise level, which is defined as five decibels or more. If more than half of the votes received are in favor of the wall, the wall will likely be included in the project. A final decision on the installation of the wall will be made upon completion of the project's final design and the public involvement process.

Your property/rental unit (identified on the attached exhibit by the address number and PIN listed near the top of this letter) has been found to be benefited from the noise wall shown in the enclosed exhibit. LCDOT respectfully requests your viewpoint (i.e. vote) for or against the noise wall.

Enclosed is a "Viewpoint Solicitation Form" for you to vote for or against the recommended noise wall in your area.

For your vote to count, please complete one of the following:

- Return the enclosed form (fold in thirds and tape);
- Fax to (847) 823-0520 or
- E-mail your response to Matt Huffman at mhuffman@cbbel.com. Include your full name and address in any correspondence you provide.

Note: Both owners and tenants are allowed to submit their viewpoints.

All responses must be received/postmarked by October 18, 2019.

If you have any questions or need additional information, please contact me at cgleason@lakecountyil.gov or 847-377-7447.

Sincerely,

Chuck Gleason
Project Manager
Lake County Division of Transportation

Enclosures

Potential Noise Wall
Viewpoint Solicitation Form

LakeCounty
Division of Transportation

DEERFIELD Road
Milwaukee Avenue to
Saunders/Riverwoods Road

The Lake County Division of Transportation requests a viewpoint (i.e. vote) regarding your desire for a potential noise wall near your property along Deerfield Road and Saunders Road. Per State and Federal noise analysis policy, public opinion is taken into account before a final decision is made on the inclusion of a noise wall in the proposed improvement. Only each property "benefited" by a noise wall may vote in favor or against the inclusion of a noise wall in the proposed improvement.

You may submit your Viewpoint Solicitation Form using one of the following methods:

a) Fold in thirds, tape shut, and submit via mail;

b) Fax to (847) 823-0520; or

c) Scan and e-mail to mhuffman@cbbel.com.

Your viewpoint must be received by October 18, 2019, to count towards the official tally. Be sure to include your full name and property address in the space below.

I desire the noise wall:

◯ ***Yes*** ◯ ***No***

Please check one:

◯ ***Owner*** ◯ ***Resident (Tenant)***

Name, Email & Property Address:

_____

_____

_____

Signature & Date:

_____ / /2019

Comments:

_____

_____

_____

_____

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_____

Potential Noise Wall Viewpoint Solicitation Form

place
stamp
here

Christopher B. Burke Engineering, Ltd.
Attn: Mr. Matt Huffman
9575 W. Higgins Road
Suite 600
Rosemont, IL 60018

Affix tape here

EXAMPLE NOISE WALL
(STYLE TO BE DETERMINED)

Legend

- EXISTING RIGHT-OF-WAY
- POTENTIAL NOISE WALL
- BENEFITED RECEPTORS

More design information can be found on the project website:
http://www.deerfieldroadcorridor.com

CLIENT: LakeCounty Division of Transportation

TITLE: POTENTIAL NOISE WALL LOCATION

PROJ. NO.	150331
DATE:	9/18/2019
SHEET	1 OF 1
DRAWING NO.	EXH

CHRISTOPHER B. BURKE ENGINEERING, LTD.
9575 W. Higgins Road, Suite 600 · Rosemont, Illinois 60018 · (847) 823-0500

DSGN.				SCALE:	1:1,800
DWN.	DRW			AUTHOR:	DWALTERS
CHKD.				PLOT DATE:	9/18/2019
FILE:	Noise Wall				

Path: N:\LCDOT\150331\GIS\Exhibits\Noise Exhibits\Noise Wall.mxd

Frequently Asked Questions

This document provides responses to the frequently asked questions pertaining to the proposed improvements and the potential noise wall adjacent to the Thorngate Subdivision associated with the Phase I Engineering Study of Deerfield Road from Milwaukee Avenue to Saunders/Riverwoods Road. Project information, including information shared at the Noise Forum Meeting, can be found on the project website www.deerfieldroadcorridor.com. Please review this information, as it will help inform you of the traffic noise process and results. This document will also be posted on the project website.

Contents

1. Why is the County studying Deerfield Road?

Through the Lake County Division of Transportation (LCDOT) planning process, Deerfield Road from Milwaukee Avenue to Saunders/Riverwoods Road has been identified to have transportation deficiencies as documented in the Lake County 2040 Transportation Plan (2040 Plan). The 2040 Plan is a long range plan adopted in June 2014 that identifies deficiencies and recommends improvements necessary to address the future transportation needs of Lake County including roadway, transit, and non-motorized modes of travel. More information regarding the Lake County 2040 Transportation Plan can be found on their website. From the long range plan, the County develops a 5-year Highway Improvement Program to schedule projects, which includes various phases of engineering and construction.

In addition to transportation deficiencies identified within this portion of Deerfield Road, LCDOT pavement management data shows almost 40% of the base/substructure of the pavement to be in failing condition. As such, LCDOT views the roadway to be near the end of its life and the most cost-effective pavement management approach is to reconstruct the roadway. When a roadway is reconstructed, the entire pavement structure is removed (typically nearly 2 to 3 feet in depth) and rebuilt, which requires a significant financial investment. As such, when a roadway is reconstructed a full evaluation of capacity, safety, drainage, non-motorized accommodations, and roadway design elements are required. The specific needs identified for this project are documented in the Purpose and Need statement located on the project website at: https://deerfieldroadcorridor.com/info_center/project_reports.aspx

2. What is a Phase I Study and when will construction begin?

The roadway project development process includes three phases:

- Phase I is preliminary engineering, environmental studies, and public coordination, and is planned to take 36 months for completion.
- Phase II is contract plan preparation and land acquisition, and typically takes 24 months.
- Phase III is roadway construction, and typically takes 12-24 months.

The Deerfield Road Phase I Study will follow the federal National Environmental Policy Act (NEPA) for project development to be eligible for federal funds. Following this process will allow the study team to balance the need for safe and efficient transportation improvements with any potential impact to the human and natural environment. The specific Phase I Study process consists of data collection, developing the project purpose and need, identifying a range of alternatives, screening the range of alternatives down to a preferred alternative, determining the potential impacts the proposed improvement may have on the environment, and then obtaining design approval from the Illinois Department of Transportation (IDOT) and the Federal Highway Administration (FHWA). Phase I and Phase II are included in the Federal Fiscal Year (FFY) 2019-2024 Transportation Improvement Program (TIP). Phase III (construction) is not programmed in the current TIP. Construction is anticipated to start in 2023.

3. What is the proposed improvement for Deerfield Road between the Des Plaines River and Saunders/Riverwoods Road?

The proposed improvement for this section of Deerfield Road consists of a 3-lane roadway that includes a center bi-directional turn lane, curb and gutter, and 8 foot multi-use path (south side up to Portwine Road; north side up to Saunders/Riverwoods Road). As Deerfield Road approaches the Saunders/Riverwoods Road intersection, the same number of lanes will be provided on Deerfield as currently exists today (5). In this area, there will be some modifications that will require the existing south curb line to move between 4 and 11 feet to the south. The reason for this is to accommodate a lengthening of the eastbound right turn lane by 60 feet to meet intersection design standards, provide a 3 foot “bike friendly” shoulder, and 2.5 foot wide curb and gutter.

4. What is the proposed improvement for Saunders Road?

The proposed improvement on Saunders Road includes a new northbound right turn lane and 6 foot sidewalk along the west side of Saunders Road directly behind the existing curb. The Saunders Road intersection will be modernized with new signal equipment and cross walks on all legs of the intersection. The proposed sidewalk will extend south to the Thorngate HOA Park.

5. Why was a Traffic Noise Study completed?

A traffic noise assessment was required to comply with State and Federal regulations because Federal funds are being used for this project and due to the project scope. The scope of this project includes proposed roadway reconstruction with the addition of through traffic lanes at Milwaukee Avenue and the addition of a center turn lane throughout the length of the Deerfield Road corridor. If any part of the project meets the requirements for a noise analysis, the entire project must be evaluated for traffic noise according to the IDOT Highway Traffic Noise Assessment Manual (2017). A copy of the manual is located on the project website (Information Center/Project Reports). The entire project area was evaluated for traffic noise and based on the analysis, only one location warranted noise abatement (i.e., noise wall) per the IDOT Noise Policy.

6. What are the criteria that must be met for noise mitigation to be considered for a project?

A noise barrier may be proposed when a traffic noise impact occurs, and a noise barrier is determined to be feasible and reasonable.

Based on the IDOT Noise Policy, for a residential area, a traffic noise impact occurs when the design year (2050) build condition traffic noise levels are predicted to be 66dB(A) or greater. A traffic noise impact also occurs if the design year (2050) build condition traffic noise levels are predicted to substantially increase (15 dB(A) or greater) over existing conditions. Traffic noise levels are determined by computer modeling.

A noise barrier is determined to be feasible if it achieves at least a 5 dB(A) traffic noise reduction for at least two impacted receptors. A traffic noise reduction of ±5 dB(A) is a readily perceivable change in noise.

A noise barrier must also be reasonable, which includes the following three criteria:

- It must meet the noise reduction design goal of achieving at least an 8 dB(A) reduction for at least one benefited receptor. A benefited receptor is the recipient of an abatement measure that receives a noise reduction of 5 dB(A) or greater. A benefited receptor does not need to be an impacted receptor.
- The estimated build cost per benefited receptor must be less than or equal to the allowable cost per benefited receptor. The base allowable cost is $30,000 per benefited receptor. The allowable cost may be adjusted based on a number of factors. Refer to the IDOT Highway Traffic Noise Assessment Manual (2017) for additional information.

  For example, if a noise barrier will benefit 10 residences, and the total cost of the noise barrier is $270,000, then the cost per benefited receptor would be $27,000 (which is less than the allowable cost of $30,000 per benefited receptor) and the noise barrier would be considered economically reasonable.

- If noise abatement measures are determined to be feasible and achieve the first two reasonableness criteria, the benefited receptor viewpoints must be considered. If the majority of the viewpoints are in favor of the noise barrier, then the noise barrier would be considered "likely to be implemented."

If a noise barrier is not considered feasible or reasonable for an area, the noise barrier abatement measure will not be implemented as part of the project.

7. Can a berm be used instead of a noise wall?

Earth berms can be considered for noise abatement. However, the use of berms depends on the space available. For maintenance reasons, the slope of the berm should not be steeper than 3(H):1(V). For this project, there is limited available space to build a berm that would achieve the necessary noise reduction. The potential noise wall for this project would be 15 feet tall. Comparatively, a 10-15 feet tall berm would be about 60-90 feet wide. The available area for noise abatement would need to accommodate this base width.

8. Can vegetation be used as noise mitigation?

Landscaping (vegetation) is not recognized by the FHWA as a traffic noise abatement measure. However, landscaping can provide traffic noise reductions if it is sufficiently wide, dense (e.g., evergreen trees), and tall such that it cannot be seen through or over. Generally, the vegetation needs to be between 100 and 200 feet in width, 16 to 18 feet tall, and with dense understory growth to obtain a perceivable noise reduction of 5 dB(A). Vegetation/trees can potentially help screen the traffic from view, but it is generally not feasible to plant this number of trees or have available sufficient right-of-way for this to be a prudent abatement measure.

9. What property would be needed for the potential noise wall adjacent to the Thorngate Subdivision?

If the noise wall is included with this project, additional property acquisition will be required. The noise wall would be installed on property that is owned by Lake County. Permanent and Temporary Easements would be required for construction and future maintenance of the noise wall. All property acquisition would be from the Thorngate HOA property adjacent to the Deerfield Road and Saunders Road right-of-way. There is one exception (781 Links Court) where acquisition would be required directly from the property owner. Refer to the proposed improvement exhibit on the project website showing the potential noise wall location and associated property acquisition.

A summary of the proposed property acquisition is provided below. If the noise wall is not included with the project, the property acquisition associated with the noise wall can be eliminated.

- Along Deerfield Road, 5 feet of right-of-way will be needed adjacent to the eastbound right turn lane; a 5 foot permanent easement would be needed along the entire Thorngate Subdivision for future maintenance of the wall; a 5 foot temporary construction easement would be needed to construct the wall (predominantly for clearing vegetation/trees and grading).
- Along Saunders Road, a 10 foot temporary construction easement would be needed to construct the wall (predominantly for clearing vegetation/trees and grading).

Deerfield Road cannot be shifted to the north to avoid property acquisition to the Thorngate Subdivision.

10. How is property that is needed for the project acquired?

This project is using federal funds and therefore a certain process must be followed for property acquisition, which includes preparation of a plat of highway, appraisal, review appraisal, an offer made, and a negotiation with the property owner. Compensation is provided for permanent and temporary acquisition based on the appraisals and any other damages to the remainder of the property. This process is anticipated to begin when Phase II Engineering commences in mid 2020.

11. Where is my property line?

Property lines are shown on the detailed proposed improvement exhibits and noise wall exhibit. The roadway right-of-way, which is owned by Lake County, is depicted as a thick dashed red line style and is approximately 13 feet (adjacent to the eastbound right turn lane) to 25 feet (west of the right turn lane) from the existing roadway curb. The existing power lines and existing wire fence are located within the Lake County roadway right-of-way. Beyond the roadway right-of-way, is HOA property, which is a minimum of 22 feet (and is higher closer to Saunders/Riverwoods Road intersection) from the roadway right-of-way to private property parcels. Many residents adjacent to Deerfield Road and Saunders Road currently have landscaped this area or located other items such as playgrounds within the HOA property. The parcel lines are typically shown as black, solid lines on the project exhibits.

12. Will there be any additional costs for property owners or the HOA to construct the noise wall?

No. All costs for land acquisition and construction of the noise wall will be paid for by Lake County as part of the project.

13. Where would the potential noise wall be located?

The potential noise wall would be located approximately 17 feet (adjacent to eastbound right turn lane) to 23 feet (west of eastbound right turn lane) from the existing roadway curb along Deerfield Road and approximately 17 feet from the existing roadway curb along Saunders Road. The approximate location is shown on the noise wall exhibit. Another reference point is the existing wire fence located near the rear of the residential lots. **Along Deerfield Road, the potential noise wall would be located approximately 6 feet from the wire fence to the south (towards the homes); along Saunders Road, the potential noise wall would be located approximately between the two wire fences.**

14. What would the potential the noise wall look like?

The potential noise wall would have a form liner that would look like natural stone. An example picture is included in the Noise Forum Meeting PowerPoint presentation located on the project website (Information Center/Meeting Materials). The potential noise wall would be 15 feet tall.

15. How was the height of the wall determined?

As part of the traffic noise analysis, a computer noise model was used to evaluate different wall heights. As part of the analysis, many iterations are run to determine a noise wall height that meets the feasibility and reasonableness requirements mentioned above. Based on the analysis completed for this project, the potential noise wall would be 15 feet tall. A lower wall did not meet the feasibility and reasonableness requirements.

16. What will happen to the existing vegetation and landscaping between the roadway and residential homes?

If the noise wall is constructed, it would require the removal of many of the existing trees and other vegetation currently located between the roadway and the residential homes. The noise wall would be 15 feet tall and would also require trimming of tree branches that extend towards the wall. A rendering of what the potential noise wall would look like from a back yard perspective is provided in the Noise Forum meeting PowerPoint presentation located on the project website. Landscaping behind the noise wall will not be provided as part of this project. Since the property directly behind the noise wall is owned by the HOA, any plantings immediately adjacent to the noise wall would be HOA responsibility. Grass would be planted between the noise wall and the roadway. Detailed landscaping will be determined during Phase II Engineering.

17. How much noise reduction would be achieved with the noise wall?

Based on computer modeling, the vast majority of the 37 benefited receptors would receive a noise reduction of between 5 and 11 dB(A) in the 2050 future build condition with the implementation of a noise wall. More than half of these benefited receptors would be on the lower end of that range (i.e., between 5 and 7 dB(A)). Three of the receptors would receive a slightly higher than 11 dB(A) noise reduction due to the receptor location/area of frequent outdoor activity, such as a playset, being located immediately adjacent to the potential noise wall.

Please note that based on computer modeling (and confirmed by field monitoring), the worst case receptor for the Thorngate Subdivision has an existing traffic noise level of 66 dB(A), which would be considered an impact in the build condition. Based on computer modeling, under the 2050 future build condition, the worst case receptor for the Thorngate Subdivision has a predicted noise level of 69 dB(A). **This is a difference of 3 dB(A) from existing to build condition. A change of ±3 dB(A) is a barely perceivable change in noise.**

18. What is this vote for?

The vote you are casting is only for the potential noise wall to be recommended for implementation as part of the project. The roadway project will proceed regardless of the vote results.

19. Who is allowed to vote?

Only benefited receptors of the noise wall are allowed to vote. For this potential noise wall, there are 37 benefited receptors. The benefited receptor locations are depicted on the Noise Wall Exhibit. To be a benefited receptor, a noise reduction of at least 5 dB(A) must be obtained with the proposed noise wall under future 2050 traffic conditions. Benefited receptors include property owners and renters/leasers residing on the benefited property. In the case of rental properties, both the property owner and renter are allowed to vote.

Viewpoints Solicitation Results

PIN	Property Address - Street Number	Taxpayer - Street Number	Taxpayer - City	Taxpayer - State	Taxpayer - Zip Code	Confirmed Receipt	Vote by Email/Form	YES	NO
1631107004	781 LINKS CT	781 LINKS CT	RIVERWOODS	IL	60015-3820	X			
1631107005	761 LINKS CT	761 LINKS CT	RIVERWOODS	IL	60015-3820				
1631107007	2346 CONGRESSIONAL LN	2346 CONGRESSIONAL LN	RIVERWOODS	IL	60015-3806	X			
1631107008	2336 CONGRESSIONAL LN	2336 CONGRESSIONAL LN	RIVERWOODS	IL	60015-3806	X	X	4	
1631107009	2326 CONGRESSIONAL LN	2326 CONGRESSIONAL LN	RIVERWOODS	IL	60015-3806		X	4	
1631107010	2316 CONGRESSIONAL LN	2316 CONGRESSIONAL LN	RIVERWOODS	IL	60015-3806				
1631107011	2300 CONGRESSIONAL LN	1013 Maleventum Way	Springhill	TN	37174	X			
1631107011	2300 CONGRESSIONAL LN	2300 CONGRESSIONAL LN	RIVERWOODS	ILL	60015				
1631107012	2290 CONGRESSIONAL LN	2290 CONGRESSIONAL LN	RIVERWOODS	IL	60015-3803	X	X	4	
1631107013	2280 CONGRESSIONAL LN	2550 WATERVIEW DR	NORTHBROOK	IL	60062	X			
1631107013	2280 CONGRESSIONAL LN	2280 CONGRESSIONAL LN	RIVERWOODS	ILL	60015				
1631107014	2270 CONGRESSIONAL LN	245 Park Lane	Deerfield	IL	60015	X	X	4	
1631107015	2260 CONGRESSIONAL LN	2384 GLEN EAGLES LN	RIVERWOODS	IL	60015-3895	X	X	4	
1631107015	2260 CONGRESSIONAL LN	2260 CONGRESSIONAL LN	RIVERWOODS	IL	60015-3803	X			
1631107016	2250 CONGRESSIONAL LN	2250 CONGRESSIONAL LN	RIVERWOODS	IL	60015-3803	X	X	4	
1631107017	2240 CONGRESSIONAL LN	2240 CONGRESSIONAL LN	RIVERWOODS	IL	60015-3803	X	X		4
1631107018	771 CONGRESSIONAL LN	771 CONGRESSIONAL LN	RIVERWOODS	IL	60015-5704	X	X	4	
1631107019	751 CONGRESSIONAL LN	751 CONGRESSIONAL LN	RIVERWOODS	IL	60015-5704				
1631107020	741 CONGRESSIONAL LN	741 CONGRESSIONAL LN	RIVERWOODS	IL	60015-5704	X	X		4
1631107021	731 CONGRESSIONAL LN	731 CONGRESSIONAL LN	RIVERWOODS	IL	60015-5704	X	X	4	
1631107022	721 CONGRESSIONAL LN	721 CONGRESSIONAL LN	RIVERWOODS	IL	60015-5704	X	X	4	
1631107023	711 BAY HILL CT	711 BAY HILL CT	RIVERWOODS	IL	60015-3870	X	X	4	
1631107024	2299 CONGRESSIONAL LN	2299 CONGRESSIONAL LN	RIVERWOODS	IL	60015-5705	X			
1631107025	710 BAY HILL CT	710 BAY HILL CT	RIVERWOODS	IL	60015-3870	X	X	2	
1631107026	700 BAY HILL CT	700 BAY HILL CT	RIVERWOODS	IL	60015-3870				
1631107027	690 BAY HILL CT	690 BAY HILL CT	RIVERWOODS	IL	60015-3870	X	X	2	
1631107028	691 BAY HILL CT	691 BAY HILL CT	RIVERWOODS	IL	60015-3870				
1631107029	701 BAY HILL CT	701 BAY HILL CT	RIVERWOODS	IL	60015-3870	X	X	4	
1631108001	2337 CONGRESSIONAL LN	2337 CONGRESSIONAL LN	RIVERWOODS	IL	60015-3811	X			
1631108002	2327 CONGRESSIONAL LN	2327 CONGRESSIONAL LN	RIVERWOODS	IL	60015-3811	X	X	2	
1631108003	2307 CONGRESSIONAL LN	2307 CONGRESSIONAL LN	RIVERWOODS	IL	60015-3811	X	X	2	
1631108004	2281 CONGRESSIONAL LN	2281 CONGRESSIONAL LN	RIVERWOODS	IL	60015-3871				
1631108005	2271 CONGRESSIONAL LN	2271 CONGRESSIONAL LN	RIVERWOODS	IL	60015-3871	X			
1631108006	2261 CONGRESSIONAL LN	2261 CONGRESSIONAL LN	RIVERWOODS	IL	60015-3871	X	X	2	
1631108007	2251 CONGRESSIONAL LN	2251 CONGRESSIONAL LN	RIVERWOODS	IL	60015-3871	X	X	2	
1631108008	2312 CONGRESSIONAL LN	2312 CONGRESSIONAL LN	RIVERWOODS	IL	60015-5707	X	X	2	
1631108009	2302 CONGRESSIONAL LN	2302 CONGRESSIONAL LN	RIVERWOODS	IL	60015-5707	X	X	2	
1631108010	2292 CONGRESSIONAL LN	2292 CONGRESSIONAL LN	RIVERWOODS	IL	60015-5706	X			
1631108011	2282 CONGRESSIONAL LN	2282 CONGRESSIONAL LN	RIVERWOODS	IL	60015-5706				
1631108012	2272 CONGRESSIONAL LN	2272 CONGRESSIONAL LN	RIVERWOODS	IL	60015-5706		X	2	
					Totals	**29**	**22**	**62**	**8**

Appendix D

Top of Wall Elevations for Feasible and Reasonable Barriers

EXAMPLE NOISE WALL
(STYLE TO BE DETERMINED)

More design information can be found on the project website:
http://www.deerfieldroadcorridor.com

CLIENT: LakeCounty Division of Transportation

TITLE: POTENTIAL NOISE WALL TOP OF WALL ELEVATIONS

PROJ. NO.	150331
DATE:	10/28/2019
SHEET	1 OF 1
DRAWING NO.	FIGURE D-1

CHRISTOPHER B. BURKE ENGINEERING, LTD.
9575 W. Higgins Road, Suite 600 · Rosemont, Illinois 60018 · (847) 823-0500

DSGN.			SCALE:	1:1,800
DWN.	DRW		AUTHOR:	DWALTERS
CHKD.			PLOT DATE:	10/28/2019
FILE:	Noise Wall Location			

Path: N:\LCDOT\150331\GIS\Exhibits\Noise Exhibits\Noise Wall Location.mxd