

## RANDALL ROAD AT HOPPS ROAD INTERSECTION IMPROVEMENTS



Christopher B. Burke Engineering, Ltd.



## Noise Forum – October 9, 2024 @ 5:00pm http://kdot.countyofkane.org/Pages/Projects/Randall-Hopps/RandallHopps.aspx

#### **MEETING AGENDA**

- Project Presentation
  - Introductions
  - Project Overview and Purpose
  - Proposed Improvements
  - Traffic Noise Study Overview
  - Traffic Noise Study Results
  - Viewpoint Solicitation Process
- Discussion/Questions





#### PRESENTERS





## Kane County Division of Transportation

Jennifer O'Connell, PE – Chief of Design



## Project Consultant

**Christopher B. Burke Engineering , Ltd. (Prime Consultant)** 

Melissa McGhee – Project Manager



Pete Knysz – Senior Environmental Policy Manager



#### **PROJECT LOCATION**



#### **PROJECT PURPOSE & NEED**





The study area is growing in Population and Employment with 145% Growth in Population and 135% Growth in Employment projected by the year 2050.

Randall Road is classified as a **Strategic Regional Arterial (SRA)** based on high traffic volumes and roadway continuity. Improvements are needed to address **Recent Growth** in traffic volumes and **Additional 45% Growth** projected by the year 2050.

Strategic Regional Arterial



Building on recent safety improvements at the Randall Road/Hopps Road intersection, Geometric changes are needed to further increase intersection safety.

A grade separation of the Canadian National Railroad (CNRR) is proposed to ensure **Mobility & Safety** will be maintained with projected future growth along Randall Road.



#### **PROPOSED IMPROVEMENT ELEMENTS**



- Realignment of Randall Road and Hopps Road
- Grade Separation of Randall Road over CNRR
- Added 3rd Travel Lane in each direction
- Multi-Use Path along west side of Randall Road
- Landscaped Barrier Median



# Contraction of the second seco

#### TYPICAL SECTIONS





#### PREFERRED ALTERNATIVE

## Potential Noise Wall – Looking North







# Traffic Noise Study Overview

#### TRAFFIC NOISE STUDY OVERVIEW



- Policy & Procedures
- Results
- Potential Noise Wall
- 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



#### 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

#### **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





# Care Contra

## FHWA NOISE ABATEMENT CRITERIA (NAC) – USED TO IDENTIFY CNES AND DETERMINE IMPACTS

Activity Category	dB(A)	Description of Activity Category		
А	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance		
В	67 (Exterior)	Residential *		
С	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

#### POLICY AND PROCEDURES



#### dB(A) 120 Jet Flyover at 1,000 ft. 110 Horn Noise - Train at 1,000 ft. Gas Lawnmower at 3 ft. 100 Inside Subway Train (NY) Diesel Truck at 50 ft. Food Blender at 3 ft. General Freight Train at 100 ft. Noisy Urban Daytime Garbage Disposal at 3 ft. FHWA Noise Very Loud Speech at 3 ft. Lawnmower at 100 ft. Abatement Criteria Vacuum Cleaner at 10 ft. Commercial Area Normal Speech at 3 ft. is 67 dB(A) for Heavy Traffic at 300 ft. Large Business Office **Residential Area** Quiet Speech at 3 ft. **Dishwasher Next Room** Small Theater/Large Conference Room (Background) **Quiet Urban Nighttime** Similar to Library 30 Conversational Quiet Suburban Nighttime **Bedroom at Night** Speech at 3 feet **Quiet Rural Nighttime** Concert Hall (Background) **Broadcast & Recording Studio** Threshold of Hearing **Common Outdoor Common Indoor** Sound Levels Sound Levels

Common Sound Levels (Decibels)

#### **CNEs/RECEPTOR LOCATIONS**

• 9 CNEs were identified along the Project Corridor



#### COMMON NOISE ENVIRONMENT RECEPTOR LOCATION #6



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

#### 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 MODEL



- 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)

## Impact (Pertains to Build Condition)

- Approaches (within I dB(A)), Meets or Exceeds noise abatement criteria threshold
- Residential; Impact = 66 dB(A)



#### TRAFFIC NOISE ANALYSIS RESULTS

CNE/ Receptor #	Activity Category/ NAC	Noise Level at the Representative Receptor dB(A)			With No Walls
		Existing	No-Build (Year 2050)	Build (Year 2050)	<ul> <li>NAC Impact is</li> <li>Approached</li> </ul>
IA	E/72	59	60	60	(within IdB(A))
2	B/67	66	67	60	Met
3	B/67	60	62	61	Exceeded
4	E/72	66	68	68	<ul> <li>B = Residential;</li> </ul>
5	B/67	66	68	61	Impact = 66
6	B/67	68	69	70	dB(A)
7	B/67	62	64	63	<ul> <li>One CNE impacted under Build Condition</li> </ul>
8	C/67	61	62	60	(CNE 6)
9	B/67	56	57	58	

E COD

#### TRAFFIC NOISE ANALYSIS RESULTS

# ELSE COLUMN

## 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

#### POTENTIAL NOISEWALL



## **Common Noise Abatement Treatments**

#### **Earth Berms**

- Earth berms require a large footprint
- I0 ft high = ~60 ft footprint (3H:IV 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 (~I ft wide) than an earth berm



#### POTENTIAL NOISEWALL



# Abatement is considered for residential receptors with traffic noise levels $\geq$ 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 <u>impacted</u> receptors and at least 8 dB(A) reduction for at least 1 impacted receptor

## 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

#### 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  $\geq 5 dB(A)$  noise reduction
  - Does not need to be impacted

#### POTENTIAL NOISE WALL



# I 5 Benefited Receptors



#### POTENTIAL NOISE WALL



## CNE 6



 A noise wall is considered feasible and reasonable for CNE 6 since the estimated cost <u>does not exceed</u> the adjusted allowable cost per benefited receptor...pending viewpoint solicitation

#### POTENTIAL NOISE WALL

CORVER CORVER

An ±8-10 FOOT HIGH WALL IS BEING CONSIDERED ALONG THE EAST SIDE OF RANDALL ROAD, NORTH OF THE CNRR



#### Legend



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

#### POTENTIAL NOISE WALL



COT





#### POTENTIAL NOISE WALL



Existing Conditions – Looking North



Proposed Conditions – Looking North





#### POTENTIAL NOISE WALL



Existing Conditions – Looking South



Proposed Conditions – Looking South



#### POTENTIAL NOISE WALL

	-1944 
Contraction and the second sec	L. TLAES
	Provingent Color
	The state of the s
Coogle	

Sample Noise Wall Panel

For informational purposes only – style to be determined in Phase II

#### VIEWPOINT SOLICITATION (I.E.VOTING)

CORPORT OF THE OWNER

- Benefited Receptors Vote (DOT and County do not vote)
  - Benefited Receptor Receives  $\geq 5 \text{ dB}(A)$  noise reduction
- Goal is to obtain <u>at least 1/3</u> of potential vote points
- Up to two attempts (mailings) to achieve goal
- If I/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

#### VIEWPOINT SOLICITATION (I.E.VOTING)

## **Votes are Weighted**

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



- Owner versus Renter (15 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

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



#### 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: Melissa McGhee

 Scan the Viewpoint Solicitation form and e-mail to mmcghee@cbbel.com



#### **RANDALL ROAD AT HOPPS ROAD** POTENTIAL NOISE WALL VIEWPOINT SOLICITATION FORM

The Kane County Division of Transportation requests a viewpoint regarding your desire for a potential noise wall near your property. Your input is valuable. If you are providing your viewpoint at the October 9, 2024 meeting, please place your Viewpoint Solicitation Form in the box marked COMMENTS.

Alternatively you may submit your form using one of the following methods:

- a. Fold in thirds and submit via self-addressed, stamped form
- b. Fax to 847/823-0520 (Attention: Melissa McGhee); or
- c. Scan and email to mmcghee@cbbel.com

Your viewpoint must be received by October 24, 2024, 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:	THES	D NO		
Please check one:	Owner	Resident (Tenant)		
Name & Property Address:			_	
Signature:		Date:		
Comments:				

HTTP://KDOT.COUNTYOFKANE.ORG/PAGES/PROJECTS/RANDALL-HOPPS/RANDALLHOPPS.ASPX

#### VIEWPOINT SOLICITATION (i.e., VOTING)

- You will receive Viewpoint Solicitation Form tonight.
   Voting period begins today.
- Votes must be received within two weeks (after start of voting period 1<sup>st</sup> Attempt) –

#### Received by 10/24/2024

- If necessary, 2<sup>nd</sup> Attempt to obtain 1/3 of potential vote points
- Finalize Supplemental Memorandum to the Phase I Noise Report and submit voting results to IDOT: November 2024
- Construction planned 2027-2028 seasons



## Question and Answer Session

