



Citizens for Appropriate Transportation (CAT) Issue Brief

Eisenhower Transportation Corridor

NOISE – Unwanted Sound

Noise is unwanted sound.

Noise is measured in decibels (dB), but the human ear filters out both low and high frequencies, so the A-weighted decibel scale (dBA) is used because it measures noise the way the human ear perceives it. Loud noise affects our ability to talk to another person, hold a telephone conversation, sleep, or concentrate. Traffic noise has more impact on our lives from Spring to Fall when windows are open.

The level of traffic noise from the Eisenhower is always changing based on:

1. **Traffic volume** - 2,000 vehicles an hour sound twice as loud as 200 vehicles an hour.
2. **Speed** - Traffic at 65 miles per hour (MPH) sounds twice as loud as traffic at 30 MPH.
3. **Number of Trucks** - 1 truck at 55 MPH sounds twice as loud as 28 cars at 55 MPH.

Traffic noise comes from three sources: engines, exhausts, and tires. Traffic noise generally affects people who live within 500 feet (about 1.5 blocks) from an expressway. The Illinois Department of Transportation (IDOT) should measure existing noise from a variety of locations to determine the actual noise impact area. The CTA Blue Line and the railroad create more noise.

Noise experts use two numbers to summarize traffic noise.

1. L_{10} - the sound level exceeded 10 percent of the time
2. L_{eq} - the sound level equivalent to the amount of sound energy created by varying levels of traffic noise over time

L_{eq} is about 3 dBA less than L_{10} for the same traffic conditions. The U.S. Federal Highway Administration noise criteria for residential areas are 70 dBA (L_{10}) and 67 dBA (L_{eq}) and 75 dBA (L_{10}) and 72 dBA (L_{eq}) for business districts. A quiet urban night is about 40 dBA, a vacuum cleaner at 3 feet is about 70 dBA, and a garbage disposal at 3 feet is about 80 dBA.

The methodology for doing a noise analysis has two steps: (1) measure existing noise levels and (2) predict future noise levels based on the transportation proposal being considered.

If future noise levels will increase by 10 decibels or more, or if noise criteria are exceeded, then the noise impact should be abated. There are three general ways to abate road noise – (1) at the source (quieter vehicles), (2) along the sound path, or (3) at the receiver. Quieter vehicles are not within the control of IDOT. Common ways to abate noise along the sound path are changing the horizontal or vertical alignment of the expressway, noise barriers, and creating buffer zones.

Noise barriers cannot completely block all noise. Effective noise barriers can reduce noise levels by 10 to 15 decibels, which cuts traffic noise in half. To be effective, the barrier must be high enough and long enough to block the view of the road. The maximum height for noise barriers is usually 25 feet for structural and aesthetic reasons.

Openings for intersecting streets and bridges lessen the effectiveness of noise barriers. We have seven openings in Oak Park (Austin, Lombard, Ridgeland, East, Oak Park, Home, and Harlem).

Noise barriers reduce noise in four ways: (1) absorb sound, (2) transmit it, (3) reflect it, and (4) force it to take a longer path around or over the barrier. Positive reactions to noise barriers are better sleeping, easier conversations, windows open more, privacy, and more yard use. Negative reactions include restricted views, feeling of confinement, lack of air circulation, and increased shadows. Noise barriers should be far enough away from residences to avoid visual dominance.

Noise barriers have a roadway side and a residential side. The design should be different for each. From the roadway side where motorists travel at high speed, drivers tend to notice overall form, color, and surface texture. A design that avoids tunnel effect by varying form, materials, and surface treatments is desirable. The residential side has pedestrians that walk at 2 to 4 MPH and motorists driving at 25 MPH. Shrubs, vines, and other plantings will soften the visual form. The wall texture and rhythm on the residential side should account for what people see at slower travel speeds and what they see from their homes.

Transportation corridors like the Ike are a major part of the urban landscape. They do not have to be ugly. IDOT has an opportunity to develop a good visual design for the Eisenhower.

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