Traffic Noise Analysis

**Evaluation Process**

- Existing conditions provides the basis for evaluation
- IDOT Policy follows FHWA Noise Abatement Criteria (NAC)

**Noise Monitoring**

- Traffic noise impact is when predicted noise levels approach, meet or exceed the NAC
  - Residential, Parks, Schools, Playgrounds, Hospitals (67 dBA)
  - Offices, Hotel, Restaurants (72 dBA)

**Traffic Noise Model (TNM)** for 2040 conditions

**Determine impacts and assess potential mitigation**

**Goals**

- Must be both feasible and reasonable
  - Achieves at least an 8 dBA reduction for at least one benefited receptor
  - Economically reasonable
    - $24,000 + adjustment factors per benefited receptor

**Traffic Noise** based on these factors

- SPEED
- DISTANCE FROM ROAD
- PERCENTAGE OF TRUCKS
- TOPOGRAPHY/ELEVATIONS
Traffic Noise Analysis

IDOT Noise Policy and Process

- IDOT BDE Manual – Chapter 26-6 (Based on 23 CFR Part 772 from FHWA)
- Process includes combination of field monitoring and computer modeling
- Noise impacts are determined from predicted 2040 traffic levels

Traffic Noise Analysis Results

- 61 Common Noise Environments (CNEs) studied within the project area
- 18 locations of field measurements to validate computer noise model
- 84 receptors modeled
- Noise barriers found feasible and reasonable at 6 locations

Common Outdoor Sound Levels

- Jet Flyover at 1,000 ft.
- Horn Noise - Train at 1,000 ft.
- Gas Lawnmower at 3 ft.
- Diesel Truck at 50 ft.
- General Freight Train at 100 ft.
- Noisy Urban Daytime
- Lawnmower at 100 ft.
- Commercial Area
- Heavy Traffic at 300 ft.
- Quiet Urban Nighttime
- Quiet Suburban Nighttime
- Quiet Rural Nighttime

Common Indoor Sound Levels

- Inside Subway Train (NY)
- Food Blender at 3 ft.
- Garbage Disposal at 3 ft.
- Very Loud Speech at 3 ft.
- Vacuum Cleaner at 10 ft.
- Normal Speech at 3 ft.
- Large Business Office
- Quiet Speech at 3 ft.
- Dishwasher Next Room
- Small Theater/Large Conference Room (Background)
- Library
- Bedroom at Night
- Concert Hall (Background)
- Broadcast & Recording Studio
- Threshold of Hearing
Common Noise Environments

The Circle Interchange Project study area is divided into Common Noise Environments (CNEs). CNEs are determined by:

- **Common land uses** (i.e. residential, commercial, institutional, mixed use, etc.)
- **Within 400 to 500 feet of the project area**
- **61 CNEs established for project**
Currently the Department is soliciting viewpoints from benefitted receptors (property owners and tenants).

The deadline for returning the “View Point Form” has been extended to July 12, 2013.

- 33% response rate is the goal
- Viewpoints tallied
- Requires greater than 50% of viewpoints to be in favor of potential abatement measure

If it develops during final design that constraints not foreseen in the preliminary design or public input substantially change, the noise abatement measures may need to be modified or removed from the project plans. A final decision of the installation of the abatement measure(s) will be made upon completion of the project’s final design and the public involvement process.
Drainage Summary

Existing Drainage Conditions

+ Existing drainage system consists of inlets, catch basins, storm sewers and three pump stations (Nos. 5, 22 and 26).
+ The Location Drainage Study investigated 14 locations with existing flooding concerns.
+ I-90/94 and I-290 have separate main drain systems.

Proposed Drainage Conditions

+ Collector sewers and inlets will be upsized to accommodate a 50-year storm.
+ The proposed hydraulic design for Pump Stations Nos. 5 & 26 will eliminate flooding for the 50-year storm event.
+ Where feasible, best management practices will be incorporated with the project.
+ An underground storage structure will be constructed beneath the Accident Investigation Site in the median of I-90/94.
Building Vibration Program

Early planning

- Identify risks
- Establish allowable vibration thresholds

Building vibration monitoring

- Before construction
  - Visual condition inspection
  - Vibration baseline identification

- During construction
  - Vibration monitoring
  - Alerts when approaching vibration thresholds

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Land Acquisition

Acquisition Types

• Fee simple taking
• Permanent Easements
• Temporary Easements

Right of Way Needed

• Approximately **0.1 acres of fee simple acquisition** is required (from 1 parcel)
• Approximately **0.2 acres of Temporary Easement for grading and access** is required (from 6 parcels)

Three types of land acquisition.

1. The first is fee simple, or the acquisition of all rights and interest of real property.
2. The second type of acquisition involves a permanent easement or use of the property, where underlying ownership is retained by the property owner, but access is provided for maintenance of facilities such as traffic signal equipment, storm sewers and outfall ditches.
3. The third type is a temporary construction easement where access is required only during construction for grading work, sidewalk or driveway construction, and other improvements.