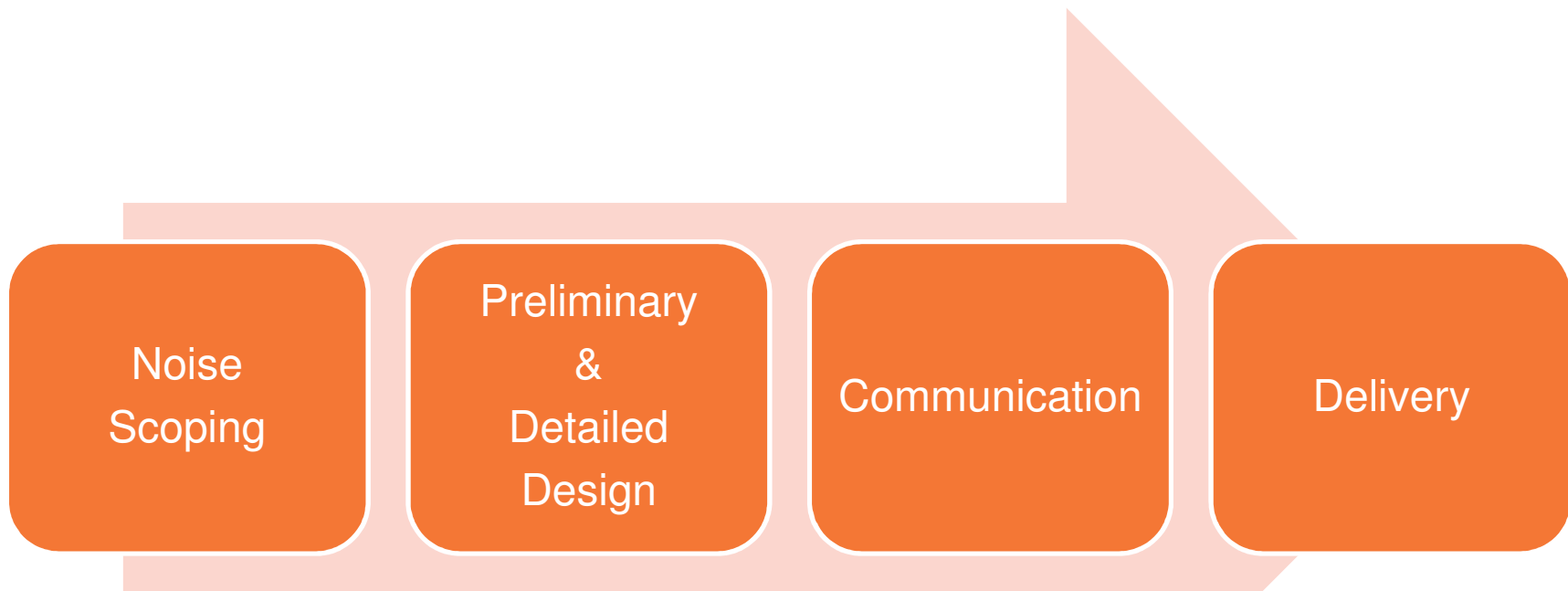


NOISE PROGRAM UCI TRAINING

Paul M. Kohler
Noise Abatement Program Manager
Email: paul.kohler@vdot.virginia.gov
Phone: (804) 371-6766

PRESENTATION SUMMARY



- **Why we do Noise studies?**
- **When Noise studies occur?**
- **What are the outcomes?**

NOISE SCOPING

- **23 CFR 772**
- **Type I Federal-Aid Projects**
 - **Highways on new location**
 - **Alteration of the horizontal or vertical geometry**
 - **Adding through lanes**
 - (recent FHWA guidance 2,500' in length)
 - **Adding auxiliary lanes**
 - (connecting successive interchanges)
 - **Interchange alterations**
 - **Restriping for new through lanes**
 - **Weigh stations, rest stops, park-n-ride, and toll plazas**

NOISE SCOPING

- **Type II**

- **Type II projects are federal-aid projects for constructing noise barriers on an existing highways.**
 - Retrofit project
 - Separate program is required
 - Prioritizing the entire state is required
 - VDOT does not participate in Type II projects (no funding)

- **Type III**

- **Federal or Federal-aid highway project that does not meet the classifications of a Type I or Type II project.**
 - Guardrail replacement
 - Paving projects

NOISE SCOPING

- **Type III**

- **Department of Rail Transportation projects with FHWA Funding**

- Amtrak Station Relocation Project
 - FTA/FRA Methodologies
 - Possible FHWA Methodologies depending on project scope

- **Type III**

- **Atlantic Sturgeon**

- Usually bridge projects; not required by 23 CFR 772
 - However, may be required by NOAA
 - Communication is essential during bridge design

PRELIMINARY DESIGN

- **Traffic – ENTRADA**
 - **Constrained 24-hour Volumes**
 - **Uninterrupted Speeds**
 - **Truck Percentages**
 - **Worst noise hour may not coincide with peak-traffic**
- **ENTRADA**
 - **Spreadsheet available upon request**

PRELIMINARY DESIGN

- **Design Files and Survey**
 - **Aerial photography of project**
 - **CAD Files**
 - Plans
 - Profiles
 - Cross-sections
 - Survey
 - **Existing TIN (preferred)**
 - **Proposed TIN (preferred)**

PRELIMINARY DESIGN

- **State Noise Abatement Policy**
 - **Highway Traffic Noise Impact Analysis Guidance Manual**
 - **July 2014 (Version 6)**
 - A minimum of 10 years experience as a primary author of a noise analysis for an individual is required to submit a noise analysis for review and approval.
- **Warranted (AKA Noise Impact)**
 - **Approach or exceed FHWA Noise Abatement Criteria**
 - **10 decibel increase above existing**
 - **Section 4(f) – 3 dB(A) between no-build and build**

PRELIMINARY DESIGN

Activity Category	Noise Level	Location	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 ¹	67	Exterior	Residential
C ¹	67	Exterior	Active sport areas, amphitheatres, 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 ¹	72	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A–D or F.
F	--	Exterior	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	--	--	Undeveloped lands that are not permitted.

 ¹ Includes undeveloped lands permitted for this activity category.

PRELIMINARY DESIGN

- **Feasible**

- **Does it work acoustically**

- VDOT requires that 50% or more of the impacted receptors experience 5 dB(A) or more of noise reduction to be feasible; and

- **Can it be constructed**

- The factors related to the design and construction include: safety, barrier height, topography, drainage, utilities, and maintenance of the abatement measure, maintenance access to adjacent properties, and general access to adjacent properties

PRELIMINARY DESIGN

- **Reasonable**

- **Viewpoints of the benefited receptors**

- Democratic vote
 - 50% of the benefited respondents must favor construction
 - Partial mitigation may occur as a result of the vote

- **Cost-effectiveness**

- 1,600 maximum square feet or less per benefited receptor

- **Design goal**

- 7 decibels of noise reduction at 1 impacted receptor

PRELIMINARY DESIGN

- **Right-of-Way**
 - **Property acquisition**
 - **Construction easements**
 - **Maintenance easements**
 - Is it 5' or 10'?
 - **Other**
- **Purchasing ROW for a noise barrier does not preclude the construction of a noise barrier**

PRELIMINARY DESIGN

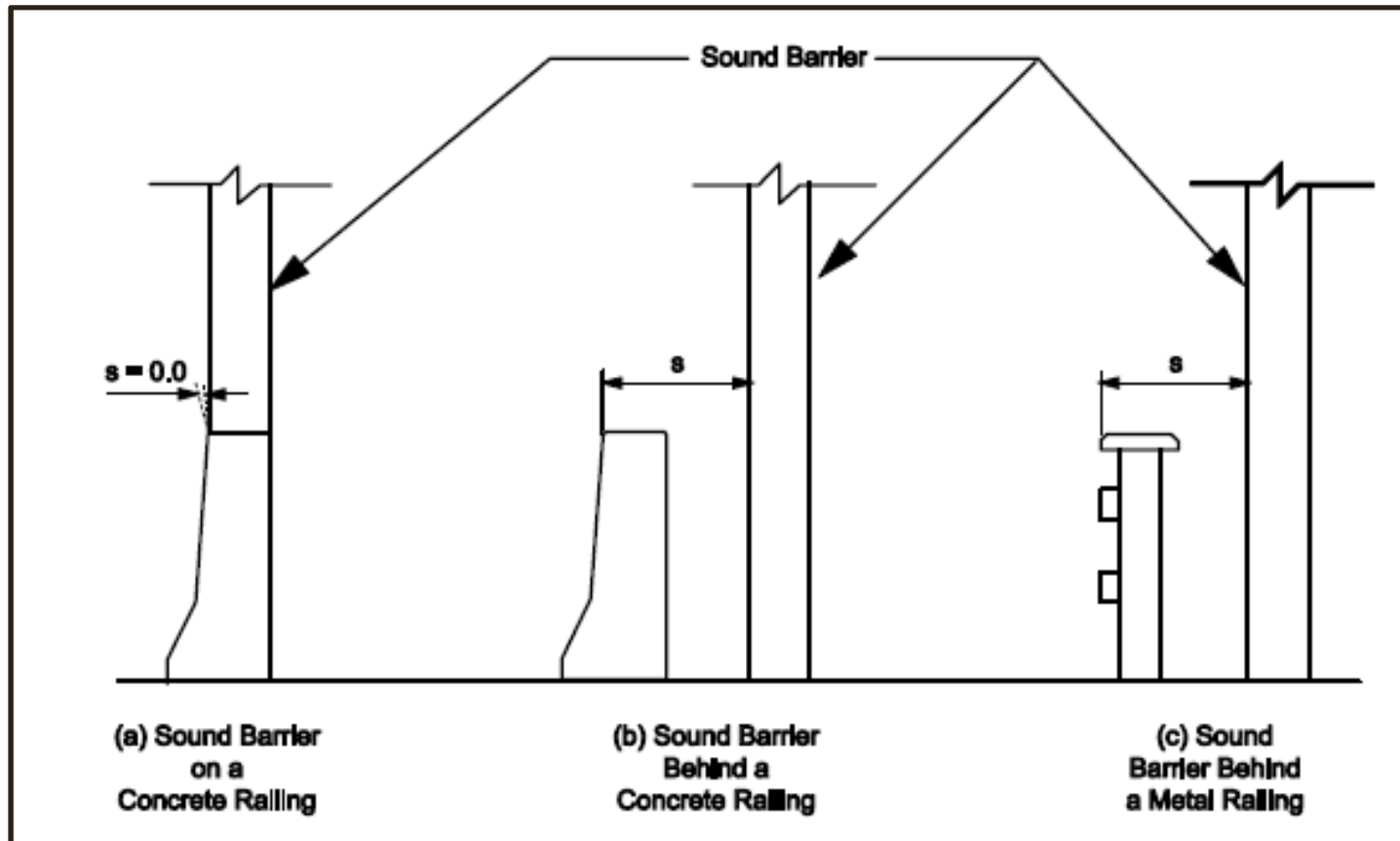
- **Utilities**
 - **Conflicts**
 - **Relocations**
 - **Other**
- **Utility relocation does not preclude the construction of a noise barrier**

PRELIMINARY DESIGN

- **Barriers on Bridges**
 - **30' height restriction for all barriers**
 - Only light-weight material
 - **AASHTO Load and Resistance Factor Design (LRFD)**
 - Section 15.8.4 requires vehicular collision forces are to be applied to sound barriers with a setback of 4' or less from the face of a crashworthy traffic barrier.
 - Not currently adopted by VDOT
- **In most cases noise barriers on bridges do not preclude the construction of a noise barrier**

PRELIMINARY DESIGN

- **Barriers on Bridges**



DETAILED DESIGN

- **Final NAD (iPM 59)**
 - **PM notified by noise specialist**
 - **CEDAR task created automatically**
 - **Scheduled 30 days after Design Approval (iPM 49)**
 - Depending on the preliminary analysis results; time on the shelf; and/or design year changes new traffic may be required
 - Final NAD should be completed prior to ROW acquisition
 - **Qualitative or Quantitative**
 - **Standard duration (6 months)**

DETAILED DESIGN

- **Right-of-Way**
- **Utilities**
- **Barriers on Bridges**
- **Special provisions**
 - **Solicit input on Aesthetic Treatment(s)**
 - **May reflect desires of District/Residents/Locality**
- **Aesthetic manual**
 - **http://www.extranet.vdot.state.va.us/locdes/electronic_pubs/BridgeManuals/Sound/VolumeV-part12.pdf**

COMMUNICATION

- **Open door policy**
- **Keep lines open during entire process**
 - **PE**
 - **Final NAD**
 - **Design changes**
 - **Traffic changes**
 - Qualitative or Quantitative

COMMUNICATION

- **Final NAD Not Scheduled**
 - **Project Manager – no changes to design**
 - **Noise specialist checked on their own accord**
 - After a thorough review of the plans, it was determined that the cross sections changed dramatically and the roadway was depressed.
 - **The cut line acted as a natural noise barrier.**
 - **Proposed noise barrier shortened approximately 800'**
 - **\$414,015 in project savings were realized**
 - **Less than 50 hours expended**

COMMUNICATION

- **VDOT and Locality Relationships**
 - **Locality lack of knowledge of the process created federal strategy issues and under designing of noise barriers or excluded**
 - **Barriers eliminated due to utility and ROW conflicts**
- **Communication within VDOT and with the Localities is crucial for a successful project delivery**

DELIVERY

- **Accurate construction plans**
 - Not over designing noise barriers
 - Not under designing of noise barriers
 - Balance between budget/environmental benefits
- **Better cost estimates**
- **Fewer complaints**
 - Internal
 - External

