

# **Challenges and Pitfalls in the Acoustical Design of Noise Barriers for P3 Projects**

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# What is P3?

## P3 = Public-Private Partnership

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- In Virginia, the Public-Private Transportation Act (PPTA) of 1995 allows private entities to enter into agreements to finance, construct, improve, maintain and operate transportation facilities
- A means to finance & build programmed road projects
  - other states also pursuing similar approaches
- Tolls are the means of financing
- HOT Lanes – High-Occupancy Toll lanes
  - High-occupancy vehicles – no tolls
  - Other vehicles pay tolls
  - Toll pricing based on demand – to keep travel times short, even during peak periods
    - You can go fast if you're willing to pay!

# Outline

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- **New working relationships and responsibilities in large public projects**
- **Time is money and money is critical**
- **Contractual requirements vs. unwritten DOT policies**
- **Speeding up neighborhood approval**
- **Efficiency: engineering vs. acoustical design & review**
- **Closing thoughts**

# New Public-Private Working Relationships

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- **Shared responsibilities for:**
  - Communication with the public
  - Ensuring compliance with DOT standards and requirements
  - Review and approval of final noise barrier design plans/profiles
  - Paying for unforeseen circumstances or oversights  
→ Whose fault was it?
- **Frequent communication among all parties is crucial**



# Time is Money and Money is Critical

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- **Barriers are very expensive - \$30 m for recent project**
- **Preliminary design and final costing is needed before “financial close” of project**
  - Must be done quickly – before roadway design is done
  - Also, must be done accurately – later cost increases not good
- **After close, enormous pressure to complete final acoustical design of many barriers in record time**
- **The Challenge: Financial effect is potentially large if**
  - DOT later approves barrier for recreation facility not included in pricing
  - Cost-effectiveness changes for large barrier near threshold
  - Approval date of subdivision is disputed and modified
  - Mis-identified land use requires additional barrier

# Contractual requirements vs. unwritten DOT policies

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- **All written policies will be accounted for in the DOT-developer contract**
  - Different interpretations of written policies
  - Political pressure can influence DOT policy
- **Unwritten policies or standard practices the DOT insists be followed**
  - For example, barriers continued beyond project limits for “community continuity”
  - Inevitable conflicts over what is required and who should pay
- **Acoustical consultant charged as interpreter of DOT noise abatement policies for developer and negotiator with DOT staff – facilitating the “Partnership” in P3**



# Speeding up Neighborhood Approval

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- Strong desire to get speedy neighborhood approval
- Traditional DOT approach – time-consuming follow-up
- New approach suggested because:
  1. Major interstate widening project with high noise levels
  2. Barriers are highly desired by residents
- Letters to residents state: **The barrier will be built unless residents reply in the negative within 30 days**
- DOT approved the approach
- Reduced the approval time for each barrier by several months
- No barriers rejected: 15 negatives out of 1162 letters

# Efficiency: Engineering Design vs. Acoustical Design & Review

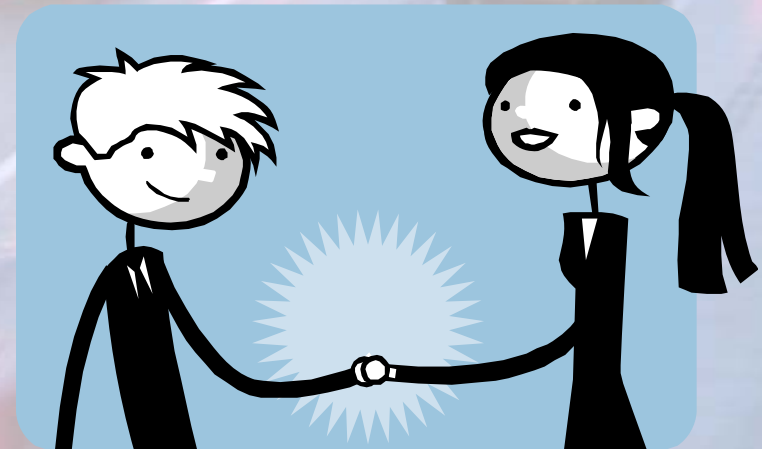
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- **Acoustical designer must account for barrier as a whole**
- **Engineering designer may separate a barrier into several sections due to different:**
  - Roadway design sections
  - Sections of barrier on fill vs. retaining wall
  - Sections of barrier along cross streets
- **Review & approval of pieces of barriers needed, so final design and construction can start**
- **Roadway and barrier changes in one section affect others not finalized yet, or final and already approved**
- **Organizational challenge for all changes/reviews:**  
→ **Which barrier is the “final” one?**

# Closing Thoughts

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- **Caution the developer to include a healthy financial contingency for potentially costly noise barrier changes or additions**
- **Plan ahead to expect many iterations and changes, and develop solid filing protocols for traceability**
- **Insist on enough time to do each design carefully**
- **Review engineering plans and profiles very carefully**
- **Be patient, and the project will succeed!**



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