Extracting Value from NDT Applications – NDT Results to Asset Management to NTIS

R06G Implementation

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We Have Lots of Tools for Tunnel Evaluation -

Where do we go next?
• Next Steps -

• Use proven NDT scanning technologies plus traditional evaluation tools together to evaluate tunnel linings quickly and comprehensively.

• The final and most important step –

• Use these results in an integrated Asset Management program
Tunnels Managed as Assets

• As noted - 473+ highway tunnels in the national inventory

• 37 states have at least 1 tunnel on a highway

  • Tunnel Inspection Requirements based on the NTIS are in-place and require tunnel inspection

  • Use the Inspection and NDT Results to rate tunnels, assign conditions, and (ultimately) determine how and where to spend LIMITED FUNDS
This project had **TWO major parts**

- Use of NDT Techniques for both Rapid and Detailed tunnel evaluation in conjunction with traditional evaluation methods
- **And then** –
- To determine the best ways to USE that information as part of an overall Asset Management plan.

Not implementing the second part effectively essentially makes the first part **POINTLESS**
So – USE the “traditional” evaluation methods:

- Visual Inspection
- Hammer Sounding
And USE the Mobile Scanning Methods:

- Air-coupled ground-penetrating radar (GPR)
- Thermography LIDAR Scanning
- Photogrammetry/Photographic
...And USE the Hand-Held Technologies:

- Ground-coupled GPR
- Thermography
- Ultrasonic tomography (UST)
- Ultrasonic echo
- Portable seismic property analyzer (PSPA)
- Ultrasonic surface waves (USW)
- Impact Echo (IE)
R06G Wrap-up (continued)

...And the use the results together to accurately evaluate tunnel condition and keep your tunnels operating “worry-free”

Distribution of Cracks Greater Than 1/8”, Armstrong Tunnel

<table>
<thead>
<tr>
<th>Element</th>
<th>Type</th>
<th>Unit Cost</th>
<th>Unit</th>
<th>Trigger(s) of Available Funding Options</th>
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Thanks!

Questions?