



Implementation Assistance

Implementation Q&As

Leadership Endorsement

Contact

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## Implementation Assistance Application for Nondestructive Testing for Tunnel Linings (R06G)



[Read the Product Page](#)

### Background

Tunnel inspection is a challenging problem, but owners routinely need to test the integrity of the concrete lining of their tunnels to maintain and repair their assets. Tunnels typically service high-volume traffic and operate in aggressive environments. As a result, they are difficult to inspect for maintenance concerns or deficiencies such as leaks, concrete liner cracking, concrete spalling, delamination, and other debonding issues. Due to their confinement, heavy use, and the often long detours needed when they are closed to traffic, tunnels pose a unique operational challenge that technology is poised to solve.

Nondestructive testing (NDT) methods are automated, quantitative, and rapid; they provide substantially more complete coverage than conventional visual inspections. SHRP2 has evaluated all the best NDT technologies for their use in tunnel lining assessments. Ground-penetrating radar (GPR), infrared thermography analysis, and impact echo technology were determined to be the most appropriate. These technologies enable inspectors to drive through the tunnel and conduct the inspection without closing lanes.

The web-based, open-source NDToolbox helps identify and characterize testing technologies that are available to locate the primary deficiencies in tunnel linings. With the toolbox, users can explore different NDT technologies and examine their use in detecting deterioration for conditions relevant to the project. The NDToolbox describes the technology and the physical principle behind it, applications, performance, limitations, equipment, test procedures and protocols, and sample results. It also provides recommendations regarding the best technologies for a particular deterioration detection application.

The accompanying user's manual was developed for selecting NDT technologies that can detect defects behind or within tunnel linings. The manual includes more in-depth information on equipment, test procedures, inspector's training requirements, data management procedures, data analysis procedures, limitations, and interpretation guidelines.

### Leadership Endorsement

Each application submitted from an organization or agency must have the endorsement of the Chief Executive Officer or designee. The letter of endorsement is submitted **as an attachment to the application**. Guidance for creating an endorsement letter appears in the application below.

### Priority Ranking

When multiple applications are submitted from an organization or agency, each application must have a designated priority ranking. Please rank all applications in one grouping including all product submissions from your agency. For purposes of ranking do not separate your organization's applications into categories for individual products, or levels of incentives such

as Lead Adopter or User Incentive.

For example, if your agency submits four applications; two applications for R06C, one for C03/C11, and one for R10, your agency must rank each application in priority order from 1 to 4, with 1 as the highest priority and 4 as the lowest priority. For your convenience, you will find a box later in this application to designate the priority ranking. FHWA and AASHTO will take into consideration the agency's rankings when reviewing and evaluating the applications for implementation assistance. Your priority ranking should be expressed as "X of Y," as in "1 of 4."

## Available Implementation Assistance

Type of Assistance: Proof of Concept

Number of Awards: Up to 2

Funding Level: Up to \$250,000 in the form of direct funding and/or technical assistance for implementation activities, including a national showcase event.

Who Can Apply: State Departments of Transportation (DOTs), Metropolitan Planning Organizations (MPOs)

Application Deadline: June 27, 2015

## Requirements

1. Commitment of DOT leadership to embrace NDT methods for tunnel lining inspection and incorporate condition assessment results within DOT tunnel inspection, asset management, and maintenance programs.
2. Participation in hands-on training on the use of various NDT technologies, development of application protocols for deploying NDT technologies on routine inspections, and development of the means to incorporate NDT data in asset management programs.
3. Identification of one or more concrete-lined or tile-on-concrete-lined tunnels to test and showcase the use of NDT technologies for concrete tunnel lining condition assessment.
4. Participation in product evaluation activities, including an organizational, before/after assessment conducted by an independent consultant for FHWA.
5. Willingness to share knowledge with neighboring DOTs interested in implementing NDT technologies for tunnel lining evaluations, including reporting on the lessons learned from the implementation study and efforts to use the data for asset management.
6. Willingness to participate in regional or national knowledge sharing events to promote NDT technologies.

## Application Form

Follow these steps to apply for implementation assistance:

1. Review all background information
2. Download the [Nondestructive Testing for Tunnel Linings \(R06G\)](#) application form; and save it to your computer in order to iterate, revise, and secure approvals before uploading the final application and [Leadership Endorsement Letter](#) to this site
3. Once you have completed the form and secured the required Leadership Endorsement Letter, return to this page and complete the contact information fields below
4. Upload the completed application form and Leadership Endorsement Letter
5. Click submit; you will receive an email confirmation that includes the uploaded endorsement letter and application form, be sure to only hit the submit button one time

Attach letter of endorsement from CEO or designee

no file selected

[View Leadership Endorsement Guidance](#)

Attach completed application form. Be sure you are attaching the application form that matches this application.

no file selected

Download the [Nondestructive Testing for Tunnel Linings \(R06G\)](#) application form.

Number of applications your organization is submitting to Round 4

Rank this application relative to the total

Contact Information

Point of Contact

Title

Business Phone

Business Email

Organization

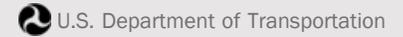
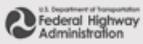
Type of Organization

State

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# SHRP2 Implementation Assistance Program

## Round 4 Application Form - *Application period closes June 27, 2014.*

### Nondestructive Testing for Tunnel Linings (R06G)

**FHWA Product Lead Name:** Matthew DeMarco, [Matthew.DeMarco@dot.gov](mailto:Matthew.DeMarco@dot.gov), 720-963-3520

This SHRP2 Solution is part of Round 4 of the Implementation Assistance Program. For more information about this product or about applying for implementation assistance, visit the Implementation Assistance Program page (<http://www.fhwa.dot.gov/GoSHRP2/ImplementationAssistance>) or this product's application page (where this form originated) on the GoSHRP2 website.

#### Point of Contact:

The SHRP2 Implementation Assistance Program is designed to foster peer learning, and as a result, applicants are encouraged to share their experience implementing SHRP2 products with others. By submitting this application, your organization grants permission to FHWA to publish and distribute the name and business email address of a **staff member from the applying organization** who is familiar with the project. Please provide:

POC Name: Provide your response here.

POC Business Email Address: Provide your response here.

#### Questions:

1. Describe your organization's interest and goals in using NDT technologies for evaluating concrete tunnel linings. (What do you hope to gain? Is there a specific issue you hope to resolve? How do you define success?)

Provide your response here.

2. Briefly describe your organization's experience, if any, with NDT technologies related to tunnel evaluations or other structure applications.

Provide your response here.

3. Briefly describe demonstrated executive-level support for adopting NDT technologies, either through purchase of the technology for in-house use or through vendor services.

Provide your response here.

4. Describe your plan for evaluating and implementing NDT technologies, including the activities and resources – direct funding amount and/or technical support – needed to adopt these technologies into routine practice and showcase their use to other agencies.

Provide your response here.

5. Describe any challenges you expect to encounter in implementing and adopting these technologies, and how you plan to address these challenges.

Provide your response here.

6. Describe how you envision integrating NDT condition assessment data within tunnel inspection, transportation asset management, and maintenance programs.

Provide your response here.

As a reminder:

1. Review all background information located on this product's application page.
2. Once you have completed this form and secured the required Leadership Endorsement Letter, return to application page and complete the contact information fields.
3. Upload this form and the Leadership Endorsement Letter to the page. **Be sure you are attaching the form to the correct application page.**
4. Click "Submit;" you will receive an email confirmation that includes the uploaded endorsement letter and application form.
5. Application period will close June 27, 2014.

For more information or to find this product's application page, visit the Implementation Assistance Program page (<http://www.fhwa.dot.gov/GoSHRP2/ImplementationAssistance>) on the GoSHRP2 website.