



U.S. Department of Transportation  
Federal Highway Administration

## PRODUCT BRIEF

# Videotapes Explain the How and Why of LTPP's Revised Resilient Modulus Laboratory Tests and Procedures

### Introduction

The resilient modulus or stiffness of the soil and rock in the subgrade at a paving project is a critical factor in determining the thickness and composition of the pavement layers. However, measuring the resilient modulus of a particular site has been, at best, a complex and difficult task. The process, as outlined in the *1993 AASHTO Guide for Design of Pavement Structures*, calls for the resilient modulus to be measured using a carefully controlled laboratory test on a small sample of the subgrade. Because the laboratory test is complex and can produce inconsistent results, many highway agencies have been hesitant to conduct them.

To address this issue, the Long Term Pavement Performance (LTPP) program developed a standardized laboratory procedure to measure the resilient modulus of subgrade materials, along with a related laboratory startup and calibration verification procedure. This procedure has since been adopted as an American Association of State Highway and Transportation Officials (AASHTO) provisional standard, "Standard Test Method for Determining the Resilient

Modulus of Soils and Aggregate Materials."

To help highway agencies understand the new procedure, three videotapes have been produced by FHWA through a cooperative agreement with the Minnesota Department of Transportation. The videotapes explain the how and why of LTPP's revised resilient modulus laboratory tests and procedures.

### Resilient Modulus Videotapes

This series of videotapes produced in 1998 addresses key questions about the new procedure for highway administrators, engineers, laboratory managers, and technicians. They are:

- "Laboratory Resilient Modulus Testing: Is This the Right Time?" Intended for administrators and engineers, this 8-minute videotape explains resilient modulus and what it is used for. It also explains the developments that have made resilient modulus testing more consistent and easier to adopt.
- "Laboratory Resilient Modulus Testing: Startup and Quality

Control Procedure." This 15-minute videotape for laboratory managers and technicians begins with a detailed definition of resilient modulus. It then explains the procedure developed under the LTPP program to ensure that a laboratory is setup properly to conduct the resilient modulus test procedure and to collect accurate test results. The procedure ensures that test results are comparable regardless of where or when they were obtained.

- "Laboratory Resilient Modulus Testing: Sample Preparation and Test Procedure." This 13-minute videotape for managers and technicians describes each of the steps in the resilient modulus test procedure, including how to prepare soil and aggregate samples.

### Who Can Benefit From the Resilient Modulus Videotapes?

Highway administrators and engineers will benefit most directly from the overview videotape ("Laboratory Resilient Modulus Testing: Is This the Right Time?") as it explains

resilient modulus and the role it plays in designing more reliable pavements.

Laboratory managers and technicians will benefit most directly from the other two videotapes ("Laboratory Resilient Modulus Testing: Startup and Quality Control

Procedure" and "Laboratory Resilient Modulus Testing: Sample Preparation and Test Procedure") as they carefully lay out the steps involved in conducting LTPP's resilient modulus procedure and explain the developments that have made the testing more consistent.

Overall, the videotapes are intended to provide highway agencies with a clear understanding of what it will entail to adopt this new procedure.

For more information, or to order the videotapes, contact Keith Herbold at (708) 283-3548 or e-mail [keith.herbold@fhwa.dot.gov](mailto:keith.herbold@fhwa.dot.gov).

**Research, Development, and Technology**

Turner-Fairbank Highway Research Center  
6300 Georgetown Pike • McLean, VA 22101

*Visit us on the web at [www.tfrc.gov](http://www.tfrc.gov)*