U.S. Department of Transportation
Federal Highway Administration

PRODUCT BRIEF

Pavement Profile Viewer and Analyzer

Introduction

Pavement Profile Viewer and Analyzer, or ProVAL, is a software package that imports, displays, and analyzes the characteristics of pavement profiles from many different sources. ProVAL can analyze pavement profiles using several methods, including International Roughness Index, Ride Number, Profile Index, California profilograph, and rolling straightedge, and other more complex filters such as Butterworth band pass filters and power spectral density. ProVAL also can perform American Society for Testing and Materials (ASTM) E 950 precision and bias tests and cross-correlation to find recurring patterns in pavement profiles.

ProVAL Applications

ProVAL software uses a new standard file format that is fast, compact, and portable. Profile and project files can be transferred easily to ProVAL installations on other computers.

The software can help State highway engineers, contractors, and quality control managers improve the quality of pavement construction by analyzing a given profile quickly and providing results in a number of formats. In addition, researchers can use ProVAL to analyze large numbers of profiles of virtually any length, frequency of data collection, and number of longitudinal traces.

Although the software was completed recently, State departments of transportation (DOT) already are applying it in the field. For example, the Ohio DOT is conducting an informal study of pavement smoothness immediately after construction and how pavement smoothness affects a contractor's ability to achieve full payment or bonus, especially as smoothness relates to the warranty and quality control/quality assurance specifications.

FHWA also is using ProVAL as part of its recently initiated

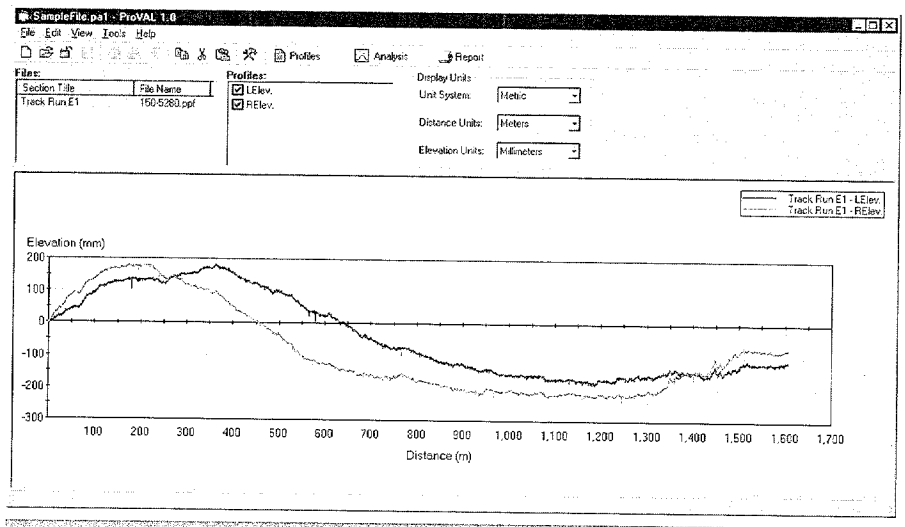

Figure 1. A screen capture from the ProVAL software program shows pavement profile characteristics at different elevations and distances.

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Inertial Profile Data for Pavement Performance Analysis project. The project aims to identify practices that will minimize the harmful effects of curling and warping in concrete pavement slabs.

FHWA conducted a presentation on the software for the Road Profiler User Group and the Transportation Research Board's Long-Term Pavement Performance (LTPP) subcommittee on Product Development and Delivery. FHWA also sponsored a workshop that was piloted in December 2002.

Compatible Profile Formats

Currently, three profile formats are compatible with ProVAL: the industry-standard University of Michigan Transportation Research Institute Engineering Research Division (ERD) profiler; the Texas DOT profiler; and the K.J. Law profiler. Other formats may be added to the import functionality of the software as manufacturers work with the developers of ProVAL to include new capabilities.

As ProVAL evolves, more users are expected to apply its solutions to real-world problems. FHWA expects that this software and its new file format will become an industry standard.

Research, Development, and Technology
Turner-Fairbank Highway Research Center
6300 Georgetown Pike • McLean, VA 22101
Visit us on the Web at www.tfhrc.gov

For Copies of ProVAL 1.0 Software, Contact:

Mark Swanlund, P.E.
Pavement Design Engineer
HIPT-20
400 7th St., SW
Washington, DC 20590
202–366–1323
mark.swanlund@fhwa.dot.gov

Antonio Nieves
LTPP Midwest and West Regions
Turner-Fairbank Highway
Research Center, HRDI-13
6300 Georgetown Pike, Rm. F-209
McLean, VA 22102
202–493–3074
antonio.nieves@fhwa.dot.gov

Mike Moravec
LTPP Northeast and South Regions
FHWA Resource Center,
Baltimore, HRC-EA
10 S. Howard St., Ste. 4000
Baltimore, MD 21201-2819
410–962–5623
mike.moravec@fhwa.dot.gov

Software updates and other information is available on the ProVAL Web site, http://www.roadprofile.com.