



# Project Summary

Texas Department of Transportation

## 0-6004: Develop a Portable Profiler for Maintenance and Construction Applications

### *Background*

An easy to mount and use portable profiler has been desired by TxDOT project and field engineers for several years. Although districts have access to one of the general purpose profiler vans, occasionally a set of profile measurements is needed while the general purpose profiler vans are being used on other projects or in other areas within the district. TxDOT research project 0-6004 was initiated to develop a single path, easy to use, portable profiler providing an easily obtainable portable profiler module. The desired portable profiler module would provide TxDOT a unit that can be quickly mounted or removed from the front or rear bumper of typical TxDOT vehicles for profiler measurements by TxDOT field and other engineers. The profile generated also needs to be compatible with existing TxDOT formats and capable of providing certifiable profile measurements.

The project was initiated in mid-December of 2007. The research plan was separated into several tasks, including the investigations into newer sensors, installation, mounting and computational procedures. The project report provides a summary of work performed on this project, complete with details on developing, testing and using the device.

### *What the Researchers Did*

UTA and TTI researchers performed the tasks listed in the previous section including the development of: a portable single path profiler that is available for immediate use, a portable instrument module attachment that easily fits into commercially available receiver hitches and an easy to use software package that provides TxDOT certifiable profile consistent with current TxDOT profile measurement systems.

### *Research Performed by:*

The University of Texas at Arlington (UTA)  
Texas Transportation Institute (TTI),  
The Texas A&M University System

### **Research Supervisor:**

Roger S. Walker, UTA

### **Researcher:**

Emmanuel Fernando, TTI

**Project Completed:** 8-31-09

### *What They Found*

Researchers, working with TxDOT measurement personal, installed, tested and certified the portable profiler module on both a TTI full-size pickup and a TxDOT van. The portable profiler is ready for implementation usage.

A summary of the results of the research are as follows:

1. A portable profiler was developed and is available for immediate use.
2. An accompanying program has been developed.

3. A portable attachment that easily fits into commercially available receiver hitches has been fabricated.
4. A self-contained carrying case was obtained and used for holding the complete profiler measurement module.
5. A portable holder for the distance encoder was developed and tested.
6. The profile and measurement process is consistent with current TxDOT data collection procedures.

## *What This Means*

An easy to mount, store, transport, and use portable profiler module is available to TxDOT field engineers and other TxDOT measurement personnel. The unit, when mounted properly can provide certifiable profile consistent with the profiler certification requirements given in TxDOT Test Method Tex-1001S. The portable profiler software runs under Windows XP on a notebook PC. The package provides an output format consistent with the TxDOT VNET protocol and has been tested. The module has been used on both TxDOT and TTI profilers to provide data that complies with the profiler certification requirements given in TxDOT Test Method Tex-1001S. The profile generated from the portable profiler has been used with both TxDOT's Ride Quality software and the FHWA software PROVAL.



*Prototype Profiler Module Mounted in Front of Test Vehicle.*

*For More Information:*

**0-6004-1 A Portable Profiler for Pavement Profile Measurements**

Research Engineer - German Claros, TxDOT, 512-416-4730

Project Director - Phillip Hempel, TxDOT, 512 465-3650

Research Supervisor - Roger S. Walker, UTA, 817-272-3785

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**keyword: research**



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