

STATEMENT OF WORK – TPF-5(039) Task Order Proposal Request #6.1

Tasks required to achieve the objectives of the task order are as follows. They are not in chronological order or in order of significance, urgency or importance. The contractor and COTR will determine the order with which work will proceed.

TASK 1. FWD OPERATIONS MANUAL

Develop a manual containing guidelines for FWD operations and data collection. This manual is intended to compliment work being conducted under FHWA contract # DTFH61-06-R-00044, “Using Falling Weight Deflectometer Data with Mechanistic-Empirical Design and Analysis,” FHWA publications FHWA-HRT-05-153 “Long Term Pavement Performance (LTPP) Program Falling Weight Deflectometer (FWD) Maintenance Manual,” and findings from NCHRP Project 20-5, Synthesis of Highway Practice Topic 38-15, “Falling Weight Deflectometer Usage.”

The contractor will take the latest LTPP FWD Operations manual used in the program and adapt it for general use for state transportation agencies (STAs) with recommended guidelines and procedures for deflection data collection at both the network and project levels. The upgraded manual will be based on work conducted in the LTPP Program, with input from STAs, FHWA and possibly, private highway engineering firms. Work should be coordinated with input from the FHWA Office of Asset Management.

The manual will include recommendations on traffic control, test point locations, equipment warm-up and maintenance, calibration procedures, and data processing and storage. The manual will be manufacturer independent. This project is important because it represents the bulk of knowledge of the FWD operations and data collection and maintenance based on several years of experience of the STAs, the LTPP program and private engineering practice in deflection data collection.

Task 1.1. Obtain and review pertinent literature to attain a thorough understanding of relevant prior practice with FWD data collection and operations, as well as equipment manufacturer operations manuals and specifications.

Task 1.2. Organize the information from task 1 into the format of a field manual covering recommendations on traffic control, test point locations, equipment warm-up and maintenance, calibration procedures, and data processing and storage. The manual should have separate sections for rigid and flexible pavement surface conditions, as well as network-level and project-level data collection purposes.

Task 1.3. Prepare a final product and publishing preparation. A draft final shall be submitted 4 weeks prior to the end of performance for final review and acceptance by the COTR.

TASK 2. FWD CALIBRATION CENTER TECHNICAL SUPPORT AND SERVICE

Provide Technical Support for and service to the FWD Calibration Centers hosted by states participating in the pooled fund study. Technical support shall include the following:

Reference load cell calibrations

- Hardware replacement
- A/D board calibration

- Software support
- Calibration center operator training
- Telephone support, e-mail communications
- Troubleshooting
- Quality Assurance Reviews

TASK 3. FWD CALIBRATION VIDEO

Develop an updated “Why you should calibrate your FWD” digital video, with the overall message that “FWDs should be calibrated in-order to collect high quality data.” The video will cover the recently developed revised calibration process and what FWD operators or owner should expect when they arrive at the calibration center, as well as what they should do to prepare their FWD. The deliverables include 1000 copies of the CD or DVD product, meeting Section 508 requirements and also coordination with the FHWA Office of Corporate Management to make the video available for viewing on the FHWA website.

Objectives:

1. To educate FWD managers and operators on the need for calibrating equipment in-order to collect high quality data for their pavement applications.
2. To share new calibration procedures with the FWD community.
3. To share information on other recently developed FWD-related products and where they may be obtained.

Audience

FWD owners, operators and data users.

Subtask	Description	Comments/Notes
<i>3.1 Storyboard Design and Layout</i>	Develop and design video and select scenes, shots and speakers. Topic is researched; a script is written, reviewed, and adjusted.	FHWA review and approval required prior to next project phase.
<i>3.2 Videotaping</i>	Camera crews will travel to the necessary locations.	Existing footage can be added to supplement taped footage.
<i>3.3 Videotape editing and effects</i>	Called a "rough cut" or "off-line" edit. And sound effects recording.	A meeting will be held to discuss needed adjustments or corrections.

3.4 Final videotape production	Called the "on-line" edit.	Visual and audio effects will be added at this stage.
3.5 DVD Reproduction and Distribution	Includes on-line streaming video version along with HQ version	1000 copies of the DVD product to be delivered to FHWA.

TASK 4. FWD BACKCALCULATION WORKSHOP

Provide a 2-3 day backcalculation workshop for the TAC or representative that covers the background, theory, software, and application to pavement evaluation and design through demonstrations, discussions and class exercises. The class participants will be required to supply their own computers. The participants will be given a demonstration version of the software application used in class to keep. Participants will also be supplied with a workbook containing class materials, such as theory, references, exercises and class notes in a 3-ring binder. Class size target is 20 students.

TASK 5. DOCUMENTATION

Create or update documentation relative to the calibration process, calibration software users or FWD users.

5.1 Software User Manual(s)

5.2 AASHTO T 256-01, R 33-03, R 32-03, "Pavement Deflection Data Exchange Technical Data Guide Version 1.0," and other relevant protocols, such as ASTM.

5.3 Quality Assurance Review checklist and reports with certifications to the calibration center operators.

5.4 Quarterly progress reports shall be prepared and submitted according to Section G of the original contract.

TASK 6. COMMUNICATION AND COORDINATION

This includes gathering information relevant to ongoing work and participating in and coordinating 1 TAC meeting and 1 FWD User Group meeting, as well as teleconferences and correspondence by phone, fax and e-mail.

TASK 7. SOFTWARE UPDATES AND UPGRADES

It is anticipated that updates to the software will be needed in response to unforeseen bugs, or to feedback for functional improvements identified by users. The software may also require evaluation on evolving software platforms, such as Microsoft Vista. The contractor shall continue to make these software modifications and updates on an ongoing basis in coordination with the COTR.

TASK 8. FWD CALIBRATION SYSTEM FABRICATION, INSTALLATION AND TRAINING

The contractor shall provide the documentation, equipment, software installation and training for up to 3 FWD calibration centers during this period of performance. The training time and materials shall be sufficient to cover up to 2 full days of background and hands-on training.

TASK 9. LWD EVALUATION

There are two basic types of light weight falling weight deflectometers on the market in North America; those that have a load cell, and those whose load is based on the mass and the height from which is was dropped. This task is intended to provide an independent evaluation of these devices and determine what considerations a user should take when interpreting the results. The outcome of this research should result in guidelines and recommendations for modifications to standard test or calibration protocols. The work should build upon NCHRP Project 10-65, “Nondestructive Testing Technology for Quality Control and Acceptance of Flexible Pavement Construction.”

TASK 10 – LONG-TERM CALIBRATION CENTER SUPPORT

The contractor shall investigate mechanisms to provide financial support to State Transportation Agency (STA)-sponsored FWD calibration centers in the period following this pooled-fund study. Based on an evaluation of the mechanisms identified as possible, the contractor shall provide recommendations that are most likely to work with the STA.

Meeting Participation

The contractor shall prepare and present briefings to the project panel as in conjunction with the annual TAC meeting and FWD User Group meeting, as well as:

1. Approximately 30 days after submission of the interim report. The contractor shall make the meeting arrangements in consultation with the COTR.
2. Approximately 30 days after submission of the draft final report. The contractor shall make the meeting arrangements in consultation with the COTR.