



U.S. Department
of Transportation

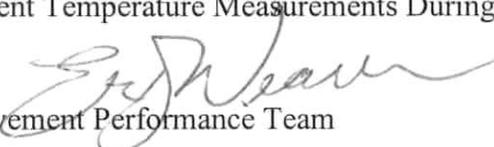
Memorandum

6300 Georgetown Pike
McLean, Virginia 22101

**Federal Highway
Administration**

Subject: **ACTION:** LTPP Directive FWD-27
Thermal Gradient Temperature Measurements During Deflection Testing

Date: June, 9 2003

From: Eric Weaver 
Long Term Pavement Performance Team

Reply to
Attn of: HRDI-13

To: Dr. Frank Meyer, PM - LTPP North Atlantic Regional Contract
Dr. Frank Meyer, PM - LTPP North Central Regional Contract
Mr. Mark Gardner, PM - LTPP Southern Regional Contract
Mr. Kevin Senn, Acting, PM - LTPP Western Regional Contract

Attached is the Long Term Pavement Performance (LTPP) Program Monitoring Directive FWD-27: Thermal Gradient Temperature Measurements During Deflection Testing. Included attachments contain new instructions for performing pavement temperature gradients associated with deflection tests on LTPP test sections. These instructions supersede those contained in Version 3.1 of the LTPP Manual for FWD Testing. Please ensure that all personnel involved with the IMS and FWD data collection are aware of this new directive.

Should you have any questions or would like to discuss this directive, please do not hesitate to contact me at 202-493-3153.

Attachments (3)

LONG TERM PAVEMENT PERFORMANCE PROGRAM DIRECTIVE



For the Technical Direction of the LTPP Program



Program Area: Monitoring Directive Number: FWD-27
Date: June 9, 2003 Supersedes: N/A
Subject: Thermal Gradient Temperature Measurements During
Deflection Testing

This directive provides new instructions for performing pavement temperature gradient measurements associated with deflection tests on LTPP test sections. These instructions supersede those contained in Version 3.1 of the LTPP Manual for FWD Testing.

Up to five holes shall be drilled in the bound layers of the pavement for the purpose of measuring sub-surface temperatures. Only holes that terminate in an unbound or permeable layer may be eliminated. Table 1 shows the depths to which the holes shall be drilled.

Table 1. Hole Depths

Hole Number	Hole Depth (mm)
1	25
2	50
3	100
4	200
5	300

All holes shall be drilled as close as possible to the depths listed in Table 1. The tolerance for hole number 1 is 5 mm. The tolerance for holes 2 through 5 is 10 mm. The actual depth of the hole shall be measured and recorded to the nearest millimeter.

The holes shall be drilled in the center of the outer wheel path (OWP), but shall be offset at least 0.5 m from each other in the longitudinal direction. For GPS sections, the holes shall be located on both ends of the test section, just outside the monitoring area. Typically the location of the holes will be near station 0-001 m (0-03) and 0+153 m (5+03). For SPS sections, holes shall be located at only one end of the section, just outside the monitoring area. The operator shall choose the end of the section that is most representative of the monitoring area.

made in determining the most suitable location for the temperature gradient holes. The locations selected shall never be within the limits of the monitoring portion of the test section.

In addition, an infrared (IR) surface temperature measurement shall be obtained at the same time that sub-surface temperature readings are obtained. The measurement location shall also be in the OWP and at least 0.5 m from the nearest hole in the longitudinal direction. The operator shall take care that area in which the IR temperature is measured is representative of the entire temperature measurement area. The area in which the IR surface temperature is taken shall be free of oil, dirt or other foreign debris. During temperature measurements, the hand-held IR device shall be held at a height consistent with height of the FWD-mounted IR measurement device. IR temperature measurements shall be taken three times in quick succession, and the results shall be averaged and entered on form F01.

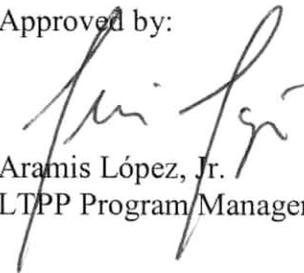
Both the IR temperature probe and the probe used for sub-surface temperature measurements should be verified according to the procedures used for the FWD-mounted devices as described in the current version of the FWD Guide.

A revised Form F01 for recording the temperature gradient measurements is attached to this directive.

Questions concerning this directive should be addressed to the FHWA LTPP leader for FWD operations. If there are any problems, please submit a FWD problem report (FWDPR) form in accordance with procedures indicated in the current version of the LTPP Manual for FWD Testing.

Prepared by: TSSC Team

Approved by:



Aramis López, Jr.
LTPP Program Manager

