LONG TERM PAVEMENT PERFORMANCE PROGRAM DIRECTIVE

For The Technical Direction Of The LTPP Program

Program Area: Monitoring **Directive Number:** FWD-14

Date: February 1, 1995 **Supersedes:** n/a

Subject: FWD Surface Temperature Measurements in Cold Weather (below 0°F)

It has been brought to our attention that the Raytec Infrared (IR) Temperature Sensor installed in the new LTPP FWD units and to be installed in the old LTPP FWD units (as part of their overhaul in the coming months) to monitor pavement surface temperatures has a problem when temperatures drop below 0°F. The problem is as follows:

> The recommended range setting for the Raytec sensor is "1", which covers the temperature range of 0°F to 200°F (linear outputs 4 to 20 mA); all settings have 0°F as the lower limit. When the temperature drops below 0°F, the sensor enters a "Fail Safe" mode which outputs full-scale current of 20.3 mA. For a calibrated sensor, the FWD Field Program should record temperatures greater than 200°F in the "Fail Safe" mode; however, erroneous temperature readings -- 9 to 154°F, and extremely variable -- have been recorded at temperatures below 0°F, which can not be explained.

Steps are being taken by the FHWA LTPP Division to permanently address this problem. In the interim, the following procedure has been developed for immediate implementation by the RCOCs when testing at temperatures below 0°F:

- Using the "comment" feature in the FWD Field Program, FWD operator shall flag each FWD test cycle within a given SMP test day where pavement surface temperatures are below 0°F. FWD operator shall also notify the RCOC engineer responsible for deflection testing, in writing, of FWD test cycles where the pavement surface temperature was below 0°F at the start of testing. This written notice shall include FWD test date, FWD data file name, and start time of FWD test cycle(s) in question.

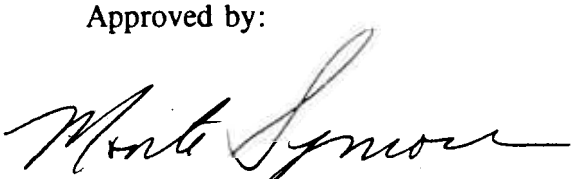
- After the FWD data file in question arrives at the RCO, but prior to running FWDSCAN or loading into the RIMS, RCOC personnel shall edit the file using

the EDITFWD program. Editing will be limited to pavement surface temperatures for those FWD test cycles where the pavement surface temperature was below 0°F at the start of testing, as indicated by the FWD operator both in the file as well as in writing. This editing will consist of replacing the pavement surface temperatures recorded by the FWD Field Program with three blank spaces. **PLEASE NOTE THAT EXTREME CARE SHOULD BE EXERCISED WHEN EDITING FWD DATA FILES**

- Once the appropriate fields in the FWD data file have been edited, RCOC personnel should proceed in accordance with the FWD data handling and processing procedures outlined in the LTPP Manual for FWD Testing and related LTPP Directives.

The occurrence of other problems or unusual data which appear to be attributable to cold weather conditions shall be promptly reported to the RCOC SMP coordinator and engineer in charge of deflection testing, and the LTPP Division Office.

Approved by:



for Chief, LTPP Division