LONG TERM PAVEMENT PERFORMANCE PROGRAM DIRECTIVE

For the Technical Direction of the LTPP Program

Program Area:	Monitoring	Directive Number:	FWD-24
Date:	February 16, 2001	Supersedes:	N/A
Subject:	Modification to LTPP FWD Geophone Holders		

Introduction

This directive details a modification to the FWD geophone holders in order to permanently secure them to the FWD raise/lower bar assembly. Its implementation will help ensure that the correct LTPP geophone spacing, as specified in the current version of the LTPP Manual for FWD Testing, is maintained on all LTPP FWD units. Implementation by the Regional Coordination Office Contractors (RCOCs) of the modification specified in this directive shall be completed by March 31, 2001.

Procedure

It is critical to ensure that the FWD geophone holders be placed at the exact locations identified in the current version of the LTPP Manual for FWD testing. The following procedure shall be used to check the sensor spacings and to permanently secure them to the raise/lower bar assembly by means of retaining bolts.

1. Make sure that ALL transport locks for the drop weight subassembly have been brought properly into their locking position on BOTH SIDES! After having done this, subassembly should be lowered again to settle on locks.

2. Travel trays will have to be fully removed to provide access to deflectors in place on FWD.

3. Make sure that guide mechanism of outer (front) end of raise/lower bar has been locked in its top position by a locking pin.

4. Make sure that MAN.KEY switch (of Trailer Connection Panel) is turned OFF!

(counterclockwise turn).

5. While drop weight subassembly is still in its top (transport) position, check that the feeler of center deflection device (deflector holder) sticks out through bottom of loading plate a distance of at least 10 to 20 mm.

6. Check springs, foam rubber guides and set up of all deflector holders to ensure they are functioning properly. Make sure that spring tensions are properly adjusted such that a force on end feeler can move holder and feeler upwards until feeler is at least 5 mm inside bottom of holder body, and that it returns easily when released again (else apply a few drops of silicone oil to top guide rod).

7. The LTPP FWDs have nine deflection sensors placed at radial offsets from the center of the load plate to define the shape of the deflection basin. One set of sensor spacing shall be used for all FWD measurements on LTPP test sections to simplify data collection, decrease testing time, and minimize errors in sensor spacing. The following sensor spacing configuration of shall be used: -305 mm (SD-9), 0 mm (SD-1), 203 mm (SD-2), 305 mm (SD-3), 457 mm (SD-4), 610 mm (SD-5), 914 mm (SD-6), 1219 mm (SD-7), and 1524 mm (SD-8).

8. Using steel metric graduated tape measure (3 m or greater in length), zero first measurement from feeler of center deflection device that sticks out through bottom of loading plate. Apply constant positive pressure on tape to eliminate any sag in tape throughout its length. Measure location of defection sensors in-place from reference "zero point" to center of each deflection center feeler. DO NOT measure just center to center between individual deflector sensors, as an accumulating error can arise from using this method of measurement. By measuring from the rear of the contact screw a more repeatable/accurate measurement can be taken. To do this it is necessary to compensate in the measurement for the distance between the outer edge of the contact screw to the center. Check position measurements at least twice.

9. If any or all of the deflector sensors or cradle assembly holders have been removed for any reason, repeat steps 5through 6 three times to ensure correct placement and measurement.

10. With the cradle assembly holders in the correct LTTP configuration the top tapped thread hole at the top of the assembly shall be used as the location to drill a $^{17}/_{64}$ inch hole into the raise/lower bar metal. This hole shall then be tapped and threaded to accommodate a 6M x1.0mm (tread pitch). The cradle assembly can now be secured with a 6M x 1.0mm - 20mm stainless steel allen head bolt. The bolt shall be retained with a flat metal washer and thread locking compound (blue grade Loctite or equivalent).

The above procedure is a two person operation, but it can be completed by one person if necessary -- steel tape can be "hooked" at zero point, but particular care must be taken to account

for width of deflector feeler.

Questions concerning this directive should be addressed to Jean Sexton of the FHWA LTPP Team at (202) 493-3153.

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