

LONG TERM PAVEMENT PERFORMANCE PROGRAM DIRECTIVE



For The Technical Direction Of The LTPP Program



Program Area: Monitoring

Directive Number: SMP-24

Date: November 17, 1997

Supersedes:

n/a

Subject: Implementation of Resistivity Calibration Check Block

Introduction

The resistivity calibration check block provided by FHWA is intended to be used for checking the functioning of the resistivity switch box and manual electrical resistivity measurement equipment. Dirt, corrosion, rust, and other problems can affect the accuracy of electrical measurements made using this equipment. The use of the resistivity calibration check block allows detection of measurement problems by providing a "ground truth" reference value.

Procedures

Effective immediately, RCOCs shall perform calibration checks of the electrical resistivity switch box and manual measurement equipment prior to collection of electrical resistivity data in the field. The calibration checks shall be performed daily before data collection. The following procedures shall be used to perform this check.

1. Set up the manual electrical resistivity equipment to measure the voltage (V) and current (I) through the calibration check block connected to the switch box. The set up of the function generator (i.e. frequency, wave type, etc.) shall be the same as for normal data collection.
2. Measure the voltage and current for each switch setting and record readings in columns (5) and (7), respectively. If non-autoranging multi-meters are used, the settings on the multi-meter should be recorded in columns (4) and (6), respectively. Calculate the electrical resistance ($R = V/I$) for each measurement and record it in column (8).
3. Compare each calculated resistance value in column (8) with the acceptance

range of 980 Ω to 1,020 Ω . If all resistance values are within the acceptance range, as shown in Figure 1, the calibration check is satisfactory. If the resistance value from any test position is out of the acceptance range, steps should be taken to locate and correct the source of the problem.

4. Inspect all electrical current measurements. All current readings must be greater than 0.0005 A or 0.5 mA to ensure that the batteries in the function generator are in good condition and provide sufficient electrical current for field measurements. If a lower current flow is obtained, replace the batteries with fully charged batteries and repeat the test.

The calibration results shall be retained by the regions.

Any problems associated with the implementation of the resistivity calibration check block should be submitted in accordance with LTPP Directive SMP-6: SMP Problem Report (SMPPR) Form.

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Approved by:

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Team Leader, LTPP Operations

LTPP Seasonal Monitoring Program Data Sheet SMP-C06 Resistivity Calibration Block Check	Agency Code [] LTPP Section ID []
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Test Position	Switch Box Settings		Voltage		Current		Resistance
	I1 V1	I2 V2	Setting	Reading	Setting	Reading	Calculated (Ω)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	1	2					
2	2	3					
3	3	4					
4	4	5					
5	5	6					
6	6	7					
7	7	8					
8	8	9					
9	9	10					
10	10	11					
11	11	12					
12	12	13					
13	13	14					
14	14	15					
15	15	16					
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32	32	33					
33	33	34					
34	34	35					
35	35	36					

Comments: _____
 Prepared by: _____ Employer: _____
 Date (dd/mmm/yy): ____/____/____

Data Sheet SMP-C06: Resistivity Calibration Block Check

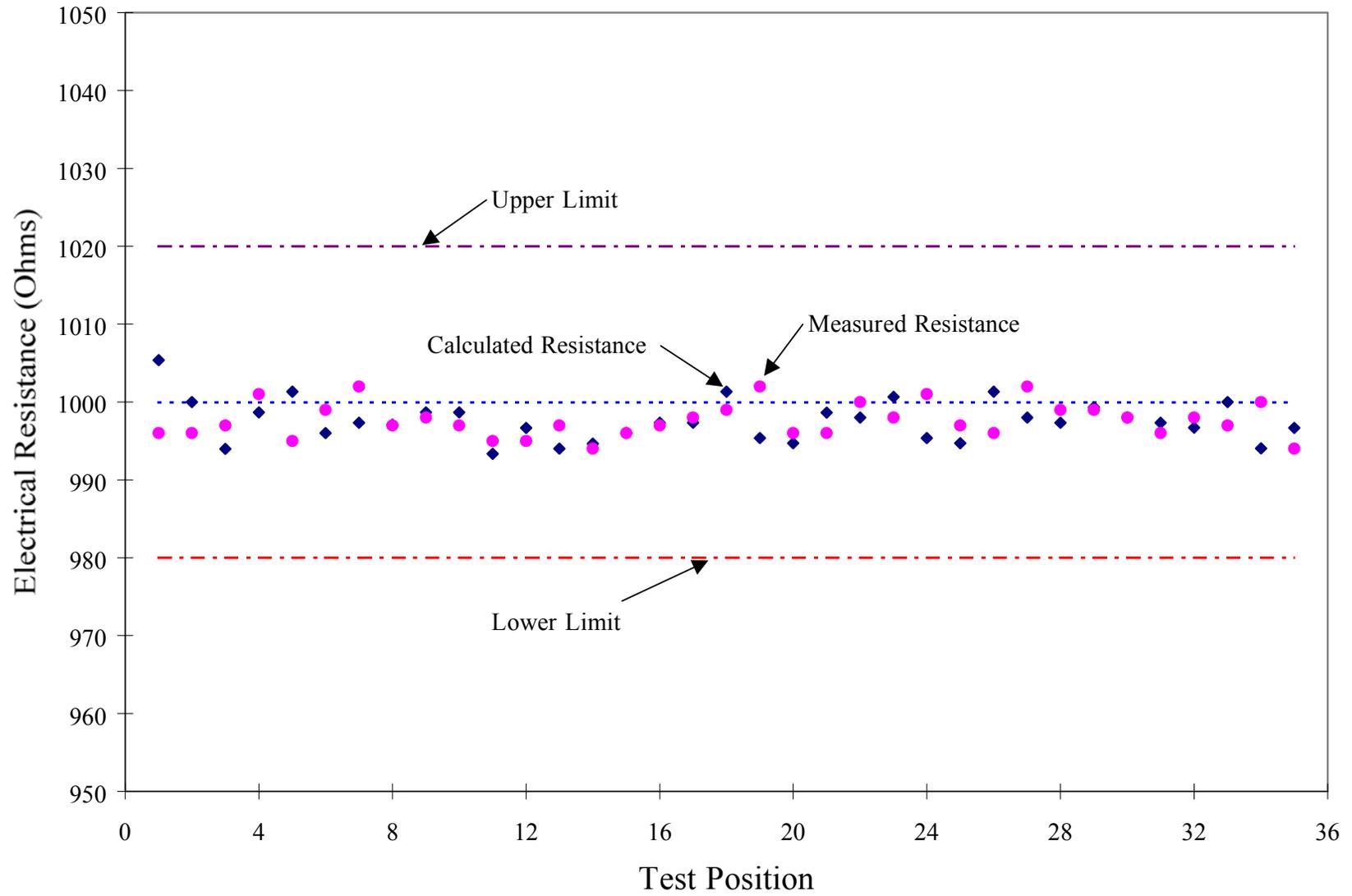


Figure 1. Example display of measured and calculated electrical resistances with a 20Ω acceptance range.