

U.S. Department
of Transportation
**Federal Highway
Administration**

**LTPP Seasonal Monitoring
Program**
Site Monitoring Suspension
Status Report
Section 421606, Altoona
Pennsylvania

SMP SITE MONITORING SUSPENSION STATUS REPORT

PENNSYLVANIA SECTION 421606

I. INTRODUCTION

The seasonal site 421606 near Altoona, Pennsylvania was installed on August 09 - August 10, 1995. Seasonal data was collected continuously from August 9, 1995 to August 8, 1996. On August 8, 1996, all site suspension activities were completed at this site according to LTPP directive SM-8 "Suspension of SMP Site Monitoring Activities". The site will remain out of operation until the next round of testing which is tentatively scheduled for August 1997.

This report entitled "SMP Site Monitoring Suspension Status Report" details the suspension preparation activities, site specific conditions, and provides information pertinent to the seasonal site 421606.

II. SUSPENSION PREPARATION ACTIVITIES

The suspension preparation activities at site 421606 were conducted during the final site visit on August 8, 1996. A manual distress survey of the entire section was conducted at this time. It was necessary to refresh the site paint markings at this time. On this day two sets of FWD tests, one set of elevations, joint opening measurements, joint faulting measurements, and a distress survey of the instrumentation area were conducted. The water table measurements and the manual resistivity measurements (2 and 4 point) were performed in the morning and afternoon. The onsite datalogger was downloaded before being dismantled. Two sets of TDR traces and resistance voltages were extracted by the mobile datalogger. The instrument hole, trench, and surface temperature probe slot areas were cleaned and sealed as needed. The snap ring holes were cleaned and sealed with Dow Corning silicone joint sealant. The instrument hole and trench from the instrument hole to pavement edge were patched with 'quickcrete' fast-setting concrete during our site visit on June 6, 1996.

The air temperature probe, tipping bucket, and the upper part of the support pole were dismantled. The lead wires from the air temperature probe and the tipping bucket were pulled out of the cabinet and sprayed with an anti-corrosive compound. The above ground conduit from the pole to the equipment cabinet was removed and the resulting hole in the back of the cabinet sealed. The bottom part of the support pole was cleaned and lubricated prior to installing the end cap.

After all the wires were disconnected from the control panel, the panel was detached from the equipment cabinet with the CR10 datalogger, terminal strip, and the battery pack

attached to it. The TDR cables were checked to ensure that they were labeled. The TDR cables, resistivity cable and MRC lead wires were sprayed with anti-corrosion compounds and sealed with desiccant packs in air tight bags. All cables were hung up high inside the equipment cabinet. After the last piezometer reading was recorded the pipe was cleaned and sealed with grease. The access cover and seat were cleaned and lubricated before being covered and brought up to grade with native soil.

The Profilometer survey corresponding to the close-out was conducted on August 29, 1996.

All the necessary suspension activities were completed on August 8, 1996. The dismantled equipment was removed from the site. The suspended site contains all the under ground instrumentation and equipment, and an equipment cabinet with all the cables in it. The equipment cabinet was locked before leaving the site. The site was cleaned and left in a condition such that the instrumentation could be easily accessed when site monitoring activities resume.

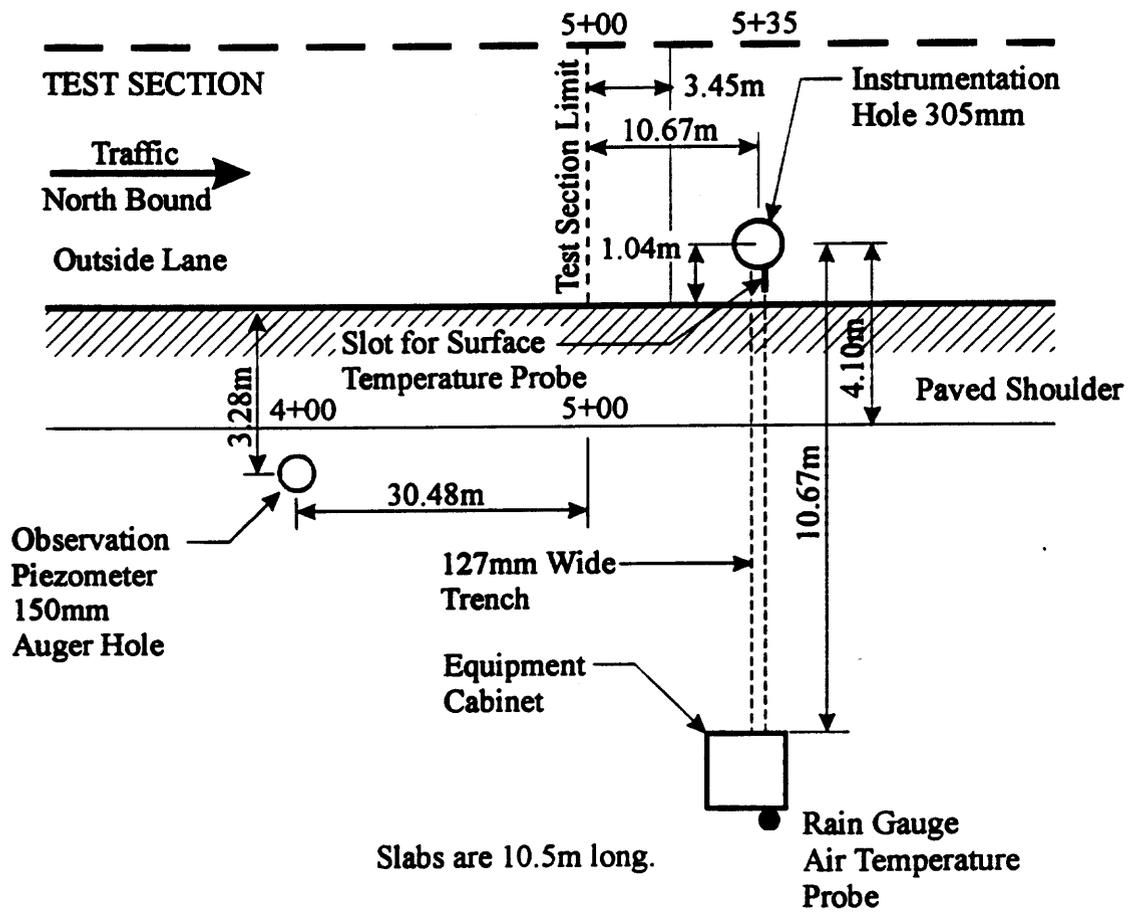
III. SPECIAL SITE CONDITIONS

The installation of site 421606 followed the "LTPP Seasonal Monitoring Program: Instrumentation Installation and Data Collection Guidelines" closely. Core holes exist in the slab adjacent to the 5+00 end. Ideally the instrument hole should have been in a slab that did not contain any deformations. Since the 0+00 end also contained core holes, the 5+00 end remained the preferred location. Rain arrived before all instrumentation installation could be completed. A tent was erected over the instrument hole to prevent water from entering it. The MRC#1 sensor was not working at the time of suspension. It has provided erroneous readings since March of 1996. The TDR#9 sensor has functioned intermittently since March of 1996.

IV. SUPPLEMENTAL INFORMATION

Figure 1 shows the locations of the installed instrumentation at the site. The instrumentation hole is at station 5+35 and the piezometer is at station 4+00. Table 1 gives elevations of the portion of test section 421606 that was used for elevation measurements. All offsets are measured from the outside pavement edge at the pavement shoulder interface.

At the time of suspension, other than the MRC#1 sensor and the TDR # 9 sensor, there were no unresolved problems with any of the sensors. The plots from ONSFIELD, MOBFIELD and SMPCHECK follow expected trends and produce expected values. Figure 2 shows the daily temperature trends during a sample period when the MRC#1 sensor was malfunctioning.



- Height of Air Temperature Probe: 2.81m
- Height of Tipping Bucket Rain Gauge: 2.85m
- Depth of Piezometer: 4.30m

Figure 1. Location of Seasonal Monitoring Instrumentation Installed at GPS 421606

Table 1. Surface Elevation Measurements

LTPP Seasonal Monitoring Study	State Code	[42]
Surface Elevation Measurements	Test Section Number	[1606]

Survey Date	August 08, 1996
Surveyed By	DS/DM
Surface Type	PCC
Benchmark	Observation Piezometer - 1.000 meters - assumed

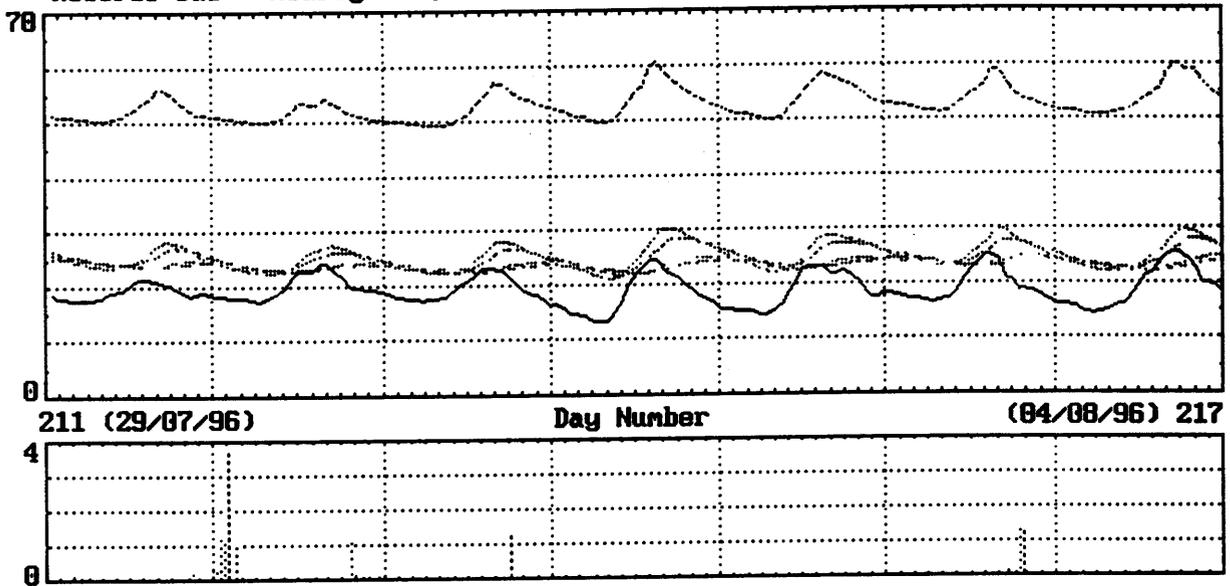
STATION	PE m offset 0.30m	ML m offset 1.84m	ILE m offset 3.44m
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3+26	1.0950	1.1250	1.1575
3+49	1.1425	1.1650	1.1950
3+72	1.1675	1.1925	1.2275
3+72	1.1675	1.1925	1.2275
3+95	1.2075	1.2325	1.2650
4+19	1.2325	1.2600	1.2950
4+19	1.2325	1.2600	1.2950
4+42	1.2800	1.3025	1.3300
4+65	1.3025	1.3300	1.3650
4+65	1.3025	1.3330	1.3500
4+88	1.3475	1.3775	1.4075
5+12	1.3750	1.4025	1.4400
5+12	1.3750	1.4025	1.4400
5+35	1.4200	1.4450	1.4775
5+58	1.4450	1.4725	1.5075

PE	Outer Slab Edge
ML	Mid Slab
ILE	Inner Slab Edge

Note: Offsets are measured from the PCC/AC interface at the shoulder.

Pennsylvania Site: A
Records 5&6 - Hourly Air, First 5 MRC Sensor Temperatures (°C), & Rain (mm)



Legend	Start Day	Time	Selected	End Day	Time	Selected	Value
AirT	0	211	100	0	218	000	
MRC1	1	211	100	1	218	000	
MRC2	2	211	100	2	218	000	
MRC3	3	211	100	3	218	000	
MRC4	4	211	100	4	218	000	
MRC5	5	211	100	5	218	000	
Rain	6	211	100	6	218	000	

Esc=Menu; PgUp, PgDn=Prior/Next Week; F8, F9=Edit; Ctrl+F10=Remove; F2=PrintScreen

Figure 2. Sample of the Erroneous Readings Provided by MRC Sensor #1

SUMMARY OF ROUND TWO SMP DATA COLLECTION TO DATE

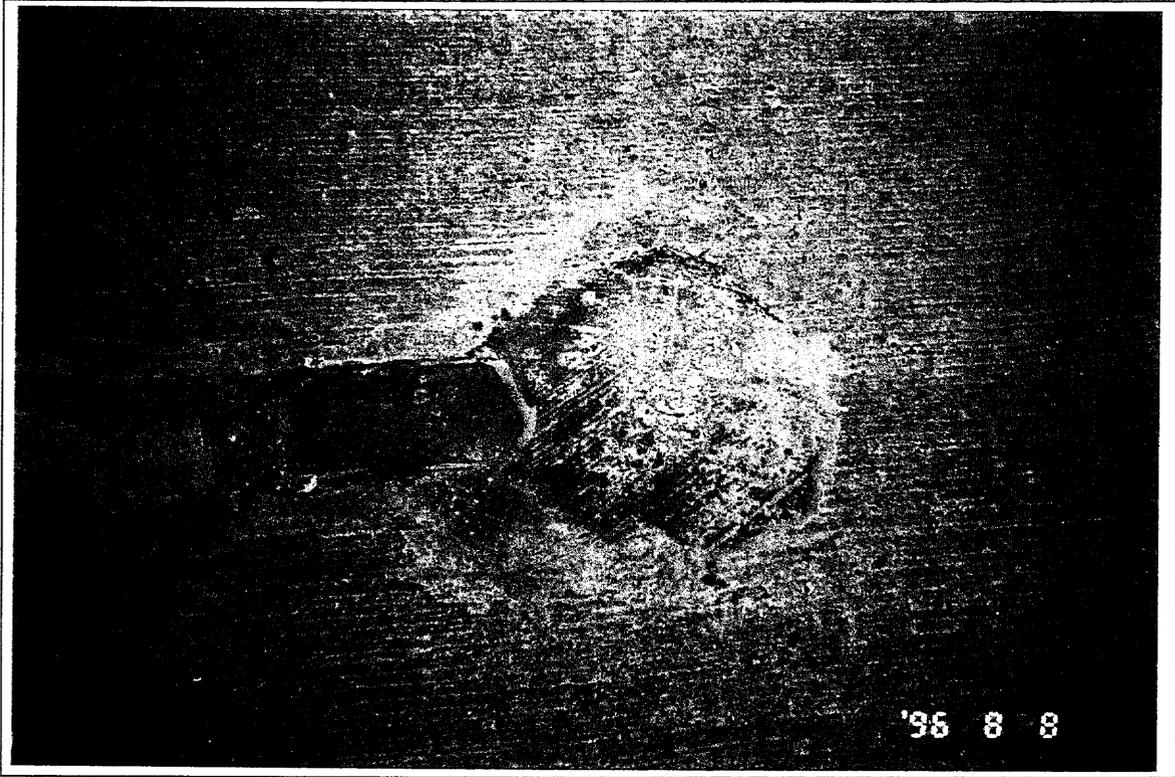
Agency Code 1421
 LTP Section I.D. 1808
 Location Allona, PA

Test Date	Visit Ident./Code	ONSITE Data			MOBILE Data			MANUAL Data				FWD Data				DISTRESS Data		PROFILE Data		Comments			
		Pav Temp.	Ambient Temp.	Rainfall	Moisture (TDR)	Frost Depth (Resist.)	Backup Prev. Temp.	Backup Moisture (TDR)	Frost Depth 2-point	Frost Depth 4-point	Water Table	Surface Elev.	Joint Open.	Joint Fault.	Surface Layer Temp.	OVP	ML	PE	Manual		PASCO	Prolifer	Dipstick
08-Aug-95	A	X	X	X	X	X	X	X	X	X	X	X	X	X	2	2	2	2	X				
28-Sep-95	B	X	X	X	X	X	X	X	X	X	X	X	X	X	2	2	2	2					
12-Oct-95	C	X	X	X	X	X	X	X	X	X	X	X	X	X	2	2	2	2					
09-Nov-95	D	X	X	X	X	X	X	X	X	X	X	X	X	X	2	2	2	2					
07-Dec-95	E	X	X	X	X	X	X	X	X	X	X	X	X	X	2	2	2	2					
15-Jan-96	A	X	X	X	X	X	X	X	X	X	X	X	X	X	2	2	2	2					
07-Mar-96	B	X	X	X	X	X	X	X	X	X	X	X	X	X	2	2	2	2					
11-Apr-96	C	X	X	X	X	X	X	X	X	X	X	X	X	X	2	2	2	2					
02-May-96	D	X	X	X	X	X	X	X	X	X	X	X	X	X	1	1	1	1					
06-Jun-96	E	X	X	X	X	X	X	X	X	X	X	X	X	X	3	3	3	3					
11-Jul-96	F	X	X	X	X	X	X	X	X	X	X	X	X	X	2	2	2	2					
08-Aug-96	G	X	X	X	X	X	X	X	X	X	X	X	X	X	2	2	2	2	X				

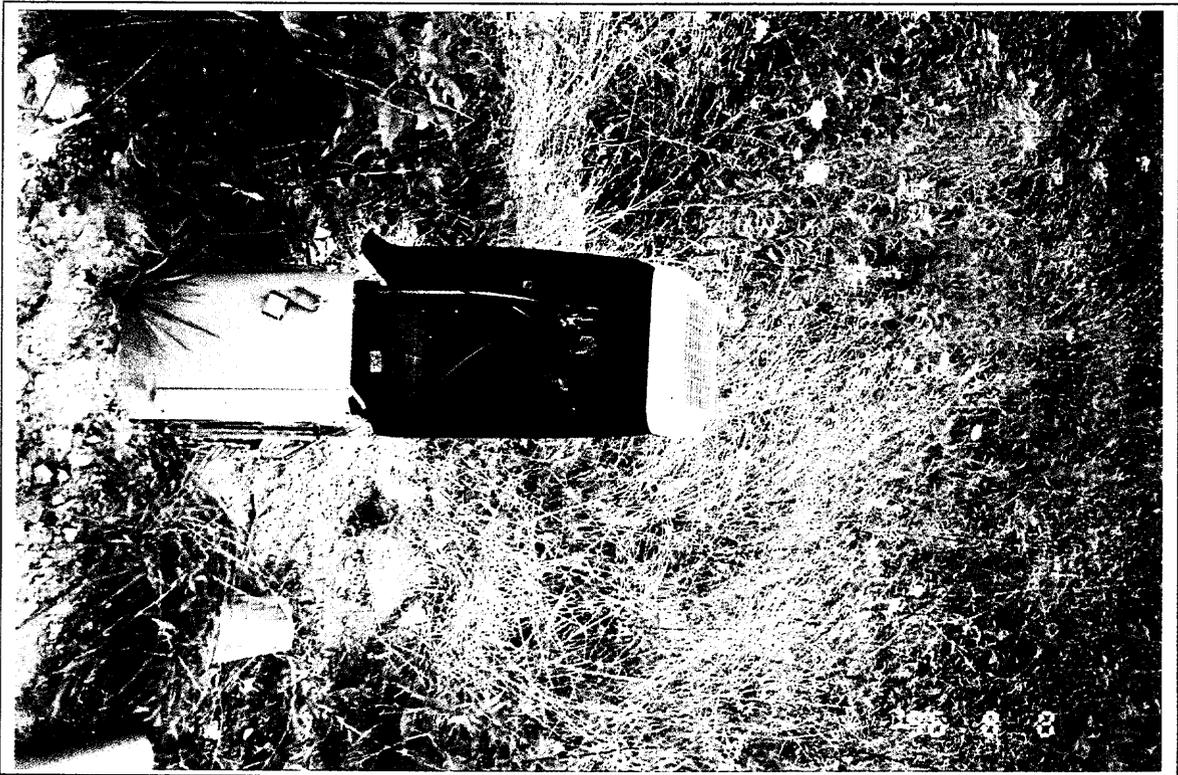
No FWD, unsafe road conditions

11-Jan-96
01-Mar-96
10-Apr-96

Close-out



Instrument Hole, Seasonal Site 421606, August 1996, After Suspension Activities



Equipment Cabinet, Seasonal Site 421606, August 1996, During Suspension Activities