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LTPP Seasonal Monitoring Program

Site Monitoring Suspension Status Draft Final Report for GPS Section 271018 (27A) Little Falls, Minnesota

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FHWA Contract No. DTFH61-96-00013 November 1997

LTPP Seasonal Monitoring Program

Site Monitoring Suspension Status Draft Final Report for GPS Section 271018 (27A) Little Falls, Minnesota

FHWA CONTRACT No. DTFH61-96C-00013

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Turner-Fairbanks Highway Research Center
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FHWA LTPP Technical Representative - Aramis Lopez, HNR-40

16. Abstract

This report contains information on suspension of NCRCO's data collection activities for the Long Term Pavement Performance (LTPP) General Pavement Study (GPS) section 271018 conducted on September 8, 1997. The report presents a description of the following activities: SMP data collection, including evaluation of instrument and equipment performance prior to suspension of data collection, and monitoring resumption schedule. The resumption of monitoring at this site is scheduled for September 1998. All instrumentation at the site will be tested at that time.

17. Keyword	18. Distribution Statement
Long Term Pavement Performance, LTPP, Seasonal Monitoring Program, SMP, Time Domain Reflectometry, TDR, Piezometer, Falling Weight Deflectometer	No restrictions. This document is available to the public from the sponsoring agency.

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LTPP Seasonal Monitoring Program
Site Monitoring Suspension Status
Draft Final Report for
GPS Section 271018 (27A)
Little Falls, Minnesota

1.0 INTRODUCTION

As dictated by seasonal monitoring procedures, the North Central Regional Coordination Office (NCRCO) has suspended data collection for the Long Term Pavement Performance (LTPP) General Pavement Study (GPS) section 271018 for a period of one year, effective September 8, 1997. The test section, which is part of the Seasonal Monitoring Program (SMP) managed by the Federal Highway Administration (FHWA) LTPP Division, is approximately 8 km northwest of Little Falls, Minnesota, on the eastbound driving lanes of US Highway 10. Additional background information on the test section, types of instruments installed, and the in-place pavement structure can be found in the *Site Installation Report for GPS Section 271018 (27A), Little Falls, Minnesota,* dated January 1996 (1).

This report contains information on data collection activities conducted on September 8, 1997. After the installation of instrumentation on August 24, 1993, the test section was visited 28 times for SMP data collection by Braun Intertec (until July 31, 1995). The test section was then visited 9 times for on-site SMP data collection by the Minnesota Department of Transportation (MNDOT).

Beginning October 26, 1996, the site was visited 14 times for SMP data collection by ERES Consultants. Currently, MNDOT is monitoring this site until September 1998, after which ERES Consultants will monitor the site for another year. The dates of these visits and the activities performed can be found in the SMP data collection summary table in appendix A. This section is planned to be monitored every other year for the remainder of the LTPP study or until it is removed from the study.

This report presents a description of the following activities: SMP data collection activities, including evaluation of instrument and equipment performance prior to suspension of monitoring, and the schedule for resumption of monitoring.

2.0 SMP DATA COLLECTION

2.1 SMP Data Collection and Upload

During ERES Consultants' last site visit on September 8, 1997, the full suite of SMP monitoring measurements in the *LTPP Seasonal Monitoring Program Instrument Installation and Data Collection Guidelines* (2) was performed. These include the following:

- FWD and associated measurements.
- Elevation survey.
- Manual distress survey with transverse profile measurements.
- Manual electrical resistivity measurements (two- and four-point).

- Automated mobile data measurements (Time Domain Reflectometry [TDR] and resistivity).
- Water table measurements.

A summary of all the SMP data collected to date can be found in appendix A. The specific type and amount of data collected can be found on the SMP field activity report (data sheet SMP-D10) in appendix B. Six other SMP data sheets pertaining to the data collection activities are also in appendix B. The locations for FWD and elevation measurements can be found in the site information sheet (SIS) in appendix C.

As can be seen in the SMP data collection summary table in appendix A, longitudinal profile measurements were recorded. All the data collected to date have been processed and uploaded into the RIMS.

2.2 Instrument and Equipment Problems

All the sensors in the test section (TDR, rain gauge, and Measurement Research Corporation [MRC]) were evaluated by reviewing the data from the on-site and mobile dataloggers using the SMPCheck 2.5c program (3). A review of the data collected during this visit indicated that the air temperature sensor readings were erratic beginning on August 16, 1997. TDR sensors 2, 4, 5, 6 and 7 have failed permanently. TDR sensors 6 and 8 failed from April 1995, and TDR sensors 2, 4, and 5 failed from July 1996. All other TDRs function as expected at this site.

3.0 INSTRUMENT DE-INSTALLATION ACTIVITIES

3.1 Suspension Preparation and Repairs to Instrumentation Hole

All instrumentation remains installed at this site. The instrument block is in excellent condition, having been overlayed on June 21, 1995. The overlay is expected to influence the sensors in the instrument hole. Temperature profile holes in the pavement have been filled with silicone sealant.

3.2 Unique Site Features

This test section is the first SMP installation in the LTPP North Central Region In the course of monitoring this site, a solar panel was installed on top of the cabinets to prolong the life of the battery. The solar panel was found to be an effective and significant addition to the SMP data collection equipment that ensured efficient storage and collection of the SMP data stored on-site.

4.0 INSTRUMENT REINSTALLATION

All instrumentation remains installed at this site. Resumption of SMP monitoring by ERES Consultants is scheduled for September 1998.

5.0 SUMMARY

This report contains information on instrument de-installation and monitoring data collection activities for the LTPP GPS section 271018, conducted on September 8, 1997. The report presents a description of the SMP data collection activities, including an evaluation of the SMP sensors and equipment. Problems

were noted with the data recorded from August 24, 1997, through September 21, 1997—specifically the air temperature data. TDR sensors 2, 4, 5, 6, & 7 have failed permanently.

Resumption of monitoring at this site by ERES Consultants is scheduled for September 1998.

LIST OF REFERENCES

1. *LTPP Seasonal Monitoring Program Site Installation Report for GPS Section 271018 (27A) Little Falls, Minnesota,* Federal Highway Administration, LTPP Division, HNR-40, Turner-Fairbanks Highway Research Center, McLean, Virginia. January 1996.
2. *LTPP Seasonal Monitoring Program: Instrumentation Installation and Data Collection Guidelines.* FHWA-RD-94-110, Federal Highway Administration, LTPP Division, HNR-40, Turner-Fairbanks Highway Research Center, McLean, Virginia. April 1994.
3. SMPCheck, computer software version 2.5c, prepared for the Federal Highway Administration, Pavement Performance Division, HNR-30, McLean, Virginia. July 1997.
4. Lopez, Aramis, Jr. *Long Term Pavement Performance Directive for the Seasonal Monitoring Program: Directive Number SM-8, Suspension of SMP Site Monitoring Activities.* Federal Highway Administration, LTPP Division, HNR-40, Turner-Fairbanks Highway Research Center, McLean, Virginia. March 1995.

Appendix A - SMP Data Collection Summary Table

27SA - 271018, US-10 EB LANES, 5 MILES NORTH WEST OF LITTLE FALLS, MN (MP 140.1)

		ONSITE Data			MOBILE Data			Manual Data						FWD Data				Distress		Profile		
Date dd/mmm/yy		Pvmt. Temp.	Air Temp.	Rain	TDR	Frost Volts	Backup TDR	Backup TDR	Frost 2-Pt.	Frost 4-Pt.	Water Table	Pvmt. Elev.	Joint Open.	Joint Fault	Man. Temp.	OWP	ML	PE	M	P	P	D	Comments
10-Aug-91																					X		PROFILE DATA NOT RECEIVED BY RCO.
2-Jun-93																				X			
26-Jul-93																			X				
24-Aug-93	93A																						
25-Aug-93	93B	T	T	T	T	T			P	P	P	P			X	1	1						INSTALLATION, MANUAL TDR DATA.
23-Sep-93	93C	T	T	T	T	T					P				X	3	3						
20-Oct-93	93D	T	T	T	T	T					P				X	3	3						HAIRLINE CRACKS FORMING IN BLOCK.
19-Nov-93	93E	T	T	T	T	T			P	P	P	P			X	1	1						
21-Nov-93															X	2	2						TWO ONSITE FILES, ADDED RELAY TO PANEL.
7-Dec-93	93F	T	T	T	T	T					P	P									X		
11-Jan-94	94A	T	T	T	T	T					P				X	1	1						
8-Feb-94	94B	T	T	T	T	T			P	P	P				X	3	3						PROBLEM WITH CABLE READER, TWO OR THREE FILES BAD.
17-Feb-94																					X		SNOWPACK ON ROAD, NO FWD TESTING.
8-Mar-94	94C	T	T	T	T	T			P	P	P	P			X	2	2		X				
22-Mar-94	94D	T	T	T	T	T					P	P			X	3	3						MANUAL READINGS ON TDR #8, FAILED PROBE OR PROBE IN VOID?
4-Apr-94	94E	T	T	T	T	T			P	P	P				X	2	2						MANY REPEAT FWD TESTS.
20-Apr-94																					X		
20-Apr-94																					X		PROFILE DATA NOT RECEIVED BY RCO.
25-Apr-94	94F	T	T	T	T	T			P	P	P				X	1	1						
9-May-94	94G	T	T	T	T	T			P	P	P	P			X	4	4						
13-Jun-94	94H	T	T	T	T	T			P	P	P				X	4	4						
11-Jul-94	94I	T	T	T	T	T			P	P	P				X	4	4						
27-Jul-94																					X		PROFILE DATA NOT RECIEVED BY RCO.
27-Jul-94																					X		
8-Aug-94	94J	T	T	T	T	T			P	P	P				X	3	3		X				
9-Aug-94																							BLADE PATCH PLACED ON SECTION WITHOUT NOTIFICATION
12-Sep-94	94K	T	T	T	T	T			P	P	P				X	1	1						
29-Sep-94																					X		
10-Oct-94	94L	T	T	T	T	T			P	P	P				X	3	3						
7-Nov-94	94M	T	T	T	T	T			P	P	P	P			X	3	3						
5-Dec-94	94N	T	T	T	T	T			P	P	P				X	3	3						
9-Jan-95	95A	T	T	T	T	T			P	P	P				X	4	4						WEATHER REDUCE AMOUNT OF TESTING.
19-Jan-95																					X		
6-Feb-95	95B				T	T			P	P	P				X	2	2						ONSITE "STUCK", NO DATA SINCE LAST VISIT.
7-Mar-95	95C	T	T	T	T	T			P	P	P												
20-Mar-95	95D	T	T	T	T	T			P	P	P	P			X	2	2		X				
3-Apr-95	95E	T	T	T	T	T			P	P	P				X	2	2						
17-Apr-95	95F	T	T	T	T	T			P	P	P	P			X	3	3						
8-May-95	95G	T	T	T	T	T			P	P	P				X	3	3						
13-Jun-95	95H	T	T	T	T	T			P	P	P	P			X	2	2		X				BAD CABLE FROM CABLE READER TO MOBILE UNIT REPLACED

Notes

T Denotes data collected and processed by Braun Intertec Corp

P Denotes data collected and processed by ERES Consultants, Inc

X Denotes data collected by Braun Intertec Corp.

X Denotes data collected by ERES Consultants, Inc.

Denotes data collected by Braun Intertec Corp. and processed by ERES Consultants, Inc.

27SA - 271018, US-10 EB LANES, 5 MILES NORTH WEST OF LITTLE FALLS, MN (MP 140.1)

		ONSITE Data			MOBILE Data				Manual Data						FWD Data				Distress		Profile		
Date dd/mmm/yy		Pvmt. Temp.	Air Temp.	Rain	TDR	Frost Volts	Backup TDR	Backup TDR	Frost 2-Pt.	Frost 4-Pt.	Water Table	Pvmt. Elev.	Joint Open.	Joint Fault	Man. Temp.	OWP	ML	PE	M	P	P	D	Comments
21-Jun-95																							
31-Jul-95	95I	P	P	P	P	P					P	P			X	1	1		X				SECTION MILLED TODAY AND OVERLAYED LATER.
28-Oct-95	95J	M	M	M																			PK NAILS PLACED ON NEW OVERLAY FOR 12FT LANE VERSUS 11FT.
12-Nov-95	95K	M	M	M																			
26-Nov-95	95L	M	M	M																			
12-Jan-96	96A	M	M	M																			
17-Feb-96	96B	M	M	M																			
13-May-96	96C	M	M	M																			
29-Jun-96	96D	M	M	M																			
3-Jul-96	96E	M	M	M																			
17-Aug-96	96F	M	M	M																			
7-Oct-96	96G	P	P	P	P	P			P	P	P	P			X	4	4						
4-Nov-96	96H	P	P	P	P	P			P	P	P	P			X	4	4						
2-Dec-96	96I	P	P	P	P	P			P	P	P	P				0	0						
6-Jan-97	97A	P	P	P																	X		
19-Jan-97																							
4-Feb-97	97B	P	P	P	P	P			P	P		P				1	1						NO TDR 1-4; MPX FAILED
17-Mar-97	97C					P			P	P					X	4	4						onsite datalogger unresponsive, couldn't find piez
7-Apr-97	97D				P	P			P	P	P	P			X	2	2						Onsite CR10 inactive; reprogrammed.
21-Apr-97	97E	P	P	P	P	P			P	P	P												No traffic control.
21-Apr-97																					X		
5-May-97	97F	P	P	P	P	P			P	P	P				X	3	3						
27-May-97	97G	P	P	P	P	P			P	P	P				X	4	4						
6-Jun-97	97H	P	P	P	P	P			P	P	P	P			X	4	4						
8-Jul-97	97I	P	P	P	P	P			P	P	P	P			X	3	3						
12 Aut 97	97J	P	P	P	P	P			P	P	P				X	4	4						
8-Sep-97	97K	P	P	P	P	P			P	P	P	P			X	4	4		X				
10-Sep-97																					X		

Notes

P Denotes data collected and processed by Braun Intertec Corp

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X Denotes data collected by Braun Intertec Corp.

X Denotes data collected by ERES Consultants, Inc.

Denotes data collected by Braun Intertec Corp. and processed by ERES Consultants, Inc.

M Denotes data collected by MN-DOT.

Appendix B - SMP Data Sheets

- SMP-D10: SMP Field Activity Report
- SMP-D03: Contact Resistance Measurements
- SMP-D04: Four-Point Resistivity Measurements
- SMP-D05: Ground Water Table Measurement
- SMP-D09: Elevation Measurements - AC
- SMP-M1: Distress Survey of Instrument Area

LTPP Seasonal Monitoring Program Data Sheet SMP-D10 SMP Field Activity Report	Agency Code [2 7] LTPP Section ID [1 0 1 8]

Onsite Datalogger and Instrumentation		
File Name - *.ONS	27SA97KI	Comments:
Battery Replace	Yes - (No)	Voltages 12.1
Repairs/Calib.		
Other: _____		

Mobile Datalogger		
File Name - *.MOB		Comments:
TDR/Resistance Voltages	Sets (0 2)	
Other: _____		

Manual Data Collection		
Piezometer	(Yes) - No	Comments:
Resistance 2 pt.	Sets (0 1)	
Resistivity 4 pt.	Sets (0 1)	
Elevations	Sets (0 1)	
Distress Survey	(Yes) - No	
Long. Dipstick Profile	Yes - (No)	
Photos or Video	(Yes) - No	
Other: _____		

FWD and Associated Data		
FWD Testing	Sets (0 4)	Operator: DSP
JCP - Snap Rings	Sets (—)	AC
JCP - Faulting	Sets (—)	AC
Other: _____		

IF REQUIRED, ATTACH SKETCHES TO THIS DATA SHEET

Comments: _____

_____

_____

Prepared by: GFE Employer: ERES/NCR

Date (dd/mmm/yy): 0 8 / S E P / 9 7 Daylight Savings Time (Y or N): Y

LTPP Seasonal Monitoring Program Data Sheet SMP-D03 Contact Resistance Measurements	Agency Code [27] LTPP Section ID [1018]

Start Time (military): 1040

Test Position	Switch Settings		Voltage (ACV)		Current (ACA)		Comments
	I1 V1	I2 V2	Range Setting	Reading	Range Setting	Reading	
1	1	2	in.1	281.4	mic	5.3	
2	2	3		253.0		6.2	
3	3	4		271.1		4.7	
4	4	5		274.2		3.5	
5	5	6		281.2		2.8	
6	6	7		287.5		2.6	
7	7	8		280.7		3.1	
8	8	9		3.1		1.4	
9	9	10		259.8		4.8	
10	10	11		238.3		6.2	
11	11	12		242.5		5.1	
12	12	13		236.4		6.9	
13	13	14		179.7		11.8	
14	14	15		134.1		16.3	
15	15	16		126.8		15.0	
16	16	17		148.7		14.6	
17	17	18		109.9		18.8	
18	18	19		115.4		11.2	
19	19	20		200.7		7.0	
20	20	21		207.5		8.5	
21	21	22		170.4		10.4	
22	22	23		159.9		12.1	
23	23	24		147.5		10.9	
24	24	25		166.8		11.3	
25	25	26		175.1		11.8	
26	26	27		156.0		14.1	
27	27	28		140.8		16.7	
28	28	29		131.5		15.7	
29	29	30		138.7		18.3	
30	30	31		116.2		19.3	
31	31	32		110.4		19.3	
32	32	33		110.2		17.6	
33	33	34		104.6		18.4	
34	34	35		101.8		18.6	
35	35	36		89.2		18.8	
36	36	37		0.2		126.6	R1 =
37	37	38		11.5		112.2	R2 =
38	38	39		67.7		67.4	R3 =
39	39	00		228.3		9.2	R4 =

Note: R = V/I, in ohms; measured resistances should be compared with known values.

Comments: _____

Prepared by: GFE Employer: ERES/NCR

Date (dd/mmm/yy): 08/SEP/97

LTPP Seasonal Monitoring Program Data Sheet SMP-D04 Four-Point Resistivity Measurements	Agency Code [27] LTPP Section ID [1018]

Start Time (military): 1110

Test Position	Switch Settings				Voltage (ACV)		Current (ACA)		Comments
	I1	V1	V2	I2	Range Setting	Reading (Volts)	Range Setting	Reading (Amps)	
1	1	2	3	4	mil	~~20.9~~ 13.4	mic	~~2.1~~ 1.5	
2	2	3	4	5		12.5		1.3	
3	3	4	5	6		10.7		0.9	
4	4	5	6	7		9.4		1.0	
5	5	6	7	8		9.4		1.1	
6	6	7	8	9		7.2		1.5	
7	7	8	9	10		7.9		2.0	
8	8	9	10	11		0.2		1.9	
9	9	10	11	12		6.7		2.2	
10	10	11	12	13		9.3		3.6	
11	11	12	13	14		6.6		5.0	
12	12	13	14	15		5.6		5.3	
13	13	14	15	16		6.3		5.0	
14	14	15	16	17		7.7		7.0	
15	15	16	17	18		8.1		7.1	
16	16	17	18	19		6.0		3.7	
17	17	18	19	20		8.2		4.0	
18	18	19	20	21		8.3		4.5	
19	19	20	21	22		6.2		3.7	
20	20	21	22	23		7.0		3.6	
21	21	22	23	24		6.9		3.8	
22	22	23	24	25		8.1		4.0	
23	23	24	25	26		6.8		4.2	
24	24	25	26	27		7.9		5.2	
25	25	26	27	28		6.8		5.6	
26	26	27	28	29		7.1		5.6	
27	27	28	29	30		8.5		6.7	
28	28	29	30	31		7.7		7.0	
29	29	30	31	32		8.9		6.6	
30	30	31	32	33		9.0		6.7	
31	31	32	33	34		9.6		6.8	
32	32	33	34	35		8.1		7.0	
33	33	34	35	36		8.5		7.5	
36	36	36	37	37		0.2		126.9	R1 =
37	37	37	38	38		11.5		112.5	R2 =
38	38	38	39	39		67.8		67.5	R3 =
39	39	39	00	00		229.1		9.2	R4 =

Note: R = V/I, in ohms; measured resistances should be compared with known values.

Comments: _____

Prepared by: GFE Employer: ERES/NCR

Date (dd/mmm/yy): 08/SEP/97

LTPP Seasonal Monitoring Program Data Sheet SMP-D05 Ground Water Table Measurement	Agency Code [27] LTPP Section ID [1018]

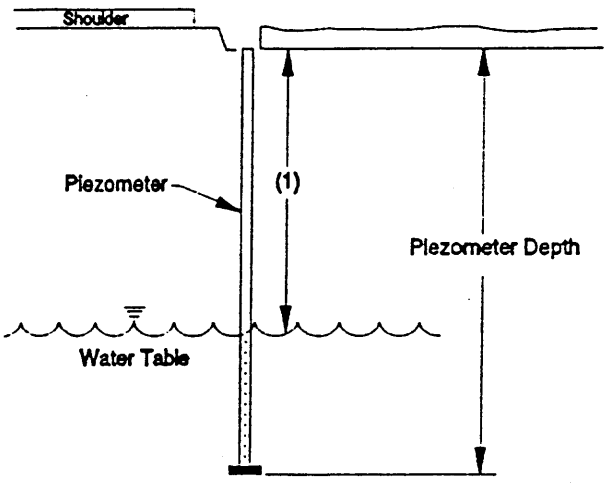
Piezometer Depth (m): 3.870

Measurement Number	Time (military)	Depth to Water[1,2] (m)	Comments
1	1200	1.90	
2	____	__.__	

[1] Distance from top of piezometer pipe to top of ground water table; to an accuracy of ±10 mm (0.4 in)

[2] If piezometer pipe is dry or frozen, enter "time" when observation was made, leave "depth to water" field blank, and enter "pipe is dry" or "pipe is frozen" under comments column.

3.87
1.97
1.90



Comments: _____

_____

_____

Prepared by: GFE Employer: ERES/NCR

Date (dd/mmm/yy): 08/SEP/97

LTPP Seasonal Monitoring Program Data Sheet SMP-D08 Elevation Measurements - AC	Agency Code [27] LTPP Section ID [1018]

Type of Instrument: NA 2000

Start Time (military): 1240

BM	Station	BS	HI	IFS	FS	ELEV	CLOSE
Piez.	4+02	1.3871		1.3871			1.3871
Other	5+00	1.7721		[illegible]			1.7720

Station	Offset (PE): 0.16 m	Offset (OWP): 0.76 m	Offset (ML): 1.83 m	Offset (IWP): 2.90 m	Offset (ILE): 3.51 m	Comments
91.4 3+00	.9640	.9562	.9430	.9257	.9144	
99.1 3+25	.9846	.9756	.9612	.9443	.9339	
106.7 3+50	1.0002	.9911	.9766	.9610	.9499	
114.3 3+75	1.0127	1.0025	.9885	.9710	.9579	
121.9 4+00	1.0191	1.0096	.9949	.9779	.9659	
129.5 4+25	1.0274	1.0161	1.0009	.9829	.9699	
137.2 4+50	1.0387	1.0283	1.0135	.9965	.9831	
144.8 4+75	1.0537	1.0441	1.0301	1.0143	1.0001	
152.4 5+00	1.0703	1.0598	1.0455	1.0289	1.0162	
155.4 5+10	1.0793	1.0696	1.0518	1.0344	1.0203	
158.5 5+20	1.0838	1.0733	1.0575	1.0394	1.0255	
160.0 5+25	1.0879	1.0778	1.0611	1.0425	1.0285	

Comments: _____

Prepared by: GFE Employer: ERES/NCR

Date (dd/mmm/yy): 08/SEP/97

2 7 S A 9 7 K

LTPP Seasonal Monitoring Program Data Sheet SMP-M1 (Page Distress Survey of Instrumentation Area	Agency Code [27] Test Section Number [1018]

Rate the condition of the instrumentation area (check one):

X Good (little or no distress; repairs are not required in the immediate future)

____ Poor (significant distress, repairs required now or in the immediate future)

List any repairs (type and extent) done since instrumentation installation and/or last survey of instrumentation area: _____

Additional Comments: _____

Prepared by: GFE Employer: ERES/NCR

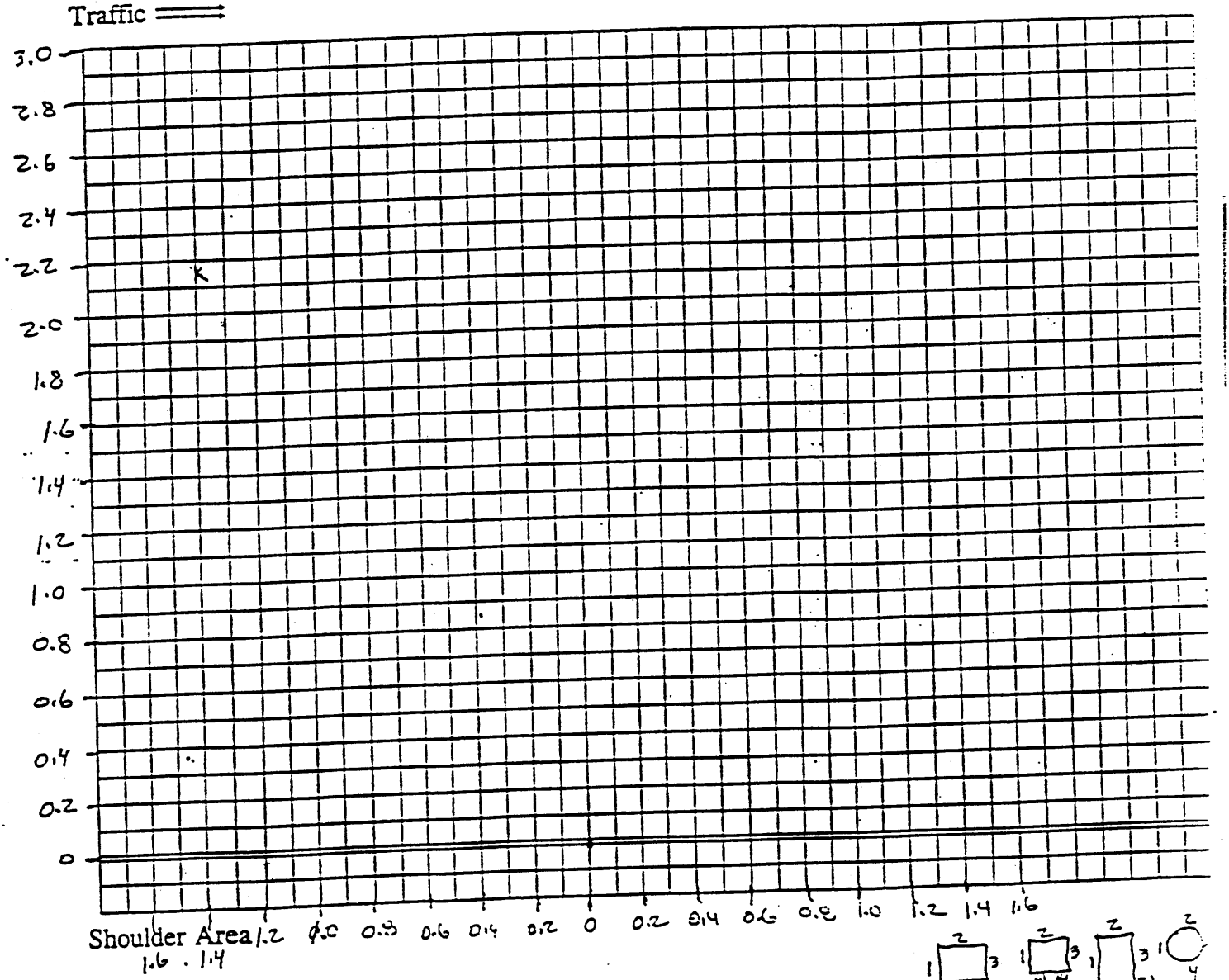
Date: 7-Sep-97

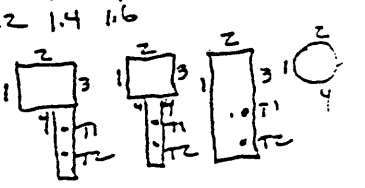
2 7 S A 9 7 K

LTPP Seasonal Monitoring Program Data Sheet SMP-M1 (Page Distress Survey of Instrumentation Area	Agency Code [27] SHRP Section ID [C01Y] Survey Date [__/15EP/97]

Use grid below to sketch distresses within 1.5 m (5 ft) of instrumentation block/hole and trench. Use LTPP Distress Identification Manual to extent possible. (Note: each square in grid equals 0.1 m by 0.1 m area)

Traffic ⟹





Use table below to record settlement of pavement in instrumentation area.

Measurement Device: DIPSTICK / STRAIGHT EDGE

Location	Settlement, mm			
	Location 1	Location 2	Location 3	Location 4
Instrumentation block/hole	__.__	__.__	__.__	__.__
Trench	__.__	__.__	n/a	n/a

Appendix C- Site Information Sheet (SIS)

271018 - 27SA

LOCATION - US-10 EB Lanes, 5 Miles Northwest of Little Falls, MN (MP 140.1)
CONTACTS -Gary Loudan (320) 632-6116, Lee Purdham (218) 828-2472
TEMP HOLES - Sta 5+03, Depths are about 1.5", 3.2", and 5.5" (AC thickness = 6.5")

DISTRESS COMMENTS:

Sta	F1 - Tests at 25 foot intervals from Sta 3+00 to Sta 5+00, and at Sta 5+20.
300	L-TRANS.CR. BETWEEN D5 & D6
350	L-TRANS.CR 1' BEHIND LP
520	LP ADJACENT TO INSTRUMENTATION HOLE

Sta	F3 - Tests at 25 foot intervals from Sta 3+00 to Sta 5+00, and at Sta 5+10, and 5+25
300	L-TRANS.CR. BETWEEN D5 & D6
350	L-TRANS.CR 1' BEHIND LP

PIEZOMETER - Sta 4+02, 0.5 feet off paved shoulder, Depth = 4.275M (07-OCT-96)

FROST TUBE - Removed 22-Jun-1995

ELEVATIONS - Mn/DOT BM at Sta 5+00, 10? feet from edge of paved shoulder.

Offsets:		PE	OWP	ML	IWP	ILE	
(M)	-0.16	0.16	0.76	1.83	2.90	3.51	3.81
(ft)	-0.5	0.5	2.5	6.0	9.5	11.5	12.5
	(nail)	--	--	--	--	--	(nail)

Sta: Transverse profiles every 25 feet from Sta 3+00 to Sta 5+00, and at Sta 5+10, 5+20, and 5+25

COMMENTS
-- Lane width changed from 11.5 feet to 12.0 feet after overlay in 1995.
-- Check distress comments for sta 375.