LTPP Seasonal Monitoring Program

Site Installation Report for GPS Section 833802 (83B) Glenlea, Manitoba

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Report No. FHWA- February 1996

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16. Abstract
This report contains instrumentation installation details and data collection summaries for GPS test section 833802, which is a core section in the LTPP Seasonal Monitoring Program. This jointed plain concrete (JPC) pavement section on Provincial Highway 75 by Glenlea, Manitoba (24 kilometers south of Winnipeg), was instrumented October 14, 1993. Instrumentation included time domain reflectometry (TDR) probes to estimate moisture content in unbound pavement layers, thermistor probes to measure pavement structure thermal gradients and air temperature, electrical resistivity probe to predict frost/thaw conditions, piezometer to measure water table depth below the pavement surface, snap rings to measure joint opening, and tipping-bucket rain gauge to measure precipitation.

Monitoring data was collected the day after instrument installation and roughly on a monthly basis from October 1993 to June 1995. In addition to temperature and precipitation data that were collected continuously by a datalogger at the site, monitoring data each month usually included Falling Weight Deflectometer data, joint faulting data, joint opening data, TDR probe readings, frost/thaw readings, and piezometer readings. On a less regular basis, longitudinal profile data, pavement surface elevation data, and manual distress data were collected as required by FHWA guidelines. A summary of data collected is included in the report.

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I. Introduction

This report contains information specific to instrument installation and monitoring data collection for the Long Term Pavement Performance (LTPP) General Pavement Study (GPS) section 833802, which is part of the core Seasonal Monitoring Program (SMP) under the Federal Highway Administration (FHWA) LTPP Division. This pavement section was instrumented on October 14, 1993, and had regular data collection through June 21, 1995. The section will be monitored every other year under the LTPP Study for a ten-year period or until it is removed from the study.

A. Test Site Location

GPS section 833802 is located on the northbound driving lane of Provincial Highway 75 in the southeast corner of Manitoba near Glenlea, which is about 24 kilometers south of Winnipeg.

B. General Test Section Information

This four-lane divided highway has a 250-mm thick jointed plain concrete (JPC) surface placed in 1985. The rest of the pavement structure consists of a 125-mm thick crushed gravel base, 150-mm thick lime-treated soil, and a fine-grain subgrade. Additional background information about the section is located in Appendix A-1. This information includes, but is not limited to, the following items:

- SMP location map;
- Detailed section location map;
- SHRP Inventory Data Sheet - traffic, design factors, and layer information;
- SHRP Section Field Verification Form;
- IMS L05A and L05B tables - layer thickness and material type; and
- LTPP Form S04 - base and subgrade moisture data.

Relevant pre-installation monitoring data for the section located in Appendix A-2 includes the following:

- Pre-installation pavement distress data;
- Pre-installation FWD data (includes tests outside the section limits); and
- FWDCHECK program uniformity analysis results.

C. SMP Test Section Information

The geographic location and existing pavement structure place this section in Cell 19 of the SMP experiment, which is defined by the following parameters:

- JPC pavement;
- Fine-grain subgrade;
- Freezing environment; and
- Dry environment.

This was the seventh and final SMP installation in the LTPP North Central Region in 1993, and highlights of the installation are summarized in Section IV of this report. The people involved with the installation are listed on "Data Sheet SMP-I01: List of Installed Instrumentation," which is included in Appendix C-1 along with other SMP installation forms.

Data for this 1993 installation were transferred to forms from the LTPP Seasonal Monitoring Program: Instrumentation and Data Collection Guidelines, April 1994. The 1994 forms were used to keep all installation reports uniform and to facilitate data entry into the IMS database. Data transfer included conversion from English to metric units with some rounding error. On some forms, data are not available regarding procedure modifications adopted in 1994. On these forms the cells are usually blank, and a comment is included on the form to explain the missing data.

II. Instrumentation Installation

A. Pre-Installation Activities

The Manitoba Highways and Transportation, sometimes referred to as "the agency" in this report, currently has a long-term monitoring plan where Benkelman Beam deflection data is collected yearly on the entire highway network from April through May. The deflection data is used for pavement designs and for setting spring load restrictions on secondary highways. In this respect, the agency was very willing to participate in the SMP regarding GPS sections 831801 and 833802.

Mr. Ray Van Cauwenberghe and Mr. Fred Young of Manitoba Highways and Transportation were initially contacted regarding potential sections identified for the seasonal monitoring pilot activities started in 1991 under the Strategic Highway Research Program (SHRP). GPS section 831801 was included in the pilot study, but GPS 833802 was not. Field notes and data analysis results from the SHRP SMP pilot are included in "LTPP Seasonal Monitoring Program Site Installation Report for GPS Section 831801 (83A), Oak Lake, Manitoba."

In 1993, Mr. Dennis Watson of Manitoba Highways and Transportation was contacted to confirm agency support for GPS section 833802 as a core section in experimental Cell 19 of the SMP study administered by the FHWA LTPP Division. The agency agreed to support the section and to defer any pavement rehabilitation at least the five years required to get three years of monitoring data that is collected every other year.

On August 27, 1993, a pre-installation meeting was held with Manitoba Highways and Transportation staff in Winnipeg, Manitoba. Staff involved with instrumentation installation and monitoring activities for both GPS section 831801 and 833802 attended the meeting. A presentation was given on the SMP and arrangements were made for the agency to supply equipment and materials required for the installation. Installation dates were set for agency staff to verify availability of equipment and materials, because the Regional Coordination Office (RCO) was looking at a very tight schedule to complete seven SMP installations before winter weather conditions would prevent any additional installations. The agenda, list of participants, and notes from the meeting are included in Appendix B-1.

After the pre-installation meeting, Mr. Robert Van Sambeek and Mr. Watson stopped at GPS section 833802 to identify any installation concerns with the site and to select which end of the section to monitor. No visit was made to GPS section 831801, because of the distance to the site. Field notes from the site visit for section 833802 are included in Appendix B-1.

At the RCO, pre-installation activities included performing instrumentation checks/calibrations, and incorporating improvements to the installation process based on field notes from previous installations. Improvements to the installation process are listed in Section IV of this report, and results from instrumentation checks/calibration are included in Appendix B-2. The checks were performed according to 1993 guidelines, but the results are reported using 1994 forms, as discussed earlier. The forms include the following:

- Data Sheet SMP-C01: TDR Probe Check;
- Data Sheet SMP-C02: Thermistor and Air Temperature Probe Check;

- Data Sheet SMP-C03: Electrical Resistivity Probe Check;
- Data Sheet SMP-C04: Function Generator, Multi-meter, and Switch Box Checks; and
- Data Sheet SMP-C05: Tipping-Bucket Rain Gauge Calibration.

For the TDR probes, checks/calibrations were done with the cable reader setting for the noise filter at 8.0, which is different than listed in the guidelines. Also, the check in water for TDR probe 4 has a calculated dielectric less than the range specified in the guidelines. However, this was not realized until after the probe had been installed. It is beyond the scope of this installation report to determine what caused the calibration in water to fail or whether data from the probe is reasonable.

With respect to instrument checks on the resistivity probe, Data Sheet SMP-C03 requires "distance from top of probe" for each electrode. However, procedures in 1993 recorded "spacing between electrodes" on two separate lines about 180 degrees apart on the probe. As a consequence, cumulative errors from adding the 35 "spacings" had to be accounted for to transfer the data to the 1994 form. Adjustments were performed as described below to estimate "distance from top of probe" within ± 5 mm:

1. Obtained average values for probes checked in 1994 and 1995 for the following:
   - Electrode No. 1 assigned 29 mm (± 2 mm) if not measured;
   - Electrode No. 17 in the range 840 mm $\pm$ 3 mm as a check; and
   - Electrode No. 36 assigned at 1,805 mm from the top of the probe.
   - Average electrode spacing is (1805 - 29)/35, which is 50.74 mm.

2. Added the 35 "spacings" measured for the first line, divided the value by 35 to get the average, subtracted 50.74 mm to get adjustment value, and subtracted adjustment value from each "spacing."

3. Repeated Step 2 for the second line.

4. Added two adjusted "spacings" and divided by two to get "adjusted average spacing."

5. Recorded Electrode No. 1 at 29 mm and cumulated "adjusted average spacings" to get "distance from top of probe" for the remaining 35 electrodes.

6. Checked "distance from top of probe" for Electrode No. 17 in the range 840 mm $\pm$ 3 mm and Electrode No. 36 in the range 1,805 mm $\pm$ 2 mm.

For the air temperature probe, no readout device was available while the thermistor probe was checked. Therefore, the only check possible was to compare thermistor and air temperature probe readings obtained overnight with both probes connected to the datalogger. The air temperature probe was within ± 1.0 °C of the average reading on the thermistor probe.

For the resistivity probe, loose electrode wraps were tightened by twisting the lead with a needle-nose pliers, and lead wires sticking out of the potting material for the probe were covered with silicon sealant for protection during installation. Excess potting material was scrapped off the electrodes for better contact with the soil.

Pre-installation activities also required selection of the instrumentation location. From field observations during the August 27, 1993 site visit and FWDCHECK program analysis for FWD testing done June 9, 1993, the five panels from Station 4+42 to Station 5+21 were selected for monitoring, and instrumentation would be placed at Station 5+11, based on the following items:

- Joint at Station 5+00 allowed instrumentation to be placed in panel adjacent to the section limits without having to skip a panel;
- FWDCHECK analysis results were more uniform for both Westergaard based Rigid Thickness and Volumetric Modulus of Subgrade Reaction;
- The datalogger cabinet could be located in line with a 90-mm by 90-mm SHRP sign post marking the section limit at Station 5+00 to help protect the cabinet from vehicles driving in the ditch; and
- This end of the section avoided concern with repairs required for panels just outside Station 0+00 limits for the section.

B. Installation Activities

The SMP instrumentation installation itinerary for Canada included travel, installation, and data collection time for three sites over a two-week period. Two travel days were allowed to make the 1600 kilometer trip from the RCO to the installation in Saskatchewan, which included stops at GPS sections 833802 and 831801 in Manitoba to confirm installation details at the sites and extra time for crossing the international border between the United States and Canada.

Border crossing was delayed one day because of problems encountered for instrumentation that was not returning to the RCO. Eventually, required forms for equipment registration and exemptions from import taxes and duties were completed. The certificate of registration that will allow export of instrumentation used at GPS section 833802 after termination of monitoring is included in Appendix C-1.

Instrumentation installation was completed at GPS section 833802 on October 14, 1993. Some final installation activities continued on the following day. The following installation forms are included in Appendix C-1 along with field notes and photographs of the installation:

- Data Sheet SMP-I01: List of Installed Instrumentation;
- Data Sheet SMP-I02: Instrumentation Locations;
- Data Sheet SMP-I03: Log of Piezometer Hole;
- Data Sheet SMP-I04: Log of Instrumentation Hole;
- Data Sheet SMP-I05: Field Gravimetric Moisture Contents;
- Data Sheet SMP-I05(A): Lab Gravimetric Moisture Contents;
- Data Sheet SMP-I05(B): Gravimetric Moisture Comparison;
- Data Sheet SMP-I06: TDR Moisture Content; and
- Data Sheet SMP-I07: Representative Dry Density.

Piezometer installation was done according to protocol. A 0.6-m long access tube was set in concrete just below the existing shoulder material to protect the top of the piezometer and provide easy access for measurements. A 3.0-m long grease sleeve was used on this piezometer to isolate the piezometer from frost heave. The grease sleeve extends about 0.2 m up into the access tube and the space between the two is filled with sand. Additional field notes on piezometer installation are included in Appendix C-1.

A 460-mm square for the instrumentation hole and a 100-mm wide trench for the conduit were marked on the pavement surface at Station 5+10 using the edge of the concrete as a transverse reference. FWD testing was done prior to sawing the block and trench, but the testing only included midpanel tests and the test required over the instrumentation hole.

The largest pavement saw available to the agency was used to cut the block and conduit trench, but the saw did not reach through the bottom 6.0 mm of the pavement. RCO and agency staff decided to jack-hammer the block into pieces for removal, and agency staff would locate patching material to repair the pavement.

After the pavement at the instrumentation hole was removed, the "Derric Digger," used by the agency to install sign posts, was moved into position over the hole and material was put into buckets as it was removed in 0.15-m lifts.

TDR probes were placed according to protocol on this site, except that TDR probe 2 was shifted 25 mm to place it mid-depth in the lime-treated soil. It was very time consuming to process subgrade soils to place around the instrumentation, because all the soil had to be manually broken or cut into lumps less than 25-mm diameter. Also, base material was placed and compacted to the original elevation, which required salvaging about the last 30-mm depth of material used in the instrumentation hole from the conduit trench on the shoulder.

For installation reports from the LTPP North Central RCO, "Data Sheet SMP-I05(A): Lab Gravimetric Moisture Contents," is used to report agency laboratory moisture results. Also, "Data Sheet SMP-I05(B): Gravimetric Moisture Comparison" was created to summarize moisture data obtained from field moisture tests, laboratory moisture tests, and interpretation of TDR probe data. These forms, along with a plot of the moisture results, are included in Appendix C-1, and the following assumptions and conclusions were made regarding the moisture data:

- LTPP Directive Number: SM-13 "TDR Trace Interpretation Method for Calibration and Function Checks" dated August 17, 1995 was used to interpret the apparent length of each TDR trace obtained during installation for estimating moisture results. This method was specified for "calibration and function checks," but no other method had been distributed by FHWA LTPP staff. The interpreted apparent lengths are reported on "Data Sheet SMP-I06: TDR Moisture Content" in Appendix C-1.

- Equations on pages II-2 and II-5 of the LTPP Seasonal Monitoring Program: Instrumentation Installation and Data Collection Guidelines, April 1994 were used to convert apparent lengths to gravimetric moisture estimates for the base and subgrade materials, and the results are included on "Data Sheet SMP-I05(B): Gravimetric Moisture Comparison," located in Appendix C-1. A plot comparing the TDR probe moisture data to the field and laboratory data is also included in Appendix C-1.

- The field and laboratory moisture results were consistent with an average difference of 1.9 percentage points compared to the average moisture of about 30 percent for all ten of the samples.

- The moisture estimate from TDR probe 1 for the crushed gravel base is 2.3 percentage points lower than the average obtained between the field and laboratory data, and the moisture estimate from TDR probe 2 in the lime-treated soil is 3.4 percentage points higher than the average from field and laboratory data.

- Moisture estimates from TDR probes 3 through 10 in the subgrade soil are all greater than 30 percent, and they are more consistent with the field and laboratory results than results obtained for the crushed gravel base and lime-treated soil. For these TDR probes, moisture estimates average 4.1 percentage points higher than the field and laboratory results.

- Answers to the following questions could help explain the differences seen in the moisture data, but they are beyond the scope of this report:

    1. Are the same equations used appropriate for the three materials on this site including fine-grain subgrade, lime-treated soil, and crushed-gravel base?
    2. Do materials used for soil stabilization affect TDR probe traces?
    3. How much influence does compaction have on the results?

"Data Sheet SMP-I07: Representative Dry Density," was not used in 1993, but it is included in Appendix C-1 to keep the report complete and uniform with other installation reports.

Several items were changed regarding installation of the datalogger cabinet and weather pole as follows:

- RCO staff were not able to get the 9.1-m offset from the lane edge specified on page II-23 and Figure II-12 of the LTPP Seasonal Monitoring Program: Instrumentation Installation and Data Collection Guidelines, April 1994 because the TDR cables provided were too short. The cabinet at this site is offset about 7.6 m and the weather pole is offset about 7.9 m. This places the obstructions inside the normal 9.15-m safety zone for highways. However, FHWA LTPP Division staff approved the two obstructions as break-away objects (page II-32 of manual) for placement inside the safety zone.

- The bottom of the front panel on the datalogger cabinet was notched about 0.1 m so the conduit buried about 0.3 m below the shoulder was easier to get into the cabinet, and it also slightly increased the distance the cabinet could be placed from the roadway.

- The conduit for the air temperature probe and tipping-bucket rain gauge signal wires was cut into the back of the cabinet above ground instead of running the conduit underground as shown in the guidelines. If the cables were run underground, the air temperature probe signal cable would have to be extended using special wire and

resistors to compensate for increased lead resistance. Also, a union coupler was used on the weather pole about 0.3 m above ground to make pole installation easier.

For pavement repairs, the original plan was to epoxy the concrete block back in place; but, as noted earlier, it was destroyed during removal. Pavement repair became more complicated with agency staff unable to find quick-set patching material, and both the block and the trench for the conduit had to be patched with a high-cement content mortar mix. Mortar mix, with most of the small aggregate removed, was also used to bond the pavement thermistor probe into the saw cut made for the probe. The mortar mix was kept warm in a truck, and hot water was used to prepare the patching material to promote faster curing. In addition, the repair was covered with a tarp to keep it warm. However, the lane still had to be closed overnight because the repair had not cured.

On the following day, monitoring activities were modified to keep the FWD and van off the pavement repair, and saw cuts extending from the block and conduit repair were filled flush to the pavement surface with Dow Corning 888 joint sealant.

Additional observations about the pavement repair at the instrumentation hole up to the completion of this installation report only include a slight spall that developed between the trench and the shoulder and minor sealant damage in the saw cuts.

III. SMP Data Collection

A. Initial SMP Data Collection

On October 15, 1993, final wiring of the datalogger in the cabinet was completed, snap rings for monitoring joint openings were installed according to protocol, and the first set of SMP data was collected.

Two cycles of FWD data were collected, as well as faulting data, elevation data, and piezometer data. The RCO had not received a switch box for manual readings on the resistivity probe, and manual readings were not taken until November 15, 1993. Also, no joint opening data were taken until November 15, 1993, because the silicon on the snap rings had not cured. The November joint opening data and resistivity probe readings along with manual data collected October 15, 1993 are included in Appendix D-1 as follows:

- One set of contact resistance data;
- One set of four-point resistivity data;
- One ground water table measurement;
- One set of joint opening measurements;
- One set of joint faulting measurements; and
- One set of elevation data.

Data from the piezometer should not be entered into the IMS database because extremely low permeability for the soils on this site will require several days for piezometer readings to stabilize.

Computer data files obtained from automated data collection using the dataloggers included the following:

- Two sets of TDR traces and CRREL voltages; and
- Temperature and precipitation data collected from the datalogger to verify operation overnight.

Temperature data from the thermistor probe should not be entered into the IMS database because of heat given off by concrete patching material used to repair the pavement and disturbance of material around the probe. In addition, temperature data up to several days after instrument installation will have to be reviewed to determine when the disturbed materials came back to thermal equilibrium. Data affected by the installation will have to be edited from the computer files.

B. Routine SMP Data Collection

Routine data collection was done on the site from October 15, 1993 through June 20, 1995, and Manitoba Highways and Transportation has continued to collect temperature and frost data from the site. LTPP's standard data tracking log, which summarizes the data collected on the site, is included in Appendix D-2.

Events that influenced the data collection and that will influence data interpretation for the site include the following:

- TDR probe 4 calibration result in water was outside guideline limits, and any potential influence on the data collected needs to be addressed.
- Extremely low permeability of the subgrade makes the piezometer data the day after the installation questionable.
- On November 15, 1993, a relay was added to the datalogger at the site, which included a change in the data format for subsequent files.
- On May 16, 1994, the FWD deflection sensor located at the center of the loadplate was not working.
- On August 22, 1994, the tipping-bucket rain gauge funnel was unplugged. See photograph in Appendix D-2.
- Some TDR traces for probes in the fine-grain subgrade have flat signals out the open end of the probe.
- On May 8, 1995, the thermistor 25-mm deep in the pavement failed and never started working again. These temperature data are not available, except for manual readings done during FWD testing roughly one day per month.

Instrumentation and equipment problems at the site include the following:

- Cables for several TDR probes are slightly longer than supplied for other installations in 1993, and the second inflection point on these TDR probe traces is not always captured with the automated data collection equipment. This is especially a problem on the site, because the high moisture content in the fine-grain subgrade produces long apparent probe lengths. On November 15, 1994, manual TDR traces for probes 5 through 10 in the fine-grain subgrade were printed to document the flat signal out the open end of the probe. A copy of the data is included in Appendix D-2 along with screen prints of TDR traces automatically collected that day.
- Cold temperature problems with the cable reader caused vertical shifts in some traces and general failure of the cable reader if temperatures were extremely cold. Screen prints of TDR data are included in Appendix D-2.
- On January 18, 1994, the datalogger cabinet on this site, which regularly has high winds, was packed full of snow. All open bolt holes and cracks were sealed to help keep snow from being drawn into the cabinet by decreased pressure on the down-wind side of the cabinet.
- An obstruction in the piezometer was removed June 20, 1994.

- On August 22, 1994, debris was removed from the tipping-bucket rain gauge funnel. Some precipitation held in the funnel may have evaporated, which would affect both precipitation amount and precipitation intensity recorded. See photograph in Appendix D-2.

- On May 8, 1995, the thermistor 25-mm deep in the pavement failed and never started working again. Screen prints located in Appendix D-2 show the failure mode for the sensor, which included an initial 15°C shift, and then a gradual drift to readings around 90° C over about a period of about 20 days. Alternatives for retrofit thermistors on SMP installations have been discussed with FHWA LTPP Division staff, but no procedure has been implemented up to the date of this report.

- Vertical movement of the piezometer has been documented on other SMP installations with both a piezometer and an agency benchmark. On this installation with a single elevation reference, agency staff have tied the piezometer elevation to another reference on three occasions to help determine the piezometer stability. Elevation data shown on the plot in Appendix D-2 indicates 13.0 mm and 9.0 mm of change in elevation for the piezometer for successive surveys. This indicates one of the references is moving, and elevation data analysis for estimating frost heave will have to account for movement of the reference.

Other problems experienced at the site include failures with switch boxes used to collect manual resistance and resistivity data and failures of the CRREL multiplexer for automated resistance data collection. Print screens showing the failure modes for the CRREL multiplexer are included in Appendix D-2.

IV. Summary, Conclusions, and Recommendations

A. Instrumentation Installation Highlights

The following items are identified by the authors as unique or particular items of interest regarding this section in the SMP.

- This was the seventh and final SMP installation in the LTPP North Central Region in 1993 but only the second installation on a concrete pavement.
- Frost penetration estimates in Manitoba are about 2.3 m, and the resistivity probe can monitor frost penetration to 2.11 m below the concrete pavement surface. However, the small particle size and high moisture content of the subgrade should make frost/thaw data very unique in this cold climate.
- Agency staff are collecting temperature, precipitation, and frost/thaw data at the site to obtain continuous data records instead of typical SMP monitoring data obtained every other year.
- Data for this 1993 installation were transferred to forms from the LTPP Seasonal Monitoring Program: Instrumentation and Data Collection Guidelines, April 1994.

B. Recommendations for Improving Installations

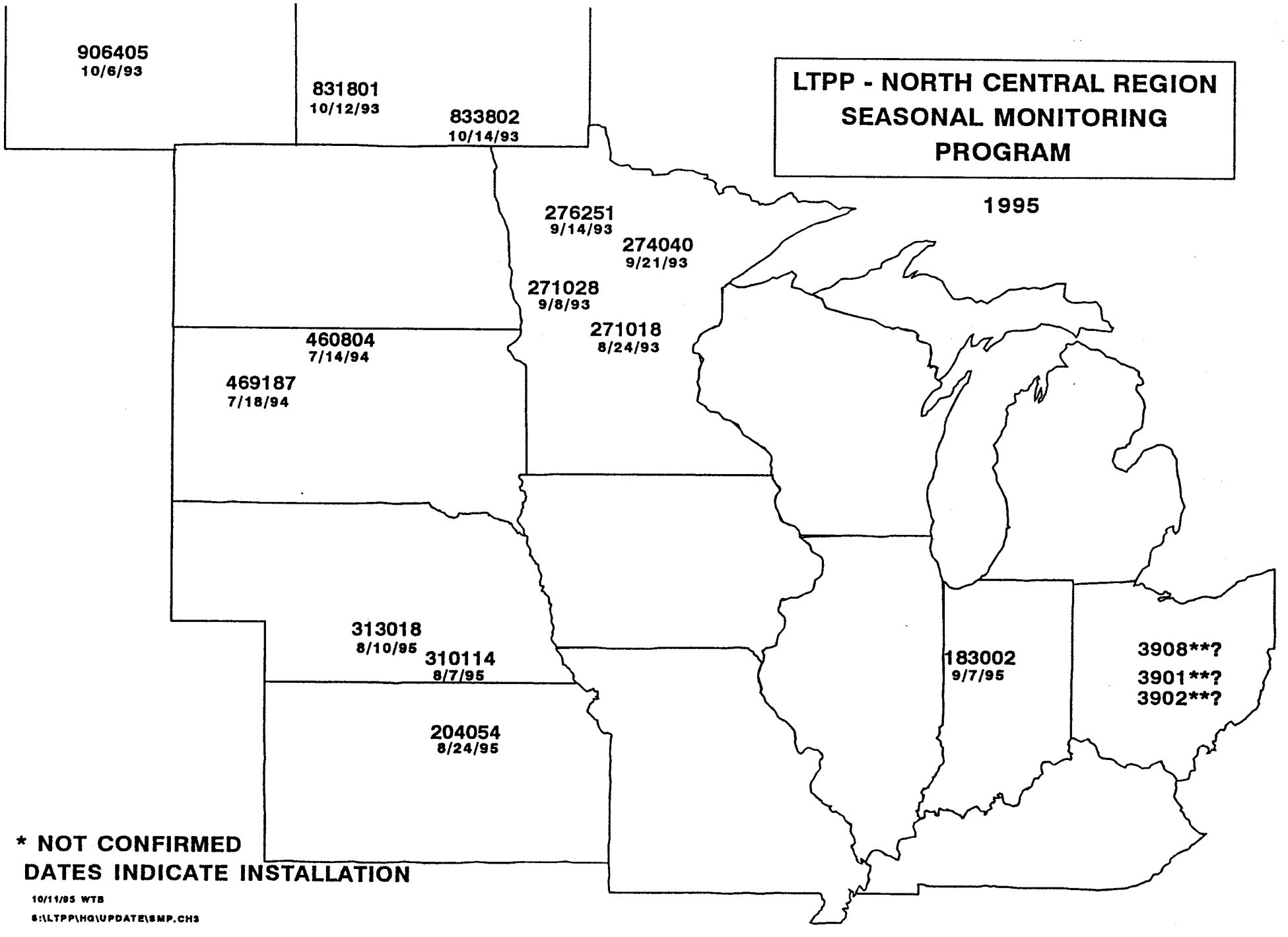
In addition to previous modifications from other installations, the following procedure and equipment changes from protocol were used during this installation or are recommended for future installations:

- Use very low penetration rate on the auger when removing materials from instrumentation hole to keep the material from coming out in large lumps. Alternatively, soil processing equipment could be rented to prepare soil for placement around instrumentation; and
- Include hazard markers by the cabinet, but leave room for maintenance equipment to work between the markers and the cabinet.

Appendix A-1: Test Section Background Information

Appendix A-1 contains the following test section background information:

- SMP location map;
- Detailed section location map;
- SHRP Inventory Data Sheet - traffic, design factors, and layer information;
- SHRP Section Field Verification Form;
- IMS L05A and L05B tables - layer thickness and material type; and
- LTPP Form S04 - base and subgrade moisture data.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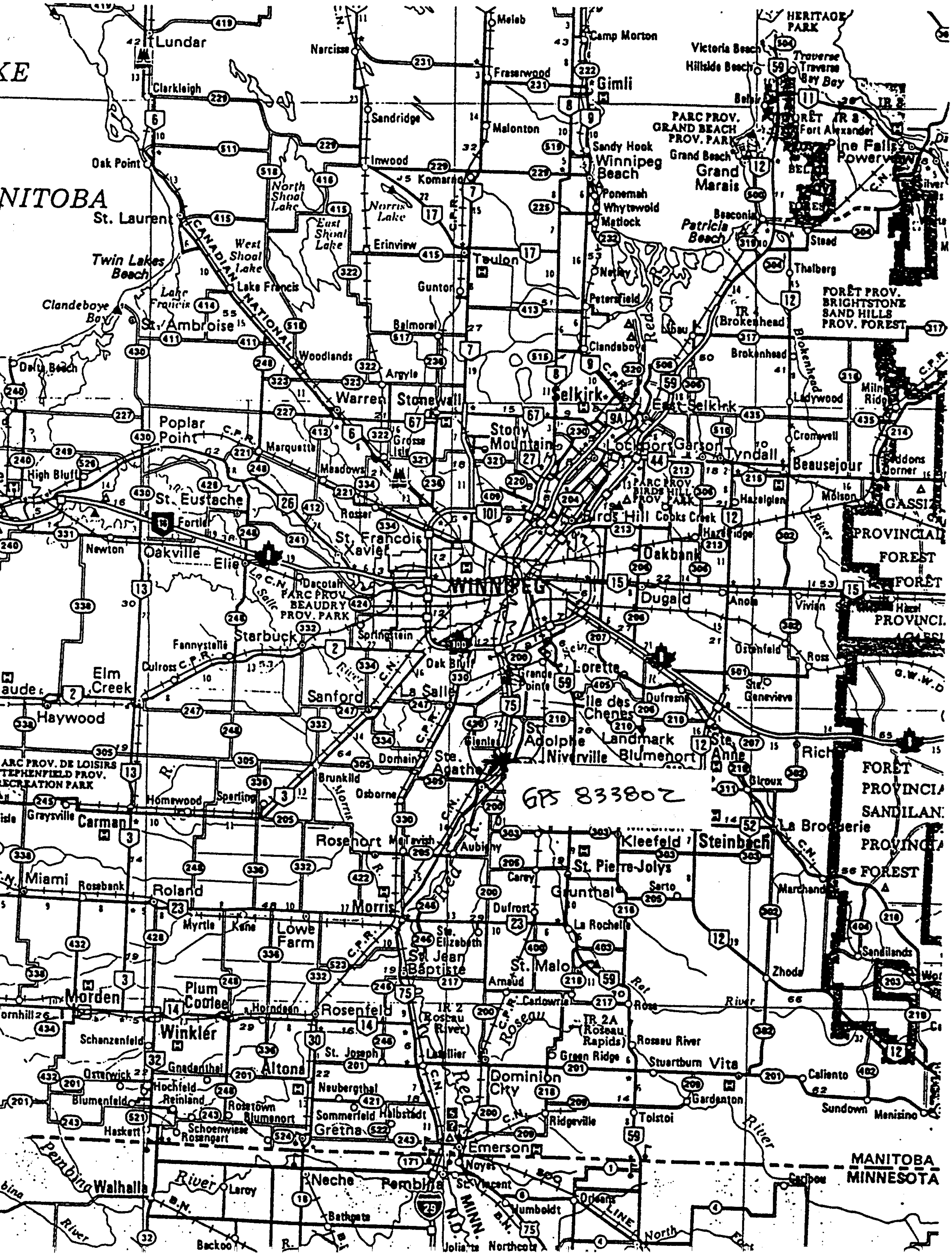

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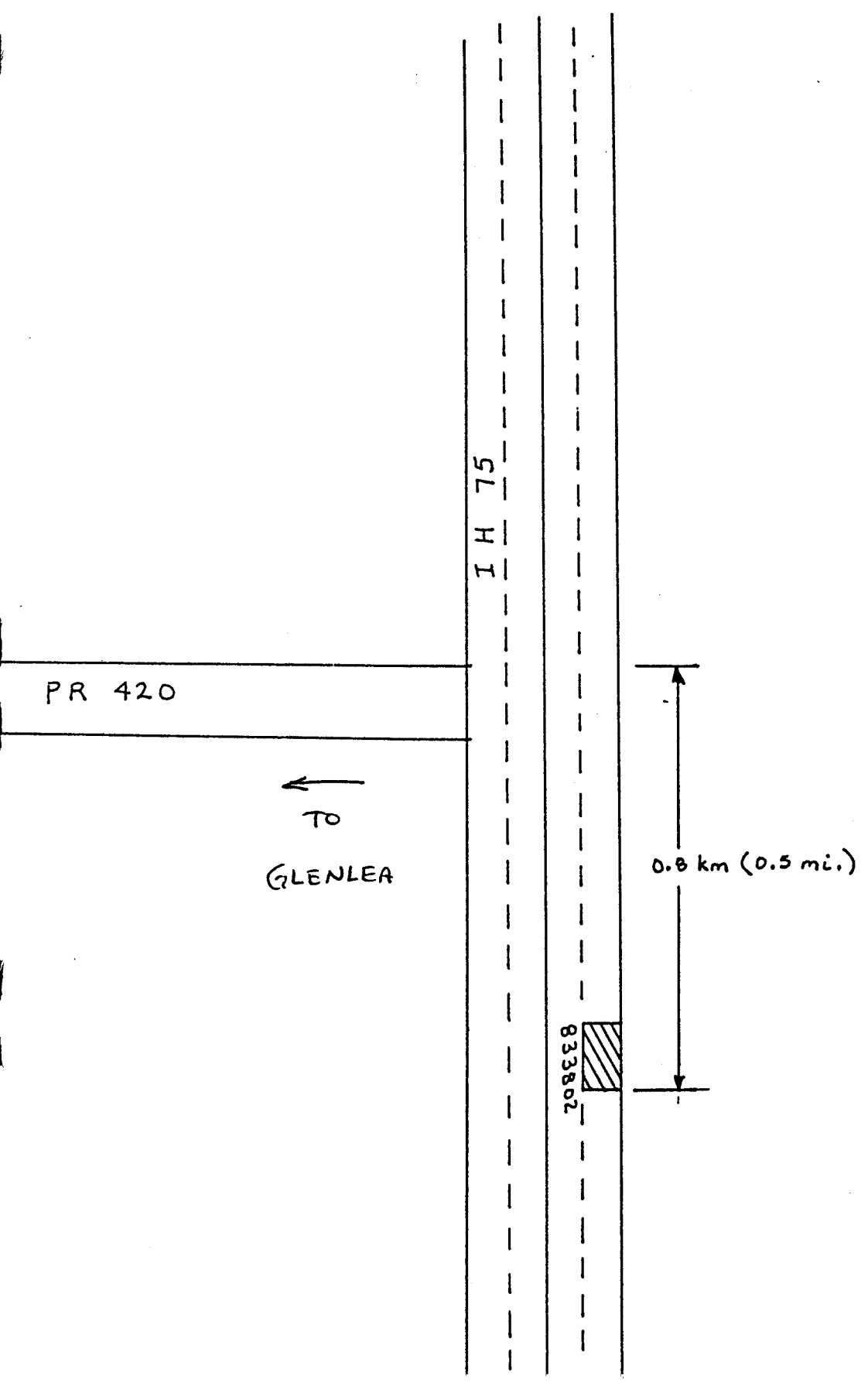
Ste. Genevieve
Dufresne
Lorette
Ile des Chenes
Landmark
Grande Pointe
St. Adolphe
Niverville
Blumenort
Ste. Anne
Giroux
Richer
WINNIPEG
Garson
Tyndall
Beausejour
Cromwell
Ladywood
Brokenhead
Hazelglen
Hazelridge
Molson
Meleb
Camp Morton
Gimli
Sandy Hook
Winnipeg Beach
Ponemah
Whytewold
Matlock
Netley
Petersfield
Clandeboye
Grand Beach
Grand Marais
Beaconia
Patricia Beach
Victoria Beach
Hillside Beach
Traverse Bay
HERITAGE PARK
PARC PROV. GRAND BEACH PROV. PARK
Fort Alexander
Pine Falls
Powerview
Stead
Thalberg
FORÊT PROV. BRIGHTSTONE SAND HILLS PROV. FOREST
PARC PROV. BIRDS HILL PROV. PARK
PROVINCIAL FOREST
SANDILANDS
CANADIAN NATIONAL
Red River
GPS 83380Z

STATE CANADA SHRP# 833802

COUNTY MANITOBA



STRATEGIC HIGHWAY RESEARCH PROGRAM
GENERAL PAVEMENT STUDIES
Long-Term Pavement Performance Monitoring
Project Information Sheet

REGION: North Central PAVEMENT TYPE: Jointed Plain Concrete
STATE: Manitoba

SHRP Assigned ID:	833802	District:	12	Year Open:	1984
State Assigned ID:	10	Highway:	- 75	Year Traffic:	1984
Design Cell ID:	3- 67	Length:	3.5 miles	AADT:	2616
		Lanes:	2	Trucks:	13.0 %
		Shoulder Surface Type:	Unspecified		
		Project Status:	Approved		

DESIGN FACTORS - Moisture: Dry
Temperature: Freeze
Subgrade: 51 - Clay (Liq Lim>50) Fine
Traffic: 117 KESAL/Yr Low (200)
Base Type: Granular
PCC Thickness: 11.0 in. High (9.5)
Dowels: No

LAYER CONFIGURATION

LAYER NO.	LAYER DESCRIPTION	LAYER THICKNESS	LAYER MATERIAL TYPE
4	3 - Orig Surface	10.0	4 - Portland Cement Concrete (JPCP)
3	5 - Base Layer	6.0	23 - Crushed Stone, Gravel, or Slag
2	6 - Subbase Layer	6.0	42 - Lime-Treated Subgrade Soil
1	7 - Subgrade		51 - Clay (Liq Lim>50)

PAVEMENT LAYER INFORMATION

	PORTLAND CEMENT CONCRETE LAYERS			
LAYER NO.	JOINT SPACING	DOWELS	REINFORCING	CRCP STEEL
4	15.0	No	No	

Revised June 8, 1988

SECTION FIELD VERIFICATION FORM

Date _____

Rater _____

State Project Code __ __ 1 0
State Code 8 3
SHRP Section I.D. 3 8 0 2

Project and Section Identification

State District No. 0 2
County or Parish STE AGATHE / RM RITCHOT 2
Route Signing (Numeric Code)
Interstate 1
Primary 2
State 3
Other 4
Route Number I H 7 5
LTPP Experiment Code 3
Number of Through Lanes (One Direction) 2
Direction of Travel 3
Eastbound 1
Westbound 2
Northbound 3
Southbound 4
Available Project Length (Without Discontinuities) 1 mi

	Start Point	End Point
Test Section Milepoints	___.___	___.___

Additional Section Location Information*: PR #420 (Glenlea)
.8 km (½ mile) SOUTH OF PUBLIC Rd. 420
RADIO TOWER ON WEST SIDE OF SITE

* Include distances from two landmarks (refer to specific procedures outlined in the Initial State Visit Guidelines).

Location of monument: _____

Geometric Information

Lane Width (Feet) 1 2.
Lane (By Number) Included in Monitoring Section 1
(Lane 1 is Outside Lane, Lane 2 is Next to Lane 1, etc.)

Shoulder Data:	Outside Shoulder	Inside Shoulder
Total Width (Feet)	1 0.	6.5
Paved Width (Feet)	___.	0.
Surface Type		2

Surface Type
Turf 1
Granular 2
Asphalt Concrete ... 3
Concrete 4
Surface Treatment 5
Other 6

Additional Data for PCC Shoulders:

Average Joint Spacing (Feet)	___.	___.
Skewness of Joints (Feet)	___.___	___.___
Joints Match Pavement Joints? (Yes - 1; No - 2)	___	___

SECTION FIELD VERIFICATION FORM (CONTINUED)

State Code
SHRP Section I.D. 38 02 83

Vertical Alignment (from plans)

Cut, Fill, or At Grade: Fill
Depth of Cut/Fill at Start of Section: 5'
Depth of Cut/Fill at End of Section: 5'

Joint Information for JCP

Average Contraction Joint Spacing (Feet) 14.
Average Intermediate Sawed Joint Spacing (Feet) (JRCP Only) .
Skewness of Joints (Feet/Lane) .

CORE 1 (Beginning of Project)

Layer No.	Layer Types*	Thickness	Brief Material Description
1	Subgrade (G)		Dark Plastic Clay
2		6'	lime Treated
3		4"	Granular
4		11" *	PCC
5			
6			
7			

Notes: 1' oil edge Treatment
* Core cut Through Keyway

CORE 2 (End of Project)

Layer No.	Layer Types*	Thickness	Brief Material Description
1	Subgrade (G)		
2			
3			
4			
5			
6			
7			

Notes:

*Layer Types: A - HMAC/Surface Treatment, P - PCC Layer, B - Base/Subbase, G - Subgrade

Revised June 8, 1988

DISTRESS SURVEY FORM
PCC Surfaced Pavements
(GPS Experiments 3,4,5,9)

Date_____ State Code 8 3

Rater_____ SHRP Section ID 3 8 0 2

	Severity Level		
	Low	Medium	High
1. "D" Cracking (Linear Feet of joints, cracks, and free edges affected)*			
2. Joint Seal Damage** (Number of joints)			
3. Longitudinal Cracking (Linear Feet)			
4. Patch or Slab Replacement Deterioration (Number and Sq. Ft.)			
5. Pumping (Check highest severity found)			
6. Transverse Cracking (Number of Cracks)			

7. Corner Break** (Number) 1

8. Average Faulting**
   - < 0.4" ✓
   - 0.4-0.8" _____
   - > 0.8" _____

* Measured as percent surface area for CRCP.
** Not applicable to CRCP.

Comments Joint chipping @ 14 joints

FIELD BOOK NO: 5854 B
PAGE NO: 1

HOLE NUM	STATION	CL	SAMPLE NUMBER	DEPTH	CA	CS	FS	SI	CL	LL	PL	PI	ASSHTO	SOIL TYPE	ORGANIC %	DESC	MC
SHRP 833802																	
1	0+00	ES	72365	0.00- 0.30												(CONCRETE NS	)
			72366	0.30- 0.55												(GRAVEL NS	)
lime treated Subgrade →			72367	0.55- 0.80	8	2	36	34	20	49	35	14	A-7-5(6)	SANDY CLAY			29
													(6)			(BRN SILT CLAY	)
Subgrade →			72368	0.80- 1.50	0	0	3	16	81	81	30	51	A-7-5(20)	HI PLASTIC CLAY			31
													(59)			(STF BRN CLAY	)

SHRP/LTPP LAYER THICKNESS

L05A - L05B TABLES

26-AUG-93

		L05A				STA 0		STA 5		L05 B REPRESENTATIVE					
		CON	LAYER	DESC	TYPE	THICK	MATL	THICK	MATL	LAYER	DESC	TYPE	THICK	MATL	INVENTORY
83	3802	1	1	7	SS		103		103	1	7	SS		103	1
		1	2	6	TS	4.9	338	6.9	338	2	6	TS	5.9	338	2
		1	3	5	GB	4	304	5.8	304	3	5	GB	4.9	304	3
		1	4	3	PC	9.8	4	9.8	4	4	3	PC	9.8	4	4

338 TS - 150 mm

304 GB - 125 mm

4 PC - 250 mm

SHRP REGION NC
STATE MB

SHRP-LTPP
FIELD MATERIAL SAMPLING
AND FIELD TESTING

STATE CODE 83
SHRP ASSIGNED ID 833802

LTPP EXPERIMENT GPS 3 ROUTE/HIGHWAY 75 Lane 1 Direction N
SAMPLE/TEST: (a) Before Section ____ (b) After Section ✓ FIELD SET NO. 1

IN SITU DENSITY AND MOISTURE TESTS

DCG SHEET: 24

OPERATOR B WALEHAM NUCLEAR DENSITY GAUGE I.D. T-23 SHEET NUMBER 10 OF 20
TEST DATE 6-5-98 LOCATION: STATION 5762 TEST PIT NUMBER TP#2
DATE OF LAST MAJOR CALIBRATION 12-13-89 OFFSET 3 feet from °/s
Note: Use additional sheets if necessary

DEPTH FROM SURFACE TO THE TOP OF THE LAYER, INCHES (SEE S03)		15 3/4		21 1/2 (BSL)		33 1/2	
TEST TYPE		BASE COURSE TOP Result, pcf Wet	Dry	SUBBASE TOP Result, pcf Wet	Dry	SUBGRADE TOP Result, pcf Wet	Dry
MATERIAL TYPE: (Unbound-G Other-T)							
IN SITU DENSITY, pcf (AASHTO T238-86)	1	144.2	134.8	109.9	79.9	113.6	85.5
	2	142.9	134.8	109.9	79.9	118.0	90.5
	3	144.8	137.3	109.9	79.3	118.6	88.6
	4	141.7	134.2	110.5	79.9	116.7	86.7
AVERAGE		143.4	135.3	110.1	79.8	116.7	87.8
Method (A,B,or C)							
Rod Depth, inches		4"		4"		8"	
IN SITU MOISTURE CONTENT, % (AASHTO T239-86)	1	9.4 lbs/ft³	7.0	30.0 lbs/ft³	37.5	28.1 lbs/ft³	32.9
	2	8.1 "	6.0	30.0 "	37.5	27.5 "	30.4
	3	7.5 "	5.5	30.6 "	38.6	30.0 "	33.9
	4	7.5 "	5.6	30.6 "	38.3	30.0 "	34.6
AVERAGE			6.0		38.0		33.0

GENERAL REMARKS: PCC BASE SUBBASE

CERTIFIED
Crew Chief, Contractor
Affiliation:

VERIFIED AND APPROVED
SHRP Representative
Affiliation:

MONTH-DAY-YEAR
____-____-19__
Date

ATERIALS AND RESEARCH
i PORTAGE AVENUE (ANNEX)
IPEG, MANITOBA R3G 0T3

SHRP REGION NC STATE MB

SHRP-LTPP
FIELD MATERIAL SAMPLING
AND FIELD TESTING

STATE CODE 83

SHRP ASSIGNED ID 833802

LTPP EXPERIMENT GPS 3 ROUTE/HIGHWAY 75 Lane 1 Direction N
SAMPLE/TEST: (a) Before Section ✓ (b) After Section ____ FIELD SET NO. 1

IN SITU DENSITY AND MOISTURE TESTS

DCG SHEET: 24

OPERATOR B. WAREHAM NUCLEAR DENSITY GAUGE I.D. T-23 SHEET NUMBER 9 OF 20
TEST DATE 6-5-9 LOCATION: STATION 0-47 TEST PIT NUMBER TP4
DATE OF LAST MAJOR CALIBRATION 12-13-89 OFFSET 3 feet from °/s
Note: Use additional sheets if necessary

BJW

DEPTH FROM SURFACE TO THE TOP OF THE LAYER, INCHES (SEE S03)		14		[redacted] 19 3/4		[redacted] 31 3/4	
TEST TYPE		BASE COURSE TOP Result, pcf Wet	Dry	SUBBASE TOP Result, pcf Wet	Dry	SUBGRADE TOP Result, pcf Wet	Dry
MATERIAL TYPE: (Unbound-G Other-T)							
IN SITU DENSITY, pcf (AASHTO T238-86)	1	142.3	133.6	123.6	92.4	109.9	78.1
	2	141.7	132.3	124.2	93.0	113.0	83.7
	3	142.3	132.9	123.6	93.6	111.7	81.7
	4	142.3	132.9	111.7	80.5	112.3	83.0
AVERAGE		142.2	132.9	120.8	89.9	111.7	81.6
Method (A,B,or C)							
Rod Depth, inches		4"		4"		8"	
IN SITU MOISTURE CONTENT, % (AASHTO T239-86)	1	8.7 lb/ft³	6.5	31.2 lb/ft³	33.8	31.8 lb/ft³	40.7
	2	9.4 "	7.1	31.2 "	33.5	29.3 "	35.0
	3	9.4 "	7.1	30.0 "	32.1	30.0 "	36.7
	4	9.4 "	7.1	31.2 "	38.8	29.3"	35.3
AVERAGE			7.0		34.6		36.9

GENERAL REMARKS: PCC BASE SUBBASE

CERTIFIED
Crew Chief, Contractor
Affiliation:
MATERIALS AND RESEARCH
1 PORTAGE AVENUE (ANNEX)
WINNIPEG, MANITOBA R3G 0T3

VERIFIED AND APPROVED
SHRP Representative
Affiliation:

MONTH-DAY-YEAR
___-___-19__
Date

Form S04/Issued 19 February 1990

Appendix A-2: Pre-Installation Monitoring Data and FWDCHECK Results

Appendix A-2 contains the following pre-installation monitoring data and FWDCHECK analysis results:

- Pre-installation pavement distress data;
- Pre-installation FWD data; and
- FWDCHECK program uniformity analysis results.

Revised May 29, 1992

STATE ASSIGNED ID ____

SHEET 4

DISTRESS SURVEY

LTPP PROGRAM

STATE CODE 83

SHRP SECTION ID 3802

DISTRESS SURVEY FOR PAVEMENTS WITH JOINTED PORTLAND CEMENT CONCRETE SURFACES

DATE OF DISTRESS SURVEY (MONTH/DAY/YEAR) 06/09/93

SURVEYORS: B I W, ____, ____ PAVEMENT SURFACE TEMP - BEFORE 82°F ____ °C; AFTER 82°F ____ °C
PHOTOS, VIDEO, OR BOTH WITH SURVEY (P, V, B) ____

DISTRESS TYPE	SEVERITY LEVEL LOW	MODERATE	HIGH
CRACKING			
1. CORNER BREAKS (Number)		1	
2. DURABILITY "D" CRACKING (Number of Affected Slabs)			
AREA AFFECTED (Square Meters)			
3. LONGITUDINAL CRACKING (Meters)			
Length Sealed (Meters)			
4. TRANSVERSE CRACKING (Number of Cracks)			
(Meters)			
Length Sealed (Meters)			
JOINT DEFICIENCIES			
? (5a) TRANSVERSE JOINT SEAL DAMAGE Well Sealed? (Y, N)			Y
If "Y" Number of Joints	34 ← sealed		
* 1 NOT SEALED OUT OF 35 JTS			
5b. LONGITUDINAL JOINT SEAL DAMAGE Number of Longitudinal Joints that have been sealed (0, 1, or 2)			1
Length of Damaged Sealant (Meters)			0.
6. SPALLING OF LONGITUDINAL JOINTS (Meters)	0.	0.	0.
7. SPALLING OF TRANSVERSE JOINTS Number of Affected Joints	31		
Length Spalled (Meters)	22.4		

Revised May 29, 1992

STATE ASSIGNED ID

SHEET 5

DISTRESS SURVEY

LTPP PROGRAM

STATE CODE 83

SHRP SECTION ID 3802

DISTRESS SURVEY FOR PAVEMENTS WITH JOINTED PORTLAND CEMENT CONCRETE SURFACES (CONTINUED)

DISTRESS TYPE	SEVERITY LEVEL LOW	MODERATE	HIGH
SURFACE DEFORMATION			
8a. MAP CRACKING (Number)			0
(Square Meters)			0.
8b. SCALING (Number)			0
(Square Meters)			0.
9. POLISHED AGGREGATE (Square Meters)			0.
10. POPOUTS (Number)			2
MISCELLANEOUS DISTRESSES			
11. BLOWUPS (Number)			0
12. FAULTING OF TRANSVERSE JOINTS AND CRACKS - REFER TO SHEET 6			
13. LANE-TO-SHOULDER DROPOFF - REFER TO SHEET 7			
14. LANE-TO-SHOULDER SEPARATION - REFER TO SHEET 7			
15. PATCH/PATCH DETERIORATION			
Flexible (Number)			
(Square Meters)			
Rigid (Number)			
(Square Meters)			
16. WATER BLEEDING AND PUMPING (Number of Occurrences)			
Length Affected (Meters)			

17. OTHER (Describe) DIDN'T HAVE FAULTMETER ALONG - NO FAULTING OR DROP OFF MEASUREMENTS

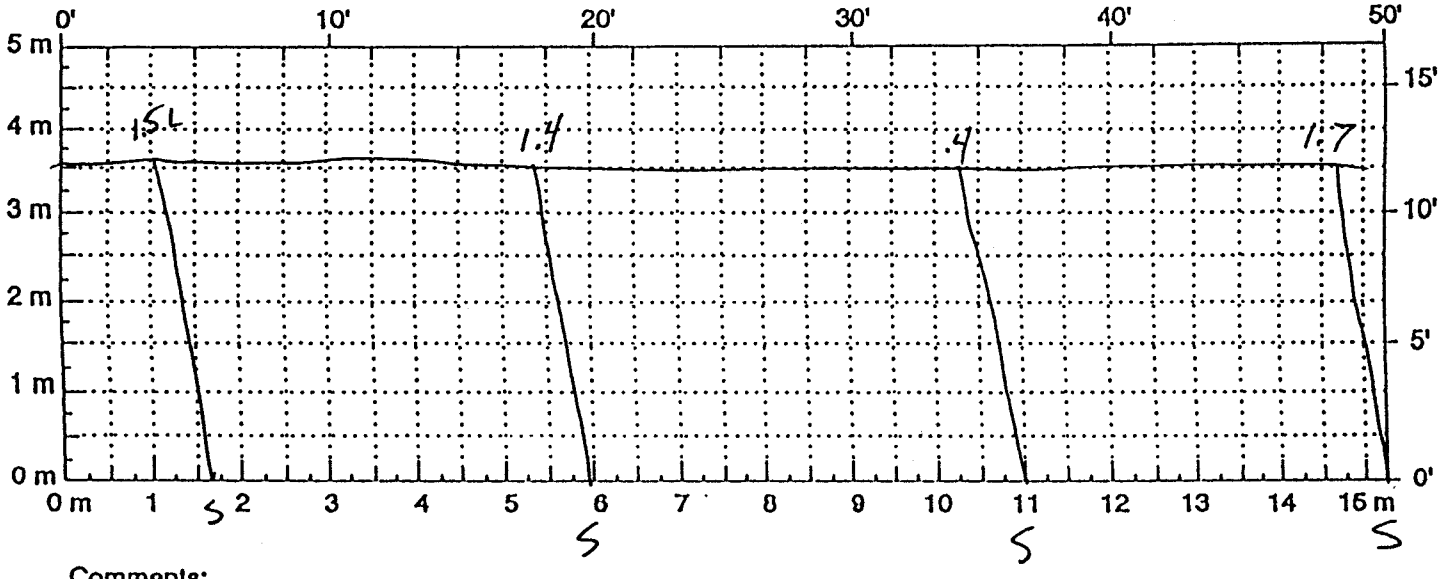
State Assigned ID _____

State Code ____

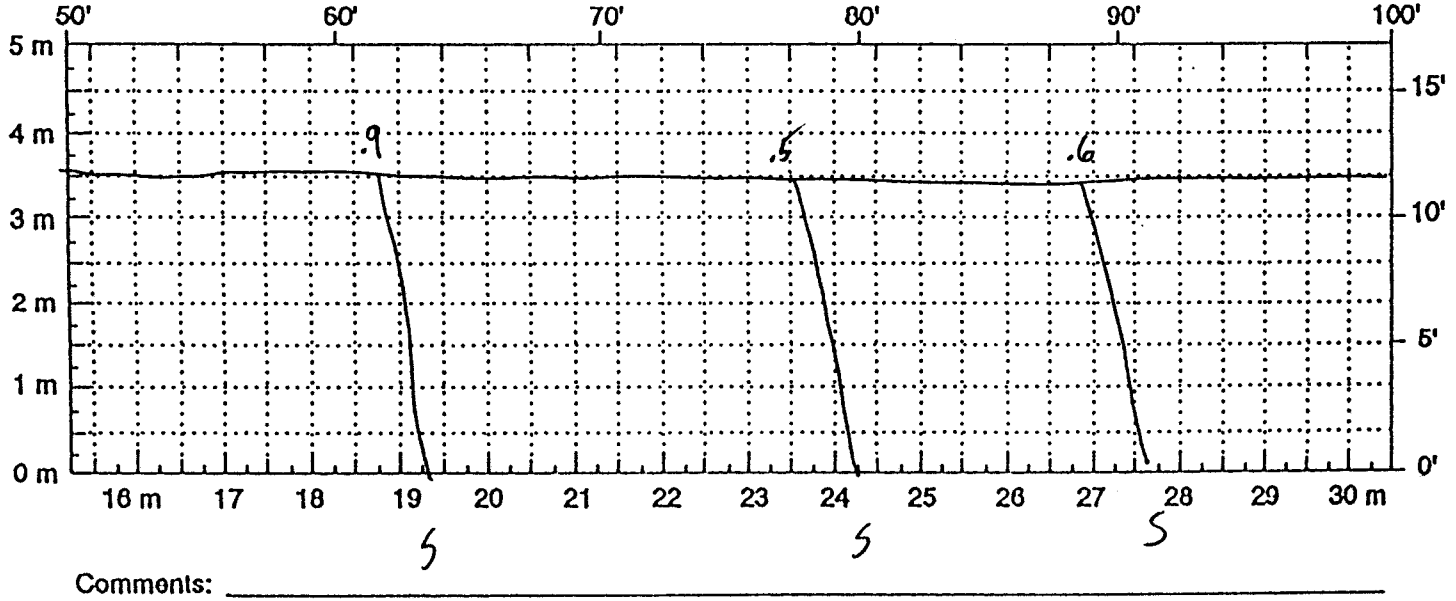
SHRP Section ID 833802

6/9/93
BJW

JOINTS
LOW SPALL = 7.0 M
LOW # = 7
Sealed = 7



Comments: _____



Comments: _____

State Assigned ID _____

State Code _____

SHRP Section ID 833802

6/9/93

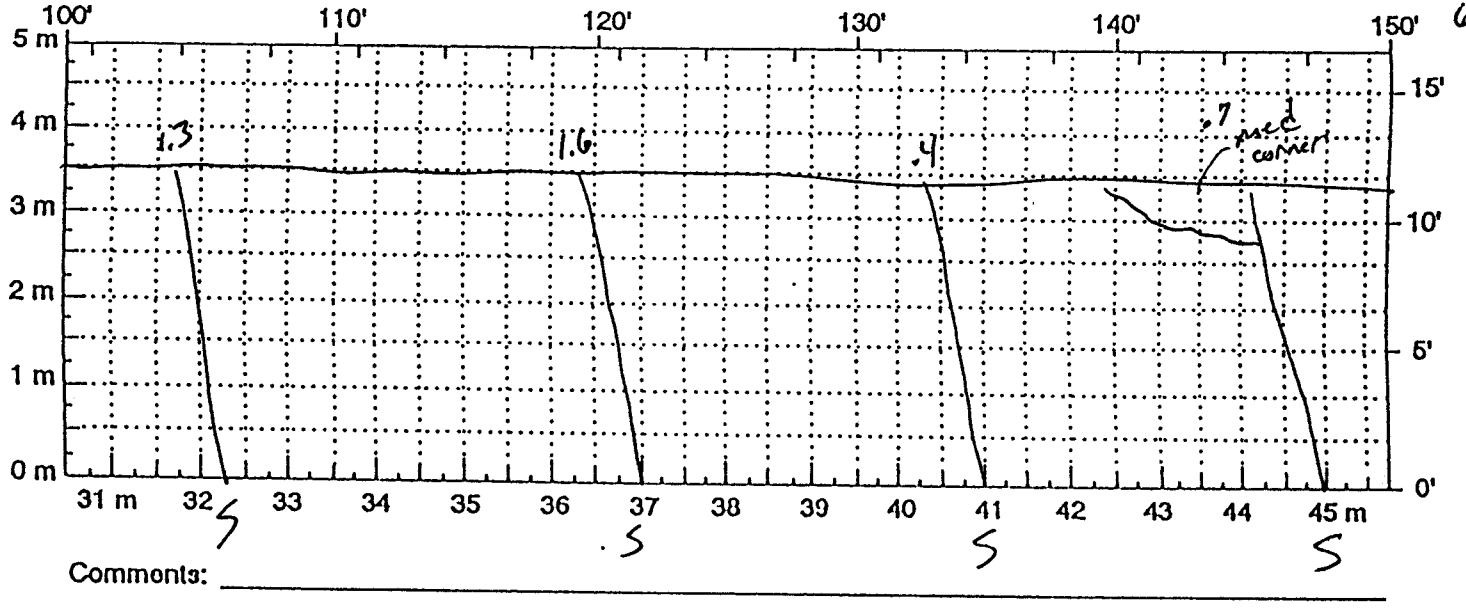
1 MED CORNER BREAK

LONG PAVE LENGTH = 7.2

#OF = 7

SCALED = 6

1 POP



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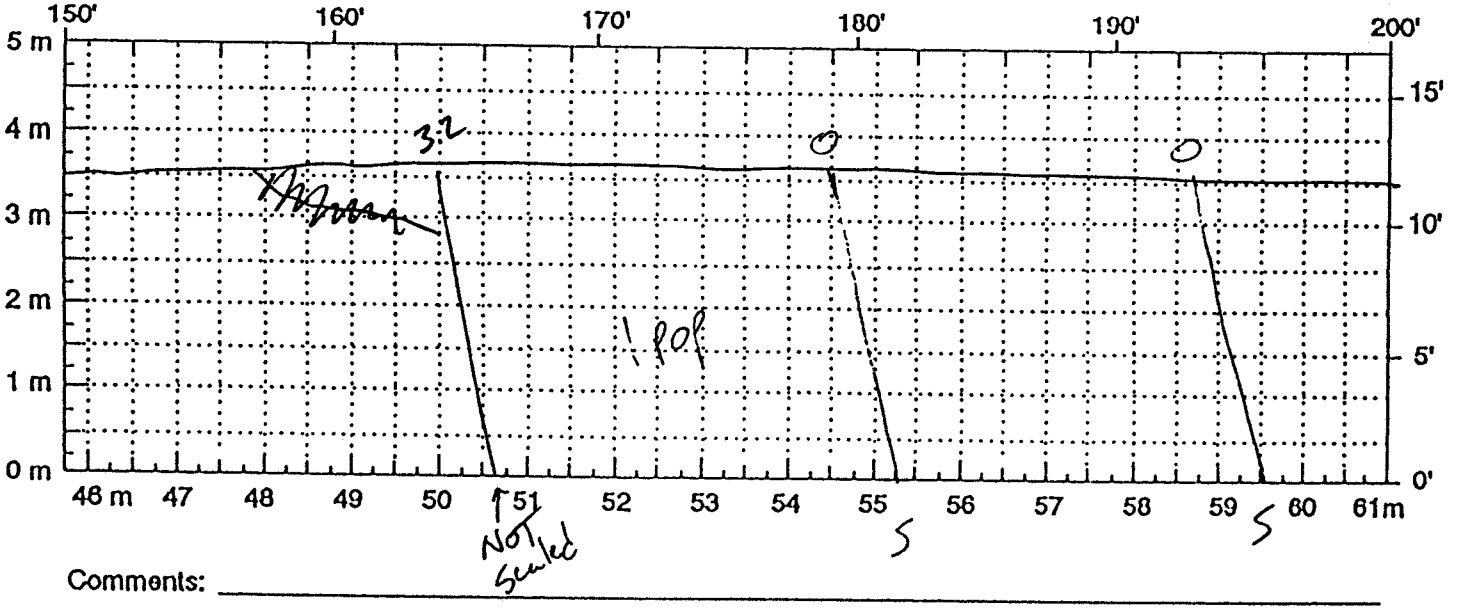


Comments: _____

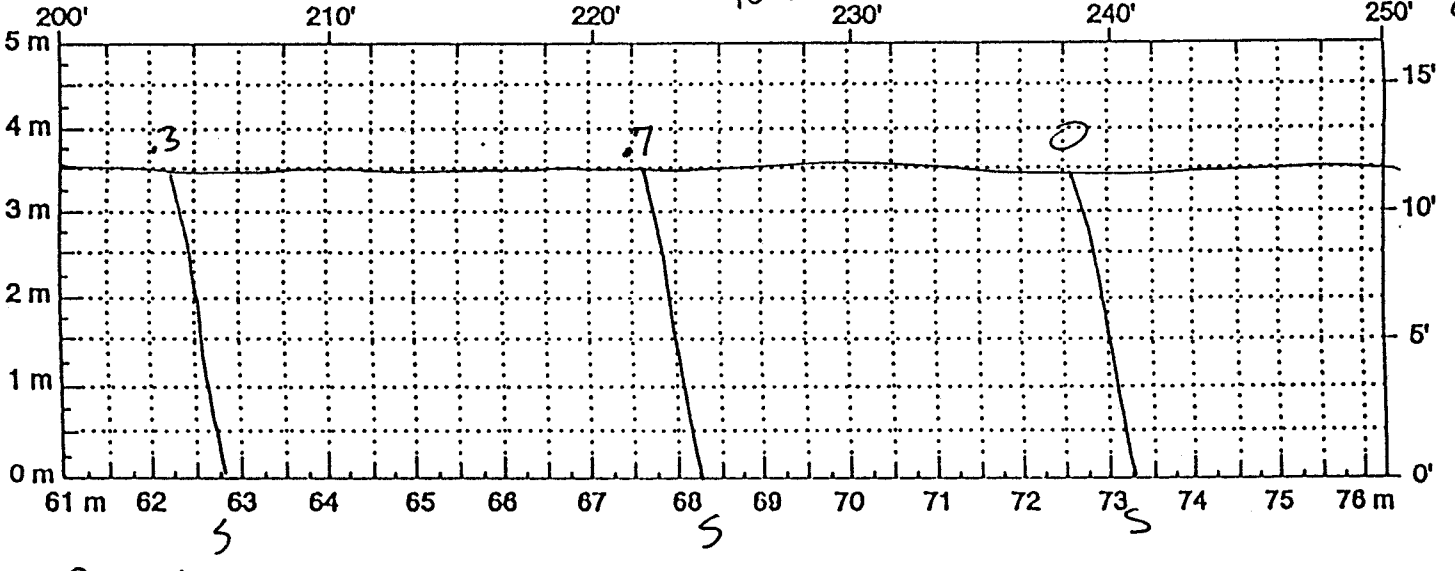
State Assigned ID _____

State Code _____

SHRP Section ID 833802

c/c scaled 100%

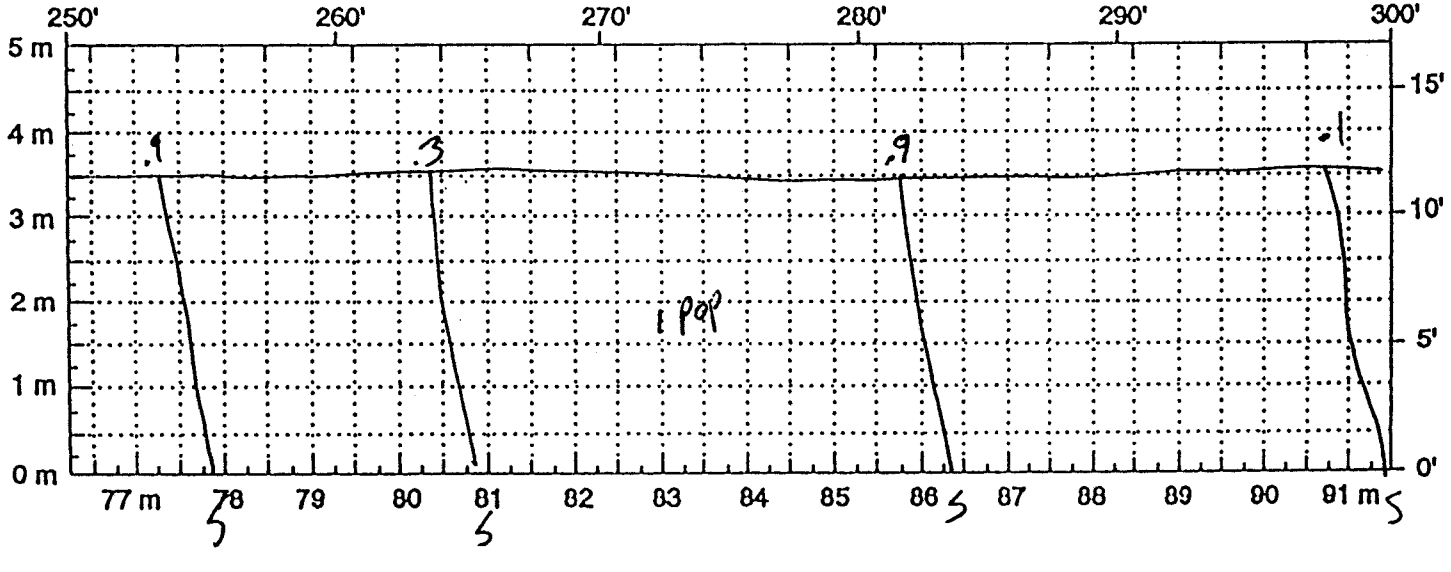
6/9/93



#JC = 7
scaled = 7
spall low = 3.2

1 pop

Comments: _____



Comments: _____

State Assigned ID _____

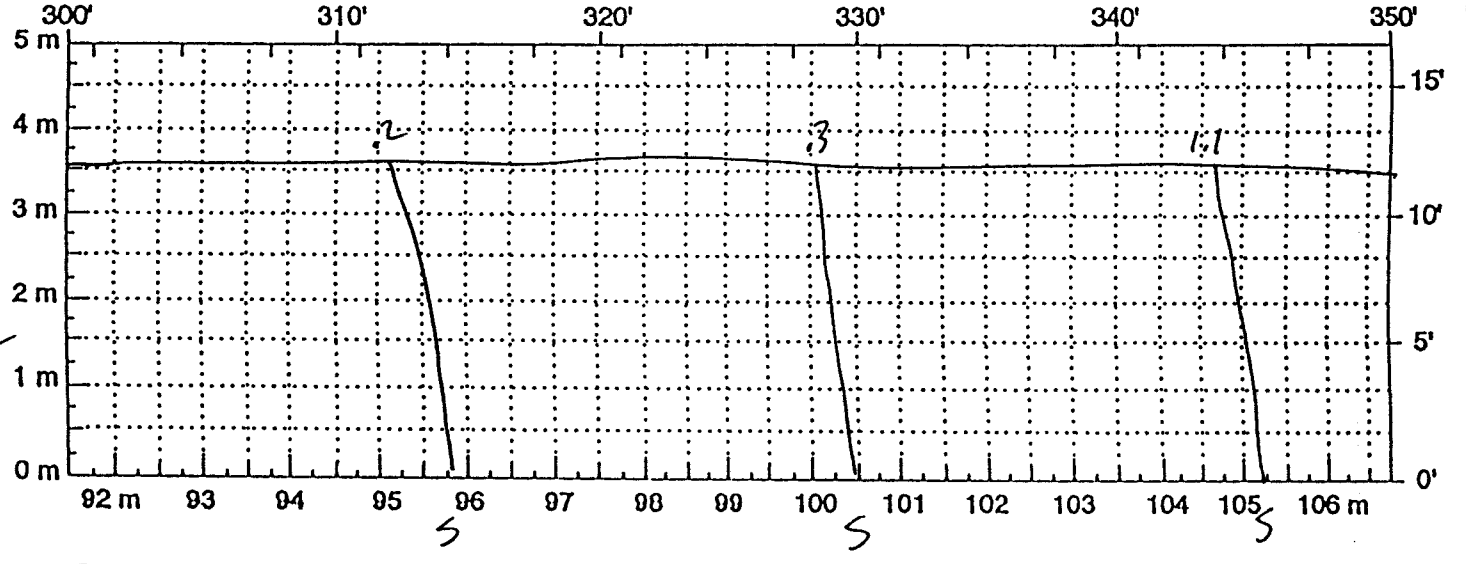
State Code _____

SHRP Section ID 833802

6/9/93

#JTs = 6
length = 2.4
Scaled = 6

1 ft AC
Paved
Shoulder



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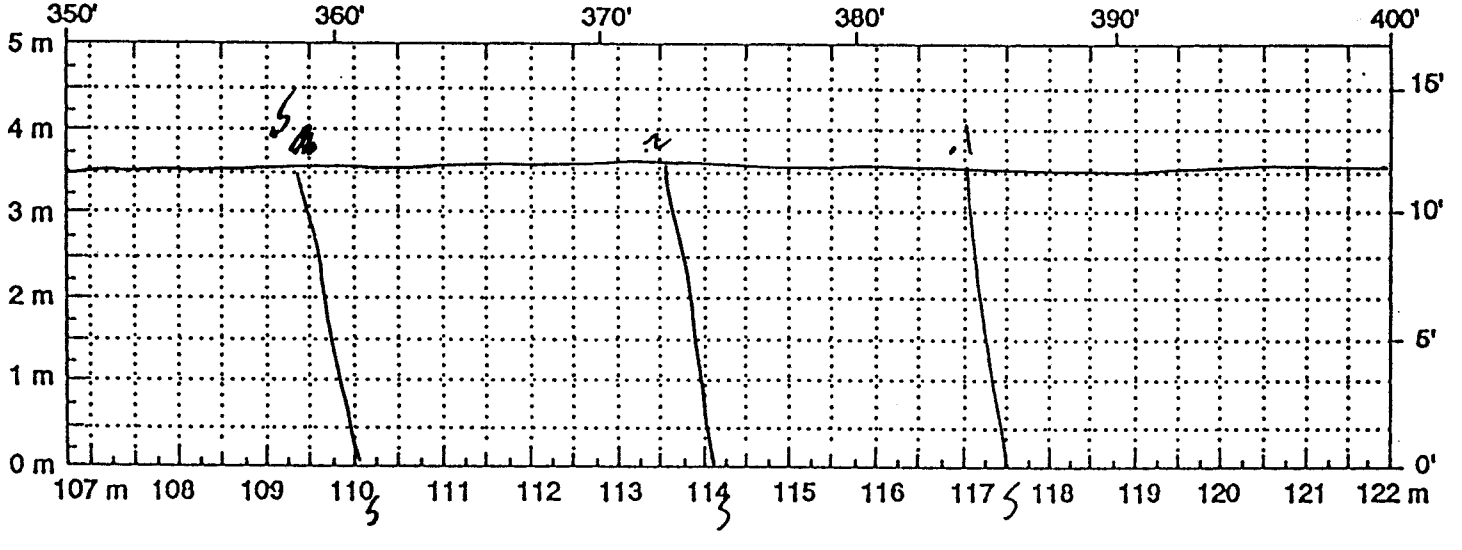


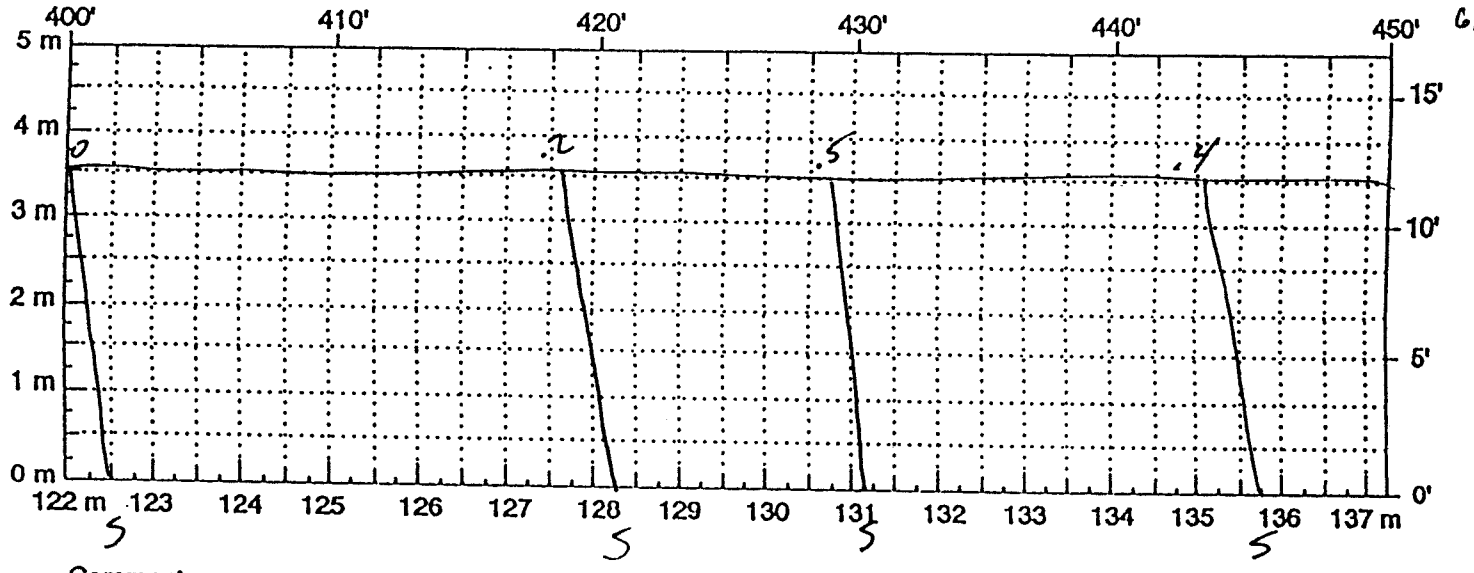
Comments: _____

State Assigned ID _____

State Code _____

SHRP Section ID 833802 6/9/93

#Jts = 8
length = 2.6
scaled = 8



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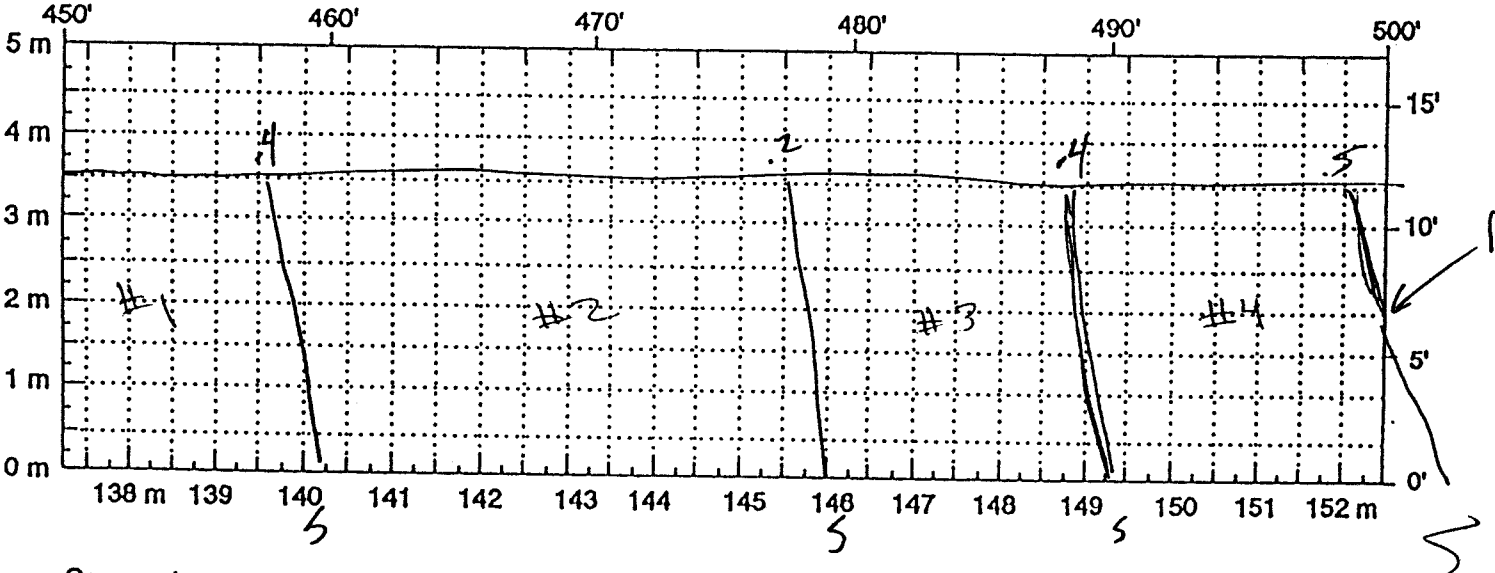

Rated in section

Comments: _____

4/4

08:35 930609 2.

File: C:\FWD\DATA\833802C1.FWD
Road: MB-75 NORTHBOUND LANE, 15 MILES SOUTH OF WINNIPEG, MB.
Subsection: 833802

FWD S/N : 8002-063
Operator ID : WOREL, BENJAMIN J.

EXTRA TESTS FOR SMP 2

Stationing...: Feet

Diameter of Plate: 11.8
Deflector distances : 8 12 18 24 36 60

SHRP TESTING - RIGID/CRCP - BASIN AND EDGE TEST (J0/C0, J1/C1, J2/C2, J3/C3)
Sequence: CCC222233334444

Stn: -21		Lane:J1	Temp:		J/C:	Air: 63		PvT: 63		08:38
Sto	Hgt psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7	
	C 114.2	12520	6.03	5.86	5.70	5.49	5.16	4.64	3.34	
	C 115.9	12704	5.99	5.90	5.78	5.49	5.24	4.59	3.30	
	C 116.5	12768	5.99	5.86	5.70	5.45	5.20	4.51	3.21	
*	2 88.0	9640	4.40	4.31	4.24	4.01	3.82	3.38	2.43	
*	2 87.4	9592	4.52	4.40	4.33	4.09	3.91	3.47	2.52	
*	2 87.5	9600	4.48	4.35	4.24	4.09	3.91	3.42	2.52	
*	2 87.5	9600	4.48	4.35	4.20	4.05	3.82	3.38	2.47	
*	3 115.9	12720	5.99	5.86	5.74	5.49	5.20	4.59	3.30	
*	3 116.7	12792	5.99	5.86	5.70	5.49	5.20	4.59	3.30	
*	3 116.5	12784	6.03	5.90	5.74	5.53	5.20	4.64	3.34	
*	3 116.4	12752	6.03	5.86	5.74	5.49	5.20	4.59	3.34	
*	4 149.9	16432	7.92	7.67	7.45	7.18	6.80	5.98	4.34	
*	4 149.7	16416	7.88	7.63	7.45	7.13	6.80	5.98	4.29	
*	4 149.7	16416	7.88	7.63	7.45	7.13	6.76	5.98	4.29	
*	4 149.6	16400	7.88	7.63	7.45	7.13	6.80	5.94	4.29	

Stn: -4		Lane:J1	Temp:		J/C:	Air: 63		PvT: 63		08:40
Sto	Hgt psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7	
	C 114.6	12560	6.20	6.08	5.91	5.66	5.42	4.81	3.47	
	C 114.6	12568	6.20	6.03	5.91	5.70	5.38	4.77	3.47	
	C 114.5	12544	6.20	6.08	5.91	5.70	5.42	4.81	3.47	
*	2 86.2	9448	4.61	4.52	4.41	4.26	4.04	3.55	2.60	
*	2 86.4	9464	4.65	4.52	4.41	4.26	4.04	3.60	2.60	
*	2 86.2	9456	4.61	4.48	4.37	4.22	4.00	3.55	2.60	
*	2 86.2	9448	4.69	4.52	4.46	4.26	4.04	3.60	2.65	
*	3 114.6	12576	6.16	6.03	5.87	5.70	5.38	4.81	3.47	
*	3 114.8	12592	6.20	6.03	5.91	5.70	5.42	4.81	3.47	
*	3 115.1	12608	6.20	6.08	5.91	5.70	5.42	4.81	3.47	
*	3 114.8	12584	6.20	6.08	5.96	5.70	5.42	4.85	3.51	
*	4 148.8	16312	8.00	7.84	7.67	7.35	6.98	6.15	4.42	
*	4 149.1	16352	8.04	7.84	7.71	7.39	7.02	6.20	4.42	
*	4 148.7	16304	8.04	7.84	7.67	7.39	6.98	6.20	4.42	
*	4 149.0	16336	8.13	7.89	7.71	7.47	7.11	6.28	4.51	

Stn: 9		Lane:J1	Temp:		J/C:	Air: 63		PvT: 63		08:43
Sto	Hgt psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7	
	C 112.8	12368	7.12	6.89	6.64	6.29	5.91	5.07	3.43	
	C 113.5	12440	7.25	6.94	6.73	6.33	6.00	5.16	3.47	
	C 113.2	12416	7.21	6.94	6.73	6.37	6.00	5.16	3.43	
*	2 84.8	9296	5.53	5.26	5.10	4.77	4.53	3.86	2.65	
*	2 84.9	9312	5.49	5.21	5.06	4.77	4.49	3.81	2.60	
*	2 84.8	9288	5.53	5.17	5.06	4.77	4.49	3.86	2.65	
*	2 84.8	9296	5.57	5.30	5.14	4.85	4.58	3.94	2.73	
*	3 113.5	12440	7.29	6.98	6.77	6.37	6.00	5.20	3.51	
*	3 113.5	12440	7.33	6.98	6.77	6.42	6.04	5.16	3.51	
*	3 113.2	12416	7.33	6.94	6.73	6.37	6.00	5.16	3.47	
*	3 113.3	12424	7.29	6.94	6.73	6.33	5.96	5.11	3.43	
*	4 147.5	16184	9.51	9.01	8.74	8.32	7.78	6.67	4.47	
*	4 147.5	16184	9.51	9.01	8.74	8.23	7.73	6.63	4.42	
*	4 147.8	16200	9.51	9.05	8.74	8.27	7.78	6.67	4.47	
*	4 147.8	16208	9.55	9.05	8.74	8.32	7.78	6.67	4.47	

Stn: 21		Lane:J1	Temp:		J/C:	Air: 63		PvT: 63		08:46
Sto	Hgt psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7	
	C 113.2	12416	7.16	6.81	6.51	6.12	5.64	4.85	3.25	
	C 113.6	12456	7.29	6.94	6.60	6.25	5.78	4.90	3.25	
	C 113.6	12456	7.29	6.89	6.60	6.21	5.73	4.90	3.21	

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*	2	84.1	9208	5.49	5.13	4.93	4.60	4.27	3.64	2.39
*	2	84.6	9272	5.57	5.17	4.97	4.64	4.31	3.64	2.43
*	2	84.2	9232	5.53	5.13	4.93	4.60	4.27	3.60	2.39
*	2	84.2	9224	5.49	5.17	4.97	4.64	4.31	3.64	2.43
*	3	113.6	12464	7.25	6.85	6.60	6.16	5.73	4.85	3.17
*	3	113.6	12456	7.29	6.89	6.56	6.16	5.73	4.85	3.17
*	3	113.3	12424	7.29	6.89	6.60	6.21	5.78	4.90	3.21
*	3	113.2	12408	7.29	6.89	6.56	6.16	5.73	4.85	3.21
*	4	148.3	16248	9.51	8.96	8.57	8.10	7.51	6.28	4.12
*	4	148.7	16304	9.59	9.01	8.65	8.15	7.56	6.33	4.16
*	4	148.4	16272	9.59	9.05	8.65	8.15	7.51	6.41	4.21
*	4	148.4	16280	9.59	8.96	8.65	8.10	7.51	6.33	4.16

Stn: 54 Lane:J1 Temp: J/C: Air: 63 PvT: 63 08:50

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	112.5	12336	6.62	6.46	6.26	5.95	5.56	4.85	3.34
	C	113.0	12400	6.58	6.42	6.21	5.91	5.51	4.81	3.30
	C	113.0	12400	6.49	6.38	6.17	5.91	5.56	4.77	3.30
*	2	83.0	9112	5.07	4.78	4.63	4.43	4.18	3.55	2.47
*	2	82.8	9080	5.03	4.78	4.63	4.35	4.13	3.55	2.47
*	2	82.9	9088	5.03	4.74	4.58	4.39	4.09	3.51	2.43
*	2	82.9	9096	5.07	4.83	4.67	4.47	4.18	3.60	2.52
*	3	112.3	12320	6.49	6.33	6.13	5.78	5.47	4.72	3.21
*	3	112.6	12352	6.58	6.38	6.17	5.87	5.56	4.77	3.30
*	3	112.8	12360	6.62	6.38	6.17	5.87	5.56	4.77	3.30
*	3	112.6	12352	6.66	6.46	6.26	5.99	5.60	4.85	3.34
*	4	147.5	16168	8.71	8.32	8.05	7.68	7.20	6.20	4.29
*	4	148.3	16256	8.71	8.32	8.05	7.68	7.20	6.20	4.29
*	4	148.3	16248	8.76	8.36	8.10	7.73	7.25	6.24	4.29
*	4	148.1	16240	8.71	8.36	8.05	7.73	7.29	6.28	4.29

Stn: 69 Lane:J1 Temp: J/C: Air: 63 PvT: 63 08:52

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	112.0	12280	6.37	6.16	6.00	5.66	5.33	4.59	3.12
	C	112.5	12336	6.37	6.12	5.91	5.66	5.29	4.51	3.08
	C	112.8	12360	6.41	6.16	5.96	5.66	5.29	4.55	3.12
*	2	82.2	9016	4.78	4.52	4.37	4.14	3.91	3.34	2.26
*	2	82.0	8984	4.78	4.57	4.41	4.18	3.96	3.34	2.30
*	2	82.5	9040	4.82	4.61	4.41	4.22	3.96	3.38	2.34
*	2	82.3	9024	4.78	4.57	4.41	4.18	3.96	3.38	2.30
*	3	112.3	12320	6.45	6.20	6.04	5.70	5.38	4.64	3.12
*	3	112.3	12320	6.37	6.16	5.96	5.66	5.29	4.55	3.08
*	3	112.5	12328	6.37	6.16	6.00	5.66	5.33	4.59	3.12
*	3	112.2	12304	6.37	6.12	5.91	5.61	5.29	4.55	3.08
*	4	147.5	16184	8.42	8.10	7.84	7.43	6.93	5.98	4.03
*	4	147.8	16208	8.42	8.06	7.80	7.39	6.93	5.94	3.99
*	4	147.7	16200	8.50	8.10	7.84	7.47	7.02	6.02	4.08
*	4	148.0	16216	8.46	8.06	7.80	7.43	6.93	5.98	4.03

Stn: 98 Lane:J1 Temp: J/C: Air: 63 PvT: 63 08:55

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	112.2	12296	6.07	5.95	5.74	5.45	5.20	4.51	3.12
	C	112.3	12312	6.07	5.95	5.74	5.49	5.20	4.55	3.12
	C	112.5	12328	6.07	5.90	5.74	5.45	5.20	4.51	3.12
*	2	82.3	9032	4.57	4.44	4.28	4.09	3.91	3.34	2.39
*	2	82.2	9016	4.57	4.44	4.28	4.09	3.87	3.34	2.39
*	2	82.0	8984	4.57	4.44	4.28	4.09	3.87	3.34	2.39
*	2	82.0	8992	4.57	4.40	4.24	4.05	3.87	3.34	2.39
*	3	112.6	12344	6.07	5.95	5.78	5.49	5.20	4.55	3.12
*	3	112.9	12376	6.07	5.95	5.70	5.45	5.20	4.51	3.12
*	3	112.3	12312	6.07	5.90	5.70	5.45	5.16	4.46	3.08
*	3	112.8	12360	6.03	5.90	5.66	5.40	5.16	4.46	3.08
*	4	147.8	16208	8.00	7.71	7.50	7.13	6.71	5.85	3.99
*	4	148.3	16256	8.09	7.80	7.54	7.18	6.85	5.89	4.08
*	4	148.4	16272	8.04	7.76	7.50	7.18	6.80	5.89	4.03
*	4	148.0	16232	8.09	7.84	7.58	7.22	6.85	5.98	4.12

Stn: 113 Lane:J1 Temp: J/C: Air: 63 PvT: 63 08:59

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	112.3	12312	5.45	5.39	5.23	5.02	4.76	4.25	3.12
	C	112.6	12344	5.53	5.43	5.36	5.11	4.80	4.29	3.21

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	C	112.9	12376	5.57	5.52	5.40	5.19	4.89	4.42	3.30
*	2	81.9	8976	4.23	4.18	4.11	3.93V	3.73V	3.42V	2.65V
*	2	81.9	8976	4.11	4.05	3.94	3.71	3.51	3.16V	2.34V
*	2	82.2	9016	4.19	4.09	4.03	3.80	3.64	3.25	2.43
*	2	82.0	8992	4.19	4.09	3.98	3.80	3.60	3.25	2.43
*	3	112.3	12312	5.49	5.43	5.27	5.07	4.80	4.29	3.17
*	3	112.3	12312	5.45	5.39	5.27	5.02	4.80	4.29	3.17
*	3	112.3	12312	5.49	5.39	5.27	5.07	4.80	4.29	3.17
*	3	112.3	12312	5.45	5.39	5.27	5.02	4.76	4.25	3.12
*	4	147.7	16192	7.25	7.07	6.94	6.59	6.27	5.55	4.12
*	4	148.0	16224	7.25	7.11	6.94	6.63	6.27	5.55	4.12
*	4	148.0	16224	7.25	7.07	6.90	6.59	6.22	5.55	4.08
*	4	148.0	16224	7.25	7.11	6.94	6.63	6.31	5.63	4.16

'ACCEPT TEST WITH VAR.

Stn: 154 Lane:J1 Temp: J/C: Air: 63 PvT: 63 09:01

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	112.8	12360	5.74	5.60	5.48	5.28	5.02	4.42	3.30
	C	112.8	12360	5.78	5.60	5.44	5.23	5.02	4.42	3.34
	C	112.6	12344	5.78	5.64	5.53	5.32	5.07	4.46	3.34
*	2	81.9	8968	4.23	4.18	4.07	3.93	3.69	3.29	2.47
*	2	82.3	9024	4.32	4.22	4.11	3.97	3.78	3.38	2.56
*	2	81.9	8976	4.27	4.18	4.11	3.97	3.73	3.34	2.47
*	2	82.3	9024	4.27	4.14	4.07	3.88	3.69	3.29	2.52
*	3	112.5	12336	5.70	5.56	5.44	5.23	4.98	4.42	3.30
*	3	112.2	12304	5.78	5.64	5.53	5.32	5.02	4.46	3.34
*	3	112.2	12296	5.78	5.60	5.48	5.23	5.02	4.42	3.34
*	3	112.3	12320	5.70	5.56	5.40	5.19	4.98	4.38	3.25
*	4	148.7	16304	7.54	7.33	7.11	6.88	6.49	5.76	4.29
*	4	149.0	16336	7.58	7.41	7.24	6.97	6.62	5.85	4.38
*	4	148.7	16304	7.54	7.37	7.20	6.92	6.58	5.81	4.34
*	4	149.1	16352	7.50	7.37	7.20	6.88	6.53	5.81	4.29

Stn: 174 Lane:J1 Temp: J/C: Air: 63 PvT: 63 09:04

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	111.9	12272	5.70	5.52	5.40	5.15	4.84	4.25	2.95
	C	112.2	12296	5.70	5.52	5.40	5.15	4.84	4.25	2.95
	C	112.3	12312	5.70	5.56	5.40	5.15	4.89	4.25	2.95
*	2	81.3	8920	4.27	4.14	4.03	3.88	3.64	3.21	2.26
*	2	80.9	8872	4.27	4.14	4.07	3.84	3.64	3.21	2.26
*	2	80.9	8856	4.23	4.09	4.03	3.80	3.60	3.16	2.21
*	2	80.9	8872	4.23	4.09	3.98	3.80	3.56	3.12	2.17
*	3	111.7	12248	5.61	5.47	5.36	5.07	4.80	4.20	2.91
*	3	111.4	12224	5.78	5.60	5.44	5.19	4.93	4.29	3.04
*	3	111.4	12224	5.74	5.52	5.40	5.15	4.84	4.25	2.95
*	3	111.6	12232	5.78	5.60	5.48	5.23	4.93	4.33	3.04
*	4	148.0	16224	7.54	7.24	7.07	6.71	6.36	5.50	3.82
*	4	148.0	16232	7.62	7.33	7.15	6.84	6.44	5.59	3.90
*	4	148.0	16216	7.71	7.41	7.20	6.88	6.49	5.63	3.90
*	4	148.3	16256	7.58	7.28	7.11	6.75	6.40	5.59	3.86

Stn: 217 Lane:J1 Temp: J/C: Air: 65 PvT: 64 09:09

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	111.9	12272	5.66	5.52	5.36	5.11	4.84	4.20	3.08
	C	112.5	12336	5.49	5.34	5.18	4.94	4.62	3.99	2.73
	C	111.7	12256	5.57	5.47	5.31	5.07	4.76	4.16	2.95
*	2	81.7	8952	4.23	4.09	3.98	3.76	3.56	3.12	2.26
*	2	82.0	8992	4.27	4.14	4.03	3.80	3.60	3.16	2.30
*	2	81.9	8976	4.19	4.05	3.94	3.76	3.56	3.08	2.21
*	2	81.9	8976	4.19	4.05	3.94	3.76	3.56	3.08	2.21
*	3	112.3	12312	5.66	5.56	5.36	5.11	4.84	4.20	2.99
*	3	112.2	12304	5.66	5.52	5.36	5.15	4.80	4.20	2.95
*	3	112.3	12320	5.61	5.47	5.31	5.07	4.76	4.12	2.95
*	3	112.0	12280	5.70	5.52	5.40	5.15	4.80	4.20	3.04
*	4	147.4	16168	7.42	7.20	7.03	6.67	6.27	5.46	3.82
*	4	147.8	16200	7.46	7.24	7.07	6.71	6.36	5.46	3.86
*	4	147.5	16176	7.42	7.24	7.03	6.67	6.27	5.42	3.77
*	4	147.7	16192	7.42	7.20	6.98	6.67	6.27	5.42	3.77

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Stn: 233 Lane:J1 Temp: J/C: Air: 65 PvT: 64 09:12

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	111.7	12256	6.20	6.08	5.91	5.61	5.29	4.55	3.08
	C	111.9	12272	6.24	6.16	5.96	5.66	5.38	4.64	3.12
	C	111.7	12248	6.28	6.16	5.96	5.66	5.38	4.68	3.12
*	2	81.2	8904	4.65	4.48	4.37	4.18	3.91	3.38	2.30
*	2	81.0	8888	4.69	4.52	4.41	4.22	3.96	3.42	2.34
*	2	80.9	8872	4.69	4.52	4.37	4.18	3.91	3.38	2.26
*	2	81.0	8888	4.73	4.57	4.46	4.26	4.00	3.47	2.39
*	3	111.7	12256	6.24	6.12	5.96	5.66	5.33	4.64	3.12
*	3	111.7	12248	6.20	6.08	5.91	5.61	5.29	4.59	3.08
*	3	111.6	12240	6.24	6.08	5.91	5.57	5.29	4.59	3.08
*	3	111.6	12240	6.24	6.03	5.91	5.61	5.29	4.59	3.08
*	4	148.7	16304	8.30	8.01	7.80	7.39	6.98	6.02	3.99
*	4	148.4	16264	8.30	8.01	7.80	7.39	6.98	6.07	4.03
*	4	148.4	16280	8.34	8.06	7.84	7.43	7.02	6.07	4.03
*	4	148.0	16224	8.30	8.01	7.75	7.39	6.98	6.07	4.03

Stn: 260 Lane:J1 Temp: J/C: Air: 65 PvT: 64 09:14

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	111.2	12192	6.16	5.99	5.83	5.53	5.20	4.55	3.51
	C	111.6	12232	6.12	5.99	5.83	5.53	5.16	4.51	3.47
	C	111.6	12232	6.16	5.99	5.83	5.53	5.20	4.51	3.47
*	2	80.9	8856	4.52	4.40	4.28	4.09	3.82	3.34	2.60
*	2	80.7	8856	4.52	4.40	4.33	4.09	3.82	3.34	2.56
*	2	80.4	8824	4.61	4.44	4.33	4.14	3.87	3.38	2.65
*	2	80.7	8856	4.61	4.48	4.37	4.18	3.91	3.42	2.69
*	3	111.6	12240	6.16	5.99	5.87	5.53	5.16	4.51	3.47
*	3	111.3	12208	6.16	6.03	5.83	5.53	5.20	4.55	3.47
*	3	111.2	12192	6.20	6.03	5.91	5.57	5.24	4.59	3.51
*	3	111.4	12216	6.12	5.99	5.83	5.53	5.16	4.51	3.43
*	4	147.7	16192	8.17	7.93	7.71	7.26	6.85	5.94	4.51
*	4	147.7	16192	8.17	7.93	7.71	7.26	6.85	5.94	4.51
*	4	147.5	16184	8.21	7.93	7.71	7.30	6.85	5.98	4.55
*	4	148.0	16224	8.13	7.89	7.67	7.26	6.80	5.89	4.47

Stn: 275 Lane:J1 Temp: J/C: Air: 65 PvT: 64 09:16

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	111.2	12184	5.82	5.73	5.53	5.28	4.98	4.33	2.95
	C	111.2	12192	5.87	5.73	5.53	5.28	5.02	4.33	2.95
	C	111.0	12168	5.87	5.69	5.53	5.28	5.02	4.33	2.95
*	2	80.3	8800	4.48	4.31	4.16	3.97	3.73	3.25	2.30
*	2	80.4	8824	4.40	4.27	4.07	3.93	3.73	3.21	2.26
*	2	80.4	8824	4.36	4.27	4.07	3.88	3.69	3.21	2.21
*	2	80.4	8824	4.36	4.22	4.07	3.88	3.64	3.21	2.21
*	3	111.4	12224	5.82	5.69	5.53	5.28	4.98	4.29	2.91
*	3	111.2	12192	5.82	5.73	5.53	5.28	5.02	4.33	2.95
*	3	110.7	12136	5.78	5.69	5.44	5.23	4.93	4.29	2.91
*	3	110.7	12144	5.78	5.69	5.48	5.28	4.98	4.29	2.91
*	4	147.2	16144	7.67	7.41	7.24	6.88	6.49	5.59	3.73
*	4	147.2	16144	7.67	7.45	7.28	6.92	6.53	5.63	3.77
*	4	147.2	16144	7.62	7.45	7.24	6.92	6.53	5.63	3.77
*	4	147.2	16152	7.67	7.45	7.20	6.92	6.49	5.59	3.73

Stn: 306 Lane:J1 Temp: J/C: Air: 65 PvT: 65 09:19

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	111.4	12216	5.74	5.56	5.40	5.15	4.89	4.20	2.86
	C	111.3	12208	5.70	5.56	5.40	5.15	4.84	4.20	2.91
	C	111.3	12208	5.70	5.56	5.40	5.15	4.89	4.20	2.91
*	2	80.4	8816	4.23	4.14	4.07	3.84	3.64	3.16	2.21
*	2	80.6	8840	4.27	4.14	4.07	3.88	3.64	3.16	2.26
*	2	81.2	8896	4.23	4.09	4.03	3.84	3.64	3.12	2.21
*	2	80.7	8848	4.27	4.14	4.07	3.84	3.64	3.16	2.21
*	3	111.4	12216	5.70	5.56	5.44	5.19	4.89	4.20	2.91
*	3	111.2	12192	5.74	5.60	5.48	5.19	4.93	4.25	2.91
*	3	111.7	12256	5.74	5.60	5.48	5.23	4.93	4.25	2.95
*	3	111.4	12224	5.78	5.56	5.48	5.19	4.98	4.29	2.95
*	4	148.1	16240	7.58	7.37	7.24	6.88	6.58	5.63	3.82
*	4	148.0	16216	7.54	7.33	7.20	6.84	6.44	5.55	3.73
*	4	148.0	16232	7.54	7.33	7.15	6.84	6.49	5.55	3.73
*	4	148.0	16216	7.54	7.37	7.20	6.88	6.49	5.59	3.82

File: C:\FWD\DATA\833802C1.FWD
Road: MB-75 NORTHBOUND LANE, 15 MILES SOUTH OF WINNIPEG, MB.
Subsection: 833802

Stn: 320 Lane:J1 Temp: J/C: Air: 65 PvT: 66 09:22

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	111.2	12184	5.78	5.69	5.48	5.23	5.07	4.51	3.34
	C	111.2	12184	5.91	5.77	5.61	5.36	5.11	4.59	3.51
	C	111.2	12192	5.82	5.69	5.53	5.32	5.07	4.55	3.47
*	2	80.3	8800	4.36	4.22	4.11	3.97	3.73	3.38	2.60
*	2	80.3	8808	4.36	4.27	4.16	3.97	3.78	3.38	2.60
*	2	80.1	8784	4.40	4.18	4.16	3.97	3.73	3.38	2.60
*	2	80.1	8792	4.40	4.22	4.16	3.97	3.78	3.38	2.60
*	3	110.9	12160	5.87	5.69	5.57	5.32	5.07	4.55	3.47
*	3	111.2	12192	5.82	5.69	5.53	5.28	5.02	4.51	3.43
*	3	110.7	12144	5.87	5.73	5.57	5.32	5.11	4.59	3.47
*	3	110.7	12144	5.87	5.69	5.53	5.28	5.02	4.51	3.43
*	4	147.8	16208	7.75	7.54	7.37	7.01	6.67	5.94	4.47
*	4	148.0	16216	7.75	7.50	7.28	6.97	6.62	5.94	4.47
*	4	147.8	16208	7.75	7.54	7.33	7.01	6.62	5.94	4.47
*	4	147.5	16176	7.75	7.50	7.28	6.97	6.62	5.94	4.47

Stn: 367 Lane:J1 Temp: J/C: Air: 65 PvT: 66 09:25

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	110.4	12104	5.32	5.26	5.06	4.85	4.62	4.16	3.21
	C	110.9	12160	5.36	5.21	5.10	4.85	4.62	4.16	3.21
	C	111.0	12176	5.36	5.26	5.06	4.85	4.62	4.16	3.21
*	2	80.0	8776	4.06	3.92	3.77	3.59	3.42	3.16	2.47
*	2	79.7	8744	4.06	3.92	3.81	3.63	3.47	3.16	2.52
*	2	79.9	8760	4.06	3.92	3.81	3.63	3.47	3.16	2.47
*	2	79.9	8760	4.11	3.96	3.81	3.67	3.51	3.21	2.52
*	3	110.9	12160	5.45	5.34	5.14	4.94	4.67	4.29	3.30
*	3	110.6	12128	5.36	5.21	5.06	4.85	4.58	4.16	3.21
*	3	110.6	12128	5.40	5.30	5.14	4.90	4.67	4.25	3.30
*	3	110.4	12104	5.45	5.30	5.14	4.94	4.67	4.25	3.30
*	4	147.2	16152	7.12	6.85	6.68	6.37	6.04	5.42	4.16
*	4	147.5	16176	7.16	6.94	6.68	6.42	6.09	5.46	4.21
*	4	147.2	16136	7.16	6.94	6.68	6.42	6.09	5.50	4.25
*	4	147.2	16136	7.12	6.85	6.64	6.33	6.04	5.42	4.16

Stn: 378 Lane:J1 Temp: J/C: Air: 65 PvT: 66 09:29

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	111.3	12200	5.53	5.39	5.23	4.94	4.67	4.07	3.04
	C	111.3	12200	5.53	5.39	5.27	4.98	4.71	4.12	3.08
	C	111.4	12216	5.57	5.43	5.27	4.98	4.71	4.12	3.12
*	2	79.9	8760	4.11	3.92	3.86	3.63V	3.47	3.03	2.30V
*	2	79.9	8760	4.19	4.01	3.94	3.71	3.51	3.08	2.47
*	2	80.3	8792	4.44V	4.31V	4.24V	4.05V	3.82V	3.38V	2.73V
*	2	80.0	8776	4.11	3.92	3.86	3.63V	3.42V	3.03	2.30V
*	3	111.3	12208	5.53	5.39	5.27	4.94	4.67	4.07	3.04
*	3	111.2	12192	5.57	5.39	5.27	4.98	4.71	4.12	3.12
*	3	111.2	12192	5.57	5.43	5.31	5.02	4.76	4.16	3.12
*	3	111.4	12216	5.49	5.39	5.23	4.98	4.67	4.07	3.08
*	4	148.0	16224	7.37	7.11	6.94	6.54	6.18	5.33	3.99
*	4	148.0	16224	7.33	7.07	6.86	6.50	6.09	5.33	3.95
*	4	147.7	16192	7.33	7.15	6.94	6.59	6.18	5.37	4.03
*	4	148.0	16216	7.29	7.07	6.90	6.50	6.13	5.33	3.95

'ACCEPT TEST WITH VAR.

Stn: 425 Lane:J1 Temp: J/C: Air: 65 PvT: 66 09:31

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	111.0	12176	5.74	5.56	5.40	5.15	4.80	4.16	2.91
	C	111.2	12184	5.70	5.56	5.36	5.11	4.84	4.16	2.91
	C	111.0	12176	5.70	5.56	5.40	5.11	4.80	4.16	2.91
*	2	79.9	8760	4.19	4.01	3.90	3.71	3.47	2.99	2.17
*	2	79.4	8712	4.27	4.09	4.03	3.80	3.60	3.12	2.30
*	2	79.6	8728	4.19	4.05	3.94	3.76	3.51	3.08	2.17
*	2	79.7	8744	4.27	4.14	4.03	3.80	3.56	3.12	2.26
*	3	111.0	12176	5.78	5.60	5.44	5.15	4.84	4.20	2.95
*	3	110.6	12120	5.74	5.56	5.40	5.15	4.84	4.20	2.95
*	3	110.7	12144	5.70	5.56	5.40	5.15	4.84	4.20	2.95
*	3	110.7	12144	5.78	5.64	5.48	5.23	4.93	4.29	2.99
*	4	147.8	16208	7.54	7.28	7.07	6.71	6.31	5.42	3.73

File: C:\FWD\DATA\833802C1.FWD
Road: MB-75 NORTHBOUND LANE, 15 MILES SOUTH OF WINNIPEG, MB.
Subsection: 833802

*	4	147.8	16216	7.58	7.33	7.11	6.75	6.36	5.46	3.77
*	4	148.1	16240	7.54	7.28	7.11	6.75	6.31	5.46	3.73
*	4	148.1	16240	7.54	7.28	7.07	6.71	6.31	5.42	3.73

Stn: 437 Lane:J1 Temp: J/C: Air: 65 PvT: 66 09:34

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	111.2	12192	5.74	5.56	5.44	5.23	4.98	4.46	3.12
	C	110.9	12152	5.82	5.64	5.53	5.32	5.07	4.55	3.30
	C	110.3	12096	5.70	5.60	5.48	5.23	5.02	4.51	3.21
*	2	79.6	8720	4.32	4.18	4.16	3.97	3.78	3.42	2.52
*	2	79.4	8704	4.27	4.14	4.07	3.93	3.73	3.38	2.47
*	2	79.6	8728	4.27	4.14	4.07	3.88	3.73	3.34	2.43
*	2	79.4	8704	4.23	4.18	4.07	3.88	3.73	3.38	2.43
*	3	110.9	12152	5.78	5.64	5.53	5.28	5.07	4.55	3.25
*	3	110.6	12120	5.78	5.69	5.53	5.32	5.07	4.55	3.30
*	3	110.6	12120	5.74	5.60	5.48	5.28	5.02	4.51	3.25
*	3	110.1	12080	5.74	5.60	5.44	5.23	4.98	4.51	3.21
*	4	147.5	16184	7.58	7.37	7.15	6.88	6.53	5.85	4.08
*	4	147.4	16160	7.58	7.41	7.15	6.88	6.53	5.85	4.16
*	4	147.4	16152	7.62	7.41	7.24	6.92	6.62	5.94	4.21
*	4	147.4	16160	7.58	7.41	7.20	6.92	6.53	5.89	4.16

Stn: 469 Lane:J1 Temp: J/C: Air: 65 PvT: 66 09:36

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	110.7	12144	5.95	5.69	5.57	5.32	5.02	4.38	3.04
	C	111.3	12208	5.91	5.69	5.53	5.32	4.98	4.33	2.99
	C	110.7	12136	5.95	5.73	5.61	5.32	5.02	4.38	3.04
*	2	79.7	8744	4.36	4.22	4.11	3.93	3.69	3.21	2.26
*	2	79.9	8752	4.40	4.27	4.16	3.97	3.73	3.25	2.30
*	2	79.7	8744	4.40	4.22	4.16	3.93	3.69	3.25	2.30
*	2	79.9	8752	4.36	4.22	4.11	3.93	3.69	3.21	2.26
*	3	110.7	12144	5.95	5.73	5.57	5.36	5.02	4.38	3.08
*	3	110.7	12144	5.91	5.69	5.53	5.28	4.98	4.33	2.95
*	3	110.7	12136	5.91	5.69	5.57	5.32	4.98	4.38	3.04
*	3	110.6	12120	5.91	5.69	5.57	5.28	4.98	4.33	2.99
*	4	147.4	16160	7.75	7.50	7.33	6.97	6.53	5.72	3.90
*	4	147.7	16200	7.67	7.37	7.20	6.88	6.44	5.59	3.77
*	4	147.5	16176	7.71	7.45	7.28	6.97	6.53	5.63	3.86
*	4	147.8	16208	7.71	7.45	7.28	6.92	6.49	5.63	3.86

Stn: 484 Lane:J1 Temp: J/C: Air: 66 PvT: 67 09:39

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	110.1	12072	5.78	5.64	5.44	5.23	4.93	4.29	3.17
	C	110.6	12128	5.78	5.64	5.44	5.23	4.93	4.29	3.17
	C	110.3	12088	5.82	5.69	5.53	5.32	4.98	4.29	3.21
*	2	79.1	8672	4.32	4.27	4.11	3.97	3.73	3.25	2.47
*	2	79.4	8704	4.32	4.27	4.11	4.01	3.73	3.29	2.47
*	2	79.1	8672	4.23	4.18	4.03	3.88	3.69	3.21	2.39
*	2	79.3	8688	4.32	4.31	4.16	4.01	3.78	3.29	2.47
*	3	110.3	12088	5.82	5.73	5.57	5.32	5.02	4.38	3.30
*	3	110.0	12064	5.74	5.69	5.48	5.32	4.98	4.33	3.21
*	3	109.9	12048	5.82	5.69	5.53	5.32	4.98	4.38	3.25
*	3	110.0	12064	5.78	5.64	5.44	5.23	4.89	4.29	3.12V
*	4	147.5	16176	7.58	7.45	7.20	6.92	6.49	5.59	4.08
*	4	147.5	16184	7.62	7.54	7.28	7.01	6.53	5.63	4.16
*	4	147.5	16184	7.58	7.50	7.24	6.97	6.53	5.63	4.12
*	4	147.4	16168	7.62	7.50	7.24	7.01	6.49	5.68	4.12

Stn: 510 Lane:J1 Temp: J/C: Air: 66 PvT: 67 09:42

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	109.7	12024	6.12	5.95	5.78	5.53	5.24	4.59	3.25
	C	109.6	12008	6.07	5.95	5.78	5.53	5.20	4.55	3.21
	C	109.9	12040	6.07	5.90	5.78	5.49	5.20	4.55	3.17
*	2	78.4	8592	4.61	4.44	4.33	4.14	3.87	3.42	2.43
*	2	78.4	8600	4.57	4.44	4.28	4.09	3.82	3.38	2.39
*	2	78.4	8600	4.48	4.35	4.24	4.01	3.78	3.29	2.30
*	2	78.6	8608	4.48	4.35	4.24	4.05	3.78	3.34	2.30
*	3	109.9	12040	5.99	5.86	5.70	5.45	5.11	4.51	3.12
*	3	109.1	11968	6.12	5.99	5.87	5.57	5.29	4.64	3.30V
*	3	109.4	12000	5.91	5.82	5.66	5.36	5.07	4.42V	3.08
*	3	109.3	11984	6.07	5.95	5.78	5.53	5.20	4.59	3.21

09:42 930609

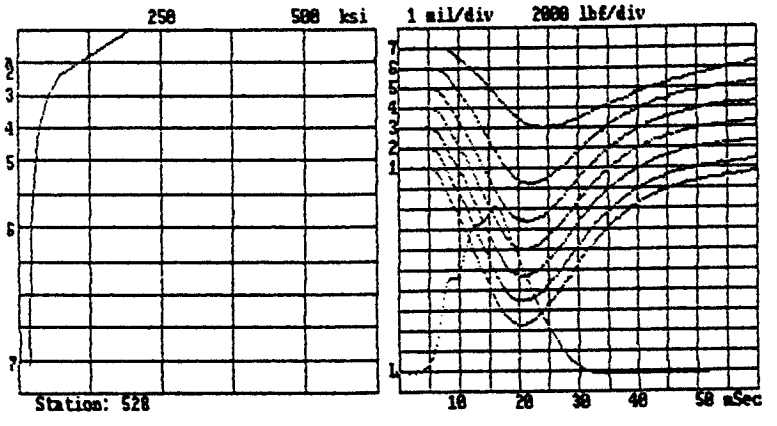
File: C:\FWD\DATA\833802C1.FWD
Road: MB-75 NORTHBOUND LANE, 15 MILES SOUTH OF WINNIPEG, MB.
Subsection: 833802

*	4	147.5	16168	8.04	7.76	7.58	7.26	6.80	6.02	4.16
*	4	147.0	16104	7.96	7.76	7.54	7.22	6.85	5.98	4.16
*	4	147.2	16152	7.96	7.76	7.54	7.22	6.80	5.98	4.16
*	4	147.2	16152	7.96	7.71	7.54	7.22	6.76	5.94	4.12

'ACCEPT TEST WITH VAR.

Stn: 528 Lane:J1 Temp: J/C: Air: 66 PvT: 69 09:46

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	109.6	12016	5.95	5.82	5.61	5.36	5.11	4.46	3.12
	C	109.4	11992	5.91	5.77	5.61	5.36	5.07	4.46	3.08
	C	109.9	12048	5.95	5.82	5.61	5.40	5.11	4.46	3.12
*	2	78.3	8584	4.48	4.31	4.20	4.01	3.82	3.34	2.39
*	2	78.4	8592	4.48	4.27	4.20	4.01	3.78	3.29	2.34
*	2	78.6	8608	4.48	4.31	4.20	4.01	3.82	3.34	2.39
*	2	78.8	8640	4.48	4.31	4.20	4.01	3.82	3.34	2.43
*	3	109.4	12000	5.99	5.86	5.70	5.45	5.16	4.55	3.17
*	3	109.6	12008	5.95	5.82	5.61	5.40	5.11	4.46	3.12
*	3	109.7	12024	5.99	5.82	5.66	5.45	5.16	4.51	3.17
*	3	109.6	12008	5.99	5.82	5.66	5.45	5.16	4.51	3.17
*	4	148.7	16296	7.79	7.58	7.41	7.09	6.71	5.89	4.08
*	4	148.6	16288	7.79	7.63	7.45	7.13	6.76	5.94	4.08
*	4	148.4	16272	7.75	7.58	7.41	7.05	6.71	5.85	4.03
*	4	148.3	16256	7.79	7.58	7.37	7.09	6.71	5.81	4.03



Mileage:-.004 -> .1

File: C:\FWD\DATA\833802C2.FWD
Road: MB-75 NORTHBOUND LANE, 15 MILES SOUTH OF WINNIPEG, MB.
Subsection: 833802

FWD S/N : 8002-063
Operator ID : WOREL, BENJAMIN J.

Stationing...: Feet

EXTRA TESTS FOR SMP

Diameter of Plate: 11.8
Deflector distances : 8 12 18 24 36 60

SHRP TESTING - RIGID/CRCP - BASIN AND EDGE TEST (J0/C0, J1/C1, J2/C2, J3/C3)
Sequence: CCC222233334444

Stn: -42.39 Lane:J2 Temp: J/C: Air: 65 PvT: 64 09:55

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	107.8	11816	18.98	16.80	15.77	14.27	12.89	10.31	6.51
	C	108.0	11848	19.06	16.85	15.77	14.35	12.89	10.31	6.51
	C	108.0	11848	19.19	16.98	15.90	14.44	12.98	10.40	6.59
*	2	78.1	8568	14.66	12.88	12.08	10.89	9.82	7.88	4.94
*	2	78.1	8568	14.62	12.93	12.12	10.98	9.87	7.88	4.99
*	2	78.4	8592	14.58	12.88	12.04	10.93	9.82	7.84	4.94
*	2	78.3	8576	14.66	12.93	12.12	11.02	9.87	7.93	4.99
*	3	108.3	11864	19.23	17.06	15.98	14.52	13.02	10.44	6.59
*	3	107.7	11800	19.23	17.02	15.98	14.52	13.02	10.44	6.55
*	3	108.1	11856	19.44	17.19	16.15	14.65	13.16	10.61	6.72
*	3	108.0	11840	19.36	17.19	16.11	14.65	13.11	10.53	6.59
*	4	143.5	15728	24.84	22.02	20.61	18.70	16.80	13.47	8.46
*	4	143.5	15736	25.05	22.23	20.78	18.91	16.98	13.65	8.54
*	4	143.8	15760	25.18	22.32	20.91	19.00	17.07	13.69	8.63
*	4	143.6	15752	25.35	22.49	21.04	19.12	17.16	13.78	8.63

Stn: -33.20 Lane:J3 Temp: J/C: Air: 64 PvT: 65 09:58

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	109.6	12016	9.51	9.39	9.17	8.82	8.40	7.32	5.12
	C	109.4	12000	9.38	9.26	9.00	8.65	8.22	7.19	4.99
	C	109.9	12040	9.43	9.26	9.04	8.70	8.27	7.19	4.99
*	2	79.9	8760	7.00	6.85	6.68	6.42	6.09	5.29	3.69
*	2	80.0	8776	6.95	6.81	6.68	6.37	6.04	5.29	3.69
*	2	80.1	8792	7.00	6.85	6.68	6.46	6.09	5.37	3.69
*	2	80.1	8792	7.04	6.85	6.68	6.46	6.13	5.33	3.73
*	3	109.4	11992	9.34	9.22	9.00	8.65	8.22	7.19	4.99
*	3	109.4	11992	9.38	9.22	9.04	8.70	8.18	7.19	4.99
*	3	109.1	11960	9.38	9.18	9.00	8.65	8.18	7.19	4.99
*	3	109.3	11976	9.38	9.22	9.04	8.70	8.22	7.23	5.03
*	4	145.2	15920	12.53	12.28	12.00	11.57	10.93	9.57	6.59
*	4	145.1	15904	12.48	12.32	12.04	11.57	10.93	9.62	6.64
*	4	145.2	15920	12.44	12.28	12.00	11.57	10.98	9.57	6.64
*	4	144.9	15888	12.44	12.28	12.00	11.52	10.89	9.57	6.59

Stn: -24.28 Lane:J2 Temp: J/C: Air: 64 PvT: 63 10:01

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	109.3	11984	12.44	11.38	10.80	9.92	9.02	7.45	5.03
	C	109.4	12000	12.23	11.20	10.63	9.79	8.93	7.36	4.90
	C	109.4	11992	12.19	11.12	10.63	9.75	8.89	7.32	4.81
*	2	79.1	8672	9.13	8.27	7.88	7.26	6.62	5.46	3.73
*	2	79.0	8664	9.13	8.23	7.80	7.22	6.58	5.46	3.64
*	2	78.8	8648	9.13	8.27	7.84	7.22	6.58	5.46	3.64
*	2	79.4	8704	9.13	8.23	7.84	7.26	6.58	5.46	3.60
*	3	109.4	12000	12.19	11.16	10.58	9.75	8.85	7.32	4.90
*	3	109.3	11976	12.19	11.16	10.54	9.75	8.89	7.32	4.90
*	3	109.3	11976	12.23	11.16	10.63	9.79	8.93	7.36	4.90
*	3	109.4	11992	12.23	11.16	10.58	9.75	8.89	7.36	4.90
*	4	144.5	15840	16.34	14.87	14.10	12.92	11.73	9.70	6.46
*	4	144.8	15872	16.34	14.87	14.10	13.00	11.82	9.70	6.38
*	4	144.9	15880	16.38	14.91	14.14	13.00	11.87	9.75	6.42
*	4	144.3	15824	16.42	14.91	14.10	12.96	11.78	9.70	6.46

Stn: -4 Lane:J3 Temp: J/C: Air: 64 PvT: 64 10:05

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.8	11944	12.11	12.02	11.78	11.48	10.89	9.75	7.11
	C	109.1	11960	12.07	11.98	11.74	11.40	10.85	9.66	7.03

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	C	109.3	11976	11.98	11.94	11.70	11.40	10.80	9.62	6.94
*	2	79.0	8672	9.09	9.01	8.83	8.61	8.18	7.28	5.29
*	2	79.0	8656	9.13	9.05	8.91	8.70	8.27	7.41	5.42
*	2	79.0	8664	9.13	9.09	8.91	8.70	8.27	7.41	5.38
*	2	79.0	8656	9.09	9.05	8.87	8.70	8.22	7.36	5.38
*	3	109.1	11960	12.11	12.06	11.83	11.52	10.93	9.75	7.07
*	3	109.3	11976	12.19	12.15	11.91	11.65	11.07	9.88	7.20
*	3	109.0	11944	12.11	12.06	11.83	11.52	10.93	9.75	7.11
*	3	109.1	11960	12.11	12.06	11.83	11.48	10.93	9.75	7.07
*	4	144.3	15816	15.96	15.77	15.47	15.03	14.27	12.74	9.15
*	4	144.3	15832	16.05	15.86	15.55	15.11	14.36	12.82	9.24
*	4	143.9	15784	16.09	15.90	15.60	15.15	14.40	12.87	9.24
*	4	144.1	15800	16.17	15.94	15.64	15.24	14.49	12.91	9.28

Stn: 5 Lane:J2 Temp: J/C: Air: 65 PvT: 64 10:08

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	106.5	11688	22.54	20.42	19.32	17.73	16.22	13.56	9.07
	C	106.4	11672	22.79	20.55	19.45	17.86	16.31	13.56	9.07
	C	106.2	11648	23.00	20.77	19.62	18.07	16.45	13.69	9.11
*	2	77.2	8472	17.89	16.12	15.25	14.06	12.80	10.66	7.11
*	2	77.2	8480	17.93	16.12	15.25	14.06	12.80	10.61	7.07
*	2	77.4	8480	17.97	16.16	15.30	14.06	12.80	10.66	7.11
*	2	77.4	8488	18.06	16.24	15.38	14.14	12.89	10.74	7.11
*	3	106.5	11680	23.25	20.98	19.84	18.24	16.67	13.82	9.20
*	3	106.2	11640	23.29	21.03	19.88	18.28	16.67	13.82	9.15
*	3	106.4	11672	23.50	21.24	20.09	18.45	16.85	13.99	9.28
*	3	106.1	11632	23.54	21.29	20.14	18.49	16.85	14.04	9.28
*	4	142.0	15568	30.12V	27.15V	25.66V	23.60V	21.47V	17.85V	11.84V
*	4	141.6	15520	30.50	27.53	26.05	23.93	21.82	18.20	12.06
*	4	141.6	15520	30.75	27.75	26.22	24.10	21.91	18.28	12.06
*	4	141.7	15544	30.96	27.92	26.39	24.31V	22.09	18.46V	12.19

'ACCEPT TEST WITH VAR.

Stn: 12 Lane:J3 Temp: J/C: Air: 64 PvT: 64 10:10

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	109.0	11952	13.11	12.75	12.34	11.74	10.98	9.40	6.29
	C	109.0	11960	13.11	12.67	12.25	11.65	10.89	9.31	6.16
	C	109.3	11976	13.20	12.80	12.34	11.74	10.98	9.40	6.29
*	2	79.0	8664	9.97	9.57	9.25	8.78	8.22	7.02	4.73
*	2	78.4	8600	9.93	9.57	9.25	8.82	8.22	7.06	4.77
*	2	78.8	8648	9.97	9.52	9.25	8.78	8.22	7.02	4.68
*	2	78.3	8584	9.89	9.57	9.25	8.78	8.22	7.06	4.77
*	3	109.1	11960	13.11	12.67	12.30	11.65	10.89	9.36	6.20
*	3	108.8	11928	13.15	12.75	12.38	11.74	11.02	9.44	6.29
*	3	108.7	11920	13.20	12.75	12.38	11.78	10.98	9.40	6.25
*	3	109.0	11944	13.24	12.80	12.47	11.82	11.07	9.49	6.29
*	4	144.3	15832	17.30	16.63	16.11	15.37	14.40	12.30	8.15
*	4	144.6	15864	17.30	16.68	16.15	15.41	14.40	12.30	8.15
*	4	144.6	15856	17.43	16.80	16.24	15.49	14.45	12.35	8.24
*	4	144.3	15832	17.47	16.89	16.28	15.53	14.45	12.39	8.28

Stn: 19 Lane:J2 Temp: J/C: Air: 65 PvT: 65 10:13

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	106.4	11656	21.74	19.39	18.21	16.55	14.93	12.13	7.81
	C	106.1	11632	21.95	19.52	18.34	16.59	14.98	12.13	7.72
	C	106.1	11624	22.46	19.95	18.77	17.01	15.38	12.48	7.98
*	2	77.0	8440	17.43	15.47	14.48	13.17	11.87	9.57	6.12
*	2	77.0	8440	17.43	15.51	14.52	13.17	11.91	9.57	6.16
*	2	77.2	8464	17.51	15.51	14.52	13.17	11.91	9.62	6.16
*	2	77.0	8440	17.47	15.47	14.52	13.17	11.87	9.57	6.12
*	3	106.1	11624	22.71	20.25	19.02	17.31	15.60	12.65	8.11
*	3	106.2	11648	23.00	20.51	19.28	17.43	15.78	12.78	8.20
*	3	105.9	11616	22.96	20.47	19.19	17.39	15.69	12.69	8.11
*	3	106.1	11632	23.13	20.60	19.32	17.52	15.82	12.82	8.20
*	4	141.2	15480	29.58V	26.24	24.68	22.37	20.18	16.38	10.54
*	4	141.4	15512	29.95	26.59	24.98	22.63	20.40	16.59	10.71
*	4	141.4	15504	30.16	26.76	25.11	22.80	20.58	16.72	10.71
*	4	140.7	15432	30.25	26.80	25.15	22.84	20.58	16.72	10.71

'ACCEPT TEST WITH VAR.

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Stn: 24 Lane:J3 Temp: J/C: Air: 65 PvT: 64 10:15

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	110.0	12064	11.10	10.69	10.37	9.92	9.20	7.84	5.03
	C	109.7	12024	11.06	10.69	10.37	9.88	9.20	7.88	5.16
	C	109.6	12016	11.06	10.73	10.37	9.84	9.20	7.84	5.07
*	2	79.1	8672	8.30	7.93	7.67	7.30	6.85	5.81	3.77
*	2	79.1	8672	8.30	7.93	7.71	7.26	6.80	5.81	3.82
*	2	78.8	8640	8.25	7.89	7.67	7.26	6.76	5.81	3.77
*	2	79.6	8728	8.21	7.89	7.67	7.13	6.76	5.68	3.82
*	3	109.9	12040	11.14	10.69	10.37	9.92	9.25	7.93	5.16
*	3	109.7	12032	11.10	10.73	10.37	9.88	9.20	7.84	5.12
*	3	110.1	12072	11.19	10.77	10.45	9.92	9.25	7.88	5.16
*	3	109.6	12024	11.27	10.86	10.54	10.00	9.33	7.97	5.20
*	4	145.8	15984	14.75	14.22	13.80	13.13	12.31	10.61	7.11V
*	4	146.2	16040	14.75	14.26	13.84	13.13	12.27	10.48	6.85
*	4	145.8	15984	14.75	14.22	13.75	13.04	12.22	10.40	6.77
*	4	145.9	16008	14.75	14.22	13.84	13.09	12.22	10.44	6.77

'ACCEPT TEST WITH VAR.

Stn: 49 Lane:J2 Temp: J/C: Air: 65 PvT: 64 10:18

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	105.4	11560	27.48	24.56	23.01	20.98	18.85	15.21	9.50
	C	105.4	11552	27.61	24.60	23.01	20.98	18.85	15.21	9.46
	C	105.4	11552	27.86	24.78	23.26	21.19	19.02	15.34	9.54
*	2	76.4	8376	21.91	19.43	18.25	16.63	14.98	12.04	7.50
*	2	76.4	8368	22.04	19.56	18.34	16.67	15.02	12.13	7.55
*	2	76.5	8392	22.04	19.52	18.29	16.67	15.02	12.09	7.50
*	2	76.4	8376	22.04	19.56	18.38	16.72	15.07	12.13	7.55
*	3	105.4	11560	28.03	24.99	23.44	21.32	19.20	15.47	9.67
*	3	105.2	11528	28.24	25.16	23.56	21.44	19.29	15.55	9.67
*	3	105.2	11528	28.40	25.34	23.74	21.61	19.47	15.68	9.76
*	3	105.1	11520	28.53	25.42	23.82	21.70	19.56	15.73	9.80
*	4	140.9	15440	35.61V	31.71V	29.69V	27.02V	24.31V	19.58V	12.14
*	4	140.7	15424	35.86	31.97	29.95	27.23	24.49	19.76	12.19
*	4	141.0	15464	36.41	32.40	30.33	27.65	24.89	20.02	12.40
*	4	140.7	15432	36.53V	32.53	30.51V	27.73	24.94	20.10	12.45

'ACCEPT TEST WITH VAR.

Stn: 57 Lane:J3 Temp: J/C: Air: 65 PvT: 65 10:20

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	109.4	11992	11.40	11.12	10.80	10.26	9.65	8.32	5.73
	C	109.7	12032	11.44	11.07	10.80	10.26	9.60	8.27	5.68
	C	109.6	12016	11.48	11.07	10.75	10.26	9.60	8.23	5.68
*	2	79.1	8680	8.67	8.27	8.05	7.68	7.25	6.20	4.21
*	2	79.4	8704	8.63	8.27	8.05	7.68	7.20	6.20	4.21
*	2	79.1	8680	8.55	8.19	7.97	7.56	7.11	6.11	4.12
*	2	79.4	8712	8.67	8.27	8.05	7.68	7.20	6.20	4.25
*	3	109.4	11992	11.48	11.12	10.80	10.30	9.65	8.32	5.68
*	3	109.3	11984	11.48	11.07	10.75	10.30	9.65	8.32	5.68
*	3	109.1	11968	11.60	11.16	10.88	10.34	9.73	8.40	5.77
*	3	109.7	12024	11.52	11.16	10.80	10.30	9.65	8.32	5.68
*	4	145.7	15976	15.25	14.69	14.31	13.63	12.80	11.00	7.50
*	4	145.7	15968	14.91	14.39	14.01	13.34	12.49V	10.74V	7.24V
*	4	145.7	15968	15.21	14.69	14.27	13.59	12.80	11.00	7.46
*	4	145.8	15984	15.21	14.74	14.31	13.68	12.80	11.05	7.55

Stn: 66 Lane:J2 Temp: J/C: Air: 65 PvT: 66 10:23

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	106.7	11696	21.58	19.13	17.91	16.17	14.53	11.65	7.50
	C	106.8	11712	21.79	19.30	18.04	16.29	14.58	11.70	7.46
	C	107.1	11744	21.91	19.39	18.12	16.34	14.62	11.74	7.46
*	2	77.5	8496	16.93	14.91	13.97	12.62	11.33	9.05	5.77
*	2	78.0	8560	16.97	14.99	14.01	12.58	11.29	9.05	5.73
*	2	77.7	8520	17.01	15.04	14.05	12.66	11.33	9.10	5.77
*	2	78.0	8552	17.09	15.08	14.10	12.75	11.42	9.14	5.81
*	3	107.7	11808	22.29	19.69	18.42	16.63	14.89	11.96	7.59

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*	3	107.0	11720	22.33	19.73	18.47	16.63	14.93	11.96	7.59
*	3	106.8	11712	22.37	19.82	18.55	16.72	14.98	12.00	7.59
*	3	106.7	11688	22.50	19.91	18.59	16.80	15.07	12.09	7.68
*	4	141.6	15528	28.66	25.29	23.56	21.36	19.11	15.34	9.76
*	4	142.8	15648	28.99	25.64	23.95	21.66	19.33	15.51	9.89
*	4	142.8	15648	29.33	25.94	24.16	21.87	19.60	15.73	10.02
*	4	142.8	15648	29.49	25.98	24.29	21.99	19.65	15.77	10.02

Stn: 73 Lane:J3 Temp: J/C: Air: 65 PvT: 65 10:25

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	109.4	11992	10.77	10.43	10.03	9.50	8.98	7.54	4.86
	C	109.7	12032	10.73	10.43	10.03	9.46	8.89	7.45	4.81
	C	109.6	12016	10.77	10.47	10.07	9.54	8.93	7.54	4.86
*	2	78.8	8648	7.92	7.71	7.45	7.05	6.62	5.59	3.60
*	2	79.0	8664	8.00	7.71	7.45	7.05	6.62	5.59	3.60
*	2	79.0	8656	7.92	7.67	7.37	6.97	6.53	5.50	3.56
*	2	79.0	8664	7.92	7.63	7.37	6.97	6.49	5.50	3.51
*	3	109.6	12016	10.73	10.38	10.03	9.46	8.89	7.45	4.77
*	3	109.4	12000	10.68	10.38	10.03	9.50	8.89	7.45	4.77
*	3	109.6	12016	10.73	10.47	10.07	9.50	8.93	7.54	4.81
*	3	109.4	12000	10.77	10.43	10.07	9.50	8.93	7.49	4.81
*	4	146.5	16064	14.20	13.79	13.32	12.62	11.82	10.05	6.55V
*	4	146.2	16024	14.12	13.79	13.28	12.58	11.78	9.92	6.33
*	4	146.5	16072	14.24	13.75	13.45	12.71	11.82	10.01	6.33
*	4	146.7	16080	14.20	13.75	13.41	12.71	11.82	10.01	6.33

Stn: 90 Lane:J2 Temp: J/C: Air: 65 PvT: 66 10:29

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	107.8	11816	15.54	14.35	13.67	12.66	11.60	9.70	6.42
	C	108.4	11888	15.38	14.13	13.41	12.41	11.38	9.49	6.16
	C	108.7	11912	15.71	14.52	13.84	12.83	11.78	9.83	6.46
*	2	78.0	8552	11.90	10.90	10.41	9.67	8.85	7.41	4.90
*	2	78.3	8576	11.94	10.94	10.45	9.71	8.93	7.49	4.99
*	2	78.0	8552	11.86	10.86	10.37	9.62	8.80	7.41	4.86
*	2	77.8	8544	11.86	10.86	10.37	9.62	8.85	7.41	4.90
*	3	108.4	11880	15.58	14.35	13.67	12.66	11.60	9.66	6.38
*	3	108.4	11888	15.67	14.39	13.67	12.71	11.65	9.75	6.42
*	3	108.3	11864	15.71	14.39	13.71	12.75	11.69	9.75	6.42
*	3	108.3	11864	15.71	14.43	13.75	12.75	11.69	9.79	6.46
*	4	144.6	15856	20.44	18.66	17.87	16.55	15.07	12.61	8.24
*	4	144.1	15792	20.44	18.66	17.91	16.63	15.07	12.61	8.20
*	4	144.5	15848	20.40	18.66	17.82	16.51	15.02	12.56	8.15
*	4	144.2	15816	20.49	18.74	17.99	16.67	15.07	12.65	8.20

Stn: 99 Lane:J3 Temp: J/C: Air: 65 PvT: 65 10:31

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	109.1	11968	11.19	10.94	10.75	10.34	9.78	8.58	6.03
	C	109.9	12040	11.19	10.94	10.71	10.26	9.69	8.49	5.94
	C	110.0	12064	11.23	10.94	10.71	10.30	9.73	8.49	5.94
*	2	78.7	8632	8.46	8.23	8.01	7.68	7.25	6.37	4.51
*	2	78.8	8648	8.46	8.27	8.05	7.73	7.29	6.41	4.55
*	2	78.8	8640	8.46	8.27	8.05	7.73	7.29	6.41	4.51
*	2	78.8	8640	8.42	8.23	8.01	7.68	7.25	6.37	4.51
*	3	109.3	11984	11.19	10.99	10.67	10.26	9.69	8.49	5.99
*	3	109.6	12008	11.31	11.03	10.75	10.34	9.78	8.58	5.99
*	3	109.4	12008	11.14	10.90	10.63	10.13	9.60	8.36V	5.86
*	3	109.4	12008	11.35	11.12	10.84	10.38	9.82	8.62	6.12
*	4	146.5	16064	14.70	14.31	13.97	13.38	12.67	11.09	7.76
*	4	146.1	16024	14.79	14.39	14.05	13.47	12.76	11.18	7.81
*	4	146.7	16088	14.91	14.52	14.14	13.59	12.85	11.26	7.89
*	4	146.5	16056	14.87	14.48	14.14	13.59	12.85	11.26	7.85

'ACCEPT TEST WITH VAR.

Stn: 107 Lane:J2 Temp: J/C: Air: 65 PvT: 66 10:34

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	109.0	11952	15.21	13.87	13.11	12.07	10.98	9.14	6.07
	C	109.3	11984	15.12	13.70	12.98	11.95	10.89	9.05	5.99
	C	109.7	12024	15.33	13.87	13.15	12.07	11.02	9.14	6.07
*	2	79.0	8664	11.65	10.51	9.94	9.16	8.36	6.97	4.68

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*	2	79.0	8664	11.60	10.43	9.90	9.08	8.27	6.84	4.60
*	2	79.0	8656	11.65	10.51	9.98	9.20	8.36	6.93	4.64
*	2	79.0	8656	11.56	10.47	9.94	9.08	8.27	6.89	4.55
*	3	109.3	11976	15.25	13.83	13.11	12.03	10.98	9.10	5.99
*	3	109.1	11960	15.29	13.83	13.11	12.03	10.98	9.05	6.03
*	3	109.0	11944	15.33	13.92	13.20	12.12	11.02	9.18	6.12
*	3	109.1	11960	15.38	13.96	13.24	12.12	11.07	9.18	6.12
*	4	145.2	15920	19.44	17.62	16.62	15.32	13.96	11.52	7.63
*	4	144.6	15864	19.44	17.62	16.67	15.32	14.00	11.57	7.63
*	4	144.6	15864	19.48	17.62	16.71	15.37	13.96	11.61	7.63
*	4	144.5	15848	19.44	17.62	16.71	15.37	14.00	11.57	7.68

Stn: 115 Lane:J3 Temp: J/C: Air: 65 PvT: 66 10:37

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.4	11888	11.19	11.16	10.97	10.68	10.22	9.27	6.94
	C	108.8	11928	11.27	11.20	11.01	10.72	10.31	9.27	6.81
	C	109.1	11960	11.27	11.20	10.97	10.72	10.22	9.23	6.77
*	2	78.1	8568	8.34	8.27	8.10	7.89	7.51	6.76	4.94
*	2	78.3	8576	8.38	8.27	8.18	7.94	7.60	6.84	5.03
*	2	78.1	8568	8.42	8.36	8.23	8.02	7.60	6.89	5.03
*	2	78.3	8576	8.42	8.36	8.23	8.02	7.69	6.93	5.07
*	3	108.6	11904	11.31	11.33	11.10	10.85	10.40	9.36	6.94
*	3	108.3	11864	11.19	11.16	10.93	10.68	10.27	9.18	6.68
*	3	109.0	11944	11.31	11.29	11.05	10.81	10.31	9.31	6.81
*	3	108.7	11920	11.31	11.20	11.05	10.76	10.31	9.27	6.77
*	4	146.1	16016	14.79	14.74	14.44	14.14	13.47	12.13	9.02
*	4	145.2	15920	14.83	14.65	14.40	14.10	13.42	12.13	8.89
*	4	145.8	15992	14.87	14.69	14.48	14.14	13.51	12.22	8.98
*	4	145.2	15920	14.87	14.74	14.44	14.14	13.51	12.22	8.98

'ACCEPT TEST WITH VAR.

Stn: 149 Lane:J2 Temp: J/C: Air: 65 PvT: 66 10:40

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.3	11872	17.43	15.77	14.82	13.55	12.27	10.01	6.51
	C	108.6	11904	17.55	15.77	14.87	13.51	12.22	9.96	6.51
	C	109.0	11952	17.76	15.94	15.00	13.63	12.36	10.05	6.46
*	2	78.7	8632	13.49	12.06	11.31	10.30	9.29	7.58	4.86
*	2	79.0	8656	13.45	12.06	11.31	10.34	9.33	7.58	4.90
*	2	78.6	8608	13.49	12.06	11.35	10.34	9.29	7.58	4.86
*	2	78.8	8640	13.49	12.11	11.35	10.34	9.33	7.54	4.86
*	3	109.0	11944	18.01	16.16	15.21	13.85	12.53	10.18	6.55
*	3	108.7	11920	18.14	16.29	15.30	13.93	12.58	10.22	6.59
*	3	108.8	11928	18.18	16.29	15.34	13.93	12.58	10.22	6.59
*	3	108.8	11936	18.31	16.46	15.47	14.06	12.71	10.35	6.68
*	4	143.9	15784	23.75V	21.24V	19.97V	18.24V	16.45V	13.34	8.59
*	4	143.3	15712	23.96	21.41	20.18	18.40	16.62	13.47	8.67
*	4	143.8	15752	24.17	21.67	20.39	18.57	16.80	13.60	8.72
*	4	143.2	15696	24.26	21.76	20.48	18.66	16.85	13.65	8.72

'ACCEPT TEST WITH VAR.

Stn: 157 Lane:J3 Temp: J/C: Air: 66 PvT: 65 10:42

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	109.3	11992	11.06	10.86	10.58	10.17	9.60	8.36	5.86
	C	109.3	11976	10.93	10.69	10.45	10.00	9.47	8.23	5.68
	C	109.9	12040	11.06	10.82	10.58	10.13	9.60	8.36	5.77
*	2	79.3	8688	8.21	8.01	7.84	7.51	7.07	6.15	4.29
*	2	79.4	8712	8.17	8.01	7.80	7.47	7.07	6.15	4.21
*	2	79.1	8672	8.21	7.97	7.80	7.47	7.07	6.15	4.25
*	2	79.0	8664	8.17	7.97	7.75	7.43	7.02	6.11	4.21
*	3	109.3	11976	11.06	10.82	10.58	10.13	9.56	8.32	5.77
*	3	109.3	11976	11.10	10.86	10.58	10.17	9.60	8.36	5.77
*	3	109.4	12000	11.02	10.82	10.58	10.13	9.51	8.32	5.68
*	3	109.3	11984	11.10	10.86	10.58	10.17	9.60	8.36	5.81
*	4	145.5	15952	14.58	14.22	13.92	13.34	12.58	11.00	7.55
*	4	145.4	15936	14.54	14.18	13.88	13.25	12.58	10.96	7.55
*	4	145.4	15944	14.58	14.26	13.92	13.38	12.62	11.05	7.55
*	4	145.4	15928	14.62	14.31	13.97	13.47	12.67	11.05	7.59

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Stn: 167 Lane:J2 Temp: J/C: Air: 66 PvT: 66 10:45

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	106.4	11664	22.16	19.78	18.64	16.93	15.20	12.22	7.63
	C	106.5	11680	21.16	18.87	17.78	16.08	14.49	11.65	7.24
	C	107.0	11736	21.32	19.05	17.91	16.25	14.62	11.78	7.33
*	2	77.2	8464	16.26	14.43	13.58	12.33	11.07	8.92	5.55
*	2	77.2	8472	16.26	14.43	13.58	12.33	11.11	8.92	5.55
*	2	77.4	8480	16.26	14.43	13.58	12.33	11.07	8.92	5.51
*	2	77.2	8464	16.17	14.43	13.54	12.28	11.07	8.88	5.51
*	3	106.5	11680	21.28	18.96	17.78	16.17	14.58	11.70	7.24
*	3	106.8	11704	21.45	19.09	17.95	16.29	14.71	11.78	7.33
*	3	106.7	11688	21.53	19.22	18.04	16.38	14.76	11.87	7.37
*	3	106.8	11704	21.58	19.22	18.08	16.38	14.80	11.91	7.42
*	4	142.9	15672	27.57V	24.56V	23.05V	20.94V	18.85	15.21	9.41
*	4	142.2	15584	27.82	24.73	23.26	21.11	19.02	15.34	9.50
*	4	142.0	15568	27.94	24.91	23.39	21.23	19.07	15.38	9.50
*	4	142.0	15568	28.11	25.08	23.52	21.36	19.20	15.47	9.59

'ACCEPT TEST WITH VAR.

Stn: 174 Lane:J3 Temp: J/C: Air: 67 PvT: 66 10:48

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.6	11904	10.43	10.21	10.03	9.58	9.07	7.93	5.64
	C	109.1	11968	10.35	10.13	9.90	9.50	8.93	7.84	5.51
	C	109.1	11968	10.35	10.17	9.90	9.50	8.98	7.84	5.51
*	2	78.6	8616	7.79	7.58	7.41	7.09	6.71	5.89	4.12
*	2	78.7	8624	7.67	7.45	7.33	7.01	6.58	5.72	4.03
*	2	78.4	8592	7.67	7.50	7.33	7.05	6.62	5.81	4.08
*	2	78.6	8616	7.75	7.54	7.37	7.09	6.67	5.85	4.12
*	3	109.6	12016	10.39	10.21	9.94	9.54	8.98	7.88	5.55
*	3	109.6	12008	10.35	10.08	9.90	9.46	8.93	7.80	5.47
*	3	109.3	11984	10.39	10.21	9.98	9.54	8.98	7.88	5.51
*	3	109.3	11976	10.35	10.17	9.90	9.50	8.98	7.84	5.51
*	4	147.2	16144	13.70	13.40	13.07	12.54	11.82	10.35	7.24
*	4	146.7	16072	13.74	13.31	13.02	12.50	11.78	10.31	7.16
*	4	146.2	16032	13.70	13.36	13.07	12.54	11.82	10.31	7.24
*	4	146.7	16072	13.74	13.36	13.07	12.50	11.78	10.31	7.20

Stn: 207 Lane:J2 Temp: J/C: Air: 67 PvT: 66 10:51

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.3	11880	14.83	13.36	12.60	11.48	10.45	8.58	5.64
	C	108.3	11880	14.50	13.01	12.34	11.27	10.22	8.40	5.55
	C	108.1	11864	14.45	12.97	12.34	11.27	10.22	8.40	5.55
*	2	78.3	8576	11.23	10.04	9.55	8.70	7.91	6.50	4.25
*	2	78.1	8560	11.27	10.04	9.55	8.74	7.91	6.50	4.29
*	2	78.4	8592	11.23	10.08	9.55	8.74	7.91	6.50	4.29
*	2	78.0	8552	11.19	10.00	9.47	8.65	7.82	6.41	4.21
*	3	108.4	11888	14.50	13.06	12.38	11.31	10.27	8.45	5.55
*	3	108.6	11896	14.54	13.10	12.38	11.31	10.27	8.40	5.55
*	3	108.8	11936	14.58	13.10	12.38	11.31	10.31	8.40	5.55
*	3	108.7	11920	14.54	13.06	12.34	11.27	10.22	8.40	5.51
*	4	144.9	15888	18.52	16.68	15.72	14.44	13.07	10.74	6.98
*	4	144.3	15824	18.43	16.59	15.77	14.44	13.07	10.74	6.94
*	4	144.5	15840	18.52	16.68	15.77	14.39	13.07	10.74	6.94
*	4	144.2	15808	18.56	16.63	15.85	14.48	13.16	10.83	7.03

Stn: 215 Lane:J3 Temp: J/C: Air: 67 PvT: 66 10:54

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	109.4	11992	9.55	9.48	9.25	8.86	8.49	7.41	5.29
	C	109.3	11984	9.51	9.39	9.17	8.82	8.40	7.32	5.25
	C	109.4	11992	9.59	9.48	9.25	8.82	8.45	7.41	5.29
*	2	78.7	8632	7.25	7.07	6.98	6.63	6.31	5.59	3.99
*	2	79.0	8656	7.16	7.07	6.90	6.63	6.27	5.55	3.95
*	2	79.0	8664	7.21	7.02	6.90	6.63	6.31	5.55	3.95
*	2	78.8	8648	7.16	7.02	6.86	6.59	6.22	5.50	3.95
*	3	109.6	12016	9.64	9.52	9.30	8.95	8.53	7.49	5.34
*	3	109.6	12008	9.68	9.48	9.25	8.86	8.45	7.41	5.29
*	3	109.3	11992	9.64	9.44	9.25	8.86	8.40	7.41	5.25
*	3	109.4	11992	9.68	9.48	9.30	8.91	8.45	7.41	5.34
*	4	146.7	16080	12.65	12.41	12.17	11.74	11.16	9.79	6.90
*	4	146.2	16032	12.69	12.45	12.12	11.69	11.07	9.75	6.94

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*	4	146.1	16016	12.65	12.41	12.12	11.69	11.11	9.79	6.94
*	4	146.5	16056	12.78	12.62	12.30	11.86	11.29	9.92	7.11V

Stn: 224 Lane:J2 Temp: J/C: Air: 67 PvT: 67 10:57

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	109.0	11944	13.45	12.06	11.44	10.38	9.42	7.71	4.94
	C	108.6	11896	13.03	11.68	11.10	10.09	9.16	7.45	4.81
	C	108.7	11920	12.99	11.68	11.05	10.09	9.11	7.45	4.81
*	2	78.1	8560	9.68	8.57	8.18	7.47	6.76	5.55	3.56
*	2	78.3	8576	9.72	8.66	8.18	7.47	6.80	5.55	3.60
*	2	78.0	8544	9.76	8.66	8.18	7.47	6.76	5.55	3.60
*	2	78.3	8584	9.80	8.70	8.27	7.51	6.80	5.59	3.64
*	3	108.4	11888	13.03	11.68	11.14	10.09	9.16	7.58	4.81
*	3	108.4	11880	13.07	11.63	11.10	10.05	9.16	7.54	4.77
*	3	108.3	11872	13.11	11.72	11.14	10.13	9.20	7.54	4.81
*	3	108.7	11920	13.11	11.72	11.18	10.13	9.20	7.58	4.81
*	4	145.7	15968	17.22	15.43	14.61	13.30	12.05	9.83	6.29
*	4	145.7	15976	17.22	15.43	14.57	13.30	12.05	9.83	6.29
*	4	145.4	15928	17.13	15.30	14.57	13.21	12.00	9.79	6.16
*	4	145.2	15928	17.09	15.34	14.52	13.25	12.00	9.79	6.20

Stn: 231 Lane:J3 Temp: J/C: Air: 67 PvT: 66 10:59

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.3	11872	10.35	10.26	10.07	9.67	9.16	8.10	5.73
	C	108.3	11880	10.39	10.26	10.07	9.71	9.20	8.10	5.68
	C	108.8	11936	10.31	10.17	9.98	9.58	9.11	8.01	5.60
*	2	78.4	8592	7.62	7.50	7.28	7.01	6.67	5.85	4.08
*	2	78.1	8568	7.71	7.54	7.37	7.05	6.71	5.89	4.12
*	2	78.4	8608	7.71	7.54	7.41	7.13	6.76	5.98	4.16
*	2	78.4	8592	7.67	7.54	7.33	7.01	6.67	5.85	4.08
*	3	108.8	11928	10.31	10.13	9.94	9.58	9.07	7.97	5.51
*	3	109.0	11944	10.39	10.17	9.98	9.58	9.11	7.97	5.55
*	3	108.6	11896	10.31	10.13	9.90	9.54	9.02	7.93	5.51
*	3	108.7	11912	10.35	10.13	9.94	9.58	9.11	8.01	5.51
*	4	145.2	15928	13.57	13.27	13.02	12.58	11.87	10.40	7.20
*	4	145.2	15920	13.53	13.23	12.98	12.58	11.91	10.40	7.11
*	4	145.7	15968	13.66	13.36	13.11	12.71	12.00	10.53	7.24
*	4	145.1	15904	13.70	13.36	13.11	12.71	12.05	10.53	7.24

Error: 559

Stn: 265 Lane:J2 Temp: J/C: Air: 68 PvT: 65 11:03

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	106.1	11632	23.29	20.85	19.58	17.90	16.13	13.04	8.20
	C	105.9	11616	23.34	20.90	19.62	17.90	16.13	13.00	8.11
	C	106.5	11680	23.50	21.07	19.75	18.07	16.31	13.17	8.24
*	2	77.1	8456	17.85	15.90	15.00	13.68	12.31	9.92	6.20
*	2	76.8	8424	17.76	15.86	14.91	13.59	12.27	9.88	6.16
*	2	77.0	8448	17.68	15.77	14.82	13.55	12.18	9.79	5.99
*	2	77.0	8432	17.72	15.86	14.91	13.59	12.27	9.83	6.12
*	3	106.8	11720	23.63	21.16	19.84	18.11	16.36	13.17	8.24
*	3	106.7	11688	23.67	21.20	19.88	18.15	16.40	13.26	8.28
*	3	106.7	11696	23.71	21.24	19.92	18.24	16.45	13.26	8.28
*	3	106.5	11680	23.84	21.41	20.09	18.36	16.58	13.43	8.41
*	4	142.3	15608	30.54	27.23V	25.54V	23.26V	21.02V	16.90V	10.54
*	4	141.6	15520	30.75	27.49	25.79	23.47	21.20	17.11	10.67
*	4	142.3	15608	31.04	27.75	25.96	23.72	21.42	17.24	10.80
*	4	141.6	15520	31.04	27.75	26.01	23.68	21.42	17.29	10.76

'ACCEPT TEST WITH VAR.

Stn: 273 Lane:J3 Temp: J/C: Air: 68 PvT: 66 11:05

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	109.6	12016	10.73	10.51	10.28	9.79	9.29	8.14	5.86
	C	110.0	12064	10.68	10.47	10.20	9.75	9.20	8.06	5.77
	C	109.1	11968	10.60	10.43	10.15	9.71	9.16	8.01	5.73
*	2	79.0	8664	7.92	7.71	7.54	7.22	6.80	5.98	4.29
*	2	78.8	8640	7.96	7.76	7.58	7.22	6.85	6.02	4.29
*	2	79.0	8656	7.92	7.76	7.54	7.22	6.85	6.02	4.29
*	2	79.0	8664	7.88	7.71	7.54	7.22	6.85	5.98	4.29
*	3	109.4	12000	10.64	10.43	10.15	9.71	9.20	8.06	5.77

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*	3	109.4	12008	10.73	10.43	10.20	9.75	9.25	8.10	5.77
*	3	109.6	12016	10.77	10.47	10.24	9.75	9.25	8.10	5.81
*	3	109.6	12008	10.73	10.47	10.20	9.75	9.20	8.06	5.77
*	4	146.1	16024	14.16	13.75	13.41	12.83	12.13	10.61	7.59
*	4	145.5	15960	14.08	13.75	13.32	12.79	12.09	10.57	7.55
*	4	145.5	15960	14.08	13.75	13.37	12.79	12.09	10.57	7.50
*	4	146.4	16056	14.16	13.83	13.50	12.88	12.13	10.66	7.59

Stn: 301 Lane:J2 Temp: J/C: Air: 68 PvT: 67 11:09

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	107.1	11752	15.29	13.79	13.02	11.95	10.85	8.97	6.03
	C	107.5	11784	15.12	13.57	12.94	11.82	10.67	8.88	5.90
	C	107.5	11792	15.42	13.75	13.02	11.95	10.80	8.97	5.99
*	2	77.7	8520	11.90	10.64	10.07	9.20	8.40V	6.97V	4.73V
*	2	77.4	8488	11.65	10.38	9.81	8.95	8.09	6.67	4.42V
*	2	77.8	8528	11.73	10.43	9.85	9.03	8.13	6.72	4.51
*	2	77.5	8496	11.73	10.47	9.90	9.03	8.18	6.72	4.51
*	3	107.4	11776	15.42	13.79	13.07	11.95	10.80	8.92	5.99
*	3	107.7	11816	15.46	13.79	13.02	11.90	10.80	8.92	5.90
*	3	107.7	11816	15.46	13.83	13.07	11.95	10.80	8.92	5.94
*	3	107.5	11792	15.50	13.83	13.07	11.95	10.80	8.92	5.94
*	4	141.9	15568	19.94	17.75	16.75	15.32	13.87	11.52	7.72
*	4	141.6	15528	19.82	17.62	16.71	15.24	13.78	11.44	7.59
*	4	141.4	15512	19.86	17.71	16.79	15.28	13.87	11.52	7.68
*	4	142.2	15584	19.98	17.84	16.88	15.37	13.91	11.52	7.68

'ACCEPT TEST WITH VAR.

Stn: 306 Lane:J3 Temp: J/C: Air: 68 PvT: 67 11:13

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	109.6	12008	10.01	9.78	9.55	9.20	8.67	7.54	5.38
	C	109.7	12024	10.10	9.78	9.55	9.16	8.71	7.62	5.38
	C	109.3	11976	9.93	9.69	9.47	9.08	8.58	7.49	5.29
*	2	78.8	8640	7.62V	7.45V	7.28V	6.97V	6.62V	5.81V	4.21V
*	2	78.6	8616	7.58V	7.41V	7.28V	7.01V	6.62V	5.85V	4.38V
*	2	78.7	8632	7.21V	7.02V	6.86V	6.50V	6.18V	5.33V	3.64V
*	2	78.8	8640	7.37	7.20	7.03	6.71	6.40	5.59	4.03
*	3	109.6	12008	9.97	9.74	9.51	9.16	8.62	7.54	5.34
*	3	109.4	11992	10.05	9.82	9.55	9.20	8.71	7.58	5.42
*	3	109.7	12024	9.89	9.65	9.43	9.03	8.53	7.45	5.34
*	3	109.4	11992	10.01	9.78	9.55	9.12	8.62	7.54	5.34
*	4	147.1	16120	13.28	12.93	12.64	12.07	11.42	9.96	7.03
*	4	146.7	16088	13.24	12.93	12.60	12.07	11.42	9.92	6.94
*	4	147.0	16120	13.28	12.93	12.60	12.07	11.38	9.96	6.98
*	4	146.8	16104	13.36	12.97	12.68	12.12	11.47	10.01	7.07

'ACCEPT TEST WITH VAR.

Stn: 314 Lane:J2 Temp: J/C: Air: 68 PvT: 68 11:15

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.3	11872	14.96	13.49	12.72	11.69	10.62	8.79	5.81
	C	108.3	11864	14.66	13.23	12.51	11.44	10.45	8.62	5.68
	C	108.6	11904	14.70	13.27	12.51	11.48	10.45	8.62	5.68
*	2	78.4	8600	11.52	10.30	9.68	8.91	8.09	6.67	4.42
*	2	78.1	8568	11.44	10.26	9.64	8.86	8.05	6.63	4.34
*	2	78.3	8576	11.44	10.30	9.73	8.91	8.09	6.67	4.42
*	2	78.1	8568	11.44	10.30	9.68	8.91	8.09	6.67	4.38
*	3	108.7	11912	14.79	13.31	12.60	11.52	10.53	8.71	5.73
*	3	108.4	11896	14.83	13.31	12.60	11.57	10.49	8.66	5.73
*	3	108.7	11912	14.83	13.36	12.64	11.57	10.53	8.71	5.73
*	3	108.1	11856	14.83	13.31	12.55	11.52	10.49	8.66	5.73
*	4	144.6	15856	18.77	16.85	15.94	14.61	13.29	10.96	7.20
*	4	144.6	15848	18.77	16.89	15.94	14.61	13.29	10.96	7.24
*	4	144.2	15816	18.81	16.93	15.98	14.69	13.38	11.05	7.24
*	4	144.1	15800	18.81	16.89	15.94	14.65	13.33	10.96	7.20

Stn: 319 Lane:J3 Temp: J/C: Air: 68 PvT: 68 11:17

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	109.3	11984	9.80	9.52	9.25	8.78	8.18	6.93	4.64
	C	109.4	12000	9.76	9.48	9.17	8.70	8.18	6.89	4.64

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	Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
		C	109.1	11960	9.89	9.52	9.25	8.78	8.22	6.93	4.68
*		2	78.3	8576	7.42	7.11	6.94	6.59	6.13	5.24	3.56
*		2	78.3	8576	7.29	6.98	6.81	6.46	6.00	5.16	3.47
*		2	78.3	8592	7.33	7.07	6.90	6.50	6.09	5.20	3.51
*		2	78.3	8576	7.37	7.07	6.90	6.54	6.09	5.24	3.56
*		3	109.3	11976	9.85	9.57	9.25	8.74	8.18	6.97	4.64
*		3	108.7	11920	9.85	9.48	9.25	8.74	8.13	6.89	4.64
*		3	109.6	12016	9.93	9.57	9.30	8.82	8.22	6.97	4.64
*		3	109.4	12000	9.89	9.57	9.30	8.78	8.22	7.02	4.68
*		4	146.7	16088	13.03	12.54	12.21	11.52	10.76	9.14	6.03
*		4	146.4	16040	13.07	12.58	12.21	11.57	10.80	9.14	6.03
*		4	146.4	16040	13.11	12.58	12.21	11.57	10.80	9.14	6.03
*		4	146.2	16024	13.15	12.62	12.30	11.61	10.85	9.18	6.07

Error: 532

Error: 532

Stn: 360 Lane:J2 Temp: J/C: Air: 69 PvT: 70 11:22

	Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
		C	108.6	11896	12.36	11.25	10.67	9.79	8.98	7.54	5.16
		C	109.0	11952	12.44	11.33	10.71	9.84	9.02	7.54	5.16
		C	108.6	11904	12.44	11.33	10.71	9.84	9.02	7.54	5.20
*		2	78.3	8576	9.38	8.53	8.05	7.39	6.80	5.72	3.95
*		2	78.3	8576	9.30	8.45	8.01	7.35	6.76	5.68	3.90
*		2	78.3	8576	9.34	8.49	8.05	7.39	6.80	5.72	3.95
*		2	78.1	8568	9.30	8.40	8.01	7.35	6.76	5.68	3.90
*		3	108.8	11928	12.53	11.42	10.80	9.88	9.07	7.62	5.25
*		3	108.6	11904	12.48	11.33	10.75	9.88	9.07	7.58	5.20
*		3	108.6	11904	12.57	11.42	10.80	9.92	9.07	7.58	5.25
*		3	107.8	11824	12.44	11.29	10.71	9.84	8.98	7.54	5.16
*		4	146.1	16016	16.51	14.95	14.14	13.00	11.87	9.92	6.77
*		4	145.4	15936	16.55	14.91	14.14	13.04	11.87	9.92	6.77
*		4	145.4	15936	16.55	14.95	14.18	13.04	11.91	9.92	6.77
*		4	145.4	15936	16.55	14.95	14.18	13.04	11.91	9.96	6.77

Stn: 366 Lane:J3 Temp: J/C: Air: 71 PvT: 69 11:28

	Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
		C	110.1	12080	9.76	9.48	9.25	8.82	8.31	7.19	4.94
		C	110.1	12080	9.68	9.39	9.17	8.74	8.22	7.06	4.86
		C	109.4	12008	9.68	9.39	9.21	8.78	8.27	7.06	4.86
*		2	79.1	8672	7.16	6.94	6.77	6.42	6.09	5.24	3.60
*		2	78.8	8648	7.21	6.98	6.81	6.46	6.13	5.29	3.64
*		2	79.0	8656	7.16	6.94	6.73	6.42	6.04	5.24	3.60
*		2	79.0	8656	7.12	6.94	6.73	6.42	6.09	5.20	3.56
*		3	109.6	12008	9.64	9.39	9.13	8.74	8.22	7.06	4.86
*		3	110.0	12064	9.64	9.35	9.08	8.70	8.18	7.02	4.77
*		3	109.6	12008	9.59	9.31	9.13	8.70	8.13	7.02	4.81
*		3	109.4	12008	9.59	9.35	9.13	8.70	8.18	7.02	4.81
*		4	147.4	16160	12.78	12.41	12.04	11.52	10.80	9.27	6.25
*		4	146.7	16080	12.78	12.41	12.08	11.52	10.85	9.31	6.29
*		4	147.1	16120	12.86	12.50	12.12	11.65	10.89	9.40	6.38
*		4	147.0	16112	12.90	12.54	12.21	11.65	10.98	9.40	6.38

Stn: 373 Lane:J2 Temp: J/C: Air: 71 PvT: 69 11:30

	Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
		C	109.6	12008	11.98	10.99	10.41	9.67	8.89	7.41	5.12
		C	110.1	12072	11.27	10.34	9.81	9.12	8.40	7.02	4.81
		C	110.4	12104	11.27	10.34	9.85	9.12	8.40	7.02	4.81
*		2	79.4	8704	8.30	7.63	7.24	6.71	6.18	5.20	3.60
*		2	79.3	8688	8.30	7.58	7.20	6.71	6.18	5.20	3.60
*		2	79.3	8688	8.30	7.58	7.15	6.71	6.13	5.20	3.60
*		2	79.0	8664	8.25	7.58	7.15	6.71	6.13	5.20	3.60
*		3	110.0	12056	11.31	10.38	9.90	9.20	8.49	7.15	5.03
*		3	109.4	12000	11.40	10.47	9.94	9.24	8.49	7.19	4.99
*		3	109.9	12040	11.35	10.43	9.85	9.16	8.40	7.06	4.90
*		3	110.3	12088	11.35	10.43	9.85	9.16	8.45	7.06	4.86
*		4	146.4	16048	15.29	13.96	13.24	12.24	11.25	9.40	6.42
*		4	146.2	16032	15.29	13.87	13.20	12.16	11.20	9.31	6.38
*		4	146.2	16032	15.25	13.87	13.15	12.16	11.11	9.31	6.38

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*	4	146.1	16024	15.29	13.92	13.15	12.20	11.16	9.36	6.46

Stn: 378 Lane:J3 Temp: J/C: Air: 70 PvT: 70 11:32

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	109.6	12016	9.09	9.01	8.78	8.40	7.91	6.80	4.64
	C	109.6	12016	9.01	8.79	8.57	8.15	7.65	6.59	4.34
	C	109.9	12040	9.22	9.05	8.83	8.44	7.96	6.84	4.73
*	2	78.7	8632	6.79	6.64	6.51	6.21	5.87	5.11	3.51
*	2	78.7	8632	6.79	6.64	6.47	6.21	5.87	5.07	3.51
*	2	79.0	8664	6.83	6.64	6.47	6.21	5.82	5.03	3.51
*	2	79.0	8656	6.79	6.64	6.47	6.21	5.82	5.03	3.47
*	3	109.6	12016	9.22	9.05	8.83	8.44	7.96	6.84	4.68
*	3	109.4	11992	9.09	9.01	8.78	8.40	7.91	6.80	4.60
*	3	109.6	12008	9.22	9.05	8.87	8.44	7.96	6.89	4.73
*	3	109.4	12000	9.22	9.05	8.83	8.44	7.96	6.84	4.68
*	4	147.4	16152	12.28	11.94	11.65	11.14	10.49	9.05	6.12
*	4	147.7	16192	12.32	11.98	11.70	11.19	10.49	9.05	6.12
*	4	147.8	16200	12.32	11.94	11.70	11.14	10.49	9.05	6.07
*	4	147.5	16176	12.32	11.98	11.70	11.14	10.49	9.05	6.07

Stn: 418 Lane:J2 Temp: J/C: Air: 69 PvT: 72 11:35

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	109.3	11984	12.44	11.55	11.01	10.17	9.33	7.84	5.38
	C	109.9	12040	11.94	11.07	10.54	9.75	8.98	7.54	5.12
	C	110.1	12080	11.86	11.07	10.50	9.75	8.98	7.49	5.07
*	2	80.3	8808	8.92	8.23	7.88	7.30	6.71	5.63	3.86
*	2	80.3	8800	8.88	8.23	7.84	7.30	6.71	5.63	3.86
*	2	80.3	8800	8.80	8.14	7.80	7.22	6.62	5.55	3.82
*	2	79.7	8736	8.88	8.23	7.84	7.26	6.71	5.63	3.86
*	3	110.0	12064	11.94	11.12	10.58	9.79	9.02	7.54	5.16
*	3	109.6	12008	11.90	11.07	10.54	9.75	8.98	7.49	5.07
*	3	109.3	11976	11.90	11.07	10.50	9.75	8.98	7.49	5.12
*	3	109.0	11952	11.90	11.07	10.54	9.75	8.93	7.49	5.12
*	4	144.5	15840	16.21	14.87	14.10	13.04	11.96	9.96	6.77
*	4	144.3	15832	16.17	14.82	14.10	13.04	11.96	9.96	6.72
*	4	144.8	15872	16.21	14.82	14.10	13.04	11.96	9.96	6.72
*	4	144.8	15880	16.09	14.82	14.10	13.00	11.91	9.96	6.72

Stn: 424 Lane:J3 Temp: J/C: Air: 69 PvT: 70 11:38

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	109.7	12024	9.80	9.61	9.38	8.95	8.40	7.23	4.90
	C	109.9	12040	9.68	9.48	9.25	8.82	8.27	7.10	4.81
	C	110.1	12072	9.72	9.48	9.21	8.78	8.27	7.06	4.77
*	2	78.8	8640	7.16	6.98	6.73	6.42	6.00	5.20	3.60
*	2	79.4	8704	7.12	6.94	6.73	6.37	6.04	5.16	3.56
*	2	79.0	8656	7.21	7.02	6.77	6.46	6.09	5.24	3.60
*	2	79.3	8688	7.16	6.94	6.73	6.42	6.04	5.20	3.51
*	3	110.1	12072	9.76	9.57	9.30	8.86	8.36	7.15	4.81
*	3	109.7	12032	9.68	9.48	9.21	8.78	8.27	7.10	4.73
*	3	109.7	12032	9.72	9.52	9.25	8.82	8.31	7.10	4.81
*	3	109.6	12008	9.68	9.48	9.25	8.86	8.31	7.10	4.77
*	4	146.4	16048	12.99	12.62	12.25	11.69	10.98	9.36	6.20
*	4	145.7	15968	13.03	12.62	12.30	11.74	11.02	9.40	6.20
*	4	145.9	16000	13.03	12.67	12.34	11.78	11.07	9.49	6.25
*	4	146.1	16008	12.99	12.58	12.38	11.74	11.02	9.40	6.20

Stn: 431 Lane:J2 Temp: J/C: Air: 69 PvT: 70 11:41

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	109.0	11944	11.27	10.47	9.98	9.29	8.58	7.28	5.03
	C	108.7	11920	10.98	10.21	9.77	9.08	8.45	7.10	4.90
	C	108.7	11912	10.98	10.17	9.73	9.08	8.36	7.06	4.86
*	2	77.7	8520	8.21	7.54	7.24	6.75	6.27	5.29	3.64
*	2	78.1	8560	8.21	7.58	7.20	6.71	6.22	5.24	3.60
*	2	78.0	8544	8.25	7.63	7.28	6.80	6.27	5.33	3.64
*	2	78.0	8552	8.21	7.54	7.20	6.71	6.22	5.24	3.60
*	3	108.7	11912	11.10	10.30	9.85	9.16	8.49	7.15	4.94
*	3	108.8	11936	11.10	10.30	9.85	9.16	8.49	7.15	4.90
*	3	108.6	11904	11.10	10.30	9.81	9.16	8.45	7.10	4.86
*	3	108.6	11896	11.19	10.34	9.85	9.16	8.49	7.15	4.90
*	4	145.7	15968	14.87	13.66	12.98	12.12	11.25	9.40	6.42

File: C:\FWD\DATA\833802C2.FWD
Road: MB-75 NORTHBOUND LANE, 15 MILES SOUTH OF WINNIPEG, MB.
Subsection: 833802

*	4	145.7	15968	14.83	13.62	12.98	12.07	11.16	9.36	6.42
*	4	145.5	15952	14.87	13.70	13.07	12.12	11.11	9.36	6.38
*	4	145.5	15960	14.91	13.75	13.07	12.12	11.20	9.40	6.42

Stn: 435 Lane:J3 Temp: J/C: Air: 70 PvT: 70 11:43

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	109.1	11960	9.22	9.13	8.95	8.57	8.09	6.97	4.81
	C	109.0	11960	9.22	9.13	8.91	8.53	8.05	6.97	4.81
	C	108.6	11896	9.17	9.09	8.87	8.48	8.05	6.93	4.77
*	2	78.1	8576	6.87	6.68	6.51	6.33	5.96	5.24	3.60
*	2	77.7	8520	6.87	6.68	6.51	6.33	5.91	5.20	3.56
*	2	77.7	8512	6.83	6.55	6.43	6.25	5.87	5.16	3.47
*	2	78.1	8560	6.87	6.59	6.47	6.29	5.91	5.20	3.51
*	3	109.0	11952	9.17	9.05	8.83	8.53	8.05	6.97	4.73
*	3	108.6	11904	9.17	9.05	8.83	8.53	8.00	6.97	4.73
*	3	108.4	11888	9.22	9.13	8.91	8.61	8.09	7.06	4.77
*	3	108.6	11896	9.22	9.09	8.87	8.57	8.09	7.02	4.77
*	4	146.4	16048	12.44	12.06	11.78	11.36	10.71	9.27	6.29
*	4	146.2	16032	12.36	12.02	11.78	11.40	10.71	9.27	6.20
*	4	146.1	16016	12.40	12.11	11.83	11.44	10.76	9.27	6.29
*	4	146.1	16008	12.36	12.06	11.78	11.40	10.71	9.27	6.25

Stn: 461 Lane:J2 Temp: J/C: Air: 72 PvT: 70 11:47

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	107.7	11800	12.99	11.89	11.27	10.34	9.42	7.80	5.20
	C	108.3	11872	13.03	11.98	11.27	10.38	9.51	7.84	5.20
	C	108.4	11880	13.15	11.98	11.35	10.43	9.51	7.88	5.20
*	2	78.7	8624	9.80	8.83	8.35	7.73	7.07	5.85	3.90
*	2	78.3	8576	9.80	8.79	8.35	7.68	7.02	5.85	3.90
*	2	78.0	8544	9.72	8.75	8.27	7.64	7.07	5.81	3.86
*	2	78.1	8568	9.72	8.75	8.31	7.64	6.93	5.81	3.86
*	3	108.6	11896	13.11	12.06	11.40	10.47	9.56	7.93	5.25
*	3	108.3	11864	13.15	12.06	11.35	10.47	9.56	7.93	5.25
*	3	108.6	11904	13.20	12.11	11.40	10.51	9.56	7.93	5.25
*	3	108.6	11904	13.20	12.02	11.35	10.43	9.47	7.88	5.16
*	4	143.8	15760	17.64	16.03	15.17	13.93	12.62	10.44	6.77
*	4	144.3	15832	17.60	15.99	15.08	13.89	12.62	10.44	6.77
*	4	144.1	15800	17.64	16.03	15.12	13.93	12.67	10.44	6.81
*	4	144.1	15792	17.72	16.16	15.25	14.06	12.85	10.61	7.03V

'ACCEPT TEST WITH VAR.

Stn: 469 Lane:J3 Temp: J/C: Air: 72 PvT: 74 11:50

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	107.4	11776	10.64	10.51	10.28	9.84	9.33	8.23	5.86
	C	107.5	11784	10.56	10.38	10.15	9.75	9.20	8.06	5.77
	C	107.5	11792	10.31	10.21	9.94	9.54	8.98	7.84	5.51
*	2	77.5	8504	7.92	7.67	7.50	7.18	6.80	6.02	4.34
*	2	77.7	8512	7.92	7.71	7.50	7.22	6.80	5.98	4.29
*	2	77.5	8504	7.92	7.67	7.50	7.18	6.80	5.98	4.29
*	2	77.7	8512	7.79	7.58	7.41	7.13	6.71	5.94	4.21
*	3	107.2	11760	10.47	10.30	10.07	9.62	9.11	8.01	5.68
*	3	107.1	11744	10.47	10.30	10.07	9.62	9.11	7.97	5.64
*	3	107.1	11736	10.47	10.34	10.11	9.67	9.11	8.01	5.68
*	3	107.1	11752	10.52	10.34	10.11	9.67	9.11	8.01	5.68
*	4	144.1	15792	14.03	13.66	13.32	12.79	12.09	10.61	7.46
*	4	144.6	15856	14.08	13.79	13.41	12.88	12.18	10.66	7.55
*	4	143.9	15784	14.08	13.79	13.41	12.88	12.18	10.70	7.59
*	4	144.1	15800	14.08	13.75	13.41	12.83	12.13	10.66	7.50

Stn: 478 Lane:J2 Temp: J/C: Air: 73 PvT: 72 11:52

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	106.2	11648	17.47	15.64	14.70	13.42	12.18	9.96	6.59
	C	106.2	11648	17.26	15.43	14.48	13.21	11.96	9.75	6.38
	C	106.5	11672	17.34	15.51	14.57	13.30	12.00	9.83	6.42
*	2	76.8	8416	13.20	11.76	11.10	10.09	9.16	7.49	4.90
*	2	76.2	8352	13.15	11.72	11.05	10.05	9.11	7.45	4.90
*	2	77.2	8464	13.24	11.85	11.14	10.17	9.20	7.49	4.94
*	2	77.0	8432	13.24	11.76	11.10	10.13	9.11	7.45	4.90
*	3	106.7	11704	17.55	15.68	14.74	13.42	12.13	9.88	6.51

File: C:\FWD\DATA\833802C2.FWD
Road: MB-75 NORTHBOUND LANE, 15 MILES SOUTH OF WINNIPEG, MB.
Subsection: 833802

*	3	106.2	11656	17.55	15.68	14.74	13.47	12.18	9.92	6.51
*	3	106.1	11624	17.55	15.64	14.74	13.42	12.13	9.88	6.46
*	3	106.2	11656	17.55	15.68	14.74	13.42	12.13	9.92	6.46
*	4	142.9	15664	22.33	19.95	18.72	17.10	15.47	12.61	8.24
*	4	143.8	15760	22.58	20.12	18.94	17.27	15.65	12.78	8.41
*	4	143.6	15744	22.54	20.12	18.89	17.31	15.65	12.74	8.28
*	4	143.6	15752	22.66	20.21	19.02	17.35	15.73	12.82	8.37

Stn: 484 Lane:J3 Temp: J/C: Air: 74 PvT: 71 11:55

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.6	11904	10.22	10.04	9.81	9.41	8.89	7.84	5.77
	C	108.4	11888	10.14	9.95	9.73	9.37	8.80	7.71	5.68
	C	108.1	11864	10.14	9.91	9.68	9.29	8.71	7.67	5.60
*	2	77.8	8528	7.58	7.37	7.20	6.92	6.53	5.76	4.25
*	2	77.8	8536	7.50	7.33	7.15	6.84	6.49	5.68	4.16
*	2	77.7	8520	7.58	7.37	7.20	6.88	6.49	5.72	4.21
*	2	77.7	8520	7.46	7.28	7.11	6.84	6.44	5.68	4.12
*	3	108.7	11920	10.22	10.04	9.81	9.41	8.89	7.80	5.77
*	3	108.0	11832	10.18	10.04	9.77	9.41	8.89	7.84	5.81
*	3	108.1	11856	10.05	9.87	9.64	9.24	8.71	7.67	5.60
*	3	107.7	11816	10.10	9.91	9.68	9.29	8.76	7.71	5.64
*	4	146.5	16056	13.45	13.14	12.85	12.33	11.65	10.27	7.50
*	4	147.1	16136	13.57	13.27	12.94	12.45	11.73	10.31	7.55
*	4	147.5	16168	13.57	13.31	12.98	12.50	11.82	10.40	7.59
*	4	147.1	16136	13.57	13.36	12.98	12.54	11.82	10.40	7.59

'ACCEPT TEST WITH VAR.

Stn: 501 Lane:J2 Temp: J/C: Air: 75 PvT: 69 11:57

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	107.8	11824	15.04	13.53	12.85	11.74	10.67	8.84	5.64
	C	108.4	11888	13.32	12.11	11.48	10.51	9.60	7.93	5.07
	C	108.4	11888	13.24	11.98	11.44	10.47	9.56	7.93	5.07
*	2	78.1	8568	9.55	8.62	8.18	7.51	6.85	5.68	3.69
*	2	78.7	8624	9.59	8.66	8.31	7.60	6.98	5.81	3.73
*	2	79.1	8672	9.59	8.66	8.27	7.56	6.93	5.72	3.69
*	2	79.1	8672	9.55	8.66	8.27	7.56	6.93	5.72	3.69
*	3	109.3	11984	13.28	11.98	11.57	10.60	9.69	8.06	5.12
*	3	108.6	11896	13.11	11.85	11.44	10.47	9.60	7.93	5.03
*	3	108.0	11840	13.07	11.85	11.40	10.43	9.56	7.93	5.03
*	3	108.3	11880	13.11	11.85	11.40	10.47	9.56	7.93	5.07
*	4	143.6	15744	17.85	16.03	15.34	14.10	12.80	10.61	6.72
*	4	144.6	15864	17.85	16.03	15.38	14.10	12.85	10.66	6.64
*	4	143.6	15744	17.76	15.94	15.21	14.01	12.76	10.53	6.64
*	4	144.8	15872	17.81	16.07	15.34	14.10	12.85	10.66	6.64

Stn: 509 Lane:J3 Temp: J/C: Air: 74 PvT: 74 12:00

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.8	11936	9.55	9.44	9.25	8.91	8.45	7.45	5.25
	C	108.8	11936	9.43	9.35	9.21	8.82	8.40	7.36	5.16
	C	108.8	11936	9.43	9.35	9.17	8.78	8.40	7.36	5.12
*	2	79.0	8656	7.08	6.89	6.73	6.46	6.09	5.37	3.82
*	2	78.8	8648	7.12	6.98	6.81	6.54	6.22	5.50	3.86
*	2	78.7	8632	7.12	6.94	6.77	6.54	6.18	5.46	3.86
*	2	78.8	8640	7.12	6.94	6.77	6.50	6.18	5.42	3.82
*	3	108.8	11936	9.43	9.35	9.21	8.78	8.40	7.36	5.20
*	3	108.6	11904	9.43	9.39	9.17	8.78	8.40	7.32	5.16
*	3	108.6	11904	9.43	9.31	9.17	8.78	8.36	7.32	5.12
*	3	108.7	11912	9.51	9.44	9.25	8.91	8.49	7.41	5.25
*	4	145.2	15920	12.65	12.45	12.21	11.74	11.20	9.79	6.90
*	4	146.5	16064	12.69	12.50	12.25	11.78	11.20	9.88	6.90
*	4	146.1	16024	12.65	12.45	12.25	11.74	11.16	9.83	6.85
*	4	146.4	16040	12.82	12.58	12.34	11.86	11.33	9.96	7.03

Error: 559

Stn: 519 Lane:J2 Temp: J/C: Air: 74 PvT: 73 12:02

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.7	11912	12.02	10.94	10.41	9.58	8.80	7.32	4.94
	C	108.7	11920	12.02	10.94	10.41	9.58	8.80	7.32	4.94
	C	108.3	11872	11.98	10.94	10.37	9.58	8.80	7.32	4.90

File: C:\FWD\DATA\833802C2.FWD
Road: MB-75 NORTHBOUND LANE, 15 MILES SOUTH OF WINNIPEG, MB.
Subsection: 833802

*	2	77.7	8528	8.76	8.01	7.63	7.05	6.49	5.37	3.64
*	2	78.3	8584	8.92	8.14	7.71	7.13	6.58	5.46	3.73
*	2	78.3	8576	8.88	8.14	7.71	7.13	6.58	5.46	3.73
*	2	78.3	8584	8.84	8.06	7.67	7.05	6.49	5.42	3.64
*	3	109.0	11952	12.11	10.99	10.41	9.62	8.85	7.36	4.94
*	3	108.6	11896	11.98	10.94	10.37	9.58	8.76	7.28	4.94
*	3	108.4	11888	12.07	10.94	10.37	9.58	8.80	7.28	4.90
*	3	108.4	11880	12.11	10.99	10.45	9.62	8.85	7.36	4.99
*	4	145.4	15936	16.13	14.69	13.88	12.83	11.69	9.70	6.51
*	4	145.8	15984	16.00	14.56	13.84	12.75	11.65	9.66	6.46
*	4	145.8	15984	16.00	14.61	13.84	12.79	11.69	9.66	6.46
*	4	145.9	16000	16.00	14.61	13.84	12.75	11.69	9.66	6.42

Stn: 526 Lane:J3 Temp: J/C: Air: 75 PvT: 75 12:04

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.7	11920	10.10	10.00	9.73	9.37	8.89	7.84	5.55
	C	108.6	11904	10.01	9.82	9.60	9.24	8.80	7.75	5.47
	C	107.8	11824	10.01	9.87	9.68	9.29	8.80	7.80	5.51
*	2	77.8	8528	7.42	7.24	7.11	6.84	6.49	5.72	4.08
*	2	77.7	8520	7.50	7.28	7.15	6.92	6.58	5.76	4.12
*	2	77.7	8512	7.42	7.20	7.11	6.84	6.49	5.72	4.03
*	2	77.8	8528	7.50	7.28	7.15	6.88	6.53	5.76	4.12
*	3	108.6	11904	10.01	9.87	9.68	9.29	8.80	7.75	5.47
*	3	107.8	11824	9.97	9.78	9.60	9.24	8.76	7.71	5.42
*	3	107.7	11808	10.05	9.82	9.64	9.33	8.85	7.80	5.51
*	3	107.5	11784	10.01	9.82	9.64	9.29	8.80	7.80	5.47
*	4	146.1	16016	13.15	12.93	12.72	12.20	11.60	10.22	7.20
*	4	147.0	16112	13.24	13.01	12.81	12.33	11.73	10.31	7.24
*	4	146.2	16040	13.20	12.97	12.72	12.28	11.65	10.27	7.24
*	4	146.2	16040	13.28	13.01	12.77	12.28	11.69	10.31	7.24

Mileage:-.008 -> .1

File: C:\FWD\DATA\833802C3.FWD
Road: MB-75 NORTHBOUND LANE, 15 MILES SOUTH OF WINNIPEG, MB.
Subsection: 833802

FWD S/N : 8002-063
Operator ID : WOREL, BENJAMIN J.

Stationing...: Feet

EXTRA TESTS FOR SMP

Diameter of Plate: 11.8
Deflector distances : 12 12 18 24 36 60

SHRP TESTING - RIGID/CRCP - JOINT AND CRACK TEST (J4/C4, J5/C5)
Sequence: CCC222233334444

Stn: -39 Lane:J4 Temp: J/C: 24 Air: 73 PvT: 81 12:14

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.7	11920	11.35	9.61	6.30	5.83	5.42	4.64	3.25
	C	108.8	11936	11.27	9.61	6.34	5.83	5.47	4.68	3.34
	C	108.7	11928	11.23	9.52	6.21	5.70	5.33	4.55	3.21
*	2	78.4	8600	8.46	7.15	4.67	4.31	4.00	3.47	2.43
*	2	78.3	8576	8.42	7.11	4.63	4.22	3.96	3.38	2.34
*	2	78.3	8584	8.46	7.24	4.71	4.35	4.09	3.47	2.47
*	2	79.0	8656	8.46	7.20	4.67	4.31	4.00	3.42	2.43
*	3	109.3	11976	11.31	9.65	6.26	5.74	5.38	4.59	3.25
*	3	109.1	11960	11.31	9.61	6.26	5.74	5.38	4.59	3.25
*	3	108.6	11904	11.27	9.61	6.21	5.70	5.33	4.55	3.25
*	3	108.7	11920	11.31	9.61	6.21	5.70	5.33	4.55	3.25
*	4	147.2	16152	14.58	12.41	8.18	7.56	7.07	5.98	4.21
*	4	146.8	16096	14.54	12.45	8.14	7.51	7.02	5.98	4.21
*	4	146.7	16080	14.58	12.45	8.14	7.47	7.02	5.98	4.21
*	4	147.0	16112	14.66	12.54	8.18	7.56	7.02	6.02	4.25

Stn: -38 Lane:J5 Temp: J/C: 24 Air: 73 PvT: 80 12:17

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.6	11896	14.41	6.51	11.87	10.68	9.65	7.80	4.94
	C	108.1	11856	14.33	6.55	11.78	10.64	9.60	7.71	4.94
	C	108.0	11832	14.37	6.55	11.83	10.72	9.65	7.80	4.99
*	2	78.1	8560	10.81	4.87	8.91	8.02	7.25	5.85	3.69
*	2	78.1	8568	10.89	4.91	8.95	8.10	7.29	5.89	3.77
*	2	78.1	8560	10.89	4.91	8.95	8.10	7.33	5.89	3.77
*	2	78.0	8544	10.85	4.91	8.91	8.02	7.25	5.85	3.73
*	3	108.1	11856	14.45	6.59	11.87	10.72	9.65	7.80	4.94
*	3	107.8	11816	14.54	6.64	11.95	10.76	9.78	7.84	5.03
*	3	107.7	11808	14.54	6.59	11.95	10.81	9.78	7.84	5.03
*	3	107.8	11824	14.54	6.55	11.91	10.76	9.73	7.84	4.99
*	4	144.8	15872	18.85	8.66	15.51	14.01	12.58	10.18	6.51
*	4	145.4	15936	18.98	8.70	15.64	14.10	12.71	10.22	6.51
*	4	145.1	15904	19.02	8.62	15.68	14.14	12.71	10.27	6.55
*	4	145.4	15936	19.15	8.57	15.72	14.23	12.80	10.31	6.55

Stn: -13 Lane:J4 Temp: J/C: 36 Air: 74 PvT: 80 12:19

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.4	11888	10.52	8.92	8.65	7.89	7.25	5.94	3.95
	C	108.6	11896	9.64	8.32	8.74	7.98	7.29	6.07	4.08
	C	108.6	11904	9.51	8.14	8.70	7.98	7.29	6.02	3.99
*	2	78.0	8552	7.04	6.08	6.60	6.04	5.56	4.59	3.17
*	2	78.1	8560	7.00	6.03	6.56	6.08	5.56	4.59	3.12
*	2	78.1	8560	6.95	5.99	6.51	6.04	5.51	4.55	3.08
*	2	78.3	8584	7.00	5.99	6.51	5.99	5.47	4.51	3.08
*	3	108.7	11920	9.68	8.27	8.87	8.15	7.42	6.15	4.12
*	3	108.3	11864	9.55	8.14	8.83	8.10	7.38	6.11	4.08
*	3	108.0	11832	9.51	8.14	8.78	8.06	7.29	6.07	4.08
*	3	108.0	11840	9.55	8.19	8.83	8.10	7.38	6.11	4.08
*	4	145.9	16000	13.15	11.25	11.57	10.60	9.65	7.97	5.29
*	4	146.2	16040	12.99	11.07	11.65	10.60	9.69	7.97	5.38
*	4	146.5	16056	12.95	11.12	11.65	10.68	9.73	8.01	5.34
*	4	146.4	16048	12.90	11.07	11.65	10.68	9.69	7.97	5.34

Stn: -12 Lane:J5 Temp: J/C: 36 Air: 75 PvT: 79 12:22

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.3	11872	9.89	9.01	8.53	7.85	7.16	5.98	4.16
	C	108.1	11856	9.76	9.13	8.40	7.77	7.07	5.94	4.12
	C	108.1	11848	9.68	9.09	8.35	7.68	7.02	5.85	4.08

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*	2	77.4	8488	7.29	6.76	6.26	5.74	5.29	4.42	3.08
*	2	77.5	8504	7.33	6.76	6.26	5.74	5.29	4.46	3.12
*	2	77.8	8528	7.29	6.72	6.17	5.70	5.24	4.38	3.04
*	2	77.4	8488	7.25	6.68	6.17	5.66	5.20	4.38	2.99
*	3	108.3	11872	9.72	9.13	8.35	7.73	7.07	5.89	4.12
*	3	107.8	11824	9.64	9.05	8.31	7.64	6.98	5.85	4.03
*	3	107.5	11792	9.68	9.05	8.31	7.64	7.02	5.85	4.08
*	3	107.7	11808	9.68	9.09	8.31	7.64	6.98	5.85	4.03
*	4	146.4	16048	13.03	12.06	11.10	10.22	9.33	7.75	5.34
*	4	146.8	16096	12.90	12.02	11.01	10.17	9.29	7.71	5.29
*	4	146.8	16096	12.95	12.06	11.05	10.17	9.25	7.71	5.34
*	4	146.7	16088	12.95	12.11	11.10	10.17	9.33	7.75	5.38

Stn: 4 Lane:J4 Temp: J/C: 39 Air: 76 PvT: 80 12:26

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	107.5	11792	13.62	11.55	7.88	7.30	6.76	5.72	3.99
	C	107.4	11776	13.70	11.50	7.50	6.97	6.44	5.50	3.82
	C	107.0	11736	13.87	11.63	7.11	6.63	6.18	5.24	3.77
*	2	76.8	8424	10.47	8.79	5.36	4.98V	4.67V	3.90	2.82
*	2	77.2	8464	10.47	8.70	5.23	4.85	4.58	3.81	2.82
*	2	77.2	8480	10.56	8.75	5.23	4.81	4.58	3.77	2.82
*	2	77.2	8472	10.60	8.79	5.18	4.81	4.49	3.77	2.78
*	3	107.4	11776	14.24	11.89	6.90	6.42	6.00	5.07	3.64
*	3	107.4	11776	14.33	12.02	6.86	6.33	5.96	5.03	3.60
*	3	106.8	11712	14.41	12.11	6.81	6.37	5.96	5.07	3.64
*	3	106.8	11704	14.50	12.11	6.77	6.33	5.91	5.03	3.60
*	4	144.8	15880	19.23	16.12	8.70	8.15	7.56	6.37	4.64
*	4	145.2	15912	19.40	16.16	8.61	8.02	7.47	6.37	4.55
*	4	144.8	15872	19.52	16.37	8.57	8.06	7.47	6.37	4.55
*	4	144.9	15888	19.65	16.50	8.57	8.02	7.42	6.33	4.51

'ACCEPT TEST WITH VAR.

Stn: 5 Lane:J5 Temp: J/C: 39 Air: 76 PvT: 79 12:30

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.7	11912	15.38	7.45	12.94	11.82	10.71	8.88	5.77
	C	107.8	11824	15.29	7.54	12.81	11.74	10.58	8.75	5.81
	C	107.4	11776	15.38	7.41	12.90	11.74	10.67	8.84	5.73
*	2	77.7	8520	11.86	5.43	9.85	8.99	8.13	6.72	4.38
*	2	77.5	8496	11.81	5.39	9.85	8.95	8.13	6.72	4.47
*	2	77.4	8496	11.86	5.43	9.90	9.03	8.18	6.76	4.47
*	2	77.5	8496	11.94	5.47	9.94	9.08	8.22	6.80	4.51
*	3	107.4	11776	15.58	7.41	13.11	11.95	10.85	8.97	5.99
*	3	107.2	11760	15.67	7.33	13.11	11.99	10.85	8.97	5.90
*	3	107.4	11768	15.71	7.24	13.20	12.03	10.89	9.01	5.81
*	3	107.1	11744	15.79	7.28	13.24	12.07	10.89	9.01	5.94
*	4	144.1	15800	20.40	9.61	17.05	15.53	14.05	11.57	7.68
*	4	144.8	15872	20.61	9.61	17.27	15.75	14.22	11.78	7.81
*	4	144.3	15824	20.65	9.57	17.31	15.79	14.31	11.83	7.76
*	4	144.8	15872	20.74	9.48	17.39	15.83	14.31	11.83	7.81

Stn: 17 Lane:J4 Temp: J/C: 39 Air: 75 PvT: 80 12:33

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.7	11920	10.81	9.09	8.14	7.51	6.89	5.72	4.03
	C	108.6	11896	10.77	9.13	8.31	7.64	7.02	5.89	4.21
	C	108.6	11904	10.64	9.05	8.18	7.56	6.89	5.76	4.03
*	2	78.4	8600	8.09	6.72	5.96	5.49	5.07	4.25	2.99
*	2	78.3	8592	8.09	6.72	6.00	5.53	5.07	4.29	2.99
*	2	78.1	8568	8.00	6.76	5.96	5.49	5.07	4.29	2.95
*	2	78.3	8592	8.04	6.72	5.96	5.49	5.02	4.25	2.95
*	3	108.1	11848	10.52	8.88	7.97	7.30	6.67	5.55	3.86
*	3	107.8	11816	10.60	9.01	8.10	7.43	6.80	5.72	3.99
*	3	107.5	11792	10.56	8.96	8.01	7.39	6.71	5.68	3.90
*	3	108.0	11832	10.64	9.09	8.14	7.47	6.85	5.72	4.03
*	4	146.1	16024	13.87	11.76	10.93	10.00	9.11	7.62	5.25
*	4	146.7	16080	13.91	11.94	10.97	10.09	9.25	7.67	5.29
*	4	146.4	16040	13.91	11.89	10.93	10.00	9.11	7.58	5.25
*	4	146.4	16048	14.03	11.94	10.97	10.09	9.20	7.71	5.29

Stn: 19 Lane:J5 Temp: J/C: 39 Air: 75 PvT: 80 12:35

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7

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	C	108.1	11856	14.12	7.24	11.61	10.47	9.47	7.67	4.99
	C	107.5	11792	14.20	7.11	11.61	10.47	9.47	7.62	4.94
	C	107.7	11816	14.37	7.07	11.78	10.60	9.60	7.71	4.94
*	2	77.4	8488	10.93	5.13	8.95	8.06	7.29	5.89	3.77
*	2	77.4	8488	11.02	5.13	8.95	8.06	7.33	5.89	3.73
*	2	77.7	8512	11.14	5.13	9.08	8.19	7.42	5.98	3.82
*	2	77.7	8512	11.10	5.17	9.08	8.19	7.38	5.98	3.82
*	3	107.7	11800	14.66	7.02	12.04	10.85	9.82	7.93	5.12
*	3	107.2	11760	14.79	6.94	12.08	10.93	9.87	7.97	5.16
*	3	107.1	11752	14.87	6.94	12.17	10.93	9.91	8.01	5.16
*	3	107.1	11744	14.87	6.85	12.12	10.93	9.87	7.97	5.12
*	4	145.1	15912	19.31	9.13	15.85	14.31	12.89	10.40	6.72
*	4	144.9	15888	19.48	9.13	16.02	14.39	13.02	10.48	6.81
*	4	145.2	15928	19.65	9.09	16.11	14.52	13.11	10.61	6.81
*	4	145.2	15920	19.73	9.05	16.20	14.61	13.20	10.66	6.85

Stn: 47 Lane:J4 Temp: J/C: 46 Air: 75 PvT: 84 12:38

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	107.5	11784	10.56	8.96	10.20	9.29	8.45	6.89	4.47
	C	107.5	11800	10.39	8.83	10.07	9.16	8.36	6.80	4.38
	C	107.5	11792	10.39	8.88	10.11	9.24	8.40	6.89	4.42
*	2	77.1	8456	7.71	6.46	7.41	6.80	6.18	5.07	3.25
*	2	77.4	8488	7.67	6.46	7.41	6.80	6.13	5.07	3.25
*	2	77.4	8480	7.96V	6.68V	7.63V	7.01	6.40V	5.29V	3.47V
*	2	77.2	8472	7.75	6.51	7.45	6.84	6.22	5.11	3.25
*	3	107.8	11824	10.43	8.83	10.07	9.24	8.36	6.80	4.38
*	3	107.5	11792	10.39	8.83	10.11	9.24	8.40	6.89	4.42
*	3	107.1	11744	10.35	8.79	10.03	9.16	8.31	6.80	4.34
*	3	107.2	11760	10.39	8.83	10.07	9.16	8.31	6.80	4.34
*	4	146.7	16080	13.91	11.81	13.37	12.20	11.11	9.10	5.77
*	4	146.7	16080	13.83	11.76	13.32	12.24	11.11	9.01	5.73
*	4	146.5	16072	13.87	11.81	13.37	12.24	11.07	9.05	5.73
*	4	146.5	16072	13.95	11.94	13.45	12.28	11.16	9.18	5.86

'ACCEPT TEST WITH VAR.

Stn: 48 Lane:J5 Temp: J/C: 46 Air: 75 PvT: 82 12:40

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	107.7	11808	16.26	7.50	13.37	12.12	10.85	8.62	5.34
	C	107.8	11824	13.03	8.83	10.80	9.75	8.80	7.10	4.51
	C	107.7	11808	12.99	8.88	10.80	9.75	8.80	7.10	4.51
*	2	78.0	8544	9.55	6.76	7.88	7.13	6.44	5.20	3.30
*	2	77.8	8528	9.51	6.72	7.88	7.13	6.44	5.24	3.34
*	2	78.1	8560	9.51	6.76	7.93	7.18	6.49	5.24	3.34
*	2	77.8	8528	9.51	6.72	7.93	7.18	6.44	5.29	3.34
*	3	108.1	11864	13.11	8.88	10.84	9.79	8.80	7.10	4.51
*	3	107.5	11800	13.07	8.83	10.80	9.75	8.76	7.06	4.47
*	3	107.5	11784	13.07	8.83	10.88	9.79	8.80	7.15	4.55
*	3	107.2	11752	13.11	8.88	10.88	9.84	8.85	7.15	4.51
*	4	145.1	15912	17.81	11.29	14.70	13.30	11.91	9.57	5.94
*	4	144.9	15896	17.60	11.25	14.52	13.13	11.78	9.44	5.86
*	4	145.2	15920	17.64	11.38	14.61	13.25	11.87	9.57	5.94
*	4	145.1	15912	17.64	11.33	14.57	13.21	11.82	9.53	5.94

Stn: 64 Lane:J4 Temp: J/C: 37 Air: 75 PvT: 81 12:42

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.7	11920	9.55	8.14	8.18	7.51	6.93	5.76	3.95
	C	108.4	11888	9.43	8.01	8.10	7.43	6.85	5.63	3.90
	C	108.3	11872	9.38	7.97	8.05	7.35	6.80	5.59	3.86
*	2	78.6	8608	7.00	5.95	5.96	5.49	5.02	4.20	2.86
*	2	78.0	8552	6.95	5.90	5.91	5.45	5.02	4.16	2.86
*	2	78.0	8552	6.95	5.90	5.87	5.45	4.98	4.16	2.86
*	2	78.4	8592	7.00	5.95	5.91	5.45	5.02	4.16	2.86
*	3	108.7	11912	9.51	8.10	8.05	7.39	6.80	5.63	3.90
*	3	108.1	11856	9.47	8.06	7.97	7.35	6.71	5.59	3.82
*	3	108.3	11864	9.47	8.06	8.01	7.35	6.76	5.63	3.86
*	3	107.7	11816	9.64	8.14	8.05	7.39	6.80	5.63	3.86
*	4	146.2	16040	12.65	10.77	10.71	9.84	9.02	7.45	5.07
*	4	146.5	16064	12.61	10.77	10.67	9.79	8.98	7.41	5.07
*	4	146.5	16064	12.65	10.77	10.71	9.84	9.02	7.45	5.12
*	4	146.5	16064	12.65	10.77	10.63	9.79	8.98	7.45	5.07

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Stn: 65 Lane:J5 Temp: J/C: 37 Air: 75 PvT: 80 12:45

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	107.7	11800	12.78	7.11	10.50	9.50	8.58	6.93	4.60
	C	108.1	11848	12.36	7.50	10.15	9.16	8.31	6.67	4.47
	C	107.8	11816	12.48	7.41	10.24	9.24	8.31	6.76	4.47
*	2	77.7	8512	9.43	5.43	7.71	6.97	6.27	5.11	3.34
*	2	77.7	8520	9.47	5.39	7.71	7.01	6.31	5.16	3.43
*	2	77.7	8520	9.47	5.34	7.75	7.01	6.31	5.16	3.38
*	2	78.3	8584	9.51	5.34	7.80	7.05	6.31	5.11	3.38
*	3	107.8	11824	12.99	7.41	10.63	9.62	8.67	7.02	4.68
*	3	107.8	11816	13.03	7.24	10.67	9.58	8.67	6.97	4.64
*	3	107.1	11744	13.07	7.15	10.71	9.67	8.71	7.02	4.68
*	3	107.2	11752	13.07	7.11	10.67	9.62	8.67	6.97	4.60
*	4	145.2	15920	17.26	9.44	14.14	12.75	11.47	9.27	6.07
*	4	145.5	15952	17.47	9.39	14.31	12.88	11.56	9.36	6.16
*	4	145.2	15928	17.60	9.35	14.40	13.00	11.65	9.40	6.16
*	4	145.7	15960	17.68	9.31	14.44	13.04	11.69	9.44	6.20

Stn: 90 Lane:J4 Temp: J/C: 32 Air: 75 PvT: 81 12:47

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.7	11912	10.31	8.88	9.77	8.99	8.27	6.89	4.60
	C	108.4	11888	9.85	8.57	9.64	8.86	8.18	6.84	4.64
	C	108.1	11848	9.72	8.40	9.55	8.82	8.09	6.76	4.55
*	2	77.7	8512	7.25	6.20	7.03	6.50	6.00	5.03	3.38
*	2	78.0	8552	7.21	6.25	7.07	6.54	6.04	5.07	3.43
*	2	77.7	8512	7.29	6.25	7.07	6.59	6.04	5.07	3.43
*	2	78.0	8552	7.29	6.29	7.15	6.59	6.04	5.07	3.47
*	3	108.7	11920	9.89	8.53	9.73	8.91	8.22	6.89	4.68
*	3	107.8	11824	9.72	8.45	9.64	8.91	8.13	6.84	4.60
*	3	108.1	11848	9.76	8.45	9.60	8.86	8.13	6.80	4.60
*	3	107.8	11824	9.76	8.49	9.64	8.86	8.18	6.84	4.60
*	4	146.5	16056	13.07	11.33	12.68	11.65	10.71	8.97	5.99
*	4	146.8	16104	12.95	11.29	12.72	11.74	10.76	9.01	5.99
*	4	147.0	16112	12.90	11.25	12.72	11.74	10.76	8.97	5.99
*	4	146.7	16080	12.90	11.25	12.72	11.74	10.76	9.01	5.99

Stn: 91 Lane:J5 Temp: J/C: 32 Air: 75 PvT: 81 12:49

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.0	11832	10.22	9.65	8.95	8.32	7.69	6.50	4.42
	C	107.7	11816	10.26	9.78	9.00	8.36	7.73	6.54	4.47
	C	107.5	11784	10.22	9.69	8.91	8.36	7.69	6.50	4.38
*	2	77.4	8488	7.58	7.15	6.64	6.16	5.73	4.81	3.30
*	2	78.0	8544	7.71	7.24	6.64	6.29	5.78	4.90	3.30
*	2	77.8	8528	7.62	7.20	6.68	6.25	5.78	4.90	3.30
*	2	77.8	8536	7.67	7.20	6.68	6.29	5.82	4.94	3.34
*	3	108.1	11864	10.26	9.74	9.00	8.40	7.73	6.59	4.38
*	3	107.1	11752	10.22	9.69	8.95	8.27	7.65	6.46	4.42
*	3	107.1	11744	10.18	9.69	8.95	8.32	7.69	6.46	4.42
*	3	107.4	11768	10.22	9.69	8.95	8.32	7.65	6.46	4.42
*	4	145.8	15992	13.58	12.75	11.78	10.88	10.09	8.49	5.73
*	4	146.2	16040	13.49	12.80	11.78	10.93	10.09	8.45	5.73
*	4	146.2	16040	13.49	12.84	11.78	10.98	10.13	8.53	5.75
*	4	146.2	16032	13.49	12.84	11.85	10.98	10.13	8.53	5.73

Stn: 108 Lane:J4 Temp: J/C: 53 Air: 75 PvT: 81 12:54

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.5	11880	8.53	7.50	7.88	7.30	6.87	5.83	3.86
	C	107.1	11744	8.71	7.58	7.95	7.39	6.76	5.72	3.99
	C	107.1	11744	8.67	7.58	7.93	7.35	6.78	5.68	3.95
*	2	77.2	8472	6.48	5.60	5.67	5.49	5.02	4.25	2.99
*	2	77.1	8456	6.48	5.60	5.67	5.49	5.02	4.25	2.95
*	2	77.5	8512	6.54	5.60	5.67	5.49	5.02	4.25	2.95
*	2	77.8	8536	6.49	5.60	5.67	5.49	5.02	4.25	2.95
*	3	107.7	11800	8.67	7.54	7.93	7.35	6.76	5.68	3.90
*	3	107.7	11800	8.67	7.58	7.88	7.30	6.87	5.83	3.90
*	3	107.5	11800	8.71	7.54	7.93	7.35	8.71	5.88	3.95
*	3	107.5	11800	8.76	7.54	7.88	7.35	8.71	5.83	3.95
*	4	146.5	16056	11.52	10.60	10.45	9.67	8.69	7.45	5.07
*	4	147.4	16160	11.60	10.68	10.58	9.71	8.65	7.41	5.12

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*	4	146.7	16068	11.56	10.00	10.41	9.71	8.65	7.41	5.12
*	4	147.0	16104	11.60	10.06	10.50	9.71	8.69	7.41	5.16

Stn: 109 Lane:J5 Temp: J/C: 53 Air: 75 PvT: 80 12:56

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	107.8	11824	9.01	7.84	7.80	7.09	6.58	5.50	3.99
	C	107.7	11816	8.88	7.84	7.67	7.01	6.49	5.46	3.86
	C	107.4	11776	8.88	7.89	7.71	7.01	6.49	5.46	3.90
*	2	77.2	8464	6.66	5.77	5.70	5.19	4.84	4.07	2.91
*	2	77.0	8440	6.62	5.86	5.70	5.23	4.84	4.12	2.95
*	2	77.2	8460	6.66	5.82	5.74	5.23	4.84	4.12	2.95
*	2	77.5	8496	6.70	5.86	5.78	5.28	4.89	4.12	3.04
*	3	107.7	11816	8.97	7.93	7.75	7.09	6.53	5.55	3.90
*	3	107.0	11728	8.88	7.93	7.71	7.05	6.49	5.50	3.90
*	3	107.1	11744	8.88	7.89	7.67	7.01	6.44	5.46	3.86
*	3	106.8	11704	8.88	7.93	7.71	7.05	6.49	5.46	3.90
*	4	146.5	16072	11.90	10.47	10.24	9.33	8.58	7.19	5.03
*	4	147.1	16128	11.90	10.47	10.15	9.37	8.58	7.19	5.03
*	4	147.2	16144	11.90	10.51	10.20	9.33	8.58	7.15	5.03
*	4	147.2	16152	11.98	10.60	10.33	9.41	8.67	7.23	5.16

Stn: 151 Lane:J4 Temp: J/C: 51 Air: 75 PvT: 85 13:01

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.8	11928	8.42	7.28	8.10	7.51	6.93	5.81	4.08
	C	108.3	11872	8.34	7.28	7.97	7.35	6.71	5.63	3.90
	C	107.7	11816	8.34	7.28	7.97	7.39	6.80	5.68	3.90
*	2	77.5	8504	6.20	5.39	5.87	5.45	5.02	4.20	2.95
*	2	78.0	8544	6.12	5.39	5.87	5.40	4.98	4.20	2.91
*	2	77.7	8512	6.33	5.47	6.00	5.57	5.16	4.33	3.08
*	2	77.7	8512	6.24	5.47	6.00	5.57	5.11	4.33	3.04
*	3	108.3	11872	8.38	7.37	8.05	7.39	6.80	5.63	3.86
*	3	107.7	11816	8.34	7.24	7.97	7.30	6.71	5.68	3.90
*	3	107.5	11792	8.38	7.28	8.01	7.39	6.76	5.68	3.95
*	3	108.0	11832	8.42	7.33	8.05	7.43	6.85	5.72	3.99
*	4	147.7	16192	11.14	9.69	10.71	9.88	9.07	7.58	5.25
*	4	147.8	16208	11.10	9.65	10.67	9.84	8.98	7.49	5.16
*	4	148.0	16224	11.10	9.61	10.67	9.84	8.98	7.49	5.16
*	4	147.8	16208	11.14	9.65	10.67	9.79	8.98	7.54	5.16

Stn: 152 Lane:J5 Temp: J/C: 51 Air: 76 PvT: 83 13:03

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.3	11864	10.05	7.45	8.48	7.68	6.98	5.89	4.03
	C	107.7	11800	9.85	7.58	8.27	7.51	6.85	5.76	3.95
	C	107.7	11800	9.89	7.58	8.27	7.51	6.85	5.76	3.95
*	2	77.2	8472	7.25	5.69	6.13	5.61	5.16	4.33	2.95
*	2	77.2	8472	7.21	5.56	6.08	5.53	5.07	4.29	2.95
*	2	77.2	8472	7.25	5.64	6.08	5.57	5.11	4.29	2.95
*	2	77.5	8504	7.29	5.69	6.17	5.61	5.11	4.38	3.04
*	3	107.7	11808	9.93	7.63	8.40	7.64	6.98	5.81	4.03
*	3	107.1	11744	9.97	7.58	8.35	7.60	6.93	5.81	3.99
*	3	107.1	11744	9.93	7.58	8.35	7.60	6.93	5.81	3.99
*	3	107.1	11744	9.93	7.54	8.35	7.64	6.98	5.85	4.08
*	4	146.1	16016	13.32	10.00	11.14	10.13	9.25	7.62	5.20
*	4	146.4	16048	13.36	10.00	11.14	10.13	9.29	7.67	5.25
*	4	146.4	16048	13.41	10.08	11.18	10.22	9.29	7.67	5.20
*	4	146.4	16056	13.45	10.08	11.23	10.17	9.25	7.71	5.25

Stn: 168 Lane:J4 Temp: J/C: 37 Air: 77 PvT: 83 13:06

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.1	11856	8.42	7.45	8.40	7.73	6.98	5.81	3.82
	C	107.8	11816	8.34	7.54	8.31	7.73	6.93	5.72	3.82
	C	107.1	11752	8.25	7.54	8.27	7.68	6.89	5.68	3.82
*	2	77.2	8464	6.28	5.73	6.26	5.83	5.20	4.38	2.91
*	2	77.4	8480	6.33	5.64	6.17	5.78	5.20	4.29	2.86
*	2	77.2	8472	6.33	5.64	6.21	5.74	5.16	4.25	2.82
*	2	77.4	8488	6.20	5.64	6.21	5.78	5.20	4.29	2.86
*	3	107.7	11800	8.38	7.63	8.40	7.85	6.98	5.81	3.86
*	3	108.0	11832	8.34	7.67	8.40	7.81	6.93	5.81	3.82
*	3	106.7	11696	8.30	7.50	8.27	7.73	6.89	5.72	3.77
*	3	107.1	11744	8.30	7.54	8.35	7.73	6.89	5.76	3.82
*	4	146.5	16064	11.02	10.13	11.14	10.34	9.25	7.58	5.03

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*	4	147.5	16176	11.19	10.17	11.18	10.38	9.25	7.67	5.07
*	4	147.2	16144	11.23	10.21	11.18	10.43	9.29	7.67	5.07
*	4	147.4	16160	11.19	10.21	11.18	10.38	9.29	7.62	5.07

Stn: 169 Lane:J5 Temp: J/C: 37 Air: 77 PvT: 82 13:10

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	106.5	11680	8.55	8.27	7.41	6.84	6.31	5.29	3.64
	C	107.4	11776	8.59	8.36	7.45	6.88	6.36	5.33	3.69
	C	107.2	11760	8.55	8.36	7.50	6.88	6.36	5.29	3.64
*	2	77.0	8440	6.49	6.25	5.57	5.15	4.76	3.99	2.78
*	2	77.1	8456	6.49	6.29	5.61	5.23	4.84	4.07	2.82
*	2	77.2	8464	6.49	6.29	5.61	5.19	4.80	4.03	2.82
*	2	77.1	8448	6.41	6.20	5.53	5.15	4.76	3.99	2.69V
*	3	107.5	11784	8.67	8.45	7.54	6.97	6.44	5.42	3.73
*	3	107.2	11760	8.63	8.36	7.50	6.92	6.40	5.37	3.73
*	3	107.2	11752	8.55	8.36	7.41	6.84	6.36	5.29	3.64
*	3	106.7	11696	8.59	8.40	7.45	6.88	6.36	5.33	3.69
*	4	145.8	15984	12.02V	10.82	10.33V	9.50V	8.71V	7.19V	4.86
*	4	147.4	16152	11.65	11.12	10.03	9.24	8.53	7.10	4.81
*	4	146.8	16096	11.44V	11.07	9.90	9.16	8.40	6.97	4.73
*	4	147.7	16192	11.60	11.16	9.98	9.20	8.49	7.06	4.77

'ACCEPT TEST WITH VAR.

Stn: 205 Lane:J4 Temp: J/C: 38 Air: 77 PvT: 88 13:13

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	109.6	12008	9.17	7.97	8.10	7.43	6.80	5.63	3.82
	C	109.3	11976	8.34	7.37	7.97	7.39	6.76	5.63	3.95
	C	109.6	12016	8.21	7.24	7.93	7.30	6.76	5.63	3.95
*	2	79.0	8656	5.99	5.30	5.78	5.40	4.93	4.16	2.95
*	2	78.6	8616	6.07	5.43	5.96	5.49	5.07	4.29	3.08
*	2	79.3	8688	6.03	5.34	5.83	5.40	4.98	4.25	2.95
*	2	79.0	8664	6.07	5.34	5.87	5.45	5.07	4.29	2.99
*	3	109.6	12008	8.21	7.28	7.93	7.35	6.76	5.63	3.95
*	3	108.8	11928	8.13	7.15	7.84	7.26	6.67	5.63	3.86
*	3	108.8	11936	8.13	7.24	7.93	7.35	6.76	5.68	3.99
*	3	108.6	11904	8.09	7.15	7.88	7.26	6.71	5.63	3.90
*	4	147.1	16136	11.19V	9.78	10.45	9.62	8.80	7.32	5.03
*	4	147.4	16168	10.93	9.65	10.45	9.67	8.85	7.45	5.12
*	4	147.1	16128	10.98	9.65	10.58	9.79	8.98	7.49	5.25
*	4	147.4	16152	10.85	9.52	10.45	9.67	8.85	7.41	5.12

'ACCEPT TEST WITH VAR.

Stn: 207 Lane:J5 Temp: J/C: 38 Air: 79 PvT: 84 13:18

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.3	11872	8.34	8.06	7.33	6.80	6.31	5.46	3.90
	C	108.0	11848	8.25	8.01	7.28	6.75	6.31	5.42	3.86
	C	107.8	11824	8.21	7.89	7.20	6.71	6.22	5.33	3.77
*	2	77.8	8536	6.16	5.90	5.40	5.02	4.67	3.99	2.82
*	2	78.0	8544	6.24	5.99	5.44	5.11	4.71	4.07	2.91
*	2	77.5	8504	6.20	5.95	5.44	5.07	4.71	4.03	2.86
*	2	78.1	8568	6.24	5.95	5.44	5.07	4.71	4.03	2.86
*	3	108.7	11920	8.34	8.06	7.33	6.80	6.36	5.46	3.86
*	3	107.4	11784	8.25	7.97	7.24	6.75	6.27	5.37	3.77
*	3	107.8	11832	8.30	8.01	7.33	6.80	6.36	5.42	3.86
*	3	108.0	11848	8.21	7.84	7.24	6.75	6.36	5.50	4.03V
*	4	145.7	15968	10.89	10.47	9.51	8.86	8.22	6.93	4.86
*	4	146.7	16088	10.98	10.56	9.55	8.95	8.27	7.06	4.99
*	4	146.5	16072	11.02	10.60	9.64	8.95	8.31	7.06	4.94
*	4	146.7	16080	11.02	10.69	9.68	9.03	8.36	7.10	5.03

'ACCEPT TEST WITH VAR.

Stn: 222 Lane:J4 Temp: J/C: 27 Air: 80 PvT: 84 13:21

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	107.4	11776	8.17	7.28	8.40	7.64	6.98	5.85	3.95
	C	106.7	11696	8.13	7.24	8.35	7.60	6.98	5.81	3.95

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	C	106.7	11704	8.13	7.20	8.31	7.60	6.93	5.76	3.95
*	2	76.5	8392	6.03	5.34	6.17	5.66	5.16	4.29	2.91
*	2	76.8	8432	5.99	5.34	6.13	5.61	5.11	4.29	2.91
*	2	76.7	8408	6.07	5.39	6.21	5.70	5.20	4.33	3.04
*	2	77.0	8440	6.07	5.34	6.17	5.66	5.16	4.33	2.99
*	3	107.4	11776	8.13	7.15	8.27	7.56	6.89	5.72	3.82
*	3	107.0	11720	8.09	7.11	8.27	7.51	6.89	5.72	3.77V
*	3	106.8	11712	8.25	7.33	8.40	7.73	7.07	5.89	4.08V
*	3	106.7	11696	8.17	7.24	8.35	7.64	6.98	5.81	3.99
*	4	146.5	16064	11.06V	9.74	10.80	9.88	9.02	7.45	5.03
*	4	147.4	16168	10.81	9.57	10.93	10.00	9.11	7.54	5.07
*	4	147.1	16128	10.81	9.57	10.97	10.05	9.16	7.58	5.07
*	4	147.1	16128	10.81	9.61	11.01	10.09	9.16	7.58	5.20

'ACCEPT TEST WITH VAR.

Stn: 224 Lane:J5 Temp: J/C: 27 Air: 80 PvT: 84 13:25

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	107.4	11768	8.34	8.14	7.24	6.67	6.13	5.16	3.56
	C	107.7	11816	8.63	8.40	7.50	6.97	6.44	5.46	3.86
	C	107.5	11784	8.55	8.36	7.45	6.84	6.31	5.33	3.69
*	2	76.7	8408	6.28	6.12	5.44	5.07	4.62	3.90	2.69
*	2	77.1	8456	6.41	6.20	5.57	5.15	4.76	4.03	2.91V
*	2	77.1	8464	6.33	6.12	5.48	5.07	4.67	3.94	2.78
*	2	77.4	8480	6.33	6.12	5.48	5.07	4.67	3.90	2.69
*	3	107.8	11816	8.55	8.36	7.45	6.88	6.36	5.37	3.73
*	3	107.5	11792	8.55	8.36	7.50	6.88	6.36	5.37	3.73
*	3	107.5	11784	8.63	8.40	7.54	6.97	6.44	5.46	3.82
*	3	107.2	11752	8.55	8.36	7.45	6.88	6.36	5.37	3.73
*	4	146.2	16040	11.31	11.12	9.90	9.12	8.40	7.06	4.86
*	4	147.2	16144	11.35	11.12	9.90	9.12	8.40	7.10	4.90
*	4	147.4	16168	11.35	11.16	9.94	9.16	8.45	7.06	4.90
*	4	147.1	16128	11.31	11.12	9.90	9.12	8.40	7.06	4.90

'ACCEPT TEST WITH VAR.

Stn: 265 Lane:J4 Temp: J/C: 34 Air: 81 PvT: 91 13:28

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	107.8	11824	8.34	7.41	8.53	7.81	7.20	5.94	3.99
	C	107.7	11808	8.25	7.33	8.40	7.68	7.02	5.85	3.95
	C	107.8	11832	8.21	7.33	8.35	7.68	7.02	5.81	3.90
*	2	77.0	8440	6.20	5.47	6.17	5.70	5.24	4.38	2.95
*	2	77.1	8448	6.16	5.47	6.21	5.74	5.24	4.38	2.99
*	2	77.2	8472	6.20	5.43	6.17	5.70	5.16	4.33	2.95
*	2	77.1	8456	6.20	5.47	6.21	5.70	5.24	4.33	2.95
*	3	108.7	11912	8.30	7.37	8.44	7.73	7.11	5.85	3.95
*	3	107.8	11816	8.30	7.37	8.40	7.73	7.07	5.89	3.95
*	3	107.2	11768	8.25	7.33	8.35	7.68	7.02	5.81	3.90
*	3	107.4	11776	8.25	7.33	8.40	7.68	7.02	5.81	3.90
*	4	146.8	16104	10.98	9.74	11.14	10.26	9.33	7.71	5.12
*	4	147.4	16152	10.98	9.65	11.10	10.22	9.33	7.67	5.12
*	4	147.2	16144	10.93	9.65	11.14	10.22	9.33	7.71	5.12
*	4	147.2	16136	11.02	9.69	11.14	10.26	9.38	7.67	5.16

Error: 559

Stn: 266 Lane:J5 Temp: J/C: 34 Air: 81 PvT: 91 13:32

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	106.5	11672	8.92	8.45	7.63	7.09	6.53	5.46	3.73
	C	107.0	11720	8.97	8.45	7.67	7.09	6.53	5.46	3.73
	C	106.5	11672	8.92	8.40	7.67	7.09	6.53	5.46	3.69
*	2	76.1	8344	6.62	6.25	5.66	5.28	4.84	4.03	2.86
*	2	76.5	8392	6.70	6.33	5.74	5.36	4.93	4.12	2.91
*	2	76.5	8392	6.66	6.29	5.66	5.28	4.84	4.07	2.82
*	2	76.7	8416	6.75	6.33	5.74	5.36	4.89	4.12	2.86
*	3	106.8	11712	9.05	8.57	7.75	7.18	6.58	5.55	3.86
*	3	106.4	11656	8.92	8.40	7.63	7.09	6.49	5.46	3.69
*	3	106.4	11656	8.92	8.45	7.67	7.09	6.53	5.50	3.77
*	3	106.5	11672	8.92	8.45	7.67	7.09	6.53	5.46	3.77
*	4	146.2	16032	12.36V	10.99	10.54V	9.67V	8.85	7.32	4.90

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*	4	147.5	16176	12.23	11.25	10.41	9.58	8.76	7.32	4.90
*	4	147.5	16168	12.19	11.25	10.37	9.54	8.76	7.28	4.90
*	4	146.5	16072	11.98	11.20	10.33	9.46	8.67	7.23	4.81

'ACCEPT TEST WITH VAR.

Stn: 299 Lane:J4 Temp: J/C: 43 Air: 81 PvT: 94 13:37

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.7	11920	7.88	6.94	7.84	7.22	6.62	5.55	3.90
	C	108.6	11904	7.75	6.89	7.75	7.13	6.58	5.50	3.90
	C	108.4	11880	7.67	6.81	7.67	7.09	6.49	5.46	3.82
*	2	77.7	8512	5.70	5.04	5.70	5.23	4.80	4.07	2.86
*	2	78.1	8568	5.70	5.08	5.70	5.28	4.84	4.07	2.86
*	2	78.3	8576	5.78	5.13	5.74	5.32	4.89	4.16	2.95
*	2	78.4	8592	5.70	5.08	5.70	5.23	4.84	4.07	2.86
*	3	109.3	11976	7.79	6.89	7.75	7.18	6.58	5.55	3.86
*	3	108.3	11864	7.71	6.85	7.75	7.13	6.58	5.50	3.90
*	3	108.0	11840	7.67	6.76	7.67	7.05	6.44	5.42	3.82
*	3	108.1	11856	7.71	6.89	7.75	7.13	6.58	5.55	3.90
*	4	147.4	16152	10.31	9.13	10.33	9.50	8.76	7.32	5.07
*	4	147.7	16192	10.22	9.09	10.24	9.37	8.62	7.23	5.03
*	4	147.5	16184	10.22	9.09	10.24	9.41	8.62	7.19	4.99
*	4	147.5	16168	10.22	9.05	10.20	9.37	8.62	7.19	4.99

Stn: 300 Lane:J5 Temp: J/C: 43 Air: 81 PvT: 91 13:40

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	109.3	11976	7.92	7.71	6.98	6.50	6.04	5.16	3.73
	C	109.3	11984	7.92	7.71	7.03	6.50	6.04	5.16	3.73
	C	108.7	11912	7.88	7.76	7.03	6.54	6.04	5.20	3.73
*	2	78.0	8544	5.91	5.77	5.23	4.90	4.53	3.86	2.86
*	2	78.6	8616	5.87	5.73	5.23	4.85	4.53	3.81	2.82
*	2	78.4	8608	5.95	5.82	5.27	4.90	4.58	3.90	2.86
*	2	77.8	8536	5.82	5.64	5.18	4.73	4.44	3.81	2.73
*	3	108.7	11920	7.96	7.76	7.03	6.50	6.04	5.16	3.77
*	3	108.6	11904	8.00	7.89	7.11	6.63	6.13	5.24	3.82
*	3	108.8	11928	7.96	7.76	7.03	6.54	6.09	5.16	3.73
*	3	108.6	11904	7.96	7.76	7.03	6.50	6.04	5.11	3.73
*	4	147.7	16192	10.47	10.34	9.25	8.61	7.96	6.76	4.86
*	4	148.0	16224	10.47	10.30	9.30	8.57	7.96	6.72	4.86
*	4	147.8	16216	10.47	10.30	9.25	8.61	7.96	6.72	4.86
*	4	147.8	16208	10.52	10.38	9.30	8.70	8.00	6.76	4.86

Stn: 312 Lane:J4 Temp: J/C: 28 Air: 81 PvT: 90 13:42

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	109.4	11992	7.92	6.98	7.67	7.09	6.49	5.50	3.82
	C	108.8	11928	7.75	6.94	7.58	7.01	6.49	5.46	3.82
	C	108.6	11904	7.79	6.89	7.58	7.01	6.44	5.46	3.86
*	2	77.7	8520	5.82	5.13	5.61	5.19	4.80	4.07	2.86
*	2	78.1	8568	5.78	5.17	5.66	5.23	4.84	4.12	2.91
*	2	78.1	8568	5.82	5.17	5.66	5.28	4.84	4.12	2.91
*	2	78.1	8560	5.82	5.13	5.61	5.23	4.80	4.07	2.86
*	3	108.6	11904	7.83	7.02	7.75	7.18	6.62	5.63	3.99
*	3	108.6	11896	7.79	6.94	7.63	7.05	6.49	5.55	3.86
*	3	108.0	11848	7.71	6.89	7.54	7.01	6.44	5.46	3.82
*	3	108.1	11848	7.71	6.89	7.54	6.97	6.44	5.42	3.82
*	4	147.5	16176	10.31	9.22	10.07	9.33	8.58	7.19	4.99
*	4	148.1	16240	10.26	9.18	10.07	9.29	8.53	7.19	4.99
*	4	147.7	16200	10.26	9.18	10.07	9.33	8.53	7.19	4.99
*	4	147.8	16208	10.26	9.18	10.07	9.29	8.53	7.19	4.99

Stn: 313 Lane:J5 Temp: J/C: 28 Air: 81 PvT: 90 13:45

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	109.1	11968	8.00	7.58	7.07	6.54	6.09	5.24	3.77
	C	109.1	11960	7.92	7.71	6.98	6.59	6.13	5.24	3.64
	C	108.7	11920	7.96	7.67	7.03	6.59	6.13	5.24	3.69
*	2	77.8	8528	5.78	5.69	5.18	4.90	4.58	3.90	2.78
*	2	78.0	8560	5.74	5.64	5.23	4.90	4.53	3.90	2.78
*	2	78.3	8576	5.82	5.73	5.27	4.94	4.62	3.94	2.82
*	2	78.0	8560	5.78	5.69	5.27	4.90	4.58	3.90	2.78

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*	3	108.7	11920	8.00	7.63	7.07	6.54	6.09	5.24	3.73
*	3	108.7	11912	7.92	7.58	7.03	6.54	6.09	5.20	3.69
*	3	108.4	11896	7.92	7.67	6.98	6.59	6.09	5.24	3.69
*	3	108.3	11864	7.92	7.63	6.98	6.50	6.04	5.20	3.64
*	4	147.7	16192	10.43	10.13	9.21	8.61	8.00	6.80	4.77
*	4	148.4	16272	10.43	10.08	9.30	8.65	8.00	6.84	4.86
*	4	148.0	16216	10.39	10.08	9.30	8.61	8.00	6.80	4.81
*	4	148.3	16256	10.39	10.13	9.25	8.61	8.00	6.80	4.77

Stn: 358 Lane:J4 Temp: J/C: 35 Air: 82 PvT: 95 13:48

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.3	11880	8.55	7.50	7.71	7.05	6.67	5.68	4.03
	C	108.6	11896	7.83	7.07	7.67	7.13	6.58	5.63	4.03
	C	108.1	11864	7.75	6.98	7.63	7.09	6.58	5.63	4.03
*	2	77.4	8480	5.78	5.17	5.66	5.23	4.89	4.16	2.99
*	2	77.4	8488	5.74	5.13	5.61	5.23	4.84	4.16	2.99
*	2	77.5	8496	5.78	5.21	5.70	5.28	4.89	4.25	3.04
*	2	77.5	8496	5.78	5.21	5.66	5.28	4.89	4.20	3.04
*	3	108.0	11832	7.67	6.94	7.63	7.05	6.53	5.59	3.99
*	3	107.7	11816	7.71	6.94	7.63	7.09	6.58	5.63	4.03
*	3	108.0	11840	7.71	6.94	7.63	7.05	6.53	5.59	4.03
*	3	107.8	11824	7.75	7.02	7.67	7.13	6.58	5.68	4.08
*	4	146.7	16088	10.43	9.39	10.11	9.33	8.62	7.36	5.29
*	4	147.2	16136	10.26	9.26	10.11	9.37	8.67	7.36	5.29
*	4	147.4	16160	10.31	9.31	10.20	9.46	8.76	7.49	5.38
*	4	147.5	16176	10.26	9.26	10.15	9.33	8.71	7.45	5.34

Stn: 359 Lane:J5 Temp: J/C: 35 Air: 81 PvT: 93 13:51

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	106.8	11712	8.09	7.71	7.15	6.75	6.31	5.46	3.90
	C	106.8	11704	8.04	7.71	7.20	6.75	6.31	5.46	3.95
	C	107.5	11784	8.04	7.76	7.20	6.71	6.31	5.42	3.90
*	2	76.5	8384	5.99	5.69	5.31	4.98	4.67	3.99	2.91
*	2	77.1	8448	6.03	5.73	5.36	4.98	4.67	4.03	2.91
*	2	77.1	8456	6.07	5.77	5.40	5.02	4.76	4.12	3.04
*	2	77.2	8472	6.07	5.77	5.36	5.02	4.71	4.07	2.95
*	3	107.8	11824	8.09	7.80	7.24	6.71	6.31	5.46	3.95
*	3	107.7	11808	8.04	7.71	7.15	6.67	6.22	5.37	3.86
*	3	107.0	11720	8.09	7.80	7.20	6.75	6.31	5.46	3.95
*	3	107.0	11728	8.04	7.76	7.15	6.71	6.27	5.42	3.90
*	4	146.7	16072	10.68	10.21	9.51	8.86	8.31	7.15	5.12
*	4	147.4	16160	10.68	10.26	9.47	8.86	8.27	7.10	5.12
*	4	147.7	16184	10.73	10.26	9.55	8.91	8.31	7.15	5.12
*	4	147.7	16184	10.73	10.26	9.51	8.95	8.31	7.15	5.12

Stn: 371 Lane:J4 Temp: J/C: 32 Air: 81 PvT: 92 13:54

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.4	11880	7.92	7.20	7.71	7.13	6.67	5.68	4.12
	C	108.4	11880	7.62	6.85	7.41	6.84	6.36	5.37	3.86
	C	108.1	11856	7.58	6.76	7.33	6.75	6.31	5.33	3.82
*	2	77.0	8440	5.66	5.00	5.36	4.98	4.62	3.94	2.82
*	2	77.2	8464	5.74	5.08	5.44	5.02	4.71	3.99	2.86
*	2	77.0	8448	5.70	5.04	5.40	4.98	4.62	3.90	2.78
*	2	77.1	8456	5.74	5.08	5.48	5.07	4.71	4.03	2.91
*	3	108.0	11840	7.54	6.76	7.33	6.75	6.27	5.24V	3.69V
*	3	107.0	11736	7.42	6.59V	7.20	6.63	6.18	5.29	3.77
*	3	107.1	11744	7.62	6.85	7.41	6.84	6.36	5.46	3.95
*	3	107.2	11752	7.62	6.85	7.41	6.88	6.40	5.46	3.95
*	4	147.0	16112	10.14	9.09	9.81	9.03	8.36	7.06	4.94
*	4	147.2	16144	10.18	9.18	9.85	9.12	8.36	7.06	4.94
*	4	147.5	16176	10.18	9.22	9.90	9.16	8.45	7.10	5.03
*	4	147.5	16168	10.18	9.22	9.90	9.16	8.45	7.10	4.99

Stn: 372 Lane:J5 Temp: J/C: 32 Air: 81 PvT: 92 13:56

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.1	11856	7.71	7.45	6.94	6.46	6.09	5.20	3.82
	C	108.1	11856	7.71	7.45	6.94	6.46	6.04	5.20	3.73
	C	107.7	11808	7.71	7.37	6.94	6.46	6.04	5.20	3.77
*	2	77.1	8448	5.78	5.47	5.14	4.77	4.53	3.86	2.86
*	2	77.0	8440	5.74	5.43	5.10	4.73	4.49	3.81	2.78

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*	2	77.4	8488	5.78	5.43	5.10	4.77	4.49	3.86	2.82
*	2	77.1	8464	5.78	5.47	5.14	4.81	4.53	3.86	2.82
*	3	107.8	11816	7.71	7.37	6.86	6.42	6.00	5.16	3.73
*	3	107.5	11784	7.71	7.37	6.90	6.37	6.00	5.16	3.73
*	3	107.5	11800	7.67	7.37	6.90	6.42	6.00	5.16	3.73
*	3	107.5	11784	7.71	7.41	6.90	6.42	6.00	5.16	3.73
*	4	147.7	16184	10.18	9.87	9.13	8.53	7.91	6.72	4.77
*	4	147.8	16200	10.26	9.91	9.17	8.57	8.00	6.84	4.90
*	4	147.5	16176	10.26	9.91	9.17	8.57	7.96	6.80	4.86
*	4	147.5	16176	10.14	9.74	9.00	8.36	7.82	6.67	4.73

Stn: 417 Lane:J4 Temp: J/C: 39 Air: 82 PvT: 94 14:05

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.3	11872	8.00	7.20	7.80	7.26	6.76	5.81	4.12
	C	108.1	11856	8.00	7.15	7.75	7.26	6.71	5.76	4.12
	C	107.8	11816	8.00	7.15	7.80	7.26	6.71	5.76	4.16
*	2	77.0	8440	5.87	5.30	5.74	5.32	4.98	4.29	3.04
*	2	77.1	8456	5.95	5.30	5.83	5.40	5.02	4.33	3.12
*	2	77.1	8448	5.87	5.26	5.74	5.32	4.93	4.29	3.04
*	2	77.0	8440	5.91	5.26	5.78	5.36	4.98	4.29	3.08
*	3	108.0	11840	8.00	7.20	7.75	7.26	6.76	5.81	4.12
*	3	107.5	11784	8.00	7.11	7.75	7.22	6.71	5.76	4.16
*	3	107.7	11816	8.00	7.11	7.80	7.22	6.71	5.81	4.16
*	3	107.4	11776	8.04	7.15	7.84	7.26	6.76	5.81	4.21
*	4	147.8	16208	10.64	9.57	10.33	9.67	8.93	7.67	5.42
*	4	148.1	16240	10.68	9.52	10.41	9.67	8.98	7.71	5.51
*	4	147.8	16208	10.64	9.52	10.33	9.62	8.93	7.62	5.42
*	4	148.3	16248	10.64	9.48	10.37	9.62	8.93	7.67	5.42

Stn: 418 Lane:J5 Temp: J/C: 39 Air: 82 PvT: 90 14:08

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.6	11904	8.09	7.84	7.33	6.88	6.44	5.63	4.03
	C	107.7	11808	8.09	7.76	7.28	6.84	6.44	5.59	3.99
	C	107.7	11808	8.13	7.76	7.37	6.92	6.44	5.63	4.08
*	2	77.1	8448	5.99	5.60	5.40	5.02	4.71	4.12	2.95
*	2	77.1	8456	6.03	5.60	5.44	5.07	4.76	4.20	2.99
*	2	77.1	8456	5.99	5.56	5.48	5.07	4.76	4.16	3.04
*	2	77.1	8456	5.99	5.64	5.40	5.07	4.71	4.16	2.99
*	3	108.0	11840	8.13	7.80	7.33	6.88	6.44	5.63	4.03
*	3	107.4	11784	8.13	7.80	7.33	6.88	6.44	5.63	4.03
*	3	107.5	11792	8.09	7.67	7.28	6.80	6.40	5.59	3.99
*	3	107.4	11776	8.09	7.71	7.28	6.80	6.40	5.59	3.99
*	4	147.1	16136	10.73	10.38	9.68	9.12	8.53	7.36	5.25
*	4	147.5	16168	10.77	10.34	9.73	9.08	8.53	7.41	5.29
*	4	147.8	16208	10.73	10.34	9.68	9.08	8.49	7.36	5.29
*	4	147.7	16192	10.77	10.47	9.73	9.16	8.58	7.45	5.34

Stn: 430 Lane:J4 Temp: J/C: 38 Air: 82 PvT: 87 14:12

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.1	11848	7.79	7.20	7.45	7.01	6.53	5.63	4.08
	C	107.5	11792	7.88	7.20	7.50	7.05	6.58	5.63	4.12
	C	107.7	11800	7.96	7.33	7.54	7.09	6.62	5.68	4.12
*	2	77.1	8456	5.82	5.30	5.48	5.15	4.80	4.16	2.99
*	2	76.8	8424	5.82	5.26	5.53	5.15	4.84	4.12	3.04
*	2	77.0	8432	5.82	5.30	5.48	5.15	4.84	4.12	2.99
*	2	76.8	8416	5.87	5.30	5.53	5.19	4.84	4.16	3.08
*	3	108.1	11848	7.83	7.15	7.45	7.01	6.53	5.59	4.03
*	3	107.7	11800	7.83	7.15	7.41	6.97	6.49	5.55	4.03
*	3	107.7	11808	7.83	7.15	7.45	7.01	6.53	5.59	4.03
*	3	107.2	11752	7.79	7.11	7.41	6.97	6.49	5.59	4.03
*	4	146.7	16088	10.35	9.52	9.98	9.33	8.67	7.45	5.29
*	4	147.4	16160	10.43	9.52	9.98	9.37	8.67	7.45	5.38
*	4	147.5	16168	10.39	9.48	9.94	9.33	8.67	7.41	5.38
*	4	147.4	16152	10.43	9.57	9.98	9.33	8.71	7.45	5.38

Stn: 431 Lane:J5 Temp: J/C: 38 Air: 83 PvT: 86 14:14

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7

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	C	108.1	11848	7.79	7.50	7.07	6.71	6.22	5.46	3.90
	C	107.2	11752	7.75	7.41	7.03	6.63	6.18	5.42	3.86
	C	107.5	11784	7.79	7.50	7.11	6.71	6.31	5.46	3.95
*	2	76.5	8392	5.78	5.52	5.23	4.94	4.58	4.03	2.86
*	2	77.2	8464	5.78	5.52	5.23	4.94	4.58	4.03	2.86
*	2	77.1	8448	5.82	5.52	5.18	4.90	4.58	3.99	2.82
*	2	77.0	8448	5.91	5.56	5.27	4.94	4.62	4.03	2.91
*	3	107.4	11784	7.83	7.54	7.11	6.71	6.22	5.50	3.95
*	3	107.4	11776	7.88	7.54	7.11	6.71	6.27	5.46	3.95
*	3	107.2	11760	7.83	7.50	7.07	6.67	6.22	5.46	3.86
*	3	107.1	11744	7.83	7.50	7.11	6.71	6.27	5.46	3.95
*	4	146.5	16064	10.26	10.00	9.34	8.82	8.27	7.15	5.16
*	4	147.4	16152	10.35	10.04	9.38	8.86	8.27	7.19	5.12
*	4	147.2	16144	10.31	10.00	9.34	8.82	8.27	7.10	5.07
*	4	147.5	16176	10.35	10.04	9.38	8.86	8.27	7.15	5.12

Stn: 460 Lane:J4 Temp: J/C: 38 Air: 83 PvT: 93 14:17

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	107.8	11816	9.17	8.10	8.44	7.81	7.20	6.02	4.16
	C	107.7	11800	8.63	7.80	8.35	7.73	7.11	5.98	4.08
	C	107.4	11776	8.59	7.76	8.31	7.73	7.07	5.98	4.08
*	2	76.8	8424	6.41	5.64	6.08	5.61	5.20	4.38	2.99
*	2	76.4	8368	6.41	5.64	6.13	5.66	5.20	4.38	3.08
*	2	76.4	8368	6.49	5.64	6.08	5.61	5.20	4.42	3.04
*	2	76.4	8376	6.45	5.64	6.08	5.61	5.20	4.38	2.99
*	3	107.5	11792	8.67	7.84	8.40	7.81	7.16	6.07	4.12
*	3	107.1	11736	8.59	7.76	8.31	7.73	7.07	5.98	4.08
*	3	107.0	11720	8.63	7.80	8.40	7.77	7.16	6.07	4.16
*	3	107.0	11720	8.59	7.71	8.31	7.73	7.07	5.98	4.08
*	4	146.2	16032	11.81	10.43	11.10	10.30	9.38	7.88	5.34
*	4	146.5	16072	11.73	10.38	11.14	10.34	9.47	7.97	5.42
*	4	146.7	16080	11.65	10.30	11.10	10.30	9.42	7.93	5.34
*	4	146.5	16072	11.65	10.30	11.10	10.30	9.42	7.88	5.34

Stn: 461 Lane:J5 Temp: J/C: 38 Air: 84 PvT: 90 14:19

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.0	11840	8.63	8.23	7.63	7.09	6.58	5.68	3.99
	C	108.0	11840	8.63	8.27	7.58	7.09	6.58	5.68	3.99
	C	107.8	11816	8.55	8.23	7.54	7.05	6.53	5.63	3.95
*	2	77.2	8464	6.28	6.03	5.57	5.23	4.84	4.16	2.99
*	2	77.4	8488	6.37	6.03	5.57	5.23	4.84	4.16	2.95
*	2	77.1	8456	6.33	6.03	5.61	5.23	4.89	4.16	2.95
*	2	77.2	8472	6.28	5.99	5.57	5.19	4.80	4.12	2.91
*	3	107.5	11792	8.59	8.27	7.63	7.13	6.62	5.68	3.99
*	3	107.2	11760	8.67	8.32	7.67	7.18	6.67	5.72	4.08
*	3	107.2	11760	8.71	8.36	7.67	7.18	6.67	5.72	4.08
*	3	107.2	11760	8.59	8.23	7.54	7.05	6.58	5.63	3.95
*	4	145.4	15936	11.44	11.03	10.11	9.41	8.71	7.41	5.16
*	4	146.7	16072	11.44	11.07	10.11	9.41	8.71	7.41	5.12
*	4	146.5	16056	11.44	11.03	10.11	9.41	8.71	7.41	5.16
*	4	146.5	16056	11.48	11.07	10.15	9.46	8.76	7.45	5.20

Stn: 477 Lane:J4 Temp: J/C: 38 Air: 85 PvT: 90 14:22

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.1	11856	8.92	7.84	8.44	7.77	7.11	5.98	4.21
	C	107.4	11776	8.80	7.71	8.40	7.73	7.07	5.94	4.16
	C	107.4	11768	8.76	7.76	8.40	7.73	7.07	5.94	4.12
*	2	77.0	8440	6.49	5.73	6.17	5.70	5.24	4.42	3.12
*	2	77.0	8448	6.41	5.64	6.17	5.66	5.20	4.33	3.04
*	2	77.1	8456	6.54	5.73	6.21	5.74	5.24	4.42	3.17
*	2	76.8	8424	6.41	5.69	6.17	5.70	5.20	4.38	3.08
*	3	107.4	11784	8.80	7.71	8.40	7.77	7.07	5.98	4.16
*	3	107.1	11736	8.80	7.67	8.35	7.73	7.02	5.89	4.12
*	3	107.0	11728	8.80	7.76	8.44	7.77	7.11	5.94	4.16
*	3	107.0	11736	8.80	7.71	8.40	7.73	7.07	5.94	4.12
*	4	146.8	16096	11.90	10.38	11.23	10.34	9.47	7.88	5.42
*	4	147.5	16168	11.90	10.34	11.27	10.34	9.47	7.93	5.47
*	4	147.2	16152	11.86	10.30	11.23	10.34	9.38	7.84	5.42
*	4	147.1	16128	11.86	10.30	11.31	10.43	9.51	7.93	5.47

File: C:\FWD\DATA\633802C3.FWD
Road: MB-75 NORTHBOUND LANE, 15 MILES SOUTH OF WINNIPEG, MB.
Subsection: 633802

Stn: 478 Lane:J5 Temp: J/C: 38 Air: 86 PvT: 89 14:24

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.0	11840	9.05	8.49	7.93	7.39	6.85	5.76	4.08
	C	107.7	11808	9.05	8.49	7.84	7.35	6.76	5.72	4.03
	C	107.8	11816	9.05	8.49	7.84	7.35	6.76	5.72	4.03
*	2	77.2	8480	6.83	6.33	5.87	5.49	5.11	4.29	3.04
*	2	77.2	8472	6.79	6.25	5.78	5.40	4.98	4.20	2.99
*	2	77.2	8472	6.66	6.25	5.78	5.45	5.02	4.29	2.99
*	2	77.2	8480	6.75	6.33	5.87	5.53	5.11	4.29	3.04
*	3	107.7	11808	9.01	8.49	7.84	7.30	6.71	5.68	3.99
*	3	107.4	11784	9.09	8.57	7.93	7.39	6.80	5.76	4.08
*	3	107.2	11760	9.09	8.49	7.84	7.35	6.76	5.63	3.99
*	3	107.2	11760	9.13	8.53	7.93	7.43	6.85	5.76	4.12
*	4	146.7	16088	12.11	11.42	10.58	9.79	9.02	7.71	5.38
*	4	147.2	16152	12.07	11.33	10.50	9.79	9.07	7.58	5.38
*	4	147.1	16128	12.07	11.33	10.45	9.75	8.98	7.54	5.29
*	4	147.4	16160	12.15	11.46	10.63	9.88	9.07	7.75	5.42

Stn: 500 Lane:J4 Temp: J/C: 38 Air: 86 PvT: 90 14:26

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.0	11832	9.01	7.89	8.53	7.94	7.29	6.15	4.25
	C	108.3	11860	8.71	7.80	8.53	7.85	7.25	6.15	4.25
	C	108.1	11848	8.67	7.76	8.48	7.85	7.25	6.11	4.21
*	2	77.2	8472	6.54	5.73	6.30	5.83	5.38	4.55	3.12
*	2	76.8	8424	6.45	5.69	6.26	5.78	5.38	4.51	3.12
*	2	77.2	8472	6.41	5.73	6.26	5.78	5.38	4.51	3.12
*	2	76.7	8408	6.37	5.69	6.21	5.74	5.29	4.42	3.04
*	3	107.5	11784	8.71	7.80	8.53	7.89	7.25	6.11	4.21
*	3	107.8	11824	8.76	7.89	8.61	7.94	7.33	6.20	4.42V
*	3	107.5	11792	8.59	7.67	8.40	7.77	7.16	5.98	4.16
*	3	107.7	11816	8.71	7.80	8.57	7.89	7.29	6.11	4.25
*	4	147.5	16176	11.56	10.34	11.31	10.47	9.65	8.14	5.51
*	4	148.1	16240	11.48	10.21	11.23	10.34	9.56	8.01	5.34
*	4	147.8	16208	11.52	10.30	11.35	10.47	9.65	8.14	5.55
*	4	148.0	16232	11.52	10.30	11.35	10.43	9.60	8.10	5.42

'ACCEPT TEST WITH VAR.

Stn: 501 Lane:J5 Temp: J/C: 38 Air: 87 PvT: 88 14:31

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	107.1	11744	8.84	8.53	7.84	7.35	6.80	5.81	4.08
	C	107.2	11752	8.84	8.57	7.93	7.39	6.89	5.85	4.08
	C	107.0	11720	8.80	8.49	7.84	7.30	6.80	5.76	4.03
*	2	76.5	8384	6.66	6.33	5.87	5.49	5.07	4.33	3.04
*	2	76.5	8384	6.62	6.25	5.78	5.40	5.02	4.29	2.99
*	2	76.7	8408	6.58	6.25	5.78	5.40	4.98	4.29	2.99
*	2	76.7	8400	6.62	6.29	5.78	5.45	5.02	4.29	2.99
*	3	107.2	11752	8.80	8.45	7.80	7.30	6.76	5.76	3.99
*	3	106.8	11712	8.80	8.53	7.88	7.35	6.80	5.81	4.03
*	3	106.5	11672	8.80	8.45	7.80	7.30	6.76	5.72	4.03
*	3	106.5	11672	8.76	8.45	7.80	7.30	6.71	5.72	3.99
*	4	147.2	16144	11.77	11.29	10.41	9.71	9.02	7.67	5.29
*	4	147.5	16184	11.86	11.33	10.45	9.71	9.02	7.67	5.29
*	4	147.5	16176	11.81	11.33	10.45	9.71	8.98	7.67	5.29
*	4	147.4	16152	11.86	11.33	10.41	9.75	8.98	7.67	5.29

Stn: 518 Lane:J4 Temp: J/C: 38 Air: 87 PvT: 91 14:34

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	108.4	11888	8.67	7.67	8.27	7.60	7.02	5.94	4.16
	C	108.1	11848	8.46	7.45	8.18	7.56	6.93	5.85	4.08
	C	107.8	11824	8.46	7.45	8.18	7.51	6.93	5.85	4.08
*	2	77.1	8456	6.24	5.43	5.96	5.53	5.07	4.29	2.99
*	2	76.7	8400	6.28	5.52	6.04	5.61	5.16	4.38	3.08
*	2	77.0	8440	6.24	5.47	5.96	5.53	5.11	4.29	2.99
*	2	76.5	8392	6.24	5.52	6.00	5.57	5.11	4.33	3.04
*	3	107.8	11824	8.50	7.50	8.23	7.60	6.98	5.94	4.16
*	3	107.4	11776	8.50	7.50	8.23	7.60	6.98	5.94	4.12
*	3	107.4	11776	8.50	7.50	8.23	7.64	6.98	5.94	4.16
*	3	107.2	11752	8.42	7.41	8.18	7.56	6.93	5.85	4.03
*	4	147.0	16120	11.44	10.04	10.93	10.09	9.29	7.75	5.42

File: C:\FWD\DATA\633802C3.FWD
Road: MB-75 NORTHBOUND LANE, 15 MILES SOUTH OF WINNIPEG, MB.
Subsection: 633802

*	4	147.1	16128	11.44	10.04	11.01	10.13	9.33	7.84	5.51
*	4	147.4	16152	11.40	10.00	10.97	10.13	9.29	7.80	5.42
*	4	147.4	16168	11.35	9.91	10.93	10.13	9.29	7.75	5.38

Stn: 519 Lane:J5 Temp: J/C: 38 Air: 87 PvT: 91 14:41

Sto	Hgt	psi	lbf	Df1	Df2	Df3	Df4	Df5	Df6	Df7
	C	107.7	11800	8.50	8.23	7.54	7.01	6.53	5.63	4.03
	C	106.8	11712	8.42	8.32	7.54	7.05	6.58	5.63	4.08
	C	107.0	11728	8.46	8.23	7.50	6.97	6.53	5.59	3.99
*	2	76.1	8336	6.24	5.99	5.53	5.15	4.80	4.07	2.91
*	2	75.9	8328	6.24	6.12	5.57	5.23	4.89	4.16	3.04
*	2	75.9	8328	6.16	5.99	5.48	5.15	4.76	4.12	2.91
*	2	75.9	8328	6.20	5.99	5.53	5.15	4.80	4.12	2.95
*	3	106.7	11688	8.38	8.23	7.45	6.97	6.49	5.55	3.95
*	3	106.8	11712	8.46	8.27	7.54	7.01	6.53	5.59	4.03
*	3	106.5	11680	8.42	8.27	7.50	7.01	6.53	5.59	4.03
*	3	106.5	11680	8.38	8.19	7.45	6.97	6.49	5.55	3.95
*	4	147.0	16112	11.10	10.99	9.94	9.24	8.62	7.36	5.25
*	4	147.2	16144	11.14	11.03	9.94	9.29	8.62	7.41	5.25
*	4	147.1	16136	11.19	11.03	9.98	9.29	8.62	7.41	5.25
*	4	147.2	16144	11.23	11.12	10.03	9.37	8.71	7.45	5.29

Mileage:-.007 -> .098

Summary of Data for section 833802C
Analyzed by: ROBERT VAN SAMBEEK on 09-30-1993

UNCORRECTED Overall Deflection Statistics

Mean Values (mils/kip)

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
1	2	0.5048	0.4872	0.4742	0.4517	0.4265	0.3735	0.2701
	3	0.4906	0.4771	0.4636	0.4420	0.4174	0.3654	0.2597
	4	0.4884	0.4723	0.4591	0.4377	0.4127	0.3596	0.2533

Standard Deviations

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
1	2	0.0368	0.0306	0.0283	0.0255	0.0226	0.0163	0.0142
	3	0.0367	0.0319	0.0296	0.0264	0.0239	0.0183	0.0136
	4	0.0383	0.0328	0.0305	0.0280	0.0250	0.0196	0.0143

Coefficient of Variation

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
1	2	7.29%	6.29%	5.96%	5.65%	5.29%	4.37%	5.26%
	3	7.49%	6.68%	6.39%	5.97%	5.73%	5.02%	5.23%
	4	7.84%	6.94%	6.65%	6.40%	6.05%	5.44%	5.66%

Rigid Pavement Deflection Statistics - 833802C

Mean Values (mils/kip)

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
1	2	0.5048	0.4872	0.4742	0.4517	0.4265	0.3735	0.2701
	3	0.4906	0.4771	0.4636	0.4420	0.4174	0.3654	0.2597
	4	0.4884	0.4723	0.4591	0.4377	0.4127	0.3596	0.2533

Standard Deviations

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
1	2	0.0368	0.0306	0.0283	0.0255	0.0226	0.0163	0.0142
	3	0.0367	0.0319	0.0296	0.0264	0.0239	0.0183	0.0136
	4	0.0383	0.0328	0.0305	0.0280	0.0250	0.0196	0.0143

Coefficient of Variation

Test Loc.	Drop Ht	Sensor 1	Sensor 2	Sensor 3	Sensor 4	Sensor 5	Sensor 6	Sensor 7
1	2	7.29%	6.29%	5.96%	5.65%	5.29%	4.37%	5.26%
	3	7.49%	6.68%	6.39%	5.97%	5.73%	5.02%	5.23%
	4	7.84%	6.94%	6.65%	6.40%	6.05%	5.44%	5.66%

Outlier Statistics - 833802C

Station	Height	Sensor	Number of Std. Dev.
9	2	1	2.44
9	2	2	2.48
9	2	3	2.59
9	2	4	2.48
9	2	5	2.66
9	2	6	2.60
9	3	1	2.65
9	3	2	2.60
9	3	3	2.68
9	3	4	2.68
9	3	5	2.73
9	3	6	2.70
9	4	1	2.60
9	4	2	2.60
9	4	3	2.64
9	4	4	2.63
9	4	5	2.68
9	4	6	2.64
21	2	1	2.53
21	2	2	2.30
21	2	3	2.19
21	3	1	2.58
21	3	2	2.39
21	3	3	2.21
21	3	4	2.06
21	4	1	2.60
21	4	2	2.45
21	4	3	2.33
21	4	4	2.19

Pavement Construction Information - 833802C

Material Code	Material Name	Layer Thickness
730	Portland Cement Concrete	9.8
304	Crushed Gravel	4.9
338	Lime Treated Soil	5.9

RIGID Pavement Thickness Data - 833802C
(comparison of each calculation to the expected value)

Minimum expected thickness: 6.37
Maximum expected thickness: 11.27

Height	Station	Effective Thickness

No predicted thickness values fall outside the expected range...

RIGID Pavement Thickness Statistics - 833802C

Drop height 2

Subsection	Station	Volumetric k	Effective Thickness
No test pit data found, therefore no results exist...			
1	-21	209	9.13
	-4	196	9.13
	9	181	8.19
	21	193	8.00
	54	192	8.38
	69	202	8.56
	98	200	8.75
	113	202	9.31
	154	199	9.31
	174	210	9.13
	217	214	9.13
	233	197	8.75
	260	188	8.94
	275	206	8.75
	306	210	9.13
	320	190	9.13
	367	200	9.50
	378	201	9.13
	425	210	8.94
	437	193	9.13
	469	203	8.94
	484	194	9.13
	510	192	8.75
	528	193	8.75
Subsection 1 Overall Mean:		199	8.91
Standard Deviation:		8	0.36
Coeff Of Variation:		4.15%	4.03%

RIGID Pavement Thickness Statistics - 833802C

Drop height 3

Subsection	Station	Volumetric k	Effective Thickness
No test pit data found, therefore no results exist...			
1	-21	207	9.13
	-4	195	9.13
	9	183	8.19
	21	195	8.19
	54	195	8.56
	69	204	8.75
	98	207	8.94
	113	213	9.50
	154	205	9.31
	174	216	9.13
	217	219	9.13
	233	203	8.75
	260	195	8.94
	275	215	9.13
	306	217	9.13
	320	196	9.13
	367	209	9.50
	378	217	9.31
	425	215	9.13
	437	201	9.13
	469	210	8.94
	484	204	9.13
	510	199	8.94
	528	200	8.94
Subsection 1 Overall Mean:		205	9.00
Standard Deviation:		9	0.33
Coeff Of Variation:		4.52%	3.67%

RIGID Pavement Thickness Statistics - 833802C

Drop height 4

Subsection	Station	Volumetric k	Effective Thickness
No test pit data found, therefore no results exist...			
1	-21	205	9.13
	-4	197	9.13
	9	185	8.19
	21	195	8.00
	54	196	8.56
	69	205	8.56
	98	208	8.75
	113	215	9.50
	154	207	9.31
	174	219	9.13
	217	223	9.13
	233	206	8.75
	260	198	8.94
	275	219	8.94
	306	221	9.13
	320	200	9.13
	367	216	9.50
	378	222	9.13
	425	225	9.13
	437	207	9.13
	469	217	8.94
	484	211	9.13
	510	204	8.94
	528	210	9.13
Subsection 1 Overall Mean:		209	8.97
Standard Deviation:		10	0.36
Coeff Of Variation:		4.97%	3.98%

COMMENTS FROM FWD DATA FILE FOR ML PASS
- NO COMMENTS ENTERED WHILE TESTING

Summary of Results

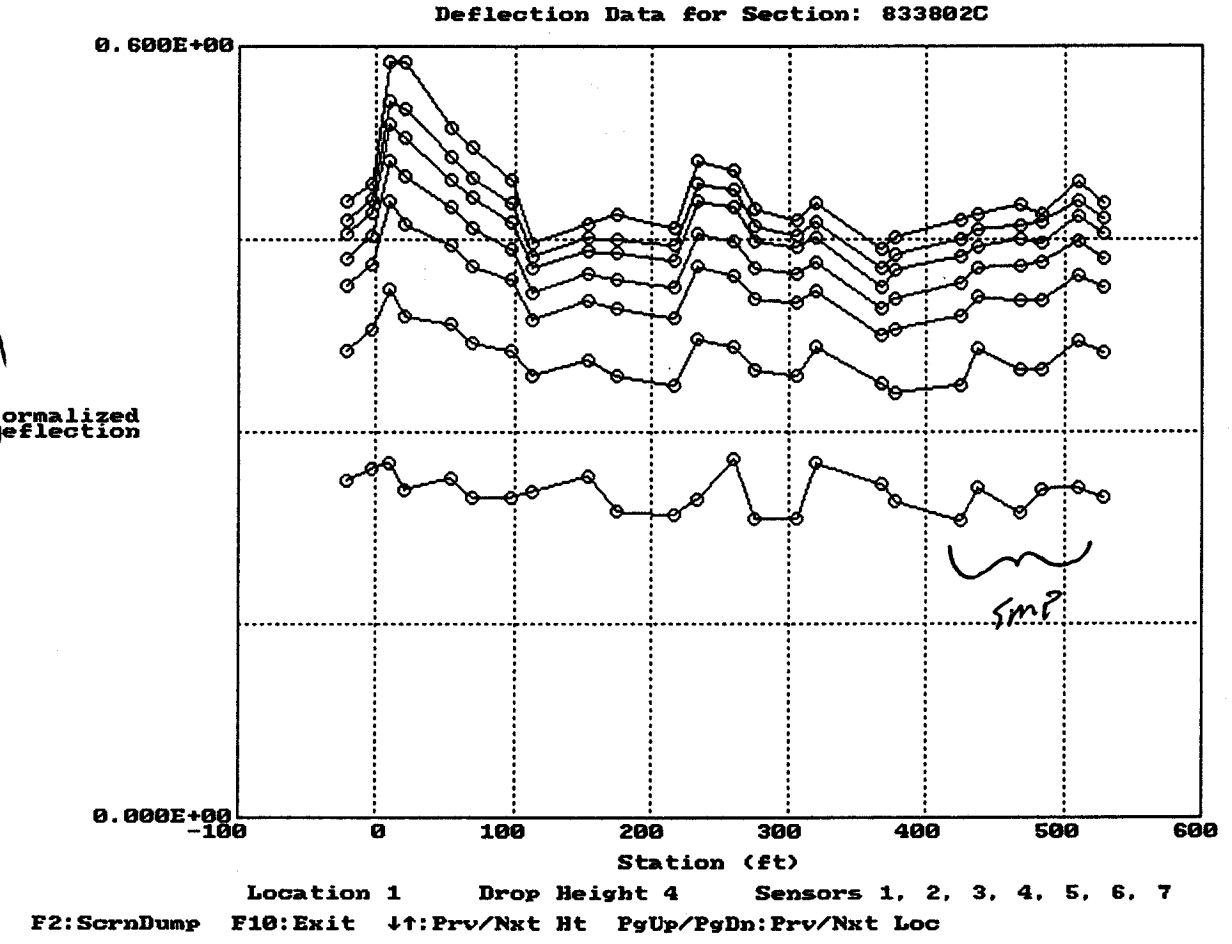
Section uniformity:
NO Subsections were identified within the section.

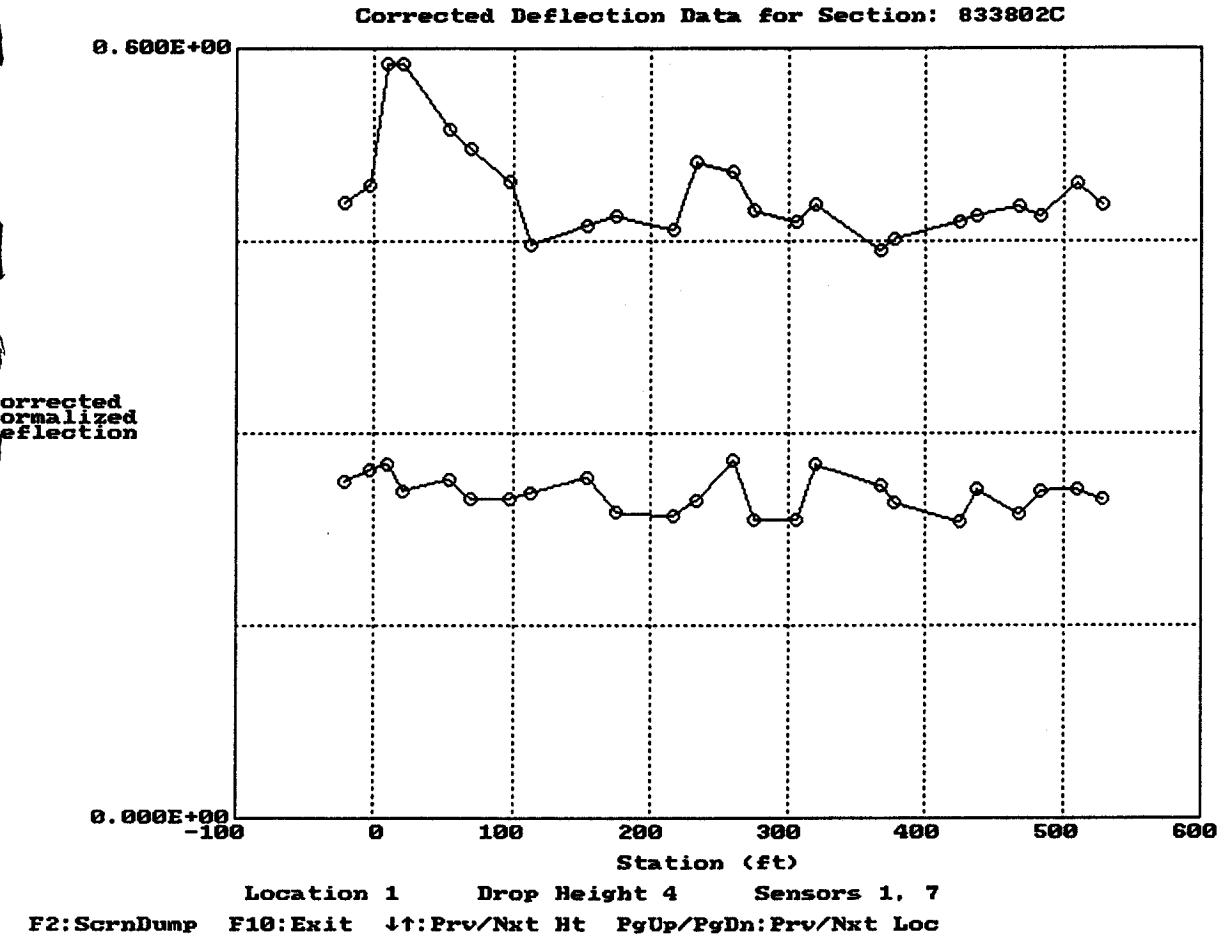
Outliers - Test pits: 21 combinations at each test pit
NO Test pit data was present.

Outliers - Section data: 504 total combinations within the section
29 height/sensor/station combinations are data outliers in subsection 1.

Structural capacity - Test pits: 3 combinations at each test pit
All results for TP 1 are within the range of expected values.
All results for TP 2 are within the range of expected values.

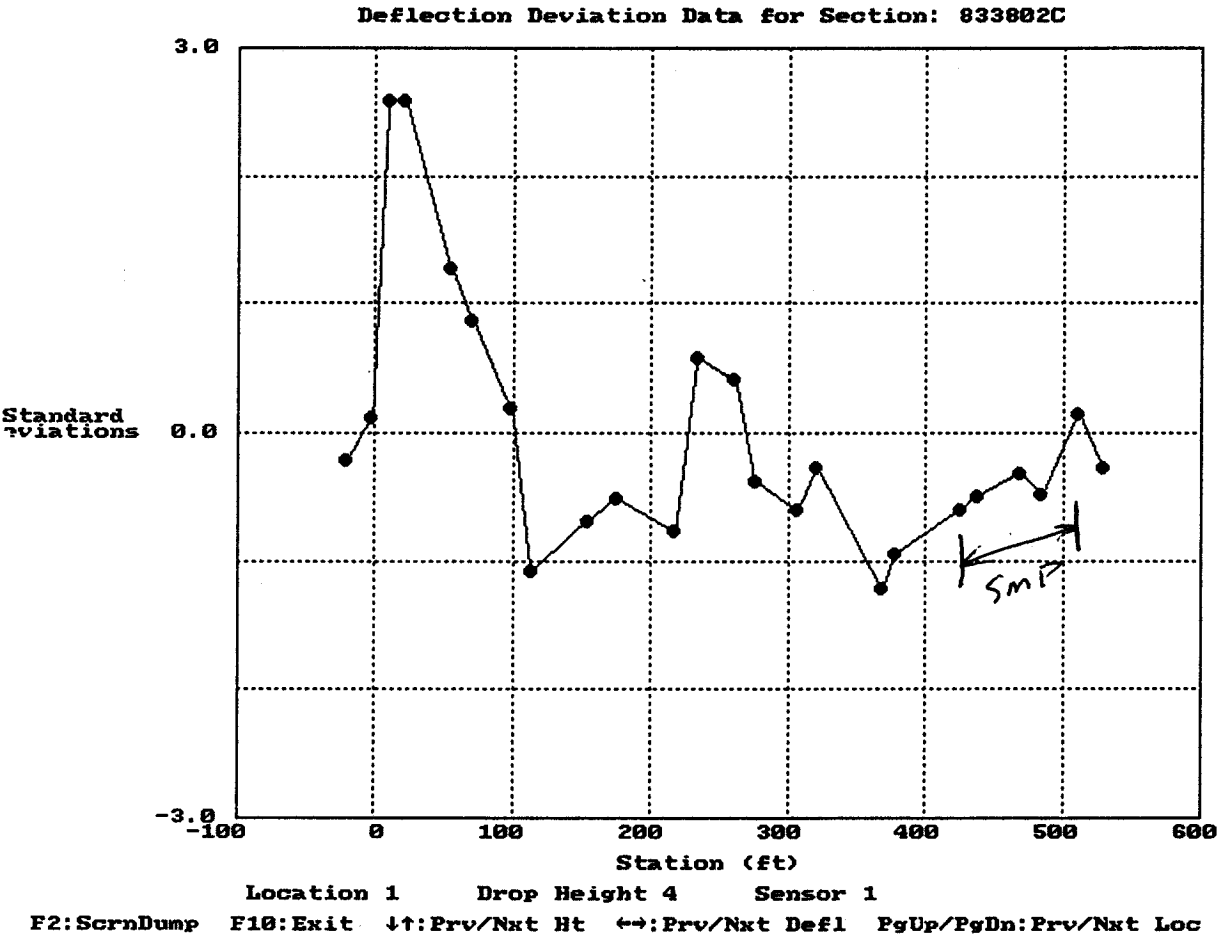
Structural capacity - Section data: 72 total combinations within the section
All results are within the range of expected values.

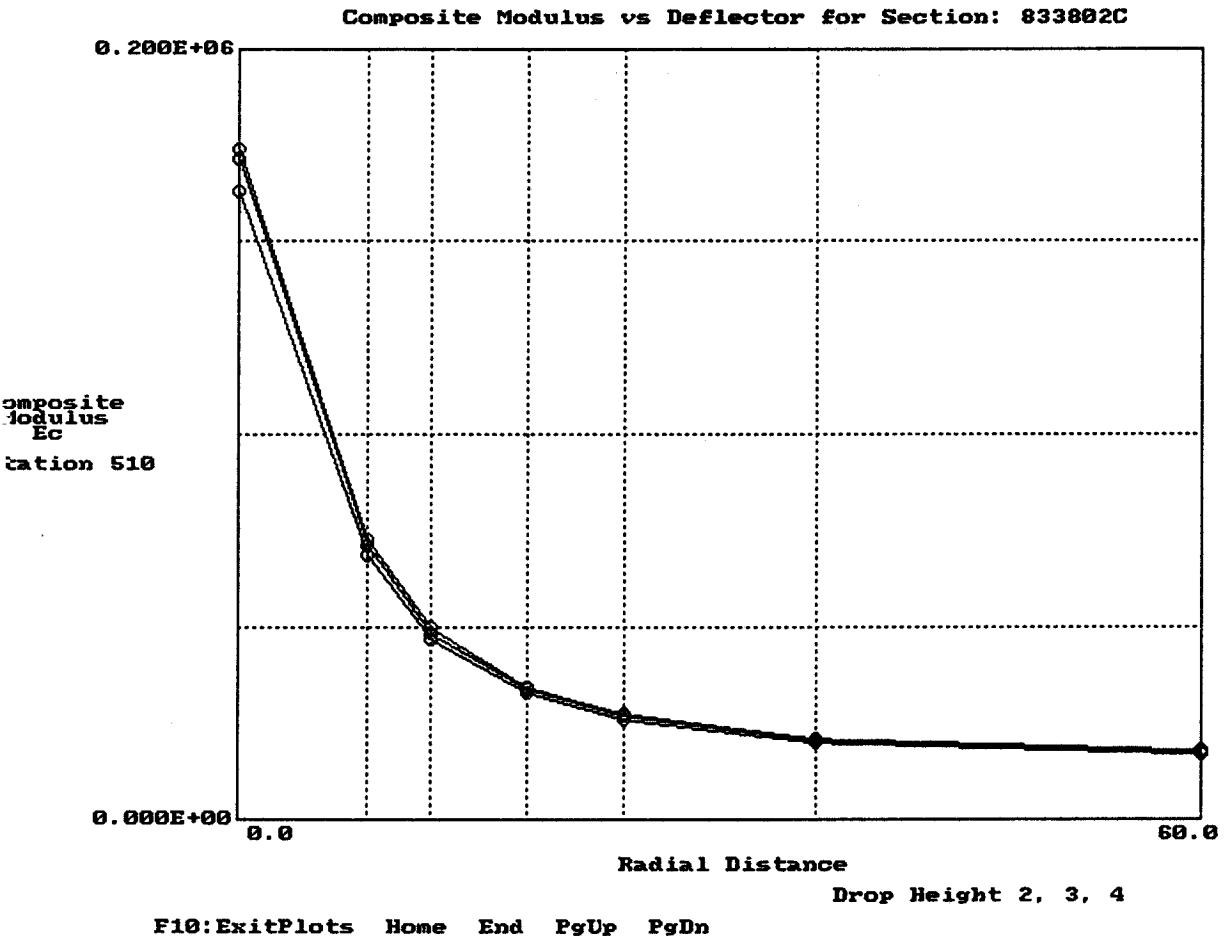

Deflection Data for Section: 833802C
0.600E+00
ormalized
eflection
0.000E+00
-100
0
100
200
300
400
500
600
Station (ft)
Location 1
Drop Height 4
Sensors 1, 2, 3, 4, 5, 6, 7
F2:ScrnDump
F10:Exit
↓↑:Prv/Nxt Ht
PgUp/PgDn:Prv/Nxt Loc



Location 1 Drop Height 4 Sensors 1, 7

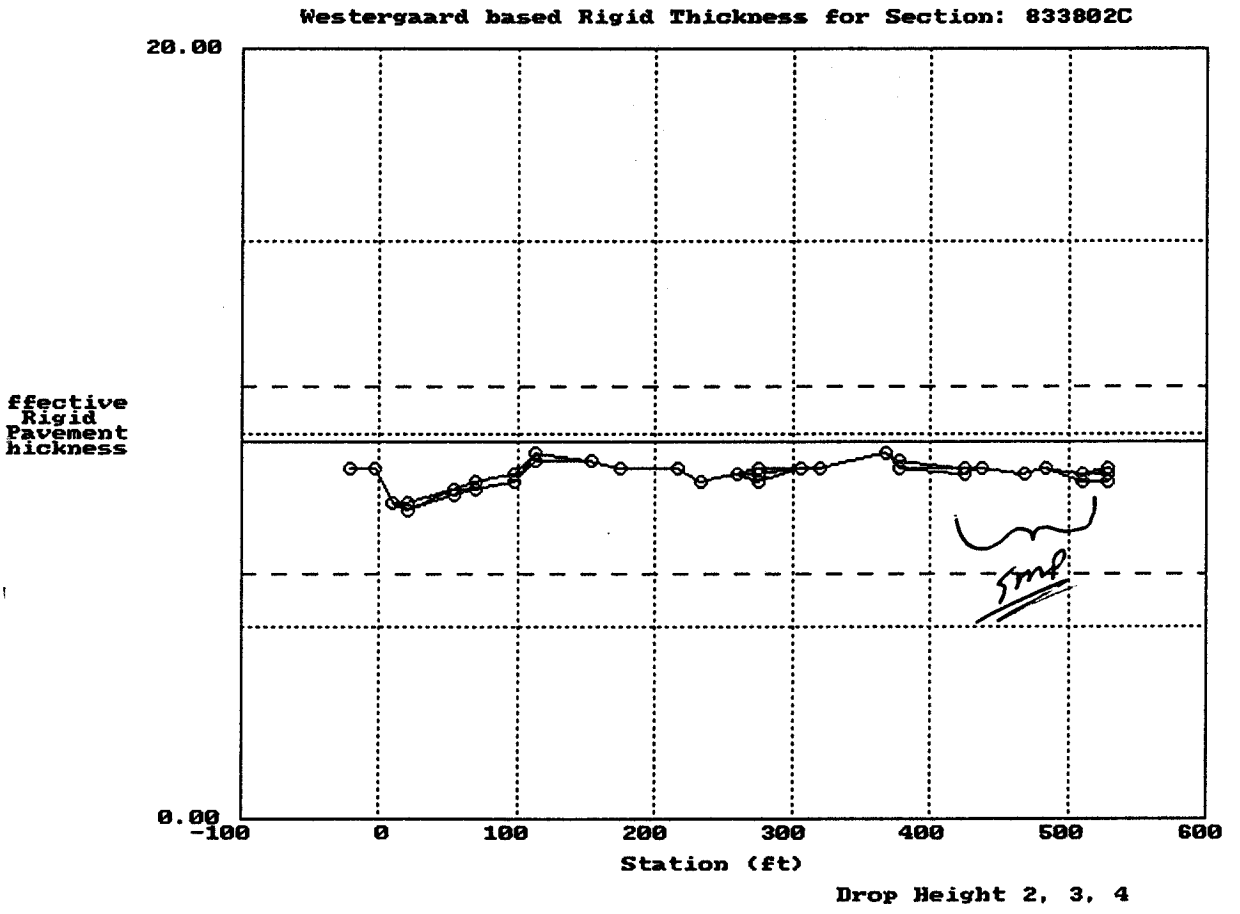
F2:ScrnDump F10:Exit ↓↑:Prv/Nxt Ht PgUp/PgDn:Prv/Nxt Loc


Deflection Deviation Data for Section: 833802C
3.0
0.0
-3.0
Standard
eviations
-100
0
100
200
300
400
500
600
Station (ft)
SMP
Location 1
Drop Height 4
Sensor 1
F2:ScrnDump F10:Exit ↓↑:Prv/Nxt Ht ↔:Prv/Nxt Defl PgUp/PgDn:Prv/Nxt Loc

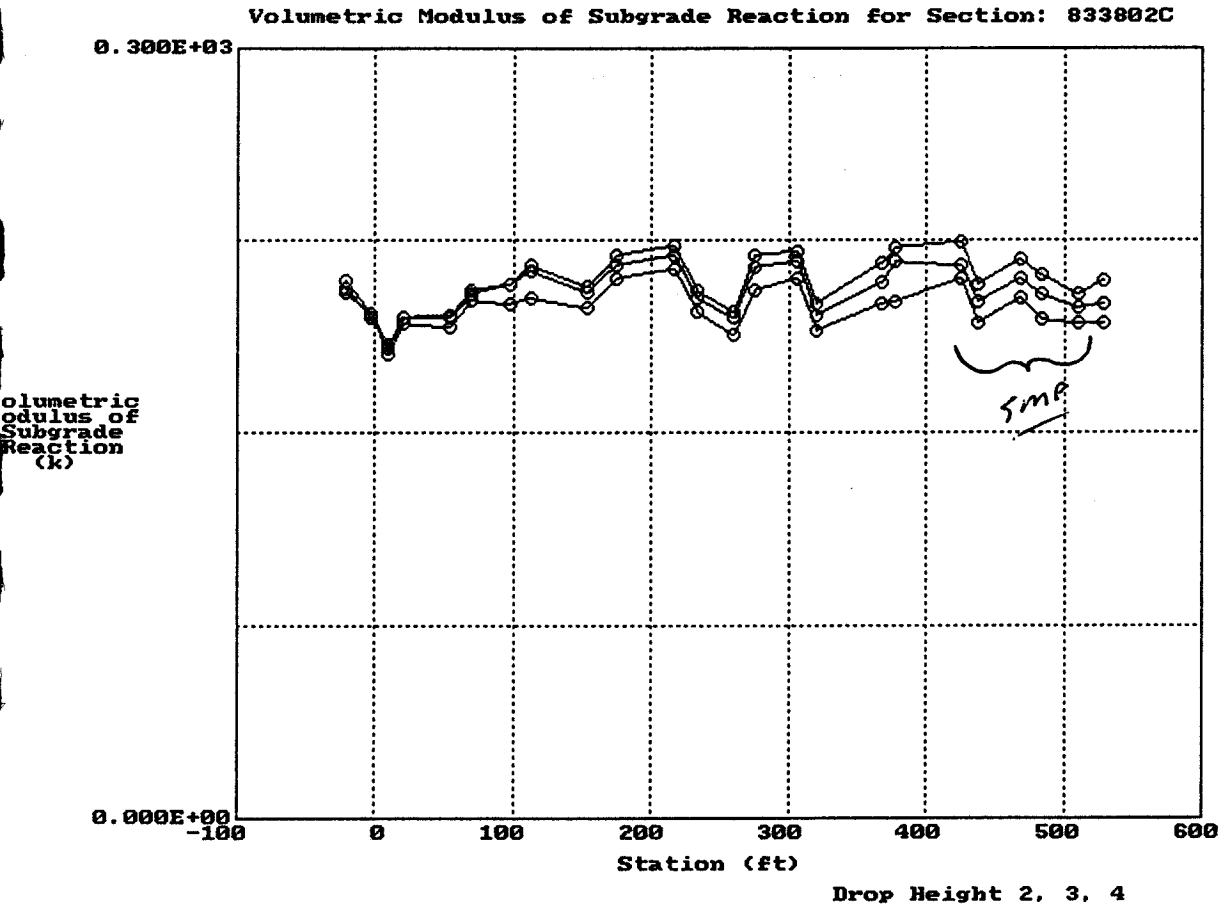


omposite
lodulus
Ec
cation 510

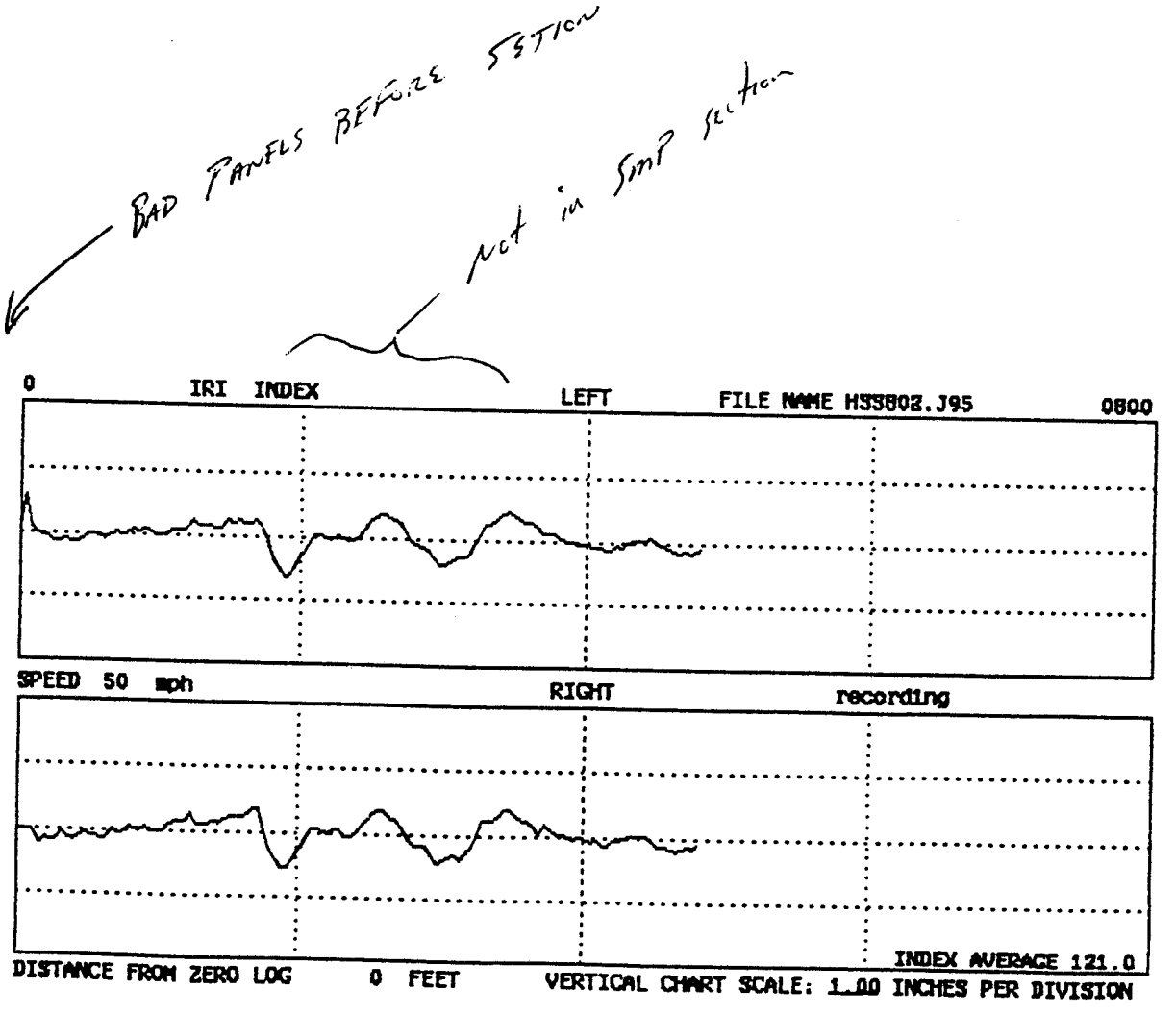
F10:ExitPlots Home End PgUp PgDn



F10:ExitPlots



F10:ExitPlots


BAD PANELS BEFORE SECTION
Not in SMP section
0
IRI INDEX
LEFT
FILE NAME H33802.J95
0800
SPEED 50 mph
RIGHT
recording
INDEX AVERAGE 121.0
DISTANCE FROM ZERO LOG
0 FEET
VERTICAL CHART SCALE: 1.00 INCHES PER DIVISION

Appendix B-1: Pre-Installation Site Recruitment and Coordination Information

Appendix B-1 contains the following pre-installation site recruitment and coordination information:

- SMP site recruitment notes; and
- Pre-installation meeting agenda, list of participants, and notes.

Manitoba

Highways and Transportation

Materials & Research
1181 Portage Avenue (Annex)
Winnipeg, Manitoba
R3G 0T3

November 20, 1990

Erland Lukanen
1404 Concordia Avenue
St. Paul, Minnesota
U.S.A. 55104

Subject: Seasonal Deflection Testing

We are pleased that plans are underway to conduct seasonal testing. Our agency is anxious to participate and therefore are willing to provide the necessary traffic control to conduct 16 days of deflection testing per year on our GPS 1 and GPS 2 sections.

Our frost depth estimate is assumed to be within 1 foot. Will it be necessary to eventually install frost depth measuring instrumentation and, if so, what type of instrumentation?

R. A. Van Cauwenberghe, P. Eng.
Senior Engineer: Pavements,
Geotechnical & Research

RAVC/rp

Attachment

cc: F. D. Young

WORKSHEET FOR GATHERING FROST DEPTH INFORMATION FOR SEASONAL TESTING

GPS-1 and 2 SECTIONS IN NORTH CENTRAL REGION

AGENCY	SECTION NUMBER	FULL-DEPTH	AC (in.)	SOIL	DEPTH TO WATER	DEPTH TO REFUSAL	FROST DEPTH	
IL.	171002	Y	13.3	F	13	N	(FT)	
IL.	171003	N	11.0	F	N	N		
IN.	181028	Y	15.0	F	N	N		
IN.	181037	Y	14.0	F	N	N		
IN.	182008	Y	19.0	F	N	N		
IN.	182009	N	15.0	F	N	N		
IA.	191044	Y	16.0	F	N	N		
KS.	201005	Y	13.5	F	N	16		
KS.	201009	Y	10.0	C	N	N		
KS.	201010	Y	8.0	C	N	N		
KY.	211010	N	6.3	C	N	15		
KY.	211014	Y	12.5	C	N	N		
KY.	211034	Y	15.0	F	N	10		
MI.	261001	N	2.3	C	6	N		
MI.	261004	N	4.5	C	N	2.5		
MI.	261010	N	2.3	F	6.5	N		
MI.	261012	N	6.0	F	N	N		
MI.	261013	N	7.5	C	N	N		
MN.	271016	N	3.0	C	N	N		WET SOIL
MN.	271018	N	4.5	C	20	N		
MN.	271019	N	4.8	C	N	N		
MN.	271023	N	10.7	C	N	N		
MN.	271028	Y	9.5	C	N	N		
MN.	271029	Y	8.0	C	N	N		
MN.	271085	Y	12.0	F	N	N		
MN.	271087	Y	14.3	C	N	N		
MN.	276251	N	7.0	C	N	N		WET @ 5'
MO.	291002	N	7.0	F	N	N		
MO.	291005	N	9.0	F	N	N		
MO.	291008	N	10.0	F	N	N		
MO.	291010	N	14.0	F	N	7.5		
NE.	311030	Y	7.0	F	N	N		
ND.	382001	N	2.5	F	N	N		6" LEAN PCC BASE
SD.	469187	N	4.5	F	N	N		
MB.	831801	N	4.4	F	N	N	7.5	
MB.	836454	Y	11.0	F	N	N	7.5	BIT. STAB. BASE
SK.	906405	N	3.0	C	N	N		

USE FOR ESTIMATE ON 833802 ALSO!

837802

1991 CONTRACT

NATIONAL RESEARCH COUNCIL

STRATEGIC HIGHWAY RESEARCH PROGRAM

North Central Region, 1404 Concordia Ave., St. Paul, MN 55104, Tel: (612) 644-2996 Fax: (612) 644-1045

RICHARD C. INGBERG
Regional Engineer

June 26, 1991

1993 INCLUDED 837802.

Mr. F.D. Young
Dir. Matls. & Res.
Manitoba Highways & Transp.
1181 Portage Ave. (Annex)
Winnipeg, Manitoba R3G 0T3
Canada

Fred

Dear ~~Mr. Young~~;

Re: Seasonal monitoring of SHRP GPS Sections

The SHRP LTPP program will be monitoring 64 GPS sections located throughout the United States and Canada to determine daily, seasonal, and yearly effects of temperature, moisture and frost on pavement structures. Detailed monitoring is needed to fully understand critical pavement characteristics, and link these characteristics at specific points in time to design factors.

The monitoring activities include: running pavement deflection tests; measuring transverse and longitudinal pavement profiles; and recording temperature, moisture, and frost conditions in the pavement structure and subgrade. Each section will be monitored once a month throughout the year and several additional times during spring thaw on a two year cycle.

The agency will be responsible for helping install the instrumentation, and for providing traffic control for the monitoring activities. Typically, the monitoring activities will start at 5 to 6 a.m. or daylight, whichever is earlier, and continue up to 12 hours. The instrumentation to be installed includes temperature probes, frost probes, and moisture sensors at each site. SHRP will furnish all instrumentation but will need assistance with traffic control, coring, drilling, sawing and any other activity needed for installing the instrumentation. The latest plan calls for deflection testing to begin by late summer, and the installation of instrumentation completed by this fall.

A site selection process was used based on such factors as: surface thickness, joint spacing, frost depth, ground water table, location, section uniformity, pavement condition, sites per region and sites per agency. The following Manitoba monitoring is based on the above factors:

831801 on TC-001 westbound, west of Brandon

We hope that Manitoba can participate in this part of the SHRP LTPP program. We are asking for a preliminary response on whether your agency is willing to include the site in the seasonal monitoring plan. If the site can not be included, an alternative site will have to be found in the North Central Region. Please respond as soon as possible, but no later than July 12, 1991. Should you have any questions or wish to respond by telephone or fax instead of writing, please do not hesitate to call. If I am not available, please talk to Gene Skok, Erland Lukanen or Bob Van Sambeek.

Sincerely,

Richard C. Ingberg
Regional Engineer

rci/bw

cc: Ray Van Cauwenberghe, LTPP Contact
E.L. Skok
R.J. Van Sambeek

833802

Manitoba

Highways and
Transportation
Materials & Research
1181 Portage Avenue (Annex)
Winnipeg, Manitoba
R3G 0T3

July 9, 1991

Richard C. Ingberg
Regional Engineer, S.H.R.P.
1404 Concordia Ave.,
St. Paul, Minnesota, 55104

Dear Dick:

I hope this finds you well and enjoying summer. I look forward to our meeting with you and Gene on July 31st, 1991.

Concerning your letter June 26, 1991, regarding seasonal monitoring of SHRP-GPS Sections, this is to advise that we will be pleased to participate. 831801

Hopefully we will be able to provide sufficient staff for instrumentation installation when the time comes.

Kinds regards,

Fred D. Young, P. Eng
Director of Materials & Research

FDY/rp

cc: R.A.V.C.
J. Hosang

1993 INCLUDED 833802

Manitoba

Highways and Transportation

MATERIALS & RESEARCH BRANCH
12th Floor - 215 Garry St.
Winnipeg, Manitoba R3C 3Z1

Telephone: (204) 945-8982 Facsimile: (204) 945-2229

COVER SHEET: If there are any problems with this transmittal, please call 945-8982.

DATE: July 8, 1993

TO: NAME: Bob VanSambeek

OFFICE: Braun Intertec

FAX NUMBER: (612) 776-7201

FROM: NAME: Dennis Watson

TELEPHONE: (204) 945-8982

FAX NUMBER: (204) 945-2229

NO. OF PAGES: (including this one) 1

MESSAGE/REPLY: Our Department does not have the capacity to core 300mm diameter holes. We do have a drill rig capable of turning a 300mm auger, but do not possess one of our own.

We may be able to contract out the coring and/or drilling to a local outfit. Let us know what we'll need.

See you in 2 weeks

DW

1993

Manitoba

Memorandum

Date . August 23, 1993

To . LIST Gene & Bob

From . Dennis Watson
. Research Engineer
. Materials & Research
. 12th Floor - 215 Garry Street
. Winnipeg R3C 3Z1
Telephone . 945-8982

Subject . **RE: Seasonal Monitoring Instrumentation Installation Meeting**

Two of our Manitoba Test Sites have been selected by the U.S. Federal Highway Administration's Long Term Pavement Performance project to be monitored seasonally. The purpose of this monitoring is to evaluate the seasonal variations in pavement structural strength. The measurement of the factors affecting this strength, namely frost depth, rainfall, water table, and temperature, involve the installation of the appropriate monitoring instruments. The Manitoba sites involved are PTH 75 at Glenlea and PTH 1W at Oak Lake which are both scheduled for installation of the monitoring instrumentation in mid-October, 1993.

A meeting to organize the activities has been arranged for Friday, August 27 at 10:00 a.m. in the Boardroom on the 15th Floor, 215 Garry Street, Winnipeg.

Please have one of your staff attend in the event that you cannot.

Please contact me at 945-8982 if you require any further information.

Dennis Watson

DW/bb

LIST:

Fred Young, P. Eng., Materials and Research
Bob Kurylko, P. Eng., Traffic
Dave Reid, Virden - FAX
Russ Farrell, Selkirk - FAX
Lawrence Papuga (for Rene Gervais), Bridges and Structures
Dr. Eugene L. Skok Jr.
Braun Intertec Pavement Inc., St. Paul, Mn. - FAX
R. Van Sambeek
Braun Intertec Pavement Inc., St. Paul, Mn. - FAX

BRAUN INTERTEC

Description: 833802 SITE VISIT

Project No: DBRX 92 700 BS

Date: 8/27/93 By: RV

Posts 25' from edge of PCC – equip. cab. in line
following grade

Sign for Glenlea @ sta ~2+30

16" to 18" of stab. matl. on rig shoulder next to PCC to prevent
agg. from blowing away next to lane

J! @ sta 5+00 – concentrate on using [illegible]

– will not have to skip any slab for instr.

≅ 5' to H_2O in ditch – expect seepage
in hole for instrumentation

– Maybe able to back rig up to inst. pole location

– No problem w/ trees (even exposure)

– Concern – bumps in highway – one mid section

– Agency desire to put PCC Block Back in hole

piezometer cap. – wait fill w/ H_2O off lane?

May have BM for plots along Red River that
actual elevation can be brought to BM @ site

– Glenlea very small – town to the south
should have hardware store

Bob V.

FHWA-LTPP SEASONAL MONITORING PROGRAM IN MANITOBA

MEETING AGENDA

August 27, 1993 from 10:00 AM to 12:00 Noon

Boardroom on the 15th floor

215 Garry Street, Winnipeg, Manitoba

Introduction

Test Sections

Sensor Description and Installation Procedures

(Break)

Installation and Monitoring Schedule

Safety

Manitoba Highways and Transportation Responsibilities

NCRCO and FHWA Staff Responsibilities

Closing Comments

? Modified Resistivity Probe to go 10' (Space 3' ? lower half ?

? Info Sign at SM sites for PR ?

? Replace PCC in trench ? - bond in place ?

- Statement from FHWA for local newspaper

FHWA-LTPP SEASONAL MONITORING PROGRAM IN MANITOBA

Introduction

Sign-up sheet

Objectives of the Seasonal Monitoring Program

- Collect and analyze data to better understand the short and long term impacts of environmental factors including temperature, moisture, and frost/thaw depth on a pavement structure for improving pavement design.

- Factors defined in the core experiment monitored by FHWA-LTPP include
  - wet or dry climate — border — +20 inches of rain - wet?
  - freeze or no freeze climate
  - pavement surface type (AC or PCC)
  - pavement surface thickness
    - original Construction
- Factors not defined in the core experiment include — limit due to equipment requirements
  - pavement edge drains
  - recycled materials
  - CRCP
  - shallow water table (very shallow)
  - shallow bedrock
  - etc

- Agencies are encouraged to monitor supplemental sections to study factors not included in the core experiment
  - reduced monitoring requirements
  - use existing GPS or SPS sections — able to tie into the existing database w/ inventory and traffic data.

Overview of Sensor Installation and Monitoring Activities

- Two days for initial instrumentation installation and monitoring

- About $10,000 of equipment installed at each site — not including labor costs

- Monitor sections every other year (70 days over a 10 year period)

Monitoring Activities need to

- Relate environmental variations to changes in pavement performance
  - pavement, base and subgrade strength calculated from deflection data collected monthly most of year and bi-weekly in the spring
  - ride quality determined from profile data collected five times per year
  - pavement distress documented using detailed distress surveys two times per year In addition to PASCO photo logging
  - frost heave/swelling soil monitored using elevation data collected five times in first year and two times per year after the first year

Test Sections

Section Location

- 64 sections in the Core Experiment monitored under FHWA-LTPP contract

- 16 sections in the North Central Region
  - two core sections in Manitoba
    - 831801, WB PTH 1, Near Oak Lake (West of Brandon)
    - 833802, NB PTH 75, Near Glenlea (South of Winnipeg)

- no supplemental sections identified in the North Central Region at this time

Allowable Maintenance

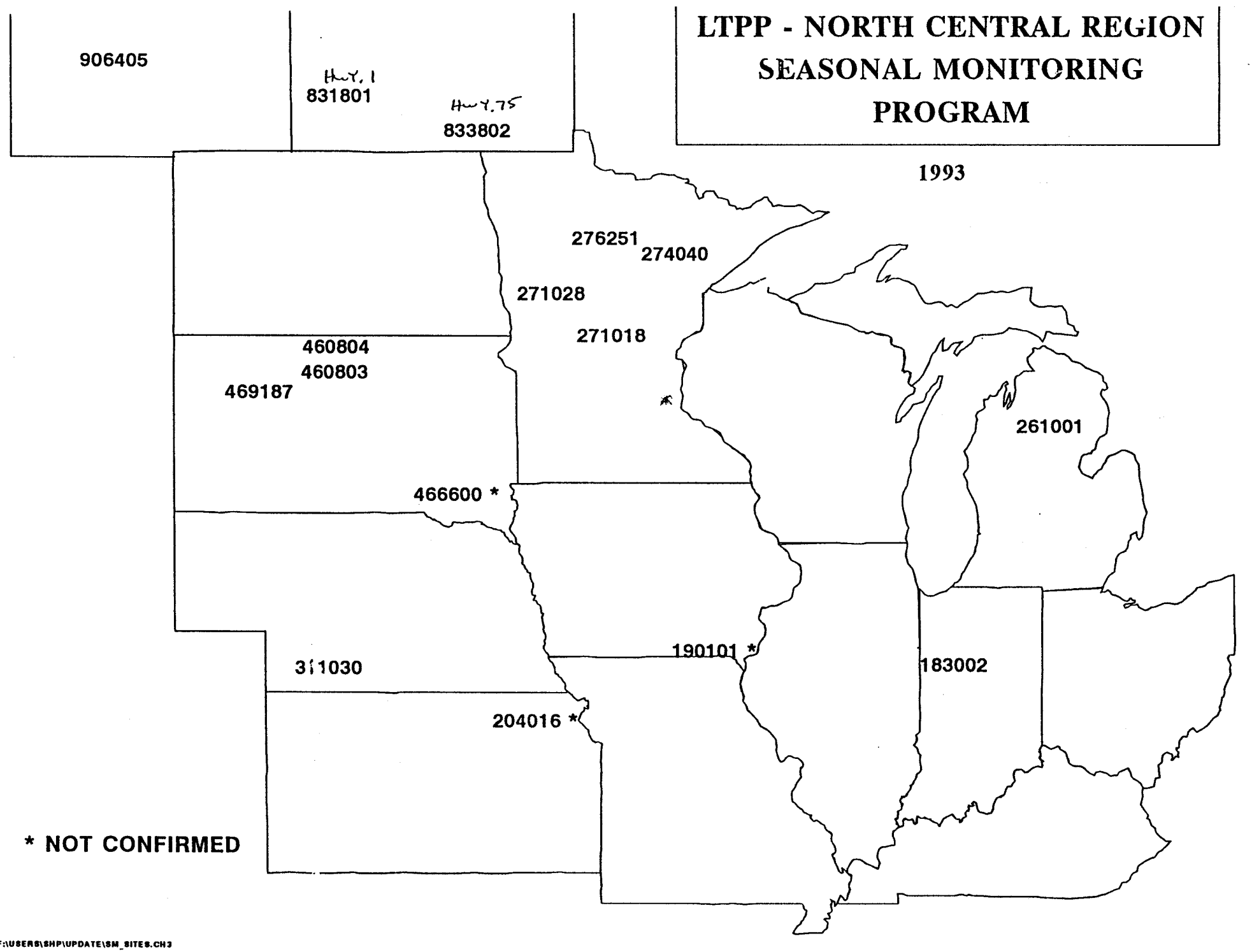
- routine maintenance
  - any scheduled?

- no structural rehab preferred for ten years

- safety is primary concern

LTPP - NORTH CENTRAL REGION SEASONAL MONITORING PROGRAM

1993



F:\USERS\SHP\UPDATE\SM_SITES.CH3

- Pilot in Keiser, Colorado
- PCC site in Nephi, Utah
- AC section in Little Falls, MN

Sensor Description and Installation Procedure

TDR (Time Domain Reflectometry) Probes

- FHWA design and manufacture
  - three prong
  - $60.00 each

- measure dielectric of material between probes and relate to moisture content
  - air = 1.0
  - dry soil = 3 to 4 - Sat. Sand ~60? (Little Falls)
  - water = 80

- calibration
  - laboratory in air and water
  - field moisture test on material placed on probes
  - retain soil samples for additional laboratory calibration @ various moisture contents

- 10 probes per installation
  - one mid-depth in the base < 12"
  - seven at six inch intervals in the top of the subgrade
  - two at 12 inch intervals approximately seven feet below the surface

Thermistor Probe

- Measurement Research Corporation (MRC)
  - $1000.00

- thermistors change resistance with change in temperature

- built in multiplexer for automated readings

- two part
  - stainless steel section - 13"
    - monitor temperature gradient through the pavement surface
      - one inch deep
      - mid depth in surface
      - one inch ~~from~~ above bottom of pavement
  - plexiglass section
    - monitor temperatures at 15 points along probe - 3" interval near top and 6" intervals into subgrade ↓ 20"

- laboratory calibration at three temperatures
  - ice bath
  - Room temp.
  - warm bath

Resistivity Instrumentation

- CRREL design
  - PVC probe with 36 electrodes at two inch intervals
  - $800.00

- large increase in resistance when moisture in the soil freezes
  - determine both frost and thaw depth
- require signal generator and multimeters
  - compute AC resistance between electrodes
- both manual measurement and automated

– plot resistance vs depth profiles
– AC prevent movement of ions in the soil
– avoid polarization

Air Temperature

- Campbell Scientific
  - $150.00

- air probe and radiation shield
- mount on instrument pole ≅ 9' above ditch

Rain Gauge/Tipping Bucket

- Texas Electronics
  - $255.00

- 0.1 mm (0.004 inches) liquid precipitation per tip
- mount on instrument pole

– bird house?
– clean out each visit.
– Target?

Equipment Cabinet and Instrument Pole

- telephone pedestal
  - break away classification
  - contain power supply, data logger, sensor connections for mobile reader
  - conduit runs into cabinet from instrumentation hole
  - pea rock inside base to prevent condensation
  - located about 26 feet off edge of driving lane – limited by cable length on TDR probes.
- instrument pole
  - two inch diameter galvanized pipe
  - break away classification
  - extend below frost line
  - holds rain gauge and air temperature probe
  - located about 27 feet off edge of driving lane – behind equipment cabinet

Interface/Communications Equipment

- mobile unit
  - used on site to read TDR probes and resistivity probe
  - multiplexers for automated readings

- cable reader
  - Tektronics model 1502
    - $8000.00
  - generates signal and monitors reflected energy from TDR probes
    - relate time for pulse to travel through probe to dielectric
    - then relate θ to moisture content

- computer and software
  - "onsite" used to monitor temperatures and rainfall continuously
  - "mobile" used to monitor resistivity probe and TDR probes during site visits

Observation Piezometer

- monitor depth to ground water table

- designed to act as frost free bench mark
  - Dave Esch design
  - anchor at 14 foot depth
  - sliding section extends eight feet below the surface
    - filled with water proof grease

BREAK

Installation and Monitoring Schedule

Instrumentation Installation and Initial Monitoring

- two days required with third day as contingency
  - first day complete instrument installation
  - second day collect data

- tentative schedule
  - Oct. 12 & 13 - 831801, WB PTH 1, Near Oak Lake
  - Oct. 14 & 15 - 833802, NB PTH 75, Near Glenlea
  - Oct. 18 & 19 as contingency days for weather or equipment problems

14th Contingency (setup for next site)

FISHING TRIP 15+16 (10 HOLIDAY) ?

Long Term Monitoring

- one day every month except during spring every other week.
- every other year for 10 years 20 days worth of monitoring

Safety

Agency Requirements
- clothing → hardhats around drill rig. and steel toe boots
- → vest + orange hat
- Bring to attention any safety concerns

Manitoba Highways and Transportation Responsibilities

Project Contacts for Maintenance Activities and Traffic Control
- will set up traffic control directly with districts if desired

Public Relations
- coordinate with FHWA representative on-site regarding any news coverage

Utility Clearance
- 700 foot section (extend 100 foot outside both ends of 500 foot test section)
- sections marked on right edge of driving lane with white paint
- clear driving lane and 40 feet into the ditch

Traffic Control for Full Lane Closure
- two days for initial installation and monitoring
- lane closure for 700 foot section
  - signs, cones, and arrow board
- set up as early as possible
  - 7:30 AM?
- may want to mark locations for signs

Establish Bench Mark for Elevation Reference
- not affected by frost
- actual elevation not required

Equipment
- pavement saw and operator
  - only required for first day during instrument installation
  - saw 16 inch square block out of the pavement surface
    - located in the outer wheel path
    - will put block back in-place on AC section
  - equipment capable of cutting one inch deeper than estimated pavement thicknesses below
    - 831801 4.4 inches Asphalt
    - 833802 9.8 inches Portland Cement Concrete
  - saw four inch wide trench for conduit
    - extend from outer wheel path to pavement edge
- drill rig and operator
  - only required for first day during instrument installation
  - able to drive in ditch or back up to location for instrument pole
  - bore one six-inch diameter hole for piezometer
    - 14 foot depth
    - located on shoulder
      - location may depend on cap used for piezometer

- bore one 12 inch diameter hole for instrumentation
  - solid stem auger preferred
  - eight foot depth
  - located in outer wheel path
  - NCRCO has 12 inch diameter auger with 1-5/8 inch male hex drive
- bore one 12 inch diameter hole for equipment cabinet
  - two feet deep
  - located about 26 feet outside the driving lane in the ditch
- bore one six-inch diameter hole for the instrumentation pole
  - 10 feet deep
  - located adjacent to the equipment cabinet in the ditch
- small portable generator?
  - not sure if needed

Materials

- cover assembly for piezometer
  - must function for ten years
  - able to open in the winter
  - minimum four inch inside diameter
- sackcrete for piezometer cover and instrumentation pole
  - estimate six bags
- bentonite pellets for sealing piezometer
  - five gallon bucket
- filter sand for piezometer
  - 400 pounds (four bags)
  - particle size not critical
- pea gravel or trap rock for equipment cabinet
  - 500 pounds
  - 3/8 inch size preferred
- asphalt patch for conduit trench
  - estimate 500 pounds
- quick set concrete to repair PCC sections
  - only for 833802 by Glenlea
  - estimate three to four cubic feet
- water for mixing sackcrete and equipment clean-up
  - estimate 30 gallons

Pavement Repairs

- patch conduit trench on AC ~~shoulders~~ 2½s with asphalt patch — *Both sections Agg. shoulder*
- assist with block replacement on AC section
- assist with rapid set concrete patch for instrumentation hole and conduit trench on PCC pavement

Miscellaneous Activities

- mow grass in area identified for utility clearance or bring weed whip to the site — *Go for area w/ instr cabinet only*

<u>NCRCO (Braun Intertec) and FHWA Staff Responsibilities</u>

Instrumentation

- provide all instrumentation
- install all instrumentation
  - may ask anyone on-site for assistance
- monitoring activities
  - will collect all required monitoring data — *traffic control side, leave – will have two people on site at all times + on site w/ telephone*
- NCRCO phone 612-776-7522
  - main contacts for Seasonal Monitoring
    - Bob Van Sambeek
    - Ron Urbach

<u>Closing Comments</u>

- Any questions or concerns, please call.

Snowmobile concerns / Stripe pole? Yellow & Black / Delineator on 2" pole?

BRAUN[SM]

INTERTEC

Description: Manitoba Seasonal Planning Meeting

Project No: DBNX 92700 BS

Date: 8/27/93 By: RI

...me	Dist/Div.	Phone Number
...bert Van Sambeek	Braun Intertec / SHRP	612-776-7522
...nnis Watson	Materials	204 945-8982
...ent Gardiner	Virden Maintenance/WRS	748-1895
...ony NG	Mat'ls & Research	204 945-8982
...tan Hilderman	Mat'ls	204 945-8982
...on Findlay	Highways Region 2 Supt	204 745-2086
...ave Reid	Highways Region 3	204 748-2414
...rald Larsen	Highways Traffic Engineering	204 945-3781
...y Van Cauwenberghe	Materials & Research	204 945-8982
Russ Farrell	Region / Maintenance Manager.	204 785-5248

Request ... [illegible]

- get Dennis copy of Manual

Manitoba

Memorandum

Date . September 22, 1993

To . LIST

From . Dennis Watson
. Pavement Research Engineer
. Materials & Research
. 12th Floor - 215 Garry Street

Telephone . 945-8982

Subject . **Installation of Seasonal Monitoring Instruments**

This memo is intended to serve as a follow-up to our meeting of August 27 at which a number of responsibilities were assigned.

The schedule remains unchanged with October 12 & 13 at Oak Lake and October 14 & 15 for Glenlea scheduled for installation and verifications. Traffic control personnel will be required for all four days with the installation personnel required on October 12 and 14 only.

A helix-type monument has been selected for use as an elevation benchmark and will be installed by Gerald Chartier's drill truck. The Regions responsible will be requested to establish an accurate elevation from a geodetic benchmark.

Don Findlay (Region 2 Superintendent) will provide a pavement saw, operator and an electric generator for use on both of the sites.

Bill Halwachs (Region 2 Superintendent) will make Gerald Chartier's drill truck available for both sites. Mr. Chartier will arrange for an adaptor for connecting the helix monument to the drill shaft for installation of the elevation benchmark. Mr. Chartier's truck is capable of drilling all of the holes required on both sites as well as installing the helix monuments.

Roger Sutyla (Region Superintendent) and Richard Murphy (Region 3 Superintendent) have been asked to provide 200 kg of filter sand, 250 kg of pea gravel, 1 pail of cold mix asphalt, and 100 litres of water per site. These Superintendents are also requested to ensure that the grass be mowed 50 m on each end of the test sites and halfway down the slope to facilitate easier installation of the instruments. Reflective hazard markers are also required for installation on the instrument pole.

The utility companies, namely Manitoba Telephone System and Centra Gas, have been contacted and have assured me that the drilling will not interfere with their facilities.

I will bring the 12 bags of sackcrete, quick set concrete, piezometer cover, and bentonite pellets to the sites.

If there are any questions on these matters, please feel free to contact me at anytime.

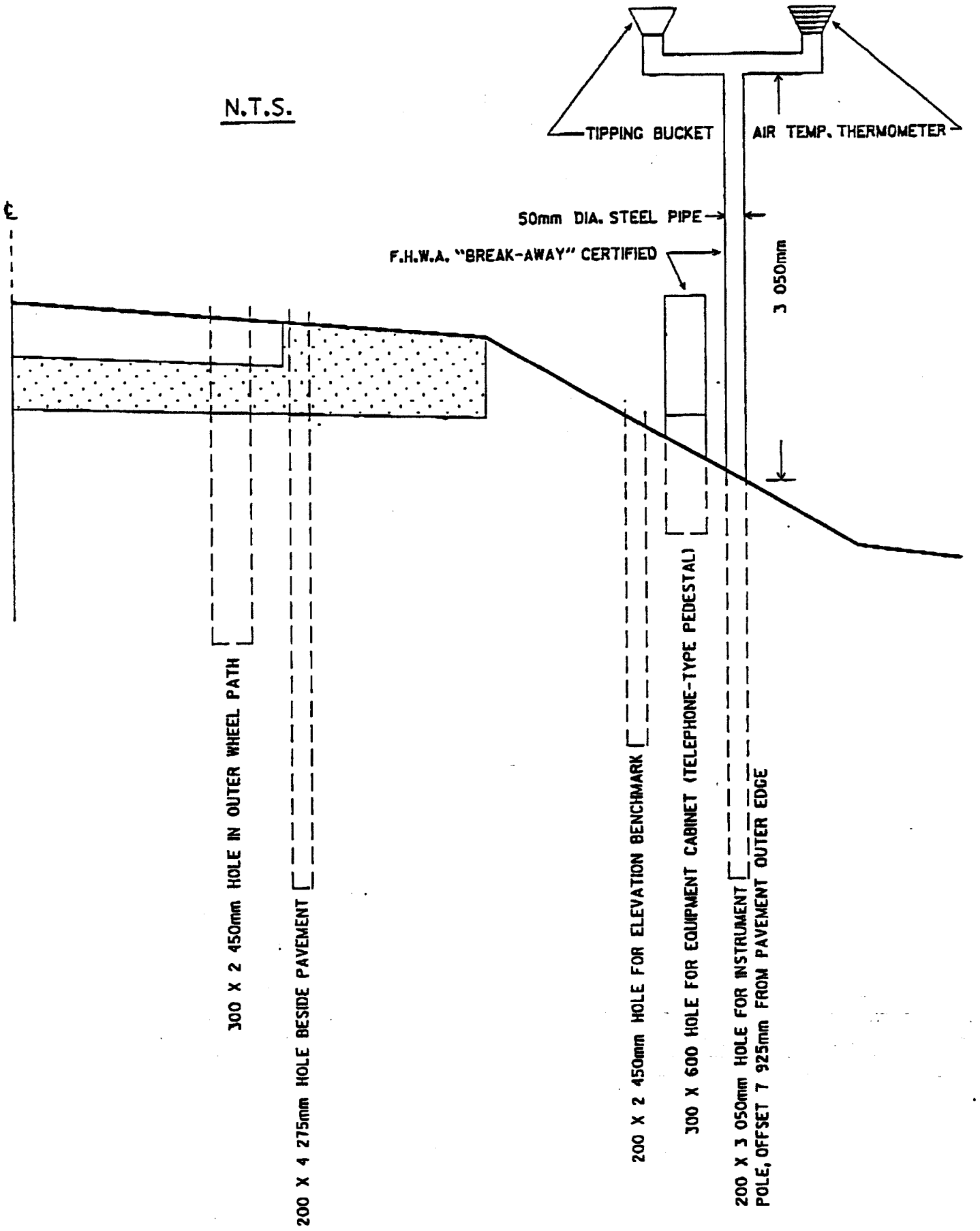
Dennis Watson
Attached - Site Layout
DW/bb

Distribution List:
Bob Van Sambeek, Project Engineer, Braun Intertec, St. Paul, Mn.(FAX)
Russ Farrell, Maintenance Manager, Selkirk Highways Office
Richard Murphy, Maintenance Superintendent, Virden Highways Office
Roger Sutyla, Maintenance Superintendent, Steinbach Highways Office
Don Findlay, Maintenance Superintendent, Carman Highways Office
Gerald Chartier, Drill Truck Operator, Wilkes Yard

F.H.W.A. - L.T.P.P. SEASONAL PROGRAM IN MANITOBA

SITE LAYOUT

N.T.S.



ERIAL

Manitoba

Highways and Transportation
Materials and Research

MATERIALS & RESEARCH BRANCH
12th Floor - 215 Garry Street
Winnipeg, Manitoba R3C 3Z1
Telephone: (204) 945-8982 Facsimile: (204) 945-2229

FACSIMILE TRANSMISSION SHEET

Please call 945-8982 if there is any problem with this transmittal.

DATE:	MAY 17, 1994	No. OF PAGES (including this one)	2
TO:	DICK & BOB ORTHMEYER	FROM:	DENNIS WATSON
PHONE:	( )	PHONE:	(204) 945-8982
FAX:	(612) 776-7201	FAX:	(204) 945-2229

SUBJECT: "FULL DAY" FWD TESTING ON SEASONAL SITE IN Mb.

MESSAGE:

Please ensure Bob + Dick receive this fax.

Originals were mailed today.

Thanks, Dennis

Manitoba

Highways and Transportation

Materials and Research Branch

12th Floor
215 Garry Street
Winnipeg, Manitoba, CANADA
R3C 3Z1

May 17, 1994

Mr. Richard Ingberg
LTPP Regional Engineer
Suite 10
1983 Sloan Place
St. Paul
MN 55117

Dear Dick:

During the Seasonal Monitoring Program Pre-Installation Meeting the possibility of obtaining data on the daily variation in PCC pavement joint load transfer efficiency due to warp/curl effects was discussed. We understand that this information could be obtained as part of the LTPP Seasonal Monitoring Program with a full day of FWD testing being conducted over a complete thermal cycle.

We would be willing to supply the necessary traffic control for such testing to occur on our PTH 75 Seasonal Monitoring Site at Glenlea, Manitoba.

If you require any further information or assistance in this matter, please don't hesitate in calling.

Sincerely yours

Dennis Van Cauwenberghe

for R. A. Van Cauwenberghe, P. Eng.
A/Director of Materials & Research

DW/bb

cc: Dr. E.L. Skok, jr.
R. Van Sambeek

- TESTING NEVER DONE
- WILL TRY AGAIN ON 1996/1997 LOOP.

BRAUN INTERTEC

Description: SMP

Project No: DBNX9270 B5

Date: 6/3/94 By: RV

893802

6/3/94 (CALL FROM DENNIS WATSON)

OAK LAKE – PIEZOMETER ELEV. 426.577 M

GLENLEA – " " 235.422 M

FEB. 3, 1993

OAKLAKE – 426.573 (MOVE 4mm)?

GLENLEA – 235.409 (11/15/93 ELEV. SHEET)

Manitoba

Highways and Transportation

Materials and Research Branch

12th Floor
215 Garry Street
Winnipeg, Manitoba, CANADA
R3C 3Z1

MESSAGE: ☐ FAX: ☑ No. of PAGES (including this one) 2

DATE: MAY 30/95

TO: BOB VAN SAMBEEK FROM: Dennis

PHONE: ( ) PHONE: (204) 945-8982

FAX: 942-3059 FAX: (204) 945-2229

SUBJECT: PIEZOMETER ELEVATION – VICINITY OF GLENLEA
#833802

235.413 m above sea level.

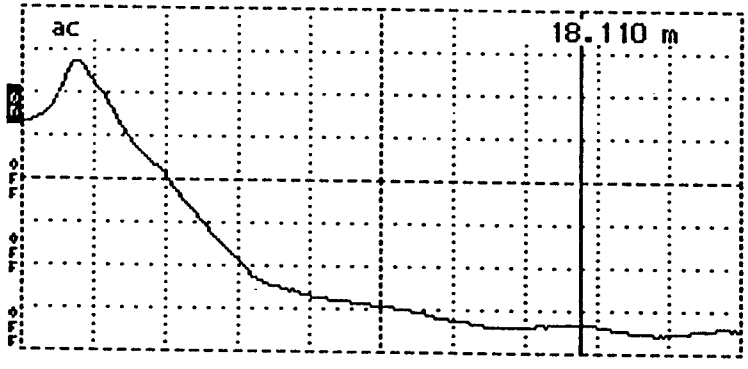
Appendix B-2: Pre-Installation Equipment Checks/Calibration Information

Appendix B-2 contains the following data sheets for the pre-installation equipment checks/calibration:

- Data Sheet SMP-C01: TDR Probe Check;
- Data Sheet SMP-C02: Thermistor and Air Temperature Probe Check;
- Data Sheet SMP-C03: Electrical Resistivity Probe Check;
- Data Sheet SMP-C04: Function Generator, Multi-meter, and Switch Box Checks; and
- Data Sheet SMP-C05: Tipping-Bucket Rain Gauge Calibration.

LTPP Seasonal Monitoring Program Data Sheet SMP-C01 (Page 1) TDR Probe Check	Agency Code [83] LTPP Section ID [3802]

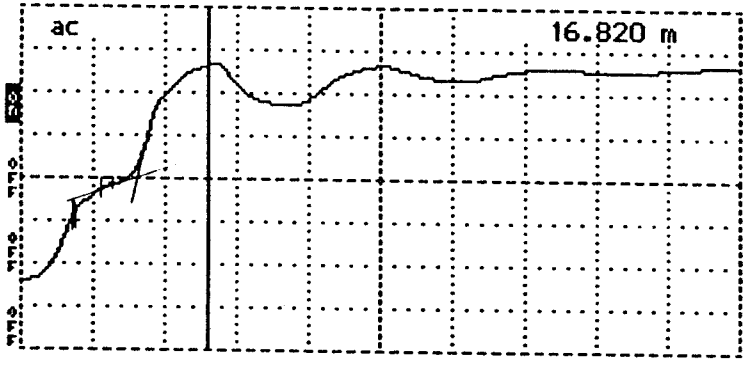
Cursor ..... 18.110 m
Distance/Div..... .25 m/div
Vertical Scale.... 177 mρ/div
VP 0.99
Noise Filter..... 8 avg
Power..... ac



Tektronix 1502B TDR
Date 10-7-93
Cable 8302 - 83B01
Notes Shorted
Input Trace
Stored Trace
Difference Trace

TDR Trace	Apparent Length, (m)	Dielectric Constant
"Shorted at Start"	N/A	N/A

Cursor ..... 16.820 m
Distance/Div..... .25 m/div
Vertical Scale.... 177 mρ/div
VP 0.99
Noise Filter..... 8 avg
Power..... ac

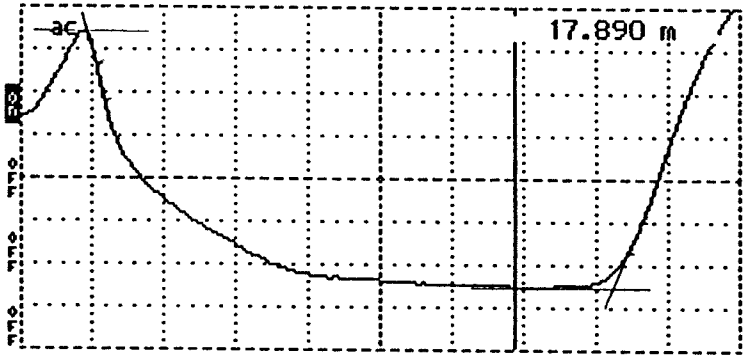


Tektronix 1502B TDR
Date 10-7-93
Cable 8302 - 83B01
Notes AIR
Input Trace
Stored Trace
Difference Trace

TDR Trace	Apparent Length, (m)	Dielectric Constant[1]
"In Air"	0.21	1.09

LTPP Seasonal Monitoring Program Data Sheet SMP-C01 (Page 2) TDR Probe Check	Agency Code [83] LTPP Section ID [3802]

Cursor ..... 17.890 m
istance/Div..... .25 m/div
ertical Scale.... 77.0 mρ/div
P 0.99
oise Filter..... 8 avg
ower..... ac



Tektronix 1502B TDR
Date 10-7-93
Cable 83B802 - B3B01
Notes H2O
83B802
Input Trace
Stored Trace
Difference Trace

TDR Trace	Apparent Length, (m)	Dielectric Constant[2]
"In Water"	1.82	82.01

[1] If dielectric constant not between 0.75 and 2.0, contact FHWA LTPP Division
[2] If dielectric constant not between 76 and 84, contact FHWA LTPP Division

Note: Dielectric constant is determined as follows:

$$\varepsilon = \left[\frac{(L_a)}{(L)(V_p)}\right]^2 = \left[\frac{(D_2 - D_1)}{(L)(V_p)}\right]^2$$

where ε = dielectric constant; L_a = apparent length of probe, m; L = actual length of probe units (= 0.203 m (8 in) for FHWA probes); V_p = phase velocity setting (= 0.99).

TDR Probe Serial Number: 83B01 TDR Probe Length, L: .(1) m Length of Coax Cable: (1). m

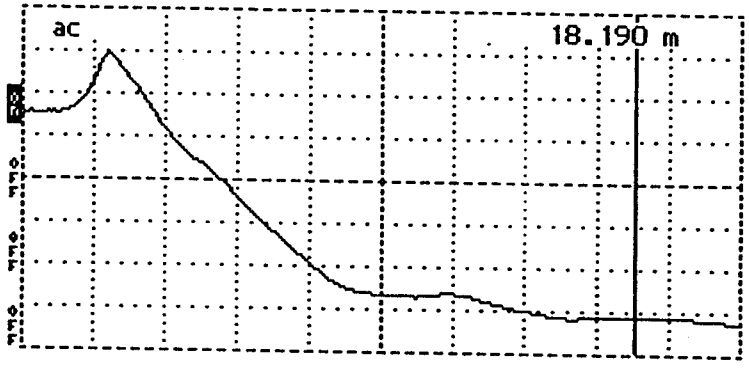
Comments: (1) Not measured in 1993, used 0.203 M for "L"

Prepared by: JAH Employer: Braun Intertec Corporation

Date (dd/mmm/yy): 16NOV195 (installed 1993)

LTPP Seasonal Monitoring Program Data Sheet SMP-C01 (Page 1) TDR Probe Check	Agency Code [83] LTPP Section ID [3802]

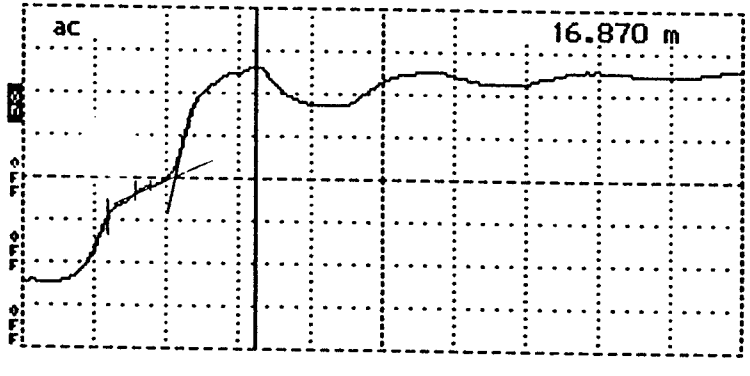
Cursor ..... 18.190 m
Distance/Div..... .25 m/div
Vertical Scale.... 177 mρ/div
VP 0.99
Noise Filter..... 8 avg
Power..... ac



Tektronix 1502B TDR
Date 10-7-93
Cable 833802 - 83302
Notes SHORTED
Input Trace
Stored Trace
Difference Trace

TDR Trace	Apparent Length, (m)	Dielectric Constant
"Shorted at Start"	N/A	N/A

Cursor ..... 16.870 m
Distance/Div..... .25 m/div
Vertical Scale.... 177 mρ/div
VP 0.99
Noise Filter..... 8 avg
Power..... ac

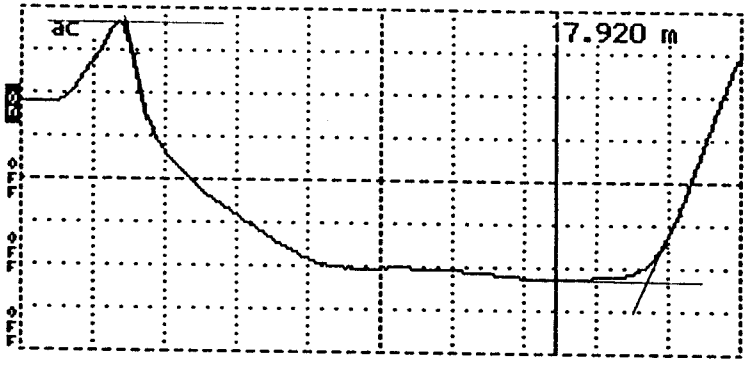


Tektronix 1502B TDR
Date 10-7-93
Cable 833802 - 83302
Notes
AIR
Input Trace
Stored Trace
Difference Trace

TDR Trace	Apparent Length, (m)	Dielectric Constant[1]
"In Air"	0.24	1.43

LTPP Seasonal Monitoring Program Data Sheet SMP-C01 (Page 2) TDR Probe Check	Agency Code [83] LTPP Section ID [3802]

Cursor ..... 17.920 m
Distance/Div..... .25 m/div
Vertical Scale.... 77.0 mρ/div
..... 0.99
Pulse Filter..... 8 avg
Cover..... ac



Tektronix 1502B TDR
Date 10-7-93
Cable 833802-83B02
Notes H2O
Input Trace
Stored Trace
Difference Trace

TDR Trace	Apparent Length, (m)	Dielectric Constant[2]
"In Water"	1.81	81.11

[1] If dielectric constant not between 0.75 and 2.0, contact FHWA LTPP Division
[2] If dielectric constant not between 76 and 84, contact FHWA LTPP Division

Note: Dielectric constant is determined as follows:

$$\varepsilon = \left[\frac{(L_a)}{(L)(V_p)}\right]^2 = \left[\frac{(D_2 - D_1)}{(L)(V_p)}\right]^2$$

where ε = dielectric constant; L_a = apparent length of probe, m; L = actual length of probe units (= 0.203 m (8 in) for FHWA probes); V_p = phase velocity setting (= 0.99).

TDR Probe Serial Number: 83B02 TDR Probe Length, L: .(1) m Length of Coax Cable: (1). m

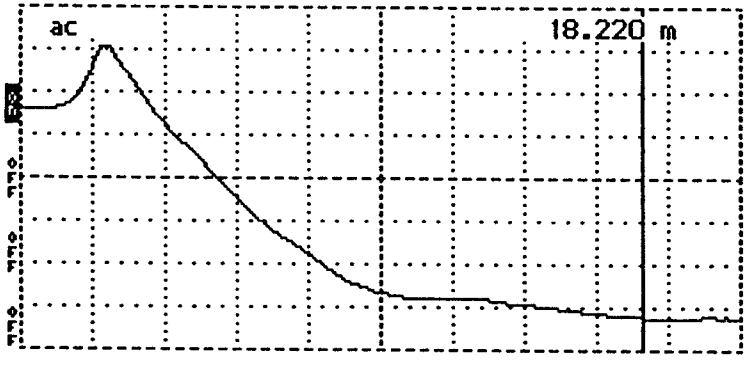
Comments: (1) Not measured in 1993, used 0.203 M for "L"

Prepared by: JAH Employer: Braun Intertec Corporation

Date (dd/mmm/yy): 16/NOV/95 (installed 1993)

LTPP Seasonal Monitoring Program Data Sheet SMP-C01 (Page 1) TDR Probe Check	Agency Code [93] LTPP Section ID [3862]

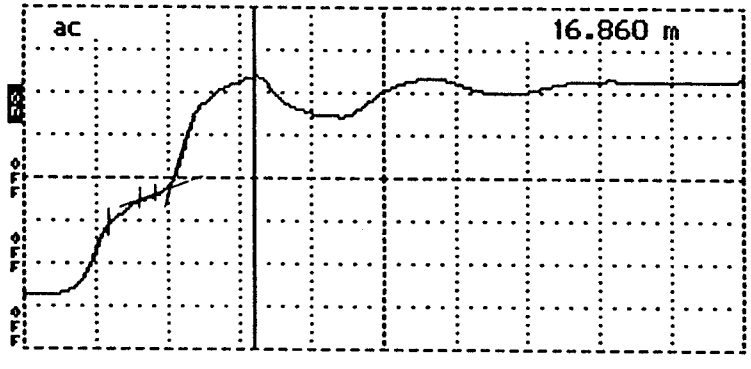
Cursor ..... 18.220 m
Distance/Div..... .25 m/div
Vertical Scale.... 177 mρ/div
Vp 0.99
Noise Filter..... 8 avg
Power..... ac



Tektronix 1502B TDR
Date 10-7-93
Cable 833802-83803
Notes SHORTED
Input Trace
Stored Trace
Difference Trace

TDR Trace	Apparent Length, (m)	Dielectric Constant
"Shorted at Start"	N/A	N/A

ursor ..... 16.860 m
istance/Div..... .25 m/div
ertical Scale.... 177 mρ/div
p 0.99
oise Filter..... 8 avg
ower..... ac



Tektronix 1502B TDR
Date 10-7-93
Cable 833802-83803
Notes
Input Trace
Stored Trace
Difference Trace

TDR Trace	Apparent Length, (m)	Dielectric Constant[1]
"In Air"	1.20	0.99

LTPP Seasonal Monitoring Program Data Sheet SMP-C01 (Page 2) TDR Probe Check	Agency Code [83] LTPP Section ID [3802]

Cursor ..... 17.940 m
Distance/Div..... .25 m/div
Vertical Scale.... 77.0 mP/div
VP 0.99
Noise Filter..... 8 avg
Power..... ac

Tektronix 1502B TDR
Date 10-7-93
Cable 833802-83B03
Notes H2O
Input Trace
Stored Trace
Difference Trace

TDR Trace	Apparent Length, (m)	Dielectric Constant[2]
"In Water"	1.84	83.82

[1] If dielectric constant not between 0.75 and 2.0, contact FHWA LTPP Division
[2] If dielectric constant not between 76 and 84, contact FHWA LTPP Division

Note: Dielectric constant is determined as follows:

$$\varepsilon = \left[\frac{(L_a)}{(L)(V_p)}\right]^2 = \left[\frac{(D_2 - D_1)}{(L)(V_p)}\right]^2$$

where ε = dielectric constant; L_a = apparent length of probe, m; L = actual length of probe units (= 0.203 m (8 in) for FHWA probes); V_p = phase velocity setting (= 0.99).

TDR Probe Serial Number: 83B03 TDR Probe Length, L: .(1) m Length of Coax Cable: (1). m

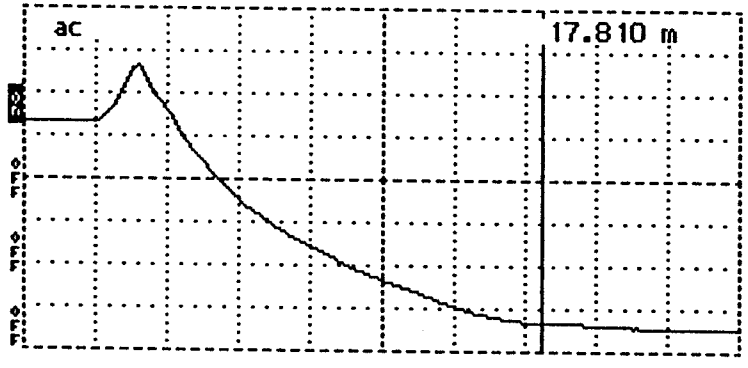
Comments: (1) Not measured in 1993, used 0.203 m for "L"

Prepared by: JAH Employer: Braun Intertec Corporation

Date (dd/mmm/yy): 16NOV95 (installed 1993)

LTPP Seasonal Monitoring Program Data Sheet SMP-C01 (Page 1) TDR Probe Check	Agency Code [83] LTPP Section ID [3802]

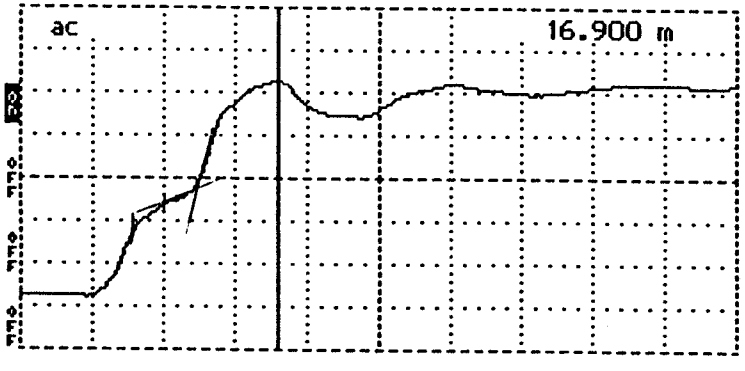
Cursor ..... 17.810 m
Distance/Div..... .25 m/div
Vertical Scale.... 177 mρ/div
VP 0.99
Noise Filter..... 8 avg
Power..... ac



Tektronix 1502B TDR
Date 10-7-93
Cable 833802 833804
Notes Shorted
Input Trace
Stored Trace
Difference Trace

TDR Trace	Apparent Length, (m)	Dielectric Constant
"Shorted at Start"	N/A	N/A

Cursor ..... 16.900 m
Distance/Div..... .25 m/div
Vertical Scale.... 177 mρ/div
VP 0.99
Noise Filter..... 8 avg
Power..... ac

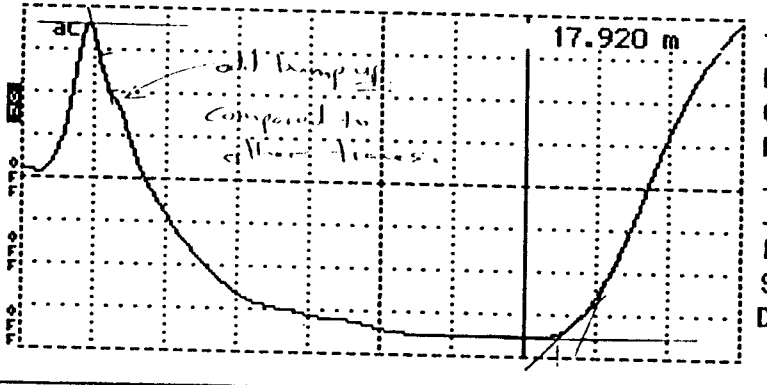


Tektronix 1502B TDR
Date 10-7-93
Cable 833802 833804
Notes AIR
Input Trace
Stored Trace
Difference Trace

TDR Trace	Apparent Length, (m)	Dielectric Constant[1]
"In Air"	0.22	1.20

LTPP Seasonal Monitoring Program Data Sheet SMP-C01 (Page 2) TDR Probe Check	Agency Code [83] LTPP Section ID [38 02]

Cursor ..... 17.920 m
Distance/Div..... .25 m/div
/ertical Scale.... 77.0 mρ/div
/P 0.99
loise Filter..... 8 avg
'ower..... ac



Tektronix 1502B TDR
Date 10-7-93
Cable 83B802 - 83B804
Notes H2O
Input Trace
Stored Trace
Difference Trace

TDR Trace	Apparent Length, (m)	Dielectric Constant[2]
"In Water"	1.73	74.10

[1] If dielectric constant not between 0.75 and 2.0, contact FHWA LTPP Division
[2] If dielectric constant not between 76 and 84, contact FHWA LTPP Division

Note: Dielectric constant is determined as follows:

$$\varepsilon = \left[\frac{(L_a)}{(L)(V_p)}\right]^2 = \left[\frac{(D_2 - D_1)}{(L)(V_p)}\right]^2$$

where ε = dielectric constant; L_a = apparent length of probe, m; L = actual length of probe units (= 0.203 m (8 in) for FHWA probes); V_p = phase velocity setting (= 0.99).

TDR Probe Serial Number: 83B04 TDR Probe Length, L: .(1) m Length of Coax Cable: (1). m

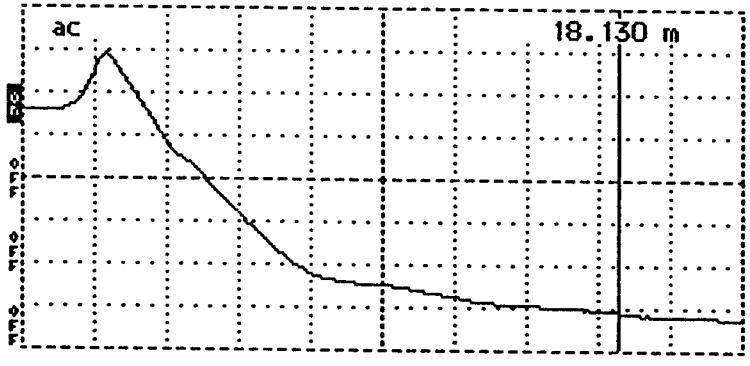
Comments: (1) Not measured in 1993, used 0.203 m for "L"

Prepared by: JAH Employer: Braun Intertec Corporation

Date (dd/mmm/yy): 16/NOV/95 (installed 1993)

LTPP Seasonal Monitoring Program Data Sheet SMP-C01 (Page 1) TDR Probe Check	Agency Code [83] LTPP Section ID [3802]

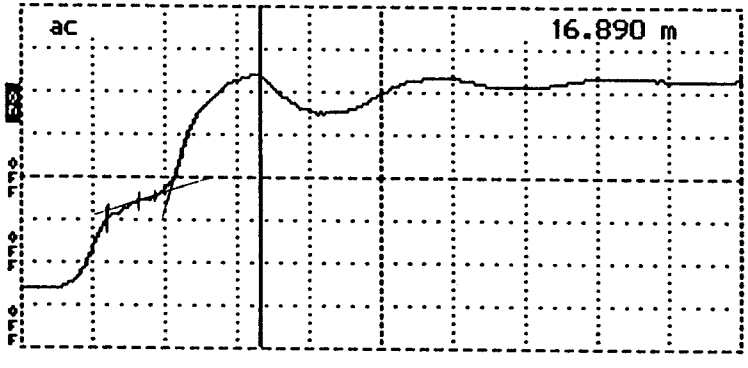
Cursor ..... 18.130 m
Distance/Div..... .25 m/div
Vertical Scale.... 177 mρ/div
VP 0.99
Noise Filter..... 8 avg
Power..... ac



Tektronix 1502B TDR
Date 10-7-93
Cable 833802-83B05
Notes SHORTED
Input Trace
Stored Trace
Difference Trace

TDR Trace	Apparent Length, (m)	Dielectric Constant
"Shorted at Start"	N/A	N/A

Cursor ..... 16.890 m
Distance/Div..... .25 m/div
Vertical Scale.... 177 mρ/div
VP 0.99
Noise Filter..... 8 avg
Power..... ac

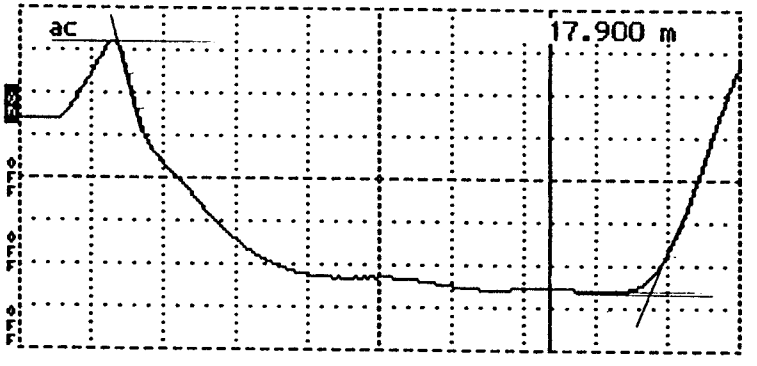


Tektronix 1502B TDR
Date 10-7-93
Cable 833802-83B05
Notes AIR
Input Trace
Stored Trace
Difference Trace

TDR Trace	Apparent Length, (m)	Dielectric Constant[1]
"In Air"	1.22	1.20

LTPP Seasonal Monitoring Program Data Sheet SMP-C01 (Page 2) TDR Probe Check	Agency Code [83] LTPP Section ID [3802]

Cursor ..... 17.900 m
Distance/Div..... .25 m/div
Vertical Scale.... 77.0 mρ/div
Vp 0.99
Noise Filter..... 8 avg
Power..... ac



Tektronix 1502B TDR
Date 10-7-93
Cable 833802 - 83B05
Notes H2C

Input Trace _____
Stored Trace _____
Difference Trace _____

TDR Trace	Apparent Length, (m)	Dielectric Constant[2]
"In Water"	1.85	84.74

[1] If dielectric constant not between 0.75 and 2.0, contact FHWA LTPP Division
[2] If dielectric constant not between 76 and 84, contact FHWA LTPP Division

Note: Dielectric constant is determined as follows:

$$\varepsilon = \left[\frac{(L_a)}{(L)(V_p)}\right]^2 = \left[\frac{(D_2 - D_1)}{(L)(V_p)}\right]^2$$

where ε = dielectric constant; L_a = apparent length of probe, m; L = actual length of probe units (= 0.203 m (8 in) for FHWA probes); V_p = phase velocity setting (= 0.99).

TDR Probe Serial Number: 83B05 TDR Probe Length, L: __.(1)__ m Length of Coax Cable: (1).__ m

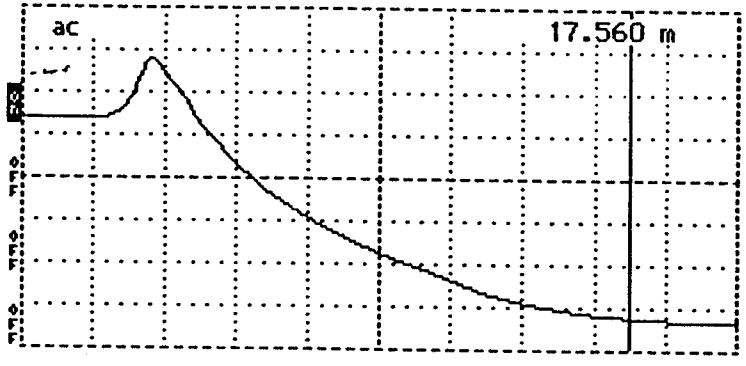
Comments: (1) Not measured in 1993, used 0.203 m for "L."

Prepared by: JAH Employer: Braun Intertec Corporation

Date (dd/mmm/yy): 16/NOV/95 (installed 1993)

LTPP Seasonal Monitoring Program Data Sheet SMP-C01 (Page 1) TDR Probe Check	Agency Code [83] LTPP Section ID [3802]

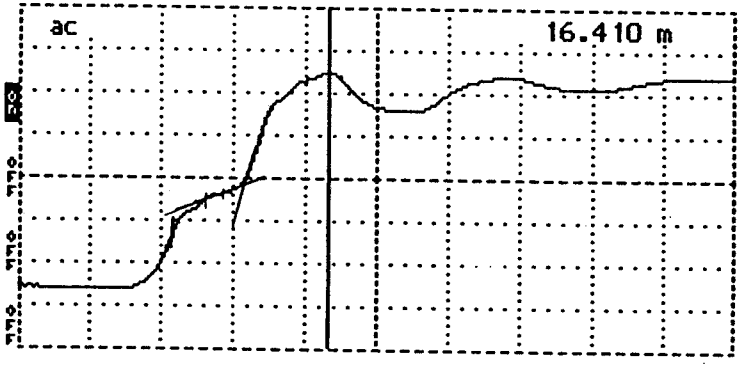
Cursor ..... 17.560 m
Distance/Div..... .25 m/div
Vertical Scale.... 177 mV/div
VP 0.99
Noise filter..... 8 avg
Power..... ac



Tektronix 1502B TDR
Date 10-7-93
Cable 833802 B3B06
Notes SHORTED
Input Trace
Stored Trace
Difference Trace

TDR Trace	Apparent Length, (m)	Dielectric Constant
"Shorted at Start"	N/A	N/A

Cursor ..... 16.410 m
Distance/Div..... .25 m/div
Vertical Scale.... 177 mV/div
VP 0.99
Noise filter..... 8 avg
Power..... ac



Tektronix 1502B TDR
Date 10-7-93
Cable 833802 B3B06
Notes AIR
Input Trace
Stored Trace
Difference Trace

TDR Trace	Apparent Length, (m)	Dielectric Constant[1]
"In Air"	1.23	1.31

LTPP Seasonal Monitoring Program Data Sheet SMP-C01 (Page 2) TDR Probe Check	Agency Code [83] LTPP Section ID [3802]

Cursor ..... 17.650 m
Distance/Div..... .25 m/div
Vertical Scale.... 77.0 mρ/div
Vp 0.99
Noise ...er..... 8 avg
Power..... ac

Tektronix 1502B TDR
Date 10-7-93
Cable 883802-B3806
Notes
H2O
Input Trace
Stored Trace
Difference Trace

TDR Trace	Apparent Length, (m)	Dielectric Constant[2]
"In Water"	1.82	82.01

[1] If dielectric constant not between 0.75 and 2.0, contact FHWA LTPP Division
[2] If dielectric constant not between 76 and 84, contact FHWA LTPP Division

Note: Dielectric constant is determined as follows:

$$\varepsilon = \left[\frac{(L_a)}{(L)(V_p)}\right]^2 = \left[\frac{(D_2 - D_1)}{(L)(V_p)}\right]^2$$

where ε = dielectric constant; L_a = apparent length of probe, m; L = actual length of probe units (= 0.203 m (8 in) for FHWA probes); V_p = phase velocity setting (= 0.99).

TDR Probe Serial Number: 83B06 TDR Probe Length, L: .(1) m Length of Coax Cable: (1). m

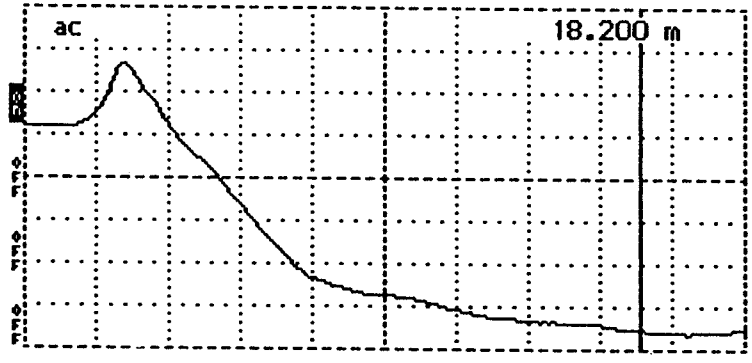
Comments: (1) Not measured in 1993, used 0.203 M for "L".

Prepared by: JAH Employer: Braun Intertec Corporation

Date (dd/mmm/yy): 16NOV95 (installed 1993)

LTPP Seasonal Monitoring Program Data Sheet SMP-C01 (Page 1) TDR Probe Check	Agency Code [83] LTPP Section ID [3802]

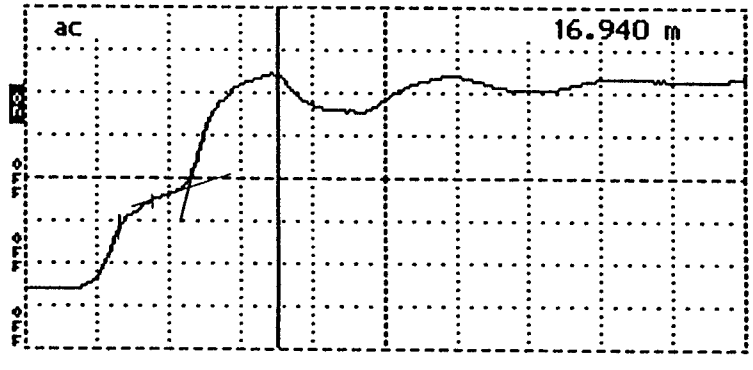
Cursor ..... 18.200 m
Distance/Div..... .25 m/div
Vertical Scale.... 177 mρ/div
Vp 0.99
Noise Filter..... 8 avg
Power..... ac



Tektronix 1502B TDR
Date 10-7-93
Cable 833802-833807
Notes Shorter
Input Trace
Stored Trace
Difference Trace

TDR Trace	Apparent Length, (m)	Dielectric Constant
"Shorted at Start"	N/A	N/A

Cursor ..... 16.940 m
Distance/Div..... .25 m/div
Vertical Scale.... 177 mρ/div
Vp 0.99
Noise Filter..... 8 avg
Power..... ac

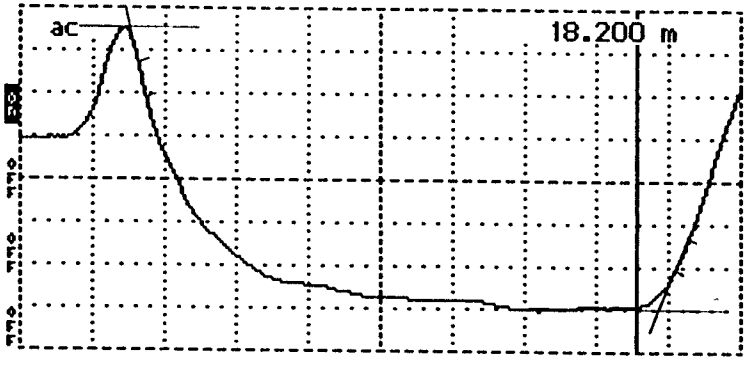


Tektronix 1502B TDR
Date 10-7-93
Cable 833802-833807
Notes Air
Input Trace
Stored Trace
Difference Trace

TDR Trace	Apparent Length, (m)	Dielectric Constant[1]
"In Air"	0.23	1.31

LTPP Seasonal Monitoring Program Data Sheet SMP-C01 (Page 2) TDR Probe Check	Agency Code [83] LTPP Section ID [3802]

Cursor ..... 18.200 m
Distance/Div..... .25 m/div
Vertical Scale.... 77.0 mρ/div
/P 0.99
loise Filter..... 8 avg
'ower..... ac



Tektronix 1502B TDR
Date 10-7-93
Cable 833802-83B07
Notes ~~83~~ H2O
Input Trace
Stored Trace
Difference Trace

TDR Trace	Apparent Length, (m)	Dielectric Constant[2]
"In Water"	1.93	82.92

[1] If dielectric constant not between 0.75 and 2.0, contact FHWA LTPP Division
[2] If dielectric constant not between 76 and 84, contact FHWA LTPP Division

Note: Dielectric constant is determined as follows:

$$\varepsilon = \left[\frac{(L_a)}{(L)(V_p)}\right]^2 = \left[\frac{(D_2 - D_1)}{(L)(V_p)}\right]^2$$

where ε = dielectric constant; L_a = apparent length of probe, m; L = actual length of probe units (= 0.203 m (8 in) for FHWA probes); V_p = phase velocity setting (= 0.99).

TDR Probe Serial Number: 83B07 TDR Probe Length, L: .(1) m Length of Coax Cable: (1). m

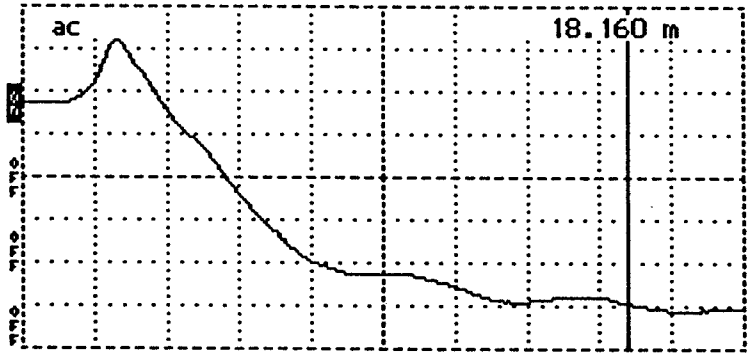
Comments: (1) Not measured in 1993, used 0.203 M for "L".

Prepared by: JAH Employer: Braun Intertec Corporation

Date (dd/mmm/yy): 16NOV95 (installed 1993)

LTPP Seasonal Monitoring Program Data Sheet SMP-C01 (Page 1) TDR Probe Check	Agency Code [83] LTPP Section ID [3802]

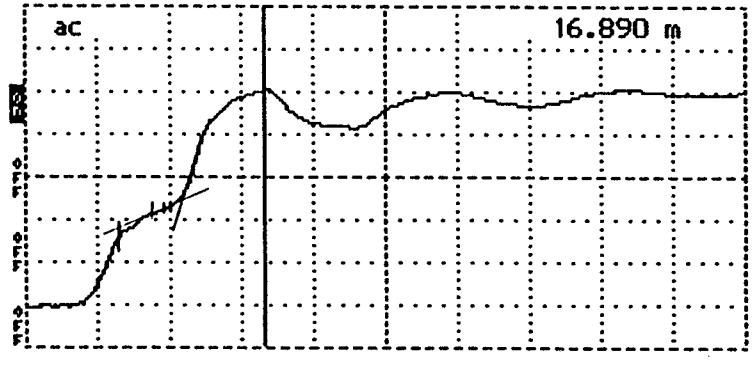
Cursor ..... 18.160 m
Distance/Div..... .25 m/div
Vertical Scale.... 177 mρ/div
Vp 0.99
Noise Filter..... 8 avg
Power..... ac



Tektronix 1502B TDR
Date 10-7-95
Cable 833802-83B08
Notes SHORTED
Input Trace
Stored Trace
Difference Trace

TDR Trace	Apparent Length, (m)	Dielectric Constant
"Shorted at Start"	N/A	N/A

Cursor ..... 16.890 m
Distance/Div..... .25 m/div
Vertical Scale.... 177 mρ/div
Vp 0.99
Noise Filter..... 8 avg
Power..... ac

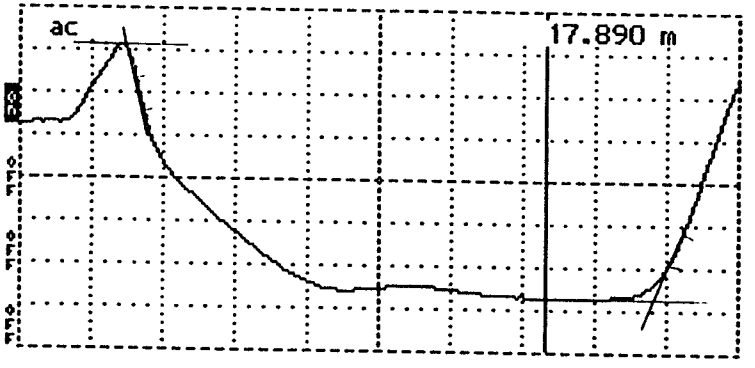


Tektronix 1502B TDR
Date 10-7-95
Cable 833802-83B08
Notes AIR
Input Trace
Stored Trace
Difference Trace

TDR Trace	Apparent Length, (m)	Dielectric Constant[1]
"In Air"	0.22	1.20

LTPP Seasonal Monitoring Program Data Sheet SMP-C01 (Page 2) TDR Probe Check	Agency Code [83] LTPP Section ID [3802]

Cursor ..... 17.890 m
Distance/Div..... .25 m/div
Vertical Scale.... 77.0 mρ/div
Vp 0.99
Noise Filter..... 8 avg
Power..... ac



Tektronix 1502B TDR
Date 10-7-93
Cable 833802 - 83308
Notes H2O
Input Trace
Stored Trace
Difference Trace

TDR Trace	Apparent Length, (m)	Dielectric Constant[2]
"In Water"	1.93	82.92

[1] If dielectric constant not between 0.75 and 2.0, contact FHWA LTPP Division
[2] If dielectric constant not between 76 and 84, contact FHWA LTPP Division

Note: Dielectric constant is determined as follows:

$$\varepsilon = \left[\frac{(L_a)}{(L)(V_p)}\right]^2 = \left[\frac{(D_2 - D_1)}{(L)(V_p)}\right]^2$$

where ε = dielectric constant; L_a = apparent length of probe, m; L = actual length of probe units (= 0.203 m (8 in) for FHWA probes); V_p = phase velocity setting (= 0.99).

TDR Probe Serial Number: 83808 TDR Probe Length, L: .(1) m Length of Coax Cable: (1). m

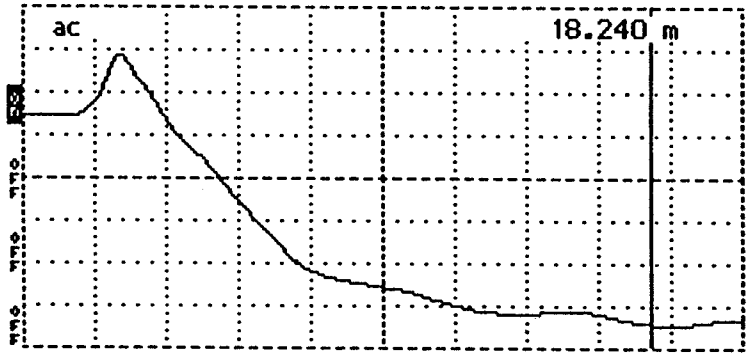
Comments: (1) Not measured in 1993, used 0.203 m for "L".

Prepared by: JAH Employer: Braun Intertec Corporation

Date (dd/mmm/yy): 16/NOV/95 (installed 1993)

LTPP Seasonal Monitoring Program Data Sheet SMP-C01 (Page 1) TDR Probe Check	Agency Code [83] LTPP Section ID [3802]

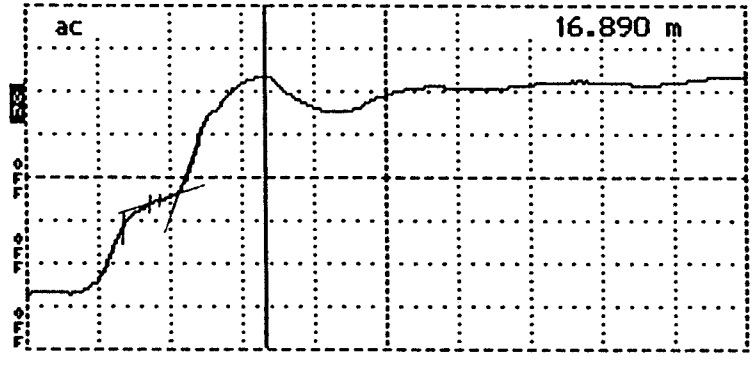
Cursor ..... 18.240 m
Distance/Div..... .25 m/div
Vertical Scale.... 177 mρ/div
Vp 0.99
Noise Filter..... 8 avg
Power..... ac



Tektronix 1502B TDR
Date 10-7-93
Cable 833802 - 83B09
Notes SHORTED
Input Trace
Stored Trace
Difference Trace

TDR Trace	Apparent Length, (m)	Dielectric Constant
"Shorted at Start"	N/A	N/A

Cursor ..... 16.890 m
Distance/Div..... .25 m/div
Vertical Scale.... 177 mρ/div
Vp 0.99
Noise Filter..... 8 avg
Power..... ac

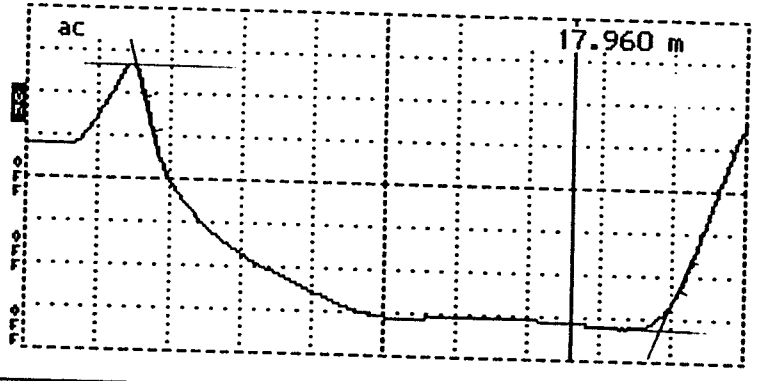


Tektronix 1502B TDR
Date 10-7-93
Cable 833802-83B09
Notes AIR
Input Trace
Stored Trace
Difference Trace

TDR Trace	Apparent Length, (m)	Dielectric Constant[1]
"In Air"	0.18	0.80

LTPP Seasonal Monitoring Program Data Sheet SMP-C01 (Page 2) TDR Probe Check	Agency Code [83] LTPP Section ID [3802]

Cursor ..... 17.960 m
Distance/Div..... .25 m/div
Vertical Scale.... 77.0 mρ/div
VP 0.99
Noise Filter..... 8 avg
Power..... ac



Tektronix 1502B TDR
Date 10-7-93
Cable 833802-83B09
Notes
H2O
Input Trace
Stored Trace
Difference Trace

TDR Trace	Apparent Length, (m)	Dielectric Constant[2]
"In Water"	1.82	82.01

[1] If dielectric constant not between 0.75 and 2.0, contact FHWA LTPP Division
[2] If dielectric constant not between 76 and 84, contact FHWA LTPP Division

Note: Dielectric constant is determined as follows:

$$\varepsilon = \left[\frac{(L_a)}{(L)(V_p)}\right]^2 = \left[\frac{(D_2 - D_1)}{(L)(V_p)}\right]^2$$

where ε = dielectric constant; L_a = apparent length of probe, m; L = actual length of probe units (= 0.203 m (8 in) for FHWA probes); V_p = phase velocity setting (= 0.99).

TDR Probe Serial Number: 83B09 TDR Probe Length, L: .(1)__ m Length of Coax Cable: (1). m

Comments: (1) Not measured in 1993, used 0.203 m for "L"

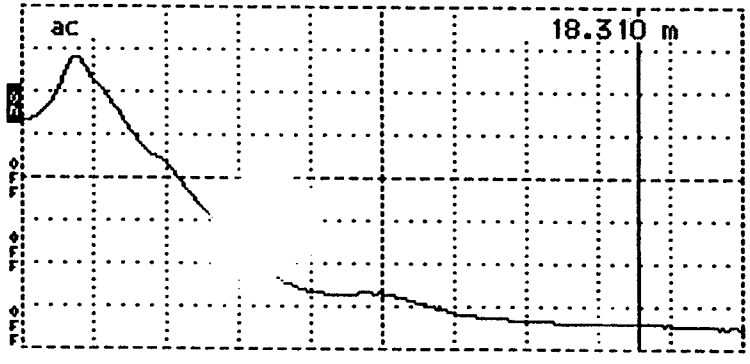
Prepared by: JAH Employer: Braun Intertec Corporation

Date (dd/mmm/yy): 16NOV95 (installed 1993)

Data Sheet SMP-C01: TDR Probe Check (Continued)

LTPP Seasonal Monitoring Program Data Sheet SMP-C01 (Page 1) TDR Probe Check	Agency Code [83] LTPP Section ID [3802]

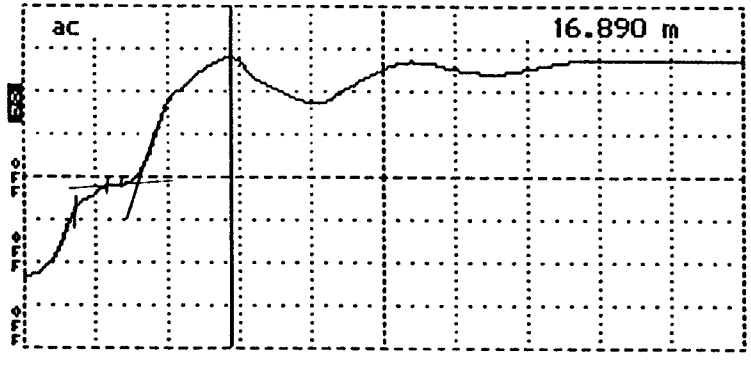
Cursor ..... 18.310 m
Distance/Div..... .25 m/div
Vertical Scale.... 177 mρ/div
Vp 0.99
Noise Filter..... 8 avg
Power..... ac



Tektronix 1502B TDR
Date 10-7-93
Cable 833802 - 83810
Notes SHORTED
Input Trace
Stored Trace
Difference Trace

TDR Trace	Apparent Length, (m)	Dielectric Constant
"Shorted at Start"	N/A	N/A

Cursor ..... 16.890 m
Distance/Div..... .25 m/div
Vertical Scale.... 177 mρ/div
Vp 0.99
Noise Filter..... 8 avg
Power..... ac

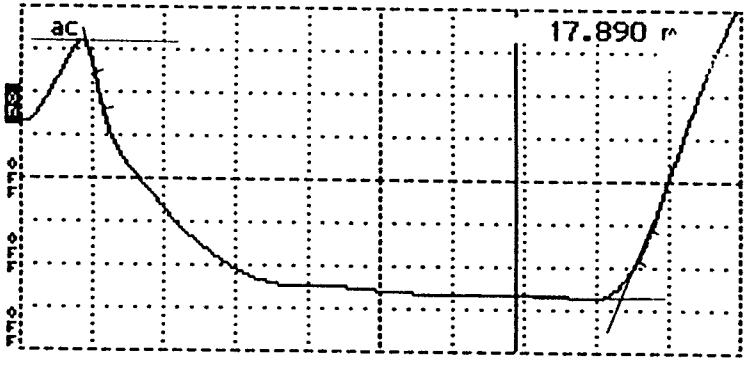


Tektronix 1502B TDR
Date 10-7-93
Cable 833802 - 83810
Notes AIR
Input Trace
Stored Trace
Difference Trace

TDR Trace	Apparent Length, (m)	Dielectric Constant[1]
"In Air"	0.21	1.09

LTPP Seasonal Monitoring Program Data Sheet SMP-C01 (Page 2) TDR Probe Check	Agency Code [83] LTPP Section ID [3802]

Cursor ..... 17.890 m
Distance/Div..... .25 m/div
Vertical Scale.... 77.0 mρ/div
Vp 0.99
Noise Filter..... 8 avg
Power..... ac



Tektronix 1502B TDR
Date 10-7-93
Cable 833802-B3B10
Notes H2o
Input Trace
Stored Trace
Difference Trace

TDR Trace	Apparent Length, (m)	Dielectric Constant[2]
"In Water"	1.95	84.74

[1] If dielectric constant not between 0.75 and 2.0, contact FHWA LTPP Division
[2] If dielectric constant not between 76 and 84, contact FHWA LTPP Division

Note: Dielectric constant is determined as follows:

$$\varepsilon = \left[\frac{(L_a)}{(L)(V_p)}\right]^2 = \left[\frac{(D_2 - D_1)}{(L)(V_p)}\right]^2$$

where ε = dielectric constant; L_a = apparent length of probe, m; L = actual length of probe units (= 0.203 m (8 in) for FHWA probes); V_p = phase velocity setting (= 0.99).

TDR Probe Serial Number: B3B10 TDR Probe Length, L: __.(1)__ m Length of Coax Cable: __(1).__ m

Comments: (1) Not measured in 1993, used 0.203 m for "L".

Prepared by: JAH Employer: Braun Intertec Corporation

Date (dd/mmm/yy): 16/NOV/95 (installed 1993)

Entered: PS

LTPP Seasonal Monitoring Program Data Sheet SMP-C02 Thermistor Probe Check	Agency Code [83] LTPP Section ID [38021]

Thermistor Probe Assigned Serial Number : [83B T]

Air Temperature Probe Assigned Serial Number: [83B A T]

Thermistor Number	Distance from Top (m)	Temperature (°C) – Calibration in: Ice-Bath; T = (1)._ °C	Other HOT WATER; T = (1)._ °C	Comments
1	0.000	3.1	42.2	
2	0.152	1.5	42.1	
3	0.305	1.7	42.1	
4	0.024	3.8	43.1	
5	0.100	1.3	43.7	
6	0.120	1.9	43.6	
7	0.252	1.2	43.5	
8	0.366	2.6	43.4	
9	0.481	1.1	43.5	
10	0.631	3.0	43.4	
11	0.786	2.2	43.5	
12	0.936	2.0	43.2	
13	1.090	2.0	43.2	
14	1.241	1.7	42.7	
15	1.395	2.0	42.8	
16	1.546	1.4	42.4	
17	1.700	2.0	42.7	
18	1.846	1.2	42.7	
End	.(1)	n/a	n/a	
Air Probe	n/a	(1)._	(1)._	

Comments: (1) NOT RECORDED IN 1993

Prepared by: RJV/JAH Employer: Braun Intertec Corporation

Date (dd/mmm/yy): 21/NOV/95 (FOR 1993 INSTALL)

Entered 9/1

LTPP Seasonal Monitoring Program Data Sheet SMP-C03 Resistivity Probe Check	Agency Code [83] LTPP Section ID [3802]

Electrical Resistivity Serial Number: 83 B R

DB37 Connector Pin Number	Electrode Number	Distance from Top (m) Line 1	Distance from Top (m) Line 2	Distance from Top (m) ~~Ave~~	Continuity ✓	Spacing (m)	Comments
36	1	_.___	_.___	0.025		___	Data taken from 1993 'spacings' versus distance from the top of the probe.
35	2	_.___	_.___	0.076		0.051	
34	3	_.___	_.___	0.130		.053	
33	4	_.___	_.___	0.179		.055	
32	5	_.___	_.___	0.230		.052	
31	6	_.___	_.___	0.280		.050	
30	7	_.___	_.___	0.330		.051	
29	8	_.___	_.___	0.380		.051	
28	9	_.___	_.___	0.430		.050	
27	10	_.___	_.___	0.483		.053	
26	11	_.___	_.___	0.534		.051	
25	12	_.___	_.___	0.586		.052	
24	13	_.___	_.___	0.634		.050	
23	14	_.___	_.___	0.684		.051	
22	15	_.___	_.___	0.739		.054	
21	16	_.___	_.___	0.788		.050	
20	17	_.___	_.___	0.838		.051	
19	18	_.___	_.___	0.888		.050	
18	19	_.___	_.___	0.939		.052	
17	20	_.___	_.___	0.990		.050	
16	21	_.___	_.___	1.040		.051	
15	22	_.___	_.___	1.093		.053	
14	23	_.___	_.___	1.142		.050	
13	24	_.___	_.___	1.192		.051	
12	25	_.___	_.___	1.245		.053	
11	26	_.___	_.___	1.295		.052	
10	27	_.___	_.___	1.345		.050	
9	28	_.___	_.___	1.398		.053	
8	29	_.___	_.___	1.448		.050	
7	30	_.___	_.___	1.498		.050	
6	31	_.___	_.___	1.550		.053	
5	32	_.___	_.___	1.599		.050	
4	33	_.___	_.___	1.650		.050	
3	34	_.___	_.___	1.700		.051	
2	35	_.___	_.___	1.753		.052	
1	36	_.___	_.___	1.802		.050	
	Bottom	_.___	_.___	1.829	n/a	n/a	

Comments: _____

Prepared by: RSV/JAH Employer: Braun Intertec Corporation

Date (dd/mmm/yy): 21/NOV/95 (FOR 1993 INSTALL)

LTPP Seasonal Monitoring Program Data Sheet SMP-C05 Rain Gauge Calibration	Agency Code [83] LTPP Section ID [3802]

General Information:

Manufacturer: TEXAS ELECTRONICS INC

Model Number: TRP - 525M

Serial Number: 12047

Note: The screen should be tacked inside the funnel using silicon at three to four points to prevent loss from wind.

Rain Gauge Calibration Data

Trial	Start Time (Military)	End Time (Military)	Volume (ml)	Number of Tips	Adjustment[1] No. of Turns
1	0710	0735	473.	100.	—.—
2	0740	0815	473.	99.	—.—
3			———.	———.	—.—

[1] Adjust gauge to obtain 100 tips ± 3 for 473 ml of water.

Comments: DATA FROM 1993 CALIBRATION PRIOR TO INSTALLATION

Prepared by: RJV Employer: Braun Intertec Corporation

Date (dd/mmm/yy): 21/NOV/95 (FOR 1993 INSTALL)

LTPP Seasonal Monitoring Program Data Sheet SMP-C04 Function Generator, Multimeter, and Switch Box Checks	Agency Code [83] LTPP Section ID [3802]

Start Time (military): _ _ _ _

Test Position	Switch Settings		Voltage (ACV)		Current (ACA)		Measured Resistance R = V/I (ohms)	Known Resistance (ohms)
	I, V_1	I, V_2	Range Setting	Reading	Range Setting	Reading		
36	36	37					R1 =	R1 =
37	37	38					R2 =	R2 =
38	38	39					R3 =	R3 =
39	39	00					R4 =	R4 =
36	36	37					R1 =	R1 =
37	37	38					R2 =	R2 =
38	38	39					R3 =	R3 =
39	39	00					R4 =	R4 =
36	36	37					R1 =	R1 =
37	37	38					R2 =	R1 =
38	38	39					R3 =	R1 =
39	39	00					R4 =	R2 =

Comments: NOT DONE IN 1993

Prepared by: Robert G. Jensen Employer: Braun Intertec Corporation

Date (dd/mmm/yy): 12/DEC/95 (FOR 1993 INSTALL)

Appendix C-1: Instrumentation Installation Information

Appendix C-1 contains the following installation data sheets and associated field notes, as well as, certificate of registration for instrumentation, and photographs documenting the installation:

- Data Sheet SMP-I01: List of Installed Instrumentation;
- Data Sheet SMP-I02: Instrumentation Locations;
- Data Sheet SMP-I03: Log of Piezometer Hole;
- Data Sheet SMP-I04: Log of Instrumentation Hole;
- Data Sheet SMP-I05: Field Gravimetric Moisture Contents;
- Data Sheet SMP-I05(A): Lab Gravimetric Moisture Contents;
- Data Sheet SMP-I05(B): Gravimetric Moisture Comparison;
- Data Sheet SMP-I06: TDR Moisture Content;
- Data Sheet SMP-I07: Representative Dry Density;
- Plot of Gravimetric Moisture Results;
- Certificate of Registration from the United States Customs Service; and
- Installation Photographs.

83SB93A

Seasonal Monitoring Program Guidelines: Version 2.1a/March 1995

LTPP Seasonal Monitoring Program Data Sheet SMP-I01 Instrumentation Installed and Participants	Agency Code [83] LTPP Section ID [3802]

List of Equipment:

Equipment	Quantity	Serial Number(s)
Instrument Hole:		
Thermistor Probe	01	83BT
Resistivity Probe	01	83BR
TDR Sensors	10	83B01 to 83B10
Equipment Cabinet:		
Campbell Scientific CR10 Datalogger	01	16523
Battery Package	01	5535
Weather Station:		
Rain Gauge	01	12049-693 Model LT42136
Air Temperature Probe	01	83BAT→
Radiation Shield	01	~~~~~~
Observation Piezometer/Bench Mark:	01	n/a

List of Participants:

Name of Participant	Agency/Employer
BOB VANSAMBEEK	BRAUN INTERTEC CORP
RON URBACH	"
JOEL RECTOR	"
DANA MILLER	"
DENNIS WATSON	MANITOBA HIGHWAYS AND TRANS.
MR PENNER (DRILL RIG)	" " " "
BONNIE ?	" " " "

Prepared by: Jeanne Dicks Employer: Braun Intertec Corporation

Date (dd/mmm/yy): 12/DEC/95 (For 14 Oct 93 Install)

Entered: 4pp

83S893A

LTPP Seasonal Monitoring Program Data Sheet SMP-I02 Installed Instrument Location	Agency Code [83] LTPP Section ID [3802]

Longitudinal and Transverse Location of Instrumentation:

Instrument	Station (Customary Units)		Offset (m)[1]	
	Planned	Actual	Planned	Actual
Instrumentation Hole	5+10	5+10	-0.76	-0.76
Observation Piezometer	4+80	4+80	-0.30	-0.91
Equipment Cabinet	5+10	5+10	-7.60	-7.62
Weather Station	5+10	5+10	-7.90	-7.93

[1] Transverse distance in meters from pavement edge (see LTTP Manual for FWD Testing) with (+) values toward mid-lane and (-) towards shoulder

Depth Location of Instrumentation:

Instrument		Depth from Pavement Surface to Top of Probe (m)		Comments
		Planned	Actual	
Thermistor Probe	Metal Top	0.025	0.025	Not measured.
	Metal Bottom	0.220	0.224	Not measured.
	PVC Top	0.305	0.298	
Resistivity Probe		0.305	0.311	

PIEZ. 0.2732 meters below the PZ @ Sta. 4+32 on Oct. 15, 1993

TDR Number	Depth from Pavement Surface to Probe (m)		Comments
	Planned Location	Actual Location	
1	0.311	0.320	All depths ±0.005m
2	0.445	0.445	
3	0.597	0.605	
4	0.749	0.760	
5	0.914	0.915	
6	1.054	1.050	
7	1.207	1.210	
8	1.359	1.350	
9	1.664	1.665	
10	1.969	1.960	

ATTACH TOP-VIEW SKETCH OF INSTRUMENTATION HOLE SHOWING DIRECTION OF TRAFFIC AND LOCATION OF THERMISTOR AND RESISTIVITY PROBES. LABEL PROBES "T" AND "R", RESPECTIVELY

Prepared by: Jerome Dicks Employer: Braun Intertec Corporation

Date (dd/mmm/yy): 10/Oct/95 (For 14Oct93 Install)

83 SB 93 A

Seasonal Monitoring Program Guidelines: Version 2.1a/March 1995

LTPP Seasonal Monitoring Program Data Sheet SMP-I03 Log of Piezometer Hole	Agency Code [83] LTPP Section ID [3802]

Operator: PENNER Equipment Used: DERRICK DIGGER

Location: Station: 4+80 Offset: −0.91 m (from lane edge)

Bore Hole Diameter: 203 . mm Auger Type: Solid Stem

Scale (m)	Depth from Surface[1] (m)	Material Description	Material Code[2]
	0.305	CLAY BLACK TOPSOIL	101
0.5			
1.0			
1.5			
2.0		FAT CLAY- GRAY	101
2.5			
3.0			
3.5			
4.0			
4.5	4.500		
5.0			

[1] Format: __.____ m; [2] Format: ____

Prepared by: Jerome Dicks Employer: Braun Intertec Corporation

Date (dd/mmm/yy): 12/Dec/95 (For 14 Oct 93 Installation)

Data Sheet SMP-I03: Log of Piezometer Hole

BRAUN℠
INTERTEC 833802

10-15-93

PIEZOMETER / BENCH MARK

DRILLED DOWN WITH A 8" AUGER,

BOTTOM WAS AT A DEPTH OF ABOUT 14.75 FEET

TOTAL LENGTH 14'1" TIP TO TIP.

FILTER SAND WAS PUT AROUND PIEZOMETER FROM BOTTOM UP TO 10 FEET 3 INCHES FROM THE SURFACE.

BENTONITE PELLETS WERE PLACED FROM THE TOP OF THE FILTER SAND, TO A DEPTH OF 5 FEET BELOW THE SURFACE.

SOIL REMOVED DURING DRILLING WAS USED FROM ABOVE THE BENTONITE. TO ABOUT 2 FEET BELOW THE SURFACE.

THE STEEL PROTECTIVE SLEEVE WAS PLACED SO THE TOP WAS ABOUT 4 INCHES BELOW GROUND SURFACE.

THE STEEL SLEEVE WAS BACKFILLED WITH SAKRETE MIX. TO ABOUT 3 INCHES OF THE TOP OF THE SLEEVE

A 1¼" PVC CAP WAS SET ON THE TOP OF THE 1" PIPE. THIS IS LOOSE FITING CAP. IT IS PREVENT ANYTHING FROM FALLING IN THE PIPE.

8 3 5 B 9 3 A

Seasonal Monitoring Program Guidelines: Version 2.1a/March 1995

LTPP Seasonal Monitoring Program Data Sheet SMP-I04 Log of Instrumentation Hole	Agency Code [83] LTPP Section ID [3802]

Operator: PENNER Equipment Used: DERRICK DIGGER

Location: Station: 5+10 Offset: 0.76 m (from lane edge)

Bore Hole Diameter: 298. mm

Scale (m)	Strata Change[1] (m)	Material Description	Material Code[2]
0.10 – 0.20	0.248	PCC	730
0.30 – 0.40	0.413	GRAVEL BASE	302
0.50 – 0.60 – 0.70 – 0.80 – 0.90 – 1.00 – 1.10 – 1.20 – 1.30 – 1.40 – 1.50 – 1.60 – 1.70 – 1.80 – 1.90 – 2.00	2.005	FAT CLAY GRAY	101
2.10 – 2.20 – 2.30 – 2.40 – 2.50		GRAVEL BASE 0.248m TO 0.413m. FAT CLAY HAD TO BE CUT UP TO COMPACT IT BACK IN THE HOLE.	

[1] Format: __.____ m; [2] Format: ____

Prepared by: Jerome Dicks Employer: Braun Intertec Corporation

Date (dd/mmm/yy): 12/Dec/95 (For 14Oct-93 Installation)

LTPP Seasonal Monitoring Program Data Sheet SMP-I05 Field Gravimetric Moisture Content	Agency Code [83] LTPP Section ID [3802]

TDR Probe	Probe Depth[1] (m)	Moisture Sample No.	Pan No.	Wt. of Pan (gms) = A	Wt. of Pan + Wet Soil (gms) = B	Wt. of Pan + Dry Soil (gms) = C	Wt. of Dry Soil (gms) = D = C - A	Wt. of Water (gms) = E = B - C	Moisture Content (%) = w = E/D * 100
1	0.320	10	1	223.1	828.5	792.7	569.6	35.8	6.3
2	0.445	9	3	224.4	570.0	513.4	289.0	56.6	19.6
3	0.605	8	2	223.8	700.4	592.0	368.2	118.4	33.1
4	0.760	7	1	223.1	624.9	515.0	291.9	109.9	37.6
5	0.915	6	3	224.4	667.0	572.5	348.1	94.5	27.1
6	1.050	5	2	223.8	724.7	588.8	365.0	135.9	37.2
7	1.210	4	1	223.1	590.6	491.5	268.4	99.1	36.9
8	1.350	3	3	224.4	750.0	611.5	387.1	138.5	35.8
9	1.665	2	2	223.8	668.1	549.4	325.6	118.7	36.5
10	1.960	1	1	223.1	713.3	585.0	361.9	128.3	35.5

[1] Distance in meters from pavement surface to TDR probe

Comments: DATA FROM 1993 FORM. INSTALLED 14-OCT-1993

Prepared by: RW/DAH Employer: Braun Intertec Corporation

Date (dd/mmm/yy): 21/NOV/95 (FOR 1993 INSTALLATION)

LTPP Seasonal Monitoring Program Data Sheet SMP-I05(A) (AB ~~Field~~ Gravimetric Moisture Content	Agency Code [83] LTPP Section ID [3807]

TDR Probe	Probe Depth[1] (m)	Moisture Sample No.	Pan No.	Wt. of Pan (gms) = A	Wt. of Pan + Wet Soil (gms) = B	Wt. of Pan + Dry Soil (gms) = C	Wt. of Dry Soil (gms) = D = C - A	Wt. of Water (gms) = E = B - C	Moisture Content (%) = w = E/D * 100
1	0.320								10.0
2	0.445								18.9
3	0.605								31.5
4	0.760								31.4
5	0.915								29.7
6	1.050								33.9
7	1.210								32.8
8	1.350								33.1
9	1.665								32.4
10	1.960								32.6

[1] Distance in meters from pavement surface to TDR probe

Comments: LAB MOISTURES DONE BY MANITOBA

Prepared by: RJV/JAH Employer: Braun Intertec Corporation

Date (dd/mmm/yy): 21/NOV/95

LTPP Seasonal Monitoring Program Data Sheet SMP-I05 (B) Gravimetric Moisture Comparison	Agency Code [83] LTPP Section ID [3802]

TDR	SMP-I02 TDR Depth (m)	SMP-I04 Material Code	Lab Data Dry Density (pcf)	TDR Installation Data		Gravimetric Moistures	
				SMP-I06 La (m)	Calculated Gravimetric (percent)	SMP-I05 Field (percent)	SMP-I05A Lab (percent)
1	0.320	302	135.3	0.53	5.8	6.3	10.0
2	0.445	101	79.8	0.80	22.7	19.6	18.9
3	0.605	101	79.8	1.03	32.4	33.1	31.5
4	0.760	101	87.8	1.35	38.3	37.6	31.4
5	0.915	101	87.8	1.20	34.5	27.1	29.7
6	1.050	101	87.8	1.38	39.2	37.2	33.9
7	1.200	101	87.8	1.32	37.5	36.9	32.8
8	1.355	101	87.8	1.37	38.9	35.8	33.1
9	1.665	101	87.8	1.36	38.6	36.5	32.4
10	1.960	101	87.8	1.47	42.0	35.5	32.6

Subgrade
3 – 10
(all > 30%)

TDR Gravimetric moistures calculated using equations on pag

Comments: Dry Density from form S0
@ 0.40meter → 135.3 pcf
@ 0.55 meter → 79.8 pcf
@ 0.85 meter → 87.8 pcf

329.9 305.6
32.99 30.56 26.63
(33.0) (30.6) (1.9)
(2.4)
329.9
305.6

BRAUN INTERTEC 1-800-279-6100

Prepared by: RJV/SD Employer: Braun

(m/yy): 08 / JAN / 96

$\omega = (-330.72 + 4526.78\,L_a^2 - 210$ ... γ_d ; L_a (meters), γ_d (pcf), ω (%)

8 3 SB 93 A

LTPP Seasonal Monitoring Program Data Sheet SMP-I06 TDR Moisture Content	Agency Code [83] LTPP Section ID [38 S2]

Required Settings:

Dist./Division: 0.25 m
Phase Velocity: 0.99
Noise Filter: 1 average

Probe Number	Probe Depth[1] (m)	Time (military)	Apparent Length (m)	Dielectric Constant[2]	Comments
1	0.320	(1)	0.53	6.95	
2	0.445		0.80	15.84	
3	0.605		1.03	26.26	
4	0.760		1.35	45.11	
5	0.915		1.20	35.64	
6	1.050		1.38	42.14	
7	1.210		1.32	43.13	
8	1.350		1.32	46.46	
9	1.665		1.36	45.78	
10	1.960		1.47	53.42	

[1] Distance in meters from pavement surface to TDR probe
[2] Dielectric constant is determined as follows:

$$\varepsilon = \left[\frac{(L_a)}{(L)(V_p)}\right]^2 = \left[\frac{(D_2 - D_1)}{(L)(V_p)}\right]^2$$

where ε = dielectric constant; L_a = apparent length of probe, m; L = actual length of probe units (= 0.203 m (8 in) for FHWA probes); V_p = phase velocity setting (= 0.99).

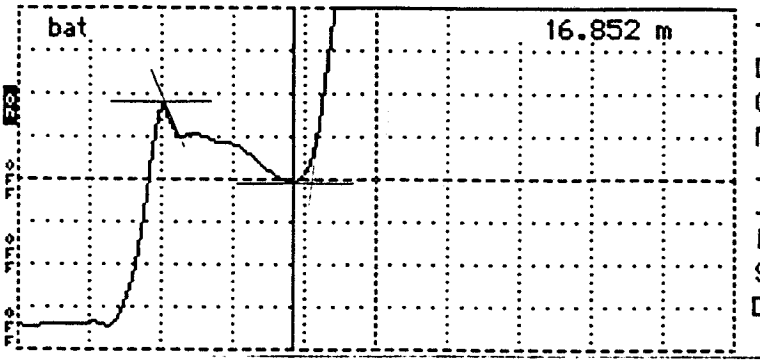
ATTACH TDR TRACES TO THIS DATA SHEET.

Comments: (1) NOT RECORDED IN 1993

Prepared by: RJV FROM 1993 DATA COLLECTED 14-OCT-1993 Employer: Braun Intertec Corporation

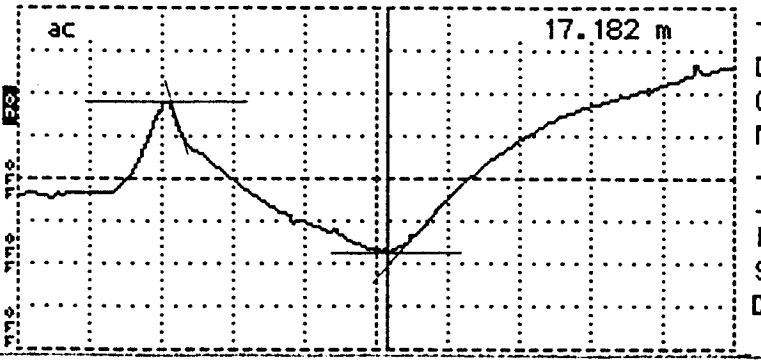
Date (dd/mmm/yy): 17/NOV/95 (FOR 1993 INFORMATION)

.... 16.852 m
.... .25 m/div
.... 45.9 mΩ/div
.... 0.99
.... 8 avg
.... bat



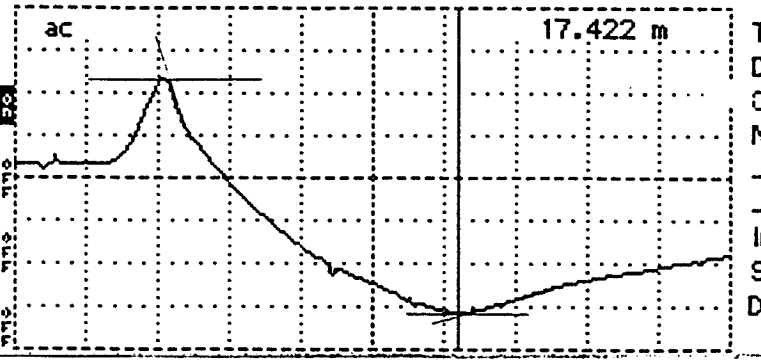
Tektronix 1502B T
Date 10-14-93
Cable 833802 #1
Notes (838C1)
Input Trace
Stored Trace
Difference Trace

.... 17.182 m
.... .25 m/div
.... 100 mΩ/div
.... 0.99
.... 8 avg
.... ac



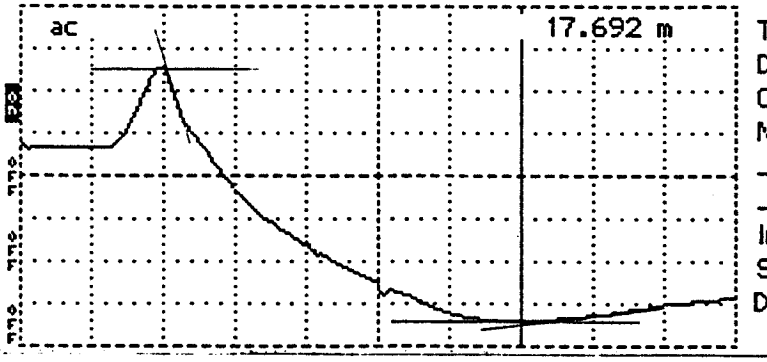
Tektronix 1502B TDF
Date 10-14-93
Cable 833802 #2
Notes (83B02)
Input Trace
Stored Trace
Difference Trace

.... 17.422 m
.... .25 m/div
.... 100 mΩ/div
.... 0.99
.... 8 avg
.... ac



Tektronix 1502B TDR
Date 10-14-93
Cable 833802 #3
Notes (83B03)
Input Trace
Stored Trace
Difference Trace

.... 17.692 m
.... .25 m/div
.... 100 mΩ/div
.... 0.99
.... 8 avg
.... ac

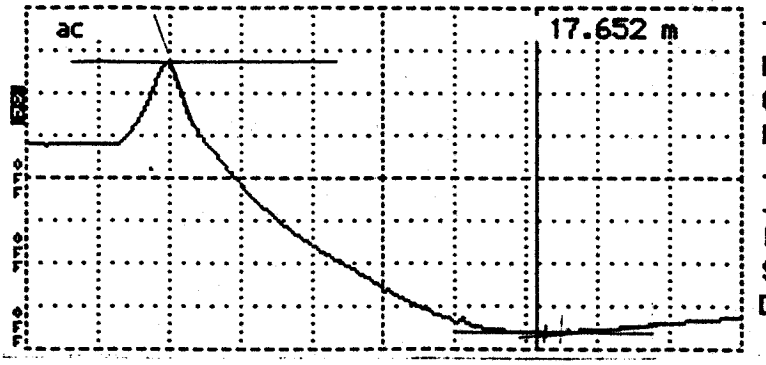


Tektronix 1502B T
Date 10-14-93
Cable 833802 #4
Notes (83B04)
Input Trace
Stored Trace
Difference Trace

.... 17.552 m
.... .25 m/div
.... 100 mΩ/div
.... 0.99
.... 8 avg
.... ac

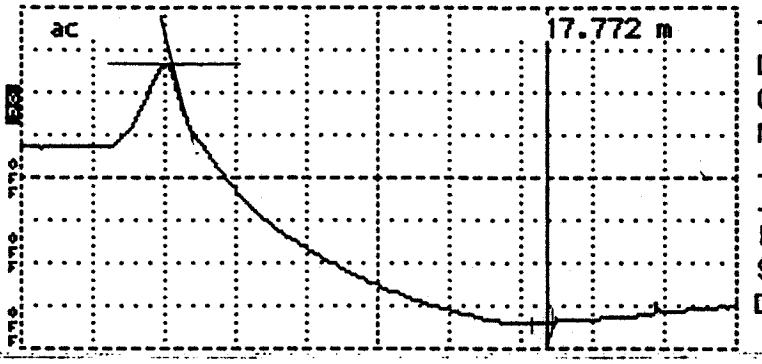
Tektronix 1502B TDR
Date 10-14-93
Cable 833802 #5
Notes (83B05)
Input Trace
Stored Trace
Difference Trace

..... 17.652 m
..... .25 m/div
..... 100 mΩ/div
..... 0.99
..... 8 avg
..... ac



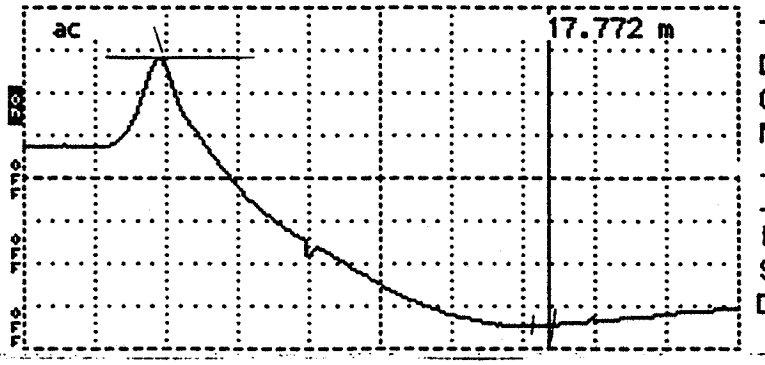
Tektronix 1502B
Date 10-14-93
Cable 833802 #6
Notes (833806)
Input Trace
Stored Trace
Difference Trace

..... 17.772 m
..... .25 m/div
..... 100 mΩ/div
..... 0.99
..... 8 avg
..... ac



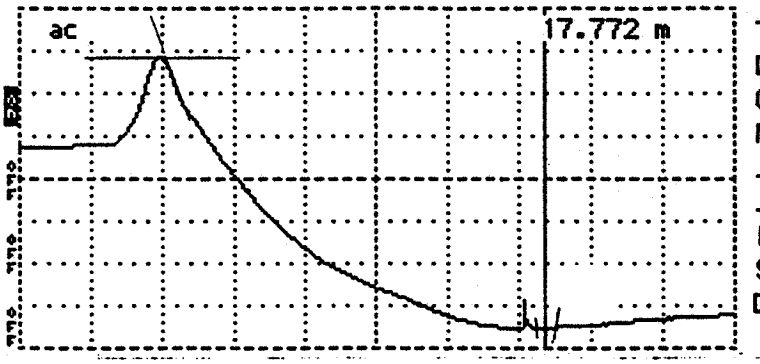
Tektronix 1502B TI
Date 10-14-93
Cable 833802 #7
Notes (833807)
Input Trace
Stored Trace
Difference Trace

..... 17.772 m
..... .25 m/div
..... 100 mΩ/div
..... 0.99
..... 8 avg
..... ac



Tektronix 1502B TI
Date 10-14-93
Cable 833802 #8
Notes (833808)
Input Trace
Stored Trace
Difference Trace

..... 17.772 m
..... .25 m/div
..... 100 mΩ/div
..... 0.99
..... 8 avg
..... ac



Tektronix 1502B TDF
Date 10-14-93
Cable 833802 #9
Notes (833809)
Input Trace
Stored Trace
Difference Trace

..... 17.772 m
..... .25 m/div
..... 100 mΩ/div
..... 0.99
..... 8 avg
..... ac

Tektronix 1502B TI
Date 10-14-93
Cable 833802 #10
Notes (833810)
Input Trace
Stored Trace
Difference Trace

8 3 S B 9 3 A

LTPP Seasonal Monitoring Program Data Sheet SMP-I07 Representative Dry Density	Agency Code [83] LTPP Section ID [3802]

Depth of Representative Sample (from pavement surface): __ . __ __ m

Dry Density Determination:

a. Tare Weight of Empty Mold: _____ g (__ . __ __ lb)

b. Weight of Mold and Compacted Soil: _____ g (__ . __ __ lb)

c. Weight of Compacted Sample (b - a): _____ g (__ . __ __ lb)

d. Unit Weight of Compacted Soil = [(b - a) / 943.0] = __ . __ __ g/cm^3

([(b - a) * 30] = ____ . __ lb/ft^3)

e. Dry Density of Compacted Soil = [d / (100 - r)] = __ . __ __ g/cm^3

(____ . __ lb/ft^3)

Moisture Content Determination:

m. Tare Weight of Pan: ____ . __ g

n. Weight of Pan and Moisture Sample: ____ . __ g

o. Weight of Pan and Dry Sample: ____ . __ g

p. Weight of Moisture (n - o): ____ . __ g

q. Weight of Dry Sample (o - m): ____ . __ g

r. Moisture Content by Weight = [(p / (p + q) * 100] = ___ . __ %

Comments: NOT PART OF PROCEDURE IN 1993.

Prepared by: Robert C. Smith Employer: Braun Intertec Corporation

Date (dd/mmm/yy): 12 / DEC / 95 (For 14-Oct-1993 Install)

BRAUN[SM]
INTERTEC 833802
10-14-93

TIPPING BUCKET RAIN GAGE / AIR TEMPERATURE PROBE

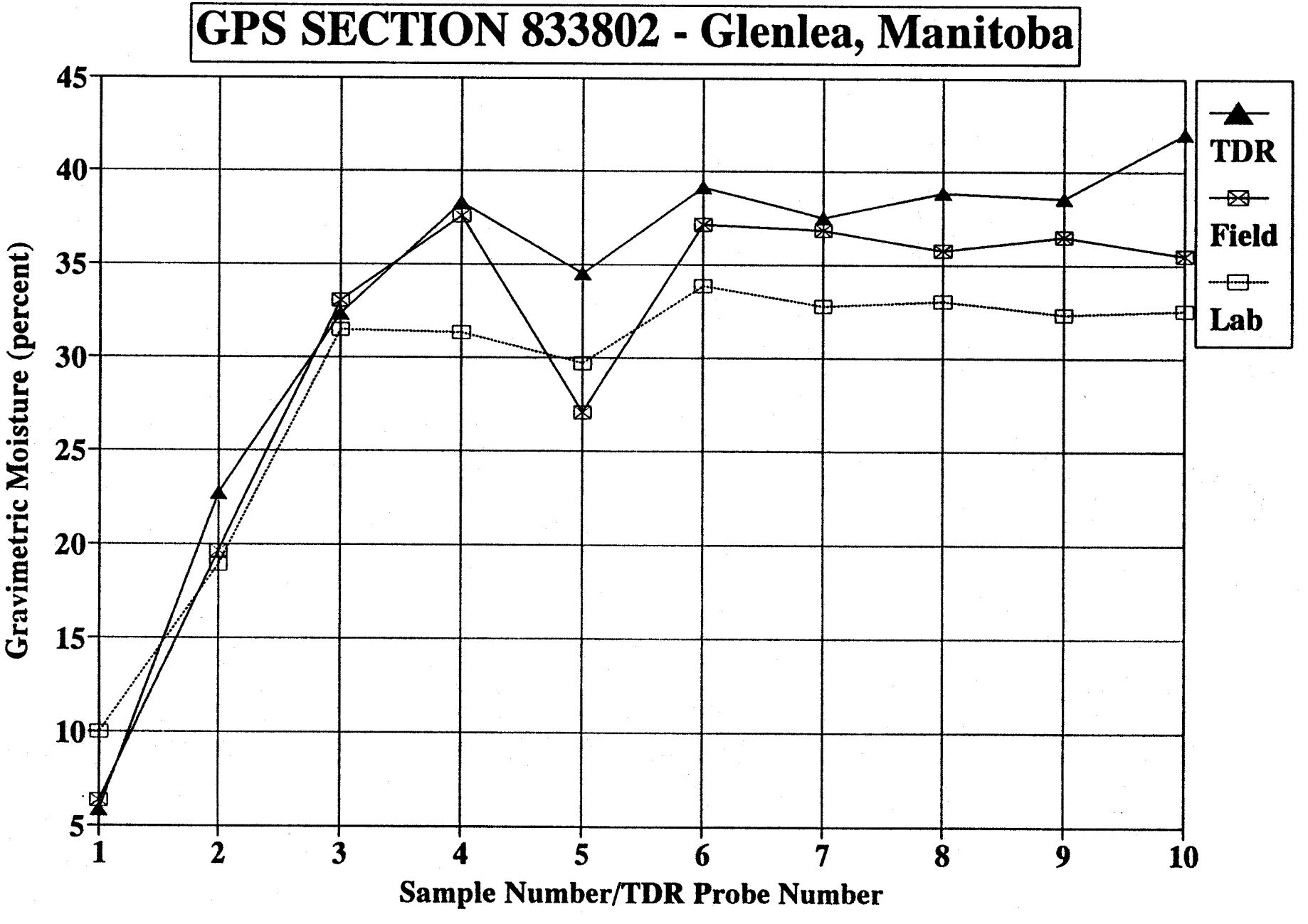
BOTTOM SECTION OF 2" PIPE, IS 10 FEET 8 INCHES LONG.

HOLE WAS DRILLED WITH 8 INCH SOLID STEM AUGER.

HOLE WAS DRILLED TO A DEPTH OF 9.5 FEET

THE PIPE WAS BACKFILLED WITH A DRY PACK SAKRETE CONCRETE MIX, IT WAS COMPACTED AS IT WAS PLACED. THE DRY PACK WAS PLACED TO ABOUT 2 FEET BELOW THE SURFACE.

SOIL REMOVED DURING DRILLING WAS USED AS BACKFILL ABOVE THE DRY PACK TO THE SURFACE.


GPS SECTION 833802 - Glenlea, Manitoba
Gravimetric Moisture (percent)
45
40
35
30
25
20
15
10
5
1
2
3
4
5
6
7
8
9
10
Sample Number/TDR Probe Number
TDR
Field
Lab

DEPARTMENT OF THE TREASURY
UNITED STATES CUSTOMS SERVICE

Form Approved.
OMB No. 1515-0014

CERTIFICATE OF REGISTRATION

NO.

CFR 10.8, 10.9, 10.68, 148.8, 148.32, 148.37

(NOTE: Number of copies to be submitted varies with type of transaction. Inquire at District Director's office as to number of copies required.)

(Carrier)	B/L or INSURED NO.	DATE
		10/4/93

NAME, ADDRESS, AND ZIP CODE TO WHICH CERTIFIED FORM IS TO BE MAILED *(If Applicable)*

BRAUN INTERTEC
1983 SLOAN PLACE
ST. PAUL, MN 55117

ARTICLES EXPORTED FOR:

- ☐ ALTERATION*
- ☐ REPAIR*
- ☒ USE ABROAD
- ☐ REPLACEMENT
- ☐ PROCESSING*
- ☐ OTHER, *(specify)* _____

* *NOTE: The cost or value of alterations, repairs, or processing abroad is subject to Customs duty.*

LIST ARTICLES EXPORTED

Number Packages	Kind of Packages	Description
		SEE ATTACHED 3 PAGES ↑ only page for 833803

NATURE OF OWNER OR AGENT *(Print or Type and Sign)*: ROBERT VAN SAMBEEK — DATE: 10/4/93

The Above-Described Articles Were:

EXAMINED	LADEN under my supervision
DATE: OCT 04 1993	DATE: OCT 04 1993 — PORT: U S Customs Pembina, N.D. 58271
SIGNATURE OF CUSTOMS OFFICER:	SIGNATURE OF CUSTOMS OFFICER:

U S Customs 1993 OCT 04

CERTIFICATE ON RETURN

Duty-free entry is claimed for the described articles as having been exported without benefit of drawback and are returned unchanged except as noted: *(use reverse if needed)*

NATURE OF IMPORTER *(Print or Type and Sign)* — DATE

NOTE: Certifying officers shall draw lines through all unused spaces with ink or indelible pencil.

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U.S.GPO:1992-0-343-023/70539

Seasonal Instrumentation Site 833802 south of Winnipeg, Manitoba

Salvageable Equipment

Telephone cabinet manufactured by Reliance

CR 10 data logger manufactured by Campbell Scientific, Inc. (SN. 16523)

PS12 power supply manufactured by Campbell Scientific, Inc. (SN. 5635)

Electronic rain gauge manufactured by Texas Electronics, Inc (SN. 12049-693)

Air temperature probe with radiation shield Model 107-L Part #LT421316

Instrumentation pole (2" galvanized pipe) 10 foot section placed in the ground and 8 foot section above ground

Materials installed in the ground (non recoverable)

Resistivity probe (SN. 83BR)

MRC thermistor probe (SN. 83BT)

Ten time-domain reflectometry (TDR) probes (SN. 83B01 to 83B10)

Eight foot copper grounding rod

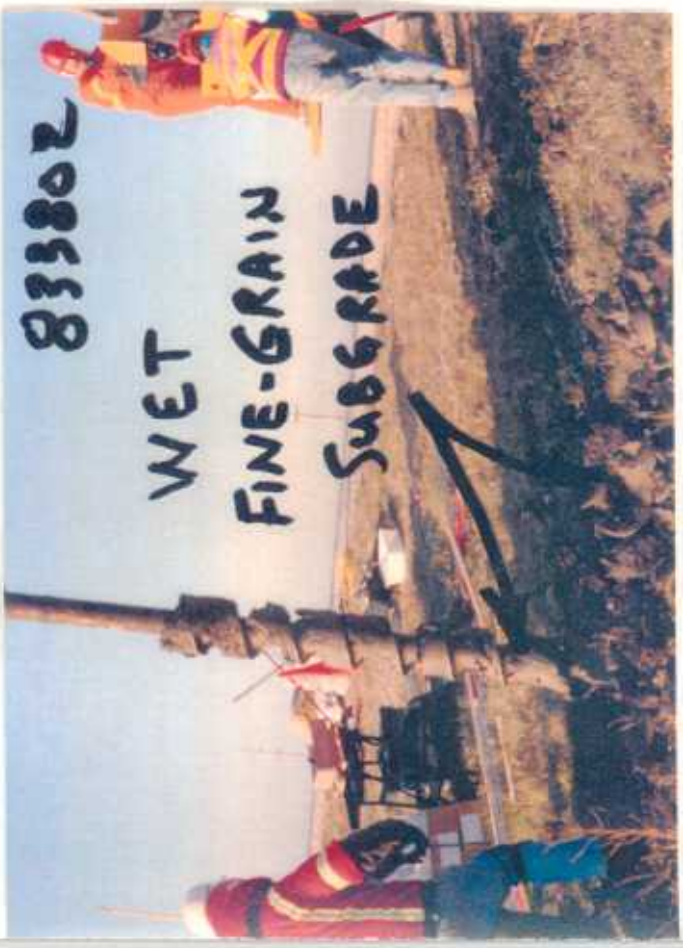
14 foot galvanized pipe with eight foot grease sleeve

32 foot flexible conduit

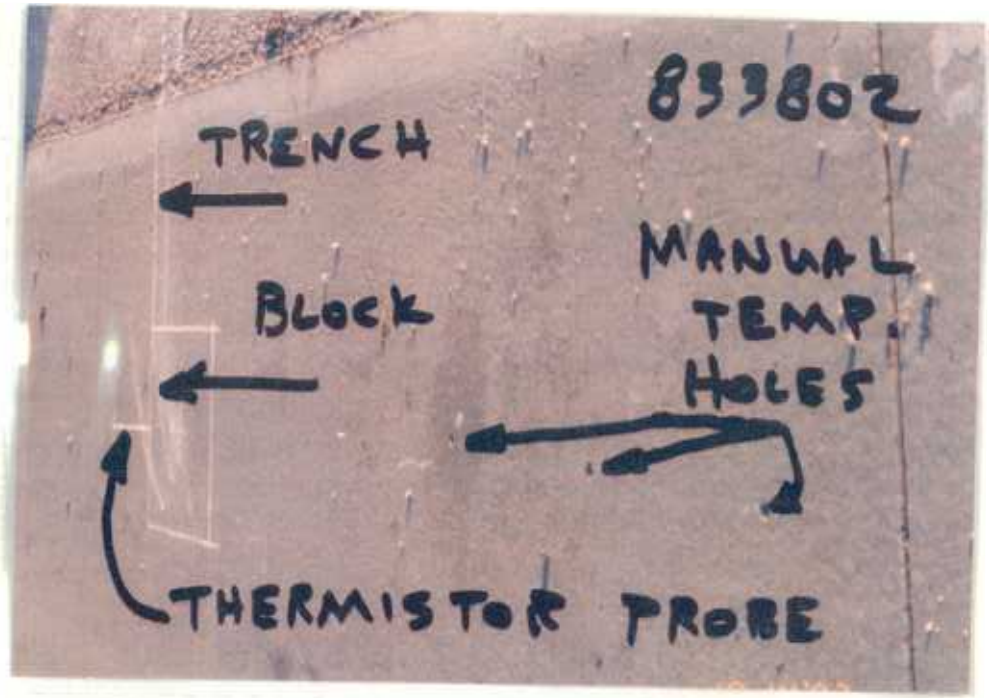

RAIN
AIR TEMP
833802


833802


833802
HEATING
POLE


833802
WET
FINE-GRAIN
SUBGRADE


833802


833802
TRENCH
BLOCK
MANUAL
TEMP.
HOLES
THERMISTOR PROBE


833802


833802


833802
PIEZOMETER HOLE


833802
TOP OF PIEZOMETER


TDR SAMPLE FROM PIE HOLE
833802


833802
BOTTOM OF PIEZOME-TER


833802
TDR
RESISTIVITY
THERMISTOR


TIPPING-
BUCKET
RAIN
GAUGE
833802

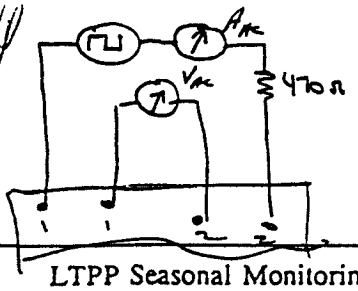

FIELD
MOISTURES
833802


FIELD MOISTURE SETUP
833802

Appendix D-1: Initial SMP Monitoring Data Collection

Appendix D-1 contains the following data sheets with information collected the day after instrumentation installation:

- Data Sheet SMP-D03: Contact Resistance Measurements;
- Data Sheet SMP-D04: Four-Point Resistivity Measurements;
- Data Sheet SMP-D05: Ground Water Table Measurements;
- Data Sheet SMP-D06: Joint Opening Measurement;
- Data Sheet SMP-D07: Joint Faulting Measurement; and
- Data Sheet SMP-D09: Surface Elevation Measurements - PCC Pavements.



835893C

LTPP Seasonal Monitoring Study
Data Sheet ~~R1~~ D03
Contact Resistance Measurements

* State Code [83]

* Test Section Number [3802]

1. Date (Month - Day - Year) NOV [14 - 15 - 93]

2. Time Measurements Began (Military) [15:45]

3. Comments USING SIGNAL GENERATOR ON AC POWER AND FHWA BOX

Test Position	Connections I_1 V_1	Connections I_2 V_2	Voltage (ACV) Range Setting	Voltage (ACV) Reading	Current (ACA) Range Setting	Current (ACA) Reading	Notes
1	1	2	V	10.21	UA	425	
2	3	2		9.95		584	
3	3	4		7.67		1696	
4	5	4		4.81		3022	
5	5	6		2.532	MA	4.64	
6	7	6		1.810		5.24	
7	7	8		1.617		5.36	
8	9	8		1.675		5.30	
9	9	10		1.655		5.36	
10	11	10		1.580		5.41	
11	11	12		1.460		5.51	
12	13	12		1.330		5.53	
13	13	14		1.592		5.31	
14	15	14		1.609		5.38	
15	15	16		1.210		5.73	
16	17	16		1.310		5.72	
17	17	18		1.350		5.58	
18	19	18		1.167		5.75	
19	19	20		1.200		5.77	
20	21	20		1.358		5.55	
21	21	22		1.523		5.45	
22	23	22		1.500		5.44	
~~23~~	~~23~~	~~24~~		.002		.01	CAMP OUT
24	25	24		3.277		4.15	
25	25	26		1.873		5.19	
26	27	26		1.230		5.75	
27	27	28		1.292		5.70	
28	29	28		1.194		5.80	
29	29	30		1.077		5.91	
30	31	30		0.965		6.04	
31	31	32		1.198		5.86	
32	33	32		1.309		5.76	
33	33	34		1.037		5.96	
34	35	34		.806		6.21	
35	35	36		.786		6.20	
~~36~~	~~37~~	~~38~~					
~~37~~	~~38~~	~~39~~					
~~38~~	~~39~~	~~40~~					

$R = \frac{E}{I}$

24000
17000 P
4500 TRAI
1600
500
300
300
300
300
300
300
300
200
200
200
200
200
200
300
300
do not enter
800
400
200
200
200
200
200
200
200
200
100
100

Preparer RJV / DLM Employer BRAUN INTERTEC

Figure III-5 - Contact Resistant Measurements - Data Sheet R1

Entered: 4/11

835893C

Seasonal Monitoring Program Guidelines: Version 1.1/June 1993

LTPP Seasonal Monitoring Study Data Sheet D04 Four-Point Resistivity Measurements	* State Code [83] * Test Section Number [3802]

1. Date (Month - Day - Year) Nov [11-15-93]
2. Time Measurements Began (Military) [15:30]
3. Comments USED AC POWER FOR SIGNAL GENERATOR AND FHWA BOX

Test Position	Connections I_1	V_1	V_2	I_2	Voltage (ACV) Range Setting	Voltage (ACV) Reading	Current (ACA) Range Setting	Current (ACA) Reading	Notes
1	1	2	3	4	mV	317.6	µA	650	
2	2	3	4	5		105.1		70.6	
3	3	4	5	6		195.8		1966	
4	4	5	6	7		67.5		3260	
5	5	6	7	8		78.6	mA	4.70	
6	6	7	8	9		66.0		5.20	
7	7	8	9	10		63.7		5.40	
8	8	9	10	11		63.6		5.36	
9	9	10	11	12		59.3		5.46	
10	10	11	12	13		61.5		5.21	
11	11	12	13	14		58.5		5.24	
12	12	13	14	15		58.6		5.59	
13	13	14	15	16		66.9		5.66	
14	14	15	16	17		55.0		5.30	
15	15	16	17	18		53.3		5.61	
16	16	17	18	19		63.0		5.83	
17	17	18	19	20		51.0		5.60	
18	18	19	20	21		50.0		5.56	
19	19	20	21	22		56.1		5.53	
20	20	21	22	23		47.1		5.51	
~~21~~	~~21~~	~~22~~	~~23~~	~~24~~		~~0.2~~		~~6.01~~	~~* CAMP OUT~~ Do not enter.
22	22	23	24	25		68.3		4.84	
23	23	24	25	26		53.6		5.70	
24	24	25	26	27		64.5		4.48	
25	25	26	27	28		44.5		5.10	
26	26	27	28	29		55.0		5.79	
27	27	28	29	30		49.3		5.74	
28	28	29	30	31		47.4		5.86	
29	29	30	31	32		47.3		5.68	
30	30	31	32	33		44.0		5.89	
31	31	32	33	34		56.0		6.06	
32	32	33	34	35		45.0		5.94	
33	33	34	35	36		44.7		6.01	

Preparer RJV/DLM Employer BRAUN INTERTEC

Figure III-6 - Four-Point Resistivity Measurements - Data Sheet R2

Entered: 4/D

835893B

LTPP Seasonal Monitoring Study Form W1 D05 Ground Water Table Measurement	State Code 833802 [83] Test Section Number [ ]

Number	Time	Well Depth (ft)	Water Depth (ft)	Weather Conditions*	Comments
1		14.2'	DRY (9x9)		Pipe is Dry
2					
3					
4					
5					

* Use only these weather terms: Sunny, Partly Cloudy, Cloudy, Drizzle, Rain

Collected by: BRAUN/DM Employer: BRAUN INTERTEC Date: Oct 10-15-93

Figure III-7 - Ground Water Table Measurements - Data Sheet W1

Entered: YYN

835B93C

Convert to mm — two places

LTPP Seasonal Monitoring Study Form D06 Joint Opening Measurement	State Code [83] Test Section Number [3802]

ENTER IN FWD 54/55 TESTS

Station	TIME	(mm)	#1 (1')	(mm)	#2 (6')	(mm)	#3 (11')	WIDTH
1 Station: 442	1142	116.51	4.587	117.12	4.611	116.74	4.596	38
	1335	116.61	4.591	117.27	4.617	116.59	4.590	38
2 Station: 460	1146	116.21	4.575	115.52	4.548	116.84	4.600	41
	1336	116.23	4.576	115.44	4.545	116.84	4.600	41
3 Station: 477	1150	116.64	4.592	116.13	4.572	115.87	4.562	39
	1338	116.64	4.592	116.13	4.572	115.95	4.565	39
4 Station: 490	1202	116.64	4.592	117.12	4.611	116.38	4.582	35
	1350	116.26	4.577	116.99	4.606	116.48	4.586	35
5 Station: 502	1208	116.10	4.571	117.40	4.622	115.11	4.572	43
	1352	116.15	4.573	117.35	4.620	116.33	4.580	42
6 Station: 520	1210	117.07	4.609	117.30	4.618	117.86	4.640	46
	1355	117.04	4.608	117.48	4.625	117.83	4.639	46

Comments:

Prepared by: RJV / DLM Employer: Braun Intertec Date: Nov 15/93

Figure III-8 - Joint Opening Measurements - Data Sheet O1

ONLY TWO CYCLES OF FWD

entered: 4/4/

835893B

LTPP Seasonal Monitoring Study Form ~~II~~ DOT Joint Faulting Measurement	State Code 833802 [83] Test Section Number [3802]

Joint/Crack		Point Distance (~~Feet~~) m	Faultmeter Reading (mm)
	2.5'		
S	1	134.6	2
S	2	140.0	4
S	3	145.1	0
S	4	148.9	1
S	5	152.4	0
S	6	158.9	1
—	7	———.	——
—	8	———.	——
—	9	———.	——
—	10	———.	——
	6.0'		
J	1	1345	1
J	2	1379	2
J	3	1450	0
J	4	1489	1
J	5	1524	1
J	6	1589	1
—	7	———.	——
—	8	———.	——
—	9	———.	——
—	10	———.	——

Joint/Crack		Point Distance (~~Feet~~) m	Faultmeter Reading (mm)
	9.0'		
J	1	134.6	-1
J	2	137.5	0
J	3	147.0	0
J	4	148.8	1
J	5	152.3	0
J	6	150.8	1
—	7	———.	——
—	8	———.	——
—	9	———.	——
—	10	———.	——

COMMENTS: _____

Prepared by: RRU/DM Employer: BRAUN INTERTEC Date: oct 10-15-93

Figure III-9 - Joint Faulting Measurements - Data Sheet F1

Entered: 440

835893B

Assumed Time: 1100

LTPP Seasonal Monitoring Study Form E3 D09 Surface Elev. Measurements PCC			State Code GPS Section No. 833802 [_] Test Section Number [__] Sheet 1 of 3			
STA.	BS	HI	IFS	FS	ELEV	REMARKS
	1.3660	~~1.3660~~			~~10.0000~~	PIZ BM
				1.3662		PIZ BM ELEV BASED 1111

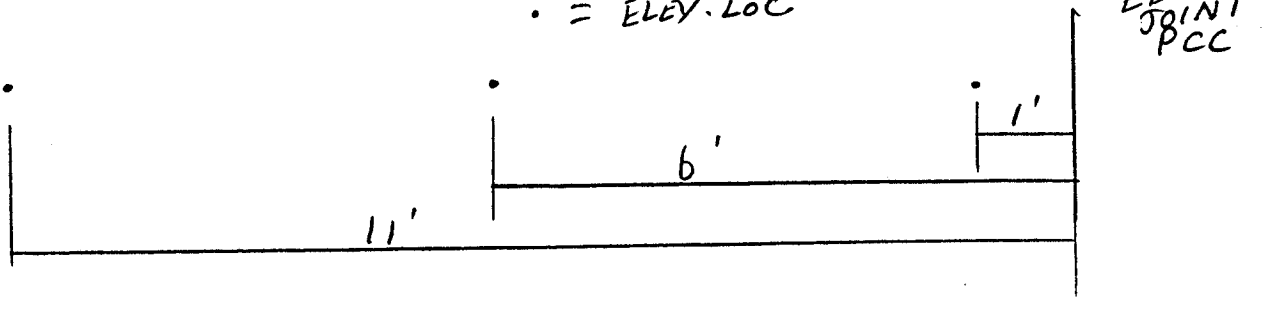
TYPE OF INSTRUMENT [ ]

1' (~~0.30 0.76M~~) 6 (~~1.33 3.38M~~) 11' (~~3.35 2.90M~~)

STA.	Slab Edge Outer	Mid Slab	Slab Edge Inner	REMARKS
4+43 ELEV	1.0825 ~~10.2835~~	1.0557 ~~10.3105~~	1.0333 ~~10.3327~~	JOINT DOWN SIDE
4+43 ELEV	1.0848 ~~10.2812~~	1.0560 ~~10.3100~~	1.0314 ~~10.3346~~	JOINT UP SIDE
4+51 ELEV	1.0941 ~~10.2719~~	1.0608 ~~10.3052~~	1.0365 ~~10.3295~~	MID SLAB
4+59 ELEV	1.0940 ~~10.2720~~	1.0645 ~~10.3015~~	1.0399 ~~10.3261~~	JOINT DOWN SIDE
4+59 ELEV	1.0989 ~~10.2671~~	1.0664 ~~10.2996~~	1.0391 ~~10.3269~~	JOINT UP SIDE
4+67 ELEV	1.1004 ~~10.2656~~	1.0686 ~~10.2974~~	1.0417 ~~10.3243~~	MID SLAB
4+76 ELEV	1.0970 ~~10.2690~~	1.0676 ~~10.2984~~	1.0390 ~~10.3270~~	JOINT DOWN SIDE
4+76 ELEV	1.0971 ~~10.2689~~	1.0669 ~~10.2991~~	1.0394 ~~10.3266~~	JOINT UP SIDE

Prepared by: RRW/DM Employer: BRAKIN INTERTEC Date: Oct 15-93

Surface Elevation Measurements: PCC Pavements - Data Sheets E3



Entered: JW

8358938

LTPP Seasonal Monitoring Study Form ~~E3~~ D09 Surface Elev. Measurements PCC			State Code GPS Section No. 833802 [ ] Test Section Number [ ] Sheet 2 of 3			
STA.	BS	HI	IFS	FS	ELEV	REMARKS
		11.3660				

TYPE OF INSTRUMENT [ ]

STA.	Slab Edge Outer	Mid Slab	Slab Edge Inner	REMARKS
4+82 ELEV	1.0928 ~~10.2732~~	1.0620 ~~10.3040~~	1.0359 ~~10.3301~~	MID SLAB
4+89 ELEV	1.0868 ~~10.2792~~	1.0572 ~~10.3088~~	1.0311 ~~10.3349~~	JOINT DOWN SIDE
4+89 ELEV	1.0870 ~~10.2790~~	1.0585 ~~10.3075~~	1.0318 ~~10.3342~~	JOINT UP SIDE
4+94 ELEV	1.0889 ~~10.2771~~	1.0623 ~~10.3037~~	1.0362 ~~10.3298~~	MID SLAB
5+00 ELEV	1.0828 ~~10.2832~~	1.0604 ~~10.3056~~	1.0358 ~~10.3302~~	JOINT DOWN SIDE
5+00 ELEV	1.0817 ~~10.2843~~	1.0610 ~~10.3050~~	1.0354 ~~10.3306~~	JOINT UP SIDE
-+ INST ELEV HOLE	1.0766 10.2897	--- ---	--- ---	DOWN SIDE
+ INST. ELEV HOLE	1.0771 10.2889	--- ---	--- ---	UP SIDE

(continues on next sheet)

Prepared by: BRY/DM Employer: _____ Date: 10-15-93

Entered JJP

835893B

LTPP Seasonal Monitoring Study Form ~~E3~~ D09 Surface Elev. Measurements PCC			State Code GPS Section No. 833802 [_] Test Section Number [__] Sheet 3 of 3			
STA.	BS	HI	IFS	FS	ELEV	REMARKS
		11.3660				

TYPE OF INSTRUMENT [.]

STA.	Slab Edge Outer	Mid Slab	Slab Edge Inner	REMARKS
5+10 ELEV	1.0845 ~~10815~~	10609 ~~103051~~	1.0386 ~~10374~~	MID SLAB
5+21 ELEV	1.0835 ~~10825~~	10593 ~~103001~~	1.0372 ~~10388~~	JOINT DOWN SIDE
5+21 ELEV	1.0850 ~~102810~~	1.0598 ~~103066~~	10380 ~~103080~~	JOINT UP SIDE
+ ELEV	--.--- --.---	--.--- --.---	--.--- --.---	
+ ELEV	--.--- --.---	--.--- --.---	--.--- --.---	
+ ELEV	--.--- --.---	--.--- --.---	--.--- --.---	
+ ELEV	--.--- --.---	--.--- --.---	--.--- --.---	
+ ELEV	--.--- --.---	--.--- --.---	--.--- --.---	

Prepared by: RHJ/DW Employer: _____ Date: Oct 10-15-93

Surface Elevation Measurements: PCC Pavements - Data Sheets E3

Appendix D-2: Routine SMP Monitoring Data Collection Summary

Appendix D-2 contains the following information:

- Standard LTPP SMP data tracking log;
- Field testing information sheet; and
- Screen prints documenting equipment problems.

83SB - 833802, PTH-75 NB LANES, 15 MILES SOUTH OF WINNIPEG, MB

Date		ONSITE Data			MOBILE Data		Manual Data								FWD Data				Distress		Profile		Comments
dd/mmm/yy (ctrl+shft+d)	Visit ID	Pvmt. Temp.	Air Temp.	Rain	TDR	Frost Volts	Backup Temp	Backup TDR	Frost 2-Pt.	Frost 4-Pt.	Water Table	Pvmt. Elev.	Joint Open.	Joint Fault	Man. Temp.	No. of Cycles/Visit OWP	ML	PE	M	P	P	D	
09-Jun-93																			X	X			
23-Aug-93																					X		
14-Oct-93	93A														X	1	1	0					INSTALLATION, MANUAL TDR READINGS, ONLY J0 AND J1 FWD TESTS.
15-Oct-93	93B	X	X	X	X	X					X	X		X	X	2	2	2					NO RESISTIVITY SWITCH BOX, INSTALLED SNAP RINGS.
15-Nov-93	93C	X	X	X	X	X			X	X	X	X	X	X	X	2	2	2					ADDED RELAY TO ONSITE, TWO ONSITE FILES
17-Nov-93																					X		
14-Dec-93	93D	X	X	X	X	X					X	X	X	X	X	2	2	2					BAD RESISTIVITY SWITCH BOX FOR TODAY AND 18JAN94.
18-Jan-94	94A	X	X	X	X	X										0	0	0					WEATHER REDUCED TESTING. CABINET FULL OF SNOW. PLUGGED HOLES
15-Feb-94	94B	X	X	X	X	X			X	X	X	X	X		X	2	2	2	X				
18-Feb-94																					X		PROFILE DATA NOT RECIEVED BY RCO.
15-Mar-94	94C	X	X	X	X	X			X	X	X	X	X		X	2	2	2					BAD FAULTMETER.
29-Mar-94	94D	X	X	X	X	X					X	X	X	X	X	2	2	2					BAD RESISTIVITY SWITCH BOX.
12-Apr-94	94E	X	X	X	X	X			X	X	X	X	X	X	X	2	2	2					
02-May-94	94F	X	X	X	X	X			X	X	X	X	X	X	X	2	2	2					
16-May-94	94G	X	X	X	X	X			X	X	X		X	X	X	1	1	1					FWD D1 READINGS BAD.
20-Jun-94	94H	X	X	X	X	X			X	X	X	X	X	X	X	2	2	2					
17-Jul-94																					X		PROFILE DATA NOT RECIEVED BY RCO.
26-Jul-94	94I	X	X	X	X	X			X	X	X		X	X	X	1	1	1					
22-Aug-94	94J	X	X	X	X	X			X	X	X	X	X	X	X	2	2	2	X				REMOVED DEBRIS PLUGGING THE TIPPING BUCKET.
20-Sep-94	94K	X	X	X	X	X			X	X	X	X	X	X	X	2	2	2					
18-Oct-94	94L	X	X	X	X	X			X	X	X	X	X	X	X	2	2	2					
10-Nov-94																					X		PROFILE DATA NOT RECIEVED BY RCO.
15-Nov-94	94M	X	X	X	X	X			X	X	X		X	X	X	2	2	2					MANUAL TDR READINGS ON PROBES #5 THRU #10.
13-Dec-94	94N	X	X	X	X	X			X	X	X		X	X	X	2	2	2					THREE GOOD DATA SETS IN 2 FILES, FILES CONTAIN MANY "-9999"
21-Jan-95																					X		
26-Jan-95	95A	X	X	X	X	X			X	X	X					0	0	0					WEATHER REDUCED TESTING.
14-Feb-95	95B	X	X	X	X	X			X	X	X	X				0	0	0					WEATHER REDUCED TESTING.
15-Mar-95	95C	X	X	X	X	X			X	X	X		X	X	X	2	2	2					

83SB - 833802, PTH-75 NB LANES, 15 MILES SOUTH OF WINNIPEG, MB

Date dd/mmm/yy (ctrl+shft+d)	Visit ID	ONSITE Data			MOBILE Data		Manual Data								FWD Data				Distress		Profile		Comments
		Pvmt. Temp.	Air Temp.	Rain	TDR	Frost Volts	Backup Temp	Backup TDR	Frost 2-Pt.	Frost 4-Pt.	Water Table	Pvmt. Elev.	Joint Open.	Joint Fault	Man. Temp.	No. of Cycles/Visit OWP	ML	PE	M	P	P	D	
28-Mar-95	95D	X	X	X	X	X			X	X	X	X	X	X	X	2	2	2	X				
12-Apr-95	95E	X	X	X	X	X			X	X	X		X	X	X	2	2	2					
26-Apr-95	95F	X	X	X	X	X			X	X	X	X	X	X	X	2	2	2					
16-May-95	95G	X	X	X	X	X			X	X	X	X	X	X	X	2	2	2					
20-Jun-95	95H	X	X	X	X	X			X	X	X	X	X	X	X	2	3	2	X				

833802 - 83SB

Updated 31-Oct-95

LOCATION - PTH-75 NB Lanes, 15 Miles South of Winnipeg, MB
CONTACTS - Roger Sutyla (204) 326-4434.
TEMP HOLES - Sta 5+03, Depths are about 1.3", 5.3", and 9.4" (PCC thickness = 9.75").

TEST LOCATIONS:	J1	J2	J3	J4	J5
	450	442	450	441	442
	467	459	466	460	461
	482	474	480	477	478
	495	487	493	490	491
	511	501	BLK	502	503
	---	---	---	520	521

DISTRESS COMMENTS:

Sta J1 - Midpanel tests.

495 JOINT 1' IN FRONT OF D7
511 LP ADJACENT TO INSTRUMENTATION HOLE

Sta J2 and J3 - Corner and Mid-edge tests.
(none)

Sta J4 and J5 - Load transfer tests in the OWP.
(none)

PIEZOMETER - Sta 4+85, 2.0 feet from edge of paved shoulder, Depth = 4.284M.
(Located longitudinally at midpanel of third panel tested.)

ELEVATIONS - No DOT BM.

Offsets:	PE	ML	ILE
(M)	0.30	1.83	3.35
(ft)	1.0	6.0	11.0
	(hole)	(hole)	(hole)

Sta:							
-	BJ/AJ	441	460	477	490	500	521
-	at MP	450	467	482	495	511	---

FAULTMETER Offsets:	OWP	ML	IWP
(M)	0.76	1.83	2.90
(ft)	2.5	6.0	9.5

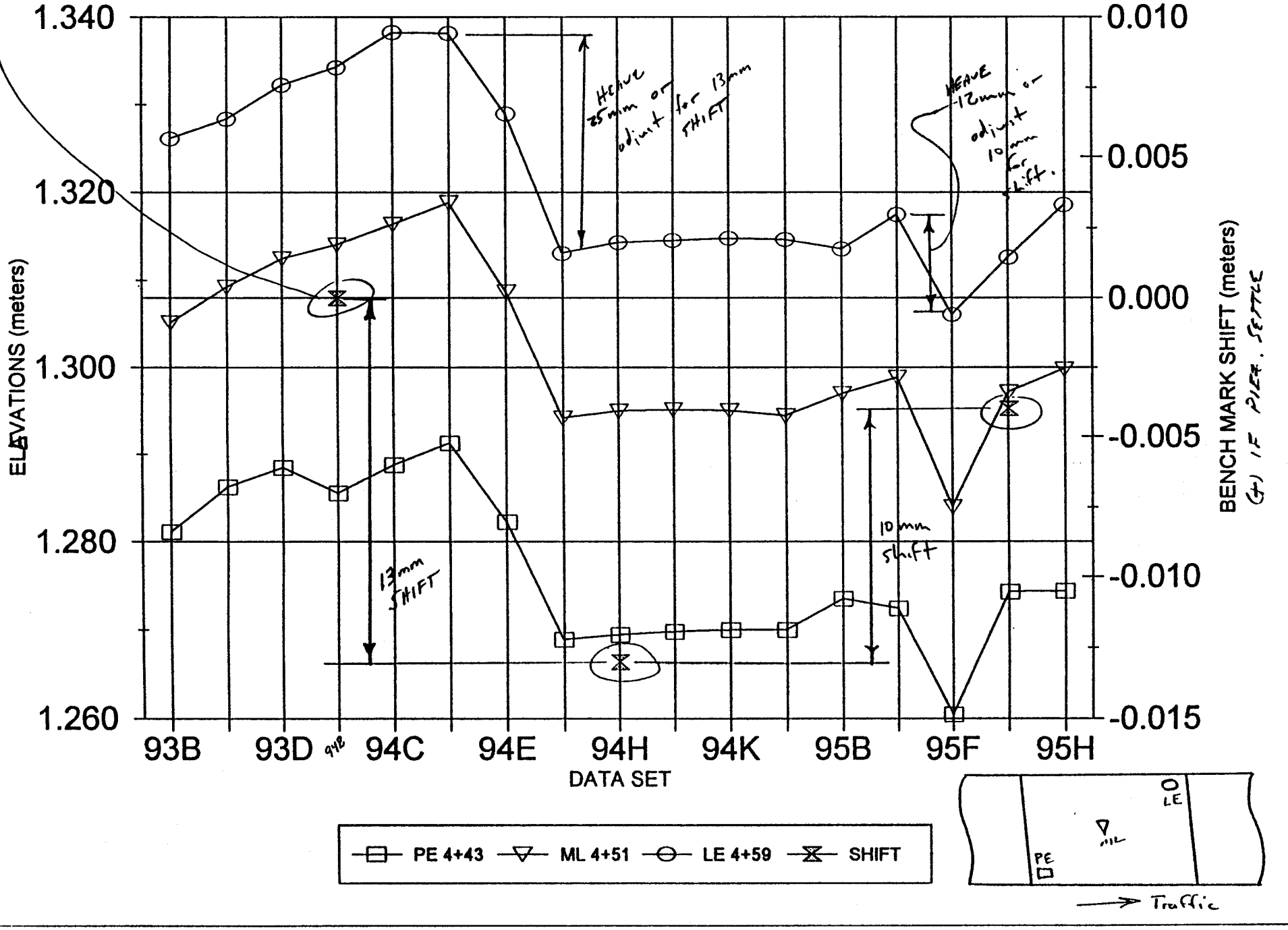
Sta: 4+42, 4+60, 4+77, 4+90, 5+01, 5+20

COMMENTS - Traffic control - Rick Hilderbrand (home) 746-2856.
- MRC #1 failed spring of 1995.


Plugged
833802
8/94

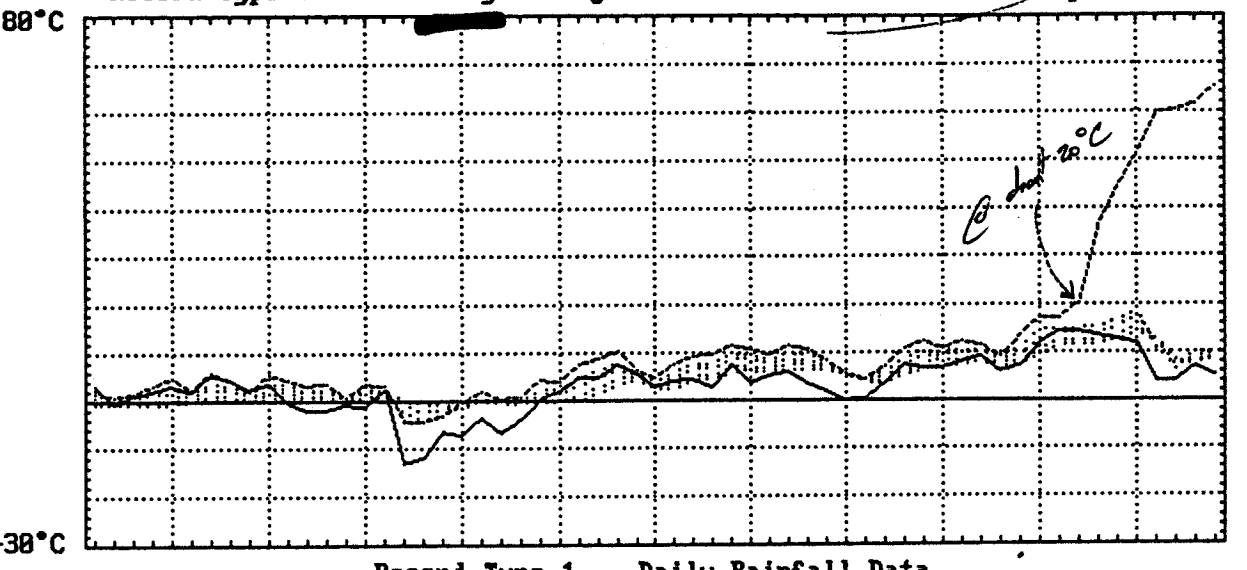

1.5 years after
repair.
8355
833802

833802


1.340
1.320
1.300
1.280
1.260
ELEVATIONS (meters)
0.010
0.005
0.000
-0.005
-0.010
-0.015
BENCH MARK SHIFT (meters)
93B
93D
94C
94E
94H
94K
95B
95F
95H
DATA SET
Heave 25mm or adjust for 13mm SHIFT
HEAVE 12mm or adjust 10mm for shift.
13mm SHIFT
10mm shift
PE 4+43
ML 4+51
LE 4+59
SHIFT
LE
ML
PE
Traffic

JNSITE

File Name: S:\LTPP\SMP\DATA\83SB95GE.ONS State: Manitoba
Record Type 1 & 2 - Daily Average Air & First 5 MRC Sensor Temperature

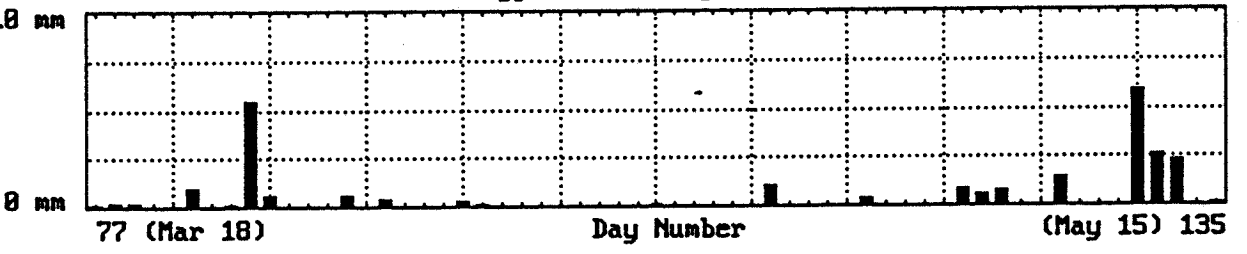


MRC #1 FAILURE

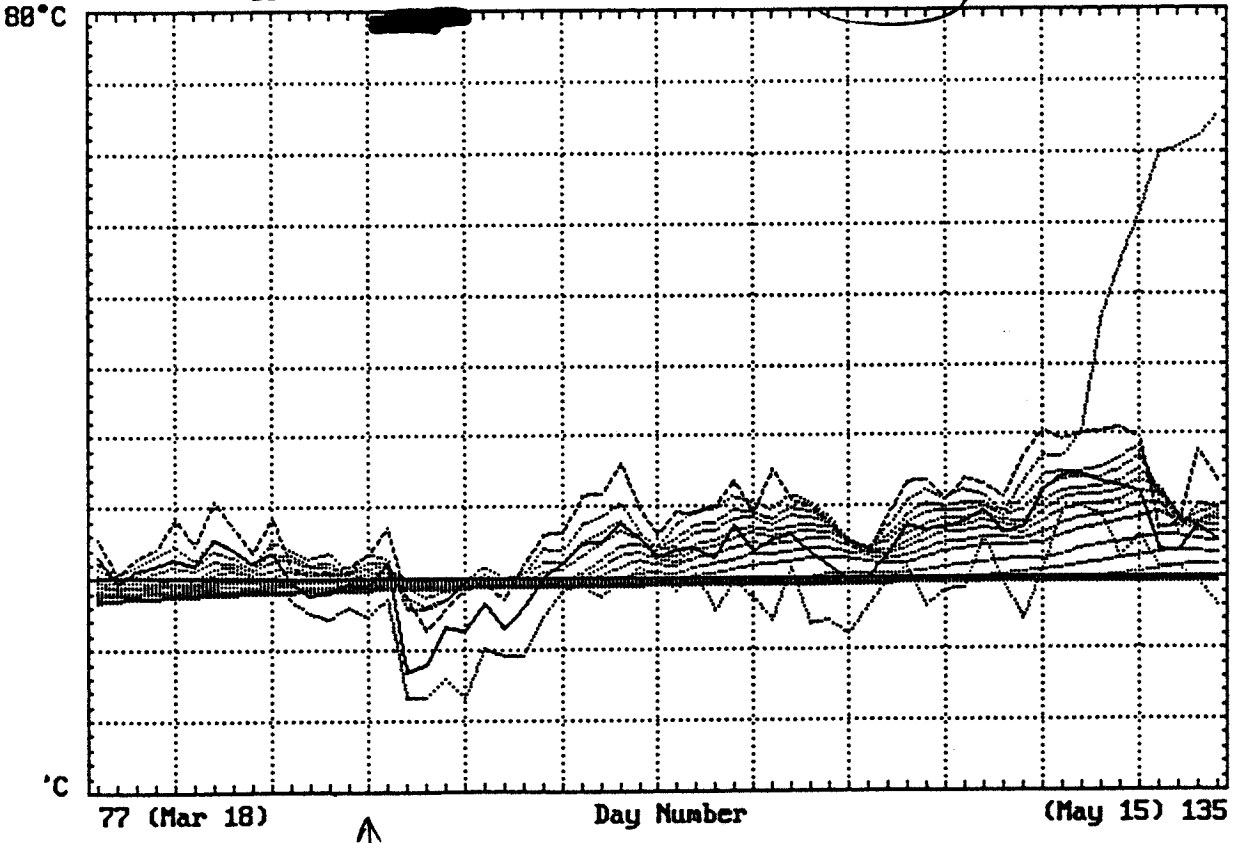
≈ 1" deep on Pcc

≈ May 8th

Record Type 1 - Daily Rainfall Data



File Name: S:\LTPP\SMP\DATA\83SB95GE.ONS State: Manitoba
Record Type 2 - Daily Max. Avg. Min. Air and All 18 MRC Sensor Temp.



- still have frost

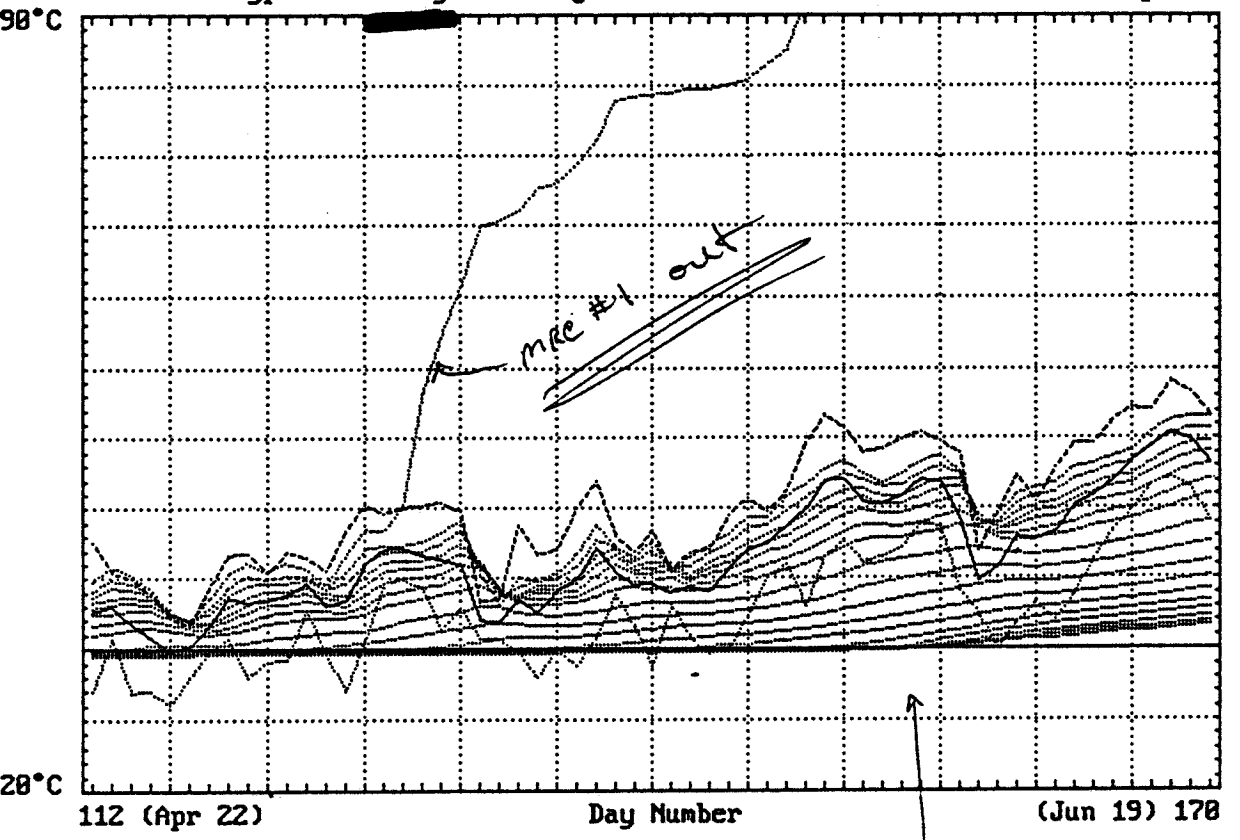
- See next page

start transition?

End of March

ONSITE

File Name: S:\LTPP\SMP\DATA\83SB95HF.ONS State: Manitoba
Record Type 2 - Daily Max. Avg. Min. Air and All 18 MRC Sensor Temp.

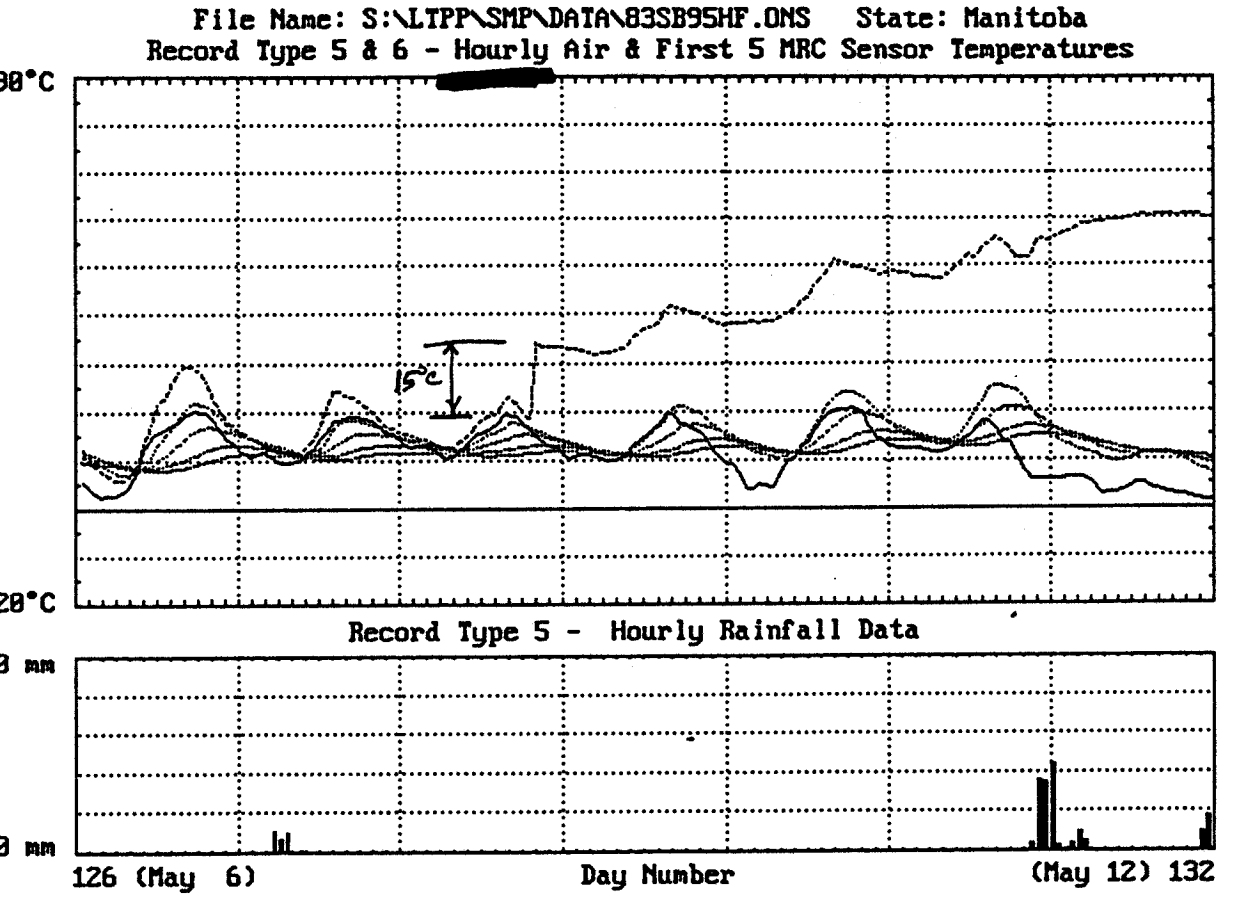


Total frost out

Long transition

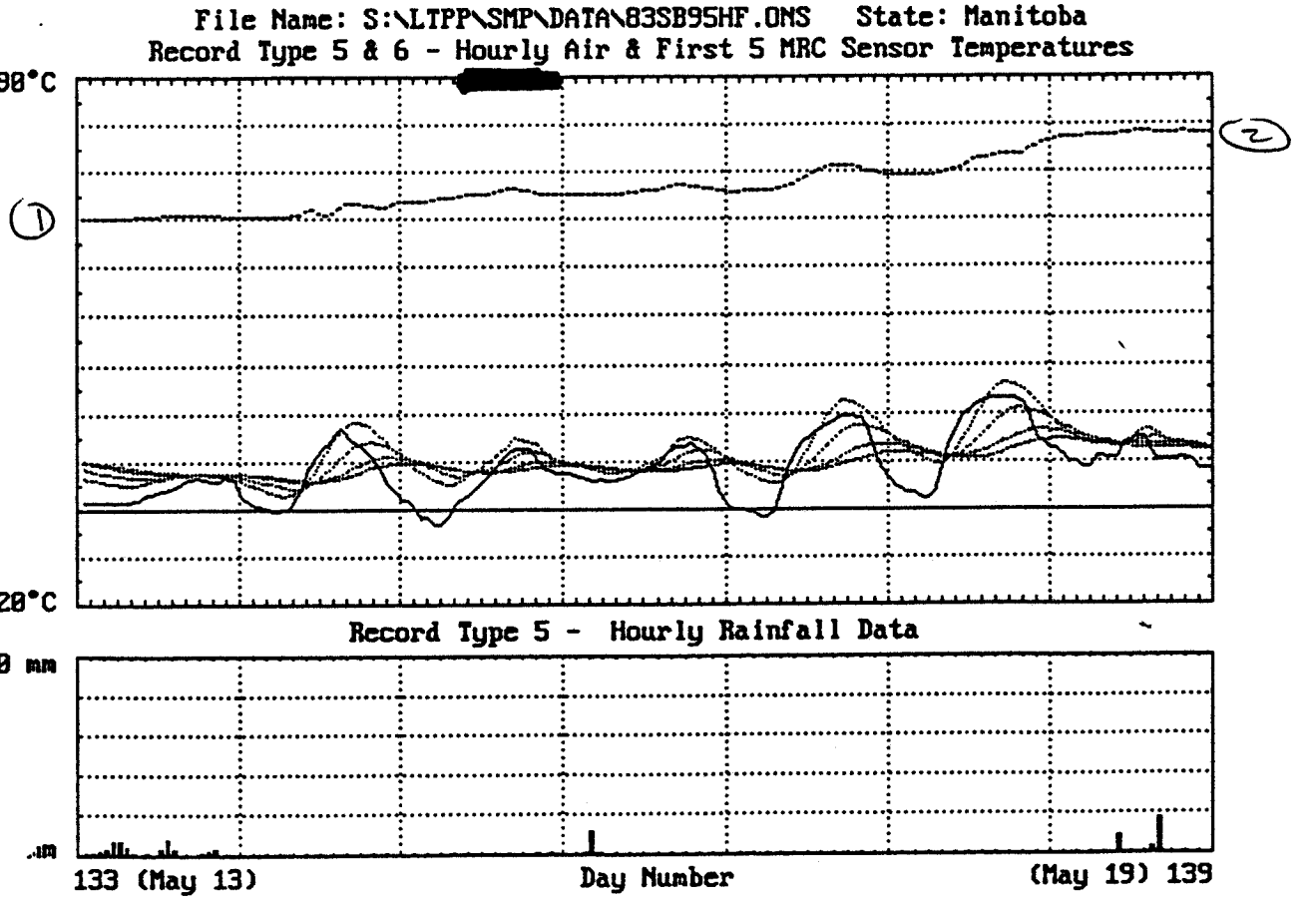
Apr. 1 to Jun 3 (~60 days)

ONSITE



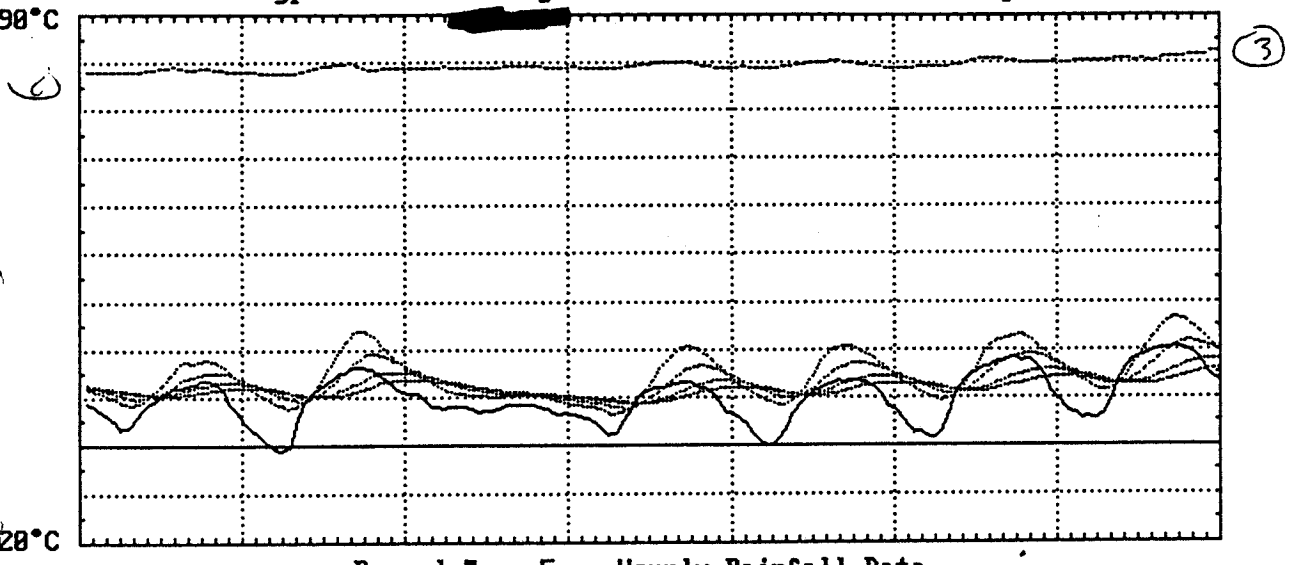
Initially MRC #1 still working but the readings are offset about 15°C. Then continues to drift higher

(1)

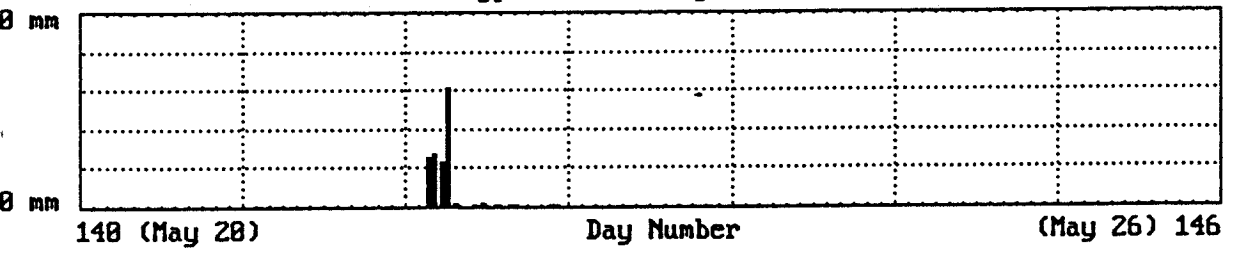


ONSITE

File Name: S:\LTPP\SMP\DATA\83SB95HF.ONS State: Manitoba
Record Type 5 & 6 - Hourly Air & First 5 MRC Sensor Temperatures

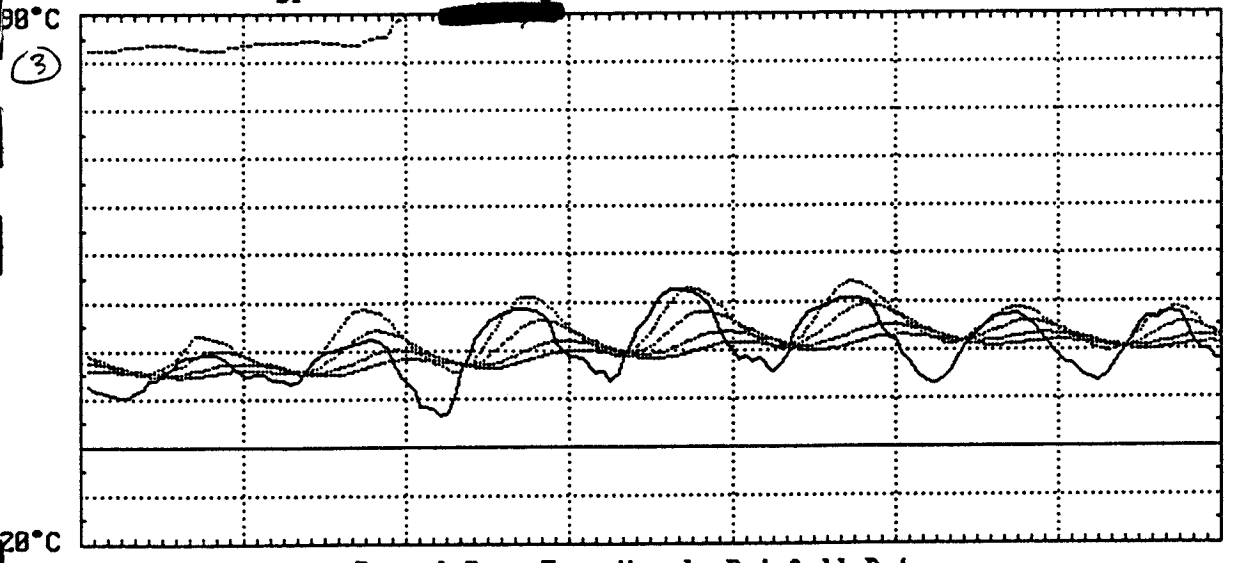


Record Type 5 - Hourly Rainfall Data



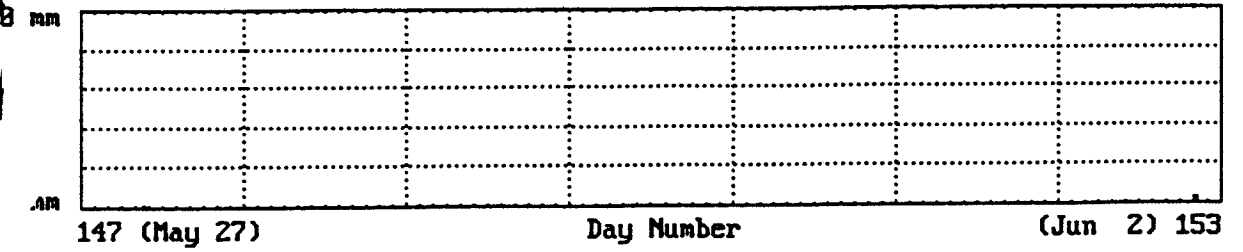
140 (May 20) Day Number (May 26) 146

File Name: S:\LTPP\SMP\DATA\83SB95HF.ONS State: Manitoba
Record Type 5 & 6 - Hourly Air & First 5 MRC Sensor Temperatures

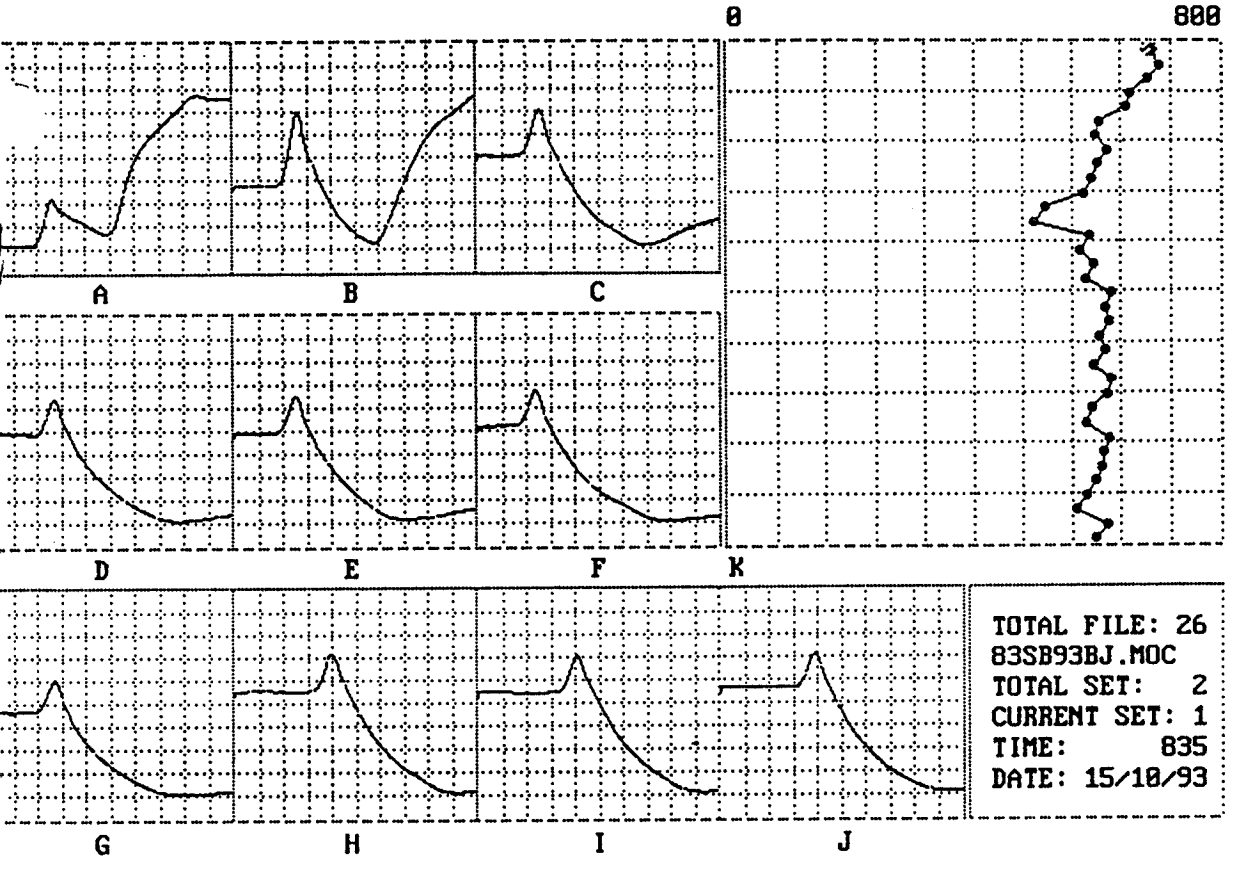


MRC #1 Never Comes back

Record Type 5 - Hourly Rainfall Data

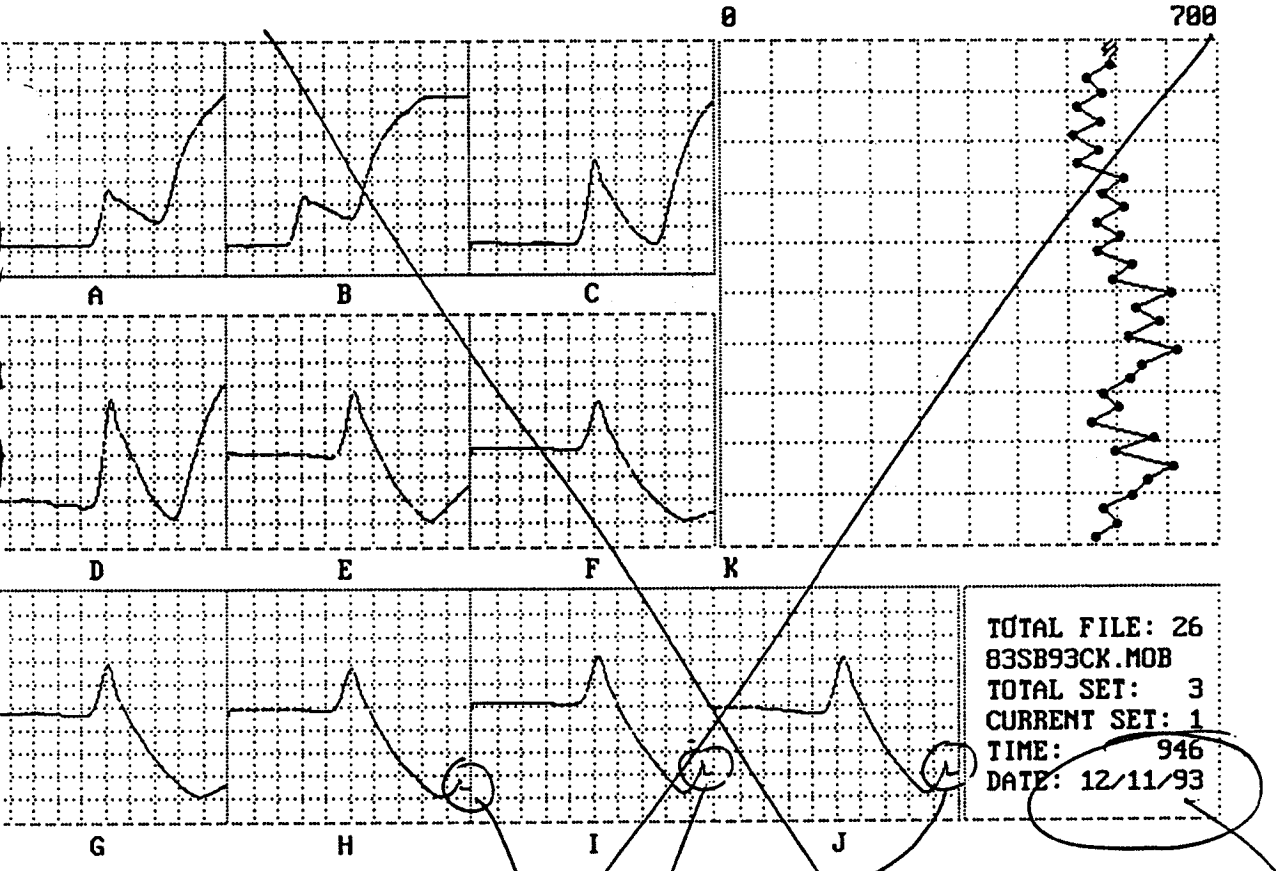


147 (May 27) Day Number (Jun 2) 153



ter=Curve to select (*): PgU/PgD=Prior/Next set: Ctrl+PgU/PgD=Prior/Next File

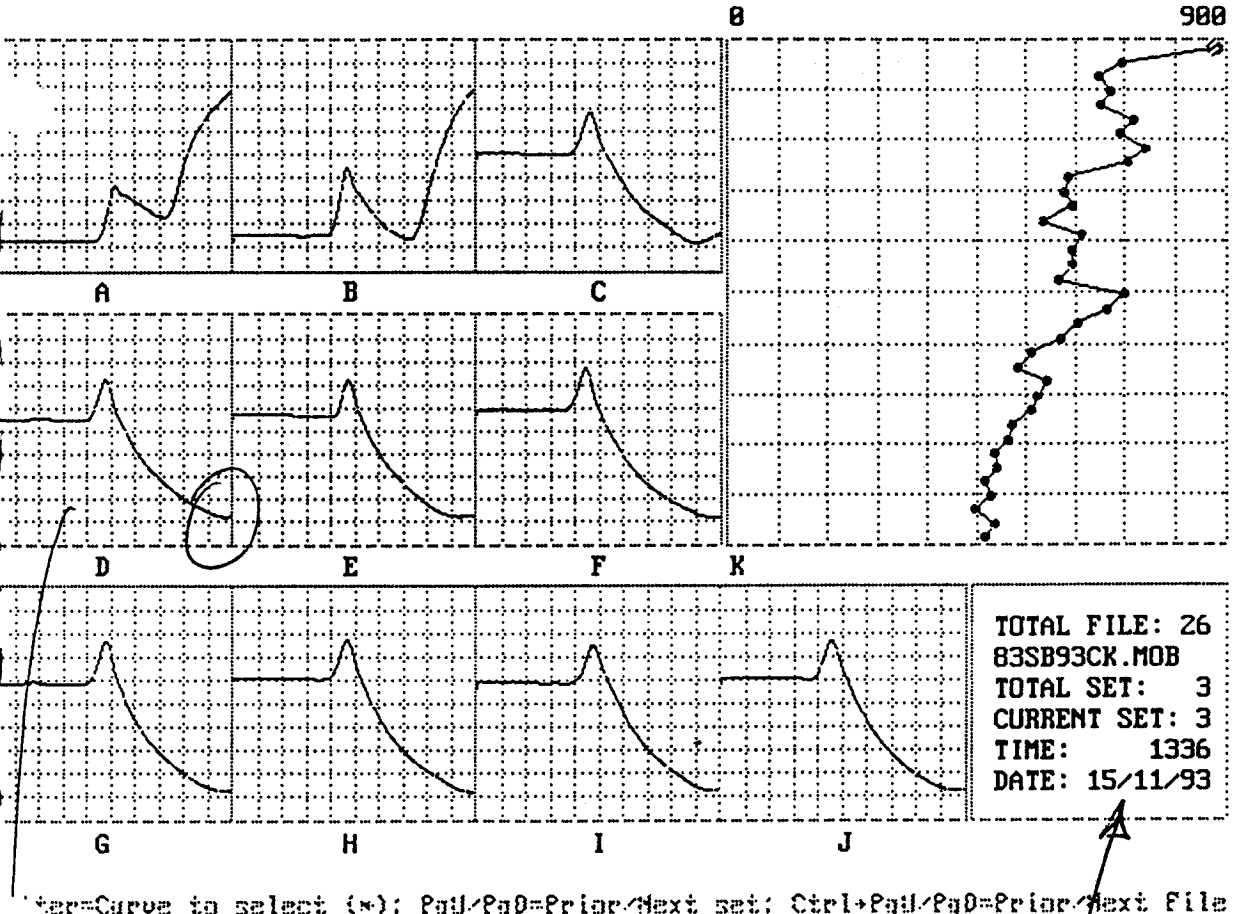
DAY AFTER INSTALL



— VERTICAL SHIFTS FROM 'COLD' CABLE READER

— DATA IS OKAY FOR IMS.

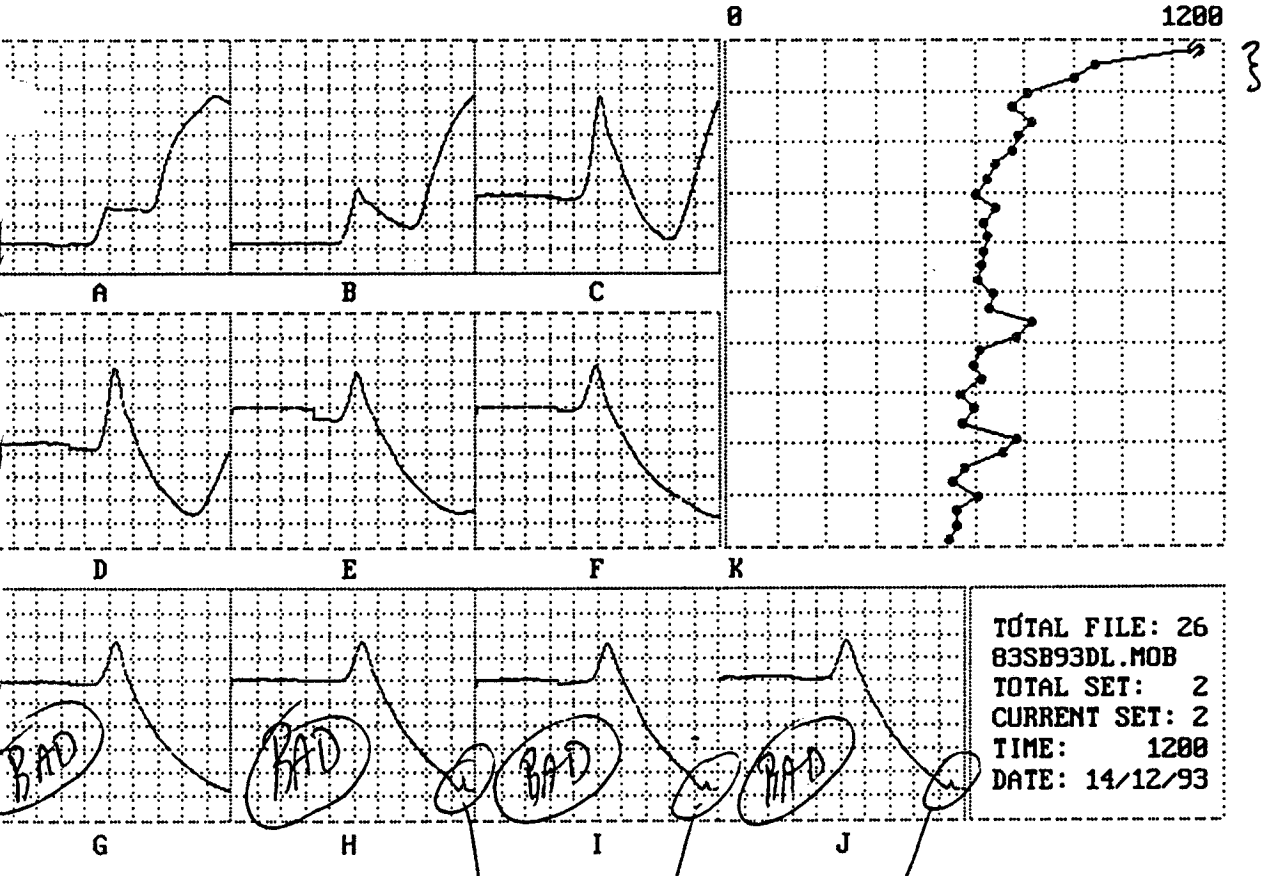
Delete all. This data is from 831801 ON 12-NOV-93. HOWEVER, MOBILE KEPT IT AS CONTINUOUS DATA ON SITE 833802 ON 15-NOV-93,



AT 835B ON 15-NOV-93

— ONLY DATA SET 3/3 IS AT 833807.

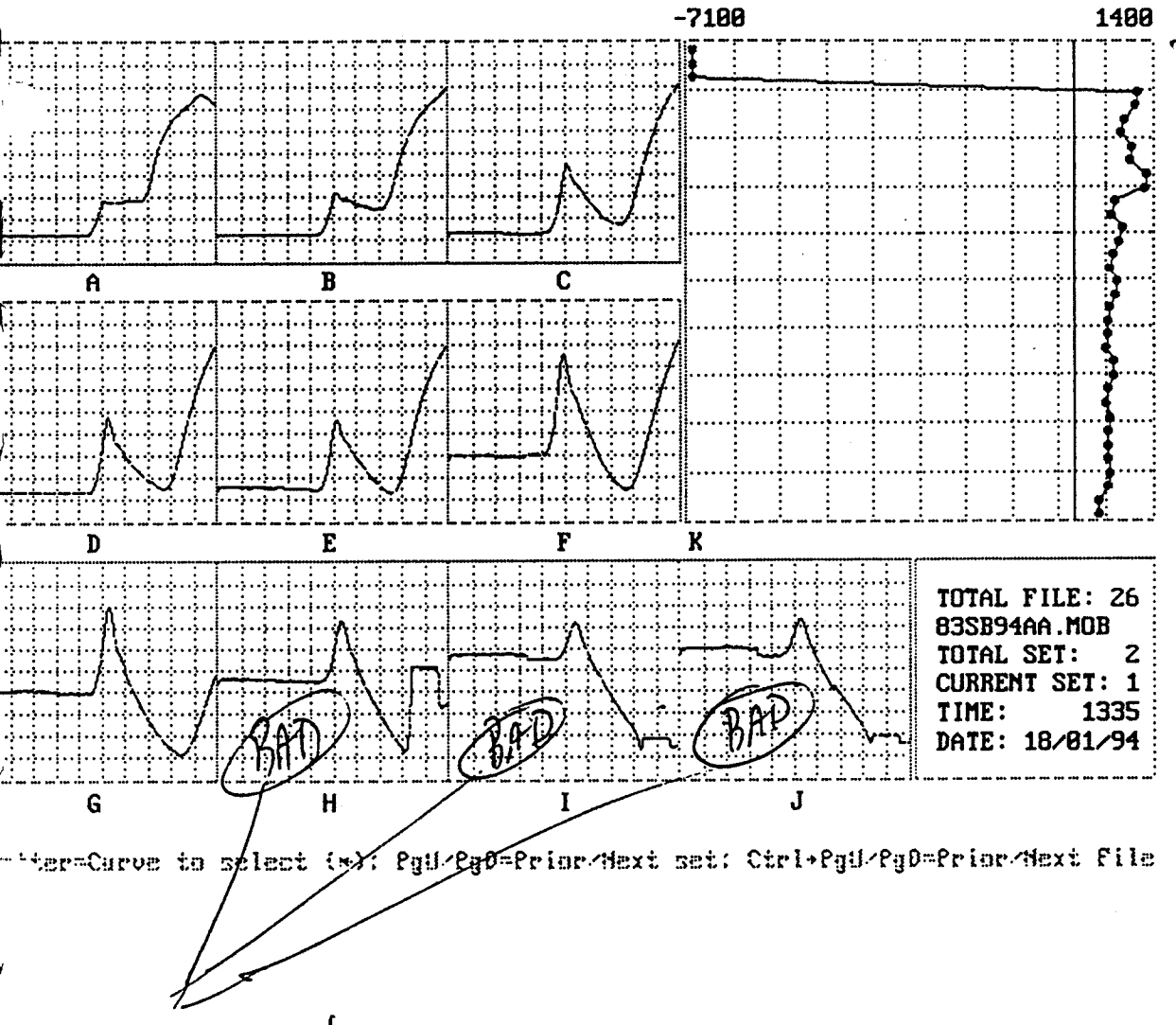
→ FHWA/TAC ADVISE
— NO SECOND INFLECTION POINT.
— CAN SAY A MINIMUM MOISTURE BUT NOT AN ACTUAL MOISTURE.



} FROST IN BASE

— VERTICAL SHIFTS FROM 'COLD' CABLE READER

- FIRST SET OKAY (SET 1/2)



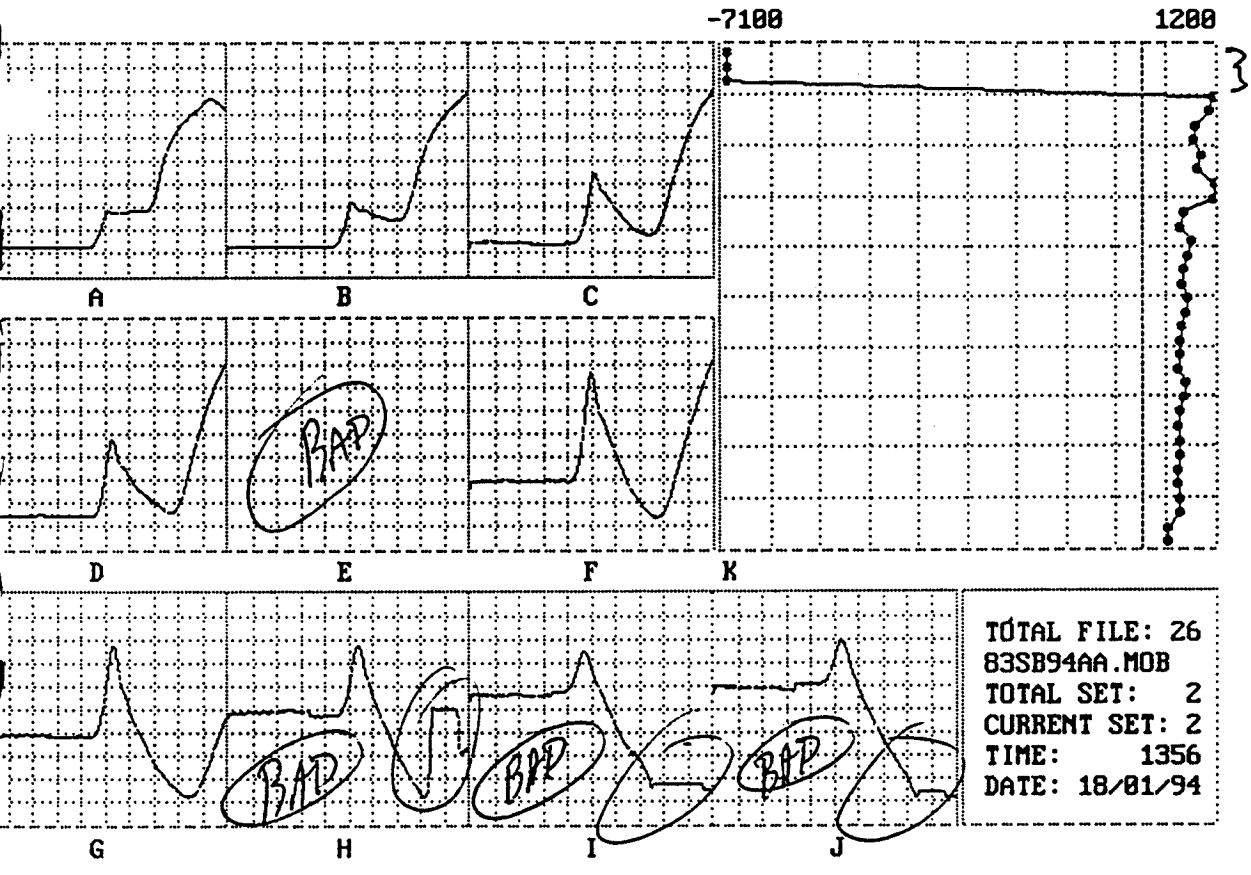
FHWA/TAC ADVISE

ASSIGN -6999 to +3000

OR IS THIS A CRREL FAILURE

'COLD' CABLE READER PROBLEM

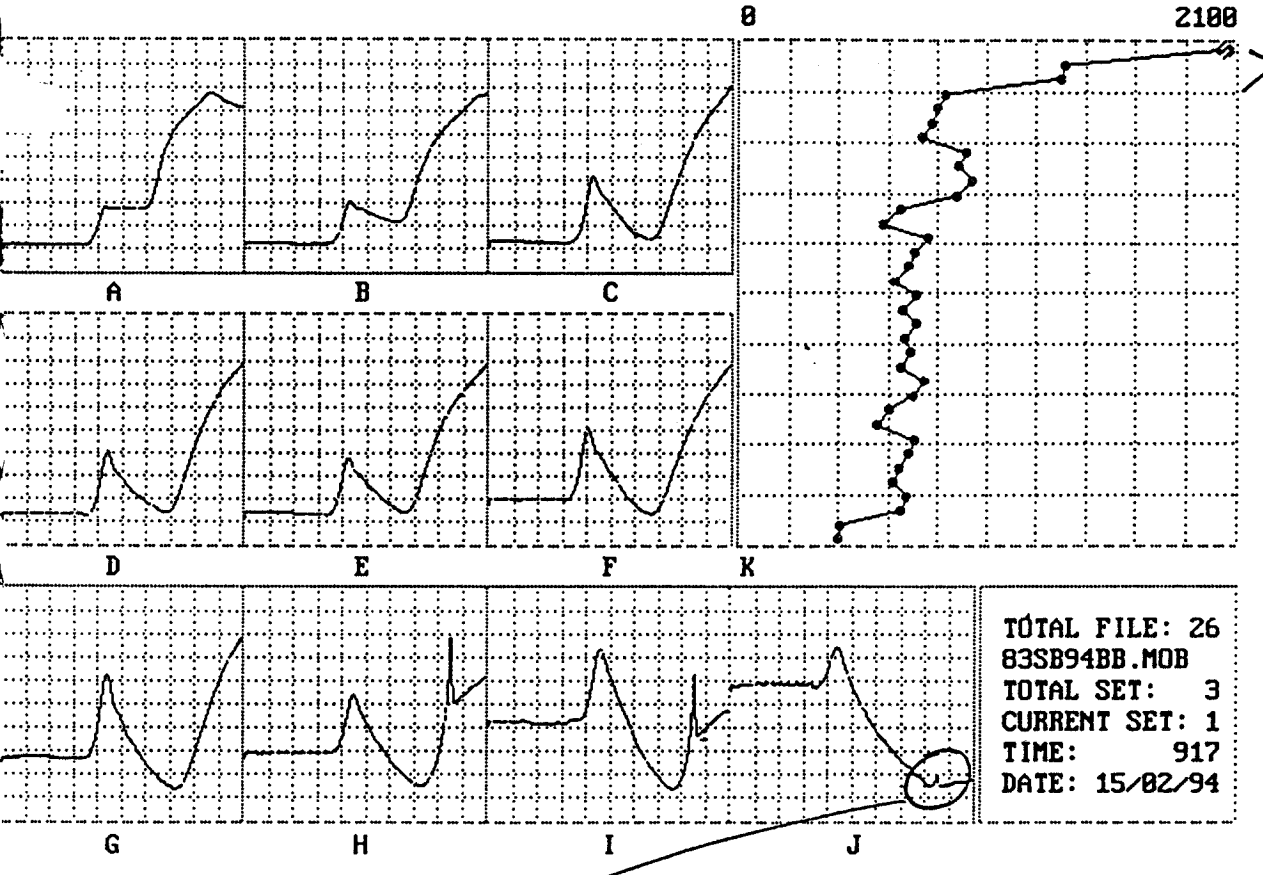
EXTREMELY COLD AT SITE (-37°C)



FHWA/TAC ADULSE - ASSIGN TO -1 OR +3000 ?

'er=Curve to select (↵): PgU/PgD=Prior/Next set: Ctrl+PgU/PgD=Prior/Next File

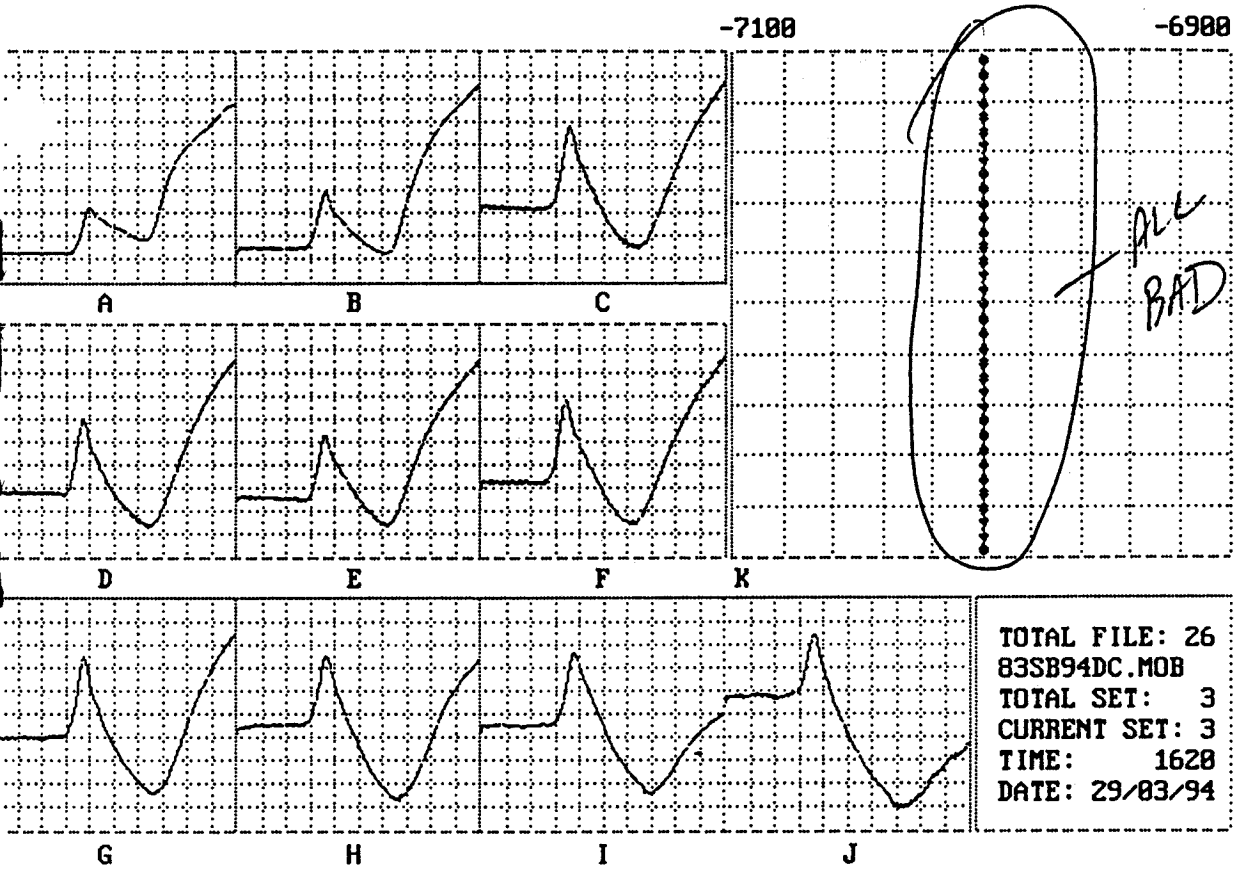
'COLD' CABLE READER - -37°C @ SITE



ter=Curve to select (↕): PgU/PgD=Prior/Next set: Ctrl+PgU/PgD=Prior/Next File

FHWA/TAC ADVISE — HOW WILL ALGORITHM PICK SECOND INFLECTION POINT ?

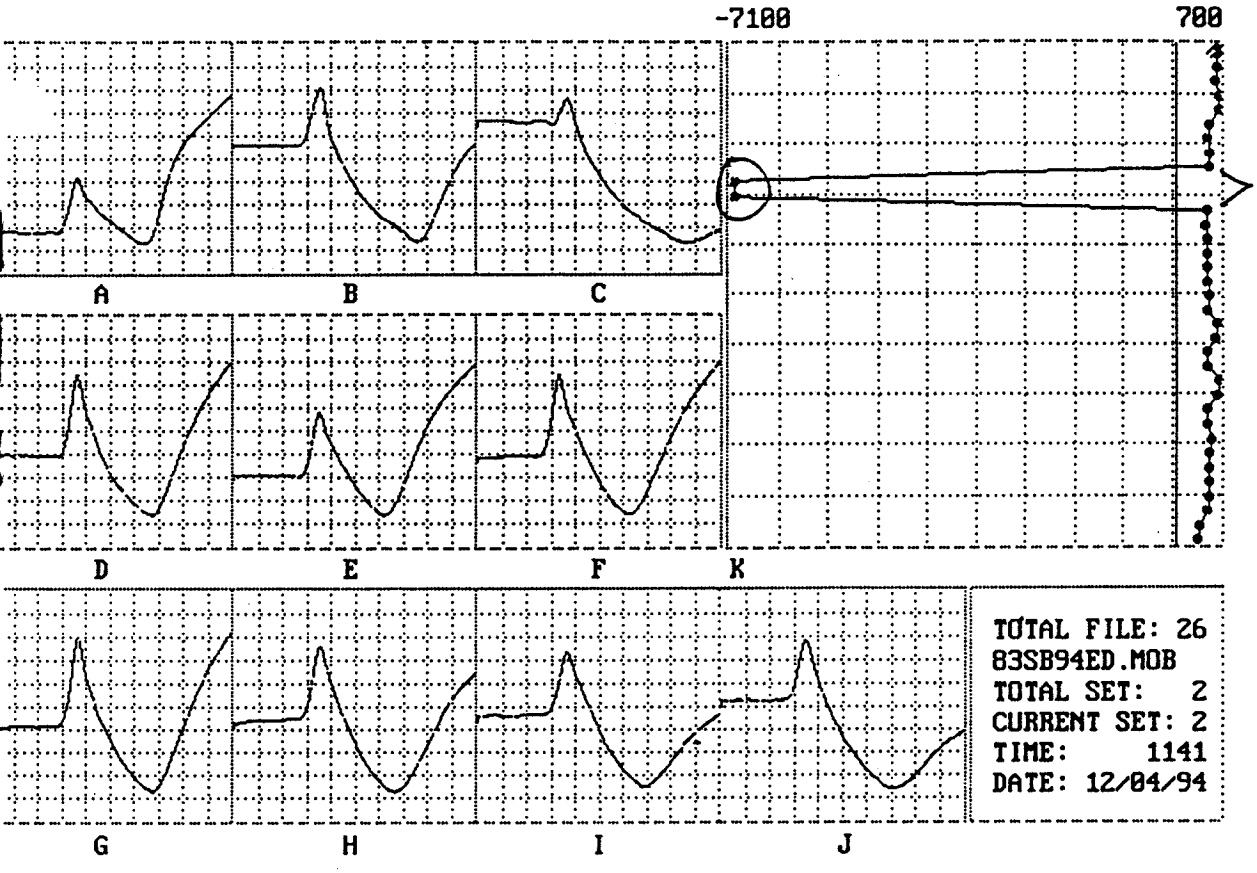
← 'COLD' TEMPERATURE PROBLEM WITH CABLE READER



'ter=Curve to select (↵): PgU/PgD=Prior/Next set: Ctrl+PgU/PgD=Prior/Next File

NO PROBE OR CARE FAIL ?

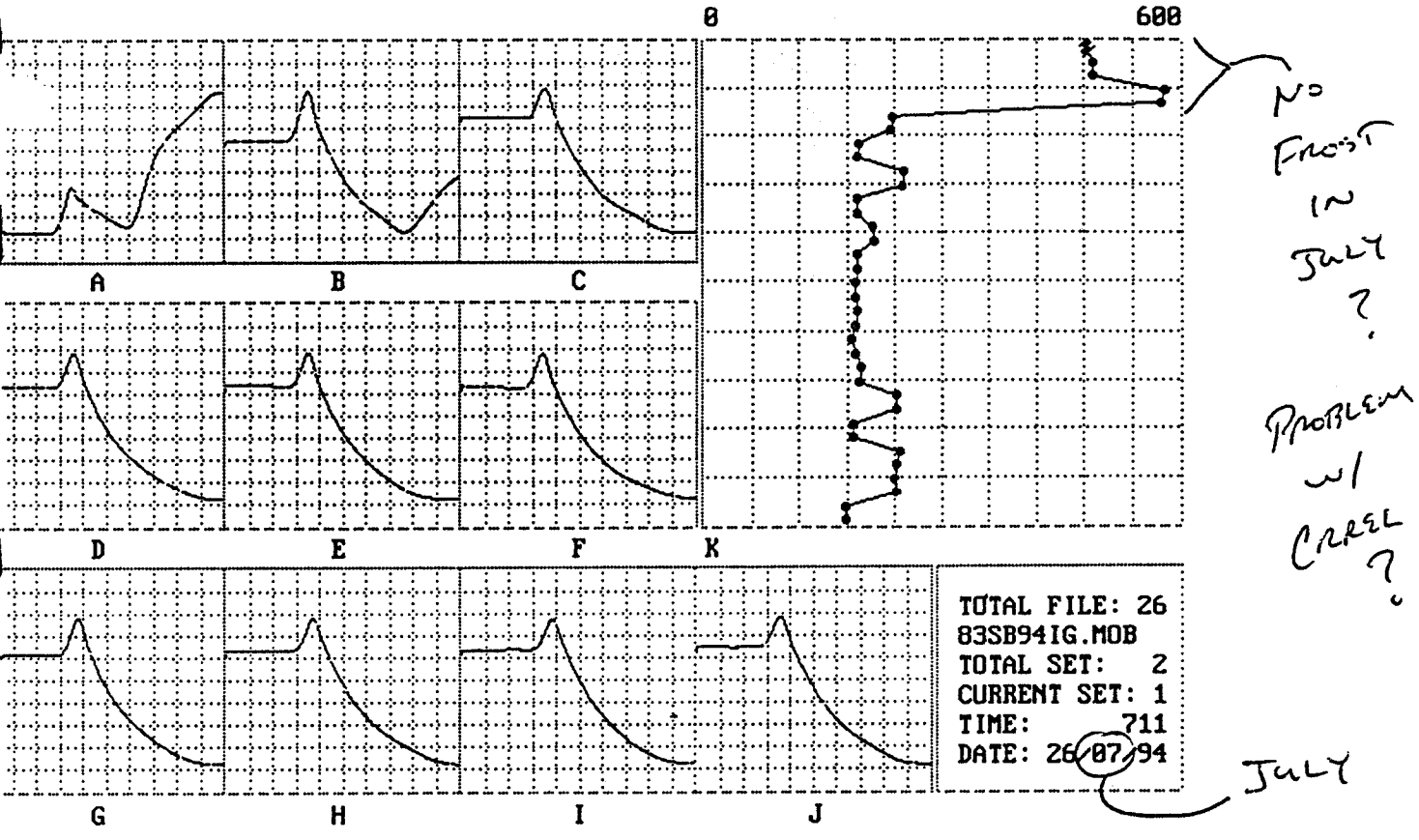
FIRST TWO SETS WERE OKAY



ASSIGN -6999 to -1

CURSOR FALL ON POSITION 10/11 -

'ter=Curve to select (*); PgU/PgD=Prior/Next set: Ctrl+PgU/PgD=Prior/Next File

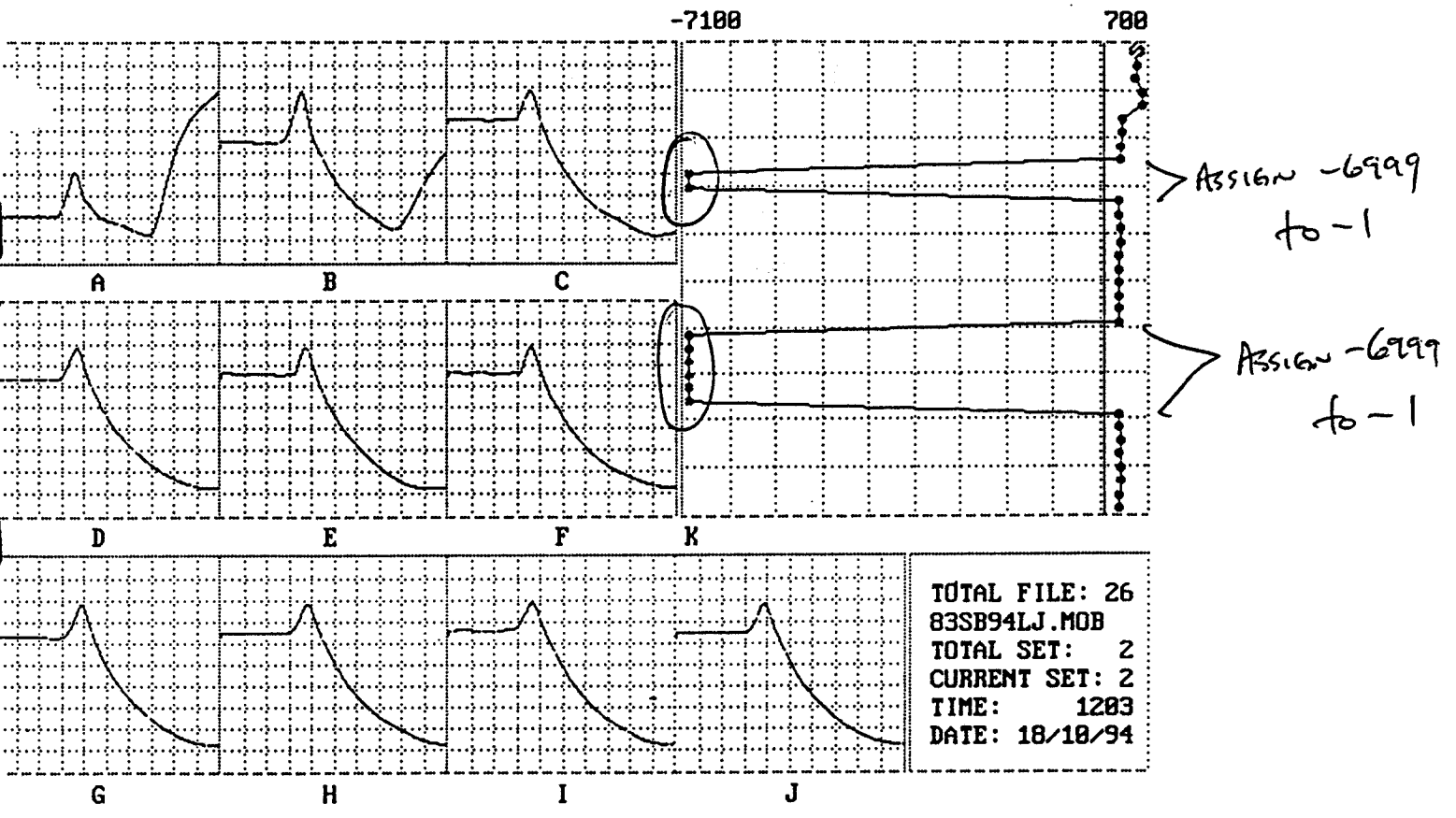


No Frost in July ?

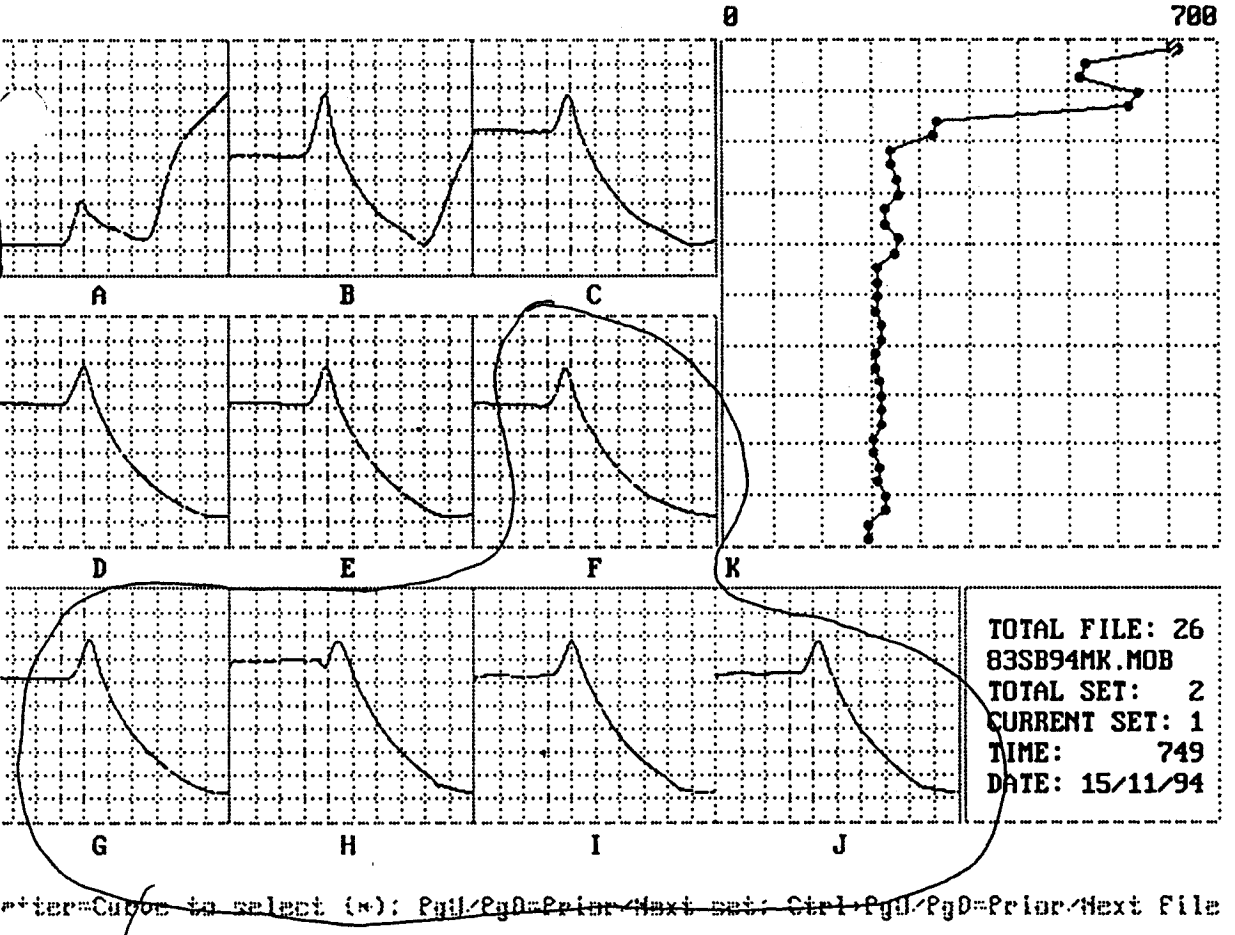
Problem w/ Creel ?

July

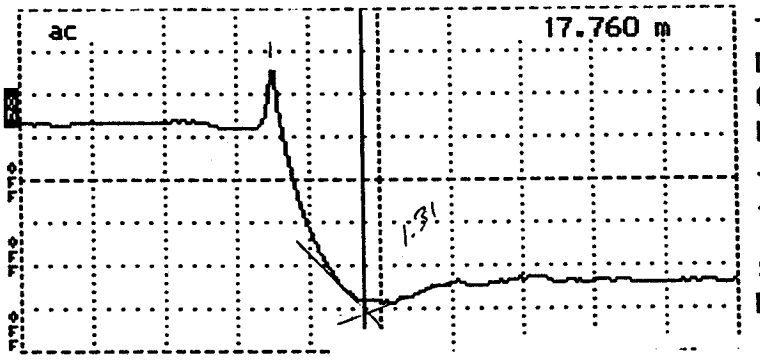
ber=Curve to select (↵); PgU/PgD=Prior/Next set: Ctrl+PgU/PgD=Prior/Next File



ter=Curve to select (*): PgU/PgD=Prior/Next set: Ctrl+PgU/PgD=Prior/Next File



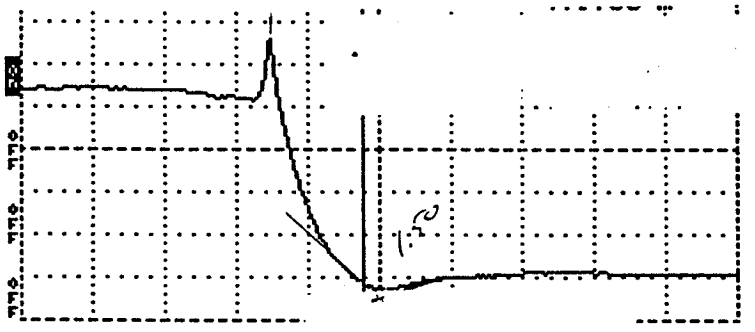
COMPARE TO MANUAL TRACES (PROBE 5 - 11)



..... 17.760 m
Y..... 1 m/div
ale.... 103 mΩ/div
..... 0.99
..... 1 avg
..... ac

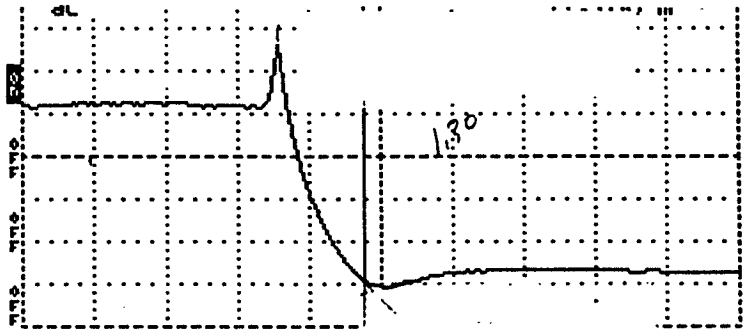
changed to get flat tail on trace

Tektronix 1502B TDR
Date NOV-15-94
Cable #5 833802
Notes
Input Trace
Stored Trace
Difference Trac



Iiv..... 1 m/div
:ale.... 103 mΩ/div
..... 0.99
er..... 1 avg
..... ac

Tektronix 1502B TDR
Date NOV-15-94
Cable #6 833802
Notes
Input Trace
Stored Trace
Difference Trace

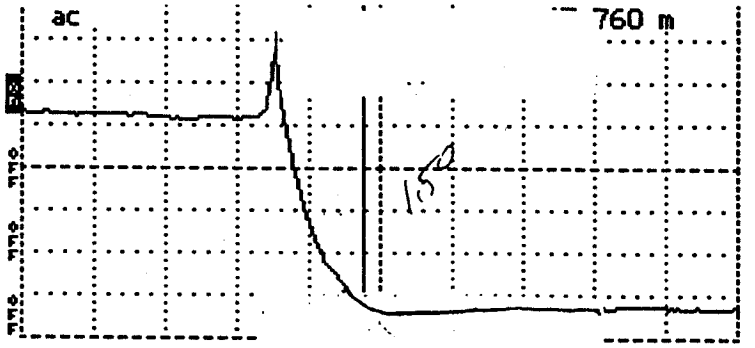


..... 17.760 m
Div..... 1 m/div
Scale.... 103 mΩ/div
..... 0.99
ter..... 1 avg
..... ac

Tektronix 1502B TDR
Date NOV-15-94
Cable #7 833802
Notes
Input Trace
Stored Trace
Difference Trac

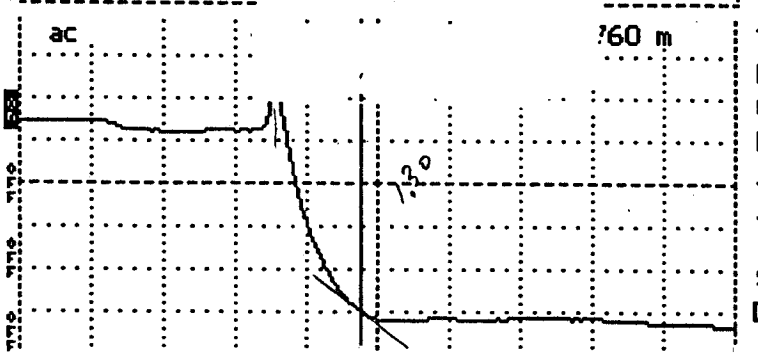
..... 17.760 m
Div..... 1 m/div
Scale.... 103 mΩ/div
..... 0.99
ter..... 1 avg
..... ac

Tektronix 1502B TDR
Date NOV-15-94
Cable #8 833802
Notes
Input Trace
Stored Trace
Difference Trac



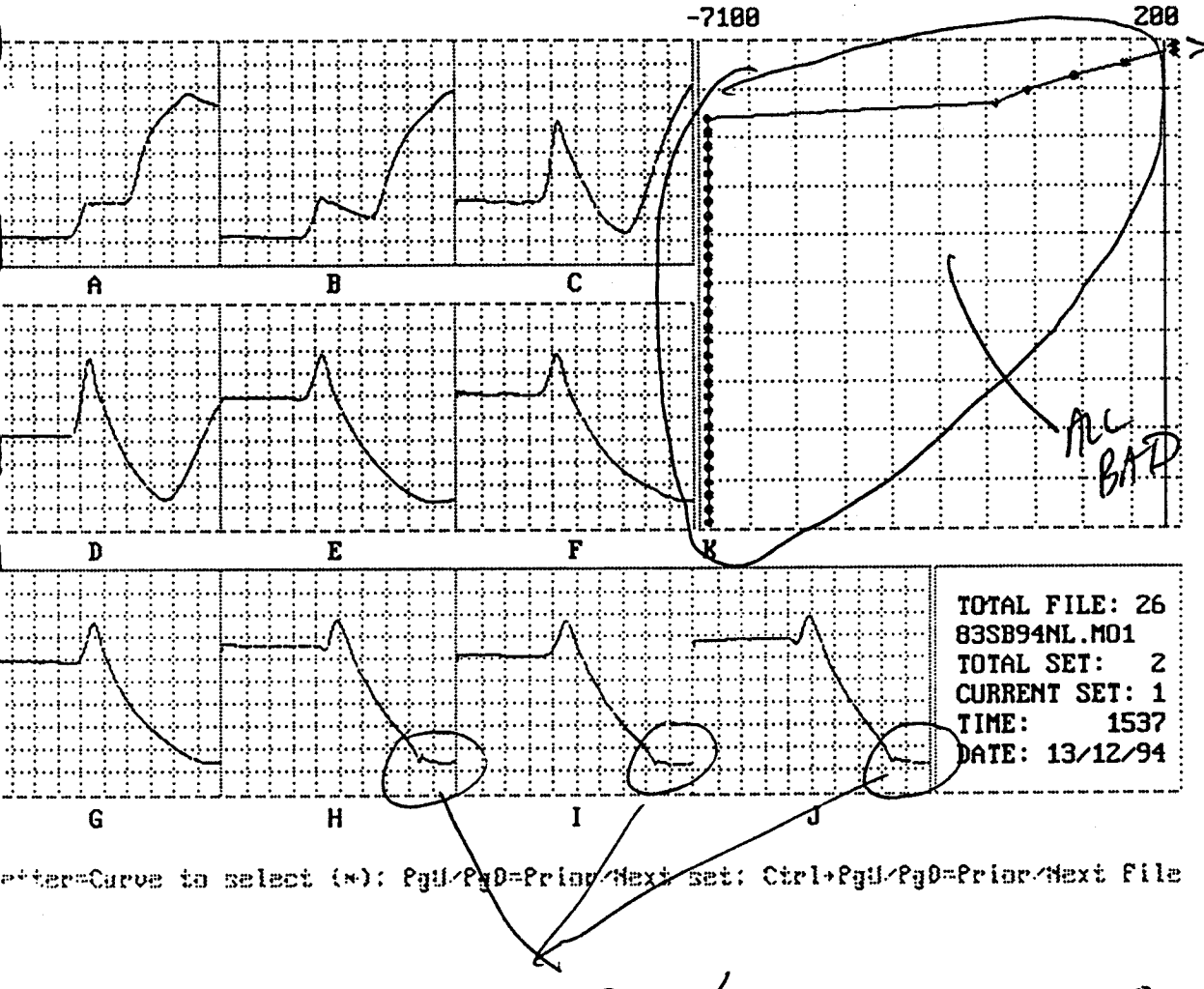
..... 17.760 m
Div..... 1 m/div
Scale.... 103 mΩ/div
..... 0.99
ilter..... 1 avg
..... ac

Tektronix 1502B TDR
Date NOV-15-94
Cable #9 - 833802
Notes
Input Trace
Stored Trace
Difference Trac



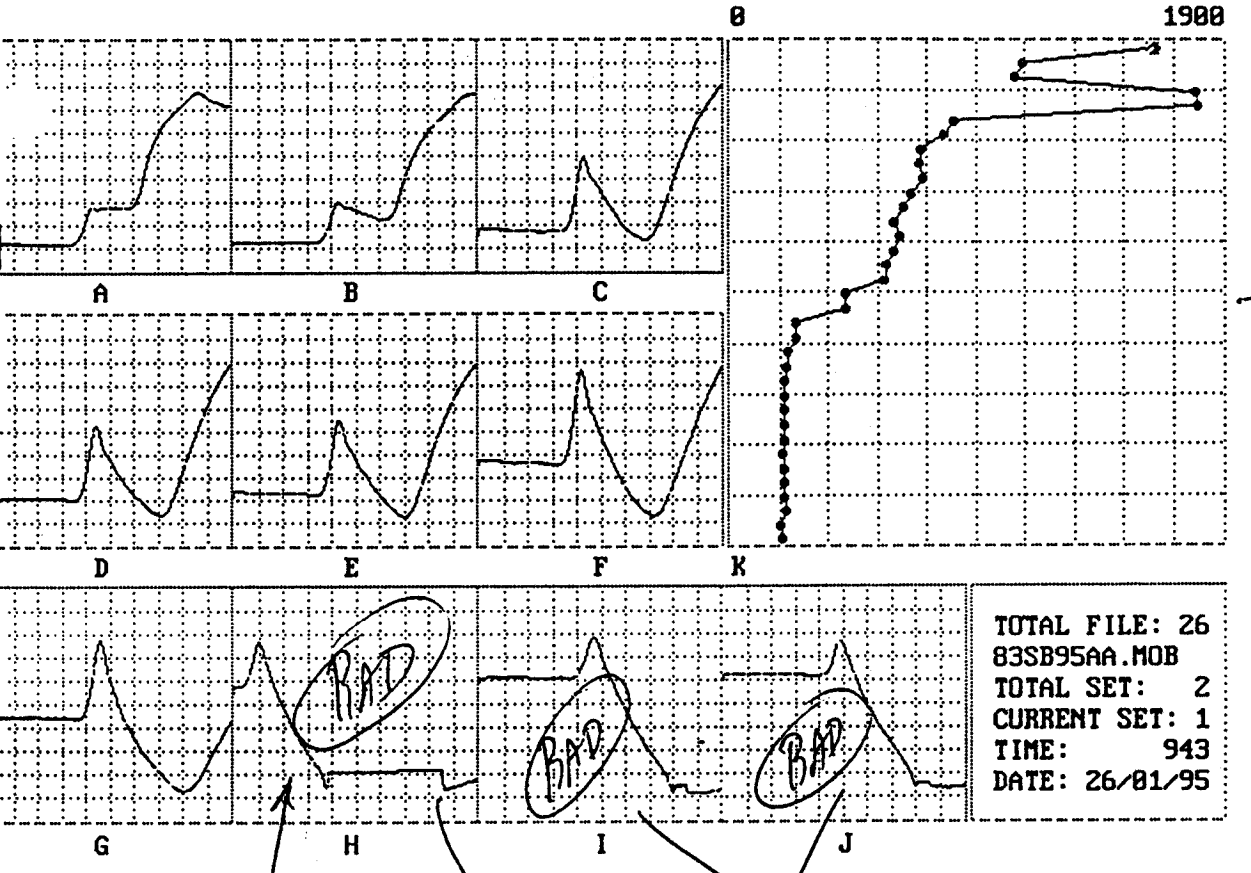
..... 17.760 m
/Div..... 1 m/div
Scale.... 103 mΩ/div
..... 0.99
lter..... 1 avg
..... ac

Tektronix 1502B TDR
Date NOV-15-94
Cable #10 - 83380
Notes
Input Trace
Stored Trace
Difference Trac



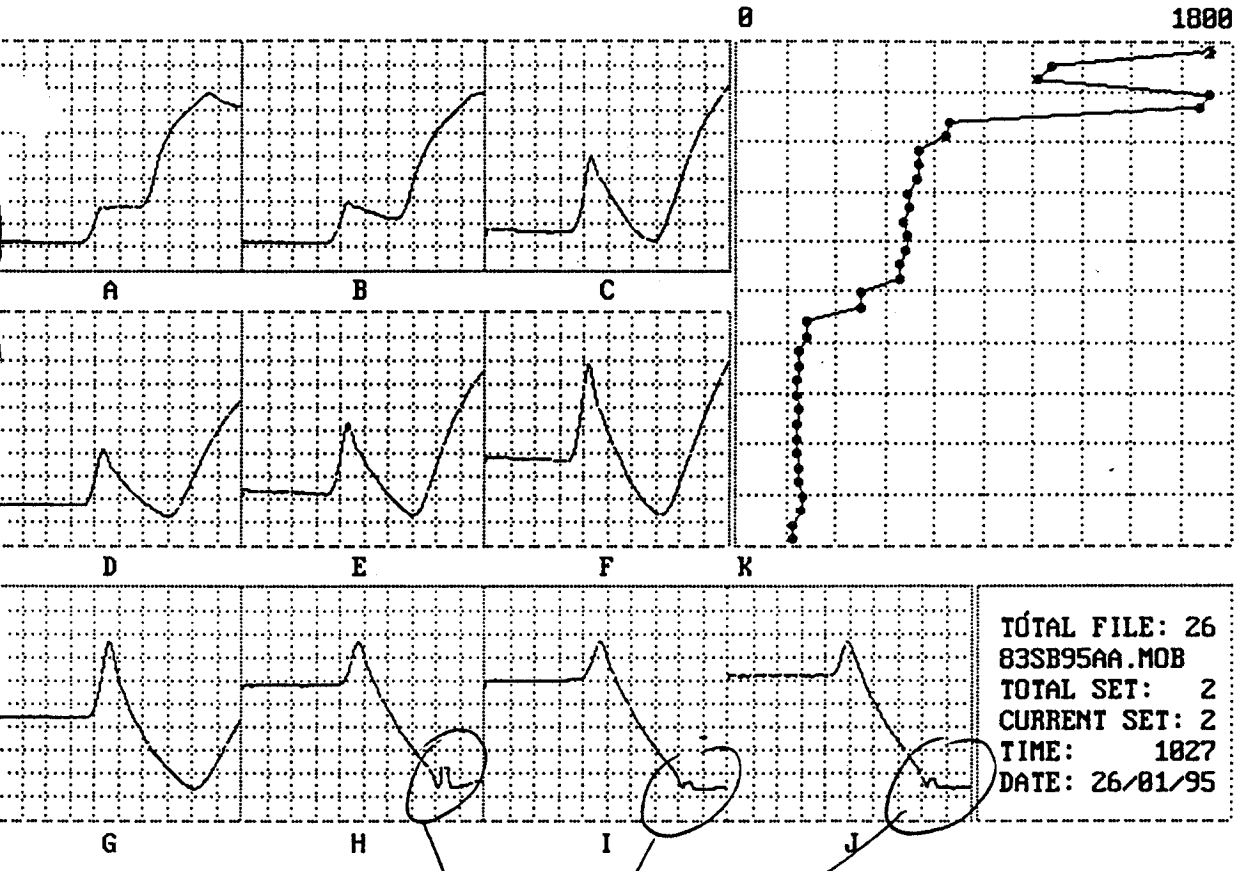
FHWA/TAC ADVISE – GOOD/BAD?

('COLD' PROBLEM WITH CABLE READER)



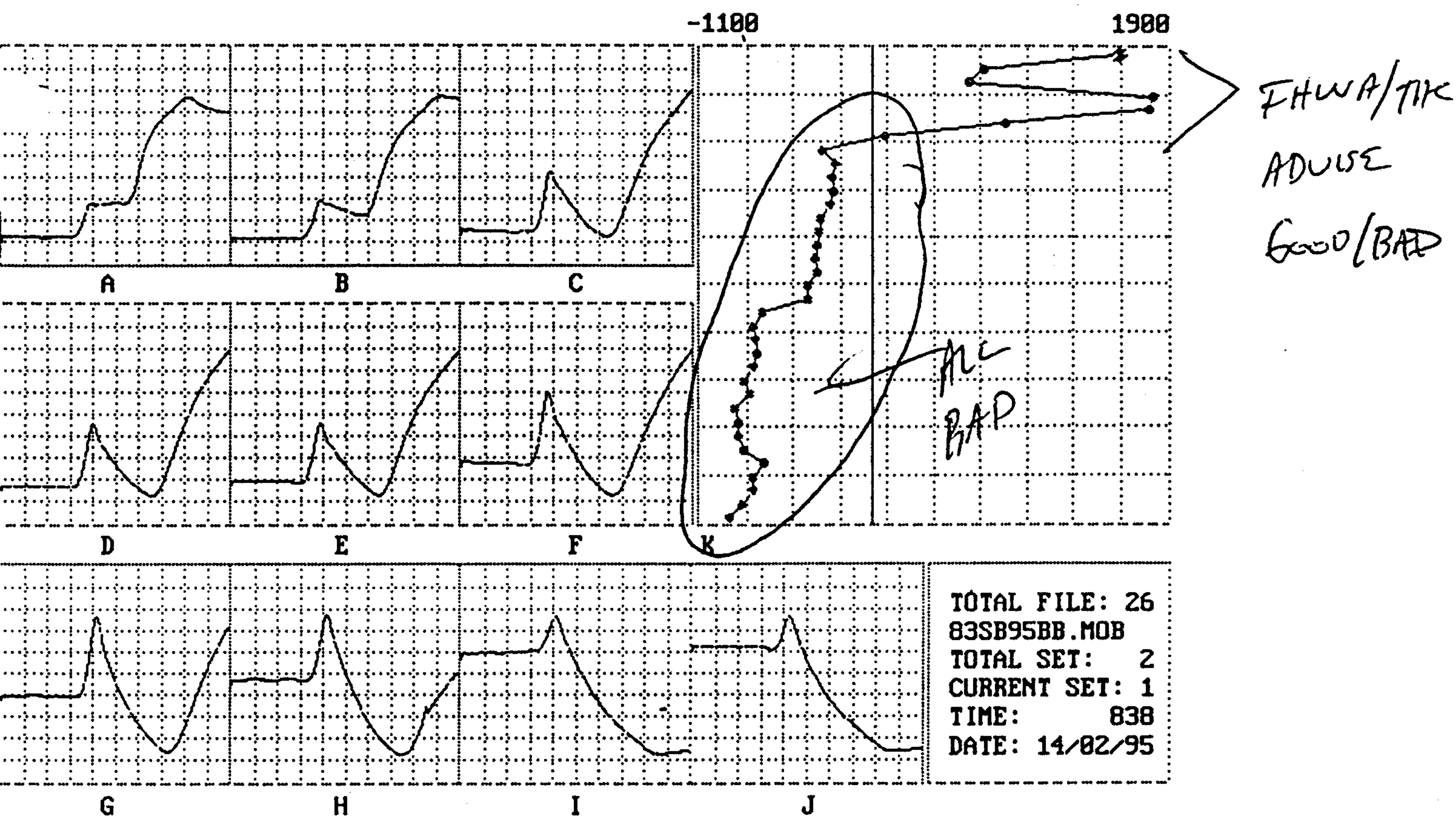
COLD PROBLEM WITH CABLE READER

SHIFTER LEFT 1.0 METER FROM 'NORMAL' LOCATION. OTHER NINE PROBES THE SAME!?

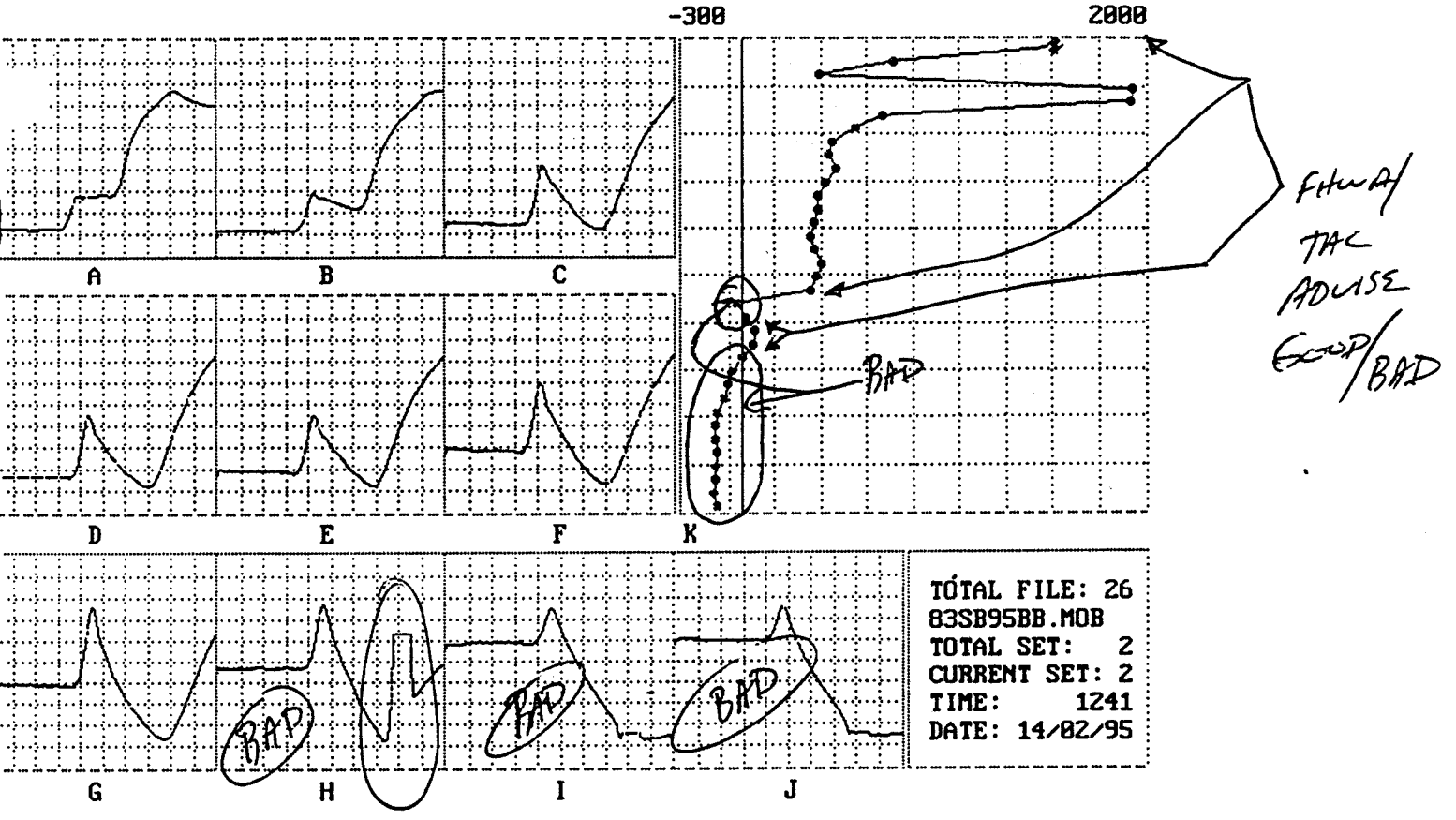


ter=Curve to select (↵): PgU/PgD=Prior/Next set; Ctrl+PgU/PgD=Prior/Next File

FHwA/TAC ADVISE ?

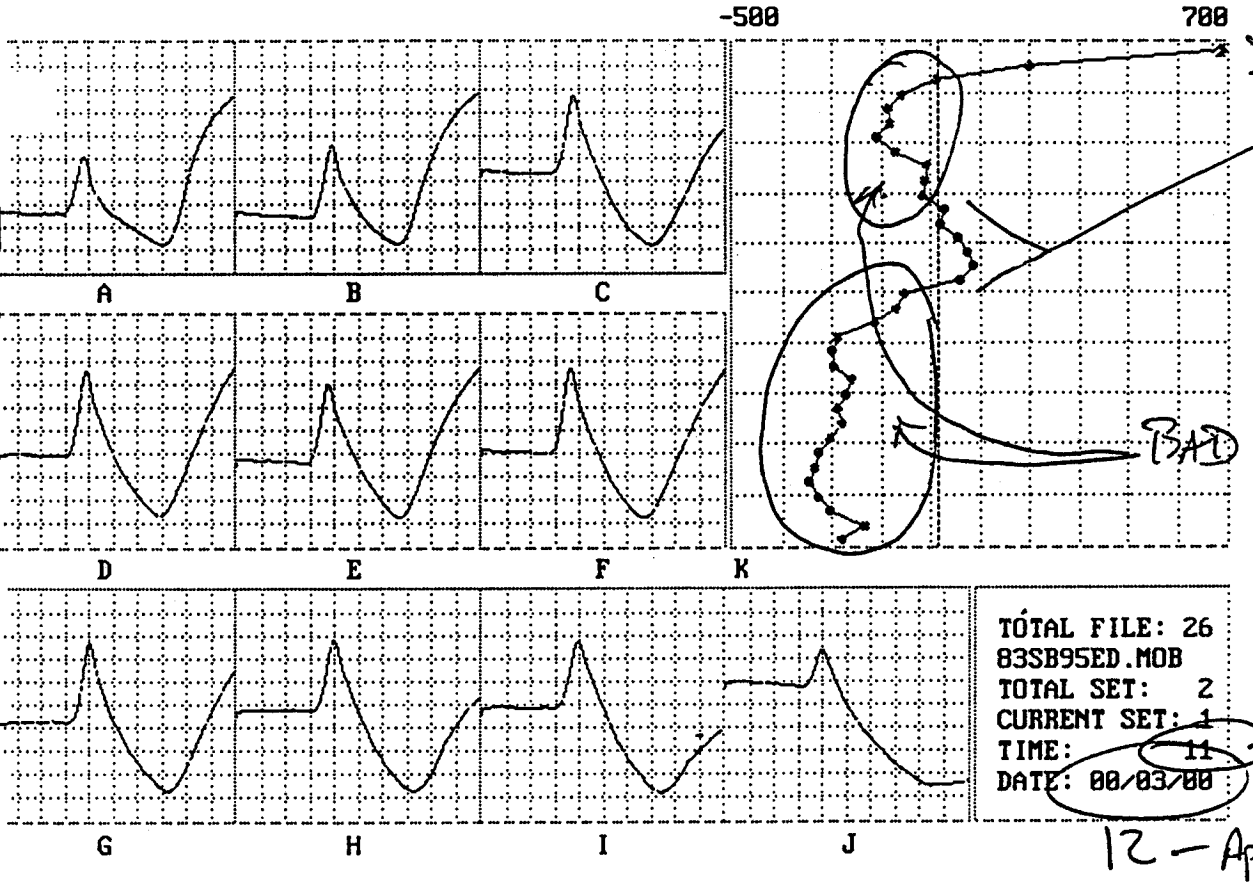


Enter=Curve to select (*): PgU/PgD=Prior/Next set: Ctrl+PgU/PgD=Prior/Next File



er=Curve to select (↵): PgU/PgD=Prior/Next set: Ctrl+PgU/PgD=Prior/Next File

VERTICAL SHIFT FROM 'COLD' CABLE HEATER



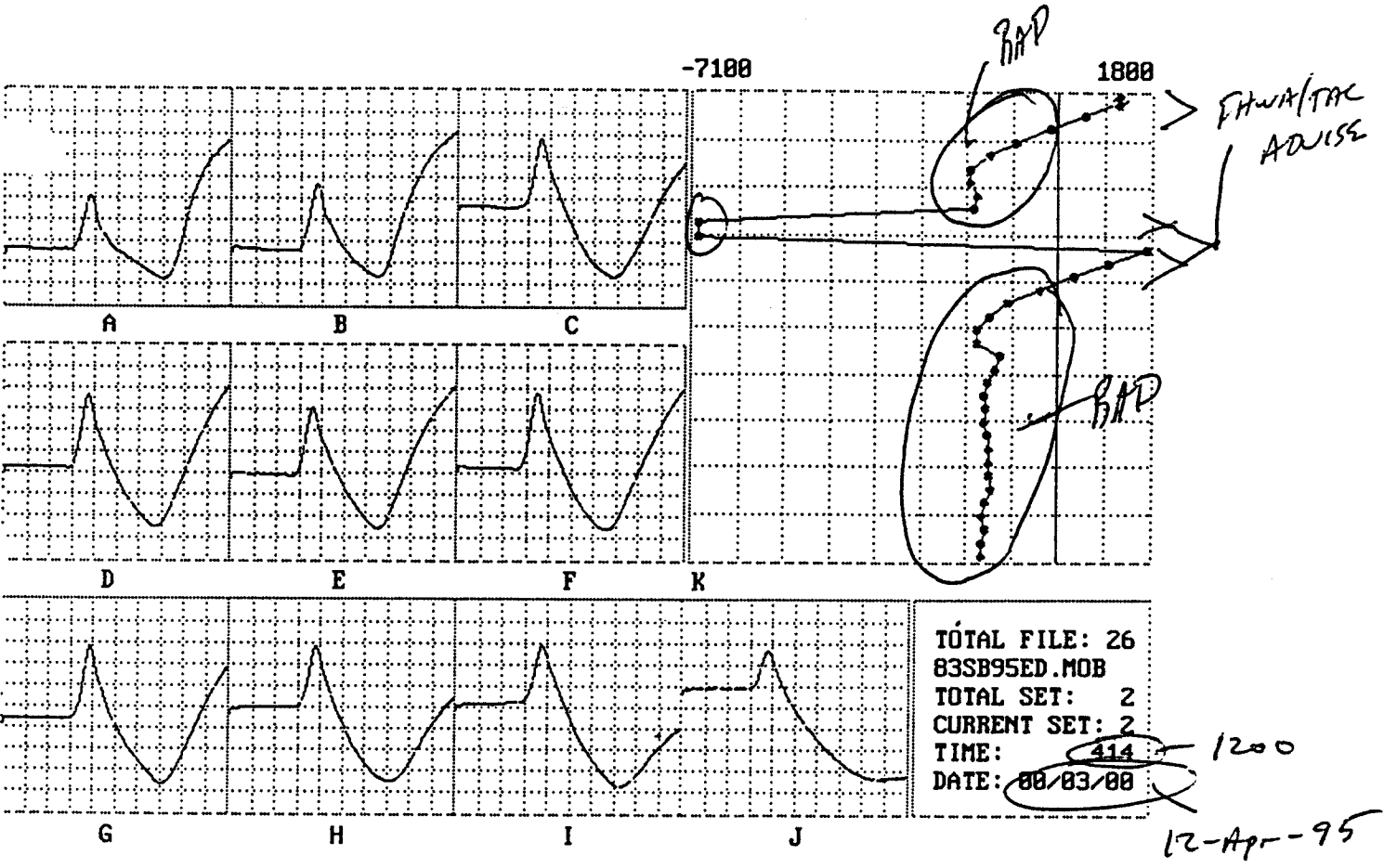
TOTAL FILE: 26
83SB95ED.MOB
TOTAL SET: 2
CURRENT SET: 1
TIME: 11
DATE: 00/03/00

Time? 0800

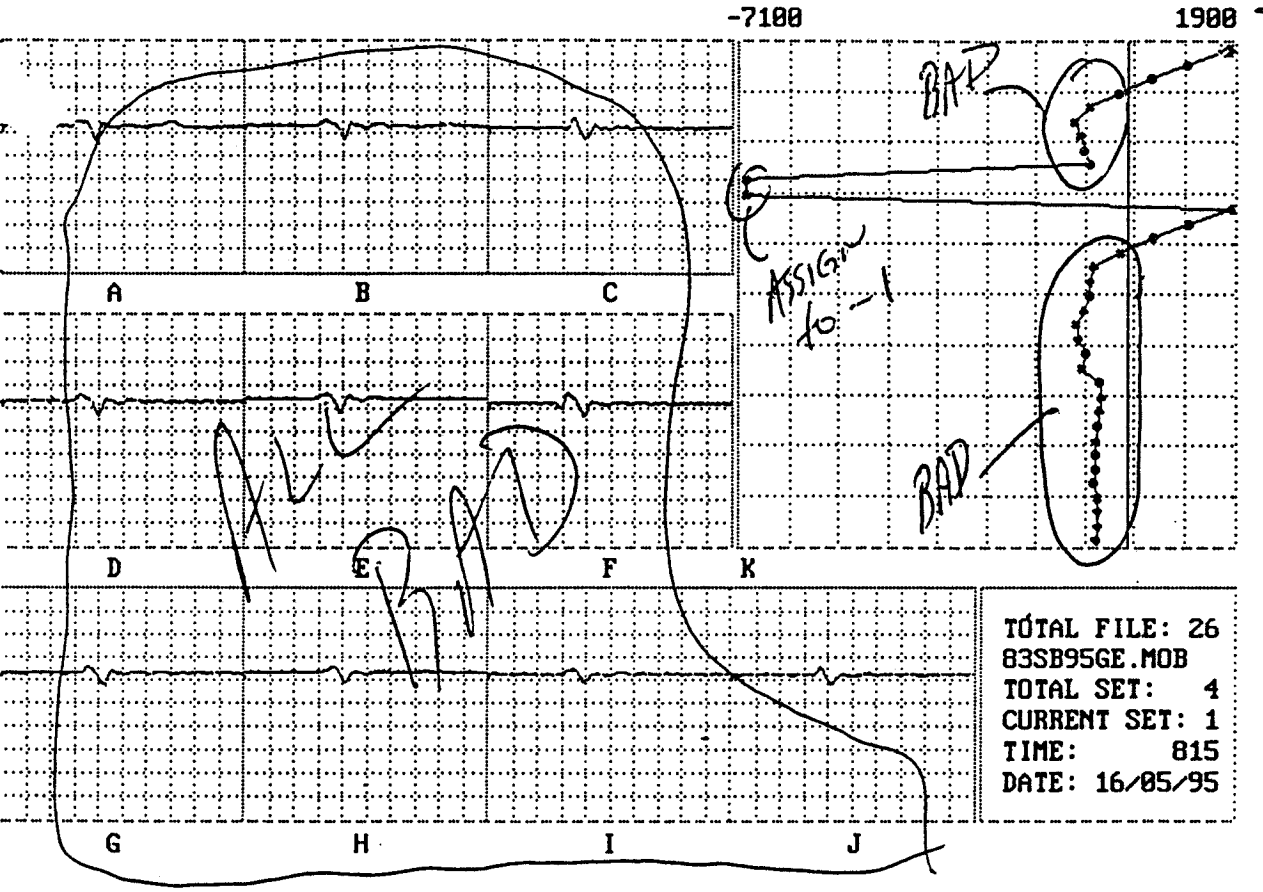
12-Apr-95

er=Curve to select (*): PgU/PgD=Prior/Next set: Ctrl+PgU/PgD=Prior/Next File

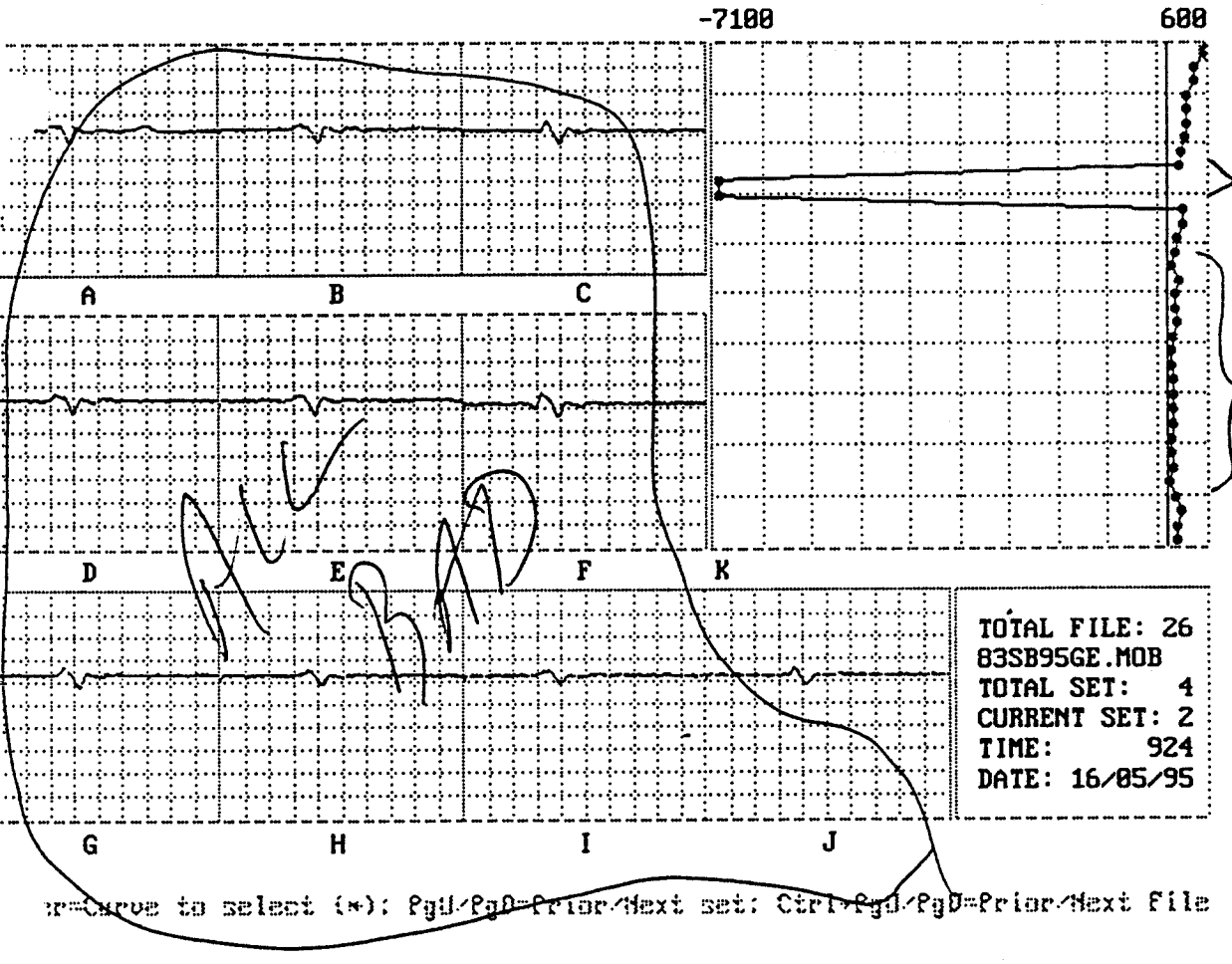
CAIO CLOCK NOT SET



Enter=Curve to select (↵): PgU/PgD=Prior/Next set: Ctrl+PgU/PgD=Prior/Next File

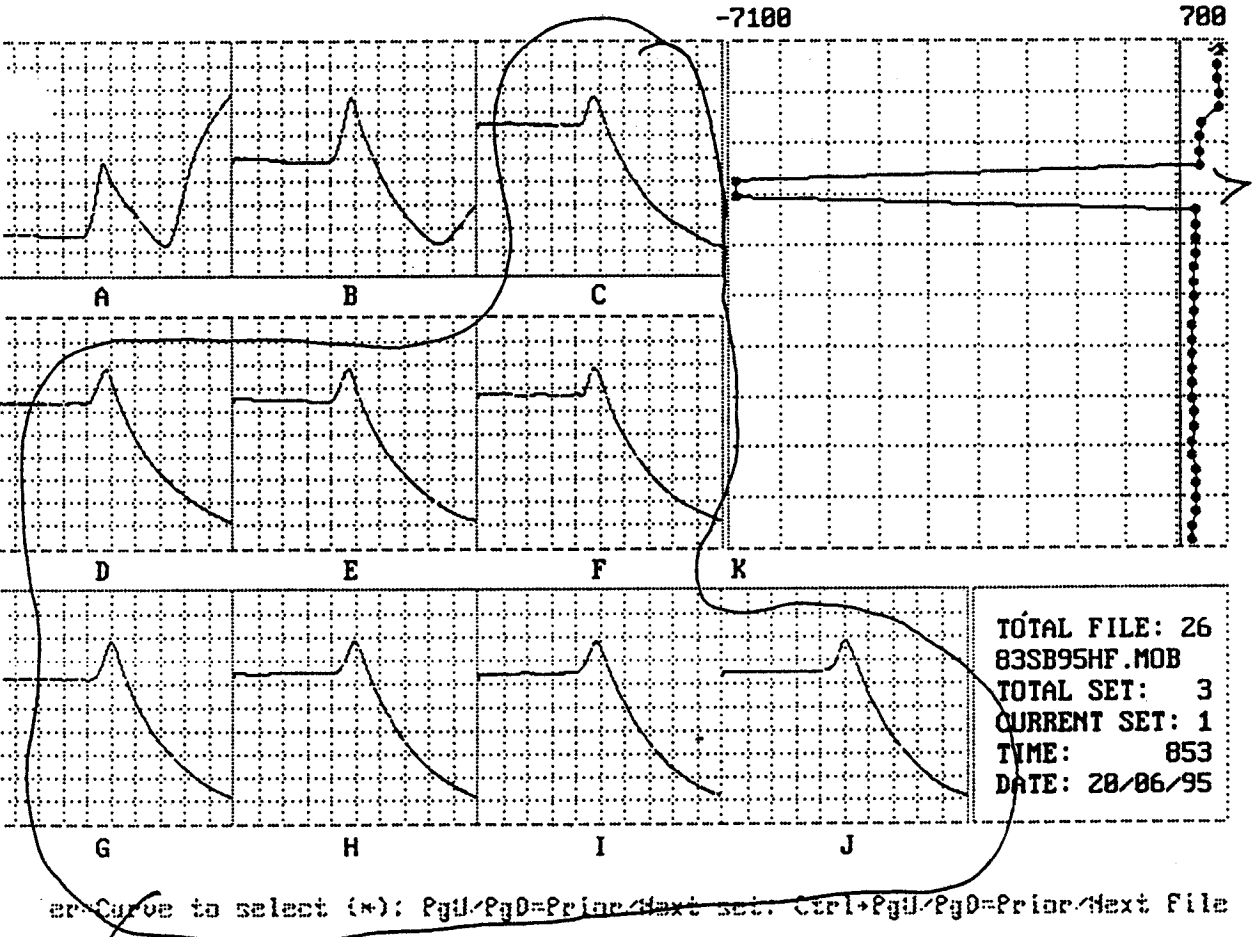


BAD CONNECTON ON FRONT PANEL OF CABLE READER?



ASSIGN -6999 to -1

CHECK FOR NO NEGATIVE NUMBERS



ASSIGN -6999 to -1

FHWA/TAC ADVISE — SHIFTED AND NO 2ND POINT?

CHECK WITH FIELD STAFF

- OLD MOBILE W/ DEFAULT LENGTHS
- MAY BE ON AGENCY COMPUTER?
- TRAINING ON 'ONSITE' DATA COLLECTION?

- SAME OBSERVATION ON 83/80/