

FINAL REPORT ON FORENSIC STUDY  
FOR SECTION 390101 OF OHIO SHRP  
U.S. 23 TEST PAVEMENT

OHIO DEPARTMENT OF TRANSPORTATION and  
FEDERAL HIGHWAY ADMINISTRATION

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SECTION 390101 OF OHIO SHRP U.S. 23 TEST PAVEMENT**

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**PRELIMINARY REPORT ON FORENSIC STUDY FOR  
SECTION 390101 OF OHIO SHRP U.S. 23 TEST PAVEMENT**

**INTRODUCTION**

The forensic study for Section 390101 of the Ohio-SHRP U.S. 23 Test Road was conducted from July 8 to 10, 1997. The main objective of the investigation was to obtain critical data relevant to the performance and cause of excessive rutting at a limited number of locations of this section. Most of the parameters that were monitored during the forensic study were essential for evaluation of the performance of this section at a future date. For instance, rutting could take place due to the poor mix design or permanent deformation in the base or subgrade or a combination of all three. This study was designed to determine the possible causes of rutting and any other distress that occurred in the pavement system.

**MATERIALS AND CONSTRUCTION**

The following information provides a description of the pavement structure and construction process:

Asphalt Concrete (AC) Pavement - Design thickness                      7.0 in.  
(See Appendix A for AC mix design and field testing)

Dense Graded Aggregate Base - Design thickness                      8.0 in.  
(See Appendix B for material sampling and field testing)

Test Sieve	% Pass	Washed Sieve	% Pass
4		#8	21%
3.5		#10	
3		#16	15%
2.5		#30	12%
2	100%	#40	11%
1.5	99%	#50	10%
1	87%	#70	
3/4	75%	#100	9%
1/2	55%	#200	7.6%
3/8	46%		
#4	34%		

Subgrade A-7-6  
(See Appendix B for material sampling and field testing)  
No Drainage

<u>Construction Stage</u>	<u>Completion Date</u>
Subgrade	8/29/95
Base	9/11/95
First Course of Type II AC 3"	9/26/95
Intermediate Course Type II AC 2.25"	10/19/95
Surface Course Type I AC 1.75"	10/26/95

### **SUMMARY OF NON-CONTACT PROFILOMETER**

The results of the non-contact profilometer are shown below. The data show that there was significant loss in the pavement serviceability index (PSI).

<u>Date</u>	<u>Time</u>	<u>Pavement Serviceability Index (PSI)</u>
08-13-1996	After Completion of Construction	3.89
06-17-1997	Prior to Forensic Study	2.78

### **ELEVATION OF WATER TABLE**

Due to the topography of the site, the water table in this region is slightly higher. Data are given below.

<u>Station</u>	<u>Water Table Elevation (ft)</u>
372 + 00	949.36
337 + 00	953.28

### **LOAD HISTORY**

The Ohio-SHRP U.S. 23 Test Road was opened for traffic on 8/14/96, and closed on 9/3/96 to repair Sections 390102 and 390107, which had both failed. The road was reopened for traffic on 9/11/96 and closed on 12/3/96 to avoid other failures during the winter and to preserve instrumentation until testing could be completed in the spring. A load cell based weigh-in-motion (WIM) was used to monitor the number of ESAL's. Table 1 enumerates the total number of ESAL's for the first two weeks that the road was opened for traffic.

**Table 1 Total Number of ESAL's For First Two Weeks**

DATE	NO. OF TRUCKS	TOTAL ESAL
8-14-96	1906	1887
8-15-96	1614	2009
8-16-96	2100	2443
8-17-96	910	900
8-18-96	784	1213
8-19-96	2062	2715
8-20-96	2329	3105
8-21-96	2307	3033
8-22-96	2054	1728
8-23-96	2100	2500
8-24-96	910	1000
8-25-96	785	1200
8-26-96	2062	2700
8-27-96	2329	3000
8-28-96	2310	3000
TOTALS	26562	32433

**FORENSIC PROCEDURE**

To accomplish the objective of the forensic study, the following steps were conducted.

1. Videotape the entire section. Photos were taken with a digital camera of selected areas and referenced by station.
2. Conduct distress surveys according to SHRP-P-338 "Distress Identification Manual for the Long-Term Pavement Performance Project."
3. Conduct Falling Weight Deflectometer Tests, Figure 1.

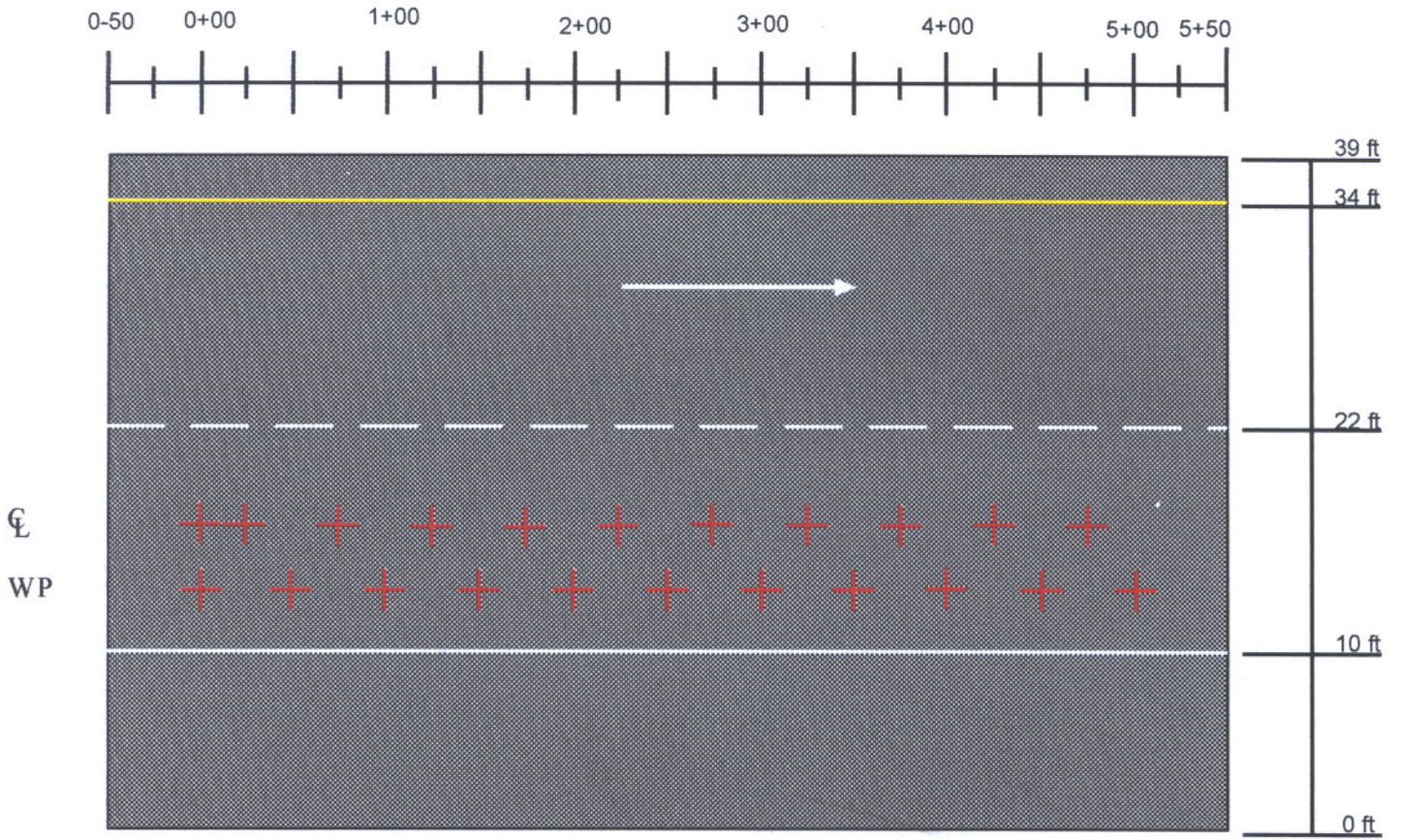


Figure 1 Layout of Falling Weight Deflectometer (FWD) Test Locations

4. Determine longitudinal and transverse profiles (dipstick), Figure 2.
5. Conduct survey with a rod and level.
6. Conduct Dynamic Cone Penetration (DCP) tests in the right wheelpath and center of the lane, Figure 3.
7. Cut three lateral trenches 3-4 feet wide at selected locations where the dipstick and Falling Weight Deflectometer indicated minimum, average, and maximum pavement distress.
  - a. AC
    - Determine the change in thickness of each lift across the entire 12 ft. traffic lane (including the wheel paths and center of lane) by measuring downward from the AC surface to the lift lines at 12 inch intervals. Elevations of the lift surfaces, as determined at the time of construction, also were used to obtain these results.
      - Obtain six cores of AC for laboratory testing as follows:
        - Determine the density, and basic mix properties (by ODOT) and verify the construction mix design.
      - Cut a 12 inch wide transverse sample of AC from the pavement for laboratory analysis.
  - b. Base Section  
Dense Graded Base
    - Determine the thickness profile using the same procedure as for AC.
    - Measure moisture content and gradation of aggregate in the base.
  - c. Subgrade
    - Determine the subgrade moisture at every 6" interval up to a 4' depth.
    - Determine the subgrade density at every 6" interval up to a 4' depth with a nuclear gage.
    - Determine surface profile and compare to construction elevations.
8. Perform Cone Penetration Tests (CPT), Figure 3
  - a. Determine the elevation of bedrock.
  - b. Determine the profile of the tip resistance, skin resistance, and water pressure of subgrade.
  - c. Identify weak zones in the subgrade.

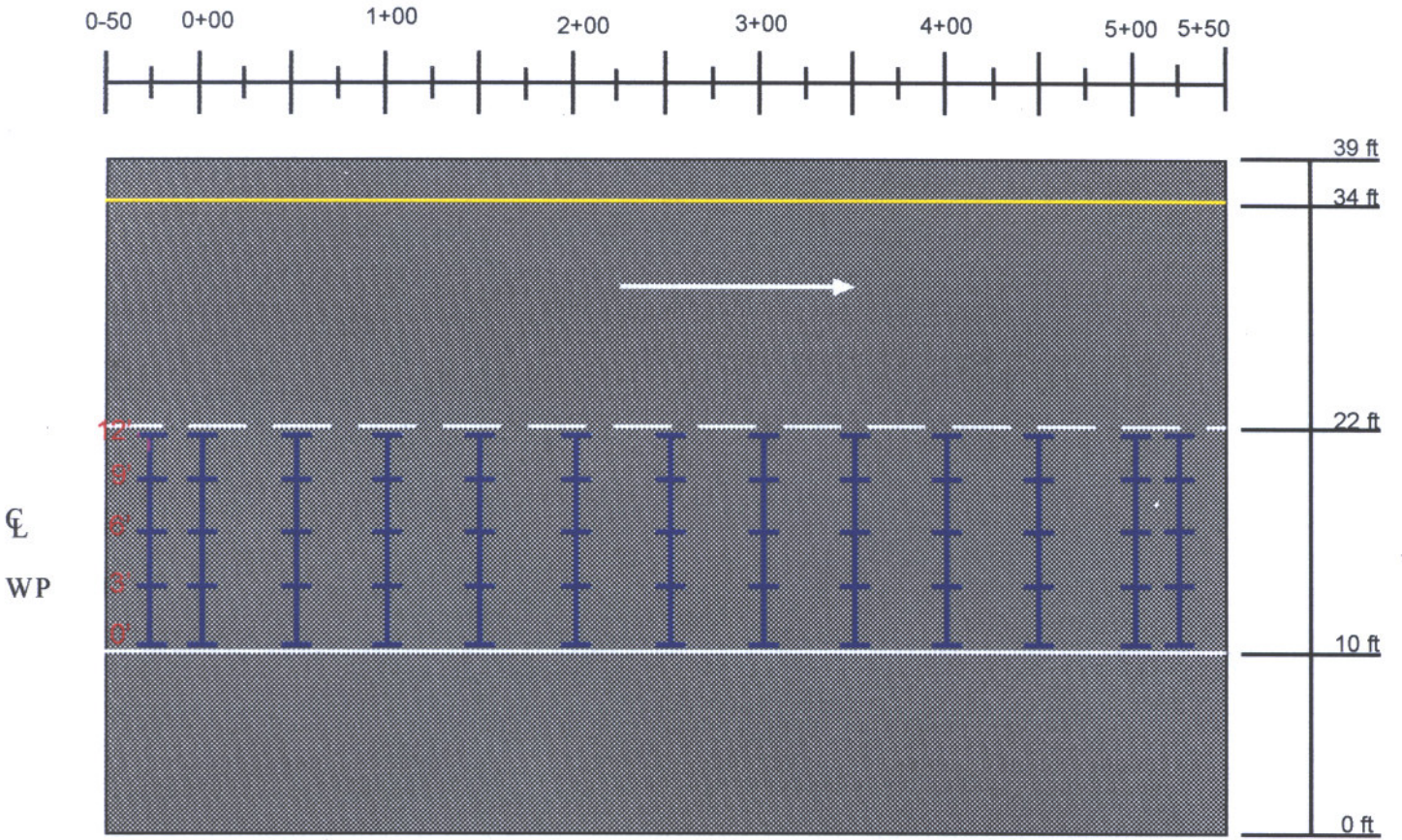


Figure 2 Layout of Survey Points and Transverse Profile Locations

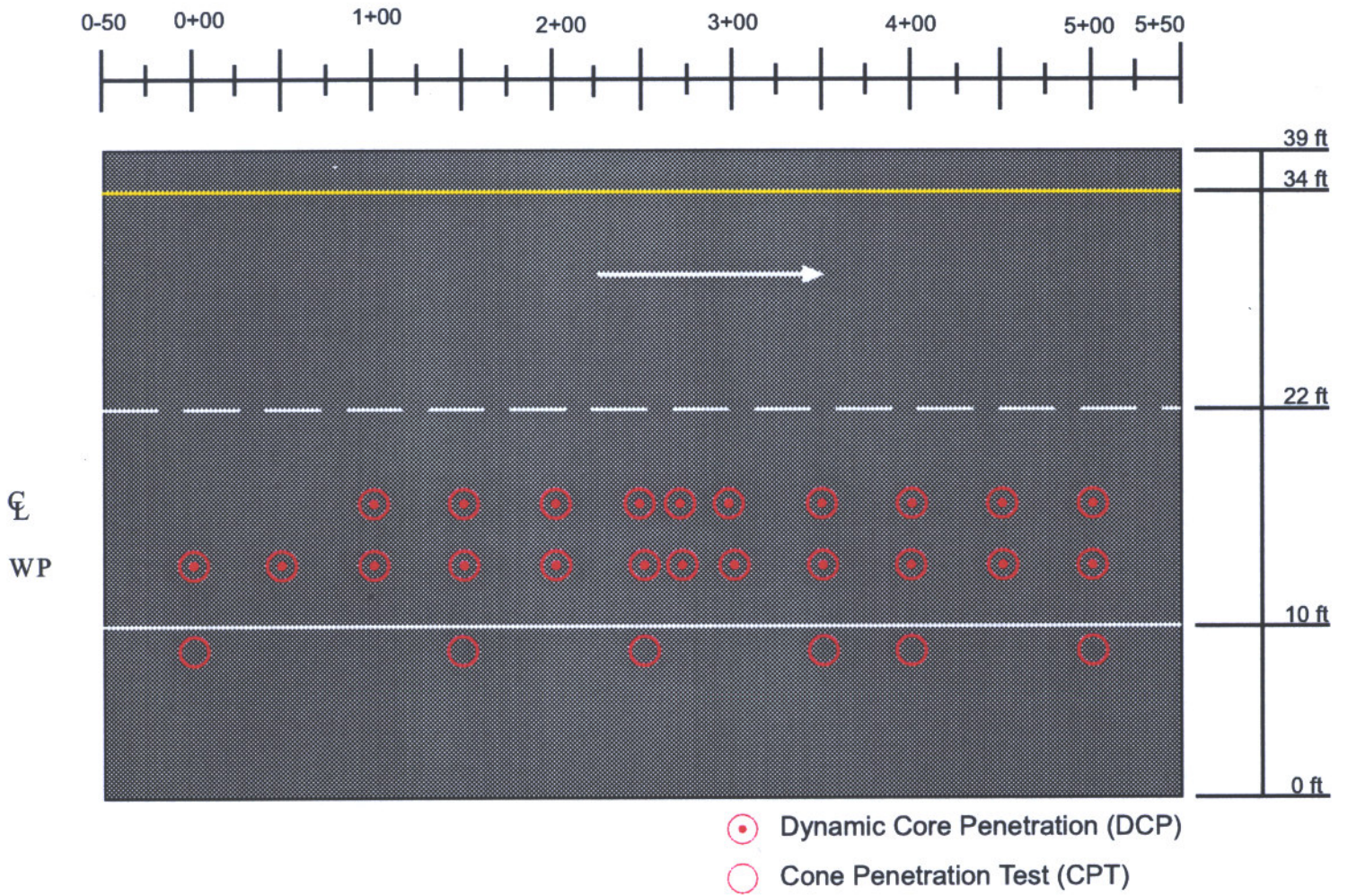


Figure 3 Layout of Cone Penetrometer Test (CPT) and Dynamic Core Penetration (DCP) Test Locations

9. Measure the elevation of the water table.
10. Determine the ESAL's.
11. Obtain climatic data as available over traffic loading period

## **TRENCHES**

Based on results from the Falling Weight Deflectometer and the dipstick, three trenches were excavated. The pavement at trench one exhibited average rutting and FWD deflection with no cracks (Station 1 + 50). Trench two was excavated where the most rutting and cracking, and the highest deflection occurred (Station 2 + 65). Trench three was situated at the least distressed region (Station 4 + 00). To maintain natural water content in base and subgrade during removal of asphalt concrete layers no water was used in sawing the AC layers.

## **VARIABILITY OF STIFFNESS**

Referring to Figures 4 through 8, results of the Falling Weight Deflectometer on the subgrade, base, and AC indicate that the stiffness of the pavement system between Stations 2 and 2+50 and at Station 4 was less than the rest of this 500 foot long section. At these two locations, deflections were almost twice as high for a given load. When the falling weight tests were conducted at the surface of the base lower deflections were exhibited at 2 + 50 (Figure 4). A series of dynamic cone penetration were performed. In each test an AC layer was removed without using water during the operation. Results of the dynamic cone penetration tests are plotted in Figures 9 through 30. These figures also indicate the non-uniformity of stiffness throughout the section. The lowest index was measured in the trench at Station 2 + 65, which agreed with results obtained with the FWD on the day the trenches were excavated (Figures 31 through 33). Nuclear density tests were conducted in the trenches as they were excavated (Figures 34 through 36).



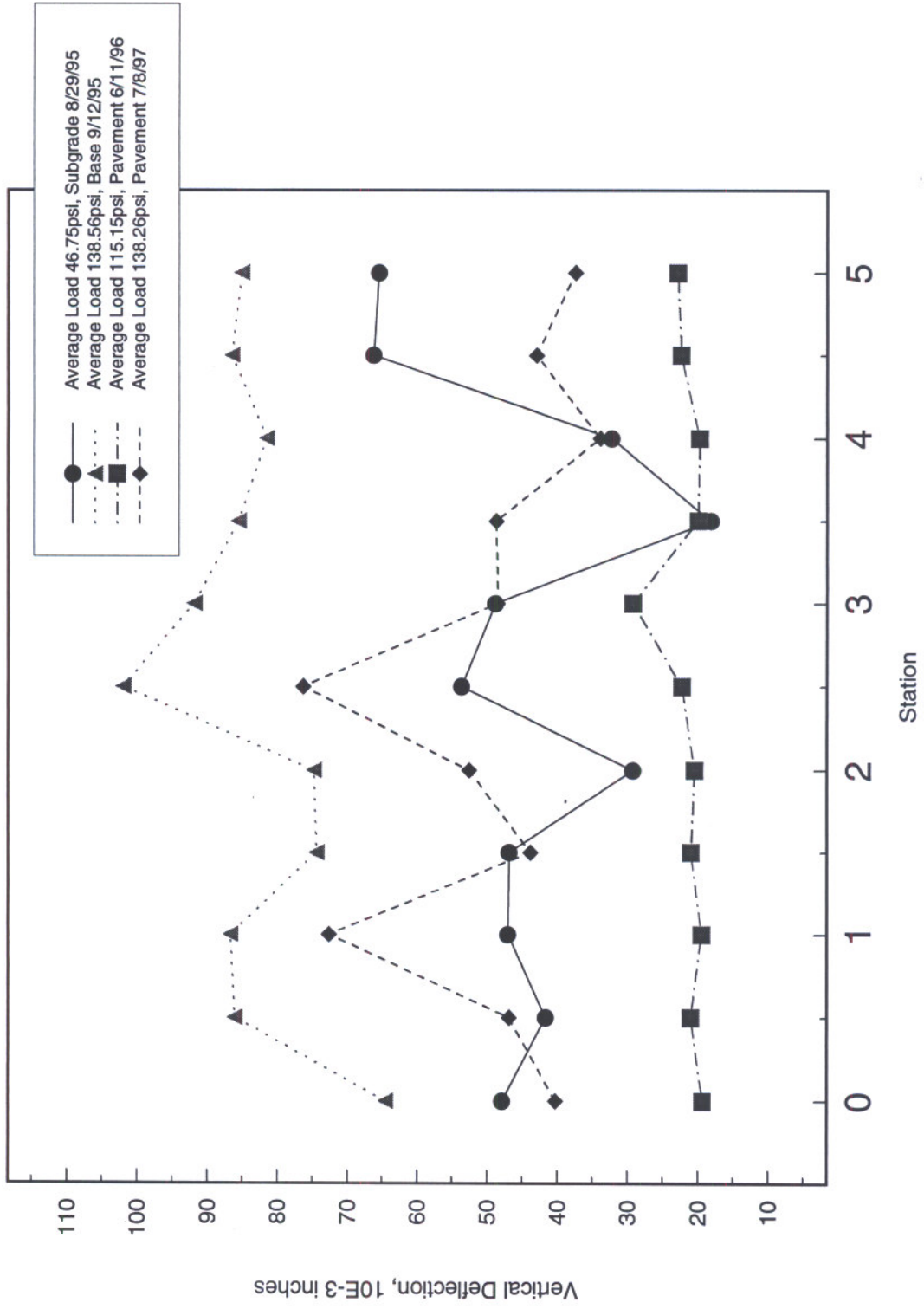


Figure 4 SHRP Section 390101. Falling Weight, Wheel Path.

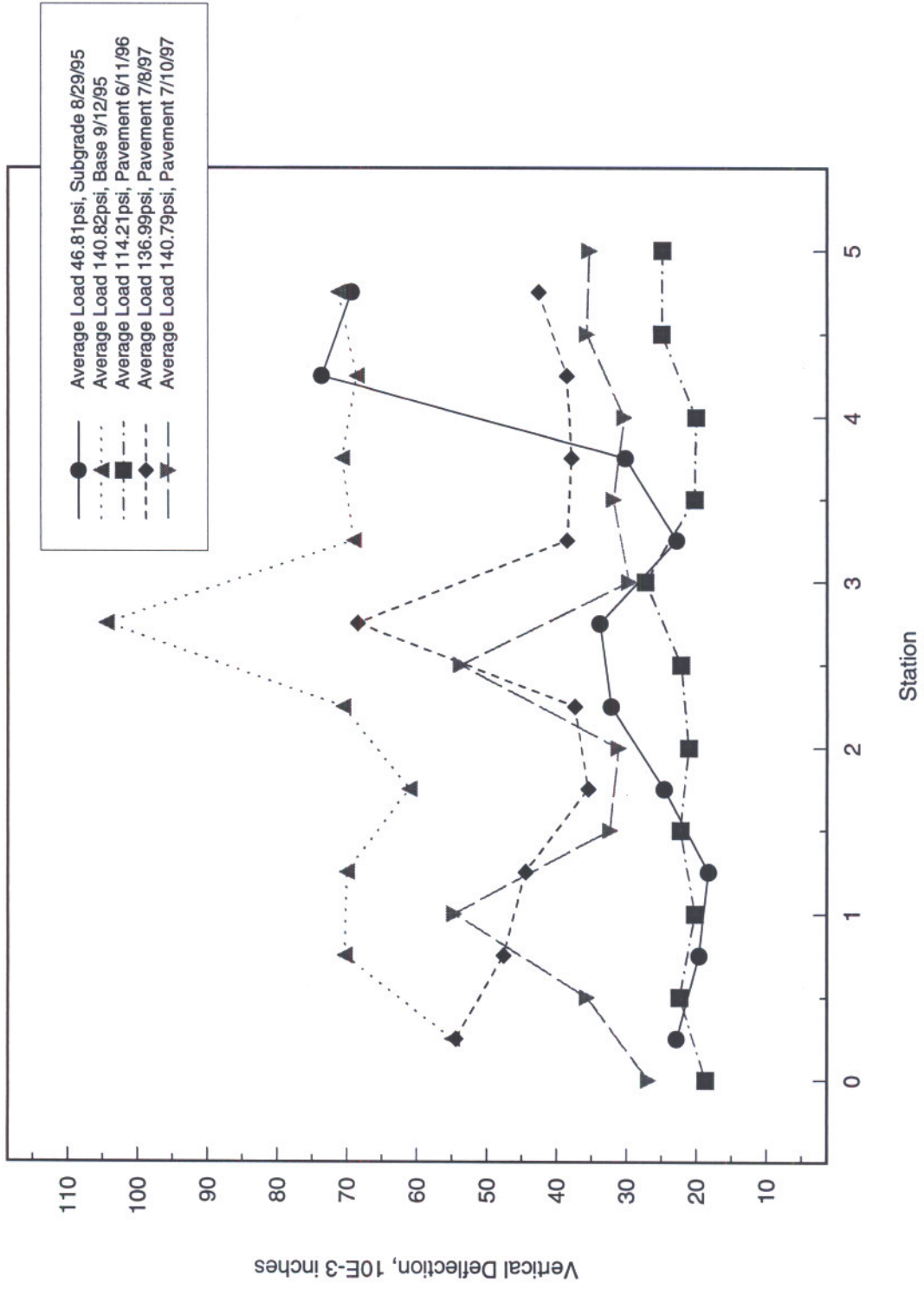


Figure 5 SHRP Section 390101. Falling Weight, Midlane.

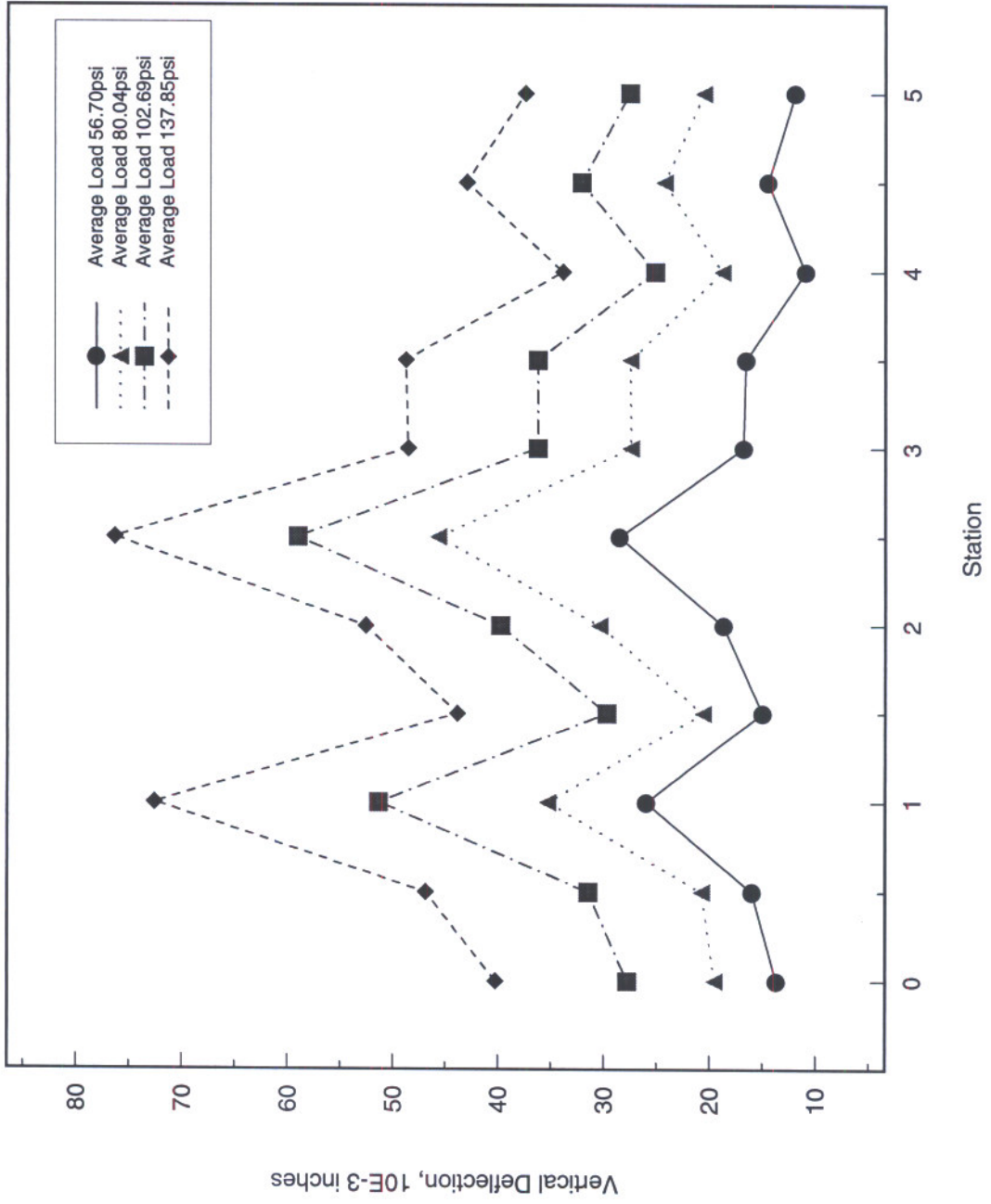


Figure 6 SHRP Section 390101. Falling Weight, Wheel Path, Pavement, 7/8/97.

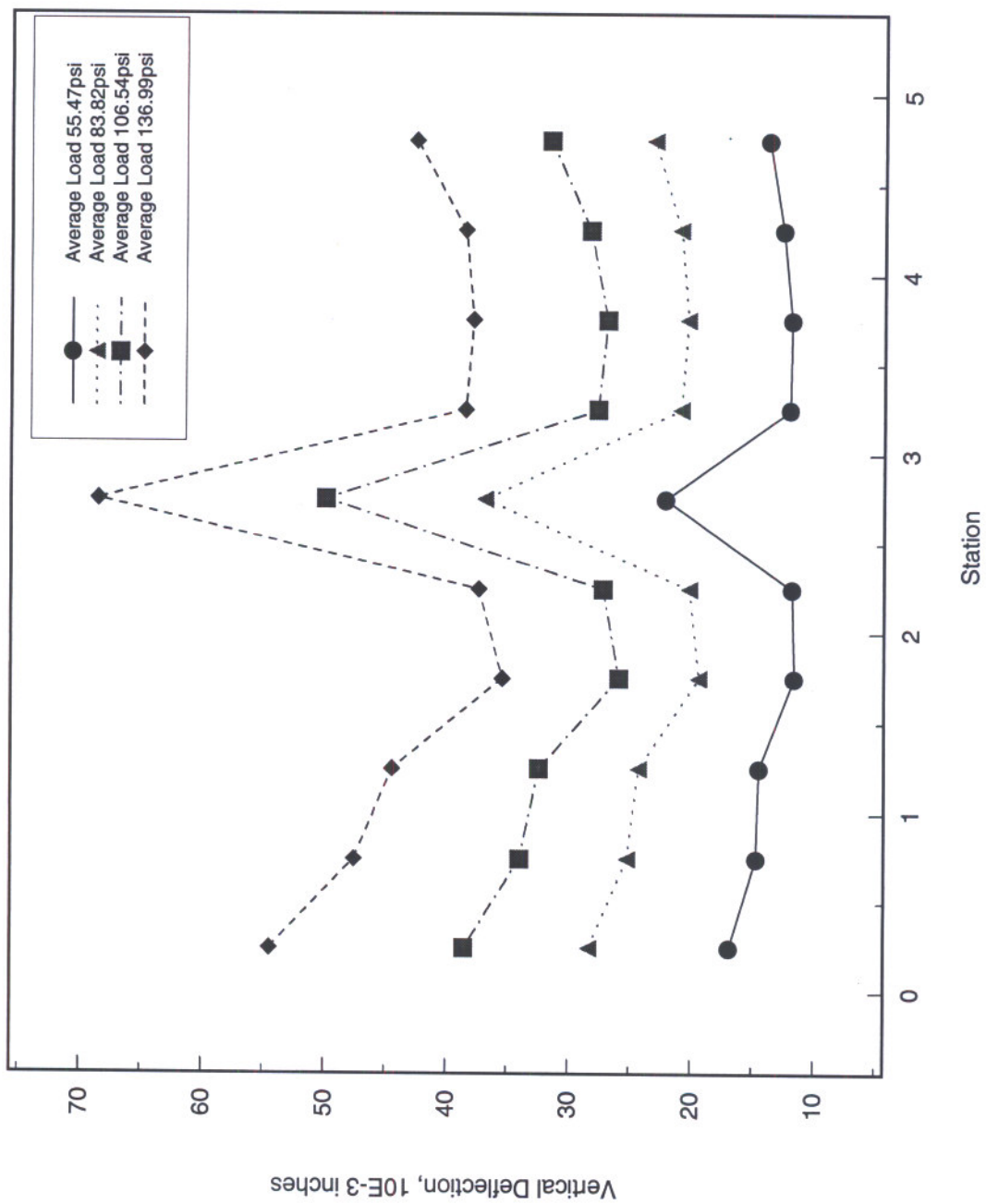


Figure 7 SHRP Section 390101. Falling Weight, Midlane, Pavement, 7/8/97.

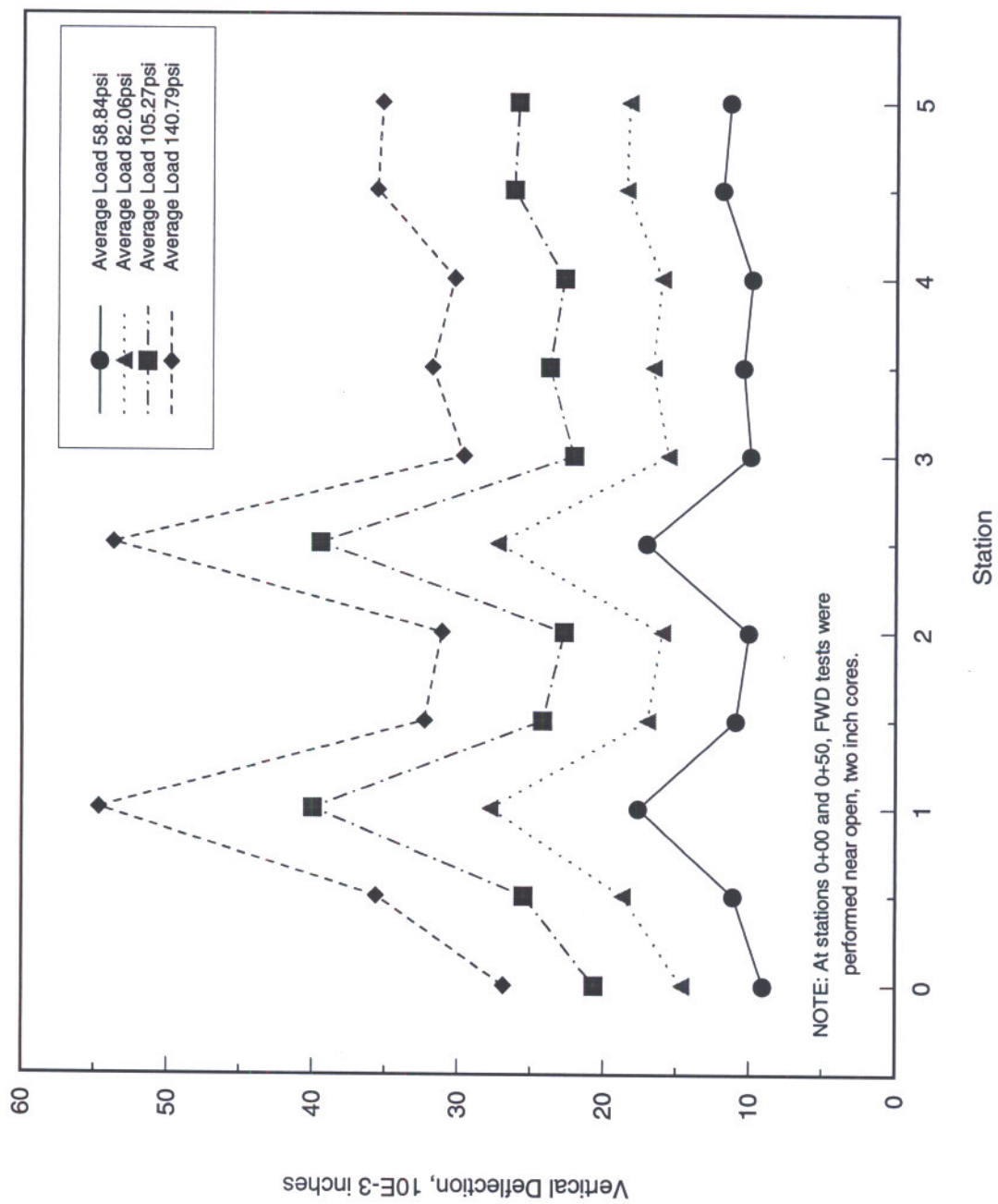


Figure 8 SHRP Section 390101. Falling Weight, Midlane, Pavement, 7/10/97.

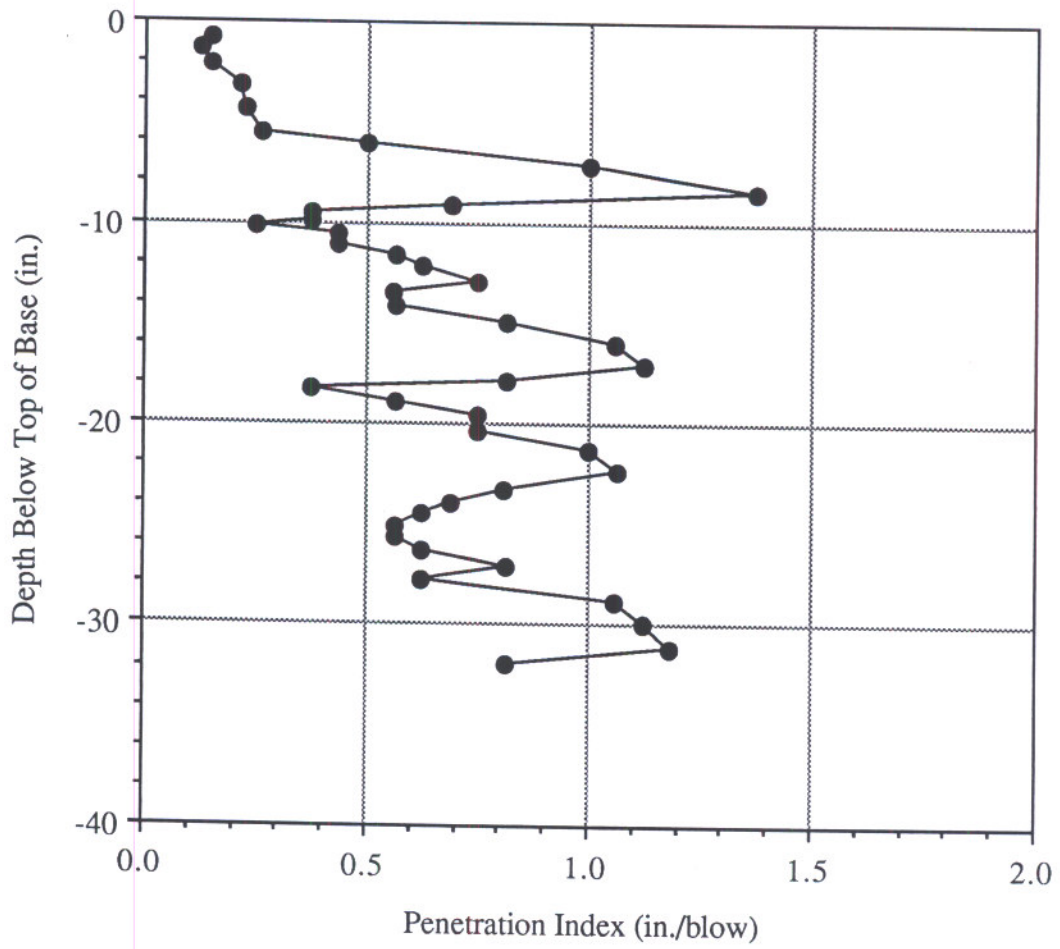


Figure 9 Result of DCP Test at Station 0+00 (Wheel Path)

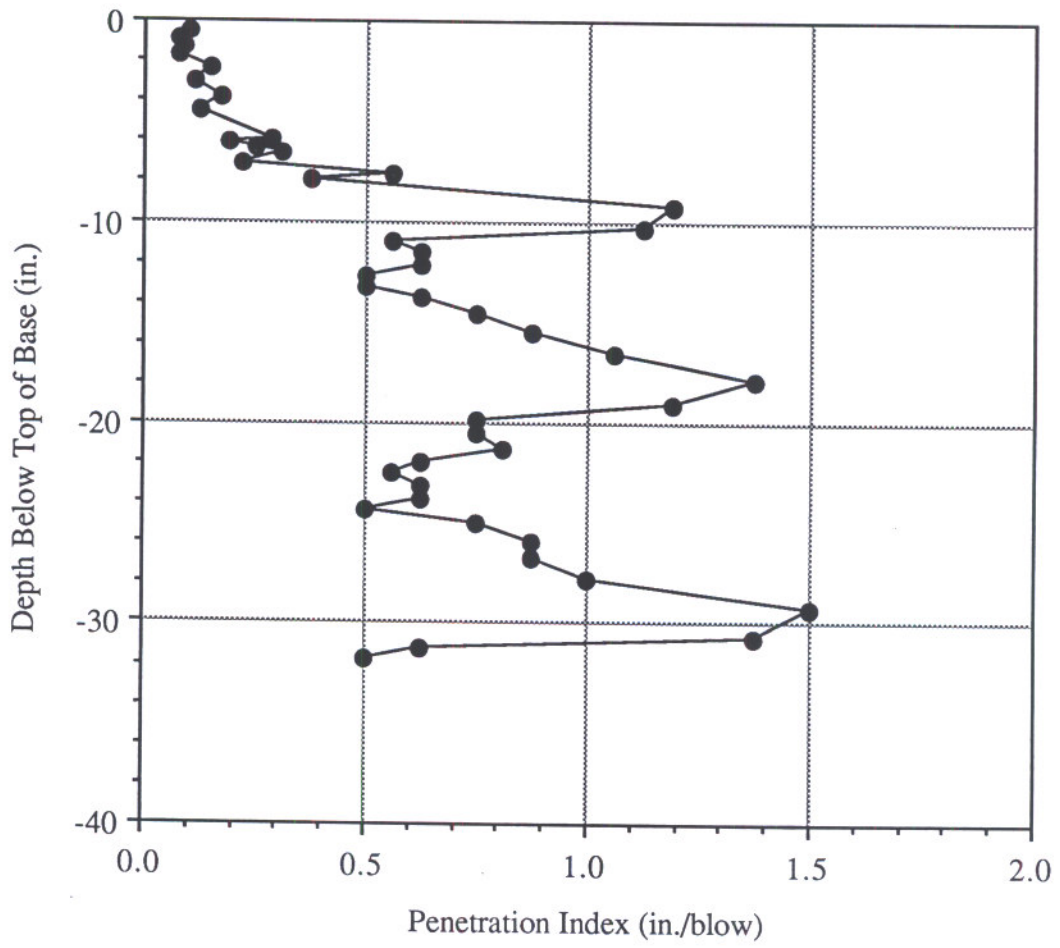


Figure 10 Result of DCP Test at Station 0+50 (Wheel Path)

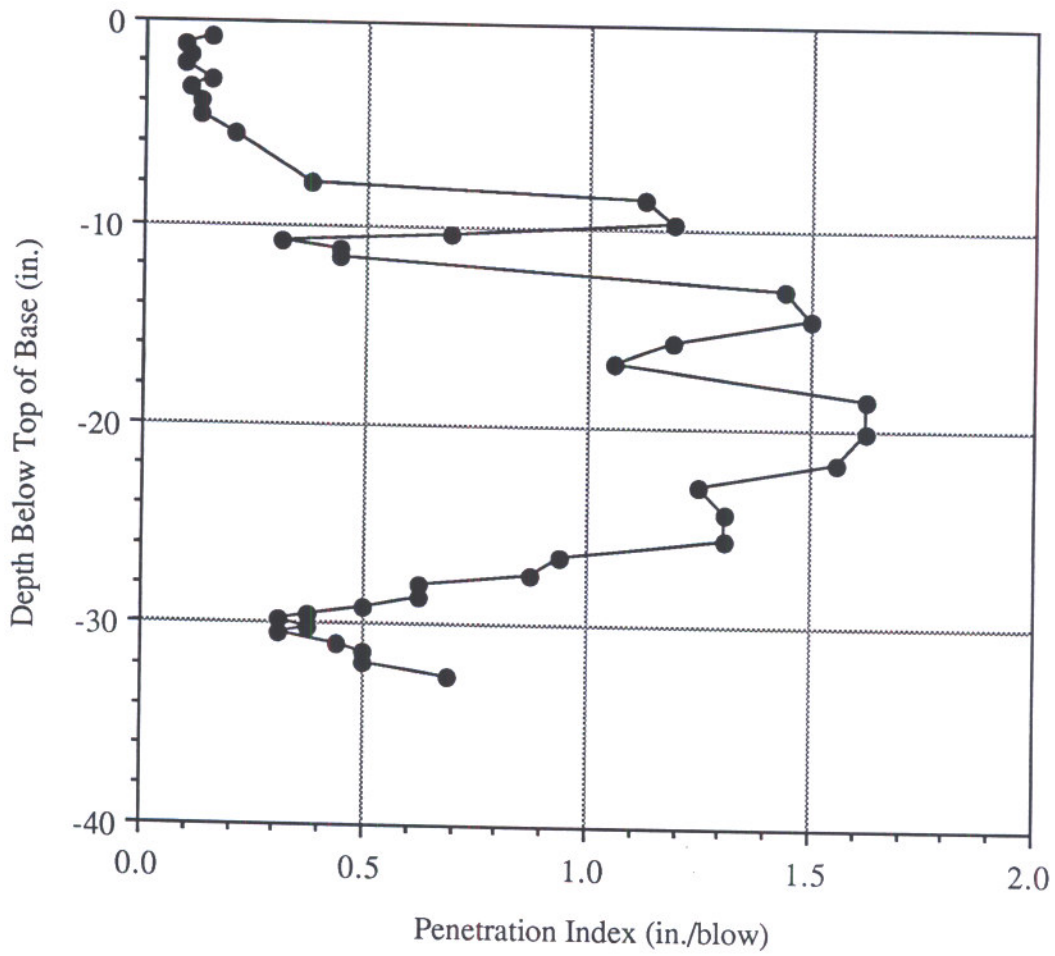


Figure 11 Result of DCP Test at Station 1+00 (Wheel Path)



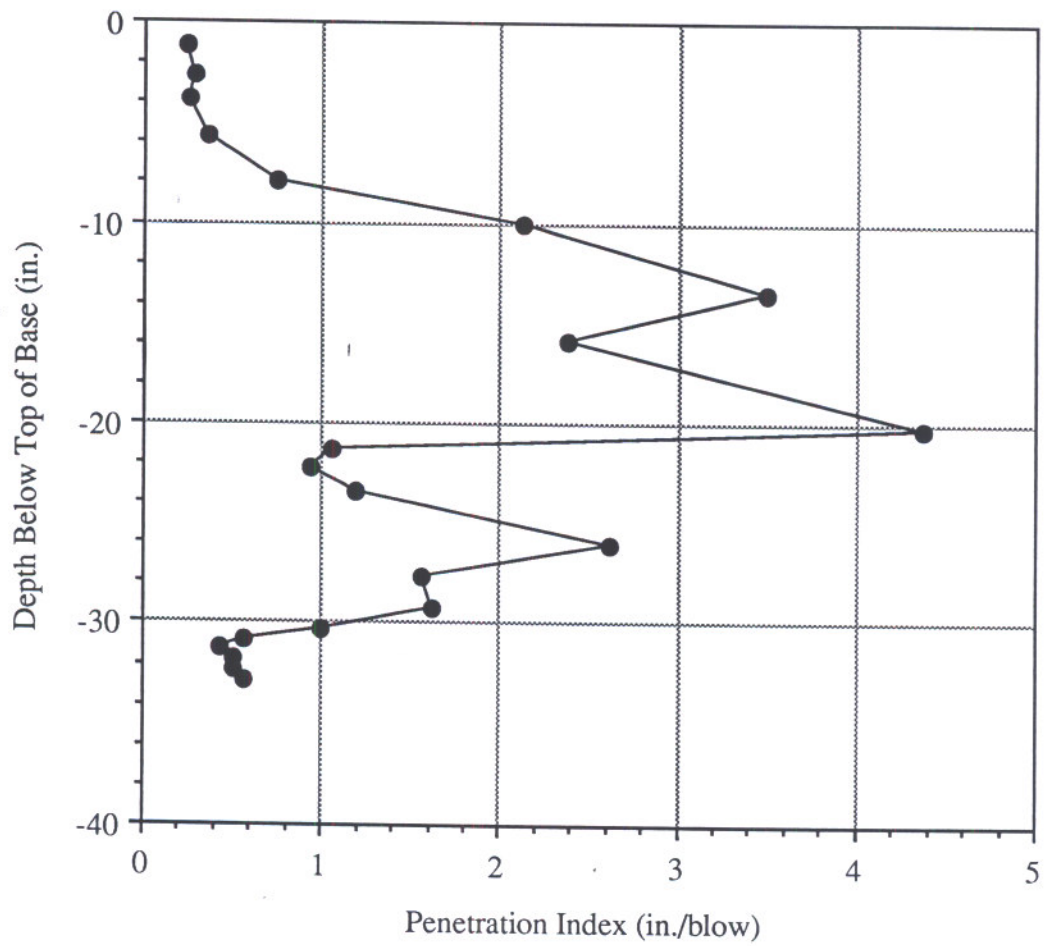


Figure 12 Result of DCP Test at Station 1+00 (Centerline)

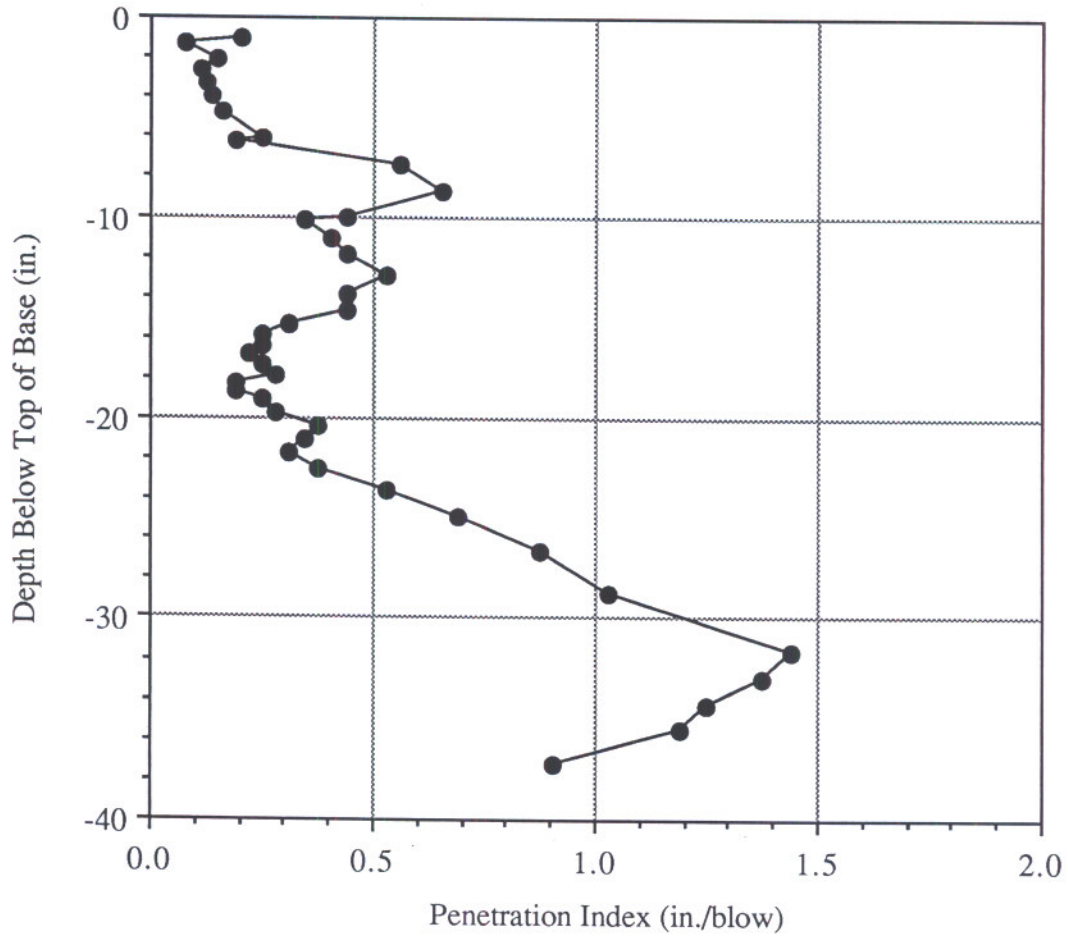


Figure 13 Result of DCP Test at Station 1+50 (Wheel Path)

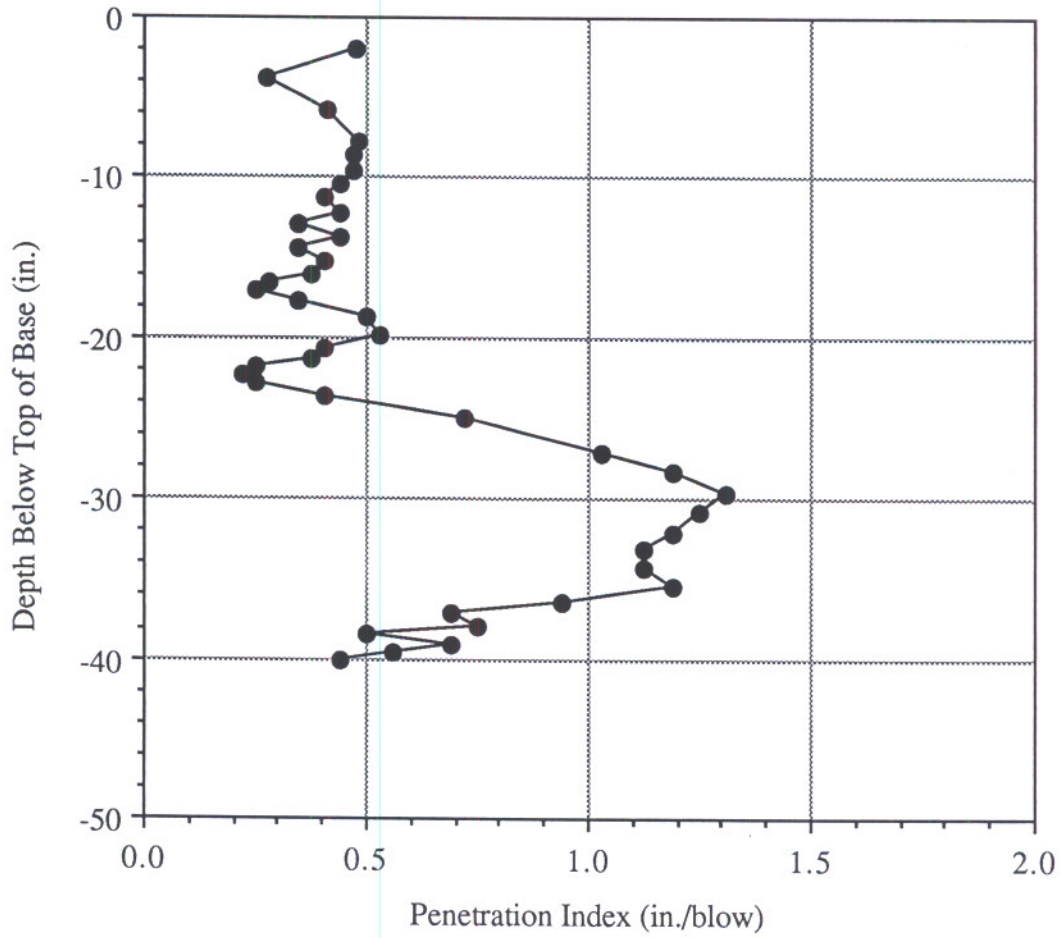


Figure 14 Result of DCP Test at Station 1+50 (Centerline)

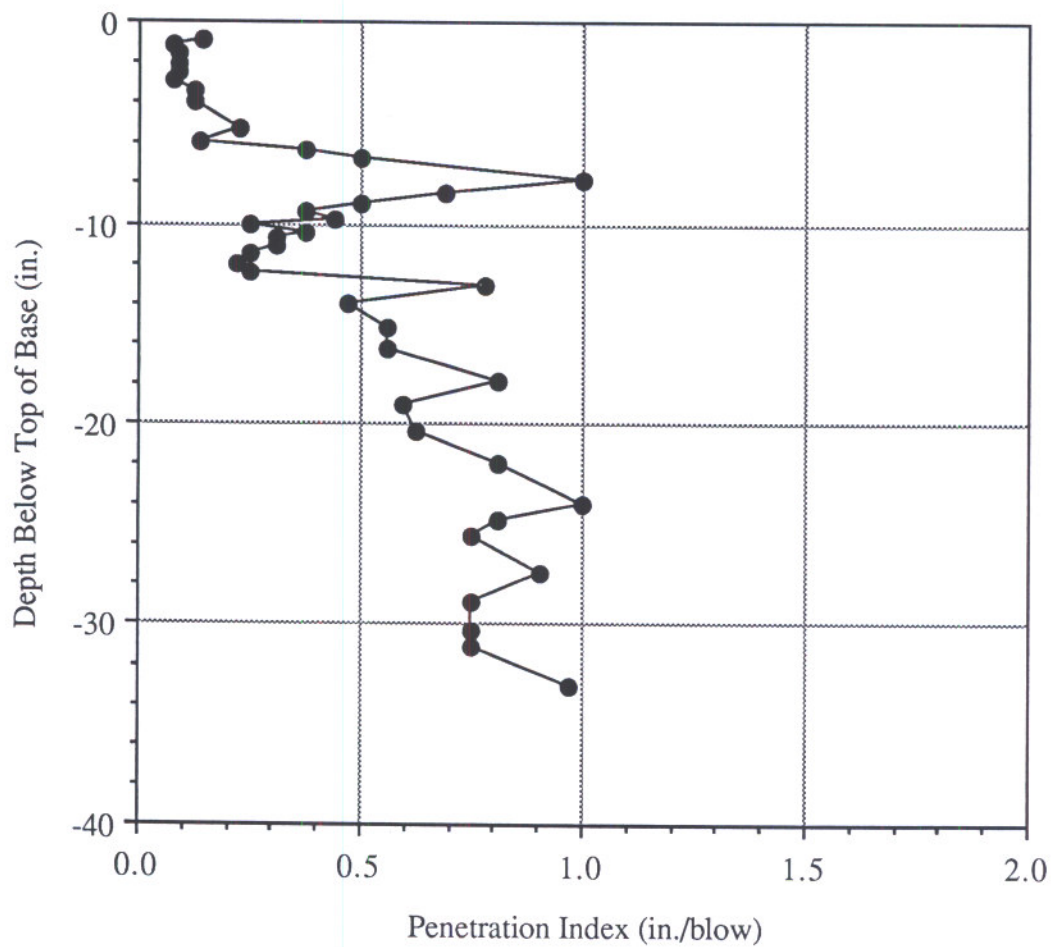


Figure 15 Result of DCP Test at Station 2+00 (Wheel Path)

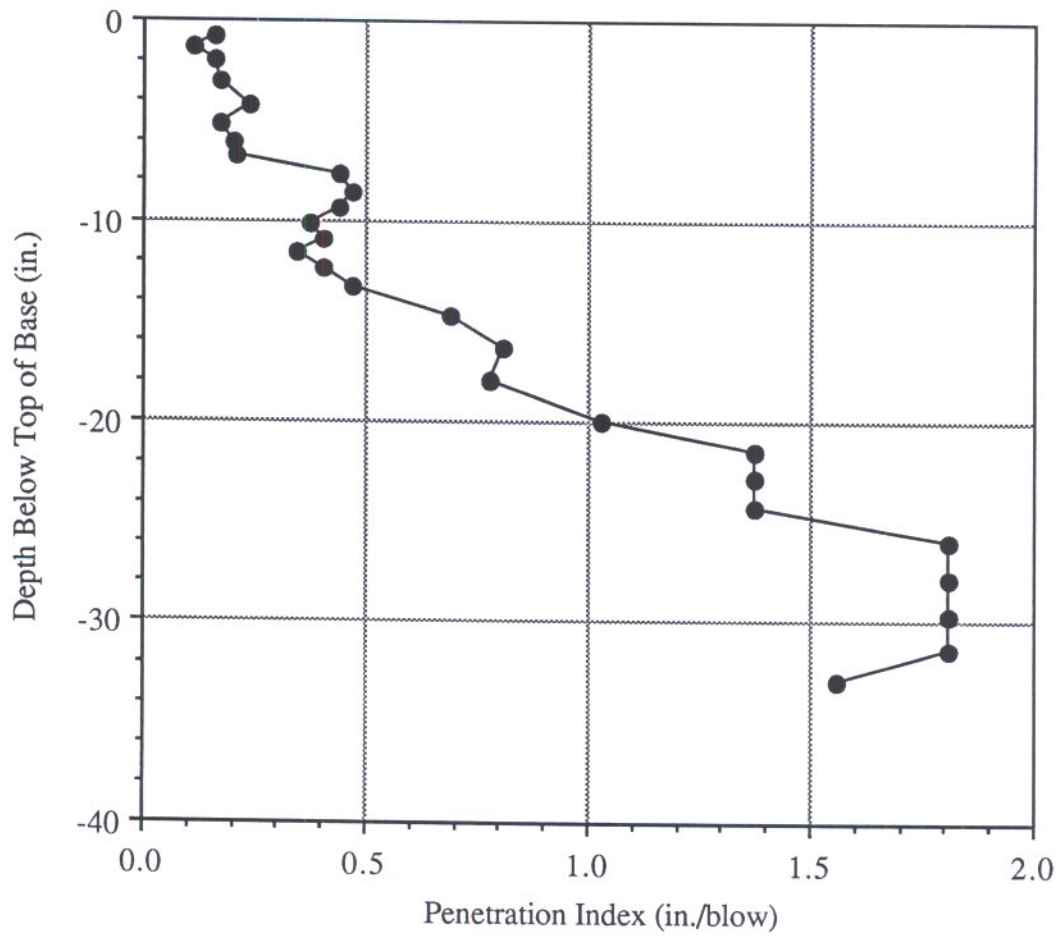


Figure 16 Result of DCP Test at Station 2+00 (Centerline)

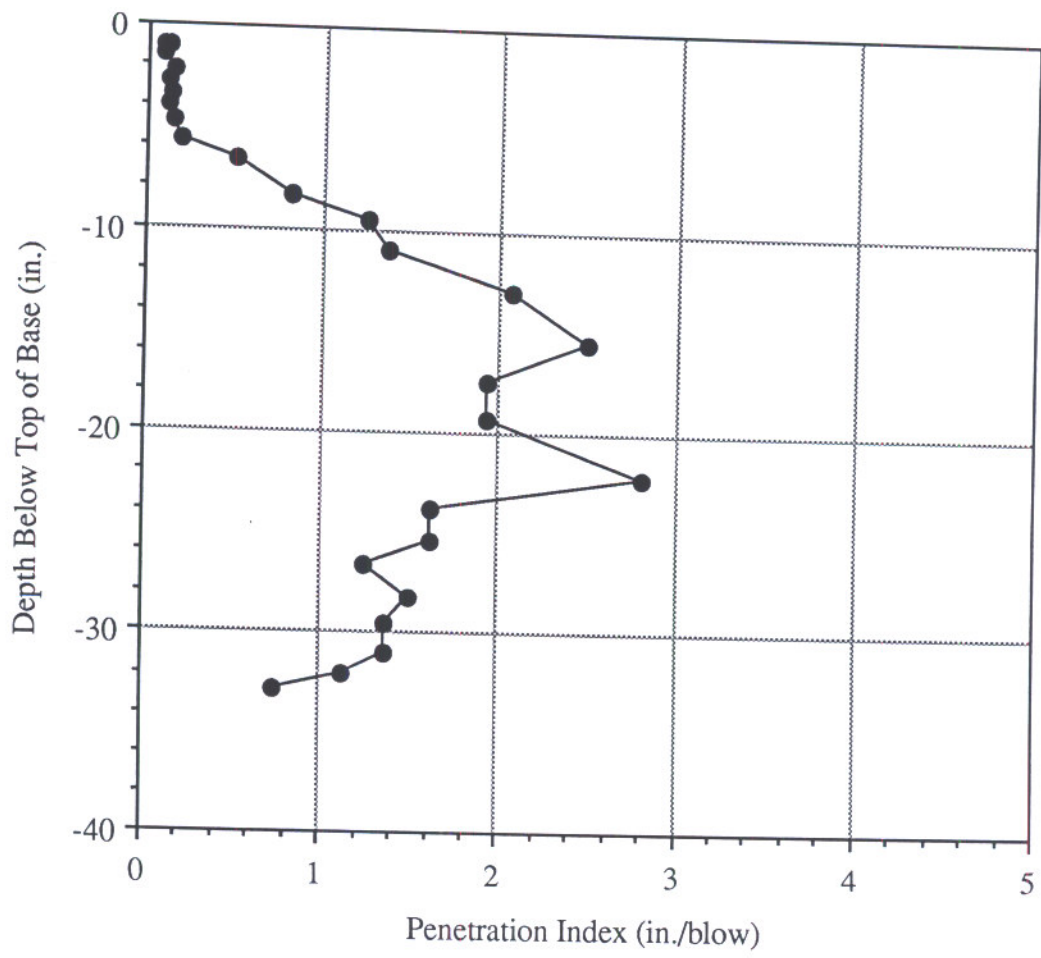


Figure 17 Result of DCP Test at Station 2+50 (Wheel Path)

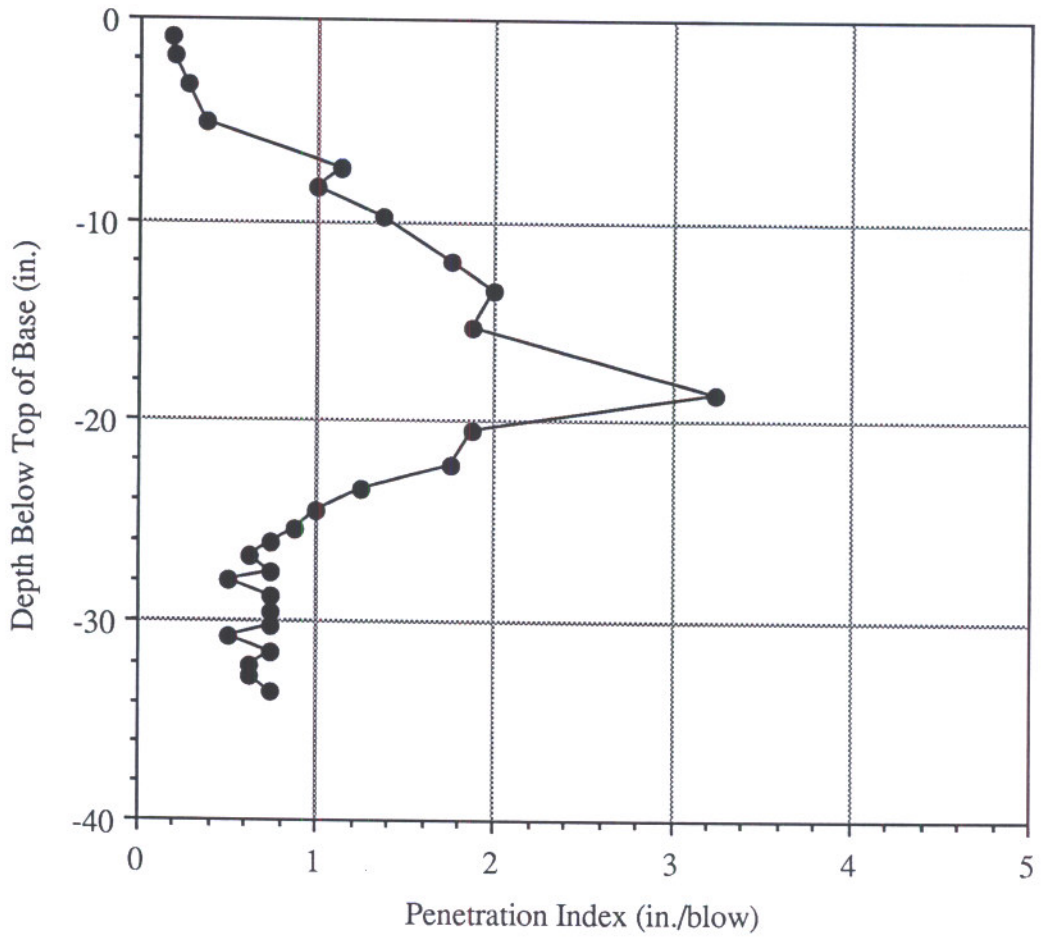


Figure 18 Result of DCP Test at Station 2+50 (Centerline)

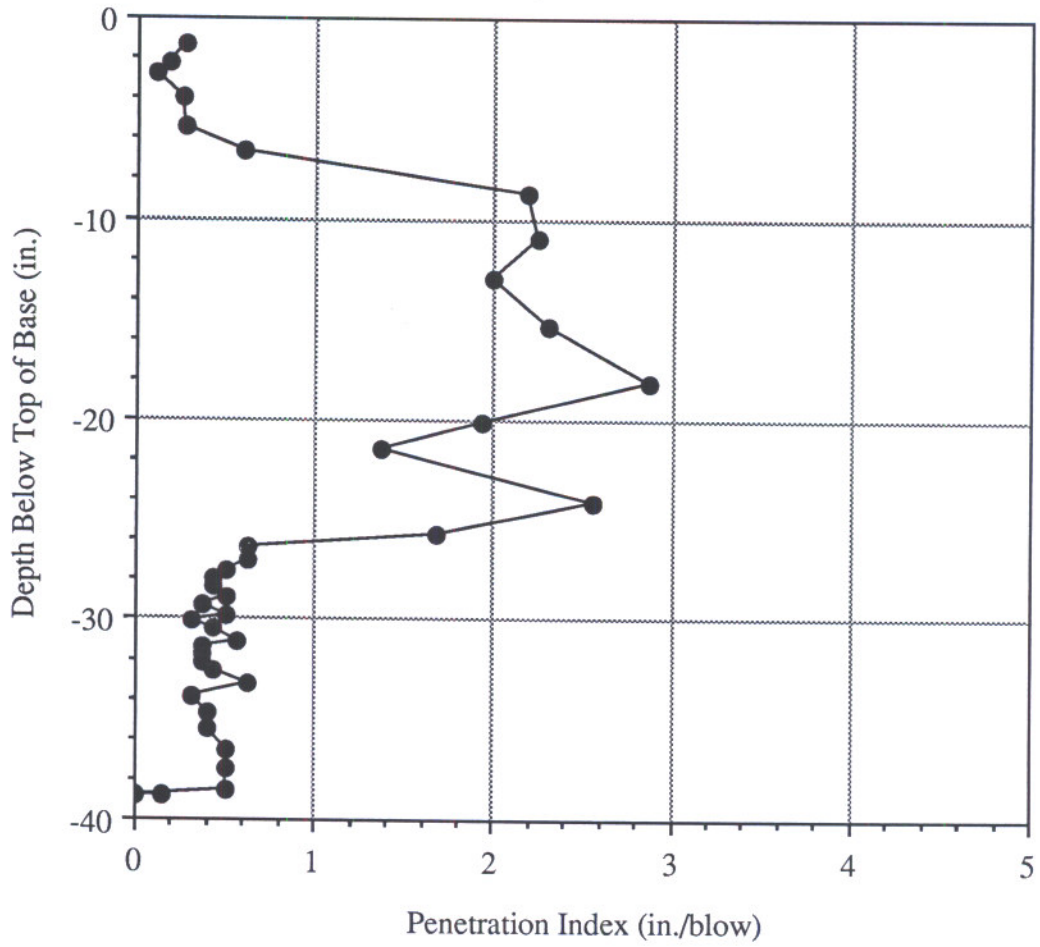


Figure 19 Result of DCP Test at Station 2+65 (Wheel Path)



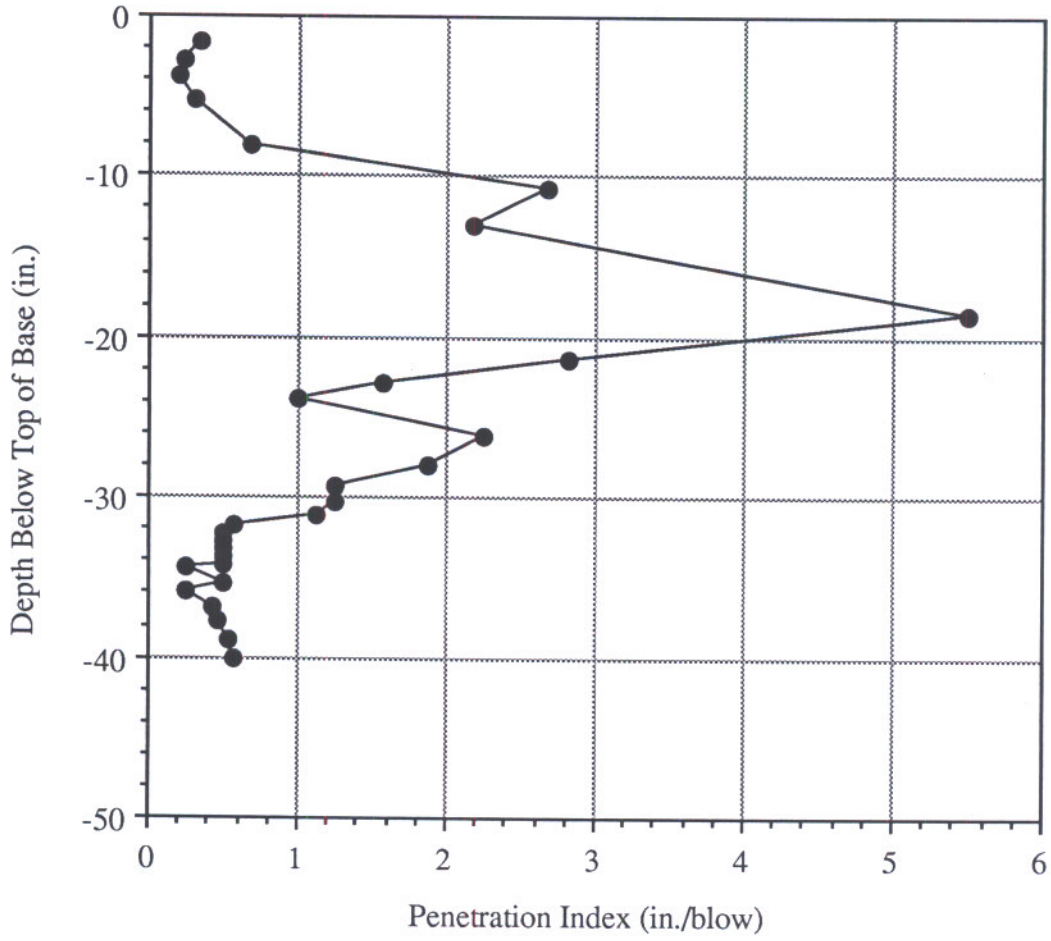


Figure 20 Result of DCP Test at Station 2+65 (Centerline)

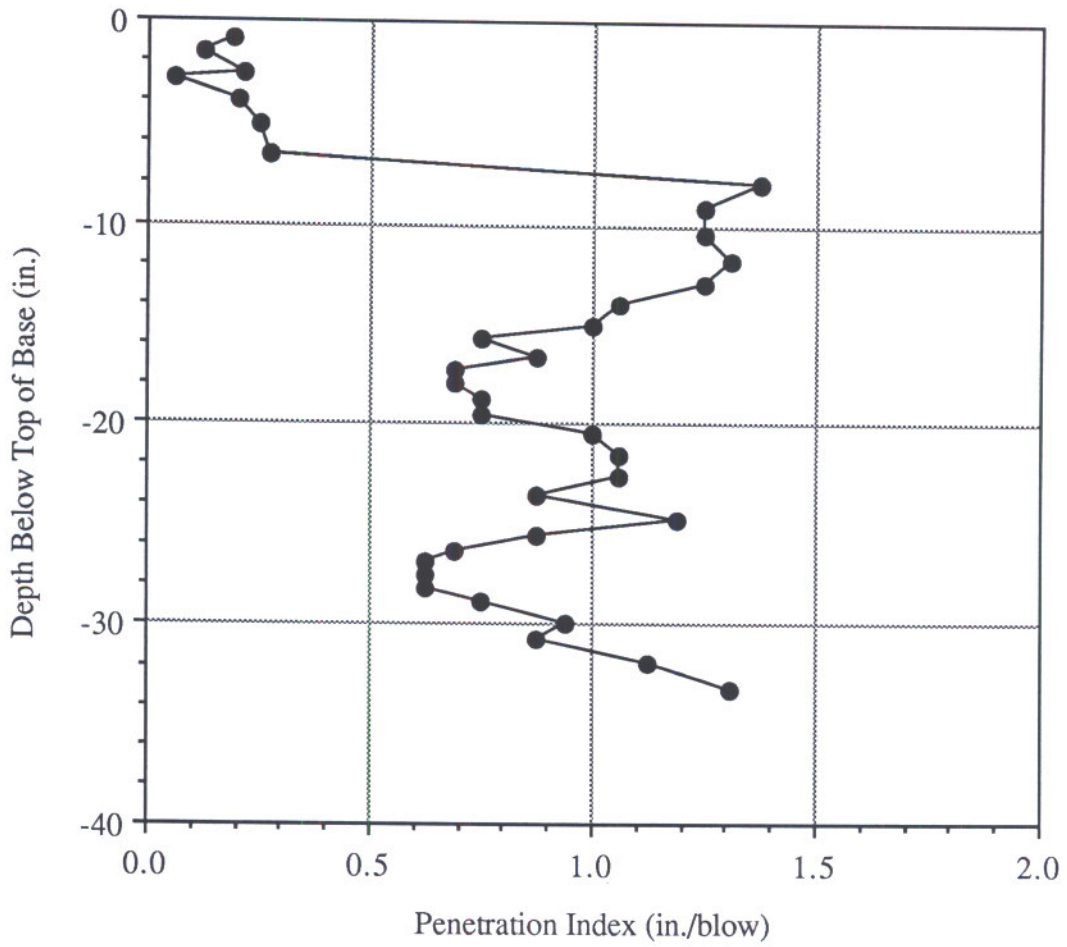


Figure 21 Result of DCP Test at Station 3+00 (Wheel Path)

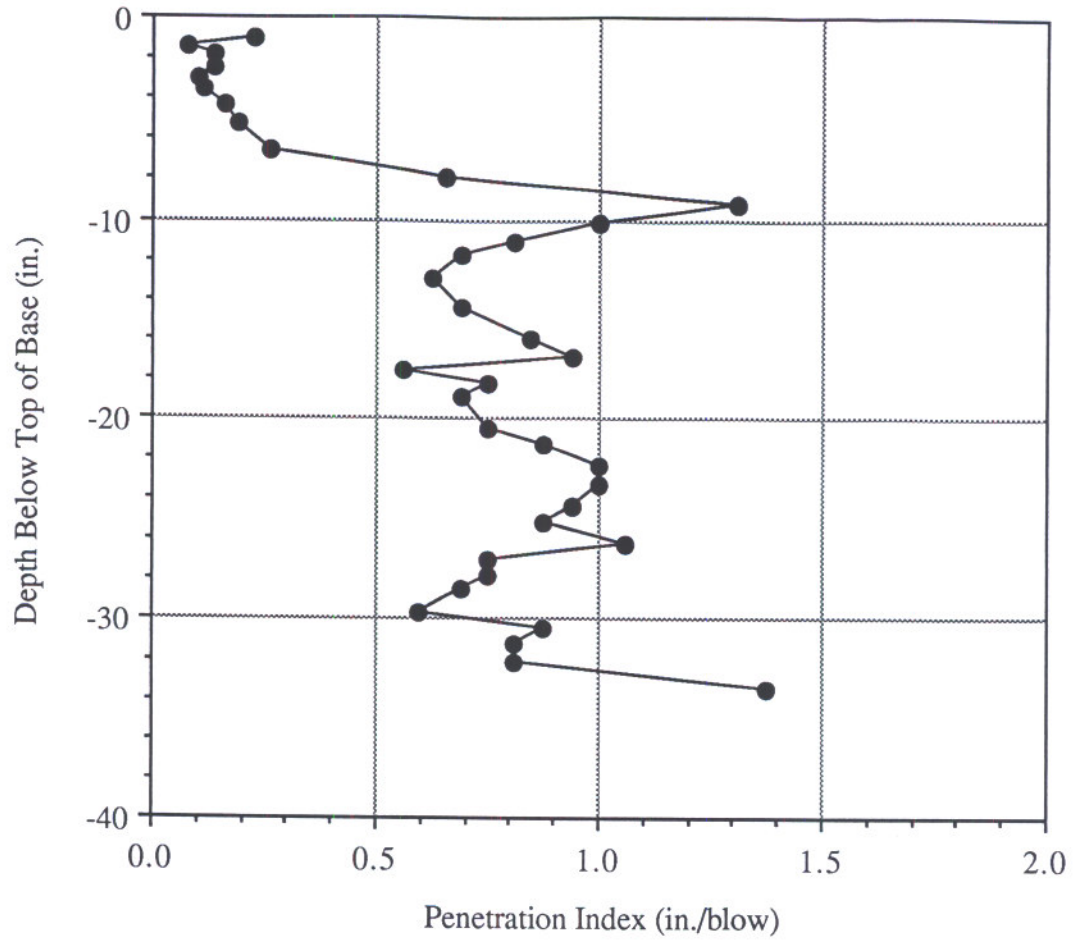


Figure 22 Result of DCP Test at Station 3+00 (Centerline)

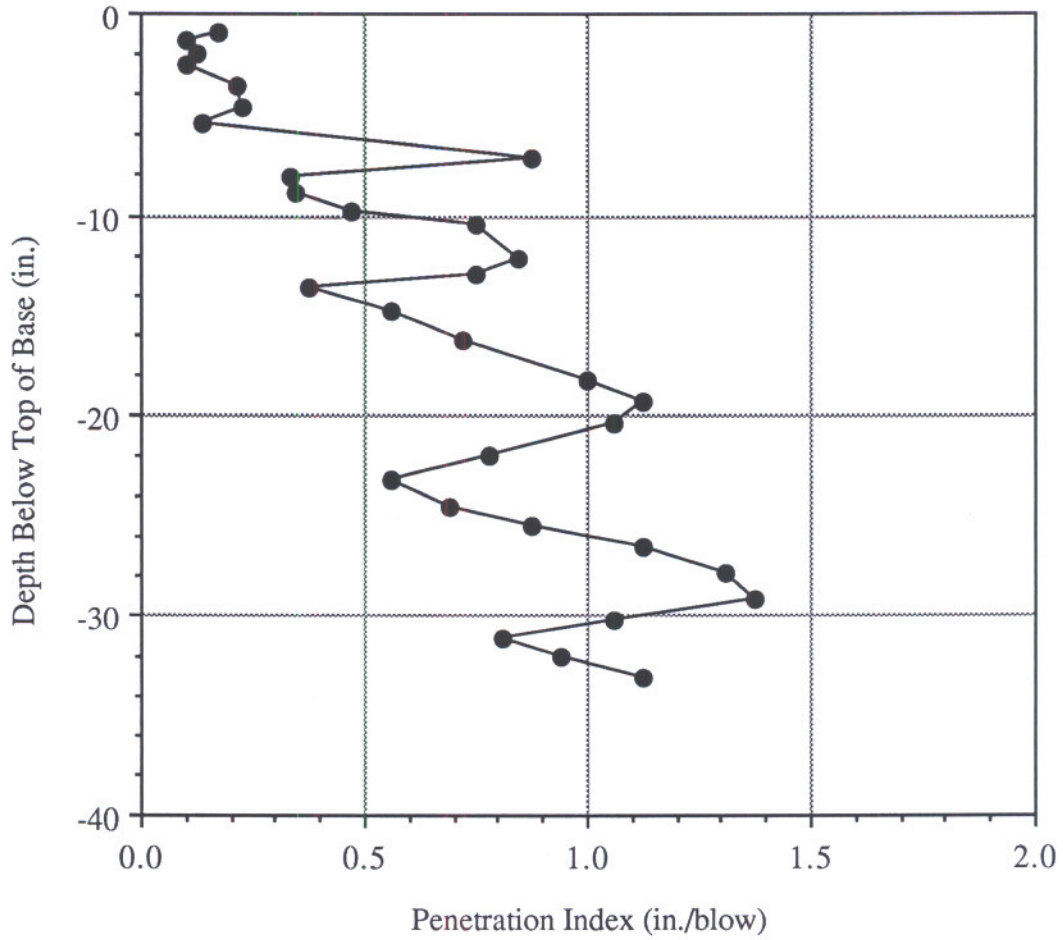


Figure 23 Result of DCP Test at Station 3+50 (Wheel Path)

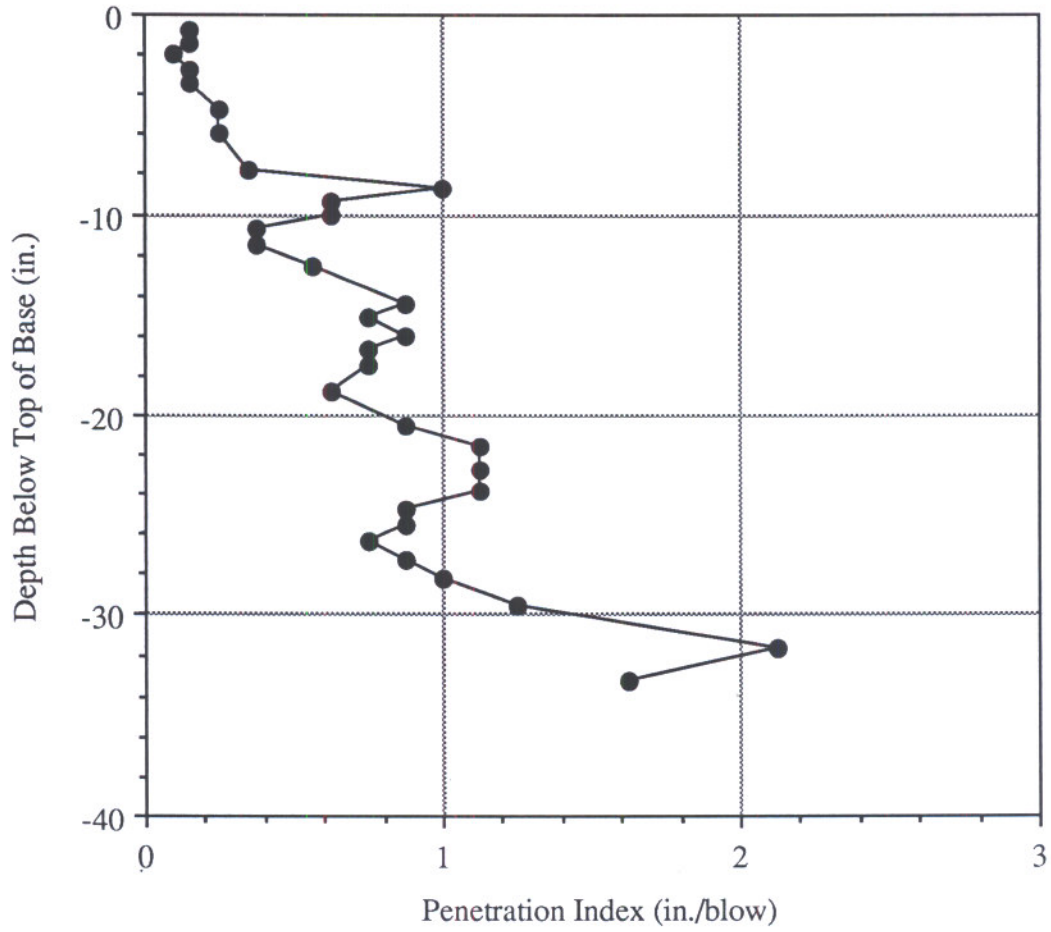


Figure 24 Result of DCP Test at Station 3+50 (Centerline)

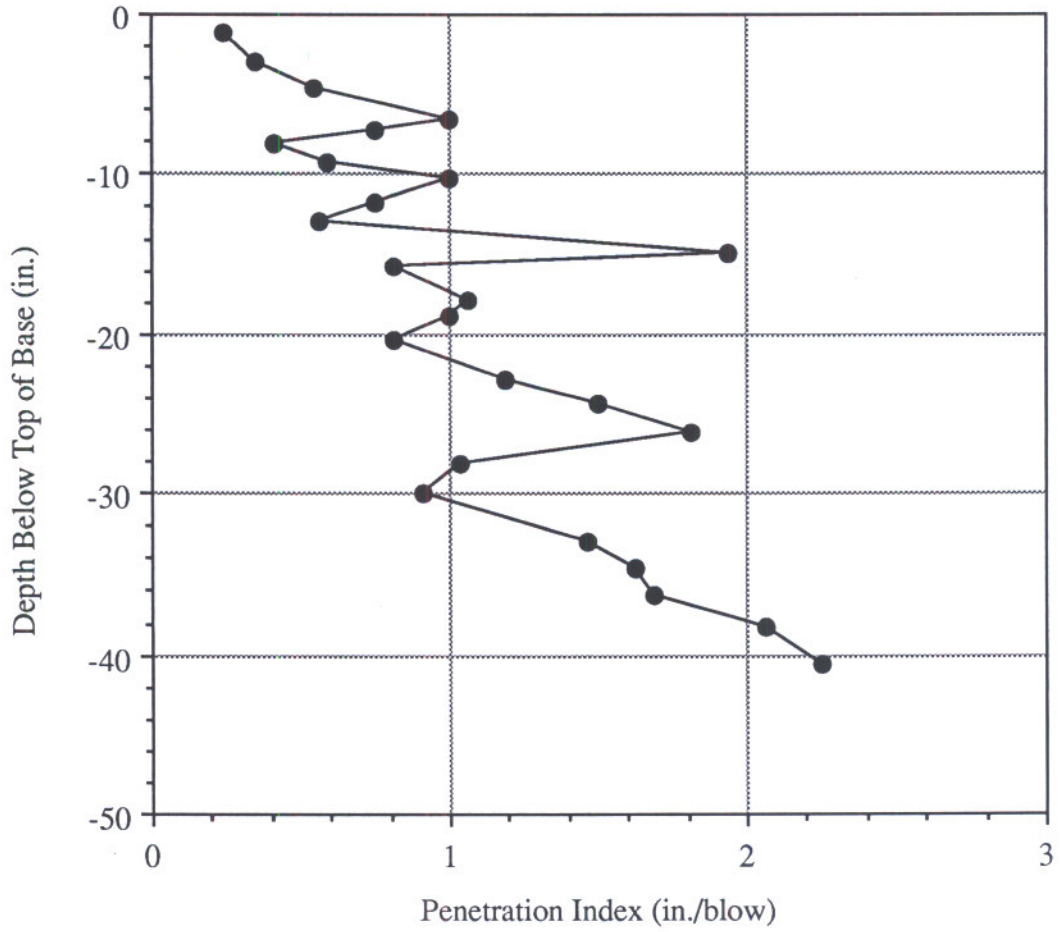


Figure 25 Result of DCP Test at Station 4+00 (Wheel Path)

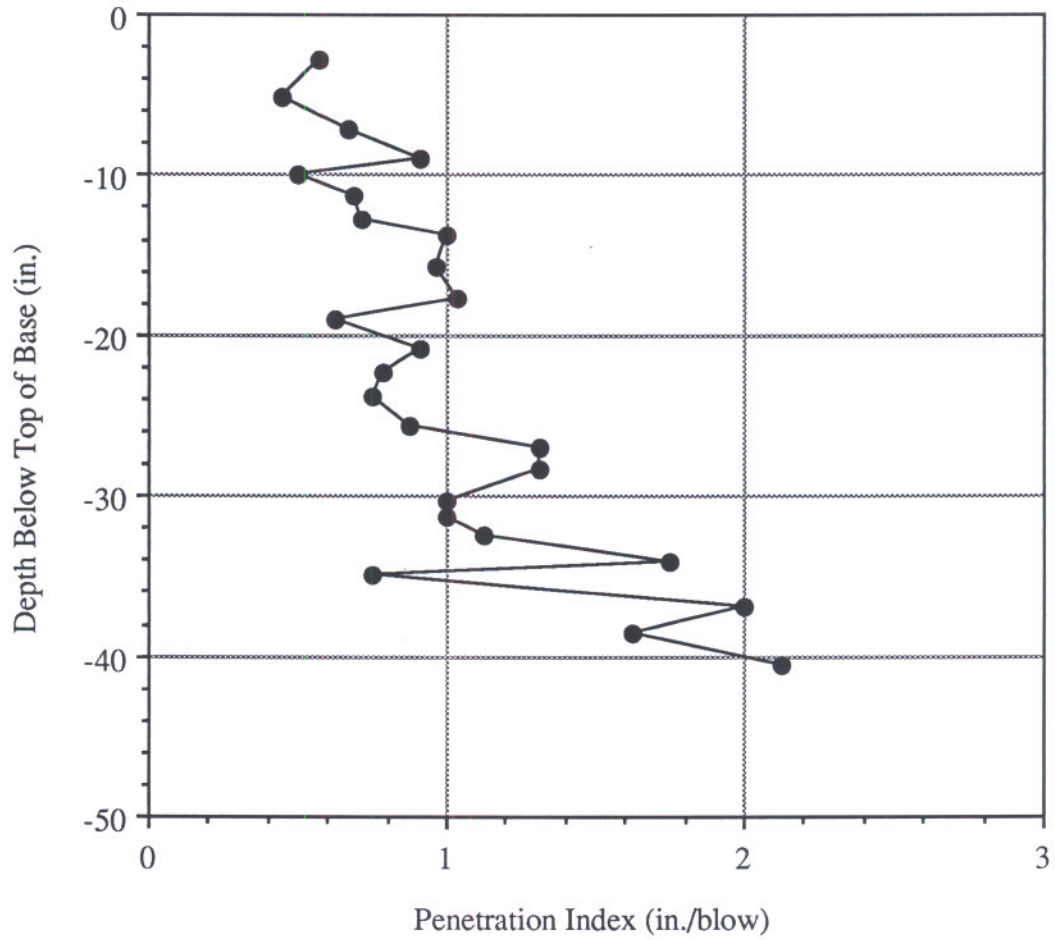


Figure 26 Result of DCP Test at Station 4+00 (Centerline)

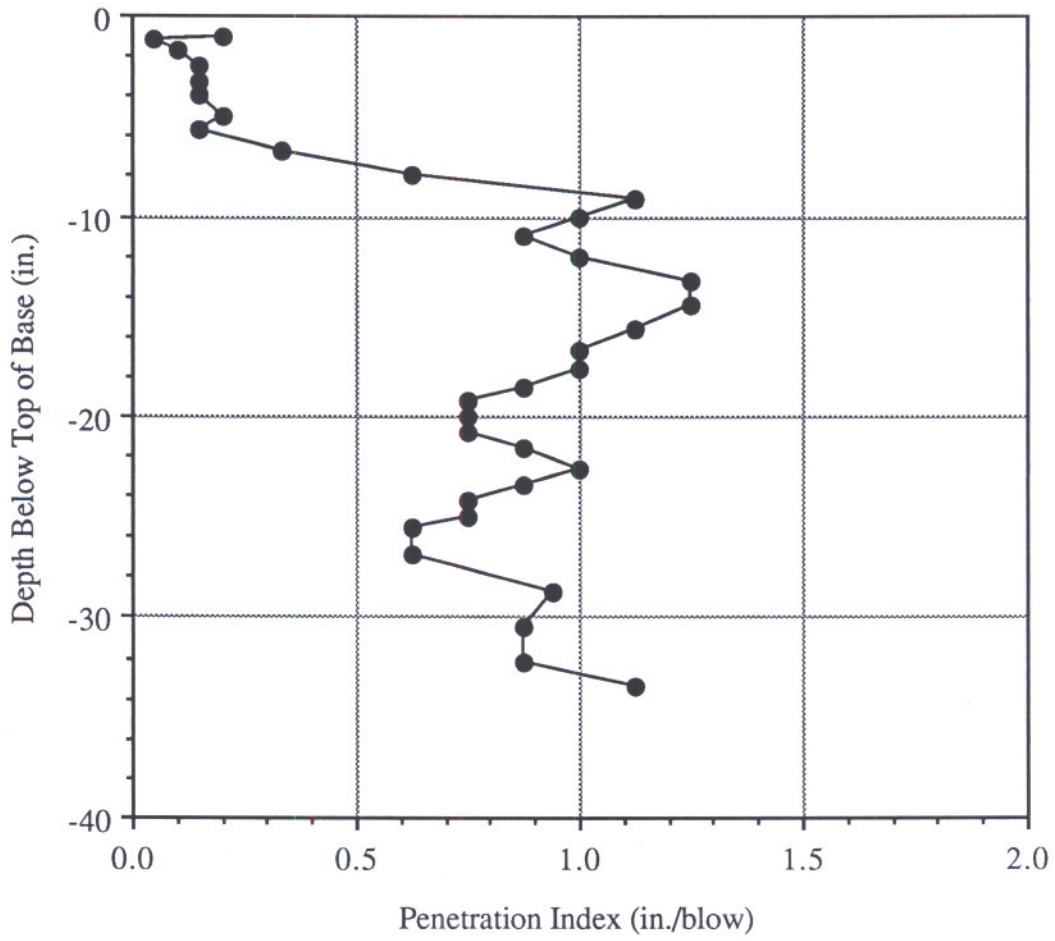


Figure 27 Result of DCP Test at Station 4+50 (Wheel Path)



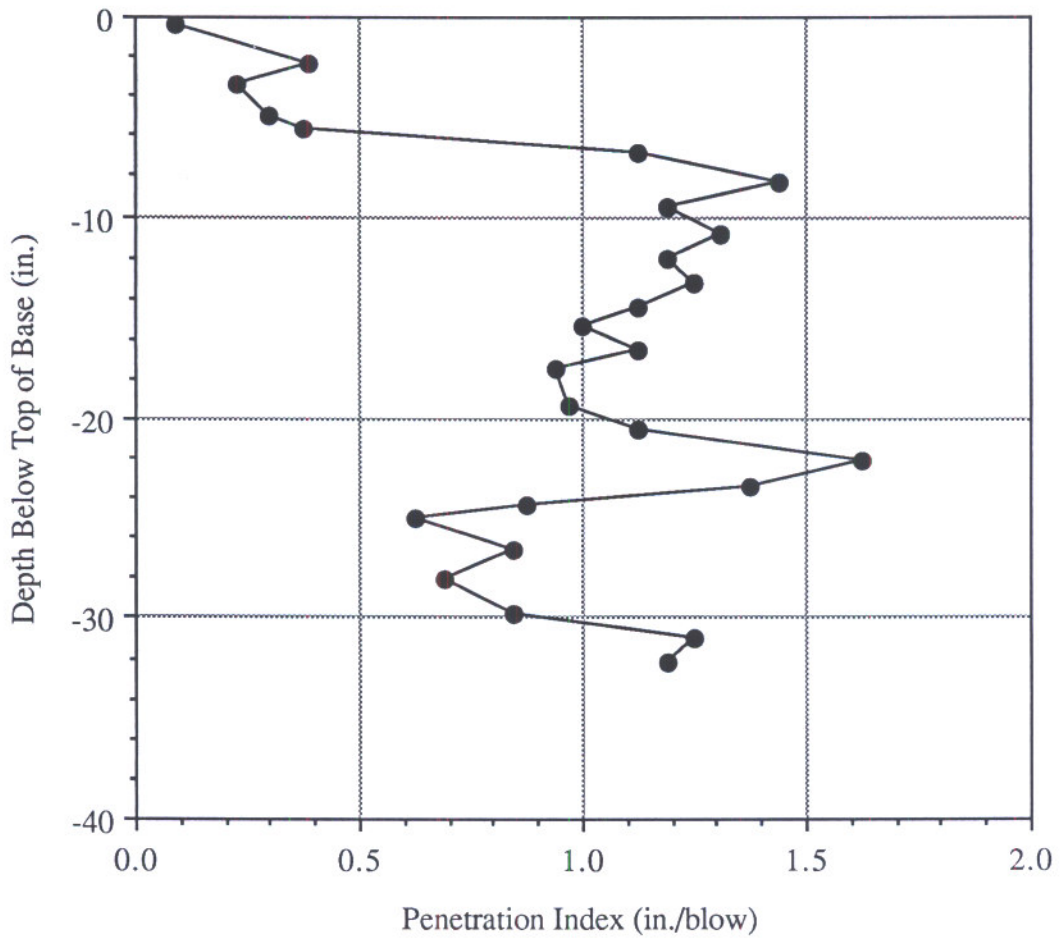


Figure 28 Result of DCP Test at Station 4+50 (Centerline)

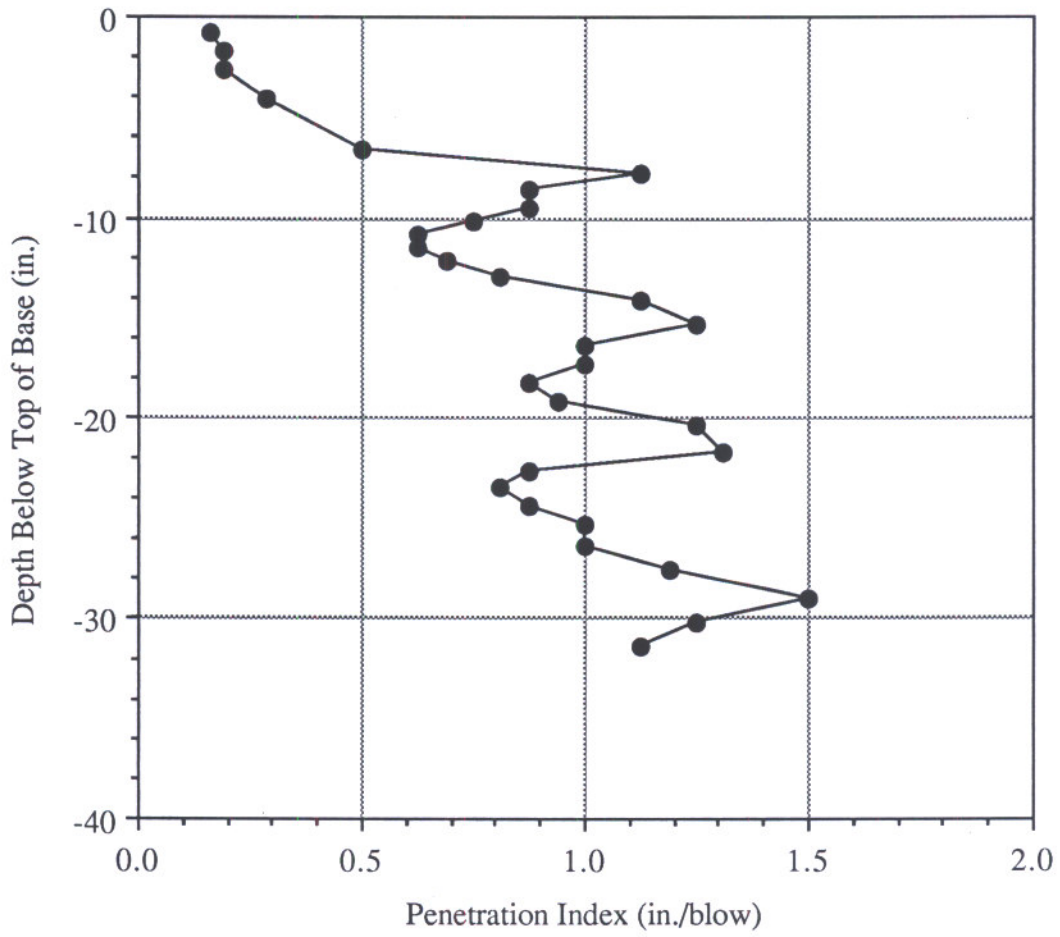


Figure 29 Result of DCP Test at Station 5+00 (Wheel Path)

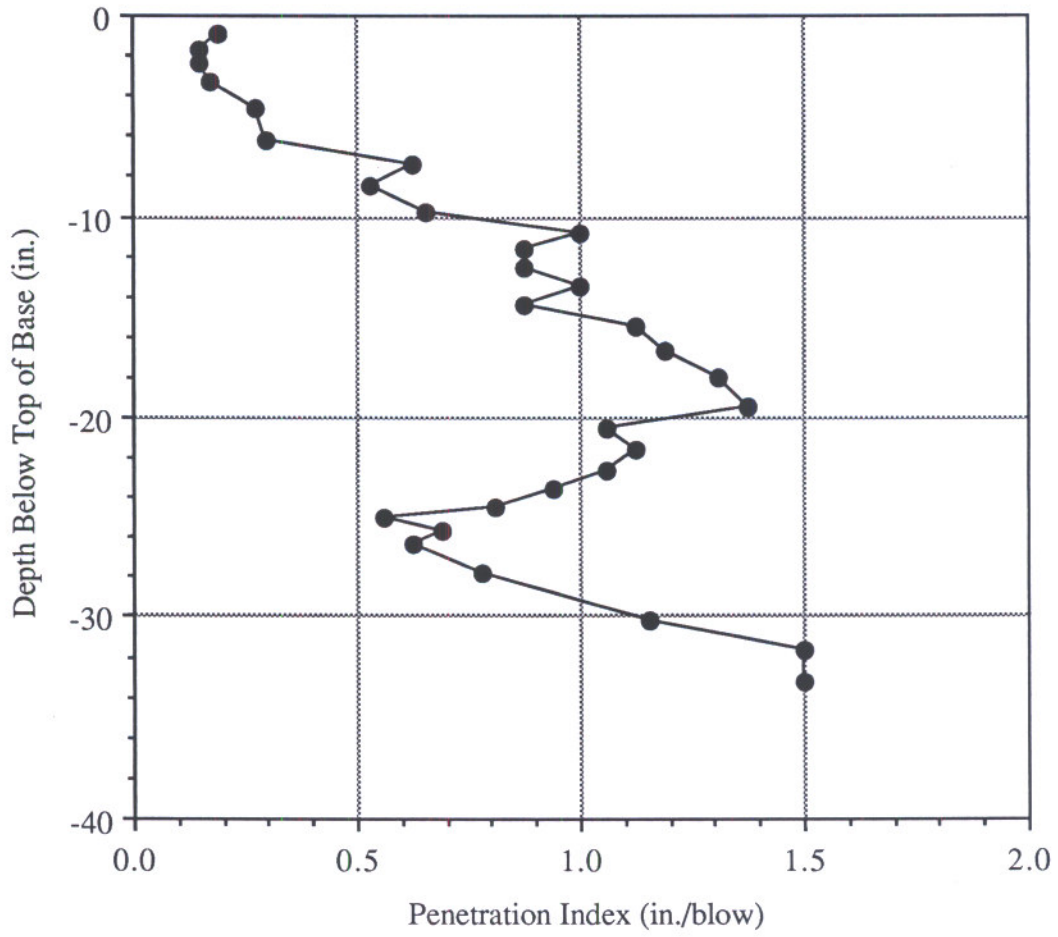


Figure 30 Result of DCP Test at Station 5+00 (Centerline)

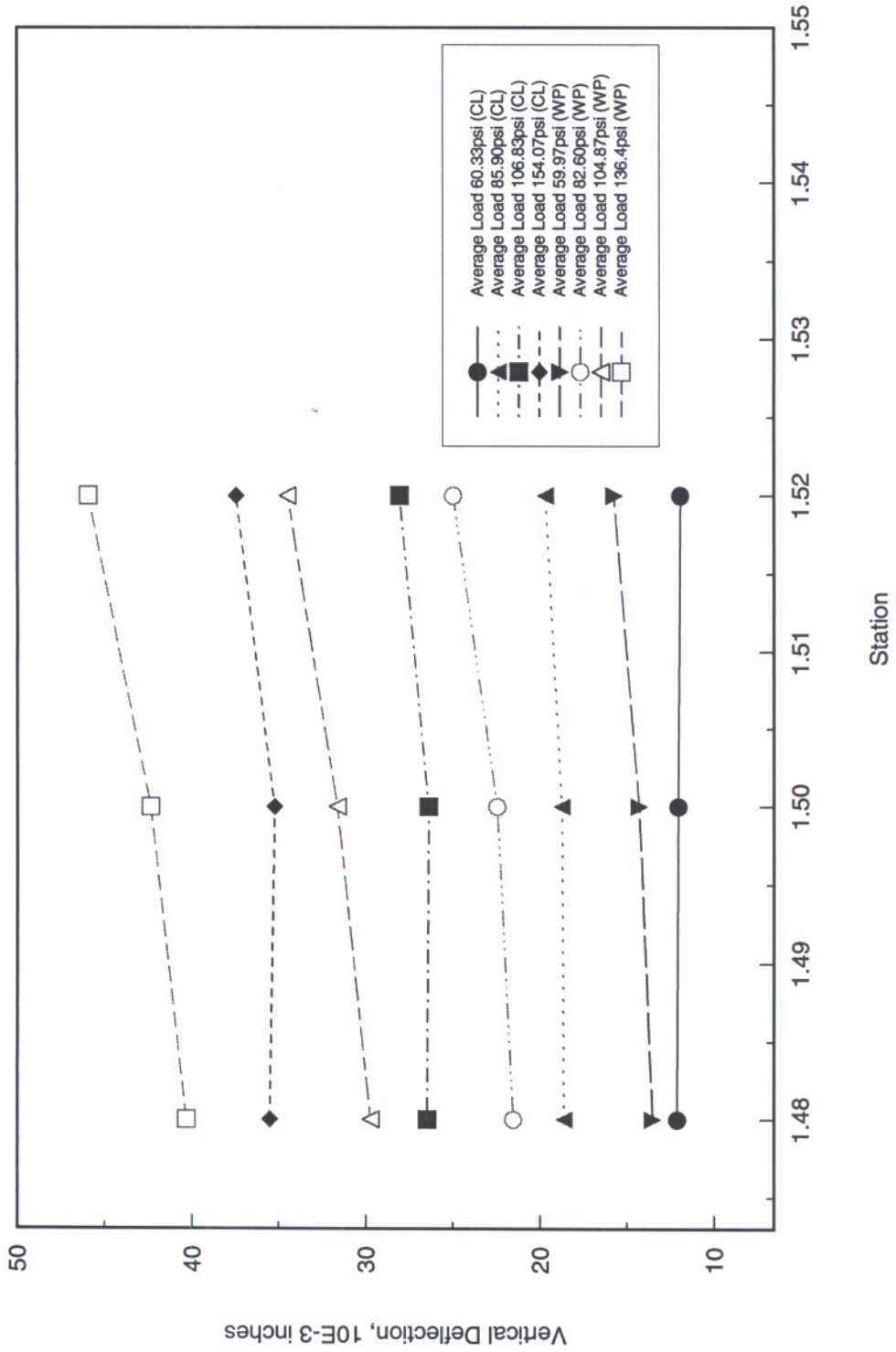


Figure 31 SHRP Section 390101. Falling Weight, Trench 1, 7/10/97.

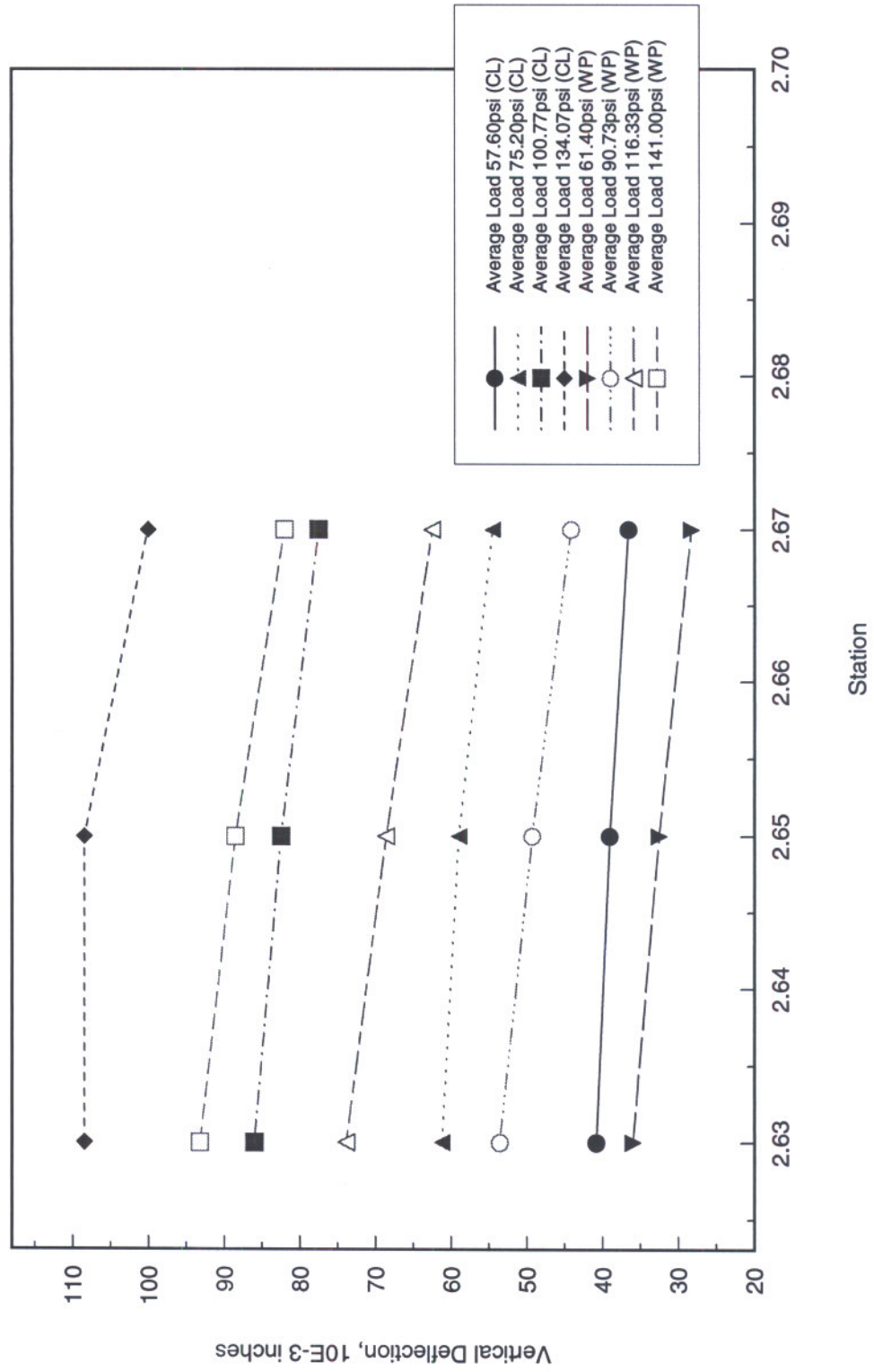


Figure 32 SHRP Section 3901010. Falling Weight, Trench2, 7/10/97.

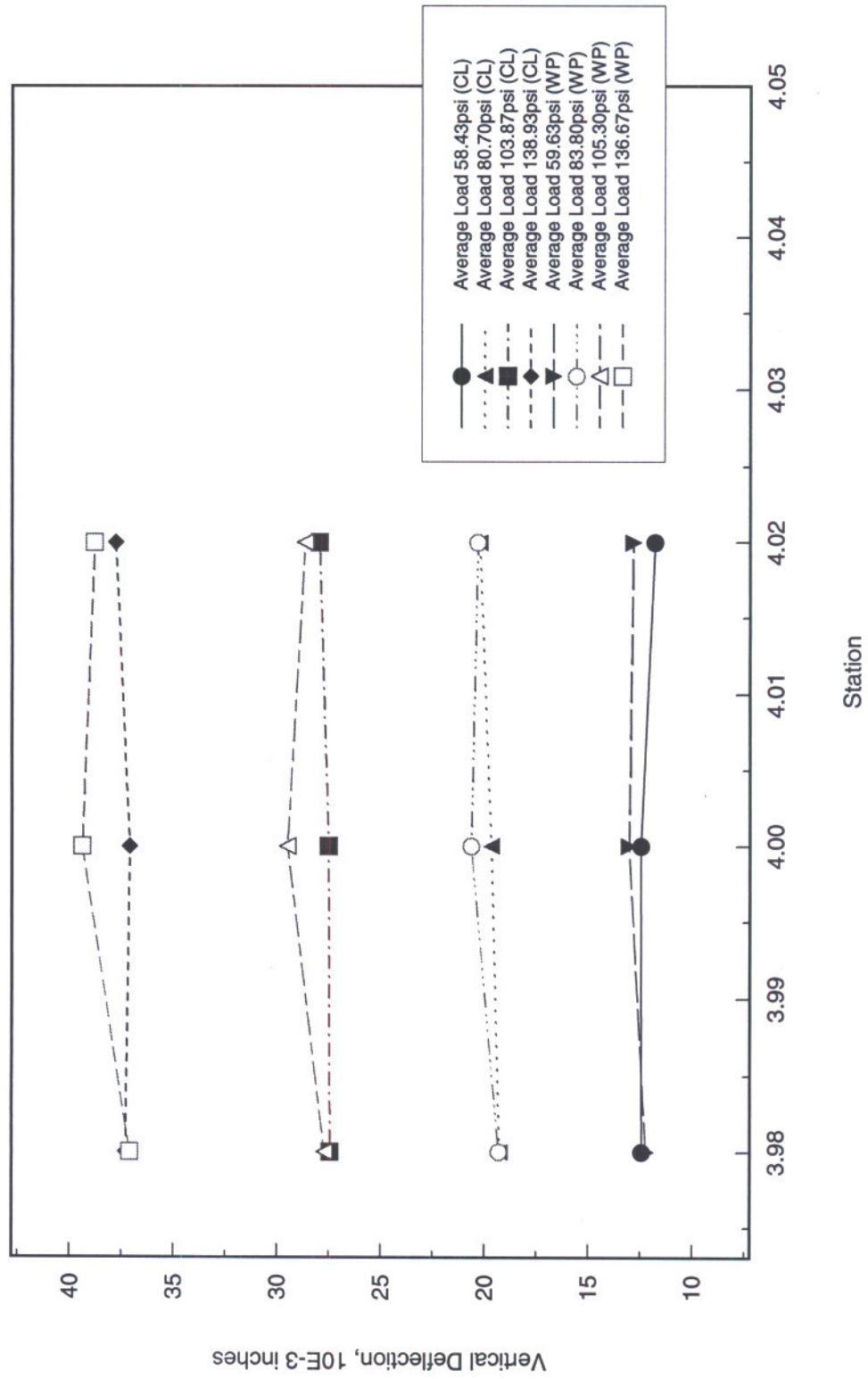


Figure 33 SHRP Section 390101. Falling Weight, Trench3, 7/10/97.

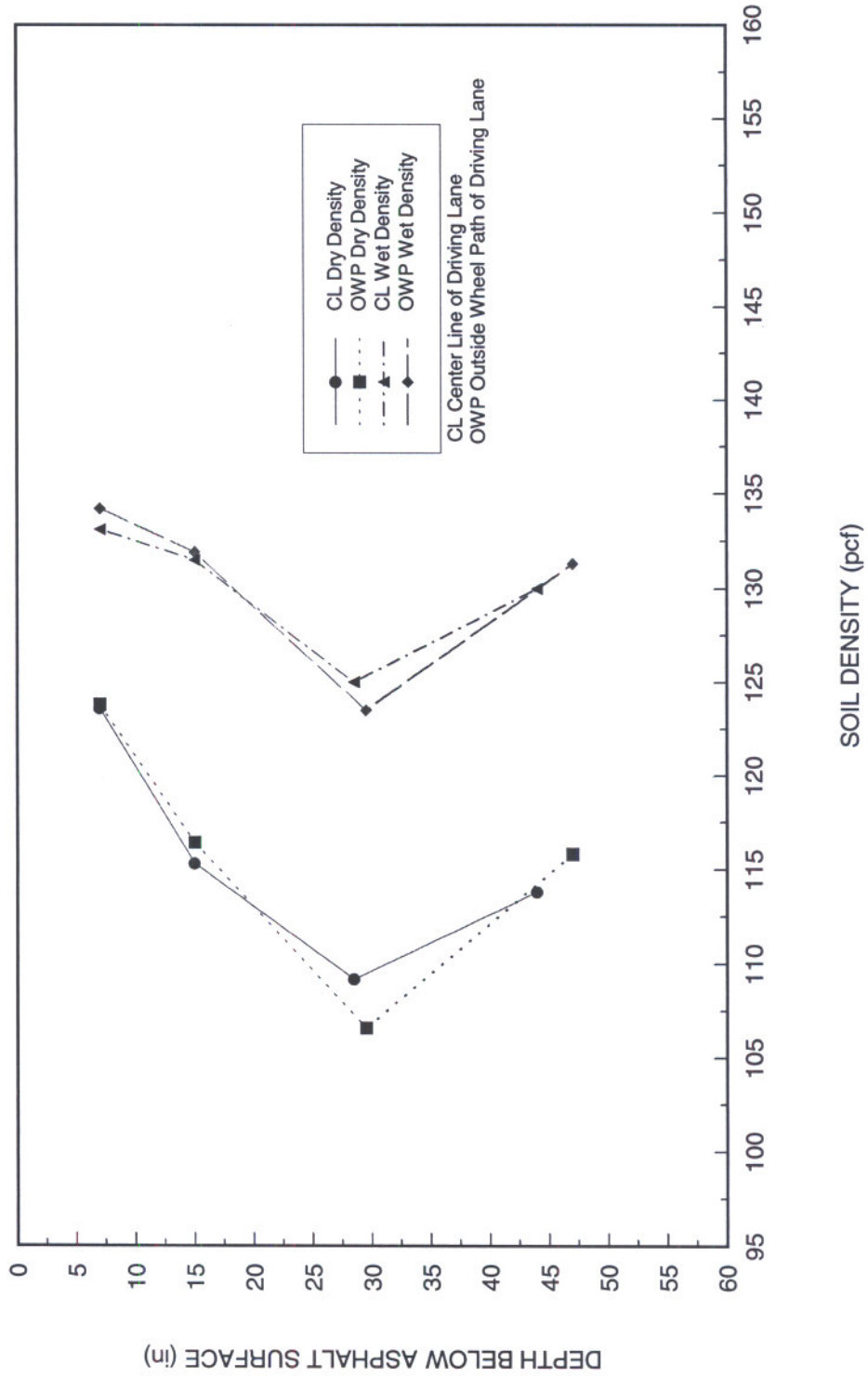


Figure 34 SHRP Section 390101. Trench1, Nuclear Density Tests. July 10, 1997.

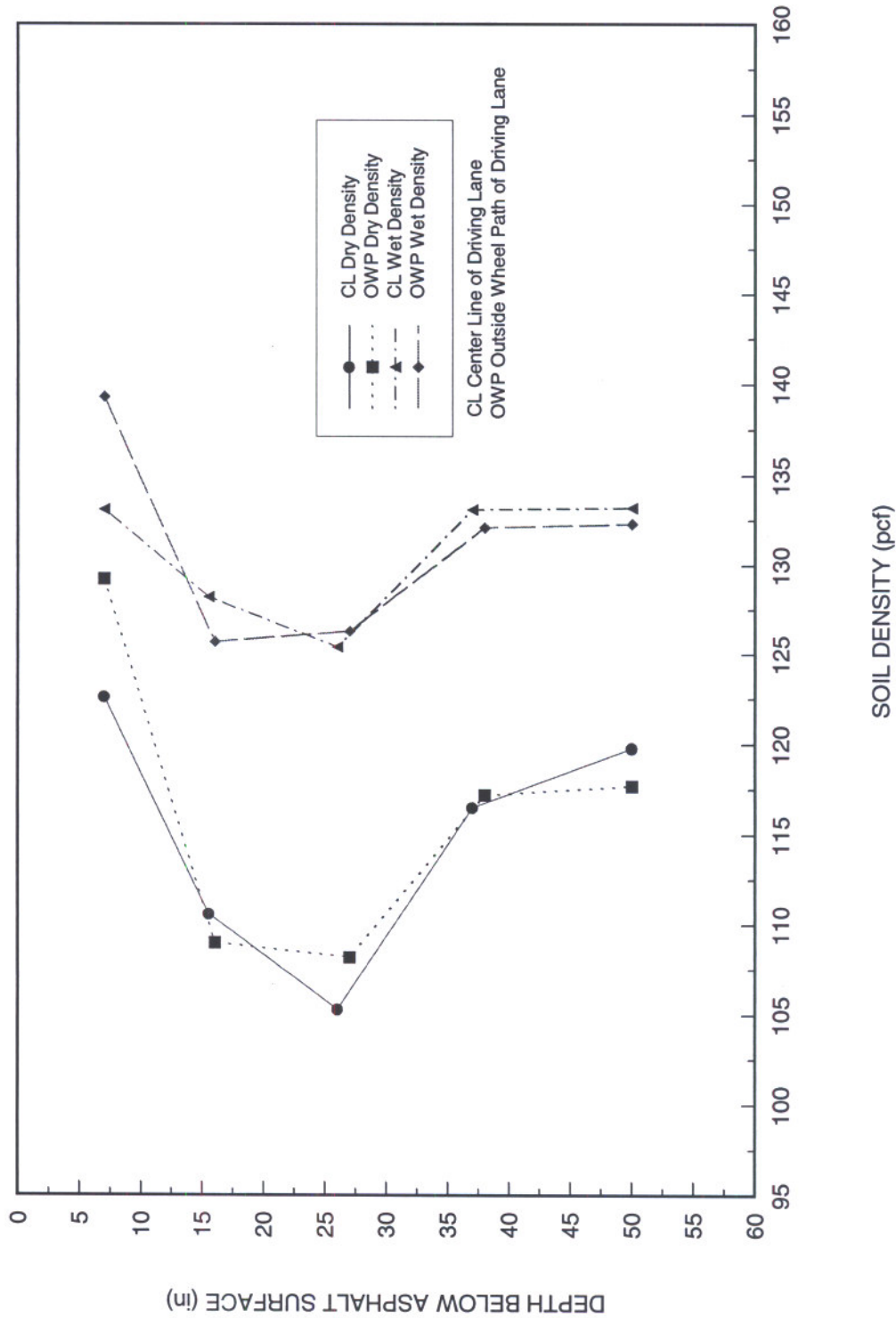


Figure 35 SHRP Section 390101. Trench2, Nuclear Density Tests. July 11, 1997.



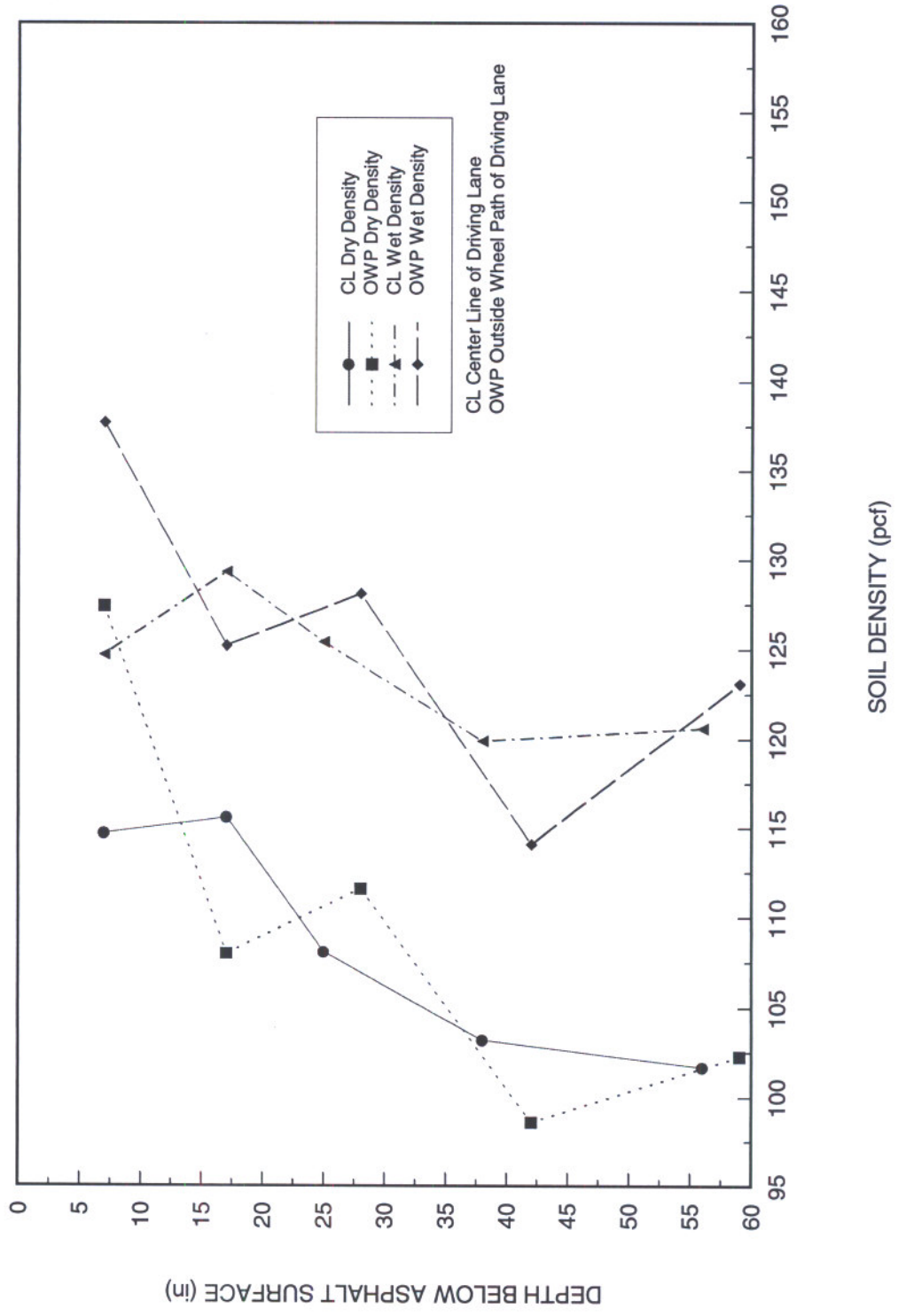


Figure 36 SHRP Section 390101. Trench3, Nuclear Density Tests. July 11, 1997.

## PROPERTIES OF ASPHALT MIX

A 6.5 inch by 12 foot section of Type 1H and Type 2 mixes from Trench 1 was removed and sent to the ODOT lab for mixture analysis. ODOT personnel conducted laboratory analysis on the mix and the following laboratory data were reported:

Sample location	Type	Rice	Bulk	Density	AC%	JMF	AC%
1-1	1H				6.8	6.6	
1-2	1H				6.9		
1-3	2				6.3	5.9	
1-4	2				6.5		
2-1	1H		2.229	90.8			
2-2	1H		2.227	90.6			
2-3	2		2.203	89.1			
2-4	2		2.225	90.3			
3-1	1H	2.455					
3-2	1H	2.459					
3-3	2	2.473					
3-4	2	2.463					

Gradation	1H JMF	1-1	1-2	Type 2 JMF	1-3	1-4
½	96	97	98	76	78	80
3/8	84	88	90	63	69	72
#4	45	50	51	46	49	52
#8	32	34	34	33	32	34
#16	19	23	23	20	21	22
#30	12	16	17	12	14	15
#50	7	12	12	7	10	11
#100	4	9	9	4	8	8
#200	3.2	6.2	6/4	3.3	5.7	5.9

## RUTTING

Figures 37 through 48 show the transverse profile of the driving lane as measured with a dipstick, and a rod and level. These figures indicate some significant variations in the profile from the proposed design. There was a discrepancy between results obtained with the dipstick and the survey. This could be due to a difference in accuracy between the two systems, and also in referencing the survey to a bench mark outside of the pavement. It is important to note that the dipstick is more accurate than standard surveying tools, but it measures relative to some starting point on the pavement.

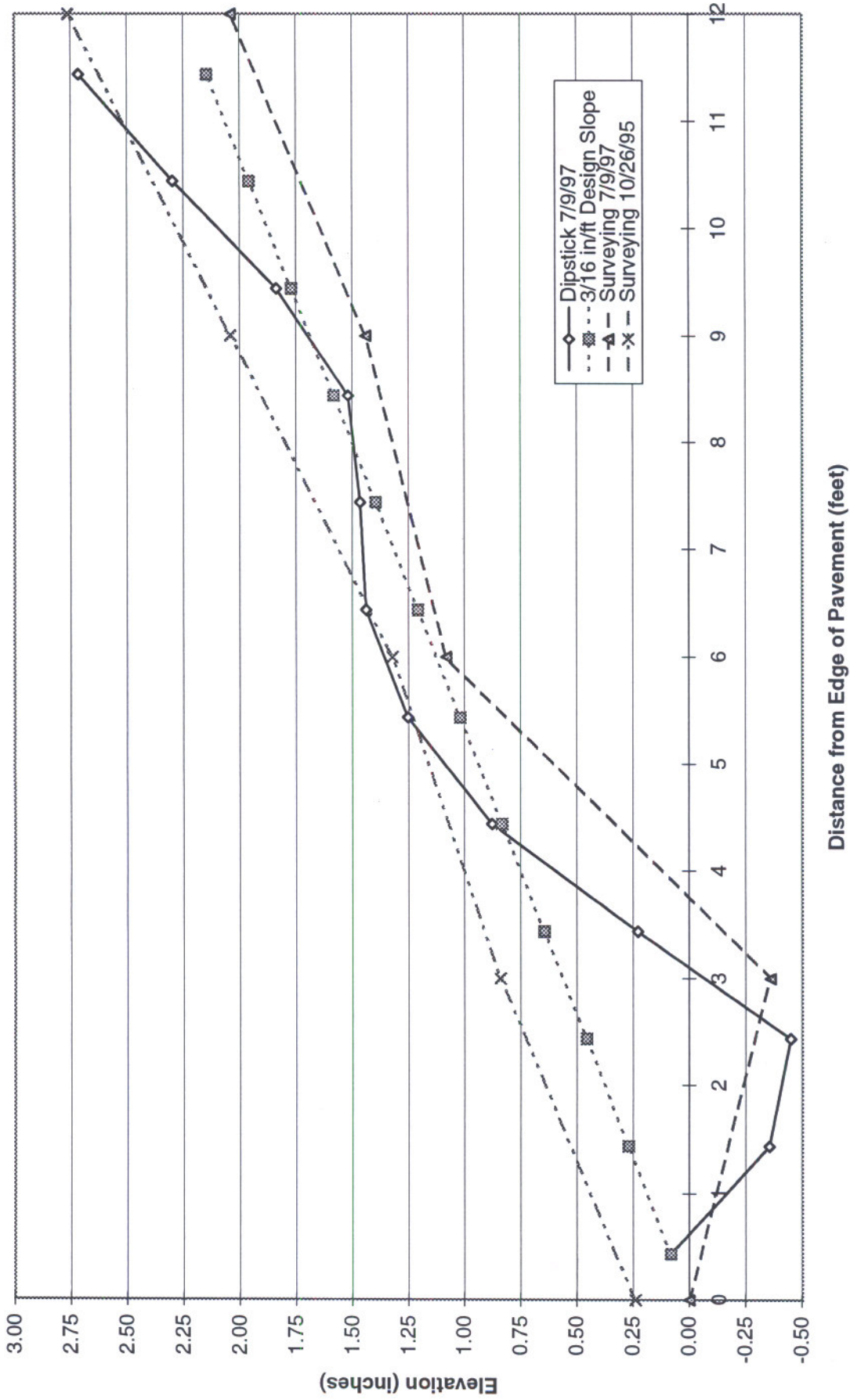


Figure 37 SHRP Section 390101. Transverse Profile, Station 0+00.

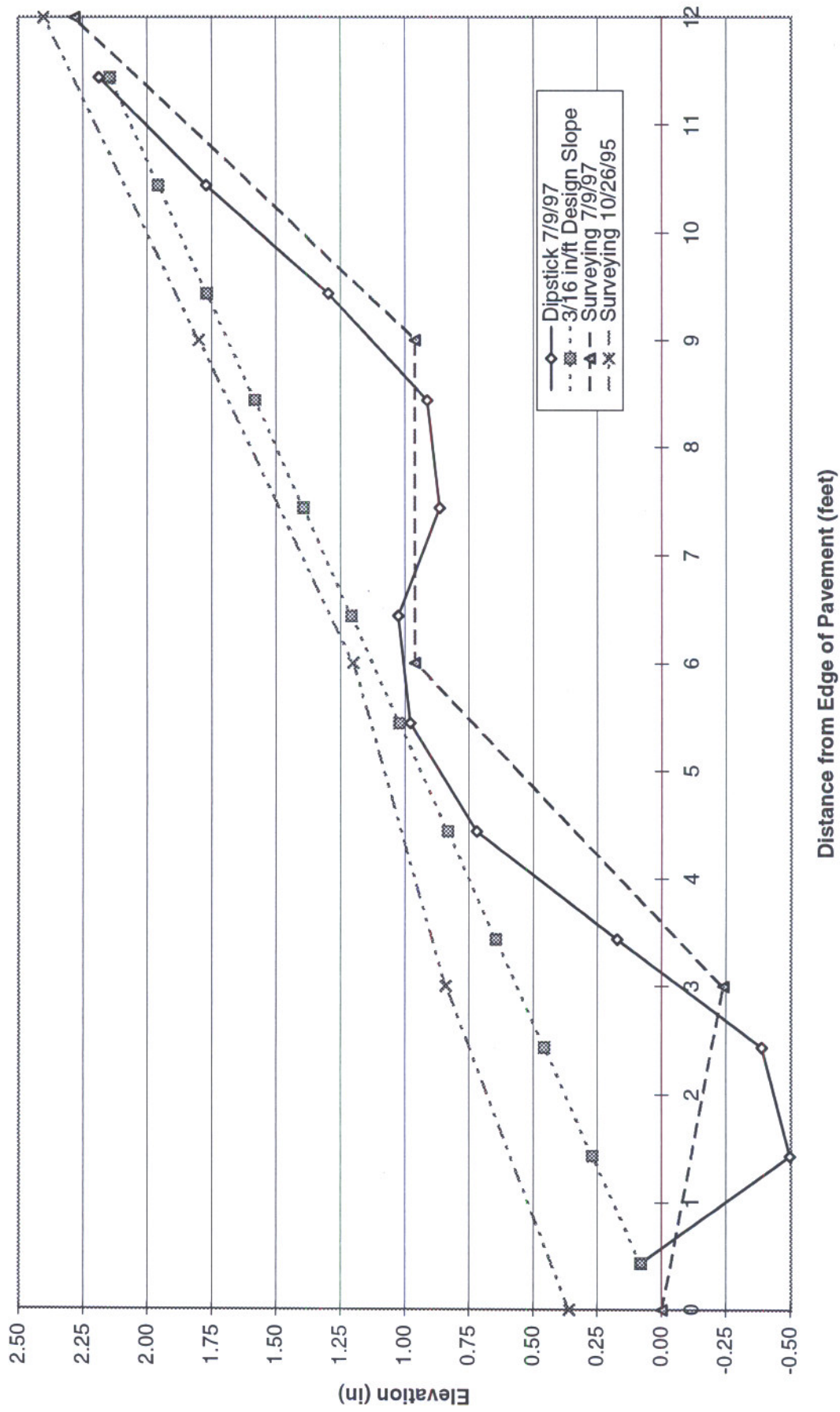
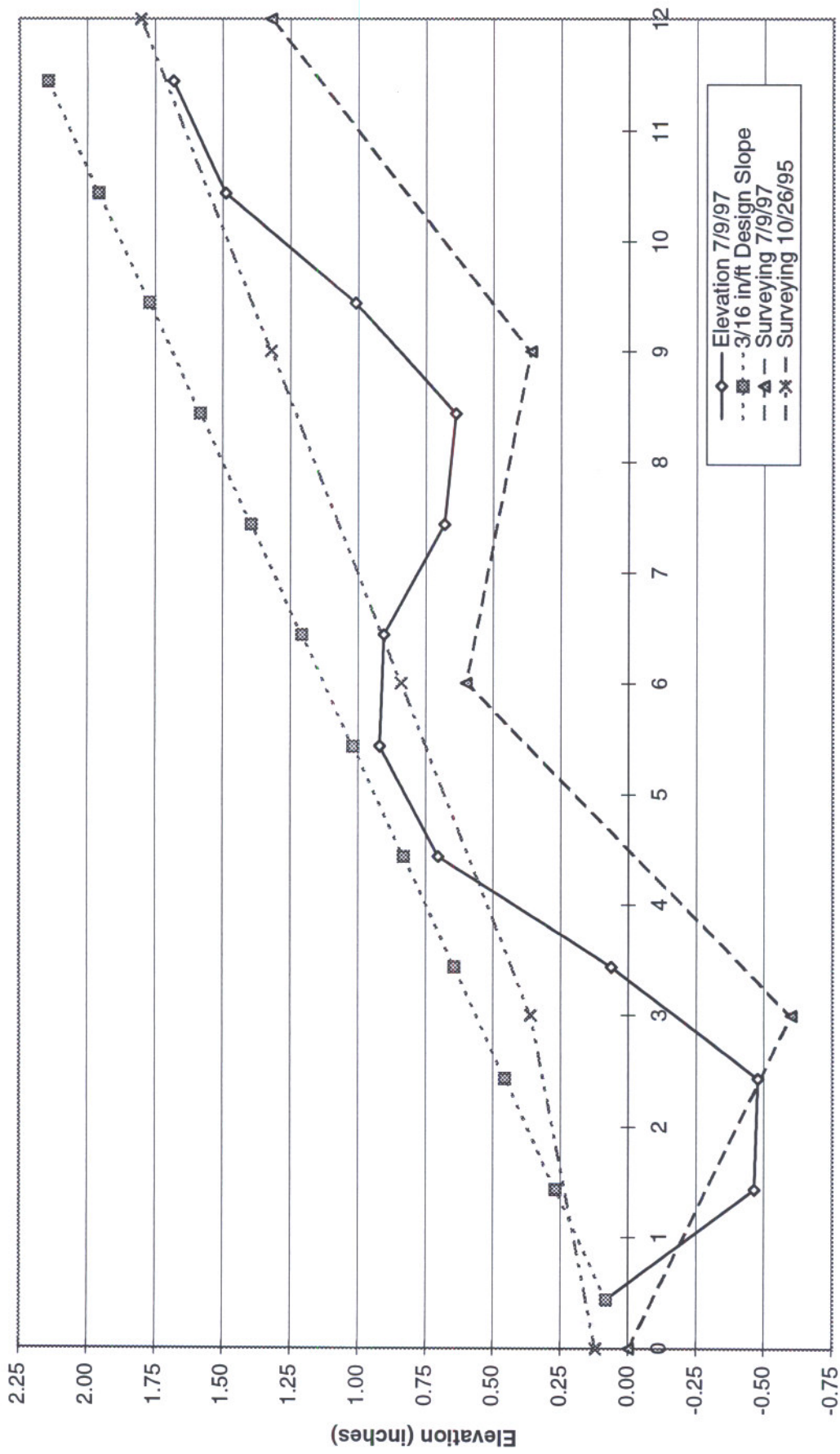


Figure 38 SHRP Section 390101. Transverse Profile, Station 0+50.



Distance from Edge of Pavement (feet)

Figure 39 SHRP Section 390101. Transverse Profile, Station 1+00.

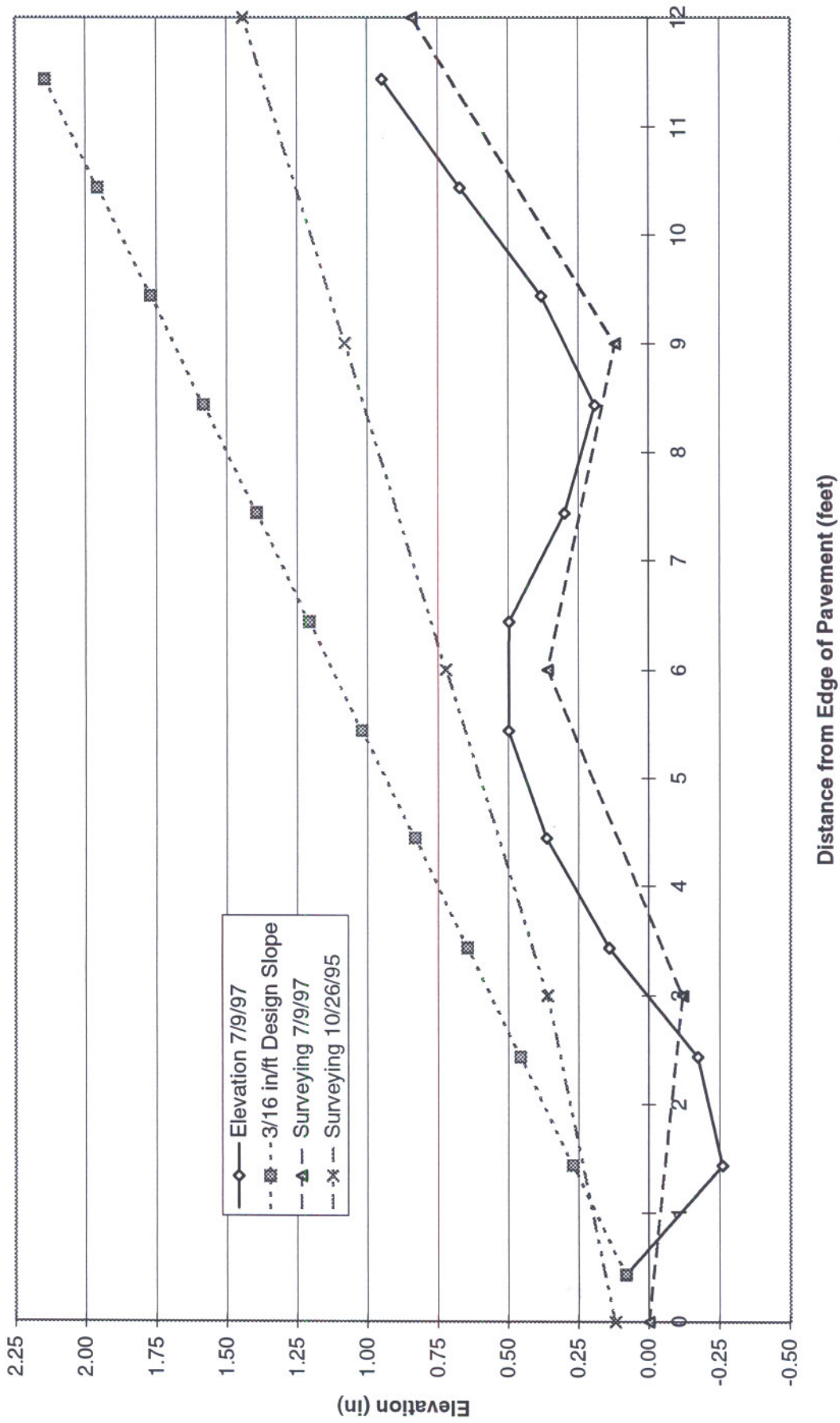


Figure 40 SHRP Section 390101. Transverse Profile, Station 1+50.

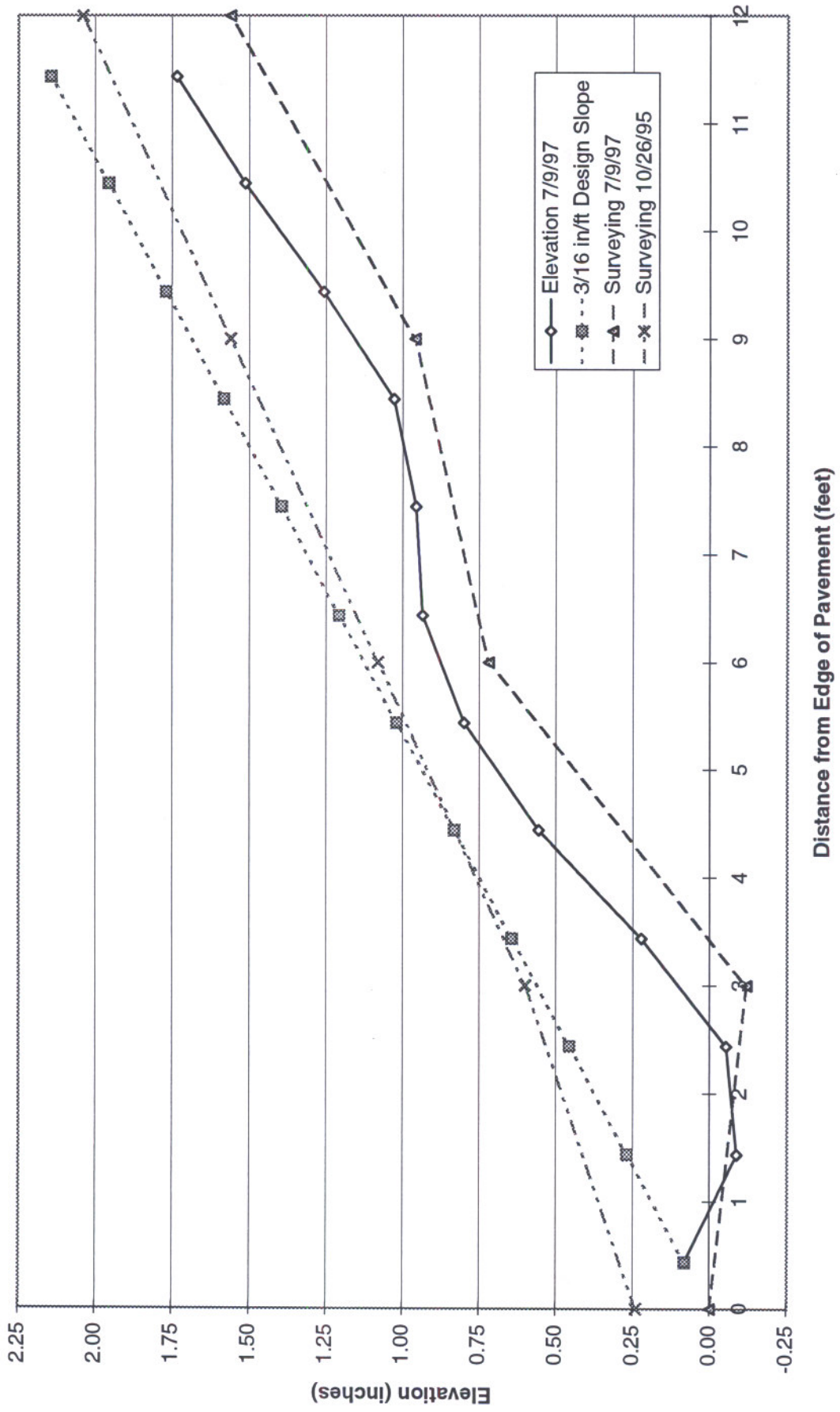
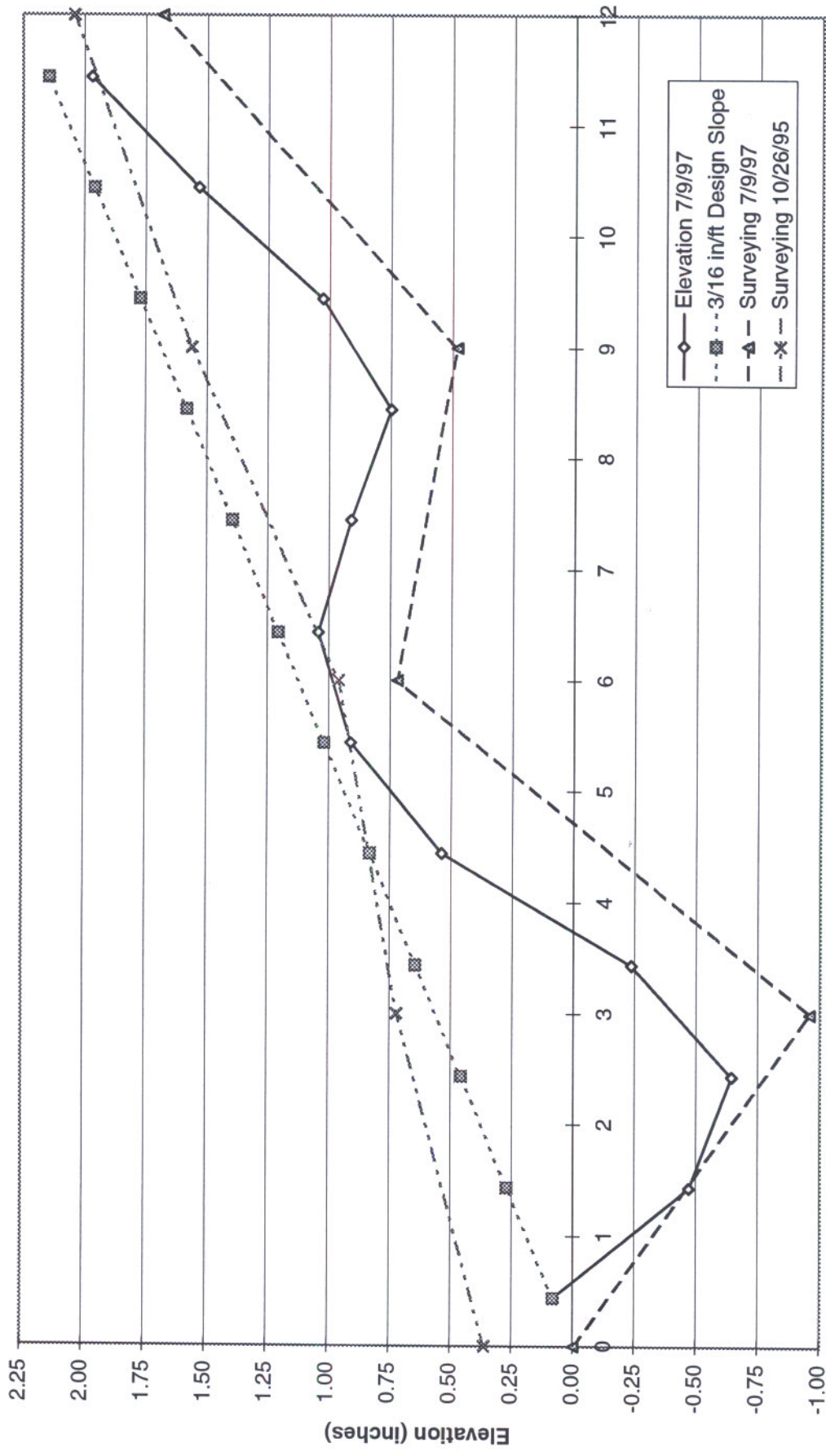


Figure 41 SHRP Section 390101. Transverse Profile, Station 2+00.



Distance from Edge of Pavement (feet)

Figure 42 SHRP Section 390101. Transverse Profile, Station 2+50.



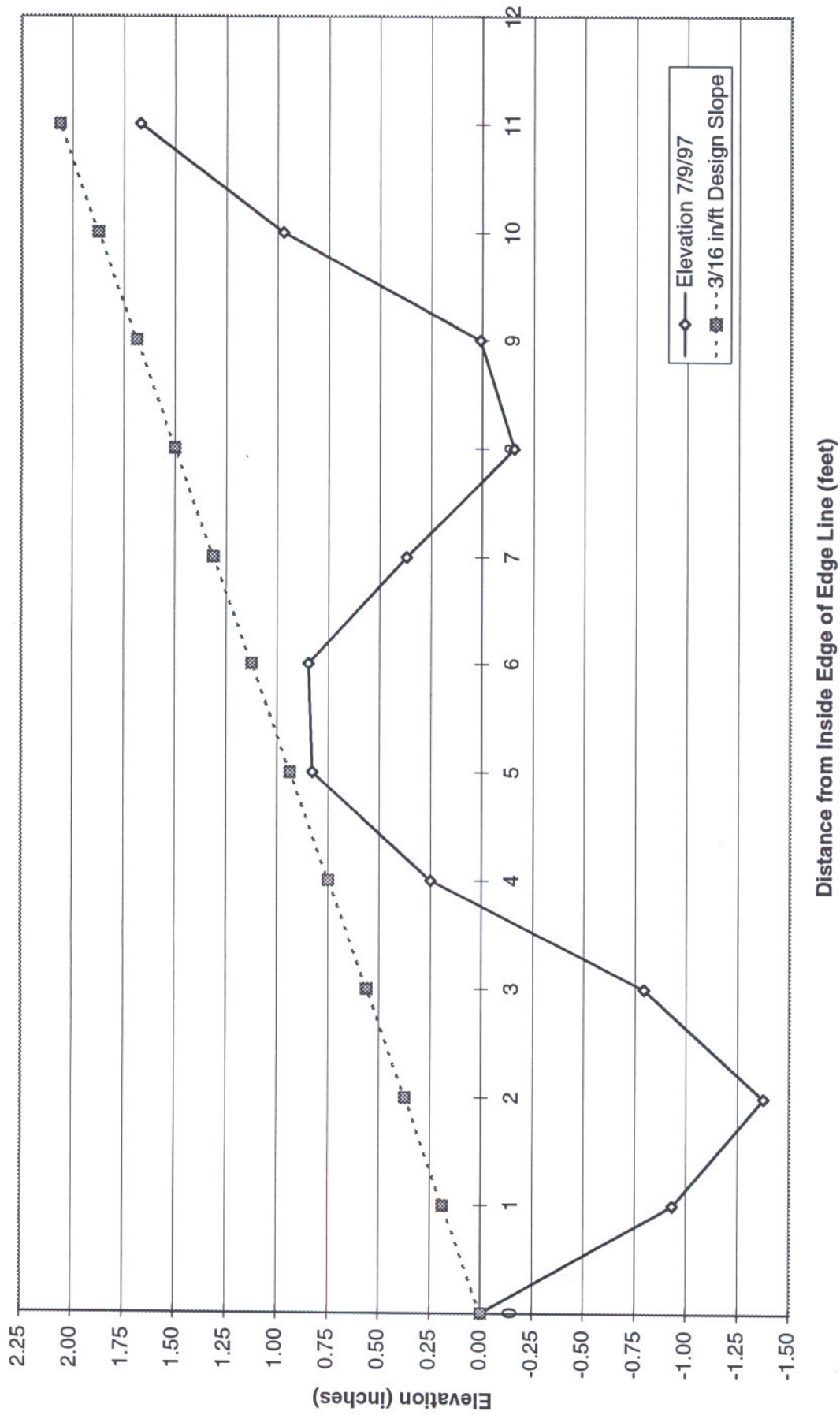


Figure 43 SHRP Section 390101. Transverse Profile, Station 2+65.

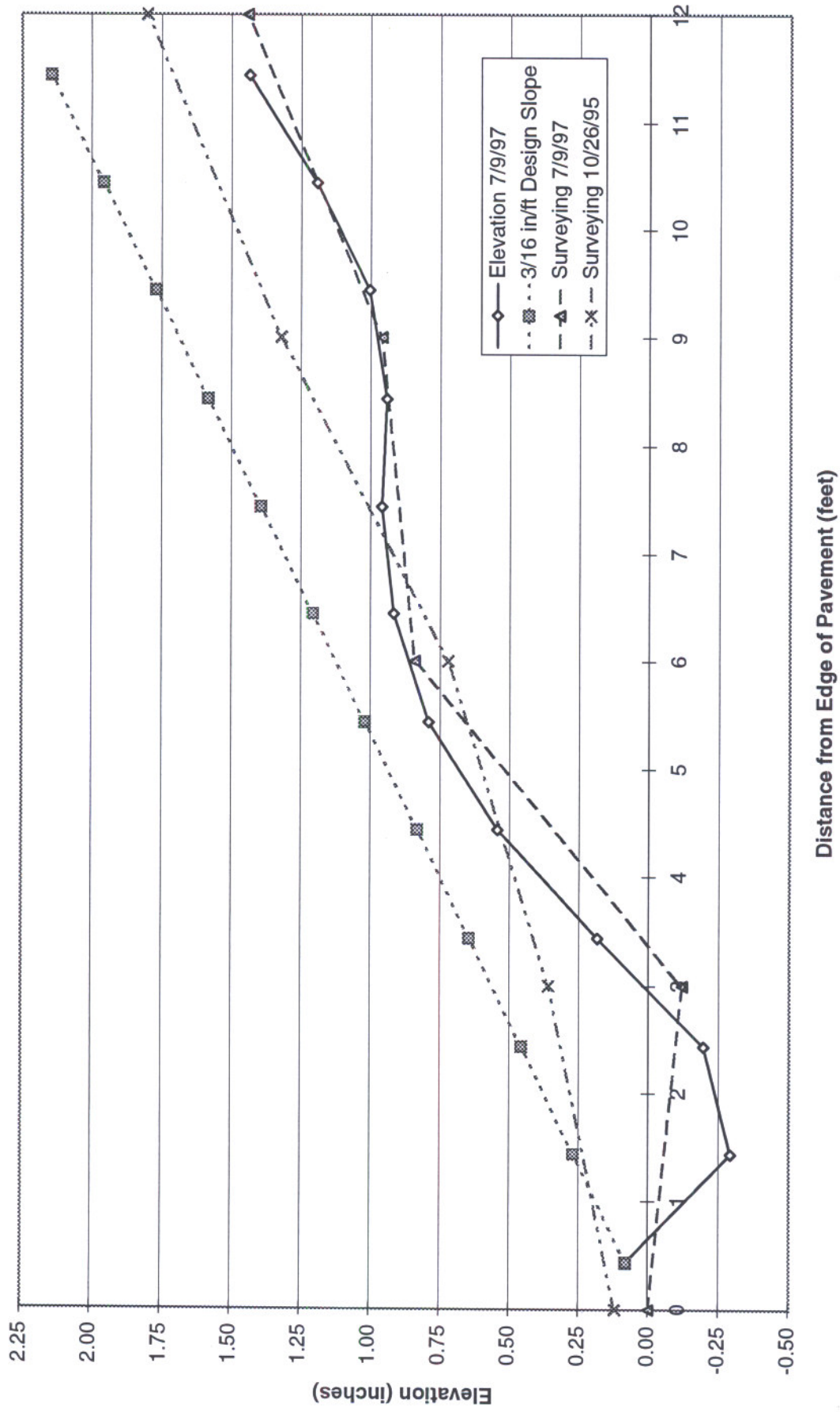


Figure 44 SHRP Section 390101. Transverse Profile Station 3+00.

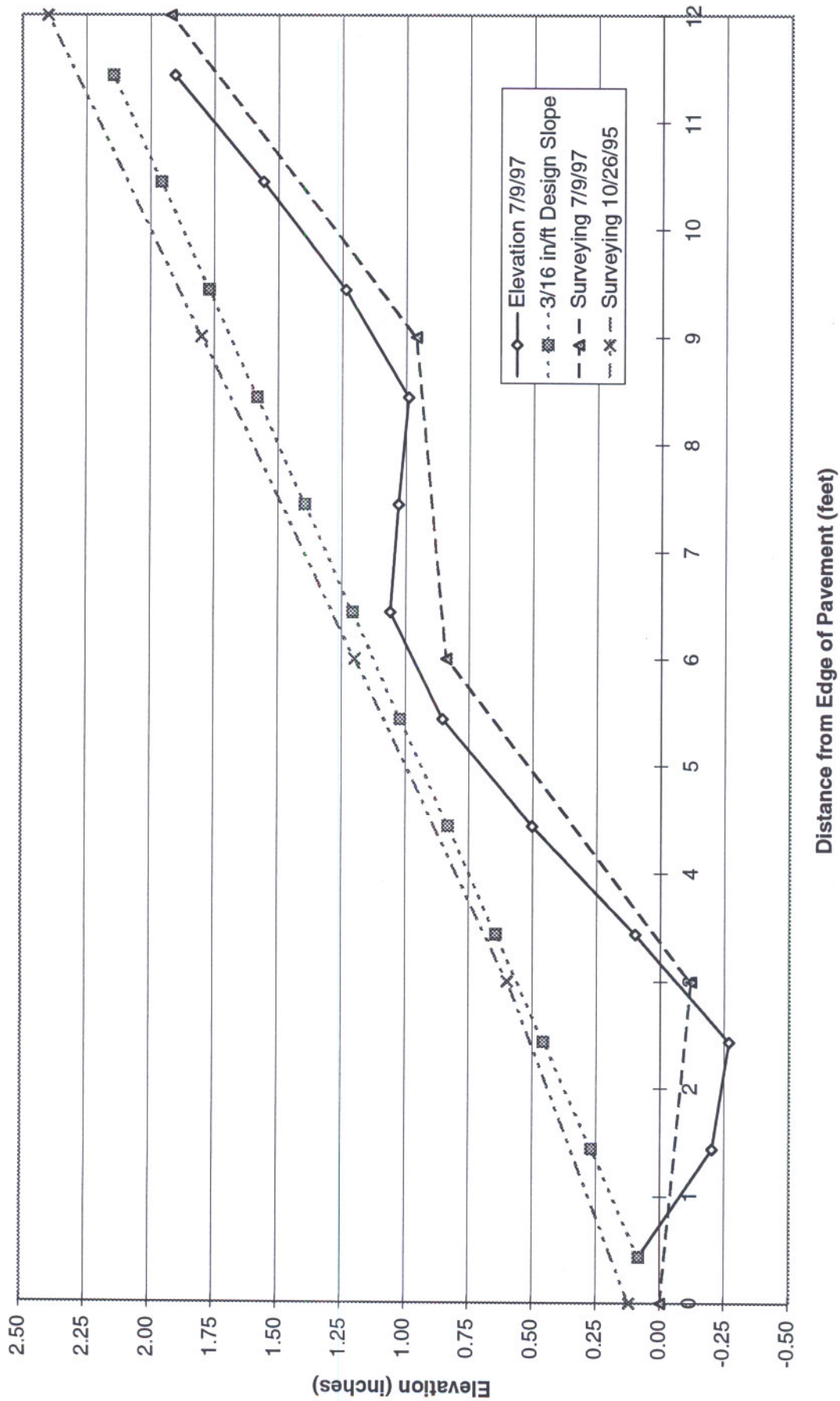


Figure 45 SHRP Section 390101. Transverse Profile, Station 3+50.

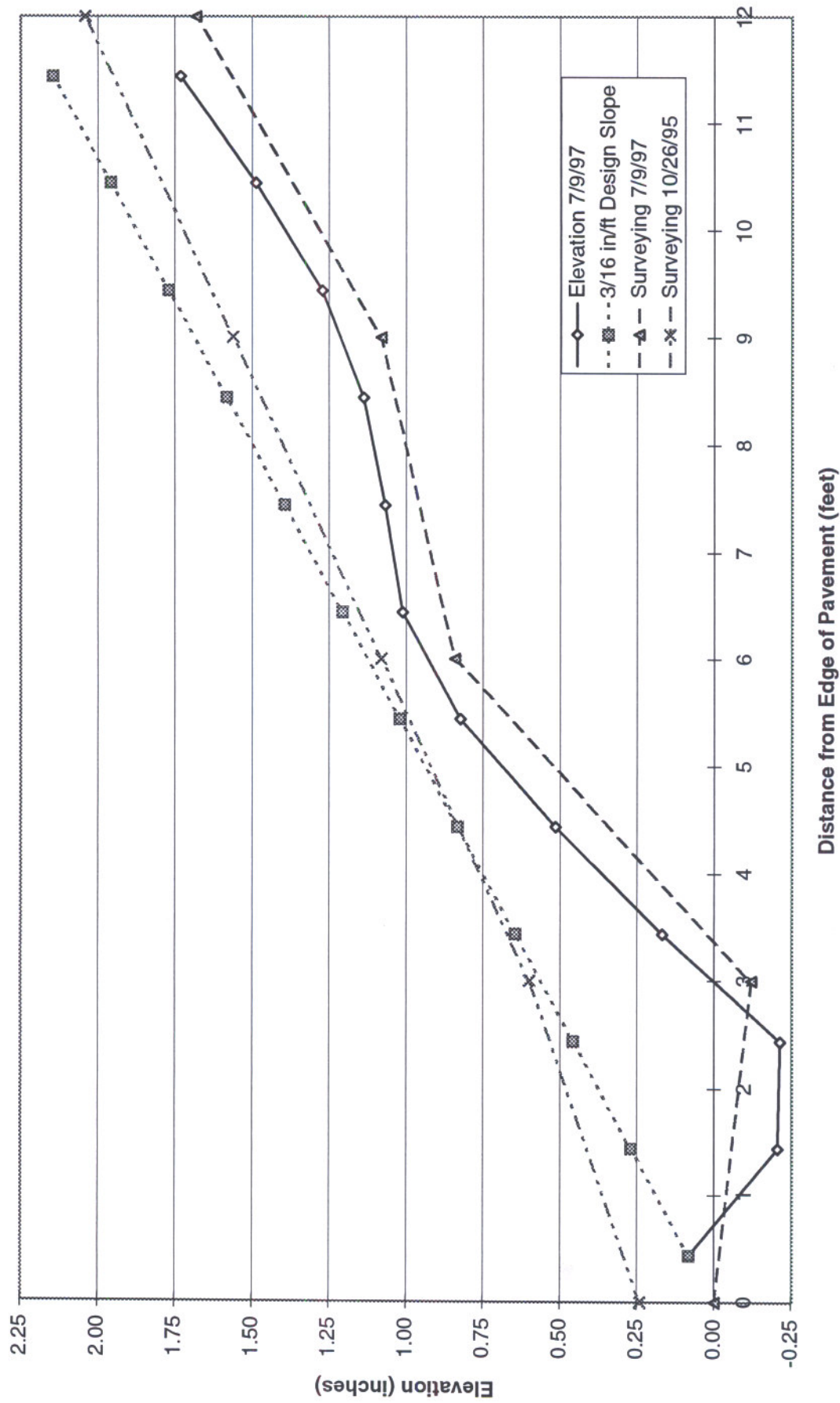


Figure 46 SHRP Section 390101. Transverse Profile, Station 4+00.

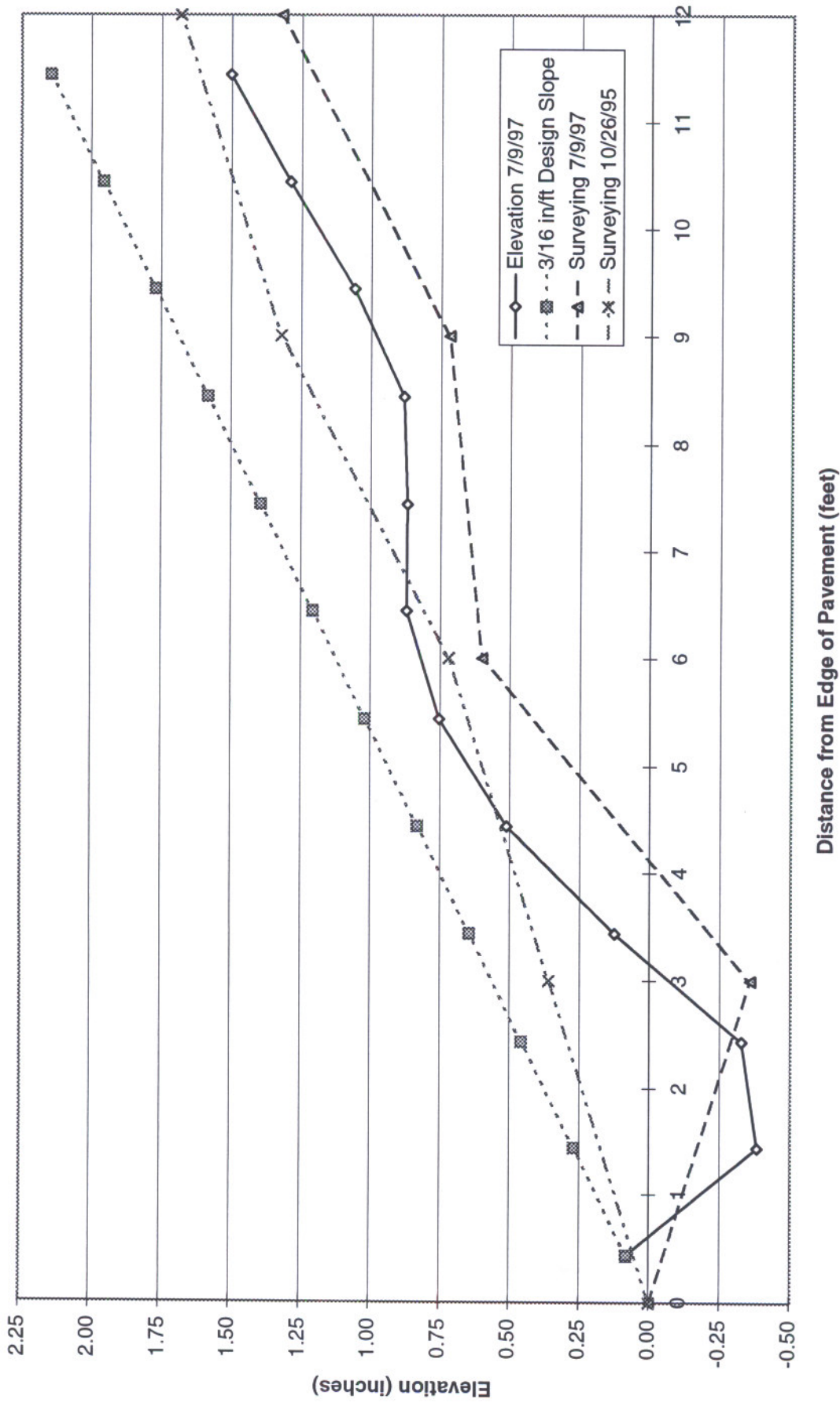


Figure 47 SHRP Section 390101. Transverse Profile, Station 4+50.

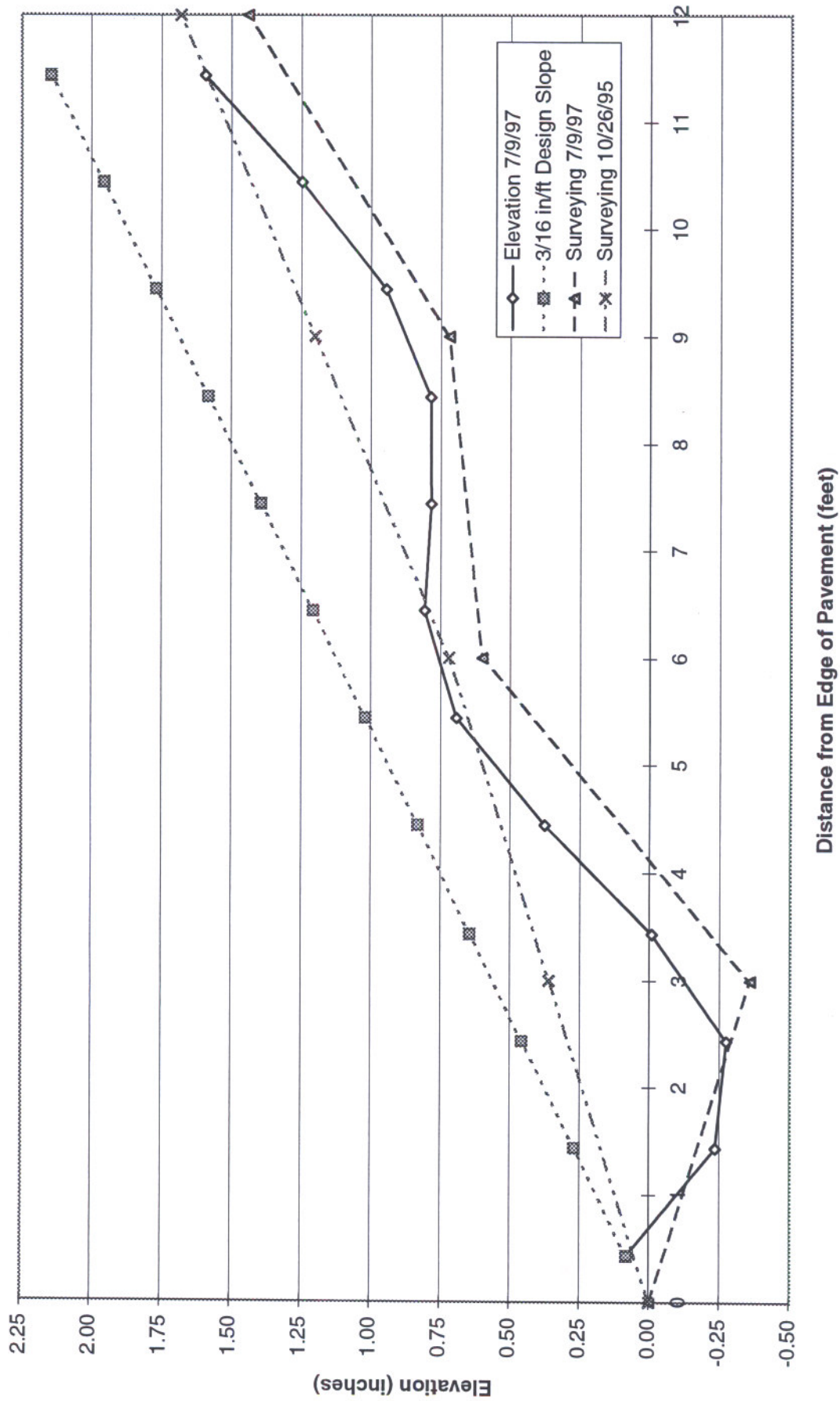


Figure 48 SHRP Section 390101. Transverse Profile, Station 5+00.

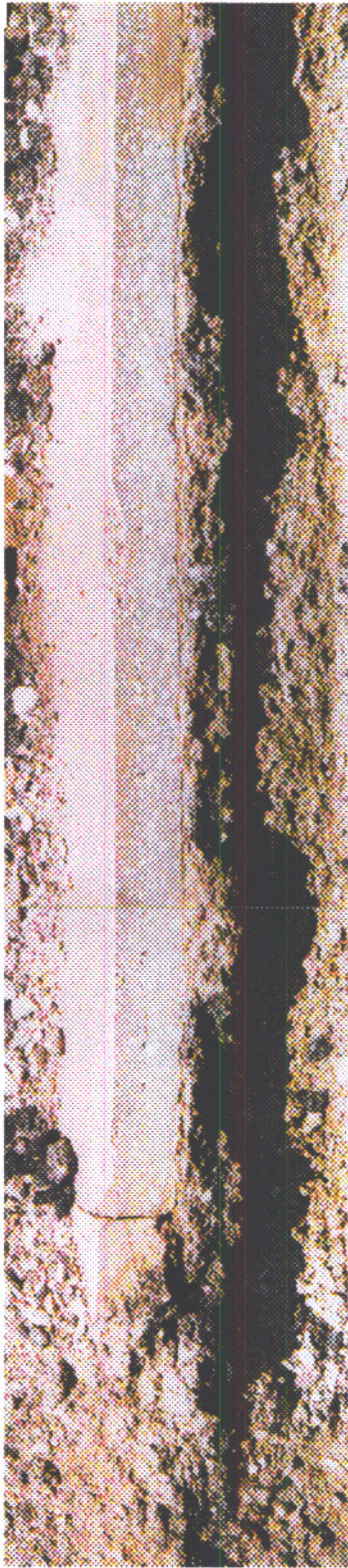
Figures 49 through 53 demonstrate that severe damage occurred at the bottom layer of the asphalt. This distress probably occurred from the presence of excess water and high cyclic stresses induced by traffic loading. Debonding of the asphalt layers was also noted in trenches at Station 1 + 50 and 2 + 65. Moisture was present between the type 1 and type 2 mixes and at the bottom of the asphalt concrete where the 304 aggregate was adhered to the bottom of the type 2 mix.

Several asphalt cores were obtained from the right wheelpath and shoulder (See Figures 54 through 61). Careful observation of these cores indicated that the bottom layer at the wheelpath had disintegrated to the point where it could be broken apart by hand; whereas, the same layer at the shoulder was in excellent condition. It appears that most of the damage to the bottom layer was caused by the load. Debonding could be due to the presence of dust on the existing pavement when the new asphalt was placed and high shear stresses induced by traffic.

Examination of the thickness of the intermediate and surface asphalt courses at the trenches did not show any changes from design thickness. The same result was obtained from the cores (Table 2). Based on these results, it could be concluded that most of the rutting took place below the asphalt concrete. Table 3 shows the thickness of the base at the location of the trenches. The thickness of the base was significantly less than the original thickness across the entire lane. This indicated that the thickness of the base placed at the time of construction was less than the design thickness (8 inches). Despite this, the reduction in thickness at the wheelpaths is obvious.

## **MOISTURE**

Figures 62 through 64 show moisture content obtained from laboratory and nuclear gage tests. The laboratory samples were obtained from different depths in the trenches and transferred to the Ohio Research Institute for Transportation and the Environment (ORITE) laboratory in sealed containers, and tests were then conducted. Moisture in the subgrade at trench two was the highest. For this trench near the surface of the subgrade, the high water content could be caused by rain infiltrating through pavement cracks. At a depth of two feet, the moisture at all three trenches was high. Figure 65 shows the moisture from the TDRs at various times. Results from the TDR indicate that subgrade moisture was relatively constant during the pavement life. Thus, average moisture data obtained from the trenches or the TDRs could be used for the determination of resilient modulus.



**Figure 49 Trench at Station 1+50 Section 390101**





**Figure 50 Trench at Station 1+50 Section 390101**



Figure 51 Trench at Station 2+65 Section 390101



**Figure 52 Trench at Station 2+65 Section 390101**



**Figure 53 Trench at Station 4+00 Section 390101**



Figure 54 Core #1, Top View



Figure 55: Core #1, Side 1

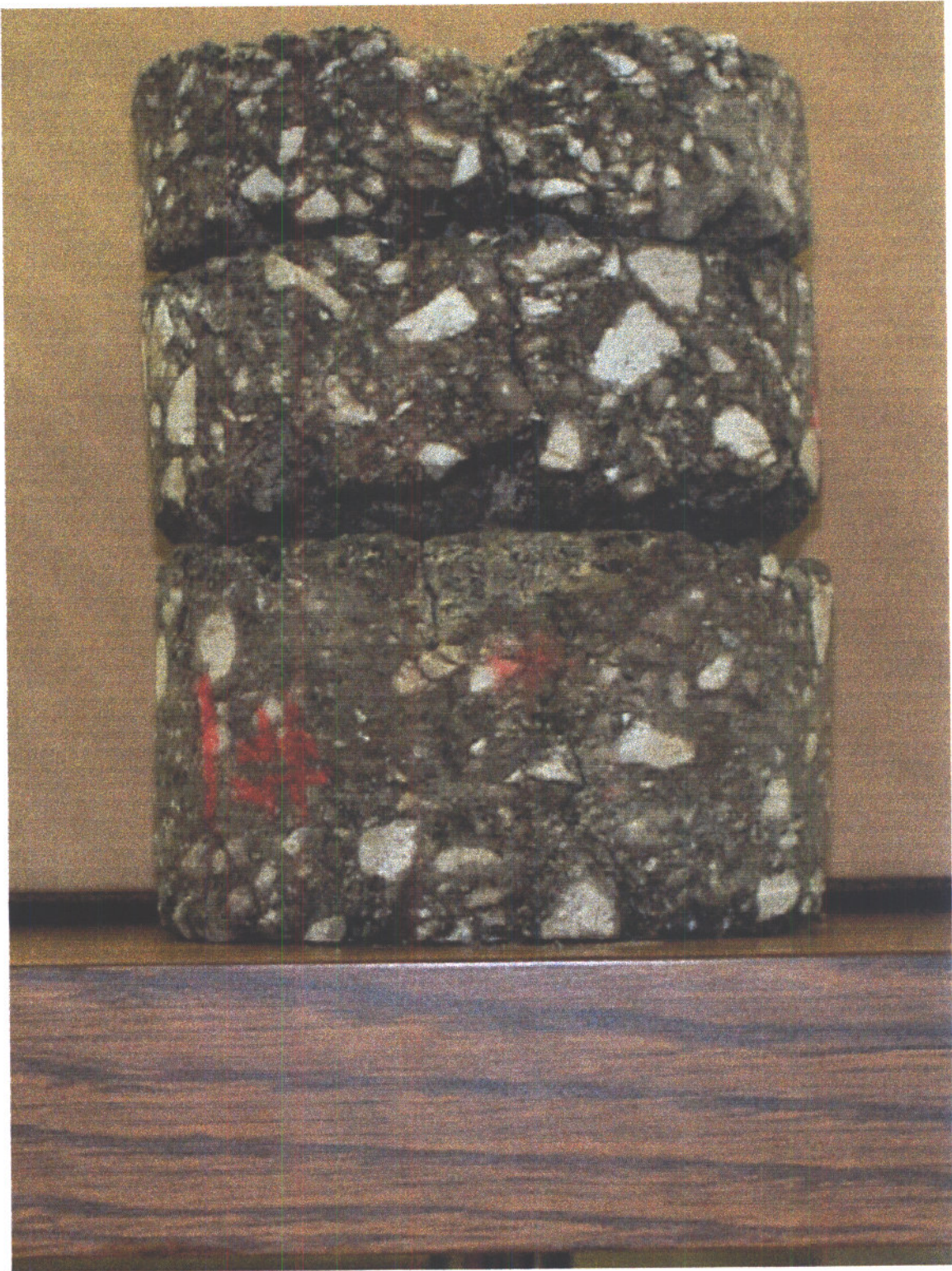


Figure 56 Core #1, Side 2



Figure 57 Core #2



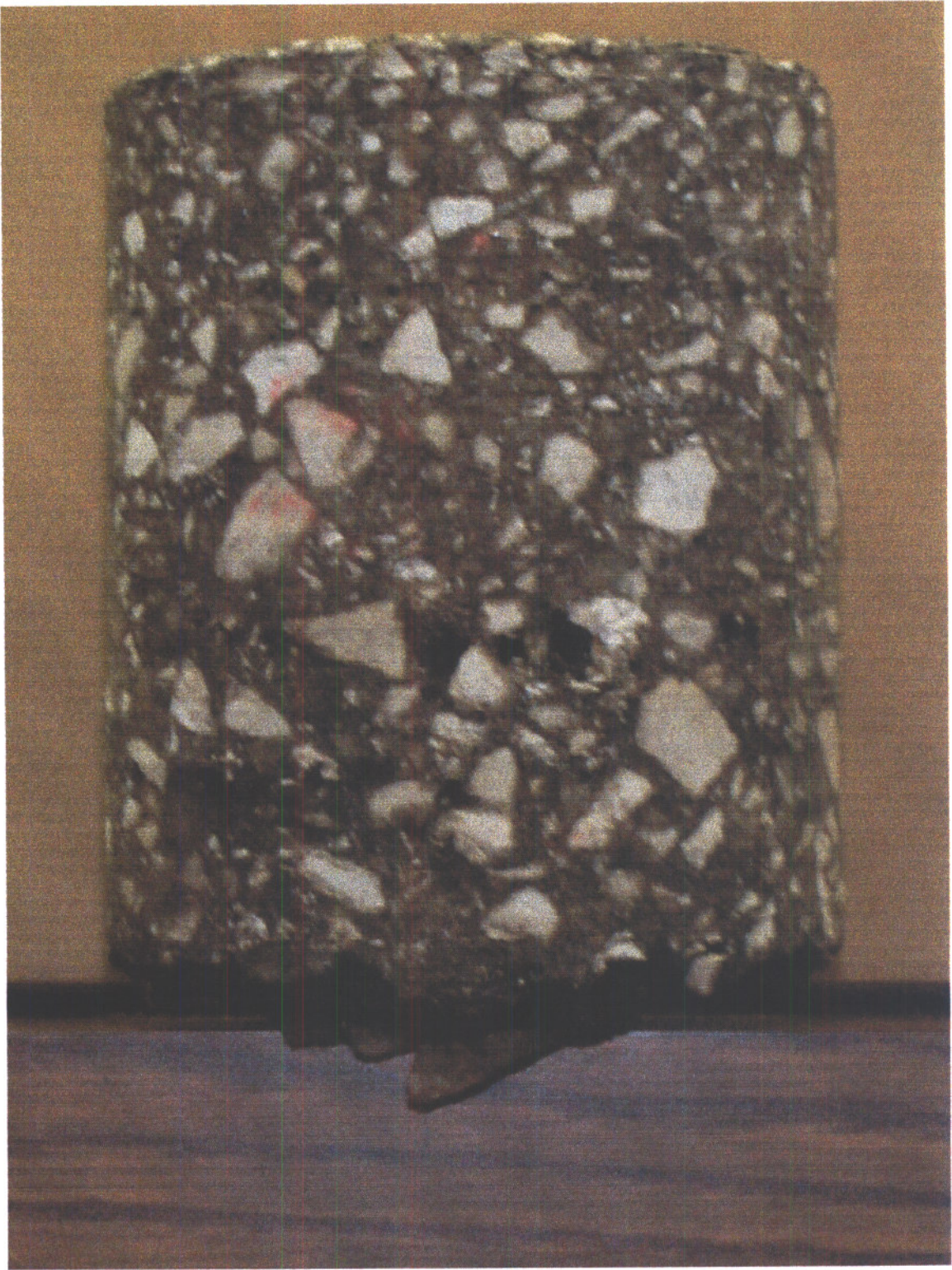


Figure 58 Core #3



Figure 59 Core #4, Lift 1



Figure 60 Core #4, Lift 2



Figure 61 Core #5

Table 2 SHRP Section 390101. Lift Thicknesses.

Station 0-26 Midlane

Measurements During Paving Process		
Lift	Top	AC Binder
inches	1.56	5.28

Measurements From Cores Taken During Forensic Study		
Lift	Top	AC Binder
inches	1.65	3.39
Binder = 5.28		

Station 0-26 Right Wheel Path

Measurements During Paving Process		
Lift	Top	AC Binder
inches	1.56	5.28

Measurements From Cores Taken During Forensic Study		
Lift	Top	AC Binder
inches	1.73	3.78
Binder = 6.06		

Station 5+26 Right Wheel Path

Measurements During Paving Process		
Lift	Top	AC Binder
inches	1.56	5.28

Measurements From Cores Taken During Forensic Study		
Lift	Top	AC Binder
inches	1.77	3.15
Binder = 5.20		

Table 3 SHRP Section 390101. Lift Profiles along the trenches.

Distance from Edgeline (Feet)	Lift Thickness (Inches) - Trench One									
	0	1	2	3	4	5	6	7	8	9
Top AC	-	1.94	1.75	1.75	1.81	1.75	1.69	1.69	1.75	1.75
Middle AC	-	2.44	2.25	2.25	2.06	2.00	2.06	2.06	2.00	2.13
Bottom AC	-	3.88	3.88	3.75	3.63	3.75	4.13	3.50	3.50	3.75
Base	-	6.06	6.50	6.56	7.19	7.00	6.44	7.06	6.94	6.69

Distance from Edgeline (Feet)	Lift Thickness (Inches) - Trench Two									
	0	1	2	3	4	5	6	7	8	9
Top AC	1.75	1.63	1.81	1.69	1.75	1.75	1.81	1.81	1.75	1.88
Middle AC	2.25	2.38	2.44	2.25	2.25	2.25	2.19	2.19	2.13	2.00
Bottom AC	4.00	4.19	3.56	3.31	3.75	3.63	3.56	2.94	3.75	3.50
Base	7.31	6.81	6.44	7.00	7.00	7.00	7.06	7.25	5.75	6.13

Distance from Edgeline (Feet)	Lift Thickness (Inches) - Trench Three									
	0	1	2	3	4	5	6	7	8	9
Top AC	1.75	1.88	1.88	2.00	1.94	1.81	1.94	1.88	1.88	1.88
Middle AC	2.25	2.19	1.88	1.63	1.69	1.75	1.63	1.75	1.75	2.00
Bottom AC	3.75	3.81	3.63	3.63	3.50	3.69	3.56	3.69	3.56	3.38
Base	7.25	7.13	7.25	7.50	7.25	6.94	7.38	7.19	7.31	7.38

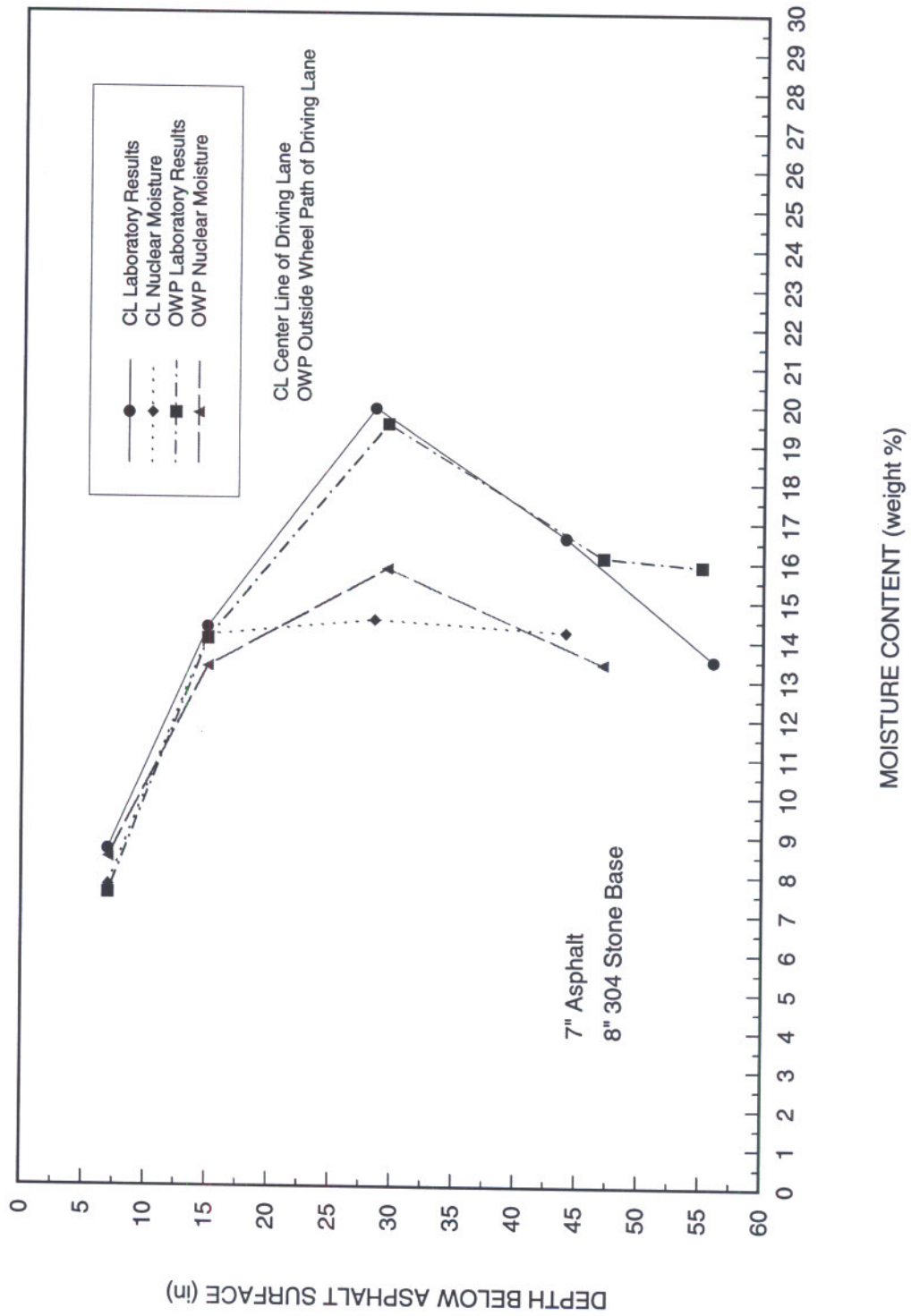
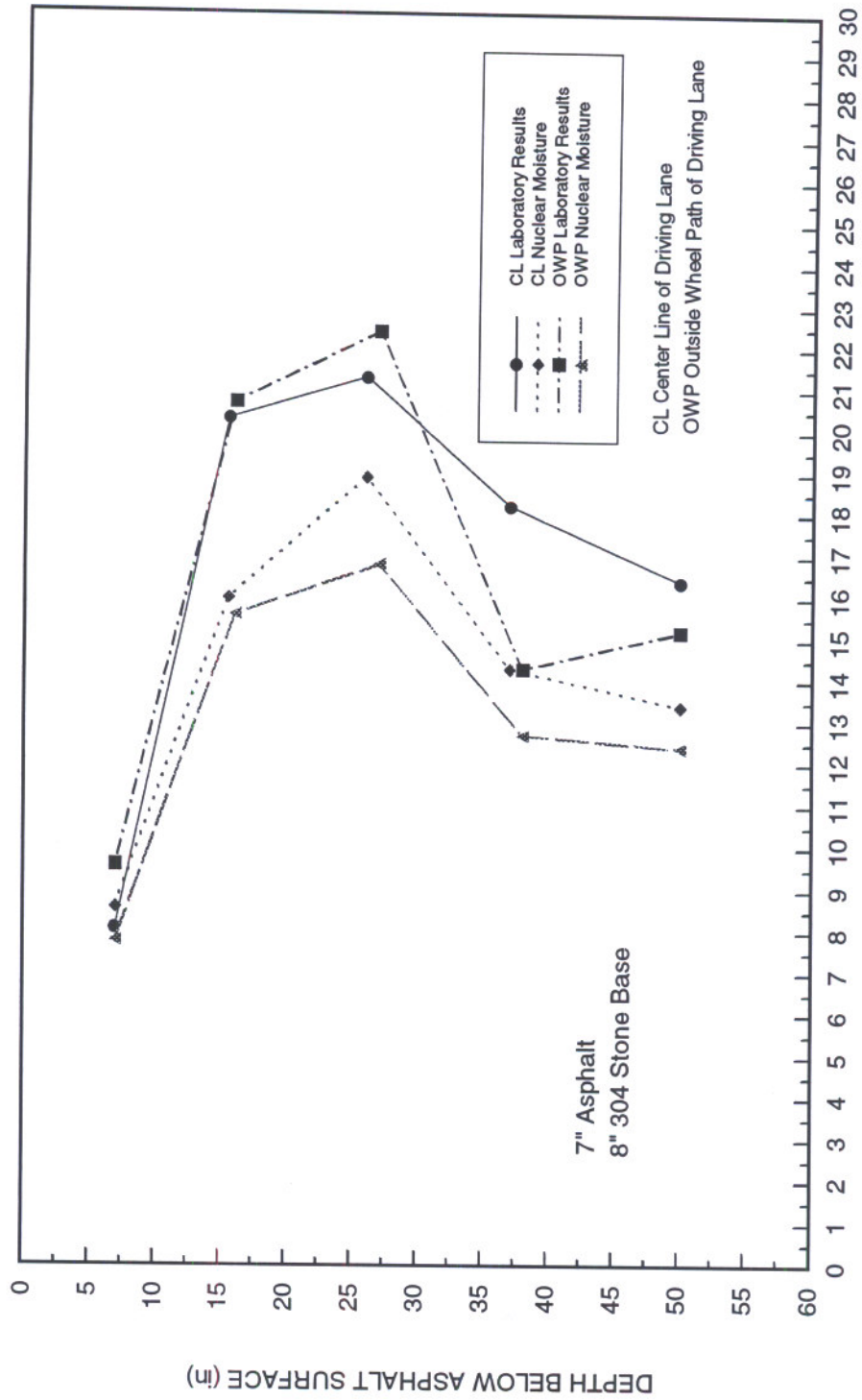


Figure 62 SHRP Section 390101. Trench1, Laboratory and Nuclear Soil Moisture. July 10, 1997.



MOISTURE CONTENT (weight %)

Figure 63 SHRP Section 390101. Trench2, Laboratory and Nuclear Soil Moisture. July 11, 1997.



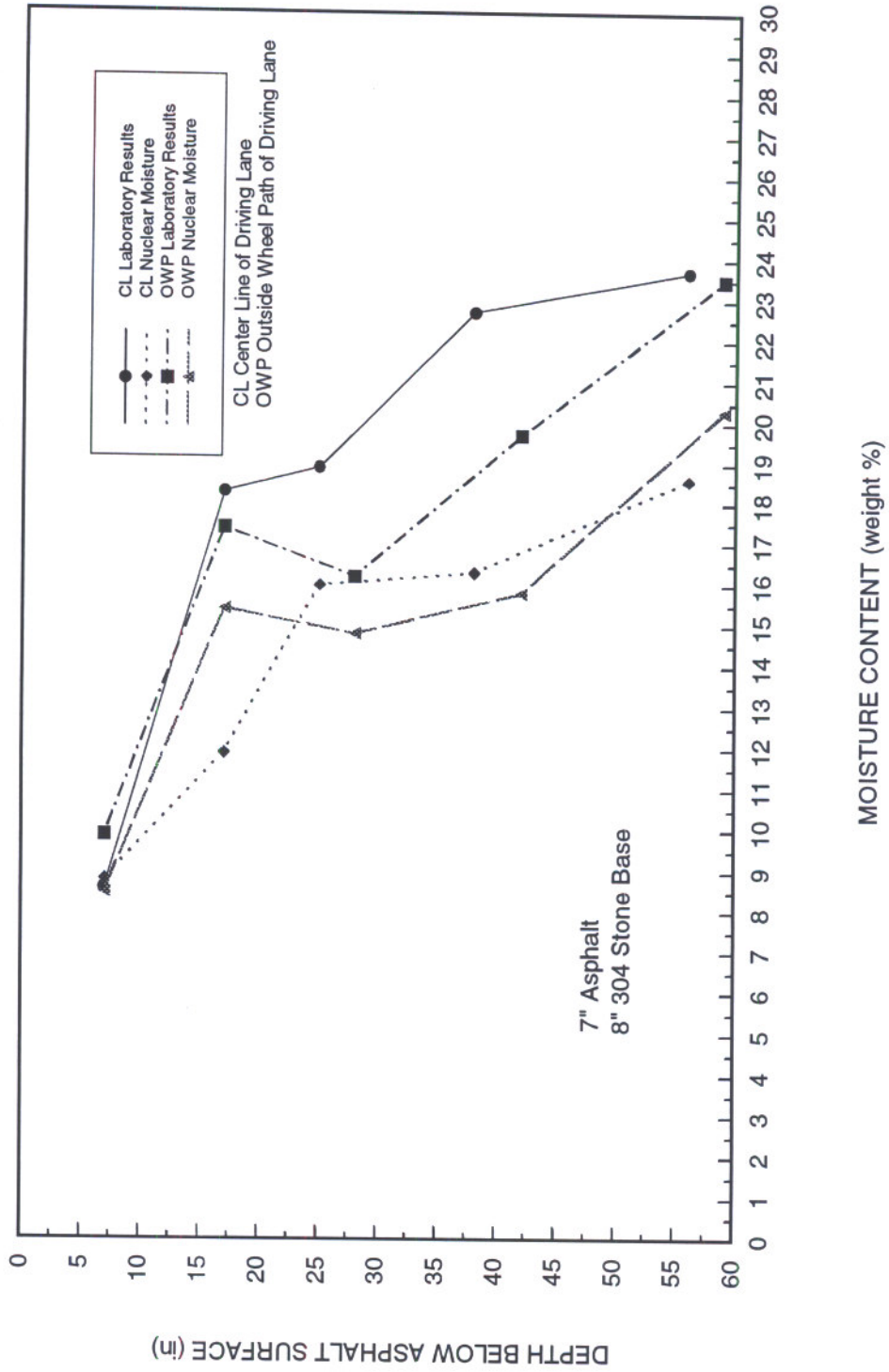
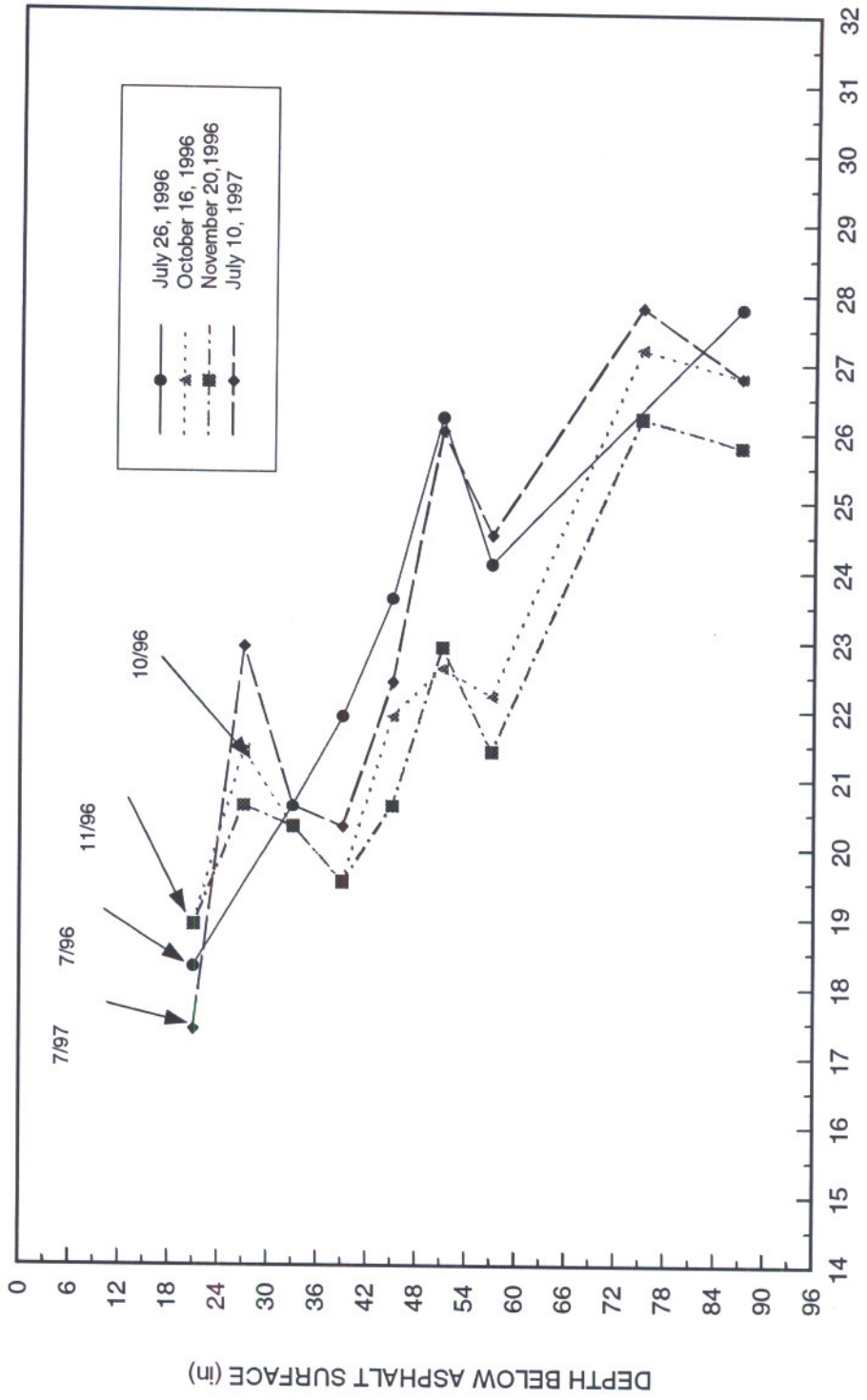


Figure 64 SHRP Section 390101. Trench3, Laboratory and Nuclear Soil Moisture. July 11, 1997.



MOISTURE CONTENT (weight %)

Figure 65 SHRP Section 390101. TDR Moisture Data.

## RESILIENT MODULUS OF SUBGRADE

In this investigation a detailed laboratory study was conducted to determine the properties of subgrade material. Figure 66 shows the relationship between the average resilient modulus and the moisture content at deviatoric stresses 2, 4, and 6 psi.

The resilient modulus of the subgrade were also calculated from the Dynamic Cone Penetration (DCP) tests. Here the CBR was determined from DCP data. The following equation was used to determine the resilient modulus ( $M_R$ ) from DCP (Livneh 1987).

$$\text{Log (CBR)} = 2.20 - 0.71 \text{ Log (PI)}^{1.5} \pm 0.075 \quad (1)$$

where PI = DCP penetration index (mm/blow) and

$$M_R = 1200 \times \text{CBR} \quad (2)$$

Although this technique yielded higher values of resilient modulus, it should be noted that there is a need for more research to determine the proper relation between DCP and the resilient modulus of soil.

## ANALYSIS OF PAVEMENT SYSTEM

Initially, the service life of Section 390101 was predicted to be 2½ years implementing the AASHTO design equations with the following parameters:

Structural Number (SN):

AC	0.35
DGAB	0.14

$$P_o = 4.5$$

$$P_t = 2.5$$

$$R = 50\%$$

$$S_o = 0.49$$

In this study the performance of the pavement was reevaluated using all parameters used in the initial prediction of pavement life expectancy, except for the resilient modulus, which was obtained from Figure 66 for in-situ water content. The new predicted pavement life was only 4 to 5 months. Thus, this pavement satisfied the expected life.

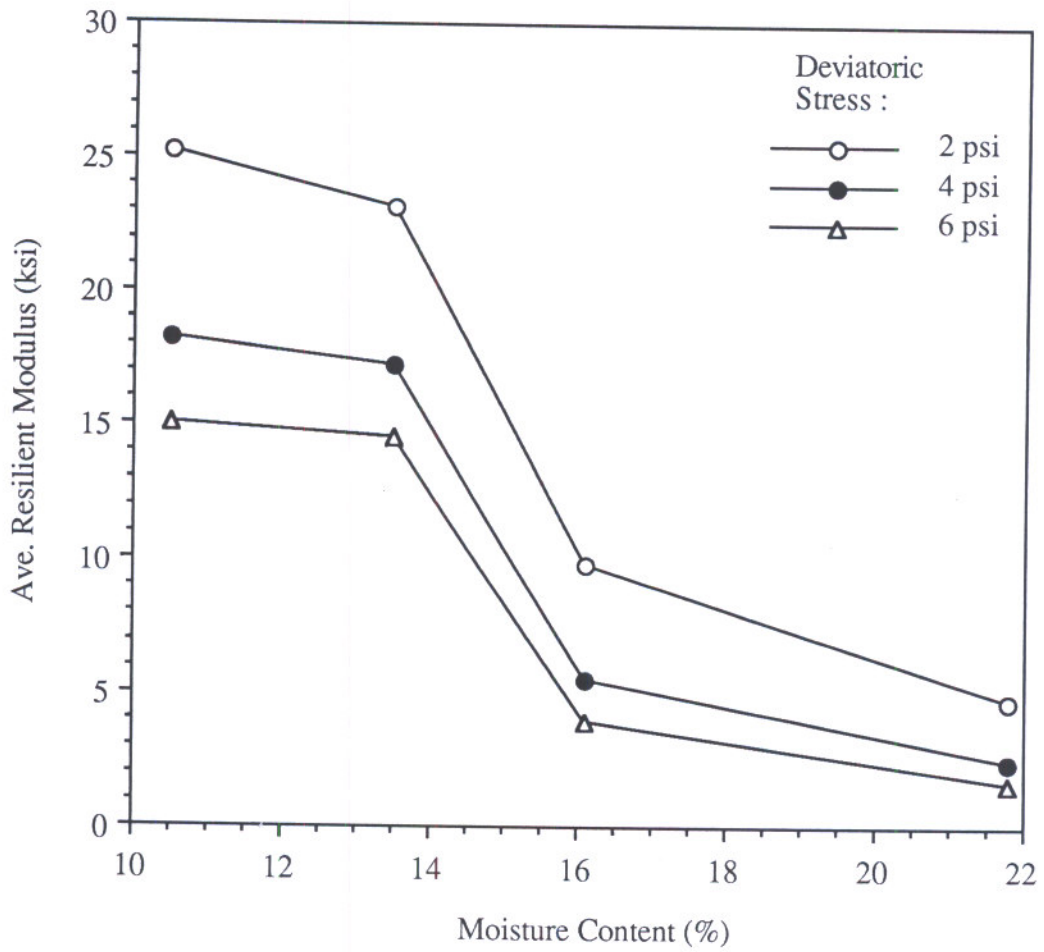


Figure 66 Relation Between Average Resilient Modulus and Moisture Content for Subgrade Soil Sample

## FATIGUE CRACKING

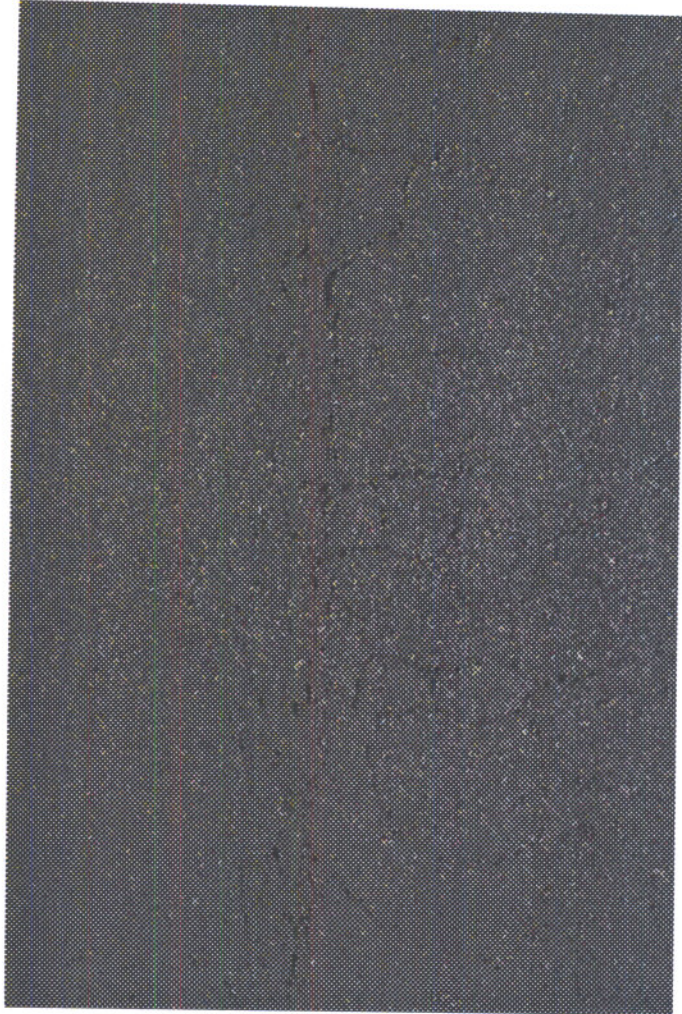
Fatigue cracking was observed at the location of Trench 2. This cracking covered an area of 3 feet wide by 23 feet long (Figure 67). These cracks could be classified between medium to high severity. When looking at the profile after the asphalt had been removed from the trench, one of these cracks was noted to extend only through the upper lift, thus suggesting initiation from the surface. No other cracks were visible along the saw cut.

## CONE PENETRATION TESTS

The cone penetration test (CPT) system utilized in the investigation was mounted on a heavy semi-truck and fully encased within its trailer section. The gross weight of the CPT truck was about 22 tons. The CPT system was completely self-sufficient, providing both electrical and hydraulic powers internally. Major components of the system included thrust machine/reaction frame, universal head clamps, system control panel, piezo-electric cone penetrometer, electronic sensors, extension rods, and computerized data acquisition units.

The cone had an outside diameter of 1.75 in. and was advanced hydraulically into the ground at a rate of 2 cm/sec. Figure 3 shows the locations where the cone penetration tests were performed. The data collected during each CPT consisted of tip resistance ( $q_c$ ), sleeve friction ( $f_c$ ), instantaneous pore water pressure ( $p$ ), and friction ratio ( $R_f$ ) which is equal to  $f_c$  divided by  $q_c$ . Plots of the CPT data are presented in Figures 68 through 73. Overall, these figures show that:

- Relatively hard material was detected at an average depth of 2 ft. below the top of the base.
- High pore water pressure commonly recorded during the CPT investigation indicated elevated moisture content in the subgrade region.
- At Trench 3, a significantly weak zone was encountered just below the base.



**Figure 67 Cracking at Location 2+65 (Trench 2)**

## **CONCLUSIONS**

An in-depth forensic study of section 390101 of the Ohio-SHRP U.S. 23 Test Road was performed to determine the cause of excessive rutting at a limited number of locations. This investigation revealed a substantial variability in the stiffness of base and subgrade throughout the 500 ft. test section. In the region that the pavement experienced the worst distress, the asphalt layers were debonded and fatigue cracks were observed. Most of the rutting could be attributed to the base and subgrade. It appears that the constructed thickness of the base was less than the design requirements. There was no significant change in moisture in the subgrade throughout the seasons. No stripping of binder from aggregate was noted between the surface and the intermediate layers. The base adhered to the type 2 mix. Moisture had not stripped binder from type 2 aggregate. Moisture in the subgrade was higher than expected throughout the life of the pavement. Rutting within the AC layer was insignificant. Utilizing resilient modulus obtained from laboratory data for the in-situ field conditions (moisture of soil at trenches) and employing the AASHTO equation for predicting the test section performance, the life expectancy for the section was 4 to 5 months. It is clear that this section performed according to the prediction.

## **REFERENCES**

Livneh, M. "The Correlation Between Dynamic Cone Penetrometer (DCP) Values and CBR Values." Transportation Research Institute, Technion-Israel Institute of Technology, Publication No.87-065, 1987.

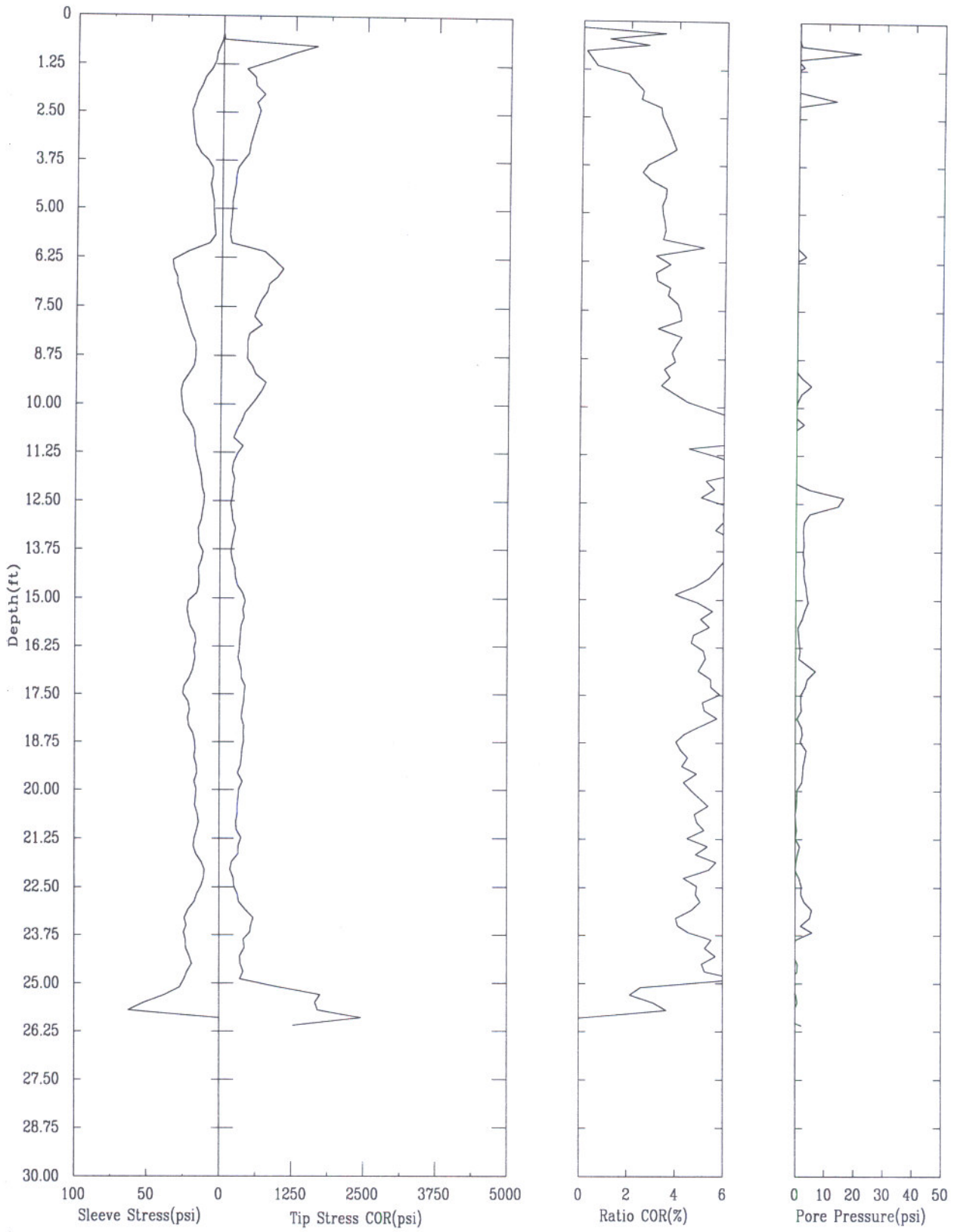


Figure 68 CPT Data, Station 0+00, Section 390101



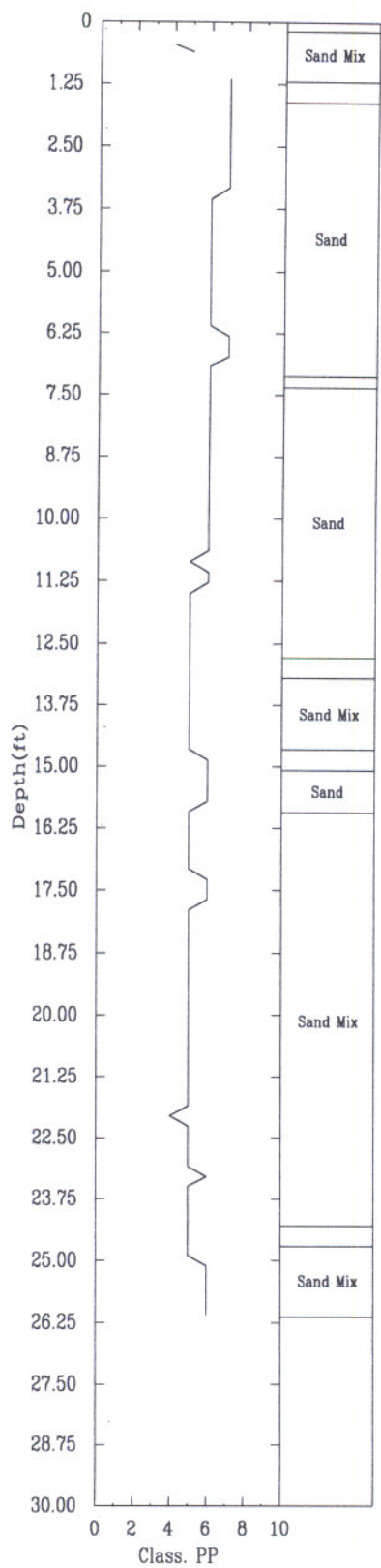


Figure 68 (continued) CPT Data, Station 0+00, Section 39010

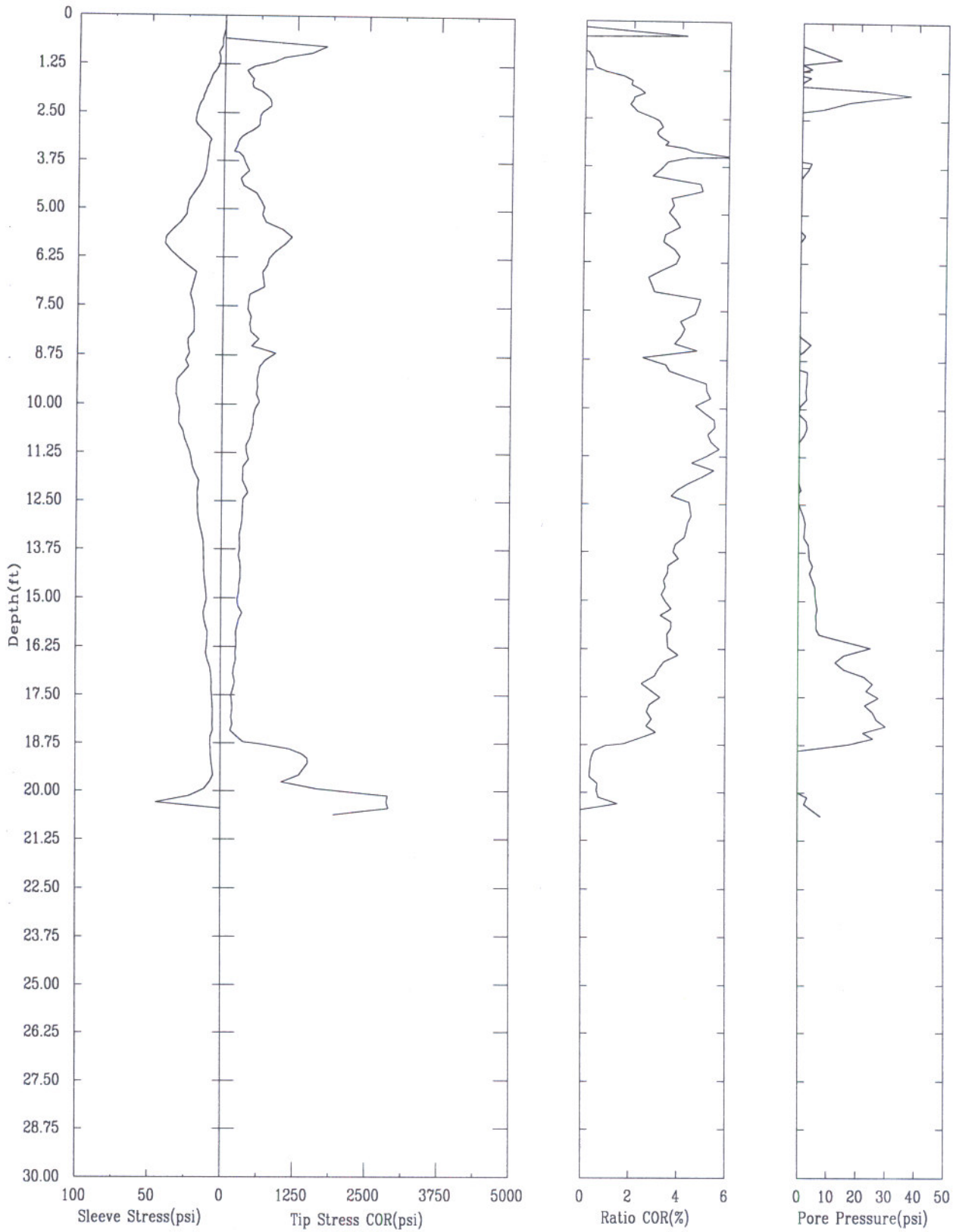


Figure 69 CPT Data, Station 1+50, Section 39010

Trench 150  
390101

Ohio University

07/11/97  
GW

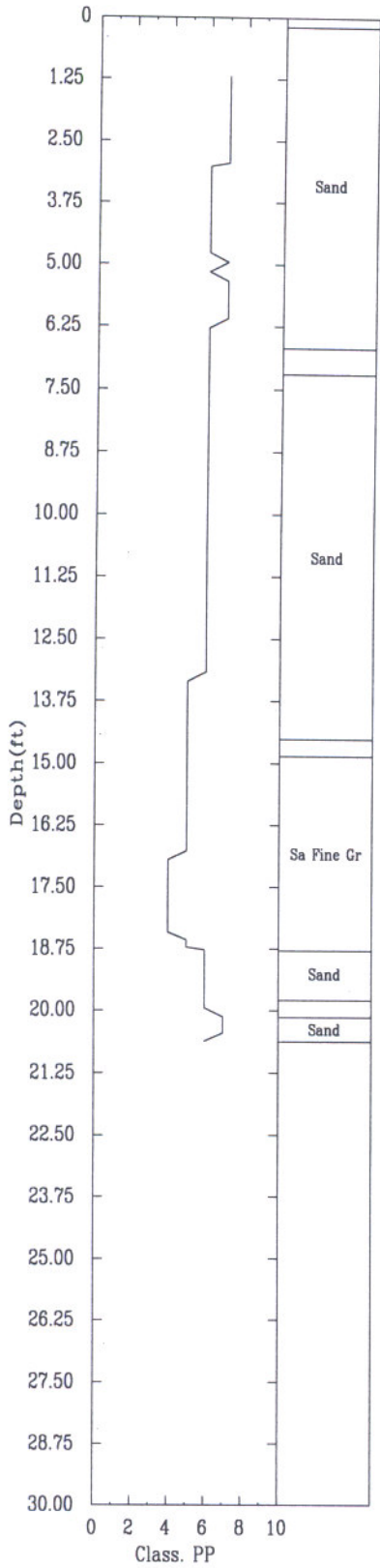


Figure 69 (continued) CPT Data, Station 1+50, Section 39010

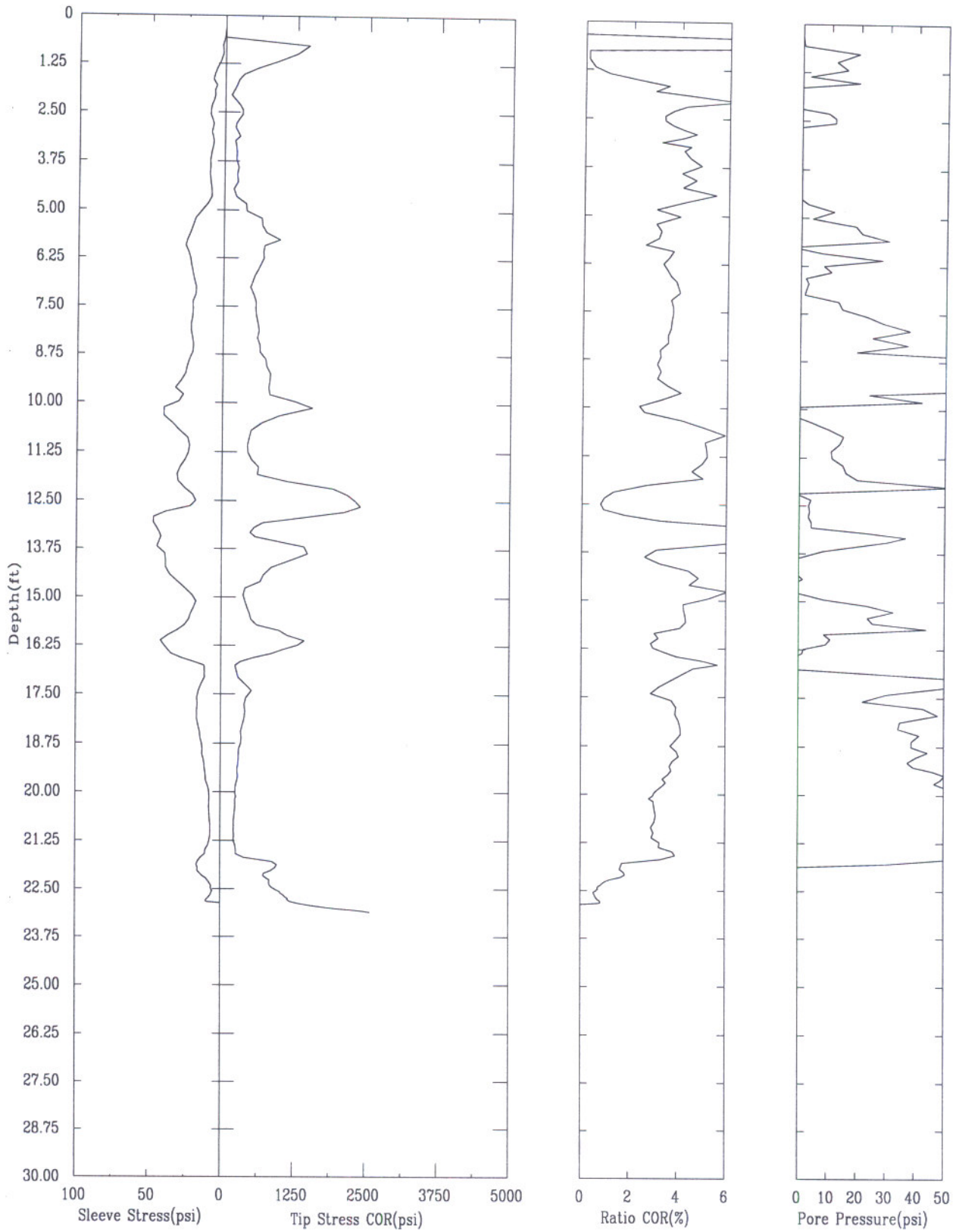


Figure 70 CPT Data, Station 2+50, Section 390101

Trench 250  
390101

Ohio University

07/11/97  
GW

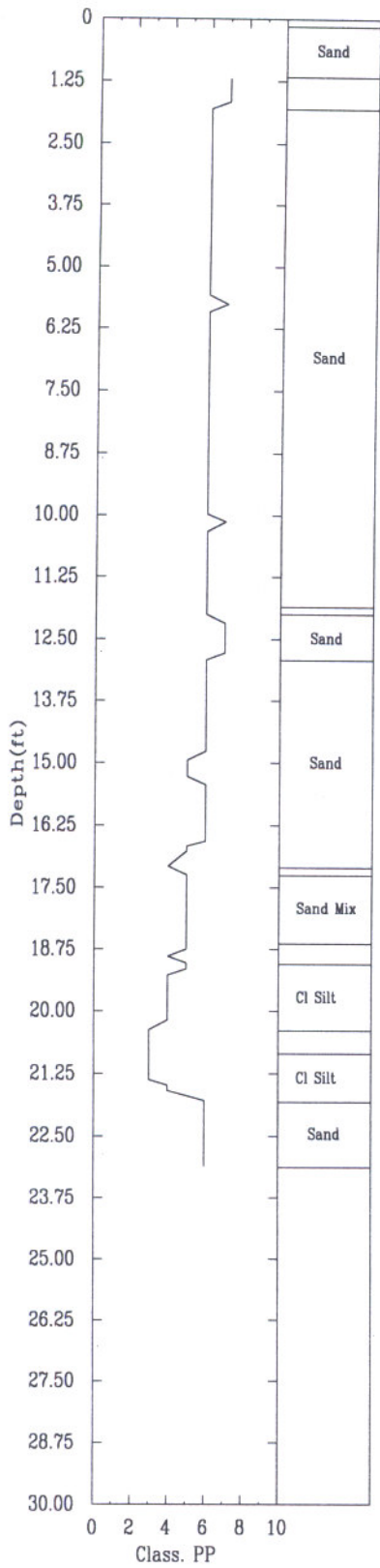


Figure 70 (continued) CPT Data, Station 2+50, Section 390101

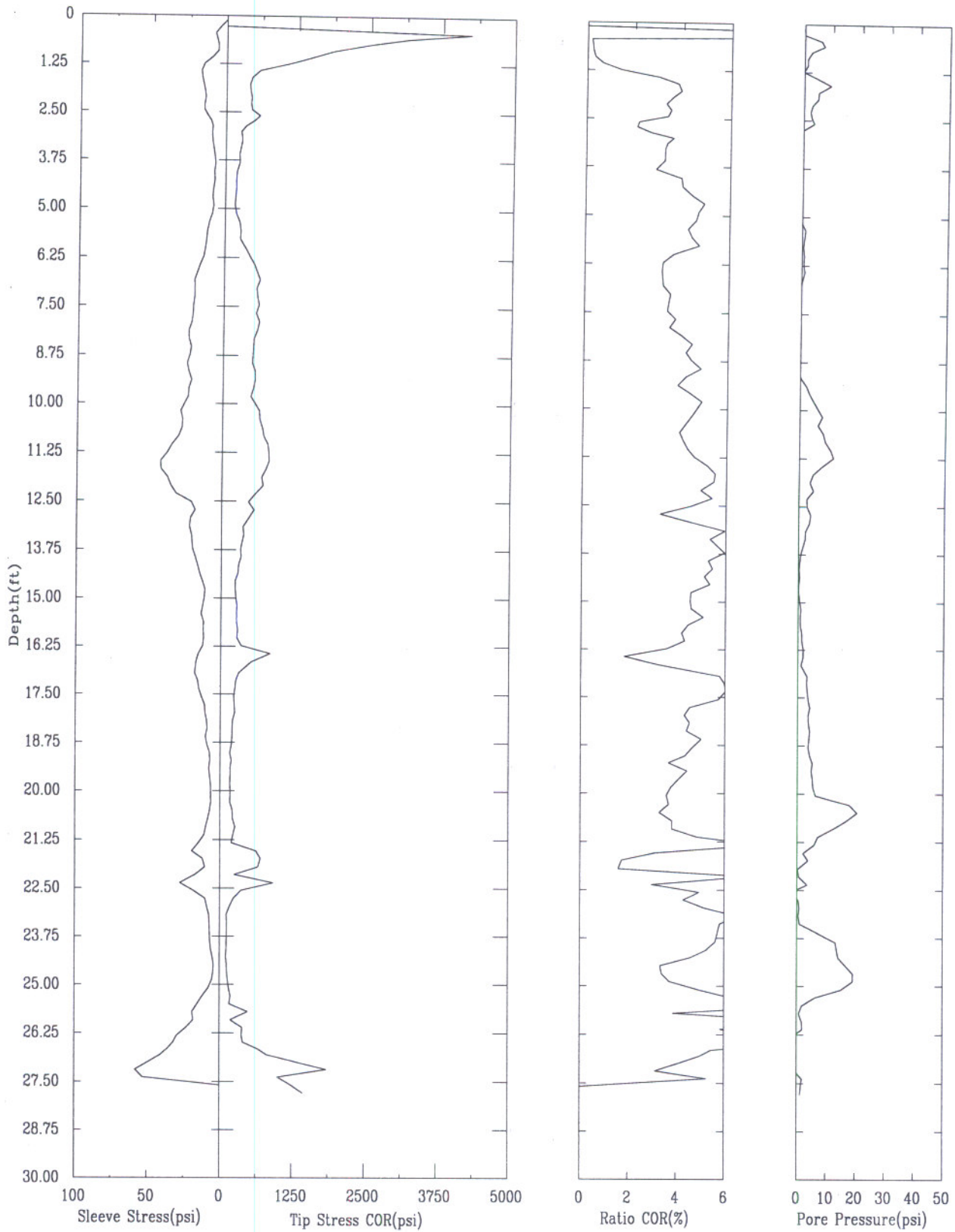


Figure 71 CPT Data, Station 3+50, Section 390101

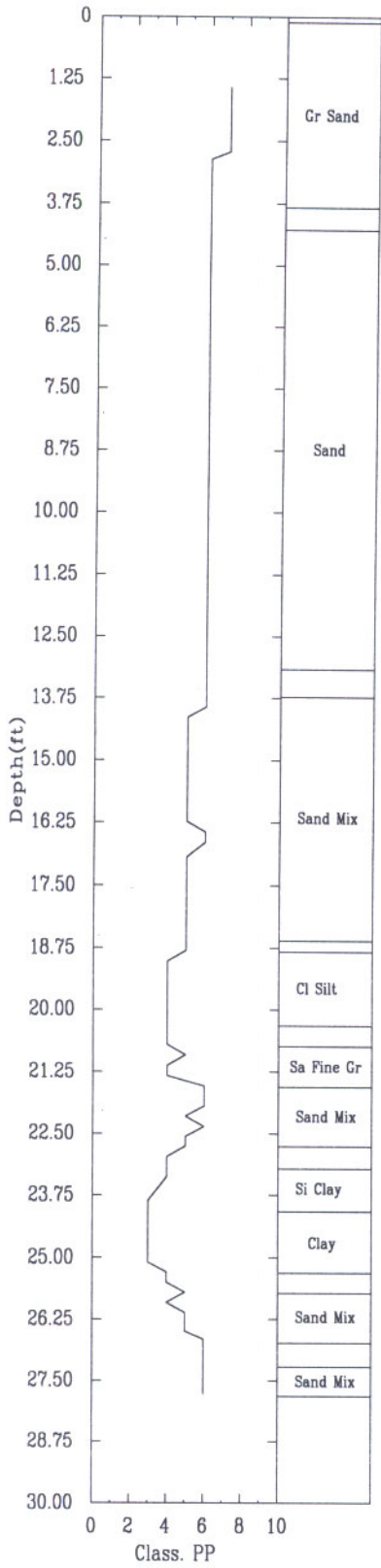


Figure 71 (continued) CPT Data, Station 3+50, Section 390101

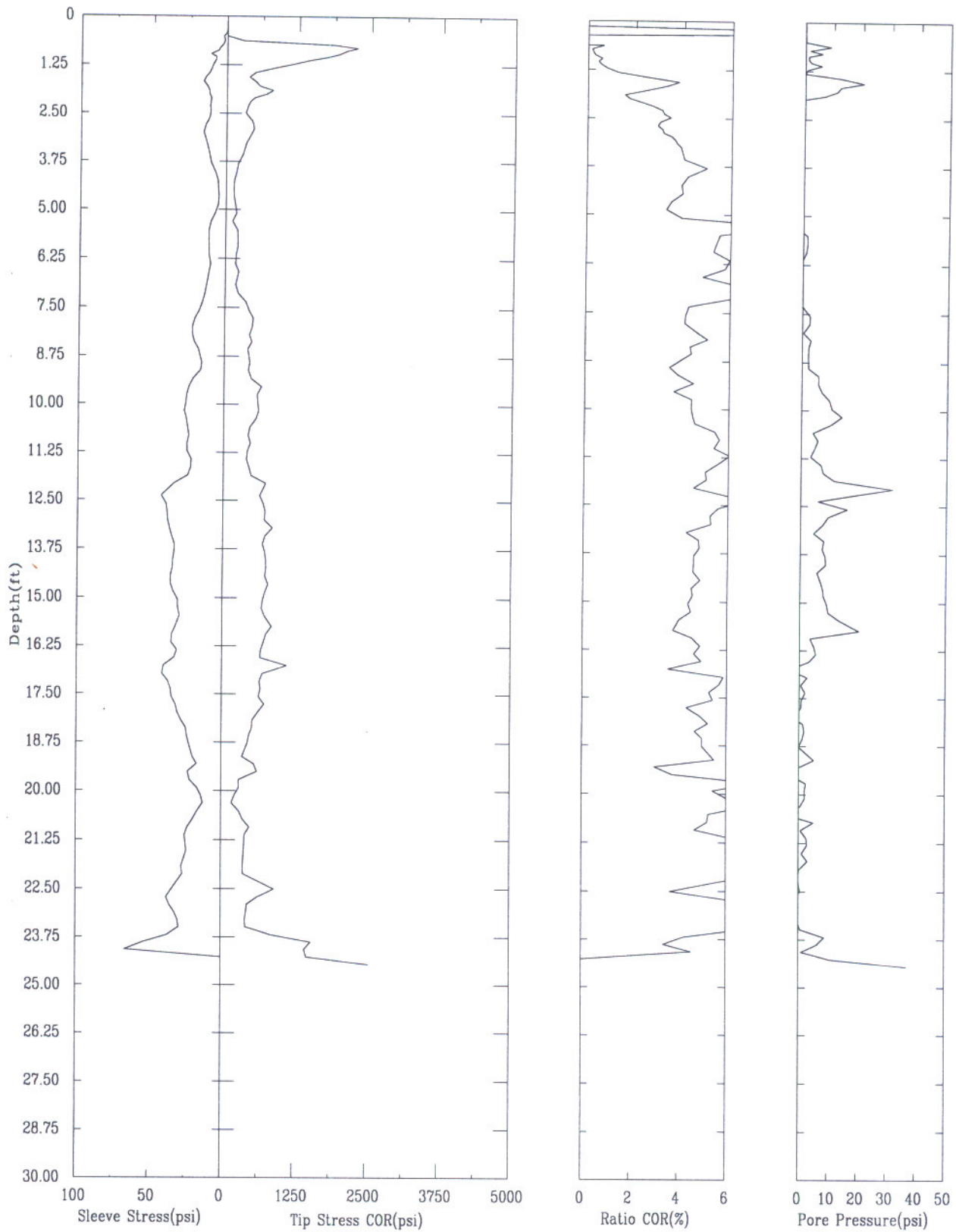


Figure 72 CPT Data, Station 4+00, Section 390101



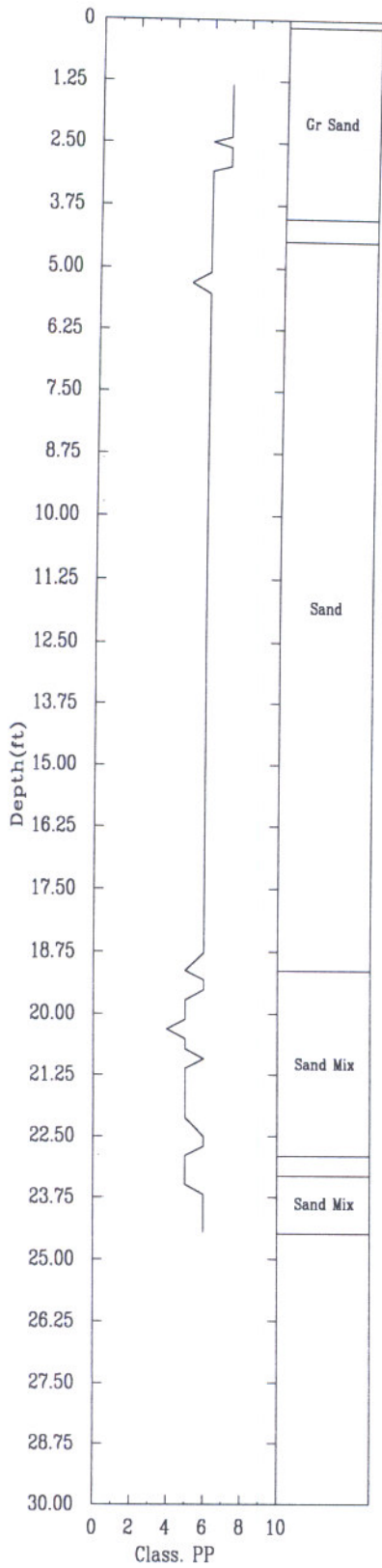


Figure 72 (continued) CPT Data, Station 4+00, Section 390101

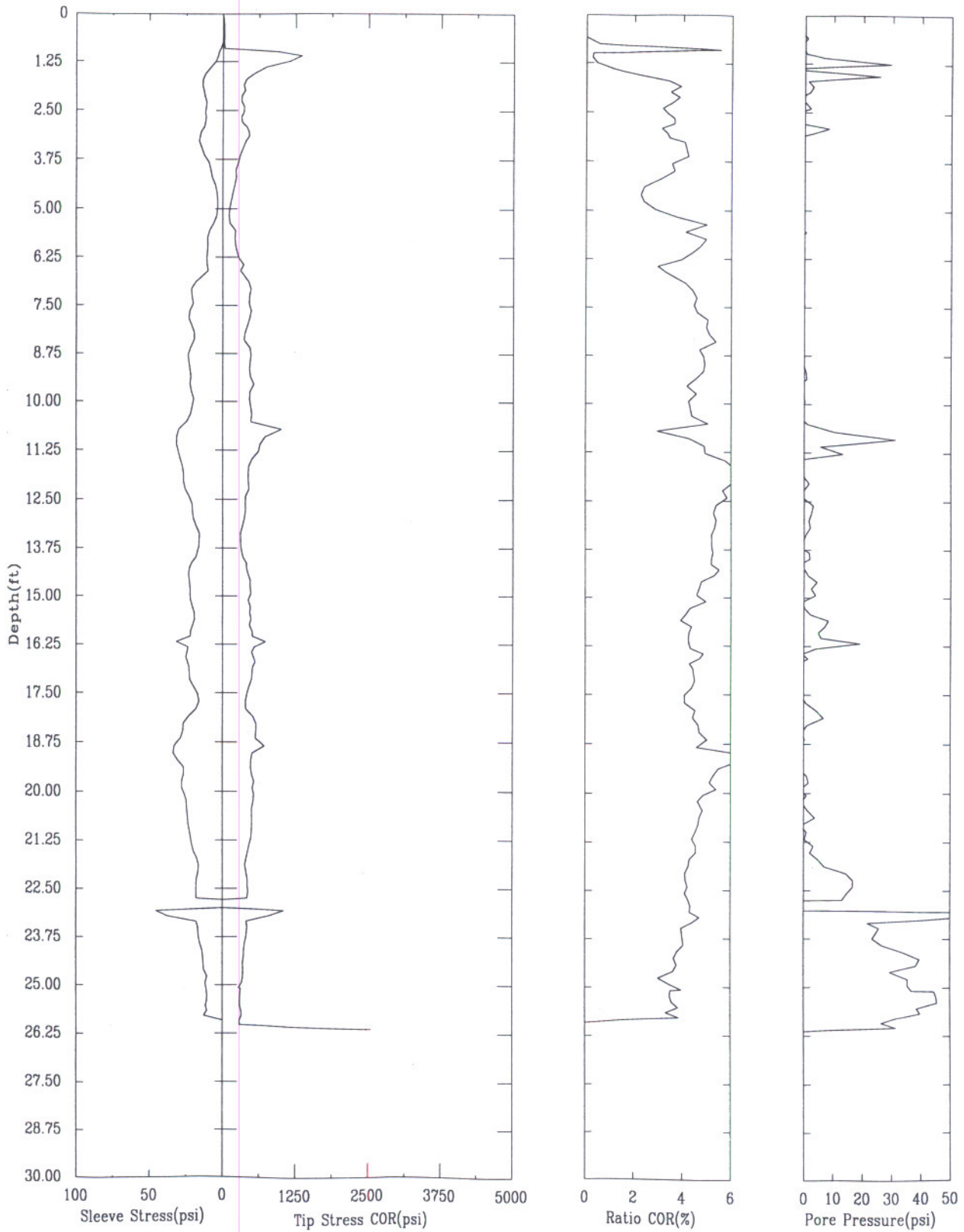


Figure 73 CPT Data, Station 5+00, Section 390101

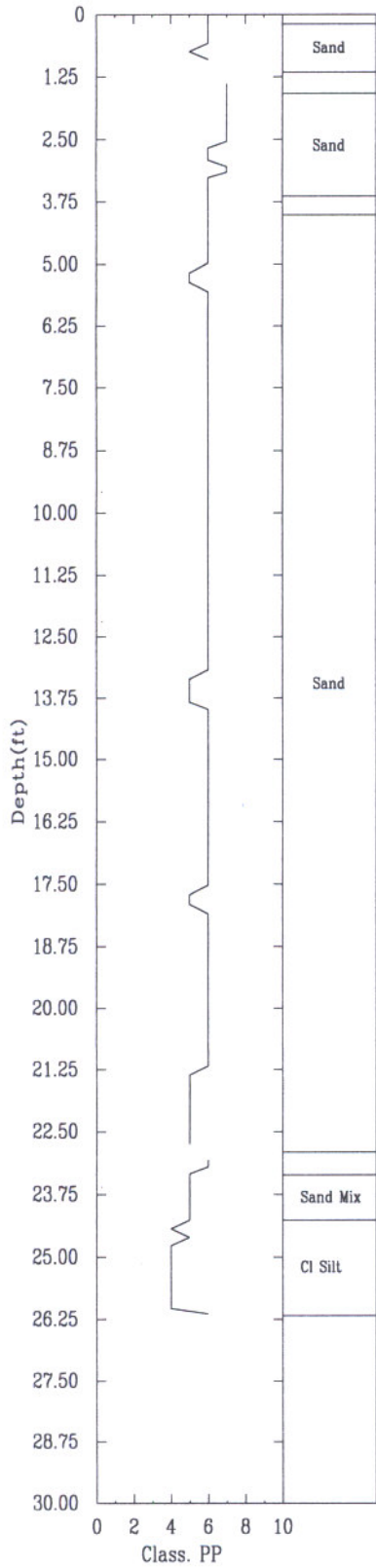
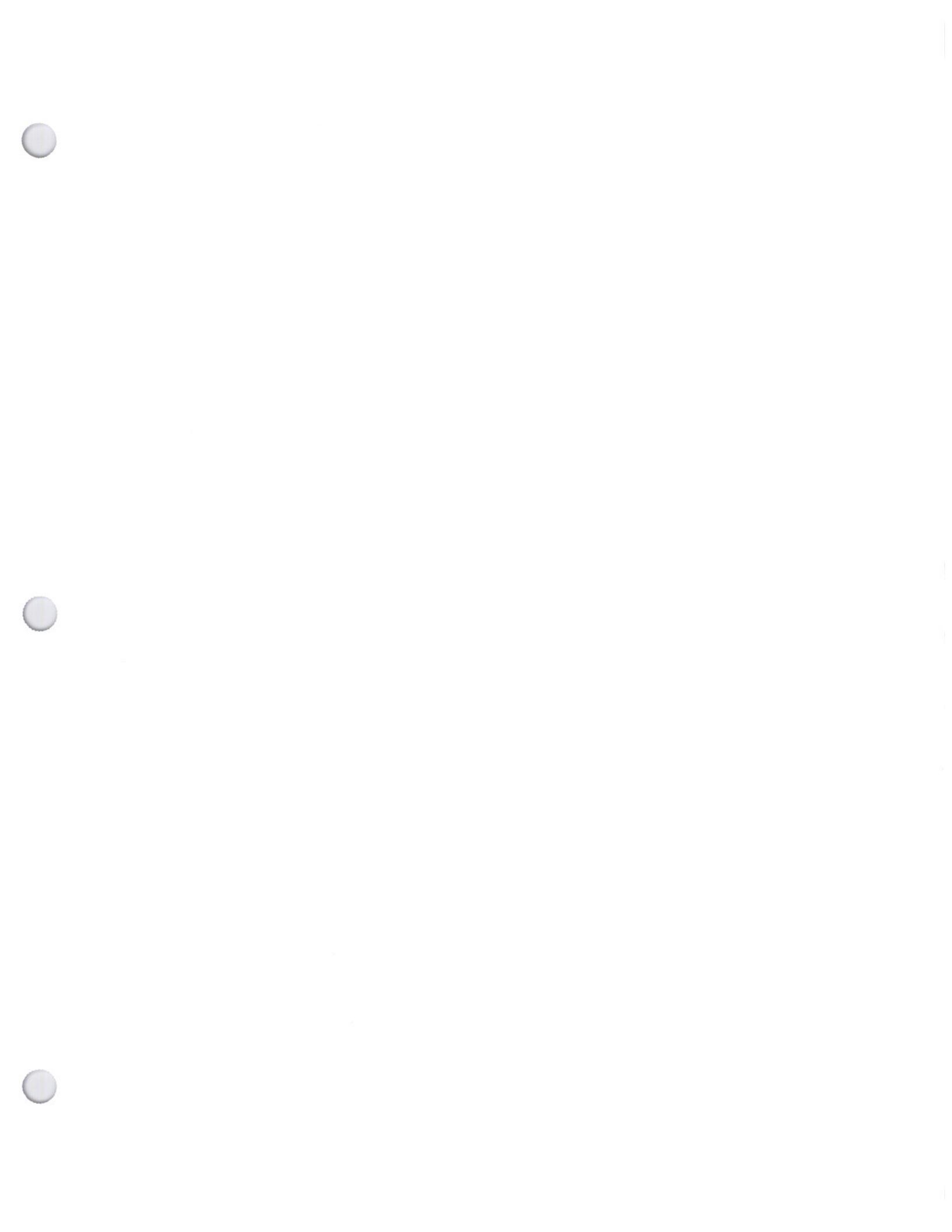
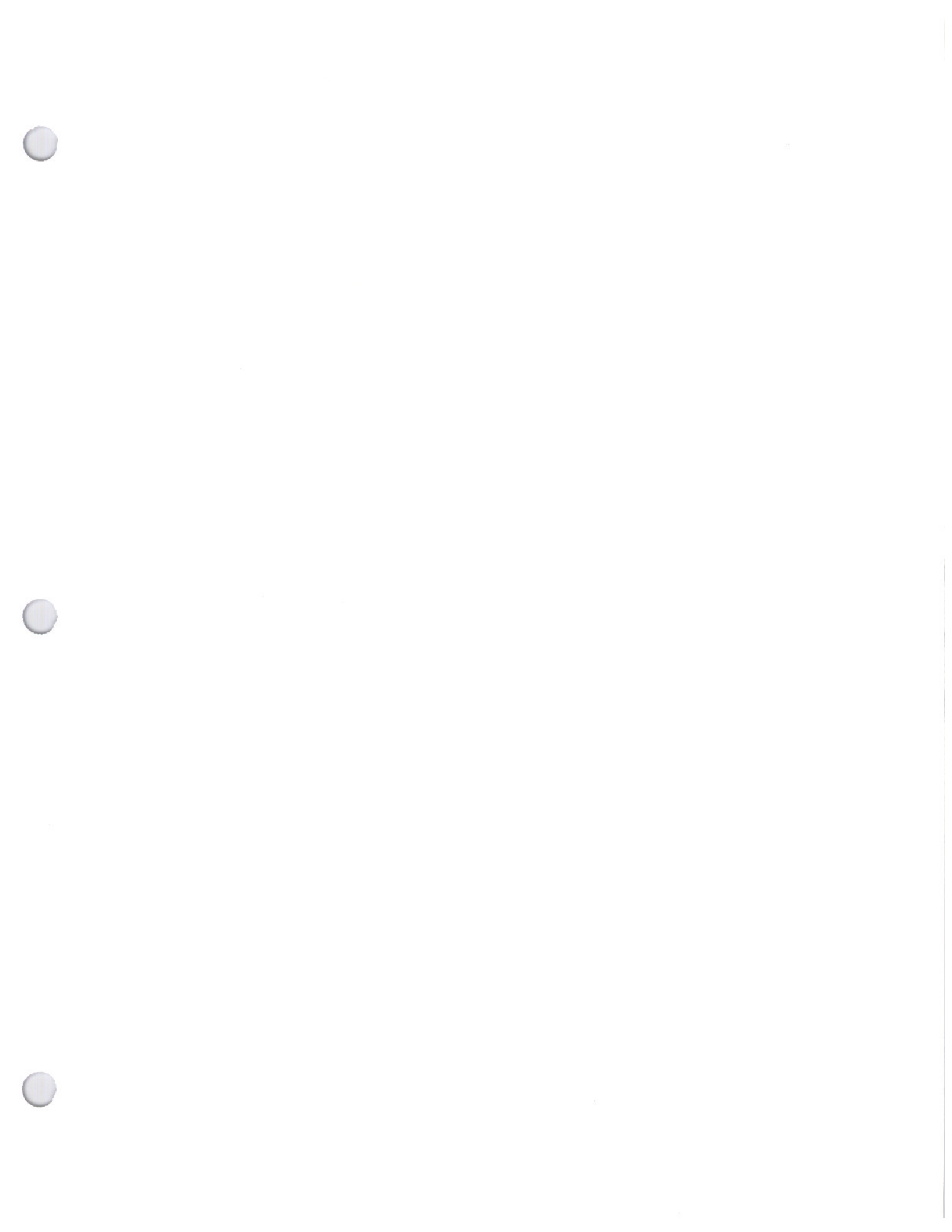


Figure 73 (continued) CPT Data, Station 5+00, Section 390101



**APPENDIX A**



LTPP-SPS MATERIAL SAMPLING AND FIELD TESTING

SHEET NUMBER 12 OF 16

IN SITU DENSITY AND MOISTURE TESTS

SAMPLING DATA SHEET 8-1

SHRP REGION NC STATE OH  
 SPS EXPERIMENT NO 1  
 ROUTE/HIGHWAY 45 23 Lane 1 Direction S  
 SAMPLE/TEST LOCATION:  Before Section  After Section  
 Within Section

STATE CODE 39  
 SPS PROJECT CODE 01  
 TEST SECTION NO. 21  
 FIELD SET NO. 1

OPERATOR Brad Young NUCLEAR DENSITY GAUGE I.D. 3440 23964 TEST DATE 10-20-95  
 SAMPLING AREA NO: SH-51 LOCATION: STATION 160/2150/440 OFFSET 6 feet from °/B  
 LOCATION NO: Q DATE OF LAST MAJOR CALIBRATION 10-14-94

Note: Use additional sheets if necessary

DEPTH FROM SURFACE TO THE TOP OF THE LAYER, INCHES (From Plans)	(1+00)	(2+50)	(4+00)			
LAYER NUMBER	3	3	3			
MATERIAL TYPE: (Unbound=G Other=T)	T	T	T			
IN SITU DENSITY, pcf <del>By Unit</del> (AASHTO T238-86)	1	130.3	131.5	129.6		
	2	128.6	130.8	128.4		
	3	130.2	136.3	127.4		
	4	130.4	130.7	127.5		
AVERAGE	129.9	130.8	128.2			
Method (A, B, or C)	<del>B</del> A	<del>B</del> A	<del>B</del> A			
Rod Depth, inches	0	0	0			
IN SITU MOISTURE CONTENT, % (AASHTO T239-86)	1					
	2					
	3					
	4					
AVERAGE						

GENERAL REMARKS: IT Intermediate Course (54)

CERTIFIED  
Brad Young  
 Field Crew Chief  
 Affiliation: ODOT

VERIFIED AND APPROVED  
 SHRP Representative  
 Affiliation: \_\_\_\_\_

DATE  
10-23-1995  
 Month- Day- Year

Proj  
 S.A.  
 354+00 - T170i  
 352+50 - T169i  
 351+00 - T168i

IN SITU DENSITY AND MOISTURE TESTS

SAMPLING DATA SHEET 8-1

SHRP REGION NC STATE OH

STATE CODE 39

SPS EXPERIMENT NO 1

SPS PROJECT CODE 01

ROUTE/HIGHWAY 45 23 Lane 1 Direction S

TEST SECTION NO. 01

SAMPLE/TEST LOCATION:  Before Section  After Section  
 Within Section

FIELD SET NO. 1

OPERATOR Brad Young NUCLEAR DENSITY GAUGE I.D. Model 3440 Serial 23964 TEST DATE 11-13-95

SAMPLING AREA NO: SH-51 LOCATION: STATION 1+00 / 2+50 / 4+00 OFFSET 6 feet from 0/B

LOCATION NO: 0 DATE OF LAST MAJOR CALIBRATION 10-14-94

Note: Use additional sheets if necessary

DEPTH FROM SURFACE TO THE TOP OF THE LAYER, INCHES (From Plans)	T170s	T169s	T168s	S = surface test		
	(1+00)	(2+50)	(4+00)			
LAYER NUMBER	4	4	4			
MATERIAL TYPE: (Unbound=G Other=T)	T	T	T			
Wt. Density IN SITU DENSITY, pcf (AASHTO T238-86)	1	144.2	134.2	129.2		
	2	144.9	134.8	129.8		
	3	145.2	134.8	128.7		
	4	145.0	135.0	129.0		
AVERAGE	144.8	134.7	129.2			
Method (A,B,or C)	A	A	A			
Rod Depth, inches	0	0	0			
IN SITU MOISTURE CONTENT, % (AASHTO T239-86)	1					
	2					
	3					
	4					
AVERAGE						

GENERAL REMARKS: Surface AC TFI (1 3/4")

CERTIFIED Brad Young  
 Field Crew Chief  
 Affiliation: ODOT

VERIFIED AND APPROVED \_\_\_\_\_  
 SHRP Representative  
 Affiliation: \_\_\_\_\_

DATE 11-13-1995  
 Month- Day- Year

Project 354+00 - T170s - 1+00  
 Station 352+50 - T169s - 2+50  
351+00 - T168s - 4+00



SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING  
LABORATORY MATERIAL TEST DATA  
MAXIMUM SPECIFIC GRAVITY  
TEST DATA SHEET T03

SHEET 1 OF 1

ASPHALT CONCRETE LAYER (ASPHALTIC CONCRETE PROPERTIES)  
SHRP TEST DESIGNATION: AC03 / SHRP PROTOCOL P03

LABORATORY PERFORMING TEST: OHIO DEPT. OF TRANSPORTATION  
LABORATORY IDENTIFICATION CODE: 3 9 2 1

SHRP REGION NC STATE OH STATE CODE 39  
SPS EXPERIMENT NO 1 SPS PROJECT CODE 01  
SAMPLED BY: BRAD YOUNG FIELD SET NO. 1  
DATE SAMPLED: 10 - 26 - 1995

1. LAYER NUMBER (FROM LAB SHEET L04 AND FROM T01b)	<u>4</u>		
2. TEST SECTION NO.	<u>01</u>	--	--
3. SAMPLING AREA NO. (SA-)	<u>S1</u>	--	--
4. SHRP LABORATORY TEST NUMBER	<u>3</u>	-	-
5. LOCATION NUMBER	<u>B25s</u>	----	----
6. SHRP SAMPLE NUMBER	<u>BV25s</u>	----	----
7. MAXIMUM SPECIFIC GRAVITY (GMM)	<u>2.444</u>	----	----
8. COMMENTS			
(a) CODE	----	----	----
(b) NOTE	_____	_____	_____
9. TEST DATA	<u>01-02-96</u>	----	----

GENERAL REMARKS: \_\_\_\_\_

SUBMITTED BY, DATE 7/10/96  
Olvera  
Laboratory Chief  
Affiliation: DOT

CHECKED AND APPROVED, DATE \_\_\_\_\_  
\_\_\_\_\_  
SHRP Representative  
Affiliation: \_\_\_\_\_

SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING  
 LABORATORY MATERIAL TEST DATA  
 ASPHALT CONTENT (QUANTITATIVE EXTRACTION)  
 TEST DATA SHEET T04

SHEET 1 OF 1

ASPHALT CONCRETE LAYER (ASPHALTIC CONCRETE PROPERTIES)  
 SHRP TEST DESIGNATION: AC04 / SHRP PROTOCOL P04

LABORATORY PERFORMING TEST: OHIO DEPT. OF TRANSPORTATION  
 LABORATORY IDENTIFICATION CODE: 3 9 2 1

SHRP REGION NC STATE OH STATE CODE 3 9  
 SPS EXPERIMENT NO 1 SPS PROJECT CODE 0 1  
 SAMPLED BY: BRAD YOUNG FIELD SET NO. 1  
 DATE SAMPLED: 1 0 - 2 6 - 199 5

1. LAYER NUMBER (FROM LAB SHEET L04 AND FROM T01b)	<u>4</u>		
2. TEST SECTION NO.	<u>0 1</u>	--	--
3. SAMPLING AREA NO. (SA-)	<u>S 1</u>	--	--
4. SHRP LABORATORY TEST NUMBER	<u>3</u>	-	-
5. LOCATION NUMBER	<u>B 2 5 s</u>	----	----
6. SHRP SAMPLE NUMBER	<u>B V 2 5 s</u>	----	----
7. ASPHALT CONTENT (BC)	<u>6.7%</u>	-.-%	-.-%
8. COMMENTS			
(a) CODE	---	---	---
(b) NOTE	_____	_____	_____
9. TEST DATA	<u>0 1-0 2-9 6</u>	- - - -	- - - -

GENERAL REMARKS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

SUBMITTED BY, DATE 7/10/96  
[Signature]  
 Laboratory Chief  
 Affiliation: OAC

CHECKED AND APPROVED, DATE \_\_\_\_\_  
 \_\_\_\_\_  
 SHRP Representative  
 Affiliation: \_\_\_\_\_

SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING  
 LABORATORY MATERIAL TEST DATA  
 MOISTURE SUSCEPTIBILITY  
 LAB DATA SHEET T05

ASPHALT CONCRETE LAYER (ASPHALT CONCRETE PROPERTIES)  
 SHRP TEST DESIGNATION AC05 / SHRP PROTOCOL P05

1. LABORATORY PERFORMING TEST: THE OHIO DEPT. OF TRANSPORTATION  
 LABORATORY IDENTIFICATION CODE: 3921

SHRP REGION NC STATE OH STATE CODE 39  
 SPS EXPERIMENT NO. 1 SPS PROJECT CODE 01  
 SAMPLED BY: BRAD YOUNG FIELD SET NO. 1  
 DATE SAMPLED: 10-26-1995

- 1. LAYER NUMBER 4 2. SHRP LABORATORY TES NUMBER 3
- 3. TEST SECTION NUMBER 01 4. LOCATION NUMBER B25s
- 5. SAMPLING AREA NUMBER (SA-) S1 6. MAX. SPECIFIC GRAVITY OF MIX 2.444
- 7. METHOD OF COMPACTION Marshall

8. TEST RESULTS

DATA ITEM	UNCONDITIONED (DRY)			CONDITIONED		
	BV25s	BV25s	BV25s	BV25s	BV25s	BV25s
SHRP SAMPLE NO.						
AVE. SPEC. HGT.	66.1	66.1	66.2	67.3	65.6	66.6
AVG. SPEC. DIAM.	101.6	101.6	101.6	101.6	101.6	101.6
BSG AFTER MOLDING	2.297	2.293	2.294	2.293	2.296	2.297
% AIR VOIDS	6.0	6.2	6.1	6.2	6.1	6.0
BSG AFTER VAC. SAT.				2.296	2.292	2.295
MAX. LOAD	1974.	188816.	16680.	17303.	19038.	18904.

TEST RESULTS (continued)

SHEET NO. 2 OF 2

DATA ITEM	UNCONDITIONED (DRY)		CONDITIONED	
INDIRECT TENS. STR.	1877.	1782.	1580.	1610.
AVE INDIRECT TENS. STR.	1746.		1735.	
STD. INDIRECT TENS. STR.	152.		110.	
TENSILE STRENGTH RATIO	0.99			
RELATIVE VAR IN STR.	1.33			
COARSE AGG. STRIPPED			000.	000.
FINE AGG STRIPPED %			000.	000.
COMMENT CODES				
NOTE				
TEST DATE	3-15-96	3-15-96	3-15-96	3-15-96

GENERAL REMARKS: \_\_\_\_\_

SUBMITTED BY, DATE 7/10/96  
 LABORATORY CHIEF [Signature]  
 Affiliation ODOT

CHECKED AND APPROVED, DATE \_\_\_\_\_  
 \_\_\_\_\_  
 Affiliation \_\_\_\_\_

SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING  
LABORATORY MATERIAL TEST DATA  
SPECIFIC GRAVITY AND ABSORPTION OF EXTRACTED COARSE AGGREGATE  
TEST DATA SHEET T11

SHEET 1 OF 1

ASPHALT CONCRETE LAYER (EXTRACTED AGGREGATE)  
SHRP TEST DESIGNATION: AG01 / SHRP PROTOCOL P11

LABORATORY PERFORMING TEST: OHIO DEPT. OF TRANSPORTATION  
LABORATORY IDENTIFICATION CODE: 3 9 2 1

SHRP REGION NC STATE OH STATE CODE 39  
SPS EXPERIMENT NO 1 SPS PROJECT CODE 01  
SAMPLED BY: BRAD YOUNG TEST SECTION NO. 01  
DATE SAMPLED: 10 - 26 - 1995 FIELD SET NO. 1  
SAMPLING AREA NO: SA- S1

- 1. LAYER NUMBER (FROM LAB SHEET L04 AND FROM T01b) 4
- 2. LOCATION NUMBER B 2 5 s
- 3. SHRP LABORATORY TEST NUMBER 3
- 4. SHRP SAMPLE NUMBER B V 2 5 s
- 5. WEIGHT OF TEST SAMPLE, grams 4 0 1 6.0
- 6. WEIGHT OF OVEN DRY TEST SAMPLE IN AIR (A), grams 4 0 1 6.0
- 7. WEIGHT OF SSD TEST SAMPLE IN AIR(B), grams 4 0 8 5.0
- 8. WEIGHT OF SSD TEST SAMPLE IN WATER (C), grams 2 4 7 5.0
- 9. BULK SPECIFIC GRAVITY OF COARSE AGGREGATE 2.49
- 10. ABSORPTION OF COARSE AGGREGATE 1.72

11. COMMENTS

- (a) CODE
- (b) NOTE

12. TEST DATA

04 - 00 - 1996

GENERAL REMARKS:

CERTIFIED

*Blauer*  
Laboratory Chief  
Affiliation: OOOT

VERIFIED AND APPROVED

\_\_\_\_\_  
SHRP Representative  
Affiliation: \_\_\_\_\_

DATE

\_\_\_\_-\_\_\_\_-19\_\_\_\_  
Month-Day-Year

SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING  
 LABORATORY MATERIAL TEST DATA  
 SPECIFIC GRAVITY AND ABSORPTION OF EXTRACTED FINE AGGREGATE  
 TEST DATA SHEET T12

SHEET 1 OF 1

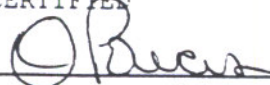
ASPHALT CONCRETE LAYER (EXTRACTED AGGREGATE)  
 SHRP TEST DESIGNATION: AG02 / SHRP PROTOCOL P12

LABORATORY PERFORMING TEST: OHIO DEPT. OF TRANSPORTATION  
 LABORATORY IDENTIFICATION CODE: 3 9 2 1

SHRP REGION <u>NC</u>	STATE <u>OH</u>	STATE CODE <u>3 9</u>
SPS EXPERIMENT NO <u>1</u>		SPS PROJECT CODE <u>0 1</u>
SAMPLED BY: <u>BRAD YOUNG</u>		TEST SECTION NO. <u>0 1</u>
DATE SAMPLED: <u>1 0 - 2 6 - 199 5</u>		FIELD SET NO. <u>1</u>
		SAMPLING AREA NO: SA- <u>S 1</u>

- |   |                          |
|---|--------------------------|
| 1. LAYER NUMBER (FROM LAB SHEET L04 AND FROM T01b)                                | <u>4</u>                 |
| 2. LOCATION NUMBER  | <u>B 2 5 s</u>           |
| 3. SHRP LABORATORY TEST NUMBER  | <u>3</u>                 |
| 4. SHRP SAMPLE NUMBER   | <u>B V 2 5 s</u>         |
| 5. WEIGHT OF TEST SAMPLE, grams   | <u>1 0 0 0.0</u>         |
| 6. WEIGHT OF OVEN DRY TEST SAMPLE IN AIR (A), grams                               | <u>- 4 8 8.7</u>         |
| 7. WEIGHT OF PYCNOMETER FILLED WITH WATER (B), grams                              | <u>- 6 6 9.1</u>         |
| 8. WEIGHT OF PYCNOMETER WITH SPECIMEN AND WATER TO CALIBRATION<br>MARK (C), grams | <u>- 9 7 6.8</u>         |
| 9. WEIGHT OF SSD SPECIMEN (S), grams  | <u>- 5 0 0.0</u>         |
| 10. BULK SPECIFIC GRAVITY OF FINE EXTRACTED AGGREGATE                             | <u>- 2.5 4</u>           |
| 11. PERCENT ABSORPTION OF FINE AGGRAGATE  | <u>- 2.3</u>             |
| 12. COMMENTS  |                          |
| (a) CODE  | - - - - -                |
| (b) NOTE  | - - - - -                |
| 13. TEST DATA   | <u>0 4 - 0 0 - 199 6</u> |

GENERAL REMARKS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

CERTIFIED  
  
 Laboratory Chief  
 Affiliation: ODOT

VERIFIED AND APPROVED  
 \_\_\_\_\_  
 SHRP Representative  
 Affiliation: \_\_\_\_\_

DATE  
 \_\_\_\_ - \_\_\_\_ - 19\_\_  
 Month-Day-Year

SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING  
 LABORATORY MATERIAL TEST DATA  
 GRADATION OF AGGREGATE  
 TEST DATA SHEET T14

SHEET 1 OF 1

ASPHALT CONCRETE LAYER (EXTRACTED AGGREGATE)  
 SHRP TEST DESIGNATION: AG04 / SHRP PROTOCOL P14

LABORATORY PERFORMING TEST: OHIO DEPT. OF TRANSPORTATION  
 LABORATORY IDENTIFICATION CODE: 3 9 2 1

SHRP REGION NC STATE OH STATE CODE 39  
 SPS EXPERIMENT NO 1 SPS PROJECT CODE 01  
 SAMPLED BY: BRAD YOUNG FIELD SET NO. 1  
 DATE SAMPLED: 10-26-1995

1. LAYER NUMBER (FROM LAB SHEET L04 AND FROM T01b)	<u>4</u>		
2. TEST SECTION NO.	<u>01</u>	--	--
3. SAMPLING AREA NO. (SA-)	<u>S1</u>	--	--
4. SHRP LABORATORY TEST NUMBER	<u>3</u>	--	--
5. LOCATION NUMBER	<u>B25s</u>	--	--
6. SHRP SAMPLE NUMBER	<u>BV25s</u>	--	--
7. GRADATION: % PASSING EACH SIEVE SIZE			
Standard (mm)			
1 1/2 (37.5)	--	--	--
1 (25.0)	<u>100</u>	--	--
3/4 (19.0)	<u>100</u>	--	--
1/2 (12.5)	<u>98</u>	--	--
3/8 (9.5)	<u>89</u>	--	--
#4 (4.75)	<u>52</u>	--	--
#10 (2.00)	<u>31</u>	--	--
#40 (0.425)	<u>13</u>	--	--
#80 (0.180)	<u>9</u>	--	--
#200 (0.075)	<u>5.9</u>	--	--
PRIMARY GEOLOGICAL CLASSIFICATION CODE	<u>LS</u>	--	--
SECONDARY GEOLOGICAL CLASSIFICATION CODE (A)	--	--	--
SECONDARY GEOLOGICAL CLASSIFICATION CODE (B)	--	--	--

8. COMMENTS  
 (a) CODE -----  
 (b) NOTE -----

9. TEST DATA 01-09-96

GENERAL REMARKS: \_\_\_\_\_

SUBMITTED BY, DATE 7/10/96  
Power  
 Laboratory Chief  
 Affiliation: DOT

CHECKED AND APPROVED, DATE \_\_\_\_\_  
 \_\_\_\_\_  
 SHRP Representative  
 Affiliation: \_\_\_\_\_

SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING  
LABORATORY MATERIAL TEST DATA  
NAA TEST FOR FINE AGGREGATE PARTICLE SHAPE  
LAB DATA SHEET T114A

SHEET 1 OF 1

ASPHALT CONCRETE LAYER (EXTRACTED AGGREGATE)  
SHRP TEST DESIGNATION: AG05 / SHRP PROTOCOL P14A

LABORATORY PERFORMING TEST: OHIO DEPT. OF TRANSPORTATION  
LABORATORY IDENTIFICATION CODE: 3 9 2 1

SHRP REGION NC STATE OH STATE CODE 3 9  
SPS EXPERIMENT NO 1 SPS PROJECT CODE 0 1  
SAMPLED BY: BRAD YOUNG TEST SECTION NO. 0 1  
DATE SAMPLED: 1 0 - 2 6 - 199 5 FIELD SET NO. 1  
SAMPLING AREA NO: SA- S 1

- 1. LAYER NUMBER (FROM LAB SHEET L04 AND FROM T01b) 4
- 2. LOCATION NUMBER B 2 5 s
- 3. SHRP LABORATORY TEST NUMBER 3
- 4. SHRP SAMPLE NUMBER B V 2 5 s
- 5. BULK DRY SPECIFIC GRAVITY OF FINE AGGREGATE 2.5 4 1
- 6. ABSORPTION OF FINE AGGREGATE 2.3 1
- 7. UNCOMPACTED VOID CONTENT 1, % 4 7.1 1
- 8. UNCOMPACTED VOID CONTENT 2, % 4 7.1 1
- 9. UNCOMPACTED VOID CONTENT AVG., % 4 7.1 1
- 10. DIFFERENCE IN UNCOMPACTED VOID CONTENT, % 0.0 0 0

11. COMMENTS  
(a) CODE ---  
(b) NOTE ---

12. TEST DATA 0 4 - 0 0 - 199 6

GENERAL REMARKS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

CERTIFIED *Obwes* VERIFIED AND APPROVED \_\_\_\_\_ DATE \_\_\_\_\_  
Laboratory Chief SHRP Representative \_\_\_\_\_  
Affiliation: ODOT Affiliation: \_\_\_\_\_  
Month-Day-Year



\*\*\*\*\*SPS LABORATORY TESTING DATA SHEET\*\*\*\*\*

SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING  
LABORATORY MATERIAL TEST DATA  
RECOVERY OF ASPHALT FROM SOLUTION BY ABSON METHOD  
TEST DATA SHEET T21

SHEET 1 OF 1

ASPHALT CONCRETE LAYER (ASPHALT CEMENT PROPERTIES)  
SHRP TEST DESIGNATION: AE01 / SHRP PROTOCOL P21

LABORATORY PERFORMING TEST: OHIO DEPT. OF TRANSPORTATION  
LABORATORY IDENTIFICATION CODE: 3 9 2 1

SHRP REGION NC STATE OH STATE CODE 3 9  
SPS EXPERIMENT NO 1 SPS PROJECT CODE 0 1  
SAMPLED BY: BRAD YOUNG TEST SECTION NO. 0 1  
DATE SAMPLED: 1 0 - 2 6 - 199 5 FIELD SET NO. 1  
SAMPLING AREA NO: SA- S 1

- 1. LAYER NUMBER (FROM LAB SHEET L04 AND FROM T01b) 4
- 2. LOCATION NUMBER B 2 5 s
- 3. SHRP LABORATORY TEST NUMBER 3
- 4. SHRP SAMPLE NUMBER B V 2 5 s
- 5. MASS OF RECOVERED BITUMEN (grams) 5 3 4.2
- 6. ASH CONTENT OF BITUMEN (percent) 0.3
- 7. COMMENTS  
(a) CODE ---  
(b) NOTE -----
- 8. TEST DATA 0 1 - 0 2 - 199 6

GENERAL REMARKS: \_\_\_\_\_  
\_\_\_\_\_

CERTIFIED  
[Signature]  
Laboratory Chief  
Affiliation: ODOT

VERIFIED AND APPROVED  
\_\_\_\_\_  
SHRP Representative  
Affiliation: \_\_\_\_\_

DATE  
\_\_\_\_-\_\_\_\_-19\_\_\_\_  
Month-Day-Year

SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING SHEET 1 OF 1  
LABORATORY MATERIAL TEST DATA  
PENETRATION OF EXTRACTED ASPHALT CEMENT AT 77 AND 115 DEGREES F.  
TEST DATA SHEET T22

ASPHALT CONCRETE LAYER (ASPHALT CEMENT PROPERTIES)  
SHRP TEST DESIGNATION: AE02 / SHRP PROTOCOL P22

LABORATORY PERFORMING TEST: OHIO DEPT. OF TRANSPORTATION  
LABORATORY IDENTIFICATION CODE: 3 9 2 1

SHRP REGION NC STATE OH STATE CODE 3 9  
SPS EXPERIMENT NO 1 SPS PROJECT CODE 0 1  
SAMPLED BY: BRAD YOUNG TEST SECTION NO. 0 1  
DATE SAMPLED: 1 0 - 2 6 - 199 5 FIELD SET NO. 1  
SAMPLING AREA NO: SA- S 1

- 1. LAYER NUMBER (FROM LAB SHEET L04 AND FROM T01b) 4
- 2. LOCATION NUMBER B 2 5 s
- 3. SHRP LABORATORY TEST NUMBER 3
- 4. SHRP SAMPLE NUMBER B V 2 5 s
- 5. PENETRATION @ 77 DEGREE F. (millimeters) 3 3.
- 6. PENETRATION @ 115 DEGREE F. (millimeter) 1 9 8.
- 7. PENETRATION INDEX 0.5
- 8. COMMENTS  
(a) CODE ---  
(b) NOTE -----
- 9. TEST DATA 0 1 - 0 4 - 199 6

GENERAL REMARKS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

CERTIFIER  
OBuens  
Laboratory Chief  
Affiliation: OPOT

VERIFIED AND APPROVED  
\_\_\_\_\_  
SHRP Representative  
Affiliation: \_\_\_\_\_

DATE  
\_\_\_\_-\_\_\_\_-19\_\_\_\_  
Month-Day-Year

\*\*\*\*\*SPS LABORATORY TESTING DATA SHEET\*\*\*\*\*

SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING  
LABORATORY MATERIAL TEST DATA  
SPECIFIC GRAVITY OF EXTRACTED ASPHALT CEMENT  
TEST DATA SHEET T23

SHEET 1 OF 1

ASPHALT CONCRETE LAYER (ASPHALT CEMENT PROPERTIES)  
SHRP TEST DESIGNATION: AE03 / SHRP PROTOCOL P23

LABORATORY PERFORMING TEST: OHIO DEPT. OF TRANSPORTATION

LABORATORY IDENTIFICATION CODE: 3 9 2 1

SHRP REGION	<u>NC</u>	STATE	<u>OH</u>	STATE CODE	<u>3 9</u>
SPS EXPERIMENT NO	<u>1</u>			SPS PROJECT NO.	<u>0 1</u>
SAMPLED BY:	<u>BRAD YOUNG</u>			TEST SECTION NO.	<u>0 1</u>
DATE SAMPLED:	<u>1 0 - 2 6 - 199 5</u>			FIELD SET NO.	<u>1</u>
				SAMPLING AREA NO: SA-	<u>5 1</u>

1. LAYER NUMBER (FROM LAB SHEET L04 AND FROM T01b) 4

2. LOCATION NUMBER B 2 5 s

3. SHRP LABORATORY TEST NUMBER 3

4. SHRP SAMPLE NUMBER B v 2 5 s

5. SPECIFIC GRAVITY 1.0 4 5

6. COMMENTS  
(a) CODE ---  
(b) NOTE -----

7. TEST DATA 0 1 - 0 4 - 199 6

GENERAL REMARKS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

CERTIFIED  
[Signature]  
Laboratory Chief  
Affiliation: ODOT

VERIFIED AND APPROVED  
\_\_\_\_\_  
SHRP Representative  
Affiliation: \_\_\_\_\_

DATE  
\_\_\_\_-\_\_\_\_-19\_\_\_\_  
Month-Day-Year

SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING  
LABORATORY MATERIAL TEST DATA  
KINEMATIC AND ABSOLUTE VISCOSITY  
TEST DATA SHEET T25

SHEET 1 OF 1

ASPHALT CONCRETE LAYER (ASPHALT CEMENT PROPERTIES)  
SHRP TEST DESIGNATION: AE05 / SHRP PROTOCOL P25

LABORATORY PERFORMING TEST: OHIO DEPT. OF TRANSPORTATION

LABORATORY IDENTIFICATION CODE: 3 9 2 1

SHRP REGION <u>NC</u>	STATE <u>OH</u>	STATE CODE <u>3 9</u>
SPS EXPERIMENT NO <u>1</u>		SPS PROJECT CODE <u>0 1</u>
SAMPLED BY: <u>BRAD YOUNG</u>		TEST SECTION NO. <u>0 1</u>
DATE SAMPLED: <u>1 0 - 2 6 - 199 5</u>		FIELD SET NO. <u>1</u>
		SAMPLING AREA NO: SA- <u>S 1</u>

1. LAYER NUMBER (FROM LAB SHEET L04 AND FROM T01b) 4
2. LOCATION NUMBER B 2 5 s
3. SHRP LABORATORY TEST NUMBER 3
4. SHRP SAMPLE NUMBER B V 2 5 s
5. KINEMATIC VISCOSITY
  - (a) CALIBRATION CONSTANT (C), centistokes/sec 2.9 0 5
  - (b) EFFLUX TIME (S), seconds 1 8 7.4
  - (c) KINEMATIC VISCOSITY @ 27 DEGREE F, centistokes -- 5 4 4.
6. ABSOLUTE VISCOSITY
  - (a) CALIBRATION FACTOR (K), poises/sec - 6 3.0
  - (b) FLOW TIME, seconds - 8 6.6
  - (c) VACUUM PRESSURE, mm of Hg 3 0 0.0
  - (d) ABSOLUTE VISCOSITY @ 140 DEGREE F, poises -- 5 4 5 6.
7. COMMENTS
  - (a) CODE -- -- -- -- --
  - (b) NOTE -----
8. TEST DATA 0 1 - 0 4 - 199 6

GENERAL REMARKS: \_\_\_\_\_  
\_\_\_\_\_

CERTIFIED  
Oliver  
Laboratory Chief  
Affiliation: OOOY

VERIFIED AND APPROVED  
\_\_\_\_\_  
SHRP Representative  
Affiliation: \_\_\_\_\_

DATE  
\_\_\_\_\_-\_\_\_\_\_-19\_\_\_\_\_  
Month-Day-Year

*Bulk  
Asphalt  
Intermediate  
Coarse  
Test  
Results*

DRY MATERIAL HANDLING AND TESTING SHEET 1 OF 1  
 SERIAL TEST DATA  
 GRAVITY  
 TEST T03  
 (ASPHALTIC CONCRETE PROPERTIES)  
 DESIGNATION: AC03 / SHRP PROTOCOL P03

STATE: OHIO DEPT. OF TRANSPORTATION  
 COUNTY CODE: 3 9 2 1

STATE OH STATE CODE 3 9  
 SPS PROJECT CODE 0 1  
 FIELD SET NO. 1

SAMPLED BY: DMW / IG  
 DATE SAMPLED: 1 0 - 1 9 - 199 5

- 1. LAYER NUMBER (FROM LAB SHEET L04 AND FROM T01b) 3
- 2. TEST SECTION NO. 0 1      --      --
- 3. SAMPLING AREA NO. (SA-) S 1      --      --
- 4. SHRP LABORATORY TEST NUMBER 3      -      -
- 5. LOCATION NUMBER B 2 5 1      - - - -      - - - -
- 6. SHRP SAMPLE NUMBER B V 2 5 1      - - - -      - - - -
- 7. MAXIMUM SPECIFIC GRAVITY (GMM) 2.4 7 4      - - - -      - - - -
- 8. COMMENTS  
     (a) CODE      - - - -      - - - -      - - - -  
                     - - - -      - - - -      - - - -  
     (b) NOTE      \_\_\_\_\_      \_\_\_\_\_      \_\_\_\_\_  
                     \_\_\_\_\_      \_\_\_\_\_      \_\_\_\_\_
- 9. TEST DATA 1 1-2 8-9 5      - - - -      - - - -

GENERAL REMARKS: \_\_\_\_\_

SUBMITTED BY, DATE 7/10/96  
DeB...  
 Laboratory Chief  
 Affiliation: ODOT

CHECKED AND APPROVED, DATE \_\_\_\_\_  
 \_\_\_\_\_  
 SHRP Representative  
 Affiliation: \_\_\_\_\_

SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING  
 LABORATORY MATERIAL TEST DATA  
 ASPHALT CONTENT (QUANTITATIVE EXTRACTION)  
 TEST DATA SHEET T04

SHEET 1 OF 1

ASPHALT CONCRETE LAYER (ASPHALTIC CONCRETE PROPERTIES)  
 SHRP TEST DESIGNATION: AC04 / SHRP PROTOCOL P04

LABORATORY PERFORMING TEST: OHIO DEPT. OF TRANSPORTATION  
 LABORATORY IDENTIFICATION CODE: 3 9 2 1

SHRP REGION NC STATE OH STATE CODE 39  
 SPS EXPERIMENT NO 1 SPS PROJECT CODE 01  
 SAMPLED BY: BRAD YOUNG FIELD SET NO. 1  
 DATE SAMPLED: 10 - 19 - 1995

- |  |                   |       |       |
|--|-------------------|-------|-------|
| 1. LAYER NUMBER (FROM LAB SHEET L04 AND FROM T01b) | <u>3</u>          |       |       |
| 2. TEST SECTION NO.                                | <u>01</u>         | --    | --    |
| 3. SAMPLING AREA NO. (SA-)                         | <u>S1</u>         | --    | --    |
| 4. SHRP LABORATORY TEST NUMBER                     | <u>3</u>          | -     | -     |
| 5. LOCATION NUMBER                                 | <u>B25i</u>       | ----  | ----  |
| 6. SHRP SAMPLE NUMBER                              | <u>BV25i</u>      | ----  | ----  |
| 7. ASPHALT CONTENT (BC)                            | <u>6.3%</u>       | -.-%  | -.-%  |
| 8. COMMENTS  |                   |       |       |
| (a) CODE   | ---               | ---   | ---   |
|  | ---               | ---   | ---   |
| (b) NOTE   | _____             | _____ | _____ |
|  | _____             | _____ | _____ |
| 9. TEST DATA                                       | <u>11-2 6-9 5</u> | --    | --    |

GENERAL REMARKS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

SUBMITTED BY, DATE 7/10/96  
Debra  
 Laboratory Chief  
 Affiliation: 0007

CHECKED AND APPROVED, DATE \_\_\_\_\_  
 \_\_\_\_\_  
 SHRP Representative  
 Affiliation: \_\_\_\_\_

SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING SHEET NO. 1 OF 2  
 LABORATORY MATERIAL TEST DATA  
 MOISTURE SUSCEPTIBILITY  
 LAB DATA SHEET T05

ASPHALT CONCRETE LAYER (ASPHALT CONCRETE PROPERTIES)  
 SHRP TEST DESIGNATION AC05 / SHRP PROTOCOL P05

LABORATORY PERFORMING TEST: THE OHIO DEPT. OF TRANSPORTATION  
 LABORATORY IDENTIFICATION CODE: 3921

SHRP REGION NC STATE OH  
 SPS EXPERIMENT NO. 1  
 SAMPLED BY: BRAD YOUNG  
 DATE SAMPLED: 10-19-1995

STATE CODE 39  
 SPS PROJECT CODE 01  
 FIELD SET NO. 1

- 1. LAYER NUMBER 3
- 2. SHRP LABORATORY TES NUMBER 3
- 3. TEST SECTION NUMBER 01
- 4. LOCATION NUMBER B25i
- 5. SAMPLING AREA NUMBER (SA-) S1
- 6. MAX. SPECIFIC GRAVITY OF MIX 2.474
- 7. METHOD OF COMPACTION Marshall

8. TEST RESULTS

DATA ITEM	UNCONDITIONED (DRY)			CONDITIONED		
	BV25i	BV25i	BV25i	BV25i	BV25i	BV25i
SHRP SAMPLE NO.						
AVE. SPEC. HGT.	66.5	68.4	66.9	66.9	65.0	65.0
AVG. SPEC. DIAM.	101.6	101.6	101.6	101.6	101.6	101.6
BSG AFTER MOLDING	2.320	2.317	2.320	2.318	2.320	2.320
% AIR VOIDS	6.2	6.3	6.2	6.3	6.3	6.3
BSG AFTER VAC. SAT.			2.323	2.327	2.330	2.330
MAX. LOAD	6361.	6895.	16903.	18282.	17570.	17570.

TEST RESULTS (continued)

SHEET NO. 2 OF 2

DATA ITEM	UNCONDITIONED (DRY)		CONDITIONED			
INDIRECT TENS. STR.	599.	754.	632.	1584.	1738.	1695.
AVE INDIRECT TENS. STR.	662.		1672.			
STD. INDIRECT TENS. STR.	82.		79.			
TENSILE STRENGTH RATIO	2.53					
RELATIVE VAR IN STR.	0.99					
COARSE AGG. STRIPPED			000.		000.	000.
FINE AGG STRIPPED %			000.		000.	000.
COMMENT CODES						
NOTE						
TEST DATE	2/16/96	2/16/96	2/16/96	2/16/96	2/16/96	2/16/96

GENERAL REMARKS: \_\_\_\_\_

SUBMITTED BY, DATE 7/10/96  
*[Signature]*  
 LABORATORY CHIEF  
 Affiliation ODOT

CHECKED AND APPROVED, DATE \_\_\_\_\_  
 \_\_\_\_\_  
 Affiliation \_\_\_\_\_



SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING SHEET 1 OF 1  
LABORATORY MATERIAL TEST DATA  
SPECIFIC GRAVITY AND ABSORPTION OF EXTRACTED COARSE AGGREGATE  
TEST DATA SHEET T11

ASPHALT CONCRETE LAYER (EXTRACTED AGGREGATE)  
SHRP TEST DESIGNATION: AG01 / SHRP PROTOCOL P11

LABORATORY PERFORMING TEST: OHIO DEPT. OF TRANSPORTATION  
LABORATORY IDENTIFICATION CODE: 3 9 2 1

SHRP REGION NC STATE OH STATE CODE 39  
SPS EXPERIMENT NO 1 SPS PROJECT CODE 01  
SAMPLED BY: BRAD YOUNG TEST SECTION NO. 01  
DATE SAMPLED: 10 - 19 - 1995 FIELD SET NO. 1  
SAMPLING AREA NO: SA- S1

- 1. LAYER NUMBER (FROM LAB SHEET L04 AND FROM T01b) 3
- 2. LOCATION NUMBER B 2 5 i
- 3. SHRP LABORATORY TEST NUMBER 3
- 4. SHRP SAMPLE NUMBER B V 2 5 i
- 5. WEIGHT OF TEST SAMPLE, grams 3 8 8 9.0
- 6. WEIGHT OF OVEN DRY TEST SAMPLE IN AIR (A), grams 3 8 8 9.0
- 7. WEIGHT OF SSD TEST SAMPLE IN AIR (B), grams 3 9 4 3.0
- 8. WEIGHT OF SSD TEST SAMPLE IN WATER (C), grams 2 3 8 8.0
- 9. BULK SPECIFIC GRAVITY OF COARSE AGGREGATE - 2.5 0
- 10. ABSORPTION OF COARSE AGGREGATE - 1.3 9

11. COMMENTS  
(a) CODE ---  
(b) NOTE ---

12. TEST DATA 04 - 00 - 1996

GENERAL REMARKS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

CERTIFIED  
[Signature]  
Laboratory Chief  
Affiliation: ODOT

VERIFIED AND APPROVED  
\_\_\_\_\_  
SHRP Representative  
Affiliation: \_\_\_\_\_

DATE  
\_\_\_\_-\_\_\_\_-19\_\_\_\_  
Month-Day-Year

SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING  
 LABORATORY MATERIAL TEST DATA  
 SPECIFIC GRAVITY AND ABSORPTION OF EXTRACTED FINE AGGREGATE  
 TEST DATA SHEET T12

SHEET 1 OF 1

ASPHALT CONCRETE LAYER (EXTRACTED AGGREGATE)  
 SHRP TEST DESIGNATION: AG02 / SHRP PROTOCOL P12

LABORATORY PERFORMING TEST: OHIO DEPT. OF TRANSPORTATION  
 LABORATORY IDENTIFICATION CODE: 3 9 2 1


SHRP REGION <u>NC</u>	STATE <u>OH</u>	STATE CODE <u>3 9</u>
SPS EXPERIMENT NO <u>1</u>		SPS PROJECT CODE <u>0 1</u>
SAMPLED BY: <u>BRAD YOUNG</u>		TEST SECTION NO. <u>0 1</u>
DATE SAMPLED: <u>1 0 - 1 9 - 199 5</u>		FIELD SET NO. <u>1</u>
		SAMPLING AREA NO: SA- <u>S 1</u>

- |  |                  |
|--|------------------|
| 1. LAYER NUMBER (FROM LAB SHEET L04 AND FROM T01b)                             | <u>3</u>         |
| 2. LOCATION NUMBER   | <u>B 2 5 i</u>   |
| 3. SHRP LABORATORY TEST NUMBER   | <u>3</u>         |
| 4. SHRP SAMPLE NUMBER  | <u>B V 2 5 i</u> |
| 5. WEIGHT OF TEST SAMPLE, grams  | <u>1 0 0 0.0</u> |
| 6. WEIGHT OF OVEN DRY TEST SAMPLE IN AIR (A), grams                            | <u>- 4 8 9.3</u> |
| 7. WEIGHT OF PYCNOMETER FILLED WITH WATER (B), grams                           | <u>- 6 5 7.7</u> |
| 8. WEIGHT OF PYCNOMETER WITH SPECIMEN AND WATER TO CALIBRATION MARK (C), grams | <u>- 9 6 5.6</u> |
| 9. WEIGHT OF SSD SPECIMEN (S), grams   | <u>- 5 0 0.0</u> |
| 10. BULK SPECIFIC GRAVITY OF FINE EXTRACTED AGGREGATE                          | <u>- 2.5 5</u>   |
| 11. PERCENT ABSORPTION OF FINE AGGRAGATE                                       | <u>- 2.2</u>     |

12. COMMENTS  
 (a) CODE ---  
 (b) NOTE ---

13. TEST DATA ----- 19--

GENERAL REMARKS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

CERTIFIED  
  
 Laboratory Chief  
 Affiliation: ODOT

VERIFIED AND APPROVED  
 \_\_\_\_\_  
 SHRP Representative  
 Affiliation: \_\_\_\_\_

DATE  
 \_\_\_\_\_-\_\_\_\_-19\_\_\_\_  
 Month-Day-Year



SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING  
 LABORATORY MATERIAL TEST DATA  
 NAA TEST FOR FINE AGGREGATE PARTICLE SHAPE  
 LAB DATA SHEET T114A

SHEET 1 OF 1

ASPHALT CONCRETE LAYER (EXTRACTED AGGREGATE)  
 SHRP TEST DESIGNATION: AG05 / SHRP PROTOCOL P14A

LABORATORY PERFORMING TEST: OHIO DEPT. OF TRANSPORTATION  
 LABORATORY IDENTIFICATION CODE: 3 9 2 1

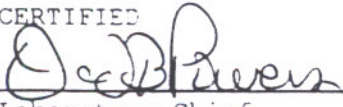
SHRP REGION	<u>NC</u>	STATE	<u>OH</u>	STATE CODE	<u>3 9</u>
SPS EXPERIMENT NO	<u>1</u>			SPS PROJECT CODE	<u>0 1</u>
SAMPLED BY:	<u>BRAD YOUNG</u>			TEST SECTION NO.	<u>0 1</u>
DATE SAMPLED:	<u>1 0 - 1 9 - 199 5</u>			FIELD SET NO.	<u>1</u>
				SAMPLING AREA NO: SA-	<u>S 1</u>

- |  |                  |
|--|------------------|
| 1. LAYER NUMBER (FROM LAB SHEET L04 AND FROM T01b) | <u>3</u>         |
| 2. LOCATION NUMBER                                 | <u>B 2 5 i</u>   |
| 3. SHRP LABORATORY TEST NUMBER                     | <u>3</u>         |
| 4. SHRP SAMPLE NUMBER                              | <u>B V 2 5 i</u> |
| 5. BULK DRY SPECIFIC GRAVITY OF FINE AGGREGATE     | <u>2.5 4 7</u>   |
| 6. ABSORPTION OF FINE AGGREGATE                    | <u>2.1 9</u>     |
| 7. UNCOMPACTED VOID CONTENT 1, %                   | <u>4 7.6 6</u>   |
| 8. UNCOMPACTED VOID CONTENT 2, %                   | <u>4 6.9 6</u>   |
| 9. UNCOMPACTED VOID CONTENT AVG., %                | <u>4 7.3 1</u>   |
| 10. DIFFERENCE IN UNCOMPACTED VOID CONTENT, %      | <u>0.7 0</u>     |

11. COMMENTS  
 (a) CODE ---  
 (b) NOTE ---

12. TEST DATA 0 4 - 0 0 - 199 6

GENERAL REMARKS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

CERTIFIED  
  
 Laboratory Chief  
 Affiliation: ODOT

VERIFIED AND APPROVED  
 \_\_\_\_\_  
 SHRP Representative  
 Affiliation: \_\_\_\_\_

DATE  
 \_\_\_\_\_-\_\_\_\_\_-19\_\_\_\_  
 Month-Day-Year

SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING  
LABORATORY MATERIAL TEST DATA  
RECOVERY OF ASPHALT FROM SOLUTION BY ABSON METHOD  
TEST DATA SHEET T21

SHEET 1 OF 1

ASPHALT CONCRETE LAYER (ASPHALT CEMENT PROPERTIES)  
SHRP TEST DESIGNATION: AE01 / SHRP PROTOCOL P21


LABORATORY PERFORMING TEST: OHIO DEPT. OF TRANSPORTATION  
LABORATORY IDENTIFICATION CODE: 3 9 2 1

SHRP REGION NC STATE OH  
SPS EXPERIMENT NO 1  
SAMPLED BY: BRAD YOUNG  
DATE SAMPLED: 1 0 - 1 9 - 199 5

STATE CODE 3 9  
SPS PROJECT CODE 0 1  
TEST SECTION NO. 0 1  
FIELD SET NO. 1  
SAMPLING AREA NO: SA- 5 1

- 1. LAYER NUMBER (FROM LAB SHEET L04 AND FROM T01b) 3
- 2. LOCATION NUMBER B 2 5 i
- 3. SHRP LABORATORY TEST NUMBER 3
- 4. SHRP SAMPLE NUMBER B V 2 5 i
- 5. MASS OF RECOVERED BITUMEN (grams) 4 8 5.5
- 6. ASH CONTENT OF BITUMEN (percent) 0.3
- 7. COMMENTS  
  - (a) CODE - - - - -
  - (b) NOTE - - - - -
- 8. TEST DATA 1 1 - 2 8 - 199 5

GENERAL REMARKS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

CERTIFIED  
  
Laboratory Chief  
Affiliation: ODOT

VERIFIED AND APPROVED  
\_\_\_\_\_  
SHRP Representative  
Affiliation: \_\_\_\_\_

DATE  
\_\_\_\_ - \_\_\_\_ - 19\_\_\_\_  
Month-Day-Year

SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING SHEET 1 OF 1  
LABORATORY MATERIAL TEST DATA  
PENETRATION OF EXTRACTED ASPHALT CEMENT AT 77 AND 115 DEGREES F.  
TEST DATA SHEET T22

ASPHALT CONCRETE LAYER (ASPHALT CEMENT PROPERTIES)  
SHRP TEST DESIGNATION: AE02 / SHRP PROTOCOL P22

LABORATORY PERFORMING TEST: OHIO DEPT. OF TRANSPORTATION  
LABORATORY IDENTIFICATION CODE: 3 9 2 1

SHRP REGION NC STATE OH STATE CODE 3 9  
SPS EXPERIMENT NO 1 SPS PROJECT CODE 0 1  
SAMPLED BY: BRAD YOUNG TEST SECTION NO. 0 1  
DATE SAMPLED: 1 0 - 1 9 - 199 5 FIELD SET NO. 1  
SAMPLING AREA NO: SA- 5 1

- 1. LAYER NUMBER (FROM LAB SHEET L04 AND FROM T01b) 3
- 2. LOCATION NUMBER B 2 5 i
- 3. SHRP LABORATORY TEST NUMBER 3
- 4. SHRP SAMPLE NUMBER B V 2 5 i
- 5. PENETRATION @ 77 DEGREE F. (millimeters) - 4 8.
- 6. PENETRATION @ 115 DEGREE F. (millimeter) 2 6 3.
- 7. PENETRATION INDEX 0.9
- 8. COMMENTS  
(a) CODE ---  
(b) NOTE -----
- 9. TEST DATA 1 1 - 2 9 - 199 5

GENERAL REMARKS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

CERTIFIED  
[Signature]  
Laboratory Chief  
Affiliation: DOT

VERIFIED AND APPROVED  
\_\_\_\_\_  
SHRP Representative  
Affiliation: \_\_\_\_\_

DATE  
\_\_\_\_-\_\_\_\_-19\_\_\_\_  
Month-Day-Year

SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING  
LABORATORY MATERIAL TEST DATA  
SPECIFIC GRAVITY OF EXTRACTED ASPHALT CEMENT  
TEST DATA SHEET T23

SHEET 1 OF 1

ASPHALT CONCRETE LAYER (ASPHALT CEMENT PROPERTIES)  
SHRP TEST DESIGNATION: AE03 / SHRP PROTOCOL P23

LABORATORY PERFORMING TEST: OHIO DEPT. OF TRANSPORTATION

LABORATORY IDENTIFICATION CODE: 3 9 2 1

SHRP REGION <u>NC</u>	STATE <u>OH</u>	STATE CODE <u>3 9</u>
SPS EXPERIMENT NO <u>1</u>		SPS PROJECT NO. <u>0 1</u>
SAMPLED BY: <u>BRAD YOUNG</u>		TEST SECTION NO. <u>0 1</u>
DATE SAMPLED: <u>1 0 - 1 9 - 199 5</u>		FIELD SET NO. <u>1</u>
		SAMPLING AREA NO: SA- <u>5 1</u>

1. LAYER NUMBER (FROM LAB SHEET L04 AND FROM T01b) 3

2. LOCATION NUMBER B 2 5 i

3. SHRP LABORATORY TEST NUMBER 3

4. SHRP SAMPLE NUMBER 5 v 2 5 i

5. SPECIFIC GRAVITY 1.0 4 2

6. COMMENTS  
(a) CODE ---  
(b) NOTE -----

7. TEST DATA 1 1 - 2 1 - 199 5

GENERAL REMARKS: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

CERTIFIED  
[Signature]  
Laboratory Chief  
Affiliation: ODOT

VERIFIED AND APPROVED  
\_\_\_\_\_  
SHRP Representative  
Affiliation: \_\_\_\_\_

DATE  
\_\_\_\_-\_\_\_\_-19\_\_\_\_  
Month-Day-Year

SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING  
LABORATORY MATERIAL TEST DATA  
KINEMATIC AND ABSOLUTE VISCOSITY  
TEST DATA SHEET T25

SHEET 1 OF 1

ASPHALT CONCRETE LAYER (ASPHALT CEMENT PROPERTIES)  
SHRP TEST DESIGNATION: AE05 / SHRP PROTOCOL P25

LABORATORY PERFORMING TEST: OHIO DEPT. OF TRANSPORTATION

LABORATORY IDENTIFICATION CODE: 3 9 2 1

SHRP REGION <u>NC</u>	STATE <u>OH</u>	STATE CODE <u>3 9</u>
SPS EXPERIMENT NO <u>1</u>		SPS PROJECT CODE <u>0 1</u>
SAMPLED BY: <u>BRAD YOUNG</u>		TEST SECTION NO. <u>0 1</u>
DATE SAMPLED: <u>1 0 - 1 2 - 199 5</u>		FIELD SET NO. <u>1</u>
		SAMPLING AREA NO: SA- <u>S 1</u>

1. LAYER NUMBER (FROM LAB SHEET L04 AND FROM T01b) 3
2. LOCATION NUMBER B 2 5 i
3. SHRP LABORATORY TEST NUMBER 3
4. SHRP SAMPLE NUMBER B V 2 5 i
5. KINEMATIC VISCOSITY
  - (a) CALIBRATION CONSTANT (C), centistokes/sec 2.9 0 5
  - (b) EFFLUX TIME (S), seconds 1 7 3.4
  - (c) KINEMATIC VISCOSITY @ 27 DEGREE F, centistokes 5 0 4.
6. ABSOLUTE VISCOSITY
  - (a) CALIBRATION FACTOR (K), poises/sec 6 3.0
  - (b) FLOW TIME, seconds 6 6.4
  - (c) VACUUM PRESSURE, mm of Hg 3 0 0.0
  - (d) ABSOLUTE VISCOSITY @ 140 DEGREE F, poises 4 1 8 3.
7. COMMENTS
  - (a) CODE -----
  - (b) NOTE -----
8. TEST DATA 1 1 - 2 8 - 199 5

GENERAL REMARKS: \_\_\_\_\_  
\_\_\_\_\_

CERTIFIED  
Dec Bliven  
Laboratory Chief  
Affiliation: OH

VERIFIED AND APPROVED  
\_\_\_\_\_  
SHRP Representative  
Affiliation: \_\_\_\_\_

DATE  
\_\_\_\_\_-\_\_\_\_\_-19\_\_\_\_  
Month-Day-Year



SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING  
 LABORATORY MATERIAL TEST DATA  
 AC CORE EXAMINATION AND THICKNESS  
 TEST DATA SHEET T01A

SHEET 1 OF 1

ASPHALT CONCRETE LAYER (ASPHALTIC CONCRETE PROPERTIES)  
 SHRP TEST DESIGNATION: AC01 / SHRP PROTOCOL P01

(This form is to be used to describe the entire AC core only)  
 (Treated base / subbase portions of the core should be described on Form T31)

LABORATORY PERFORMING TEST: OHIO DEPT. OF TRANSPORTATION  
 LABORATORY IDENTIFICATION CODE: 3 9 2 1

SHRP REGION NC STATE OH STATE CODE 3 9  
 SPS EXPERIMENT NO 1 SPS PROJECT CODE 0 1  
 SAMPLED BY: BRAD YOUNG FIELD SET NO. 1  
 DATE SAMPLED: 1 1 - 2 0 - 199 5

1. (FIELD) LAYER NUMBER (FROM FIELD OPERATIONS FORM 2)	<u>4</u>		
2. TEST SECTION NO.	<u>0 1</u>	--	--
3. SAMPLING AREA NO. (SA-)	<u>2 0</u>	--	--
4. SHRP LABORATORY TEST NUMBER	<u>2</u>	-	-
5. LOCATION NUMBER	<u>C 2 1</u>	----	----
6. SHRP SAMPLE NUMBER	<u>C A 2 1</u>	----	----
7. AVERAGE THICKNESS* (L) INCHES	<u>6.7</u>	---	---
8. VISUAL EXAMINATION			
(a) CODE	<u>01 08 09</u>	---	---
(Section 7.3.(b),	<u>---</u>	---	---
Protocol P01)			
(b) NOTE	<u>---</u>	---	---
	<u>---</u>	---	---
	<u>---</u>	---	---
9. COMMENTS			
(a) CODE	<u>---</u>	---	---
(Section 7.4 Protocol P01)	<u>---</u>	---	---
(b) NOTE	<u>---</u>	---	---
	<u>---</u>	---	---
10. TEST DATA	<u>0 2-0 1-9 6</u>	---	---

\* Measure AC core thickness prior to sawing from other bonded layers.

GENERAL REMARKS: \_\_\_\_\_

SUBMITTED BY, DATE 4/29/96

CHECKED AND APPROVED, DATE \_\_\_\_\_

Oct B. Buem  
 Laboratory Chief  
 Affiliation: Ohio DOT

\_\_\_\_\_  
 SHRP Representative  
 Affiliation: \_\_\_\_\_

\*\*\*\*\*SPS LABORATORY TESTING DATA SHEET \*\*\*\*\*

SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING  
 LABORATORY MATERIAL TEST DATA  
 AC CORE EXAMINATION AND THICKNESS  
 TEST DATA SHEET T01B

SHEET 1 OF 1

ASPHALT CONCRETE LAYER (ASPHALTIC CONCRETE PROPERTIES)  
 SHRP TEST DESIGNATION: AC01 / SHRP PROTOCOL P01

(This form is to be used to report detailed information as described in  
 Attachment B to Protocol P01)

LABORATORY PERFORMING TEST: OHIO DEPT. OF TRANSPORTATION

LABORATORY IDENTIFICATION CODE: 3 9 2 1

SHRP REGION NC STATE OH STATE CODE 3 9  
 SPS EXPERIMENT NO 1 SPS PROJECT CODE 0 1  
 SAMPLED BY: BRAD YOUNG FIELD SET NO. 1  
 DATE SAMPLED: 1 1 - 2 0 - 199 5

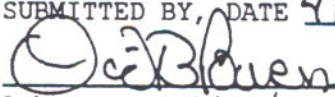
- 1. (FIELD) LAYER NUMBER (FROM FORM T01A) 4
- 2. TEST SECTION NO. 0 1 -- --
- 3. SAMPLING AREA NO. (SA-) 2 0 -- --
- 4. SHRP LABORATORY TEST NUMBER 2 - -
- 5. LOCATION NUMBER C 2 1 - - - -
- 6. SHRP SAMPLE NUMBER C A 2 1 - - - -

7. LAYER INFORMATION	LAYER NUMBER	LAYER DES.	LAYER THICKNESS (INCH)	LAYER NUMBER	LAYER DES.	LAYER THICKNESS (INCH)	LAYER NUMBER	LAYER DES.	LAYER THICKNESS (INCH)
(start layer numbers from the bottom layer within the AC core)	<u>4*</u>	<u>0 4</u>	<u>4.9</u>	<u>-*</u>	<u>--</u>	<u>---</u>	<u>-*</u>	<u>--</u>	<u>---</u>
	<u>5</u>	<u>0 9</u>	<u>1.8</u>	<u>-</u>	<u>--</u>	<u>---</u>	<u>-</u>	<u>--</u>	<u>---</u>
	<u>-</u>	<u>--</u>	<u>---</u>	<u>-</u>	<u>--</u>	<u>---</u>	<u>-</u>	<u>--</u>	<u>---</u>
	<u>-</u>	<u>--</u>	<u>---</u>	<u>-</u>	<u>--</u>	<u>---</u>	<u>-</u>	<u>--</u>	<u>---</u>

- 8. COMMENTS
  - (a) CODE ---
  - (b) NOTE ---
- 9. TEST DATA 0 2-0 1-9 6

\* Same layer number as entered in item 1 (Field layer number) if there is no other discrepancy in layers identified in the field and laboratory.

GENERAL REMARKS: \_\_\_\_\_

SUBMITTED BY, DATE 4/29/96  
  
 Laboratory Chief  
 Affiliation: Ohio DOT

CHECKED AND APPROVED, DATE \_\_\_\_\_  
 \_\_\_\_\_  
 SHRP Representative  
 Affiliation: \_\_\_\_\_

SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING  
 LABORATORY MATERIAL TEST DATA  
 BULK SPECIFIC GRAVITY  
 TEST DATA SHEET T02

SHEET 1 OF 1

ASPHALT CONCRETE LAYER (ASPHALTIC CONCRETE PROPERTIES)  
 SHRP TEST DESIGNATION: AC02 / SHRP PROTOCOL P02

LABORATORY PERFORMING TEST: OHIO DEPT. OF TRANSPORTATION  
 LABORATORY IDENTIFICATION CODE: 3 9 2 1

SHRP REGION NC STATE OH STATE CODE 3 9  
 SPS EXPERIMENT NO 1 SPS PROJECT CODE 0 1  
 SAMPLED BY: BRAD YOUNG FIELD SET NO. 1  
 DATE SAMPLED: 1 1 - 2 0 - 199 5

1. LAYER NUMBER (FROM LAB SHEET L04 AND FROM T01b)	<u>4</u>		
2. TEST SECTION NO.	<u>0 1</u>	<u>0 1</u>	<u>--</u>
3. SAMPLING AREA NO. (SA-)	<u>2 0</u>	<u>2 0</u>	<u>--</u>
4. SHRP LABORATORY TEST NUMBER	<u>2</u>	<u>2</u>	<u>-</u>
5. LOCATION NUMBER	<u>- C 2 1</u>	<u>- C 2 1</u>	<u>----</u>
6. SHRP SAMPLE NUMBER	<u>C A 2 1</u>	<u>C A 2 1</u>	<u>----</u>
7. BULK SPECIFIC GRAVITY (BSG)	<u>2.1 8 6</u>	<u>2.1 7 0</u>	<u>----</u>
8. WATER ABSORBED, %	<u>- 1 %</u>	<u>- 1 %</u>	<u>-- %</u>
9. TEST ON PARAFFIN COATED SPECIMEN (YES/NO)	<u>NO</u>	<u>NO</u>	<u>---</u>
10. BSG (PARAFFIN COATED SPECIMEN)	<u>----</u>	<u>----</u>	<u>----</u>
11.. COMMENTS			
(a) CODE	<u>----</u>	<u>----</u>	<u>----</u>
(b) NOTE	<u>-----</u>	<u>-----</u>	<u>-----</u>
12. TEST DATA	<u>0 2-0 2-9 6</u>	<u>0 2-0 2-9 6</u>	<u>----</u>

(DO NOT USE THE TEST RESULT WITH WATER ABSORPTION OF MORE THAN 2 PERCENT)  
 GENERAL REMARKS: \_\_\_\_\_

SUBMITTED BY, DATE 4/29/86  
Dee B. Buem  
 Laboratory Chief  
 Affiliation: Ohio DOT

CHECKED AND APPROVED, DATE \_\_\_\_\_  
 \_\_\_\_\_  
 SHRP Representative  
 Affiliation: \_\_\_\_\_

SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING  
 LABORATORY MATERIAL TEST DATA  
 AC CORE EXAMINATION AND THICKNESS  
 TEST DATA SHEET T01A

SHEET 1 OF 1

ASPHALT CONCRETE LAYER (ASPHALTIC CONCRETE PROPERTIES)  
 SHRP TEST DESIGNATION: AC01 / SHRP PROTOCOL P01

(This form is to be used to describe the entire AC core only)  
 (Treated base / subbase portions of the core should be described on Form T31)

LABORATORY PERFORMING TEST: OHIO DEPT. OF TRANSPORTATION

LABORATORY IDENTIFICATION CODE: 3 9 2 1

SHRP REGION NC STATE OH STATE CODE 3 9  
 SPS EXPERIMENT NO 1 SPS PROJECT CODE 0 1  
 SAMPLED BY: BRAD YOUNG FIELD SET NO. 1  
 DATE SAMPLED: 1 1 - 2 0 - 199 5

1. (FIELD) LAYER NUMBER (FROM FIELD OPERATIONS FORM 2)		<u>4</u>	
2. TEST SECTION NO.	<u>0 1</u>	--	--
3. SAMPLING AREA NO. (SA-)	<u>2 0</u>	--	--
4. SHRP LABORATORY TEST NUMBER	<u>2</u>	-	-
5. LOCATION NUMBER	<u>- C 2 2</u>	----	----
6. SHRP SAMPLE NUMBER	<u>C A 2 2</u>	----	----
7. AVERAGE THICKNESS* (L) INCHES	<u>- 6.3</u>	---	---
8. VISUAL EXAMINATION			
(a) CODE	<u>01 08 09</u>	---	---
(Section 7.3.(b),	<u>---</u>	---	---
Protocol P01)			
(b) NOTE	<u>---</u>	---	---
	<u>---</u>	---	---
	<u>---</u>	---	---
9. COMMENTS			
(a) CODE	<u>---</u>	---	---
(Section 7.4 Protocol P01)	<u>---</u>	---	---
(b) NOTE	<u>---</u>	---	---
	<u>---</u>	---	---
10. TEST DATA	<u>0 2-0 1-9 6</u>	---	---

\* Measure AC core thickness prior to sawing from other bonded layers.

GENERAL REMARKS: \_\_\_\_\_

SUBMITTED BY, DATE 4/29/96  
David Powers  
 Laboratory Chief  
 Affiliation: Ohio DOT

CHECKED AND APPROVED, DATE \_\_\_\_\_  
 \_\_\_\_\_  
 SHRP Representative  
 Affiliation: \_\_\_\_\_



SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING  
 LABORATORY MATERIAL TEST DATA  
 BULK SPECIFIC GRAVITY  
 TEST DATA SHEET T02

SHEET 1 OF 1

ASPHALT CONCRETE LAYER (ASPHALTIC CONCRETE PROPERTIES)  
 SHRP TEST DESIGNATION: AC02 / SHRP PROTOCOL P02

LABORATORY PERFORMING TEST: OHIO DEPT. OF TRANSPORTATION  
 LABORATORY IDENTIFICATION CODE: 3 9 2 1

SHRP REGION NC STATE OH STATE CODE 3 9  
 SPS EXPERIMENT NO 1 SPS PROJECT CODE Q 1  
 SAMPLED BY: BRAD YOUNG FIELD SET NO. 1  
 DATE SAMPLED: 1 1 - 2 0 - 199 5

1. LAYER NUMBER (FROM LAB SHEET L04 AND FROM T01b)	<u>4</u>		
2. TEST SECTION NO.	<u>0 1</u>	<u>0 1</u>	--
3. SAMPLING AREA NO. (SA-)	<u>2 0</u>	<u>2 0</u>	--
4. SHRP LABORATORY TEST NUMBER	<u>2</u>	<u>2</u>	-
5. LOCATION NUMBER	<u>- C 2 2</u>	<u>- C 2 2</u>	----
6. SHRP SAMPLE NUMBER	<u>C A 2 2</u>	<u>C A 2 2</u>	----
7. BULK SPECIFIC GRAVITY (BSG)	<u>2.1 9 6</u>	<u>2.1 4 3</u>	----
8. WATER ABSORBED, %	<u>- 2 %</u>	<u>- 3 %</u>	-- %
9. TEST ON PARAFFIN COATED SPECIMEN (YES/NO)	<u>NO</u>	<u>YES</u>	---
10. BSG (PARAFFIN COATED SPECIMEN)	<u>----</u>	<u>1.8 0 8</u>	----
11.. COMMENTS			
(a) CODE	<u>----</u>	<u>----</u>	<u>----</u>
(b) NOTE	<u>-----</u>	<u>-----</u>	<u>-----</u>
12. TEST DATA	<u>0 2-0 2-9 6</u>	<u>0 2-2 2-9 6</u>	-----

(DO NOT USE THE TEST RESULT WITH WATER ABSORPTION OF MORE THAN 2 PERCENT)  
 GENERAL REMARKS: \_\_\_\_\_

SUBMITTED BY: DATE 4/29/96  
Bob Brown  
 Laboratory Chief  
 Affiliation: Ohio DOT

CHECKED AND APPROVED, DATE \_\_\_\_\_  
 \_\_\_\_\_  
 SHRP Representative  
 Affiliation: \_\_\_\_\_

SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING  
 LABORATORY MATERIAL TEST DATA  
 AC CORE EXAMINATION AND THICKNESS  
 TEST DATA SHEET T01A

SHEET 1 OF 1

ASPHALT CONCRETE LAYER (ASPHALTIC CONCRETE PROPERTIES)  
 SHRP TEST DESIGNATION: AC01 / SHRP PROTOCOL P01

(This form is to be used to describe the entire AC core only)  
 (Treated base / subbase portions of the core should be described on Form T31)

LABORATORY PERFORMING TEST: OHIO DEPT. OF TRANSPORTATION  
 LABORATORY IDENTIFICATION CODE: 3 9 2 1

SHRP REGION NC STATE OH STATE CODE 3 9  
 SPS EXPERIMENT NO 1 SPS PROJECT CODE 0 1  
 SAMPLED BY: BRAD YOUNG FIELD SET NO. 1  
 DATE SAMPLED: 1 1 - 2 0 - 199 5

- |  |                    |      |      |
|--|--------------------|------|------|
| 1. (FIELD) LAYER NUMBER (FROM FIELD OPERATIONS FORM 2) | <u>4</u>           |      |      |
| 2. TEST SECTION NO.                                    | <u>0 1</u>         | --   | --   |
| 3. SAMPLING AREA NO. (SA-)                             | <u>2 0</u>         | --   | --   |
| 4. SHRP LABORATORY TEST NUMBER                         | <u>2</u>           | -    | -    |
| 5. LOCATION NUMBER                                     | <u>C 2 3</u>       | ---- | ---- |
| 6. SHRP SAMPLE NUMBER                                  | <u>C A 2 3</u>     | ---- | ---- |
| 7. AVERAGE THICKNESS* (L) INCHES                       | <u>6.9</u>         | ---  | ---  |
| 8. VISUAL EXAMINATION                                  |                    |      |      |
| (a) CODE   | <u>01 08 09</u>    | ---  | ---  |
| (Section 7.3.(b),                                      | <u>    </u>        | ---  | ---  |
| Protocol P01)  |                    |      |      |
| (b) NOTE   | <u>    </u>        | ---  | ---  |
|  | <u>    </u>        | ---  | ---  |
|  | <u>    </u>        | ---  | ---  |
| 9. COMMENTS  |                    |      |      |
| (a) CODE   | <u>    </u>        | ---  | ---  |
| (Section 7.4 Protocol P01)                             | <u>    </u>        | ---  | ---  |
|  | <u>    </u>        | ---  | ---  |
| (b) NOTE   | <u>    </u>        | ---  | ---  |
|  | <u>    </u>        | ---  | ---  |
|  | <u>    </u>        | ---  | ---  |
| 10. TEST DATA  | <u>0 2-0 1-9 6</u> | ---  | ---  |

\* Measure AC core thickness prior to sawing from other bonded layers.

GENERAL REMARKS: \_\_\_\_\_

SUBMITTED BY, DATE 4/29/96  
DeB Owen  
 Laboratory Chief  
 Affiliation: Ohio DOT

CHECKED AND APPROVED, DATE \_\_\_\_\_  
 \_\_\_\_\_  
 SHRP Representative  
 Affiliation: \_\_\_\_\_

SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING  
 LABORATORY MATERIAL TEST DATA  
 AC CORE EXAMINATION AND THICKNESS  
 TEST DATA SHEET T01B

SHEET 1 OF 1

ASPHALT CONCRETE LAYER (ASPHALTIC CONCRETE PROPERTIES)  
 SHRP TEST DESIGNATION: AC01 / SHRP PROTOCOL P01

(This form is to be used to report detailed information as described in  
 Attachment B to Protocol P01)

LABORATORY PERFORMING TEST: OHIO DEPT. OF TRANSPORTATION

LABORATORY IDENTIFICATION CODE: 3 9 2 1

SHRP REGION NC STATE OH STATE CODE 3 9  
 SPS EXPERIMENT NO 1 SPS PROJECT CODE 0 1  
 SAMPLED BY: BRAD YOUNG FIELD SET NO. 1  
 DATE SAMPLED: 1 1 - 2 0 - 199 5

1. (FIELD) LAYER NUMBER (FROM FORM T01A) 4
2. TEST SECTION NO. 0 1 -- --
3. SAMPLING AREA NO. (SA-) 2 0 -- --
4. SHRP LABORATORY TEST NUMBER 2 - -
5. LOCATION NUMBER C 2 3 - - - -
6. SHRP SAMPLE NUMBER C A 2 3 - - - -

7. LAYER INFORMATION	LAYER NUMBER	LAYER DES.	LAYER THICKNESS (INCH)	LAYER NUMBER	LAYER DES.	LAYER THICKNESS (INCH)	LAYER NUMBER	LAYER DES.	LAYER THICKNESS (INCH)
(start layer numbers from the bottom layer within the AC core)	<u>4*</u>	<u>0 4</u>	<u>5.0</u>	<u>-*</u>	<u>--</u>	<u>---</u>	<u>-*</u>	<u>--</u>	<u>---</u>
	<u>5</u>	<u>0 2</u>	<u>1.2</u>	<u>-</u>	<u>--</u>	<u>---</u>	<u>-</u>	<u>--</u>	<u>---</u>
	<u>-</u>	<u>--</u>	<u>---</u>	<u>-</u>	<u>--</u>	<u>---</u>	<u>-</u>	<u>--</u>	<u>---</u>
	<u>-</u>	<u>--</u>	<u>---</u>	<u>-</u>	<u>--</u>	<u>---</u>	<u>-</u>	<u>--</u>	<u>---</u>

8. COMMENTS
- (a) CODE ---
- (b) NOTE ---
9. TEST DATA 0 2-0 1-2 6

\* Same layer number as entered in item 1 (Field layer number) if there is no other discrepancy in layers identified in the field and laboratory.

GENERAL REMARKS: \_\_\_\_\_

SUBMITTED BY, DATE 4/29/96  
David Boers  
 Laboratory Chief  
 Affiliation: Ohio DOT

CHECKED AND APPROVED, DATE \_\_\_\_\_  
 \_\_\_\_\_  
 SHRP Representative  
 Affiliation: \_\_\_\_\_



SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING  
 LABORATORY MATERIAL TEST DATA  
 BULK SPECIFIC GRAVITY  
 TEST DATA SHEET T02

SHEET 1 OF 1

ASPHALT CONCRETE LAYER (ASPHALTIC CONCRETE PROPERTIES)  
 SHRP TEST DESIGNATION: AC02 / SHRP PROTOCOL P02

LABORATORY PERFORMING TEST: OHIO DEPT. OF TRANSPORTATION  
 LABORATORY IDENTIFICATION CODE: 3 9 2 1

SHRP REGION NC STATE OH STATE CODE 3 9  
 SPS EXPERIMENT NO 1 SPS PROJECT CODE 0 1  
 SAMPLED BY: BRAD YOUNG FIELD SET NO. 1  
 DATE SAMPLED: 1 1 - 2 0 - 199 5

1. LAYER NUMBER (FROM LAB SHEET L04 AND FROM T01b)	<u>4</u>		
2. TEST SECTION NO.	<u>0 1</u>	<u>0 1</u>	<u>--</u>
3. SAMPLING AREA NO. (SA-)	<u>2 0</u>	<u>2 0</u>	<u>--</u>
4. SHRP LABORATORY TEST NUMBER	<u>2</u>	<u>2</u>	<u>-</u>
5. LOCATION NUMBER	<u>- C 2 3</u>	<u>- C 2 3</u>	<u>----</u>
6. SHRP SAMPLE NUMBER	<u>C A 2 3</u>	<u>C A 2 3</u>	<u>----</u>
7. BULK SPECIFIC GRAVITY (BSG)	<u>2.1 6 5</u>	<u>2.1 7 6</u>	<u>----</u>
8. WATER ABSORBED, %	<u>- 2 %</u>	<u>- 2 %</u>	<u>-- %</u>
9. TEST ON PARAFFIN COATED SPECIMEN (YES/NO)	<u>NO</u>	<u>NO</u>	<u>---</u>
10. BSG (PARAFFIN COATED SPECIMEN)	<u>----</u>	<u>----</u>	<u>----</u>
11.. COMMENTS			
(a) CODE	<u>----</u>	<u>----</u>	<u>----</u>
(b) NOTE	<u>-----</u>	<u>-----</u>	<u>-----</u>
12. TEST DATA	<u>0 2-0 2-9 6</u>	<u>0 2-0 2-9 6</u>	<u>-----</u>

(DO NOT USE THE TEST RESULT WITH WATER ABSORPTION OF MORE THAN 2 PERCENT)  
 GENERAL REMARKS: \_\_\_\_\_

SUBMITTED BY, DATE 4/29/96  
Brad Young  
 Laboratory Chief  
 Affiliation: Ohio DOT

CHECKED AND APPROVED, DATE \_\_\_\_\_  
 \_\_\_\_\_  
 SHRP Representative  
 Affiliation: \_\_\_\_\_

SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING  
 LABORATORY MATERIAL TEST DATA  
 AC CORE EXAMINATION AND THICKNESS  
 TEST DATA SHEET T01A

SHEET 1 OF 1

ASPHALT CONCRETE LAYER (ASPHALTIC CONCRETE PROPERTIES)  
 SHRP TEST DESIGNATION: AC01 / SHRP PROTOCOL P01

(This form is to be used to describe the entire AC core only)  
 (Treated base / subbase portions of the core should be described on Form T31)

LABORATORY PERFORMING TEST: OHIO DEPT. OF TRANSPORTATION

LABORATORY IDENTIFICATION CODE: 3 9 2 1

SHRP REGION NC STATE OH STATE CODE 3 9  
 SPS EXPERIMENT NO 1 SPS PROJECT CODE 0 1  
 SAMPLED BY: BRAD YOUNG FIELD SET NO. 1  
 DATE SAMPLED: 1 1 - 2 0 - 199 5

1. (FIELD) LAYER NUMBER (FROM FIELD OPERATIONS FORM 2)		<u>4</u>	
2. TEST SECTION NO.	<u>0 1</u>	--	--
3. SAMPLING AREA NO. (SA-)	<u>2 0</u>	--	--
4. SHRP LABORATORY TEST NUMBER	<u>2</u>	-	-
5. LOCATION NUMBER	<u>C 2 4</u>	----	----
6. SHRP SAMPLE NUMBER	<u>C A 2 4</u>	----	----
7. AVERAGE THICKNESS* (L) INCHES	<u>6.9</u>	---	---
8. VISUAL EXAMINATION			
(a) CODE	<u>01 08 09</u>	---	---
(Section 7.3. (b),	<u>    </u>	---	---
Protocol P01)			
(b) NOTE	<u>    </u>		
	<u>    </u>		
	<u>    </u>		
9. COMMENTS			
(a) CODE	<u>    </u>	---	---
(Section 7.4 Protocol P01)	<u>    </u>	---	---
(b) NOTE	<u>    </u>		
	<u>    </u>		
	<u>    </u>		
10. TEST DATA	<u>0 2-0 1-9 6</u>	---	---

\* Measure AC core thickness prior to sawing from other bonded layers.

GENERAL REMARKS: \_\_\_\_\_

SUBMITTED BY, DATE 4/29/86  
DiBrowen  
 Laboratory Chief  
 Affiliation: Ohio DOT

CHECKED AND APPROVED, DATE \_\_\_\_\_  
 \_\_\_\_\_  
 SHRP Representative  
 Affiliation: \_\_\_\_\_

SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING  
 LABORATORY MATERIAL TEST DATA  
 AC CORE EXAMINATION AND THICKNESS  
 TEST DATA SHEET T01B

SHEET 1 OF 1

ASPHALT CONCRETE LAYER (ASPHALTIC CONCRETE PROPERTIES)  
 SHRP TEST DESIGNATION: AC01 / SHRP PROTOCOL P01

(This form is to be used to report detailed information as described in  
 Attachment B to Protocol P01)

LABORATORY PERFORMING TEST: OHIO DEPT. OF TRANSPORTATION  
 LABORATORY IDENTIFICATION CODE: 3 9 2 1

SHRP REGION NC STATE OH STATE CODE 3 9  
 SPS EXPERIMENT NO 1 SPS PROJECT CODE 0 1  
 SAMPLED BY: BRAD YOUNG FIELD SET NO. 1  
 DATE SAMPLED: 1 1 - 2 0 - 199 5

- 1. (FIELD) LAYER NUMBER (FROM FORM T01A) 4
- 2. TEST SECTION NO. 0 1
- 3. SAMPLING AREA NO. (SA-) 2 0
- 4. SHRP LABORATORY TEST NUMBER 2
- 5. LOCATION NUMBER C 2 4
- 6. SHRP SAMPLE NUMBER C A 2 4

7. LAYER INFORMATION	LAYER NUMBER	LAYER DES.	LAYER THICKNESS (INCH)	LAYER NUMBER	LAYER DES.	LAYER THICKNESS (INCH)	LAYER NUMBER	LAYER DES.	LAYER THICKNESS (INCH)
(start layer numbers from the bottom layer within the AC core)	<u>4*</u>	<u>0 4</u>	<u>5.0</u>	<u>-*</u>	<u>--</u>	<u>---</u>	<u>-*</u>	<u>--</u>	<u>---</u>
	<u>5</u>	<u>0 9</u>	<u>1.9</u>	<u>-</u>	<u>--</u>	<u>---</u>	<u>-</u>	<u>--</u>	<u>---</u>
	<u>-</u>	<u>--</u>	<u>---</u>	<u>-</u>	<u>--</u>	<u>---</u>	<u>-</u>	<u>--</u>	<u>---</u>
	<u>-</u>	<u>--</u>	<u>---</u>	<u>-</u>	<u>--</u>	<u>---</u>	<u>-</u>	<u>--</u>	<u>---</u>

- 8. COMMENTS
  - (a) CODE ---
  - (b) NOTE ---
- 9. TEST DATA 0 2-0 1-9 6

\* Same layer number as entered in item 1 (Field layer number) if there is no other discrepancy in layers identified in the field and laboratory.

GENERAL REMARKS: \_\_\_\_\_

SUBMITTED BY, DATE 4/29/96  
Bob Buey  
 Laboratory Chief  
 Affiliation: Ohio DOT

CHECKED AND APPROVED, DATE \_\_\_\_\_  
 \_\_\_\_\_  
 SHRP Representative

\*\*\*\*\*SPS LABORATORY TESTING DATA SHEET \*\*\*\*\*

SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING  
 LABORATORY MATERIAL TEST DATA  
 BULK SPECIFIC GRAVITY  
 TEST DATA SHEET T02

SHEET 1 OF 1

ASPHALT CONCRETE LAYER (ASPHALTIC CONCRETE PROPERTIES)  
 SHRP TEST DESIGNATION: AC02 / SHRP PROTOCOL P02

LABORATORY PERFORMING TEST: OHIO DEPT. OF TRANSPORTATION  
 LABORATORY IDENTIFICATION CODE: 3 9 2 1

SHRP REGION NC STATE OH STATE CODE 39  
 SPS EXPERIMENT NO. 1 SPS PROJECT CODE 01  
 SAMPLED BY: BRAD YOUNG FIELD SET NO. 1  
 DATE SAMPLED: 11 - 20 - 1995

1. LAYER NUMBER (FROM LAB SHEET L04 AND FROM T01b)	<u>4</u>		
2. TEST SECTION NO.	<u>01</u>	<u>01</u>	--
3. SAMPLING AREA NO. (SA-)	<u>20</u>	<u>20</u>	--
4. SHRP LABORATORY TEST NUMBER	<u>2</u>	<u>2</u>	-
5. LOCATION NUMBER	<u>C 2 4</u>	<u>C 2 4</u>	----
6. SHRP SAMPLE NUMBER	<u>C A 2 4</u>	<u>C A 2 4</u>	----
7. BULK SPECIFIC GRAVITY (BSG)	<u>2.171</u>	<u>2.155</u>	----
8. WATER ABSORBED, %	<u>2 %</u>	<u>2 %</u>	-- %
9. TEST ON PARAFFIN COATED SPECIMEN (YES/NO)	<u>NO</u>	<u>NO</u>	---
10. BSG (PARAFFIN COATED SPECIMEN)	----	----	----
11. COMMENTS			
(a) CODE	----	----	----
(b) NOTE	_____	_____	_____
12. TEST DATA	<u>0 2-0 2-9 6</u>	<u>0 2-0 2-9 6</u>	----

(DO NOT USE THE TEST RESULT WITH WATER ABSORPTION OF MORE THAN 2 PERCENT)  
 GENERAL REMARKS: \_\_\_\_\_

SUBMITTED BY, DATE 4/22/96  
Brad Young  
 Laboratory Chief  
 Affiliation: Ohio DOT

CHECKED AND APPROVED, DATE \_\_\_\_\_  
 \_\_\_\_\_  
 SHRP Representative  
 Affiliation: \_\_\_\_\_

SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING  
 LABORATORY MATERIAL TEST DATA  
 AC CORE EXAMINATION AND THICKNESS  
 TEST DATA SHEET T01A

SHEET 1 OF 1

ASPHALT CONCRETE LAYER (ASPHALTIC CONCRETE PROPERTIES)  
 SHRP TEST DESIGNATION: AC01 / SHRP PROTOCOL P01

(This form is to be used to describe the entire AC core only)  
 (Treated base / subbase portions of the core should be described on Form T31)

LABORATORY PERFORMING TEST: OHIO DEPT. OF TRANSPORTATION

LABORATORY IDENTIFICATION CODE: 3 9 2 1

SHRP REGION NC STATE OH STATE CODE 3 9  
 SPS EXPERIMENT NO 1 SPS PROJECT CODE 0 1  
 SAMPLED BY: BRAD YOUNG FIELD SET NO. 1  
 DATE SAMPLED: 1 1 - 2 0 - 199 5

- |  |                    |          |     |
|--|--------------------|----------|-----|
| 1. (FIELD) LAYER NUMBER (FROM FIELD OPERATIONS FORM 2) |                    | <u>4</u> |     |
| 2. TEST SECTION NO.                                    | <u>0 1</u>         | --       | --  |
| 3. SAMPLING AREA NO. (SA-)                             | <u>1 2</u>         | --       | --  |
| 4. SHRP LABORATORY TEST NUMBER                         | <u>1</u>           | -        | -   |
| 5. LOCATION NUMBER                                     | <u>C 2 5</u>       | ---      | --- |
| 6. SHRP SAMPLE NUMBER                                  | <u>C A 2 5</u>     | ---      | --- |
| 7. AVERAGE THICKNESS* (L) INCHES                       | <u>6.7</u>         | ---      | --- |
| 8. VISUAL EXAMINATION                                  |                    |          |     |
| (a) CODE   | <u>01 08 09</u>    | ---      | --- |
| (Section 7.3.(b),                                      | <u>---</u>         | ---      | --- |
| Protocol P01)  |                    |          |     |
| (b) NOTE   | <u>---</u>         | ---      | --- |
| 9. COMMENTS  |                    |          |     |
| (a) CODE   | <u>---</u>         | ---      | --- |
| (Section 7.4 Protocol P01)                             | <u>---</u>         | ---      | --- |
| (b) NOTE   | <u>---</u>         | ---      | --- |
| 10. TEST DATA  | <u>0 2-0 1-9 6</u> | ---      | --- |

\* Measure AC core thickness prior to sawing from other bonded layers.

GENERAL REMARKS: \_\_\_\_\_

SUBMITTED BY, DATE 4/29/90  
OCB/Buers  
 Laboratory Chief  
 Affiliation: OHIO DOT

CHECKED AND APPROVED, DATE \_\_\_\_\_  
 \_\_\_\_\_  
 SHRP Representative  
 Affiliation: \_\_\_\_\_

SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING  
LABORATORY MATERIAL TEST DATA  
AC CORE EXAMINATION AND THICKNESS  
TEST DATA SHEET T01B

SHEET 1 OF 1

ASPHALT CONCRETE LAYER (ASPHALTIC CONCRETE PROPERTIES)  
SHRP TEST DESIGNATION: AC01 / SHRP PROTOCOL P01

(This form is to be used to report detailed information as described in  
Attachment B to Protocol P01)

LABORATORY PERFORMING TEST: OHIO DEPT. OF TRANSPORTATION

LABORATORY IDENTIFICATION CODE: 3 9 2 1

SHRP REGION NC STATE OH STATE CODE 3 9  
SPS EXPERIMENT NO 1 SPS PROJECT CODE 0 1  
SAMPLED BY: BRAD YOUNG FIELD SET NO. 1  
DATE SAMPLED: 1 1 - 2 0 - 199 5

- 1. (FIELD) LAYER NUMBER (FROM FORM T01A) 4
- 2. TEST SECTION NO. 0 1      --
- 3. SAMPLING AREA NO. (SA-) 1 9      --
- 4. SHRP LABORATORY TEST NUMBER 1      -
- 5. LOCATION NUMBER C 2 5      - - - -
- 6. SHRP SAMPLE NUMBER C A 2 5      - - - -

7. LAYER INFORMATION	LAYER NUMBER	LAYER DES.	LAYER THICKNESS (INCH)	LAYER NUMBER	LAYER DES.	LAYER THICKNESS (INCH)	LAYER NUMBER	LAYER DES.	LAYER THICKNESS (INCH)
(start layer numbers from the bottom layer within the AC core)	<u>4*</u>	<u>0 4</u>	<u>5.2</u>	<u>-*</u>	<u>--</u>	<u>---</u>	<u>-*</u>	<u>--</u>	<u>---</u>
	<u>5</u>	<u>0 9</u>	<u>1.7</u>	<u>-</u>	<u>--</u>	<u>---</u>	<u>-</u>	<u>--</u>	<u>---</u>
	<u>-</u>	<u>--</u>	<u>---</u>	<u>-</u>	<u>--</u>	<u>---</u>	<u>-</u>	<u>--</u>	<u>---</u>
	<u>-</u>	<u>--</u>	<u>---</u>	<u>-</u>	<u>--</u>	<u>---</u>	<u>-</u>	<u>--</u>	<u>---</u>

8. COMMENTS  
(a) CODE      -- -- --  
                  -- -- --

(b) NOTE      \_\_\_\_\_  
                  \_\_\_\_\_

9. TEST DATA      0 2-0 1-9 6      \_\_\_\_\_

\* Same layer number as entered in item 1 (Field layer number) if there is no other discrepancy in layers identified in the field and laboratory.

GENERAL REMARKS: \_\_\_\_\_

SUBMITTED BY, DATE 4/29/96  
[Signature]  
Laboratory Chief  
Affiliation: Ohio DOT

CHECKED AND APPROVED, DATE \_\_\_\_\_  
\_\_\_\_\_  
SHRP Representative  
Affiliation: \_\_\_\_\_

SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING  
 LABORATORY MATERIAL TEST DATA  
 BULK SPECIFIC GRAVITY  
 TEST DATA SHEET T02

SHEET 1 OF 1

ASPHALT CONCRETE LAYER (ASPHALTIC CONCRETE PROPERTIES)  
 SHRP TEST DESIGNATION: AC02 / SHRP PROTOCOL P02

LABORATORY PERFORMING TEST: OHIO DEPT. OF TRANSPORTATION  
 LABORATORY IDENTIFICATION CODE: 3 9 2 1

SHRP REGION NC STATE OH STATE CODE 3 9  
 SPS EXPERIMENT NO. 1 SPS PROJECT CODE 0 1  
 SAMPLED BY: BRAD YOUNG FIELD SET NO. 1  
 DATE SAMPLED: 1 1 - 2 0 - 199 5

1. LAYER NUMBER (FROM LAB SHEET L04 AND FROM T01b)	<u>4</u>		
2. TEST SECTION NO.	<u>0 1</u>	<u>0 1</u>	--
3. SAMPLING AREA NO. (SA-)	<u>1 2</u>	<u>1 2</u>	--
4. SHRP LABORATORY TEST NUMBER	<u>1</u>	<u>1</u>	-
5. LOCATION NUMBER	<u>- C 2 5</u>	<u>- C 2 5</u>	----
6. SHRP SAMPLE NUMBER	<u>C A 2 5</u>	<u>C A 2 5</u>	----
7. BULK SPECIFIC GRAVITY (BSG)	<u>2.1 7 6</u>	<u>2.1 5 8</u>	----
8. WATER ABSORBED, %	<u>- 2 %</u>	<u>- 2 %</u>	-- %
9. TEST ON PARAFFIN COATED SPECIMEN (YES/NO)	<u>NO</u>	<u>NO</u>	---
10. BSG (PARAFFIN COATED SPECIMEN)	<u>----</u>	<u>----</u>	----
11.. COMMENTS			
(a) CODE	<u>----</u>	<u>----</u>	<u>----</u>
(b) NOTE	<u>-----</u>	<u>-----</u>	<u>-----</u>
12. TEST DATA	<u>0 2-0 2-9 6</u>	<u>0 2-0 2-9 6</u>	----

(DO NOT USE THE TEST RESULT WITH WATER ABSORPTION OF MORE THAN 2 PERCENT)  
 GENERAL REMARKS: \_\_\_\_\_

SUBMITTED BY, DATE 4/29/96  
Eric Buene  
 Laboratory Chief  
 Affiliation: Ohio DOT

CHECKED AND APPROVED, DATE \_\_\_\_\_  
 \_\_\_\_\_  
 SHRP Representative  
 Affiliation: \_\_\_\_\_

SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING  
 LABORATORY MATERIAL TEST DATA  
 AC CORE EXAMINATION AND THICKNESS  
 TEST DATA SHEET T01A

SHEET 1 OF 1

ASPHALT CONCRETE LAYER (ASPHALTIC CONCRETE PROPERTIES)  
 SHRP TEST DESIGNATION: AC01 / SHRP PROTOCOL P01

(This form is to be used to describe the entire AC core only)  
 (Treated base / subbase portions of the core should be described on Form T31)

LABORATORY PERFORMING TEST: OHIO DEPT. OF TRANSPORTATION

LABORATORY IDENTIFICATION CODE: 3 9 2 1

SHRP REGION NC STATE OH STATE CODE 39  
 SPS EXPERIMENT NO 1 SPS PROJECT CODE 01  
 SAMPLED BY: BRAD YOUNG FIELD SET NO. 1  
 DATE SAMPLED: 11 - 20 - 1995

- |  |                    |      |      |
|--|--------------------|------|------|
| 1. (FIELD) LAYER NUMBER (FROM FIELD OPERATIONS FORM 2) | <u>4</u>           |      |      |
| 2. TEST SECTION NO.                                    | <u>01</u>          | --   | --   |
| 3. SAMPLING AREA NO. (SA-)                             | <u>19</u>          | --   | --   |
| 4. SHRP LABORATORY TEST NUMBER                         | <u>1</u>           | -    | -    |
| 5. LOCATION NUMBER                                     | <u>C 2 6</u>       | ---- | ---- |
| 6. SHRP SAMPLE NUMBER                                  | <u>C A 2 6</u>     | ---- | ---- |
| 7. AVERAGE THICKNESS* (L) INCHES                       | <u>7.4</u>         | ---  | ---  |
| 8. VISUAL EXAMINATION                                  |                    |      |      |
| (a) CODE   | <u>01 09 09</u>    | ---  | ---  |
| (Section 7.3.(b),                                      | <u>    </u>        | ---  | ---  |
| Protocol P01)  |                    |      |      |
| (b) NOTE   | <u>    </u>        |      |      |
|  | <u>    </u>        |      |      |
|  | <u>    </u>        |      |      |
| 9. COMMENTS  |                    |      |      |
| (a) CODE   | <u>    </u>        | ---  | ---  |
| (Section 7.4 Protocol P01)                             | <u>    </u>        | ---  | ---  |
| (b) NOTE   | <u>    </u>        |      |      |
|  | <u>    </u>        |      |      |
|  | <u>    </u>        |      |      |
| 10. TEST DATA  | <u>0 2-0 1-9 6</u> | ---  | ---  |

\* Measure AC core thickness prior to sawing from other bonded layers.

GENERAL REMARKS: \_\_\_\_\_

SUBMITTED BY, DATE 4/29/96  
Chris Brown  
 Laboratory Chief  
 Affiliation: Ohio DOT

CHECKED AND APPROVED, DATE \_\_\_\_\_  
 \_\_\_\_\_  
 SHRP Representative  
 Affiliation: \_\_\_\_\_



SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING  
 LABORATORY MATERIAL TEST DATA  
 AC CORE EXAMINATION AND THICKNESS  
 TEST DATA SHEET T01B

SHEET 1 OF 1

ASPHALT CONCRETE LAYER (ASPHALTIC CONCRETE PROPERTIES)  
 SHRP TEST DESIGNATION: AC01 / SHRP PROTOCOL P01

(This form is to be used to report detailed information as described in  
 Attachment B to Protocol P01)

LABORATORY PERFORMING TEST: OHIO DEPT. OF TRANSPORTATION

LABORATORY IDENTIFICATION CODE: 3 9 2 1

SHRP REGION NC STATE OH  
 SPS EXPERIMENT NO 1  
 SAMPLED BY: BRAD YOUNG  
 DATE SAMPLED: 1 1 - 2 0 - 199 5

STATE CODE 3 9  
 SPS PROJECT CODE 0 1  
 FIELD SET NO. 1

1. (FIELD) LAYER NUMBER (FROM FORM T01A) 4
2. TEST SECTION NO. 0 1
3. SAMPLING AREA NO. (SA-) 1 2
4. SHRP LABORATORY TEST NUMBER 1
5. LOCATION NUMBER C 2 6
6. SHRP SAMPLE NUMBER C A 2 6

7. LAYER INFORMATION	LAYER NUMBER	LAYER DES.	LAYER THICKNESS (INCH)	LAYER NUMBER	LAYER DES.	LAYER THICKNESS (INCH)	LAYER NUMBER	LAYER DES.	LAYER THICKNESS (INCH)
(start layer numbers from the bottom layer within the AC core)	<u>4*</u>	<u>0 4</u>	<u>5.5</u>	<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>
	<u>5</u>	<u>0 9</u>	<u>1.9</u>	<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>
	<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>
	<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>

8. COMMENTS  
 (a) CODE ---

(b) NOTE ---

9. TEST DATA 0 2-0 1-9 6

\* Same layer number as entered in item 1 (Field layer number) if there is no other discrepancy in layers identified in the field and laboratory.

GENERAL REMARKS: ---

SUBMITTED BY, DATE 4/29/90  
DeBloue  
 Laboratory Chief  
 Affiliation: Ohio DOT

CHECKED AND APPROVED, DATE ---  
---  
 SHRP Representative

\*\*\*\*\*SPS LABORATORY TESTING DATA SHEET \*\*\*\*\*

SHRP - LTPP LABORATORY MATERIAL HANDLING AND TESTING  
 LABORATORY MATERIAL TEST DATA  
 BULK SPECIFIC GRAVITY  
 TEST DATA SHEET T02

SHEET 1 OF 1

ASPHALT CONCRETE LAYER (ASPHALTIC CONCRETE PROPERTIES)  
 SHRP TEST DESIGNATION: AC02 / SHRP PROTOCOL P02

LABORATORY PERFORMING TEST: OHIO DEPT. OF TRANSPORTATION  
 LABORATORY IDENTIFICATION CODE: 3 9 2 1

SHRP REGION NC STATE OH STATE CODE 3 9  
 SPS EXPERIMENT NO. 1 SPS PROJECT CODE Q 1  
 SAMPLED BY: BRAD YOUNG FIELD SET NO. 1  
 DATE SAMPLED: 1 1 - 2 0 - 199 5

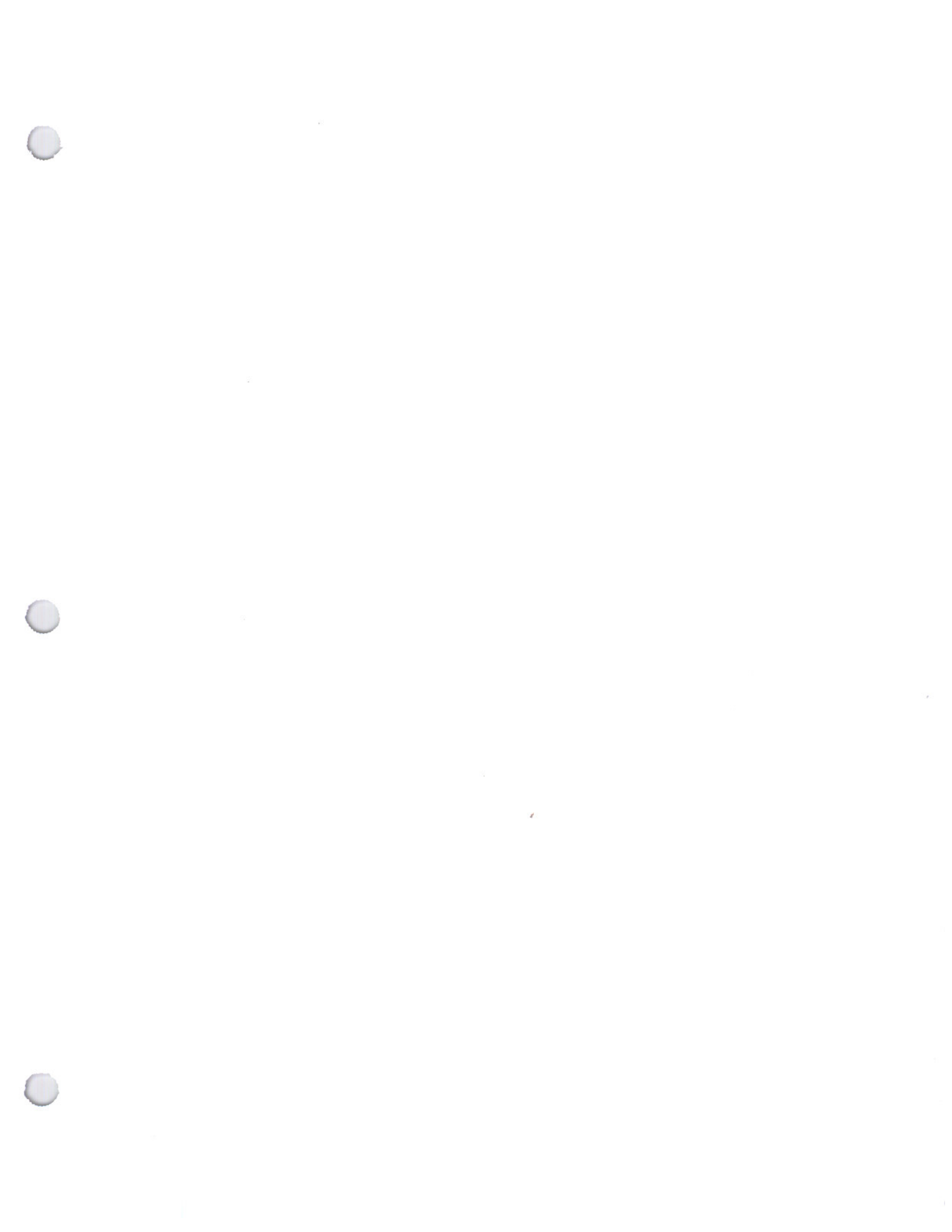
1. LAYER NUMBER (FROM LAB SHEET L04 AND FROM T01b)	<u>4</u>		
2. TEST SECTION NO.	<u>0 1</u>	<u>0 1</u>	<u>--</u>
3. SAMPLING AREA NO. (SA-)	<u>1 2</u>	<u>1 2</u>	<u>--</u>
4. SHRP LABORATORY TEST NUMBER	<u>1</u>	<u>1</u>	<u>-</u>
5. LOCATION NUMBER	<u>- C 2 6</u>	<u>- C 2 6</u>	<u>----</u>
6. SHRP SAMPLE NUMBER	<u>C A 2 6</u>	<u>C A 2 6</u>	<u>----</u>
7. BULK SPECIFIC GRAVITY (BSG)	<u>2.1 7 2</u>	<u>2.1 6 2</u>	<u>----</u>
8. WATER ABSORBED, %	<u>- 2 %</u>	<u>- 2 %</u>	<u>-- %</u>
9. TEST ON PARAFFIN COATED SPECIMEN (YES/NO)	<u>NO</u>	<u>NO</u>	<u>---</u>
10. BSG (PARAFFIN COATED SPECIMEN)	<u>----</u>	<u>----</u>	<u>----</u>
11.. COMMENTS			
(a) CODE	<u>----</u>	<u>----</u>	<u>----</u>
(b) NOTE	<u>-----</u>	<u>-----</u>	<u>-----</u>
12. TEST DATA	<u>0 2-0 2-9 6</u>	<u>0 2-0 2-9 6</u>	<u>----</u>

(DO NOT USE THE TEST RESULT WITH WATER ABSORPTION OF MORE THAN 2 PERCENT)  
 GENERAL REMARKS: \_\_\_\_\_

SUBMITTED BY, DATE 4/22/96  
Debra  
 Laboratory Chief  
 Affiliation: Ohio DOT

CHECKED AND APPROVED, DATE \_\_\_\_\_  
 \_\_\_\_\_  
 SHRP Representative  
 Affiliation: \_\_\_\_\_

## **APPENDIX B**



IN SITU DENSITY AND MOISTURE TESTS

SAMPLING DATA SHEET 8-1

SHRP REGION NC STATE OH

STATE CODE 39  
 SPS EXPERIMENT NO 1  
 SPS PROJECT CODE 01  
 TEST SECTION NO. 01  
 FIELD SET NO. 1

ROUTE/HIGHWAY 45 23 Lane 1 Direction S  
 SAMPLE/TEST LOCATION:  Before Section  After Section  
 Within Section

OPERATOR Brad Young NUCLEAR DENSITY GAUGE I.D. 3440 23964 TEST DATE 9-11-95  
 SAMPLING AREA NO: SH-51 LOCATION: STATION 40/258/400/550 OFFSET 6 feet from 1/8  
 LOCATION NO: D DATE OF LAST MAJOR CALIBRATION 10-14-94

Note: Use additional sheets if necessary

	T105	T104	T103	1	T102
DEPTH FROM SURFACE TO THE TOP OF THE LAYER, INCHES (From Plans)	(100) 7	(250) 7	(400) 7		(550) 7
LAYER NUMBER	2	2	2		2
MATERIAL TYPE: (Unbound=G Other=T)	G	G	G		G
IN SITU DENSITY, pcf Dry Unit Wt (AASHTO T238-86)	1 125.3	121.3	117.8		123.6
	2 124.3	125.5	120.0		125.8
	3 123.0	123.6	115.4		124.1
	4 123.0	124.6	116.9		124.1
AVERAGE	123.9	123.8	117.5		124.4
Method (A,B,or C)	B	B	B		B
Rod Depth, inches	8	8	8		8
IN SITU MOISTURE CONTENT, % (AASHTO T239-86)	1 4.3	4.4	4.5		3.5
	2 4.3	4.4	4.7		3.5
	3 4.7	4.2	4.1		3.6
	4 4.2	4.1	4.2		3.6
AVERAGE	4.4	4.3	4.4		3.6

GENERAL REMARKS: Agg Base

CERTIFIED Brad Young  
 Field Crew Chief  
 Affiliation: ODOT

VERIFIED AND APPROVED  
 SHRP Representative  
 Affiliation: \_\_\_\_\_

DATE 9-11-1995  
 Month- Day- Year

Proj  
 Sta.

T102 - 349+50  
 T103 - 351+00  
 T104 - 352+50  
 T105 - 354+00

IN SITU DENSITY AND MOISTURE TESTS

SAMPLING DATA SHEET 8-1

SHRP REGION NC STATE OH  
 SPS EXPERIMENT NO 1  
 ROUTE/HIGHWAY 45 23 Lane 1 Direction S  
 SAMPLE/TEST LOCATION:  Before Section  After Section  
 Within Section

STATE CODE 39  
 SPS PROJECT CODE 01  
 TEST SECTION NO. 01  
 FIELD SET NO. 1

OPERATOR Brad Young NUCLEAR DENSITY GAUGE I.D. 3440 23964 TEST DATE 8-29-95  
 SAMPLING AREA NO: SH-51 LOCATION: STATION 1+00/2+50/4+00 OFFSET 4 feet from 0/B  
 LOCATION NO: 0 DATE OF LAST MAJOR CALIBRATION 10-14-94

Note: Use additional sheets if necessary

	T17 (1+00)	T16 (2+50)	T15 (4+00)			
DEPTH FROM SURFACE TO THE TOP OF THE LAYER, INCHES (From Plans)	15	15	15			
LAYER NUMBER	1	1	1			
MATERIAL TYPE: (Unbound=G Other=T)	G	G	G			
IN SITU DENSITY, pcf Dry Unit Wt (AASHTO T238-86)	1	115.3	115.2	120.6		
	2	118.6	113.6	119.7		
	3	114.5	112.6	120.5		
	4	115.4	114.9	120.0		
AVERAGE	116.0	114.1	120.2			
Method (A,B,or C)	B	B	B			
Rod Depth, inches	8	8	8			
IN SITU MOISTURE CONTENT, % (AASHTO T239-86)	1	6.6	8.4	12.6		
	2	6.4	8.0	12.3		
	3	6.5	8.0	12.8		
	4	6.1	7.2	11.8		
AVERAGE	6.4	7.9	12.4			

GENERAL REMARKS: subgrade

CERTIFIED Brad Young  
 Field Crew Chief  
 Affiliation: ODOT

VERIFIED AND APPROVED  
 SHRP Representative  
 Affiliation: \_\_\_\_\_

DATE 8-29-1995  
 Month- Day- Year

T17 - 354+00  
 T16 352+50  
 T15 351+00

OHIO DEPARTMENT OF TRANSPORTATION  
REPORT ON SOIL

390101  
A7  
TS32

Order  
Code :

Co. Rt.#,  
& Section :

Project  
Code :

So. No. :

Sample # : 83113

Sta. &  
Offset:

Sampled  
By : UNDISTURBED

Depth-  
From-To

SIEVE ANALYSIS TOTAL % PASSING		SOIL MORTAR(%) SIEVE ANALYSIS		OTHER TEST DATA ----- % -----	
3"	100	Aggregate :	0	Liquid	
2"	100		-----	Limit :	47
1"	100	Coarse Sd.:	5	Plasticity	
3/4"	100		-----	Index :	32
1/2"	100	Fine Sand :	12	Water	
3/8"	100		-----	Cont. :	ERR
No.4	100	Silt No. :	41		
No.10	100		-----		
No.40	95	Clay Sm. :	42		
No.200	83		-----		

OHIO CLASSIFICATION: A-7-6

Group  
Index: 0

Visual Description of Material-  
As Received :

Visual Code B - Description :

Visual Moisture :

