FINAL REPORT

For the Florida Department of Transportation

Design Highwater Clearances For Highway Pavements

Volume II: Appendix

FDOT Research Contract No.: BD-543-13

FSU Project No.: 017032

by

Principal Investigator: W. V. Ping, P.E.

Research Associate: Ching-Chin Ling

Research Assistants: Chaohan Zhang, Haitao Liu, Jian Lan

Department of Civil & Environmental Engineering

FAMU-FSU College of Engineering

Tallahassee, FL 32310

August 2008

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDIX A

BASIC CONCEPT OF TIME DOMAIN REFLECTOMETRY

A.1 Dielectric Constant and Moisture Content

Unbound material used in pavement structures is comprised of a three-phase system: soil solid, air, and water. The dielectric constant for air is 1. For most minerals comprising the soil and aggregate system, the dielectric constant typically varies between 3 and 5, while the dielectric constant of water is typically near 80. As water has such a large dielectric constant (compared to the air and solid phases), the amount of water present in a soil-water mixture is the primary determinant of the dielectric constant of the mixture between the conducting surfaces of TDR probe. For a completely dry soil, the composite dielectric constant will be slightly less than the soil solid dielectric constant. As moisture is added to the soil, the composite dielectric constant increases due to the large dielectric constant of water (Aabral et al, 1999 and Campbell Scientific Inc., 1998).

A.2 TDR -- Equipment and its Approach

TDR probe (also named Water Content Reflectometer) consists of two or three stainless steel rods connected to a printed circuit board. A shielded four-conductor cable (coaxial cable) is connected to the circuit board to supply power. The probe provides a measure of the volumetric water content of porous media. The water constant information is derived from the effect of changing dielectric constant on the electromagnetic waves propagating along a wave-guide (stainless steel rod).

To measure soil moisture using the TDR approach, a Tektronix 1502B Cable Tester is used to emit an electromagnetic pulse throughout a coaxial cable connected to the probe. The electromagnetic wave travels through the center of the cable at approximately the speed of light, factored by the resistance of the cable in the air, and then through the rod of the probe. Once the pulse reaches the end of the probe, a portion of the signal is reflected back through the shielding of the coaxial cable to the Tektronix unit. The reflected voltage versus time is registered on a screen display of the Tektronix unit and/or saved to an ASCII file. The portion of the trace of interest goes from when the signal reaches the beginning of the probe to the

point when the signal reaches the end of the probe. A drop in reflected voltage is seen on the display of the Tektronix unit when the signal reaches the beginning of TDR probe, due to the increased resistance of the smaller path in the printed circuit board, and a significant rise in the reflected voltage is noticed when the signal reaches the end of the probe.

The horizontal distance between the initial and final inflection points of the TDR trace response, as measured by an oscilloscope, is the travel time of the signal (as the probe CS615 used in the DHW research). This travel time represents the apparent length (L_a) of the TDR response. Knowledge of the actual probe length and signal speed permits a calculation of an "apparent dielectric constant" (K_a) of the media into which the TDR probe is inserted.

The computed dielectric constant is referred to as the "apparent dielectric constant" (K_a) and is defined as follows:

$$K_a=((L_a)/(L)(V_p))^2 =((B-A)/(L)(V_p))^2 \qquad \text{(A-1)}$$

Where,

K_a: dielectric constant

L_a: $(B-A)$ =apparent length of the probe (m)

B = final inflection point

A = initial inflection point

L = actual length of probe (m)

Vp = the ratio of the actual propagation velocity to the speed of light

On TDR cable tester, the phase velocity setting is usually 0.99 for maximum resolution. Once the Ka is computed for a specific soil mixture, a correlation equation is used to predict the volumetric content (Campbell Scientific Inc., 1998).

A.3 Other Factors Affecting Dielectric Constant

Although volumetric water content exerts a dominant influence upon the dielectric constant, still there are other factors that can affect Ka value. They are:

A.3.1 Soil mineral dielectric constant variability

Generally, fine- and coarse-grained soils have distinctly different mineral compositions. Fine-grained soils are primarily comprised of magnesium and calcium, while coarse-grained soil predominately contains silica and quartz. With fine-grained soils' dielectric constant being 4 and coarse-grained soils' being 8, this generates a relatively large variation in dielectric value.

A.3.2 Water Constant Variability Factor

This includes the influence of free versus bound water in soil. In some cases this is important because absorbed water has a lower dielectric constant than free water. For example, when volumetric moisture content falls below 5 percent, the dielectric constant is increasingly influenced by the soil type and mineralogy (in this case, bound water constitutes a big part of total volumetric water content).

A.3.3 Saline Conditions

This is another key factor in establishing the dielectric constant. When a saline solution is added in the area where the TDR probe is located, a short-circuiting occurs to the probe, thus making the final TDR response difficult to interpret.

A.3.4 Temperature Effects

Some research found that when water content is very high and the electromagnetic wave travels in a higher frequency, the difference in temperature can generate a big difference for the test results (Campbell Scientific Inc., 1998).

A.4 Apparent Length and its Determination

Because the dielectric constant Ka is proportional to the square of the apparent length La (or the wave travel period through the rod), error or differences in the measurement of La will significantly influence the computed (measured) Ka value of the soil mixture. The purpose of the initial phase of this study was to identify the best method for determining the apparent length of the TDR probe when calculating the dielectric constant.

Presently, the five known methods for calculating the dielectric constant from the TDR trace are: 1) Method of Tangents; 2) Method of Peaks; 3) The Alternate Method of Tangents approach; 4) Method of Diverging Lines; 5) Campbell Scientific Method.

It is apparent that each method uses a slightly different location to measure the initial and final inflection points of the trace signal. The differences in the measured La can influence the predictive model and their associated accuracy (Campbell Scientific Inc., 1998).

A.5 Three Phase Approach for Modeling

Two different approaches are used to relate soil volumetric moisture content to the TDR response.

(1) The first approach is empirical. It selects functional relationships based on their mathematical flexibility to fit the experimental data points. This modeling approach is used for the TDR probes equipped in research work of Design Highwater Clearances.

(2) The second approach derives a mechanistic of fundamental equation from the dielectric mixing models. The fundamental equation relates the composite dielectric number of a multiphase mixture to the dielectric numbers and volume fractions of its constituents. In this approach, the soil is considered to be a three-phase mixture of soil, water, and air. Using the volumetric properties of the soil, such as dry density and specific gravity, in addition to the dielectric values of water and air, a mixing model can be derived. The following derivation separates the soil's elements to assume a mixing/composite model of the form:

$$k_a^{\alpha} = \frac{\sum V_i \varepsilon_i^{\alpha}}{\sum V_i} \qquad \text{(A-2)}$$

Where:

V_i = Volume of the i^{th} Material Phase.

ε_i = Dielectric Constant of the i^{th} Material.

a = Assumed Power Coefficient.

Letting $V_t = \Sigma V_i$

$$K_a^{\alpha} = (V_s/V_t)\,\varepsilon_s^{\alpha} + (V_a/V_t)\,\varepsilon_a^{\alpha} + (V_w/V_t)\,\varepsilon_w^{\alpha}$$

For a soil mixture: 's'=Solid, 'a'=Air, 'w'=Water)

$$V_s/V_t = W_s/G_s\gamma_w V_t = \gamma_d/G_s\gamma_w = V_s\ (\%)$$

Since, $\varepsilon_a = 1$ (Dielectric Constant of Air)

$$K_a^{\alpha} = \frac{\gamma_d}{G_s\gamma_w}\varepsilon_s^{\alpha} + V_a(\%) + V_w(\%)\varepsilon_w^{\alpha} \qquad \text{(A-3)}$$

Where,

$V_a(\%) = V_a/V_t$ (Volumetric Air Content)

$V_w(\%) = V_w/V_t$ (Volumetric Water Content)

Also,

$$V_a(\%) = 1 - \left[V_s(\%) + V_w(\%)\right] \qquad \text{(A-4)}$$

$$K_a^{\alpha} = \frac{\gamma_d}{G_s\gamma_w}\varepsilon_s^{\alpha} + 1 - V_s(\%) - V_w(\%) + V_w(\%)\varepsilon_w^{\alpha} \qquad \text{(A-5)}$$

$$K_a^{\alpha} = \frac{\gamma_d}{G_s\gamma_w}(\varepsilon_s^{\alpha} - 1) + V_w(\%)(\varepsilon_w^{\alpha} - 1) + 1 \qquad \text{(A-6)}$$

$$K_a = \left(\frac{L_a}{L_p V_p}\right)^2 \qquad \text{(A-7)}$$

Assume $\alpha = 0.5$; Use FHWA standard TDR length $L_p = 0.203$m,

V_p = Velocity of Propagation (0.99). Then:

$$V_w(\%) = \frac{(5L_a - 1) - \left(\sqrt{\varepsilon_s} - 1\right)\frac{\gamma_d}{G_s\gamma_w}}{\left(\sqrt{\varepsilon_w} - 1\right)} \qquad \text{(A-8)}$$

Or:

$$V_w(\%) = \frac{\sqrt{K_a} - 1 - \left(\sqrt{\varepsilon_s} - 1\right)\frac{\gamma_d}{G_s\gamma_w}}{\left(\sqrt{\varepsilon_w} - 1\right)} \qquad \text{(A-9)}$$

For water and soil, the dielectric constant can be assumed near '4' and '81' respectively, thus:

$$V_w(\%) = \frac{\sqrt{K_a} - 1 - \left(\sqrt{\varepsilon_s} - 1\right)\frac{\gamma_d}{G_s\gamma_w}}{\left(\sqrt{\varepsilon_w} - 1\right)} \qquad \text{(A-10)}$$

Since the contribution of the constant $\gamma_d/8G_s\gamma_w$ will only be between 0.06 to 0.10%,

$$V_w(\%) = 0.125\sqrt{K_a} - 0.205 \qquad \text{(A-11)}$$

The above analysis helps to explain literature model form of $V_w = SQRT(K_a)$. $\alpha = 0.5$ is found through the linear regression technique (Roth et al., 1990 and Dirksen & Dasberg, 1993).

As long as the FHWA standard TDR probe is followed, the above equation can be used to approximate the volumetric moisture content of most soils. For refined measurement of specific soil or soils group, hierarchical methodology for estimating volumetric water content can be followed (Aabral et al, 1999 and Campbell Scientific Inc., 1998).

A.6 Hierarchical Methodology for Estimating Volumetric Moisture Content

According to the 28 soils tested covering most of the groupings of the AASHTO classification, these hierarchical levels were defined by:

Each individual soil (level 1);

Each soil classification (level 2);

Coarse- and fine-grained group (level 3);

All soils grouped together to develop a universal model for all application (level 4).

Level 1: This is the most accurate level. This approach is based on a site-specific calibrated soil. A calibration curve would be developed using varying moisture levels for each soil for which volumetric moisture is needed. Once the apparent length of TDR response (or travel time on the TDR guide rod in our case) is measured, the predicted volumetric moisture can be calculated.

Level 2: This is more specific and detailed in that the volumetric moisture content is based on the AASHTO soil classification.

Level 3: Approach adopted in this level could determine the volumetric moisture content when soil can be defined as

either coarse- or fine-grained. For granular soil, this estimation can generate considerable accuracy.

Level 4: This approach is recommended as it is suitable for measuring the volumetric moisture content of a soil in just about any circumstance. When no information is available for a specific soil calibration, a close approximation is all that is needed in many applications.

The modeling approach of the granular subgrade soils in design high water clearance research work rests upon Level 3. For those sandy soils in Florida, this can produce enough accuracy (Aabral et al, 1999 and Campbell Scientific Inc., 1998).

APPENDIX B

FIELD MONITORING PROGRAM

B.1 General

The main purpose for the implementation of a field monitoring test on SR-70 is to evaluate the capillary behavior and moisture variation within SR-70 subgrades (A-3, A-2-4) under actual field geologic strata. Being exposed to the open environment, environmental factors such as precipitation and atmospheric temperature will be introduced into the moisture data measurement of SR-70 subgrades for the design highwater research.

Two test sites were selected with SR-70 A-2-4 and A-3 subgrade soils present at both pavement profiles. The close proximity of the test sites (300 ft. apart) helped achieve an easy deployment of test equipment and communication.

B.2 Field Installation

The field installation began on March 7, 2000, and was accomplished within a three-day period. After the excavation of the field test pit, CS615 TDR probes were inserted into

the pit walls in a manner shown in Figure B.1. A plan view of the equipment layout in the test area is illustrated in Figure B.2. The photo view of the TDR probe installation together with the pavement profile is shown in Figure B.3. The pits were back filled and compacted in accordance with its original geologic strata after the TDR probes were put in place. A small amount of porous concrete was mixed into the backfill to ensure the original subgrade compacted-consolidated situation.

Upon completion of field installation, subsoil exploration was conducted near the pit sites. The results of the soil boring adjacent to both pits' location are summarized in Table B.1.

B.3 Field Instrumentation

The instruments for field monitoring consisted of a Campbell Scientific CS615 water content reflectometer (TDR probe), a Campbell Scientific CR10x datalogger (measurement and control unit), a rain gauge, a SC12R cable, and an in-lab remote control terminal. The Campbell Scientific CS615 water content reflectometer (TDR probe) provides a measure of the volumetric water content for porous media like sandy soil. The output of an on-site installed CS615 reflectometer

is a square wave and can be connected to the Campbell Scientific CR10x datalogger. A more detailed description of this equipment can be found in Chapter 3 and Appendix A.

The Campbell Scientific CR10x Datalogger (measurement and control unit) powered by a solar power system, is the major part of the field instrumentation. It consists of a measurement and control module and a detachable wiring panel. Protected in a sealed stainless steel box, this data logger functioned as a measurement and control unit for the sensor measurement, communication, data reduction, data/program storage and control. The maximum rate for the unit to execute its program is 64 times per second (enough for a 15-minute interval data acquisition period in a field test). The wiring panel consisted of a baseplate, an end bracket, and a top panel. The top panel provided screw terminals for the sensor connection.

A rain gauge installed near the test site facilitated the precipitation record for the evaluation of moisture variation within the subgrade. The data acquisition interval was also 15 minutes and activated in synchrony with the data logger. Its photo illustration is shown in Figure B.4.

The SC12R is a rugged, temperature-resistant cable that connects peripherals to the CR10X measurement and control unit.

The in-lab remote control terminal installed with PC208W2.3 software has the remote access to the data storage unit on the test site (non-volatile flash memory or battery-backed RAM for CR10X) through a public-telephone communication system. PC208W2.3 software can initiate connection, data transfer, data display, data storage from CR10X on the test site to a remote control computer in the lab. It also facilitates the re-programming of the datalogger (CR10X) from the terminal. The in-lab data acquisition was performed once a week.

B.4 Data Reduction

Moisture data in each elevation of the pits were acquired weekly from the datalogger (CR10X) on site through a telephone line by activating PC208W2.3 software. The initial moisture data were recorded by the TDR probe in the form of volumetric water content (θ). With the dry density (γ_d) acquired in corresponding layers through the site exploration, it was converted into gravimetric water content through the following equation:

$$w(\%) = \frac{M_w}{M_s} = \frac{\gamma_w \times V_w}{\gamma_d \times V} = \frac{\gamma_w \times \theta}{\gamma_d} \qquad \text{(B-1)}$$

Where,

M_w = Mass of Water

M_s = Mass of Soil Solid

γ_w = Density of Water

γ_d = Dry Density of Soil

The above moisture result can be converted further into degrees of saturation (S) through the equation below:

$$S(\%) = \frac{wG_s\gamma_d}{\gamma_w G_s - \gamma_d} \qquad \text{(B-2)}$$

Where,

Gs = Specific Gravity of Soil Solid

W = Moisture Content

For the moisture analysis on a daily basis, moisture and precipitation data were recorded every 15 minutes in the field and were then averaged to present data on a 24-hour basis.

The timing of the datalogger is not in the form of a calendar, rather it was demonstrated through a three-digit number. This can be translated into a specific date (Mo./Date/Yr.) by referring to the CR10X manual. The data reduction process of the field test correlated the date of the season and the precipitation with the moisture profile obtained by TDR probes in the pavement of the test sites.

Table B.1 Summary of Soil Boring Results on Field Test Sites

SR-70 West Site (Pit No.1)					
Depth (ft)	SPT Blows (Dry density, pcf)	Material Description	-200% Passing	AASHTO Classification	Remarks
0.5	3	Gray Sand	8	A-3	0-0.3 Asphalt 0.3-2.7 Gray Sand
1.0	4 (87.4)				
1.5	6 (86.2)				
2.0	6 (82.1)	Gray Sand into Hardpan	6	A-3	
2.5	7 (89.8)				
3.0	8 (82.6)				
3.5	5 (79.3)	Hardpan into Tan sand	9	A-3	2.7-4.1 Hardpan & Organic Material
4.0	4 (89.6)				
4.5	5 (94.5)				
5.0	7 (87.2)	Tan Sand into Gray Slightly Silty Sand	16	A-2-4	4.1-5.7 Slightly Silty Sand
5.5	5 (100.4)				
6.0	4 (96.7)				
6.5	7 (87.6)	Gray Slightly Silty Sand	13	A-2-4	5.7-10.0 Tan Sand
7.0	6 (88.9)				
7.5	7 (87.6)				
8.0	4	Tan Sand	5	A-3	
8.5	5				
9.0	6				
SR-70 West Site (Pit No.2)					
Depth (ft)	SPT Blows (Dry density, pcf)	Material Description	-200% Passing	AASHTO Classification	Remarks
0.5		Gray Sand	8	A-3	0-0.3 Asphalt 0.3-3.3 Dark to Light Gray Sand
1.0	14 (102.3)				
1.5	11 (94.6)				
2.0	11 (85.1)	Gray Sand	7	A-3	
2.5	13 (83.8)				
3.0	15 (79.8)				
3.5	9 (100)	Light Gray Sand into Hardpan	12	A-2-4	3.3-4.8 Hardpan
4.0	9 (92.8)				
4.5	10 (99.9)				
5.0	5 (81.1)	Hardpan into Tan Sand	8	A-3	4.8-8.0 Tan Sand
5.5	8 (85.8)				
6.0	8 (100.6)				
6.5	6 (91.4)	Tan Sand into Slightly Silty Sand	8	A-3	
7.0	7 (91.5)				
7.5	8 (89.6)				
8.0	9		16	A-2-4	8.0-10.0 Tan Silty Sand
8.5	10				
9.0	12				

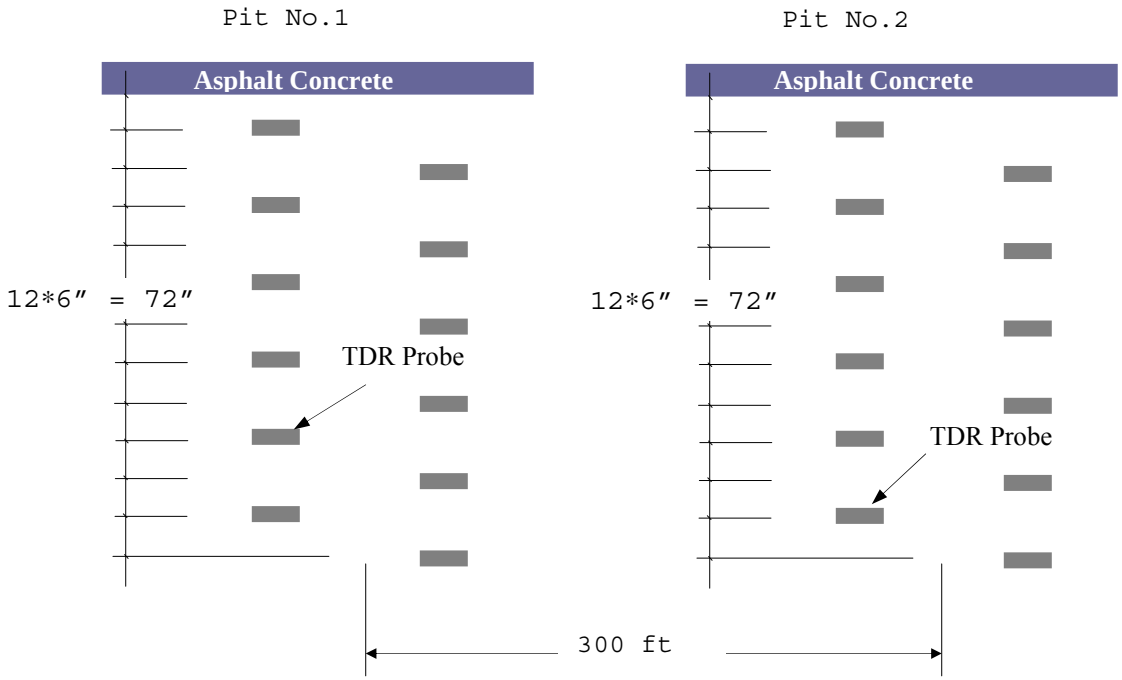


Figure B.1 Cross Sectional Sketch of Field Installation

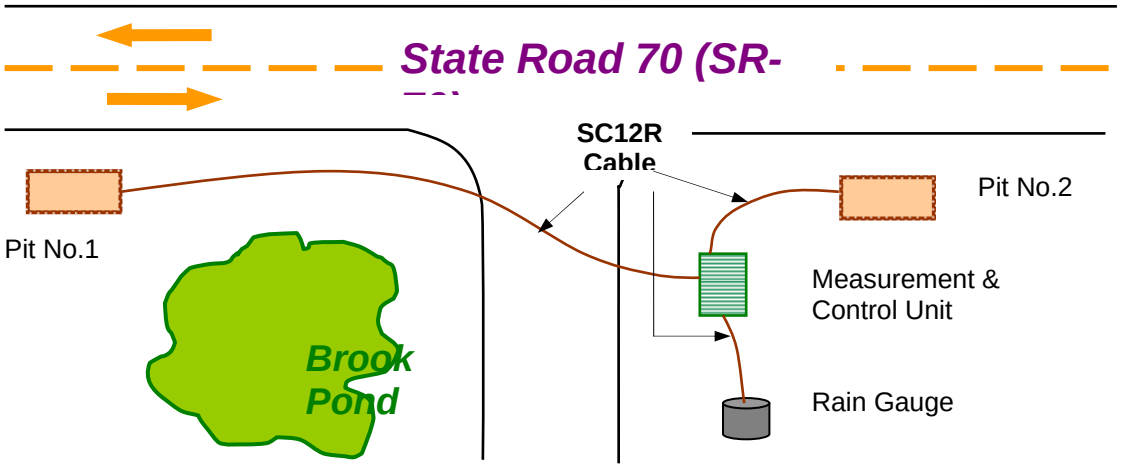


Figure B.2 Plan View of Field Installation near Fort Pierce, Florida

Figure B.3 Cross Sectional View of the TDR Installation in Field Test Pit

Figure B.4 Rain Gauge Installation in Field Test Sites

APPENDIX C

FIELD MONITORING RESULTS

C.1 Presentation of Field Monitoring Results

The moisture and precipitation data were acquired through the remote control system (PC208) and reprocessed for analysis. The presentation of the test results was separated into four seasonal groups representing moisture variations for the past year. Within each season (from spring 2000 to winter 2000/2001), the test results were then grouped together according to different test sites. Since the moisture profile of the SR-70 subgrade materials was the main concern of the field test, the presentation of the test results from field monitoring program was focused on two main categories:

(1) The influence of rainfall upon the moisture within each layer of the subgrade for a specific season. These are illustrated in the figures denoted as "Degree of Saturation versus Date and Precipitation".

(2) A continuous moisture variation below the asphalt concrete pavement for a designated time period. These are presented in the figures denoted as "Degree of Saturation versus Depth", which is in the form of an envelope encompassing the maximum and minimum degree of saturation

along the depth of the subgrade layer for the season in consideration.

All of the test results are presented in the tables and figures at the end of Appendix C.

C.2 Discussion on Field Monitoring Results

The following observations were made by evaluating the field monitoring results:

(1) The moisture change in each soil layer resulting from temperature variation within a 24-hour period was not significant.

(2) The A-3 soil with a small percentage of passing #200 fines was more sensitive to change of precipitation. The degree of saturation increased significantly with the rain. It also exhibited faster moisture dissipation after the rain.

(3) Light rains (with daily precipitation less than 0.7 in.) had no significant effect on the moisture content of deep soils (i.e., deeper than three feet below the asphalt concrete layer)

(4) For the deeper A-3 soil above the groundwater table, there would be an appreciable amount of increase in moisture content due to heavy rains (with daily precipitation more than 1.2 in.). The level of moisture

increment exceeded all the soil layers above the deep A-3 soil.

(5) The response of moisture increase due to precipitation was instant but limited for the topsoil, and slower for deeper soils (with a 24-hour time lag). The accumulation of moisture was observed to be continuing even 10 days after a heavy rain for deep soils (i. e., the A-3 soil, 6 ft. below the asphalt concrete layer) on test site No.2.

(6) Precipitation had no significant impact upon the degree of saturation for the A-2-4 soil.

(7) The hardpan layer and A-2-4 soil layer could impeded the quick accumulation of moisture for the soil layer within its adjacent area, but could not stop it from gaining moisture after 24 hours.

(8) With the exception of heavy rain, the moisture in hardpan layer was kept stable (degree of saturation about 45%) is spite of the moisture fluctuation in the adjacent soil layers.

Overall the moisture content within the A-2-4 soil for a given layer was relatively stable under the climatic change. However, the moisture content within the A-3 soil was volatile in response to the climatic change, with a

rapid change in moisture variation for the top layer (Liu, 2001).

Table C.1 Moisture Profile (%) for SR-70 Field Monitoring Program (Spring, 2000)

Moisture Profile (%) for SR-70 Field Test Site No.1 (Spring, 2000)										
Depth (ft.)	18-Mar		20-Mar		11-Apr		15-Apr		30-Apr	
	s	w	s	w	s	w	s	w	s	w
6.0	100.70	26.82	100.94	27.08	100.46	26.95	101.90	27.34	102.63	27.53
5.5	98.03	25.71	97.01	23.72	92.17	22.53	93.19	22.78	96.24	23.53
5.0	74.72	25.73	74.51	25.23	70.91	24.01	73.02	24.73	73.02	24.73
4.5	72.37	20.63	72.37	20.50	70.97	20.11	74.23	21.03	70.50	19.97
4.0	55.03	17.79	55.03	17.58	53.50	17.09	60.92	19.46	54.15	17.30
3.5	33.64	13.87	33.64	13.79	33.26	13.63	43.45	17.81	34.80	14.27
3.0	22.99	8.93	22.99	8.70	24.19	9.16	29.39	11.12	25.39	9.61
2.5	91.95	29.16	92.61	29.44	96.99	30.83	100.93	32.09	94.36	30.00
2.0	13.51	5.63	25.83	9.90	19.67	7.54	52.06	19.95	22.26	8.53
1.5	13.38	4.71	19.85	6.89	15.05	5.22	21.32	7.40	15.05	5.22
1.0	14.85	5.08	21.01	7.08	16.76	5.65	21.01	7.08	16.34	5.51
Moisture Profile (%) for SR-70 Field Test Site No.2 (Spring, 2000)										
Depth (ft.)	18-Mar		20-Mar		11-Apr		15-Apr		30-Apr	
	s	w	s	w	s	w	s	w	s	w
6.0	73.81	17.95	73.04	17.77	62.57	15.22	86.32	21.00	86.07	20.94
5.5	24.75	8.67	24.75	8.67	24.12	8.45	24.54	8.60	26.41	9.25
5.0	43.20	16.95	43.20	16.95	43.00	16.88	43.98	17.26	44.57	17.49
4.5	38.91	9.63	38.91	9.63	41.44	10.26	48.01	11.89	42.95	10.64
4.0	62.24	18.39	62.01	18.32	63.38	18.72	75.00	22.16	67.48	19.94
3.5	34.67	8.56	34.92	8.63	37.45	9.25	44.54	11.00	38.72	9.56
3.0	55.50	22.48	55.50	22.48	57.05	23.10	57.63	23.34	54.53	22.09
2.5	8.32	3.06	14.61	5.37	10.55	3.88	28.80	10.59	13.19	4.85
2.0	10.72	3.82	11.13	3.97	12.57	4.48	17.73	6.32	12.78	4.55
1.5	15.43	4.36	19.40	5.48	17.07	4.82	20.34	5.75	16.83	4.76
1.0	18.10	4.22	21.24	4.95	20.20	4.70	25.70	5.99	19.93	4.64

Table C.2 Moisture Profile of SR-70 Soils (Field Test No. 1)

Date (Mon/Day)	Degree of Saturation (%) (Below the Ground Surface)						Rainfall (inch)
	6.0 ft.	5.0 ft.	4.0 ft	3.0 ft.	2.0 ft.	1.0 ft.	
3-13	99.98	75.99	55.68	23.59	14.70	15.07	0.61
3-14	99.98	75.56	55.46	23.39	14.31	15.07	0.00
3-15	100.22	75.35	55.46	23.39	14.11	15.07	0.00
3-16	100.46	75.14	55.24	23.19	13.71	15.07	0.05
3-17	100.46	74.93	55.24	23.19	13.51	14.85	0.05
3-18	100.70	74.72	55.03	22.99	13.51	14.85	0.02
3-19	100.70	74.51	55.03	22.99	13.31	14.85	0.67
3-20	100.94	74.51	55.03	22.99	25.83	21.01	0.01
3-21	100.94	74.29	55.03	23.19	25.83	19.74	0.00
3-22	101.18	74.08	54.81	23.39	25.04	18.89	0.00
3-23	101.18	74.08	54.81	23.79	24.44	18.46	0.04
3-24	101.42	72.81	54.81	23.99	23.85	18.25	0.01
3-25	101.42	73.66	54.81	23.99	23.45	18.04	0.00
3-26	101.42	73.66	54.81	24.19	23.05	17.83	0.00
3-27	101.42	73.45	54.59	24.39	22.65	17.61	0.23
3-28	101.42	73.24	54.59	24.39	22.45	17.61	0.00
3-29	101.66	73.24	54.59	24.39	23.05	18.89	0.00
3-30	100.94	73.02	54.37	24.39	23.25	18.46	0.00
3-31	100.94	72.81	54.37	24.59	23.05	18.04	0.01
4-1	100.70	72.60	54.37	24.59	22.65	17.83	0.00
4-2	101.18	72.60	54.15	24.59	22.45	17.61	0.00
4-3	100.94	72.39	54.15	24.59	22.06	17.40	0.00
4-4	100.94	72.18	53.93	24.59	21.86	17.19	0.00
4-5	100.94	71.97	53.93	24.59	21.46	16.98	0.00
4-6	100.70	71.75	53.93	24.39	21.06	16.98	0.00
4-7	100.70	71.54	53.72	24.39	20.86	16.98	0.00
4-8	100.46	71.33	53.72	24.39	20.47	16.98	0.00
4-9	100.46	71.33	53.72	24.39	20.27	16.98	0.00
4-10	100.46	71.12	53.50	24.19	20.07	16.98	0.00
4-11	100.46	70.91	53.50	24.19	19.67	16.76	0.00
4-12	99.74	70.91	53.50	24.19	19.47	16.76	0.88
4-13	100.22	70.91	53.50	24.19	24.64	22.49	0.41
4-14	100.22	70.91	53.50	24.39	37.16	22.92	1.90
4-15	101.90	73.02	60.92	29.39	52.06	21.01	0.39
4-16	102.39	74.08	59.61	28.79	48.88	21.43	0.29
4-17	102.39	75.14	59.18	28.19	41.73	20.16	0.00
4-18	102.15	76.20	58.74	27.79	36.17	19.31	0.00
4-19	102.39	76.41	58.30	27.39	32.99	18.67	0.00
4-20	102.39	76.41	57.65	26.99	30.80	18.25	0.00
4-21	102.39	76.20	57.21	26.79	29.41	17.83	0.00
4-22	102.39	75.78	56.77	26.59	28.02	17.61	0.00
4-23	102.39	75.35	56.34	26.39	26.83	17.40	0.00
4-24	102.39	74.93	55.90	26.19	26.03	17.19	0.00
4-25	102.39	74.51	55.46	25.99	25.04	16.98	0.00
4-26	102.39	74.08	55.24	25.99	24.44	16.76	0.00
4-27	102.39	73.87	55.03	25.79	23.85	16.76	0.00
4-28	102.39	73.66	54.59	25.59	23.25	16.55	0.00
4-29	102.39	73.24	54.37	25.59	22.65	16.34	0.00
4-30	102.63	73.02	54.15	25.39	22.26	16.34	0.00

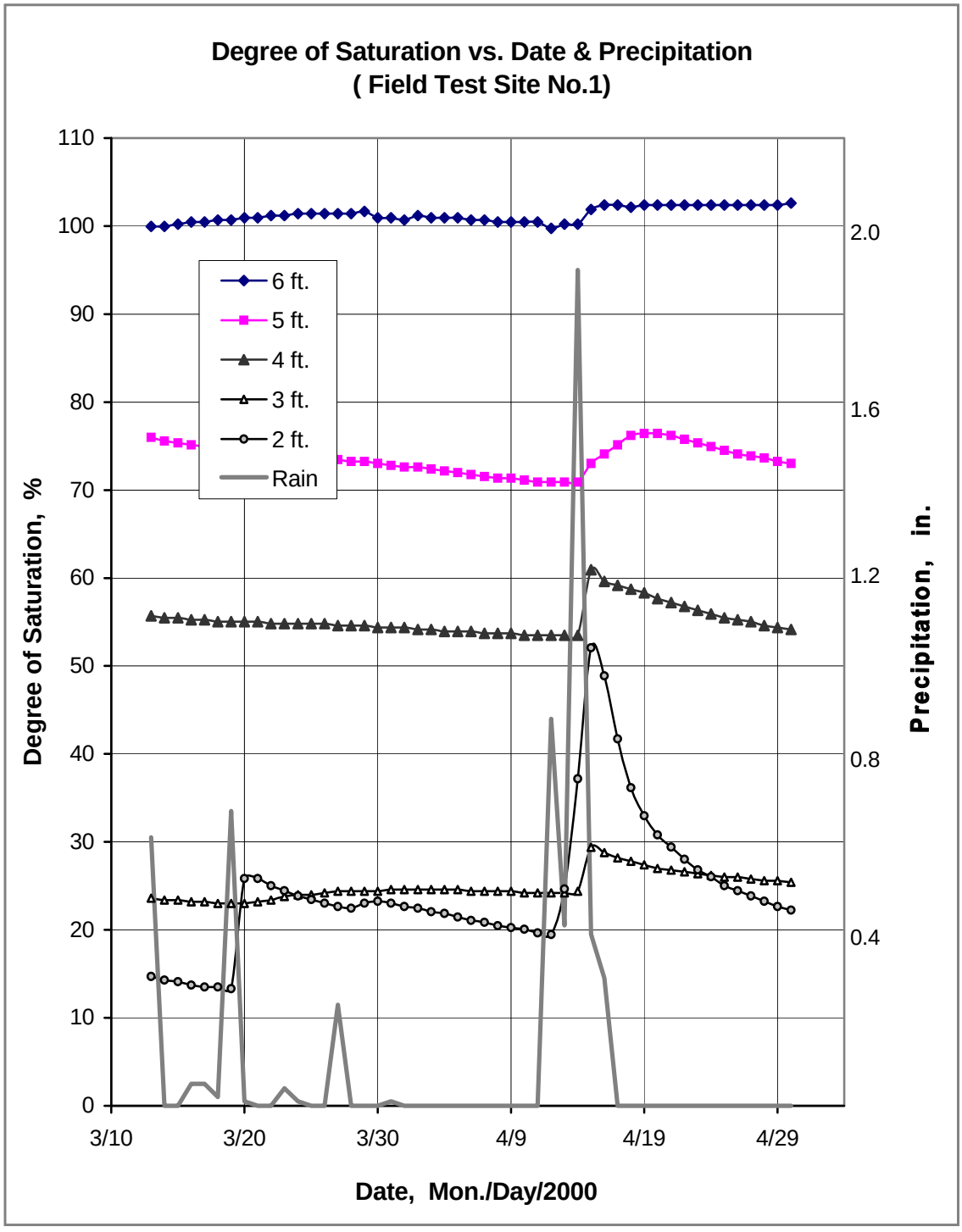


Figure C.1 Degree of Saturation vs. Date and Precipitation (Field Test Site No.1 -- Spring 2000)

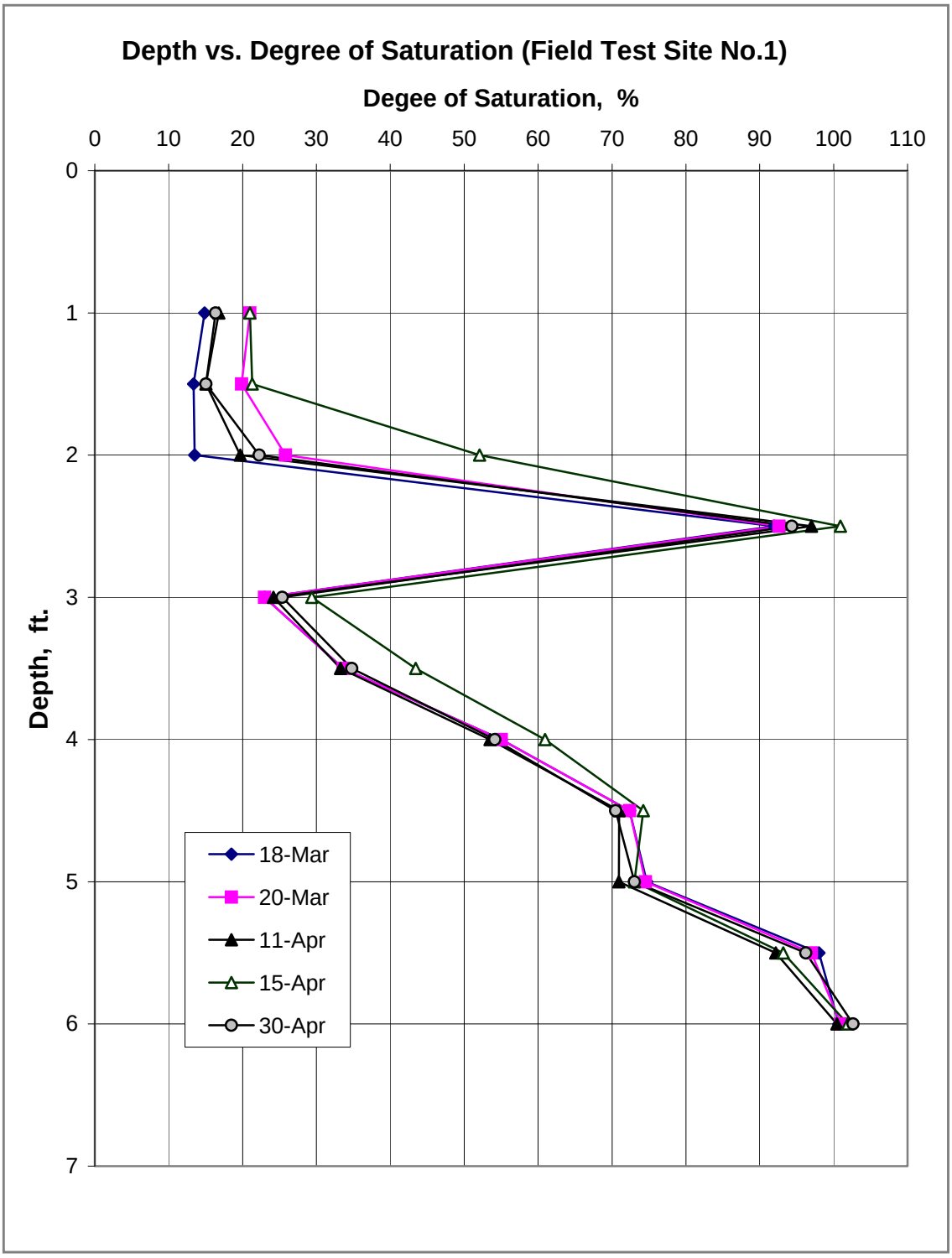


Figure C.2 Degree of Saturation vs. Depth (Field Test Site No.1 -- Spring 2000)

Table C.3 Moisture Profile of SR-70 Soils (Field Test Site No. 2)

Date (Mon/Day)	Degree of Saturation (%) (Below the Ground Surface)						Rainfall (inch)
	6.0 ft	5.0 ft	4.0 ft	3.0 ft	2.0 ft	1.0 ft	
3/13	78.41	43.79	63.38	55.50	11.13	18.10	0.61
3/14	77.39	43.59	62.92	55.50	11.13	18.10	0.00
3/15	76.36	43.59	62.69	55.69	10.92	18.10	0.00
3/16	75.60	43.39	62.47	55.50	10.92	18.10	0.05
3/17	74.58	43.39	62.24	55.50	10.92	18.10	0.05
3/18	73.81	43.20	62.24	55.50	10.72	18.10	0.02
3/19	73.55	43.20	62.01	55.50	10.72	18.10	0.67
3/20	73.04	43.20	62.01	55.50	11.13	21.24	0.01
3/21	72.79	43.20	62.01	56.47	14.22	22.29	0.00
3/22	72.53	43.20	62.24	57.24	14.43	21.77	0.00
3/23	72.02	43.00	62.24	57.63	14.22	21.51	0.04
3/24	71.77	43.00	62.47	57.82	14.02	21.51	0.01
3/25	71.26	43.00	62.69	58.01	13.81	21.24	0.00
3/26	70.75	43.00	62.92	57.82	13.60	20.98	0.00
3/27	70.49	43.00	63.15	57.82	13.40	20.72	0.23
3/28	69.98	43.00	63.15	57.82	13.40	20.72	0.00
3/29	69.72	43.00	63.38	57.82	13.40	20.98	0.00
3/30	69.21	43.00	63.38	57.82	13.60	20.98	0.00
3/31	68.70	43.00	63.61	57.82	13.60	20.72	0.01
4/1	68.45	43.00	63.61	57.63	13.40	20.72	0.00
4/2	67.94	43.00	63.61	57.63	13.40	20.46	0.00
4/3	67.43	43.00	63.61	57.63	13.19	20.46	0.00
4/4	66.91	43.00	63.83	57.43	13.19	20.20	0.00
4/5	66.15	43.00	63.61	57.43	12.99	20.20	0.00
4/6	65.64	43.00	63.61	57.24	12.99	20.20	0.00
4/7	65.13	43.00	63.61	57.24	12.78	20.20	0.00
4/8	64.36	43.00	63.61	57.24	12.78	20.20	0.00
4/9	63.85	43.00	63.61	57.05	12.78	20.20	0.00
4/10	63.08	43.00	63.61	57.05	12.78	20.20	0.00
4/11	62.57	43.00	63.38	57.05	12.57	20.20	0.00
4/12	62.32	43.00	63.38	56.85	12.57	20.20	0.88
4/13	62.06	43.00	63.38	57.05	15.67	25.70	0.41
4/14	62.06	43.00	63.38	57.43	17.52	27.80	1.90
4/15	86.32	43.98	75.00	57.63	17.73	25.70	0.39
4/16	89.90	47.13	74.32	57.24	17.31	26.23	0.29
4/17	91.18	47.71	73.64	56.85	16.49	24.65	0.00
4/18	92.71	47.52	72.95	56.27	15.67	23.34	0.00
4/19	92.96	47.13	71.81	55.89	15.05	22.56	0.00
4/20	93.73	46.73	71.13	55.69	14.64	22.03	0.00
4/21	93.73	46.34	70.45	55.31	14.22	21.51	0.00
4/22	92.96	46.14	69.99	55.11	14.02	21.24	0.00
4/23	92.45	45.95	69.53	55.11	13.81	20.98	0.00
4/24	90.92	41.82	68.85	53.76	13.60	20.72	0.00
4/25	90.67	45.36	68.85	54.92	13.40	20.72	0.00
4/26	89.90	45.36	68.62	54.73	13.19	20.46	0.00
4/27	87.86	45.16	68.17	54.73	13.19	20.46	0.00
4/28	88.11	44.97	67.94	54.53	12.99	20.20	0.00
4/29	87.09	44.77	67.71	54.53	12.78	20.20	0.00
4/30	86.07	44.57	67.48	54.53	12.78	19.93	0.00

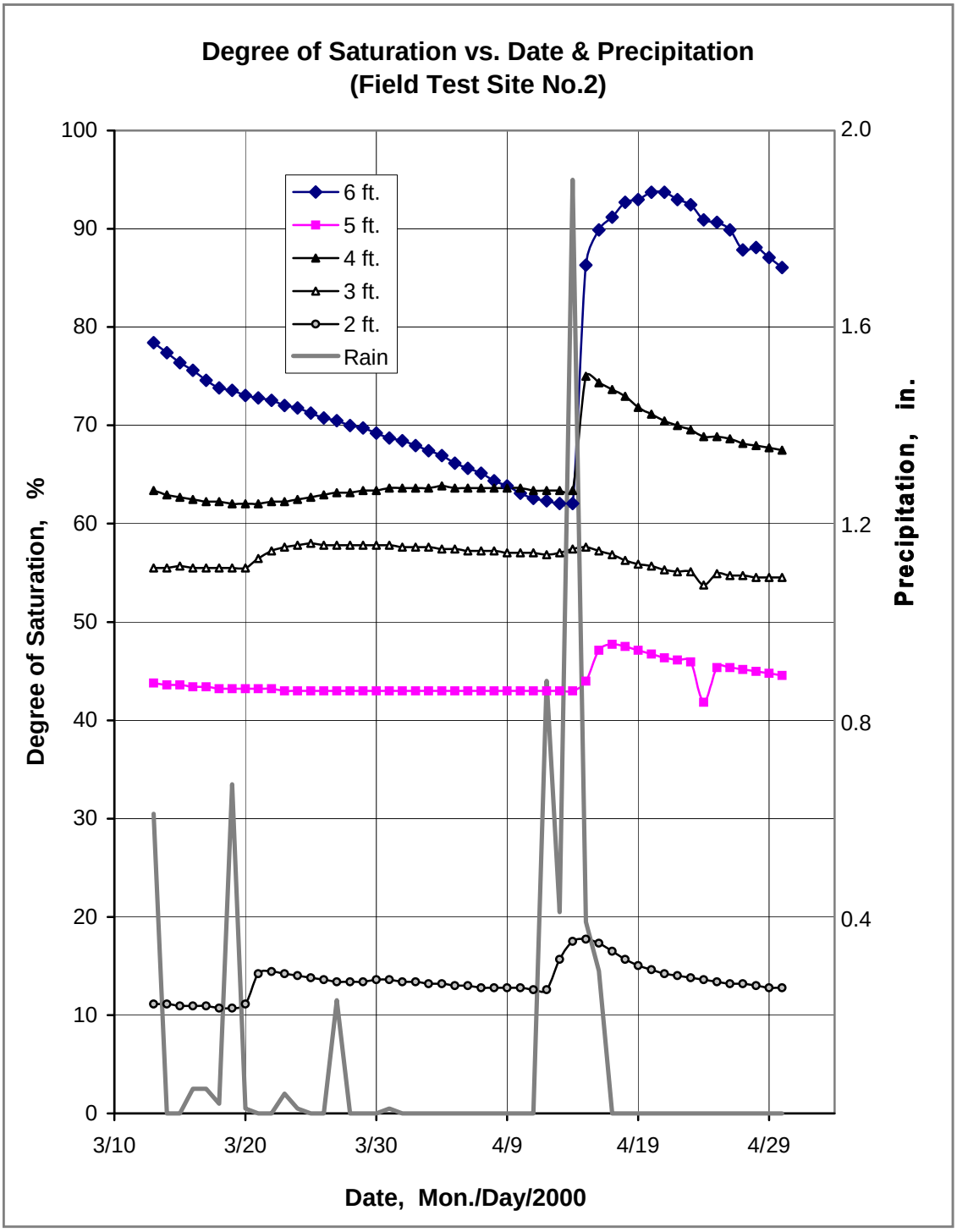


Figure C.3 Degree of Saturation vs. Date and Precipitation (Field Test Site No.2 -- Spring 2000)

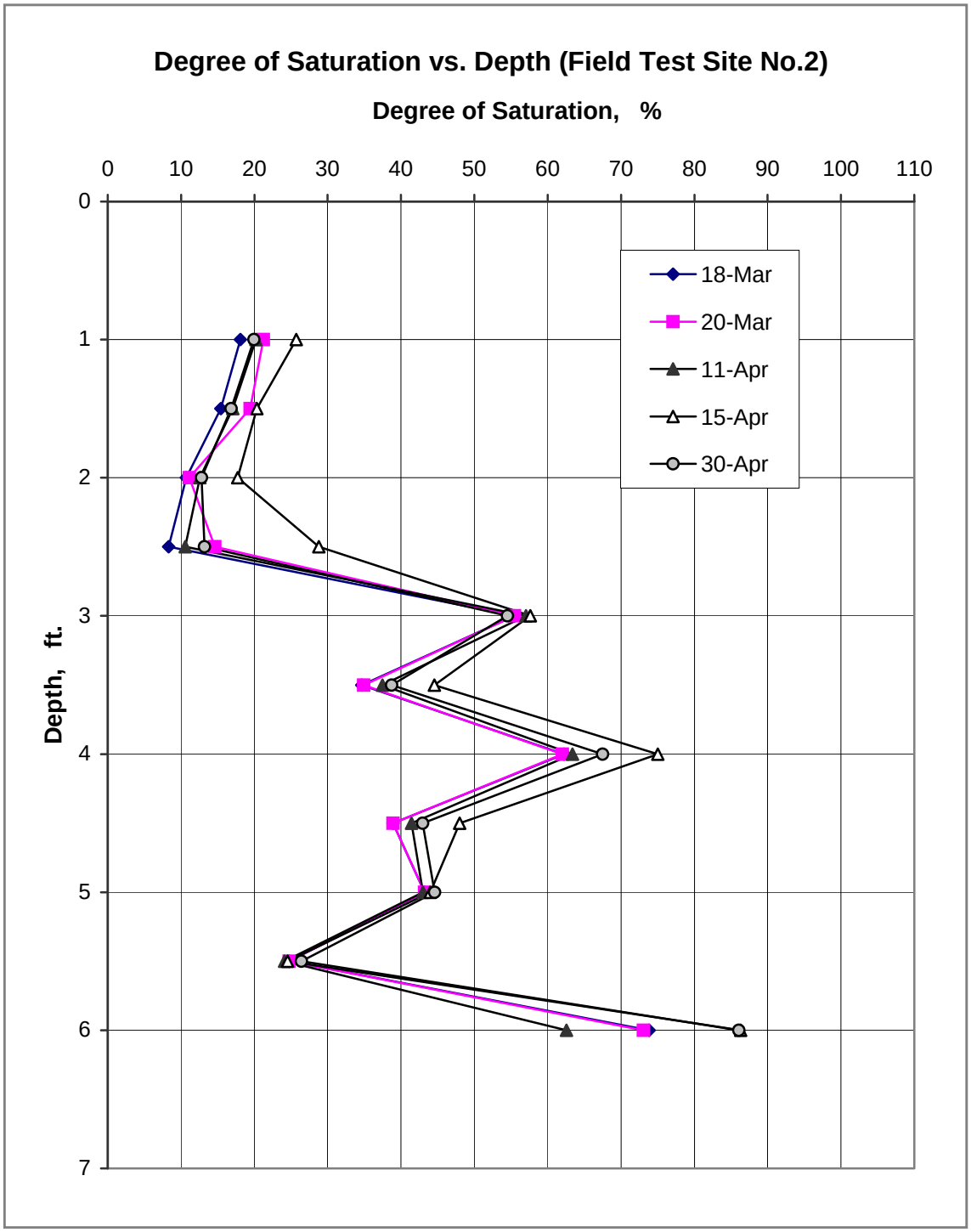


Figure C.4 Degree of Saturation vs. Depth (Field Test Site No.2 --Spring 2000)

Table C.4 Moisture Profile (%) for SR-70 Field Monitoring Program (Summer, 2000)

Moisture Profile (%) for SR-70 Field Test Site No.1 (Summer,2000)								
Depth (ft.)	4-Jun		8-Jun		24-Jun		8-Jul	
	s	w	s	w	s	w	s	w
6.0	93.95	25.21	91.79	24.63	80.22	21.52	81.91	21.98
5.5	86.82	21.23	86.06	21.04	84.53	20.67	85.04	20.79
5.0	68.37	23.15	68.16	23.08	67.73	22.94	67.94	23.01
4.5	67.23	19.05	67.00	18.98	66.76	18.92	67.00	18.98
4.0	51.10	16.32	51.10	16.32	50.88	16.25	51.31	16.39
3.5	31.72	13.00	31.53	12.93	31.72	13.00	32.11	13.16
3.0	22.39	8.47	22.19	8.40	23.59	8.93	25.39	9.61
2.5	91.95	29.23	92.17	29.30	93.70	29.79	95.89	30.48
2.0	13.11	5.02	27.62	10.58	19.08	7.31	40.34	15.45
1.5	11.91	4.13	19.44	6.74	13.79	4.79	21.74	7.54
1.0	12.94	4.36	19.95	6.72	14.85	5.01	21.01	7.08
Moisture Profile (%) for SR-70 Field Test Site No.2 (Summer,2000)								
Depth (ft.)	4-Jun		8-Jun		24-Jun		8-Jul	
	s	w	s	w	s	w	s	w
6.0	53.12	12.92	52.36	12.74	50.82	12.36	63.08	15.35
5.5	23.29	8.16	23.08	8.09	23.91	8.38	25.58	8.96
5.0	42.22	16.57	42.02	16.49	42.61	16.72	43.79	17.19
4.5	39.67	9.82	39.42	9.76	42.20	10.45	83.38*	20.65
4.0	61.33	18.12	60.64	17.91	64.29	18.99	67.48	19.94
3.5	34.42	8.50	34.92	8.63	37.71	9.31	39.98	9.88
3.0	53.37	21.62	54.53	22.09	54.34	22.01	55.11	22.32
2.5	8.52	3.13	17.44	6.41	11.97	4.40	24.34	8.95
2.0	10.92	3.89	16.08	5.73	12.37	4.41	17.73	6.32
1.5	15.43	4.36	19.87	5.62	16.36	4.62	21.04	5.95
1.0	17.83	4.15	25.97	6.05	19.41	4.52	26.75	6.23

* Reading Jumped from 43% to 82% within 15 Min. upon 16:30, July 6th.

Table C.5 Moisture Profile of SR-70 Soils (Field Test No. 1)

Date (Mon/Day)	Degree of Saturation (%) (Below the Ground Surface)						Rainfall (inch)
	6.0 ft	5.0 ft	4.0 ft	3.0 ft	2.0 ft	1.0 ft	
5-30	96.36	68.79	51.31	22.99	14.11	13.37	0.00
5-31	95.88	68.58	51.31	22.79	13.91	13.37	0.00
6-1	95.64	68.58	51.31	22.79	13.71	13.16	0.00
6-2	94.92	68.58	51.31	22.59	13.51	13.16	0.00
6-3	94.44	68.37	51.10	22.59	13.31	12.94	0.00
6-4	93.95	68.37	51.10	22.39	13.11	12.94	0.13
6-5	93.23	68.37	51.10	22.39	13.11	12.94	0.00
6-6	85.28	68.16	51.10	22.39	12.92	12.94	0.36
6-7							0.68
6-8	91.79	68.16	51.10	22.19	27.62	19.95	0.00
6-9	91.30	68.16	51.10	22.39	26.43	18.89	0.00
6-10	91.06	68.16	51.10	22.79	25.43	18.25	0.00
6-11	90.82	68.16	51.10	23.19	24.84	17.83	0.35
6-12	90.82	68.16	51.10	23.39	26.43	20.16	0.10
6-13	90.82	68.16	51.10	23.59	27.22	19.31	0.00
6-14	90.10	68.16	51.10	23.79	26.23	18.46	0.00
6-15	89.14	67.94	51.10	23.99	25.24	17.83	0.00
6-16	88.41	67.94	51.10	23.99	24.44	17.19	0.00
6-17	87.93	67.94	51.10	23.99	23.85	16.76	0.00
6-18	86.97	67.94	51.10	23.99	23.05	16.55	0.00
6-19	86.00	67.73	50.88	23.99	22.26	16.13	0.00
6-20	84.80	67.73	51.10	23.99	21.66	15.70	0.00
6-21	83.60	67.73	50.88	23.79	20.86	15.49	0.00
6-22	82.15	67.73	50.88	23.79	20.27	15.28	0.00
6-23	81.19	67.73	50.88	23.59	19.67	14.85	0.01
6-24	80.22	67.73	50.88	23.59	19.08	14.85	0.19
6-25	79.98	67.52	50.88	23.39	18.88	14.64	0.38
6-26	79.74	67.52	50.88	23.59	22.06	18.25	0.00
6-27	79.50	67.52	50.88	23.59	21.66	17.61	0.73
6-28	79.98	67.52	50.88	23.59	36.76	20.58	0.54
6-29	79.98	67.73	50.88	23.99	37.36	19.95	0.00
6-30	80.22	67.73	51.10	24.39	34.77	19.10	0.25
7-1	80.22	67.73	51.10	24.59	34.58	19.52	0.32
7-2	80.46	67.73	51.10	24.79	36.76	20.37	0.15
7-3	80.70	67.73	51.10	24.99	34.77	19.31	0.00
7-4	80.95	67.73	51.31	24.99	32.79	18.46	0.26
7-5	80.95	67.73	51.31	24.99	32.79	19.31	0.59
7-6	81.43	67.73	51.31	25.19	37.36	19.74	0.00
7-7	81.67	67.94	51.31	25.39	34.18	18.67	0.77
7-8	81.91	67.94	51.31	25.39	40.34	21.01	0.42
7-9	83.84	68.16	51.53	25.79	38.95	20.16	0.01
7-10	86.00	68.37	51.75	25.99	35.17	18.89	0.00
7-11	86.97	68.58	51.97	25.79	32.39	18.25	0.13

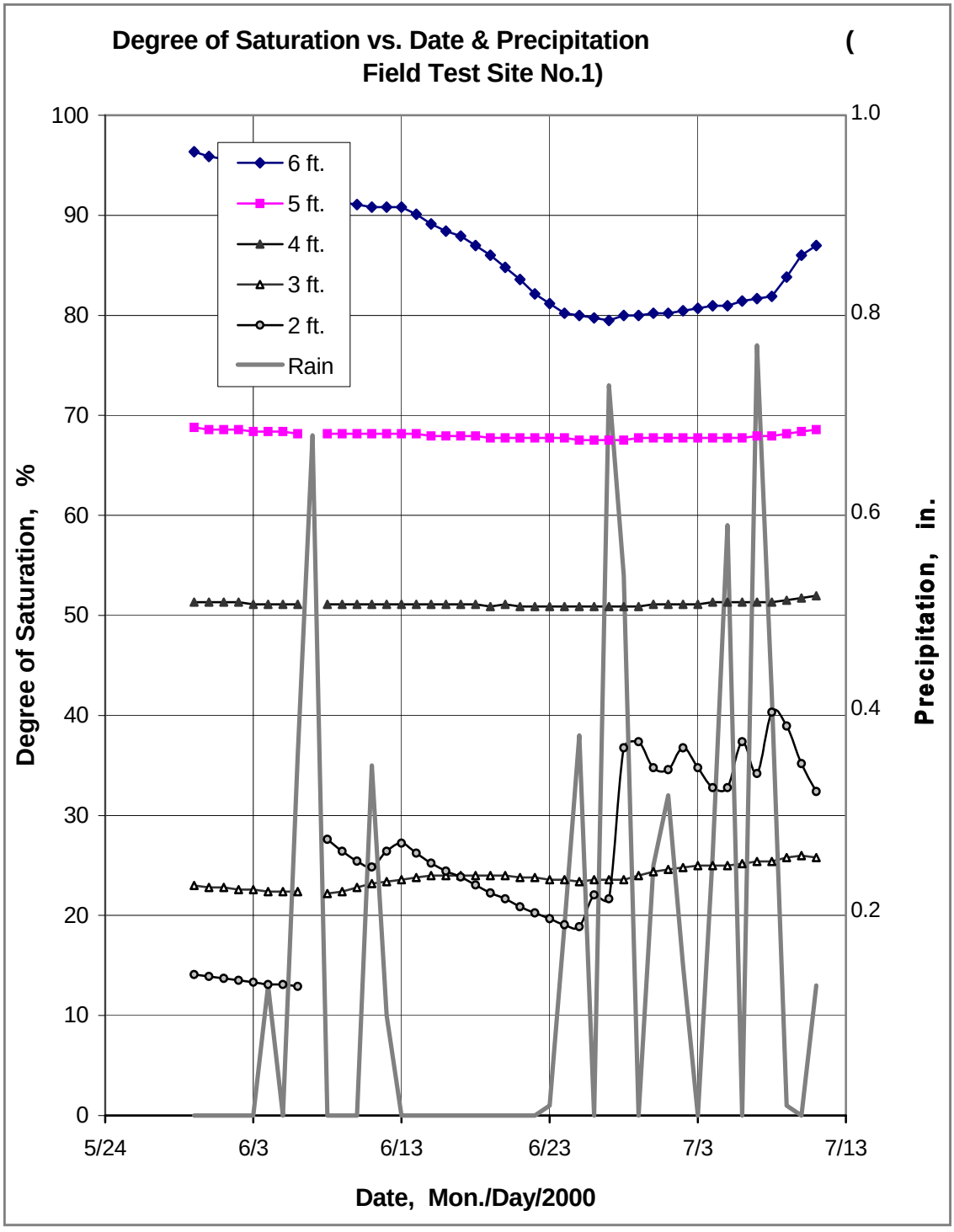


Figure C.5 Degree of Saturation vs. Date and Precipitation (Field Test Site No.2 -- Summer 2000)

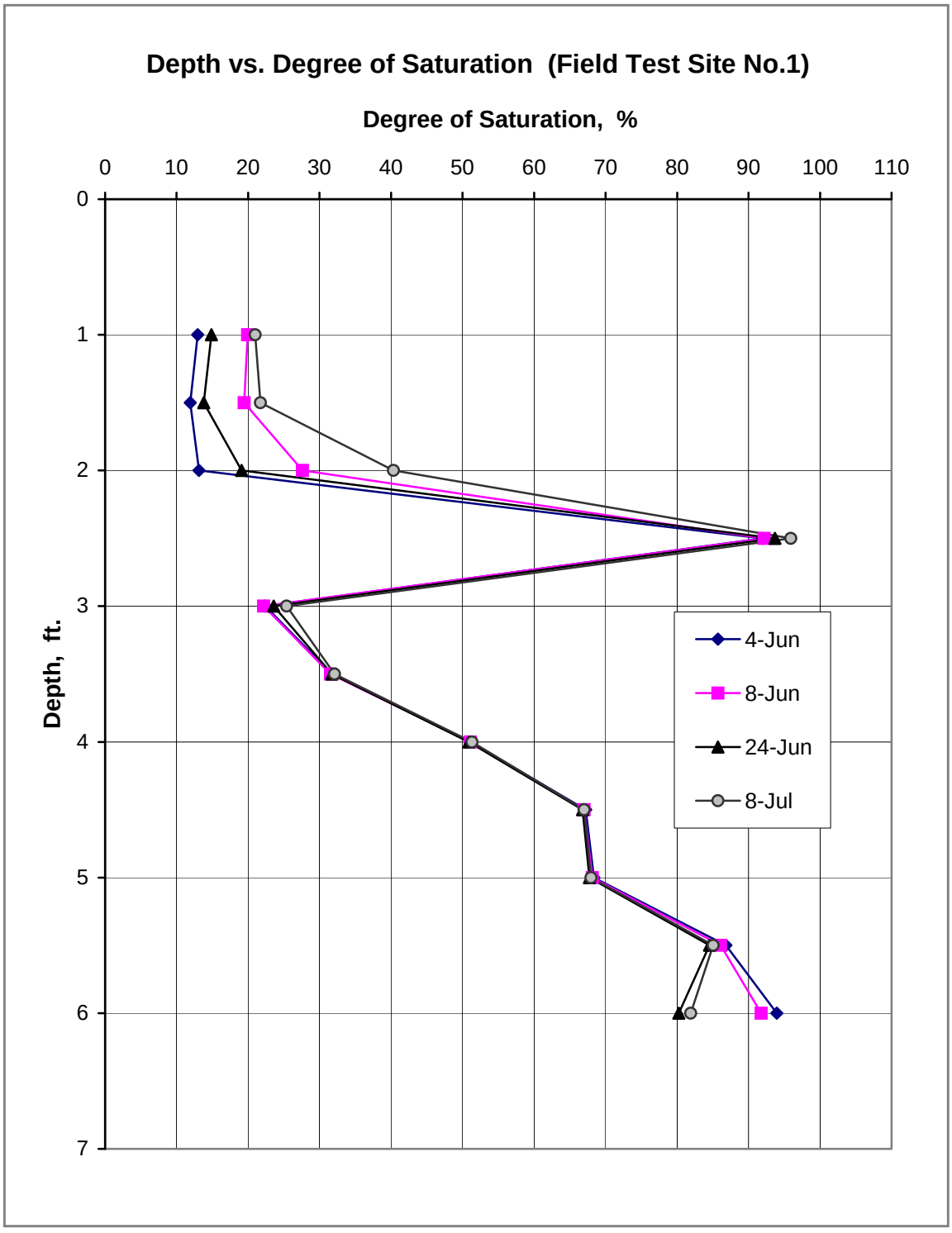


Figure C.6 Degree of Saturation vs. Depth (Field Test Site No.1 -- Summer 2000)

Table C.6 Moisture Profile of SR-70 Soils (Field Test No. 2)

Date (Mon/Day)	Degree of Saturation (%) (Below the Ground Surface)						Rainfall (inch)
	6.0 ft	5.0 ft	4.0 ft	3.0 ft	2.0 ft	1.0 ft	
5-30	54.91	42.61	62.47	53.56	11.13	18.10	0.00
5-31	54.40	42.41	62.24	53.56	11.13	18.10	0.00
6-1	54.14	42.41	62.01	53.56	10.92	18.10	0.00
6-2	53.89	42.41	61.78	53.37	10.92	17.83	0.00
6-3	53.38	42.22	61.55	53.37	10.92	17.83	0.00
6-4	53.12	42.22	61.33	53.37	10.92	17.83	0.13
6-5	52.87	42.22	61.10	53.37	10.72	17.83	0.00
6-6	52.61	42.02	60.87	53.37	10.72	17.83	0.36
6-7	52.61	42.02	60.87	53.37	10.72	21.24	0.68
6-8	52.36	42.02	60.64	54.53	16.08	25.97	0.00
6-9	52.36	42.02	61.10	54.73	15.25	24.13	0.00
6-10	52.36	42.02	61.55	54.73	14.64	22.82	0.00
6-11	52.10	42.02	62.01	54.73	14.22	22.29	0.35
6-12	52.10	42.22	62.69	54.73	15.46	25.97	0.10
6-13	52.10	41.82	62.92	54.73	15.25	24.39	0.00
6-14	52.10	42.22	63.38	54.92	14.84	23.34	0.00
6-15	51.85	42.41	63.83	54.92	14.43	22.29	0.00
6-16	51.85	42.41	64.06	54.92	14.02	21.77	0.00
6-17	51.85	41.82	64.29	54.53	13.81	21.24	0.00
6-18	51.59	42.61	64.29	54.73	13.40	20.72	0.00
6-19	51.59	42.61	64.52	54.73	13.19	20.46	0.00
6-20	51.34	42.61	64.52	54.73	12.99	20.20	0.00
6-21	51.34	42.61	64.52	54.53	12.78	19.93	0.00
6-22	51.08	42.61	64.29	54.53	12.57	19.67	0.00
6-23	51.08	42.61	64.29	54.53	12.57	19.67	0.01
6-24	50.82	42.61	64.29	54.34	12.37	19.41	0.19
6-25	50.82	42.61	64.06	54.34	12.37	19.41	0.38
6-26	52.87	42.61	64.06	54.53	15.87	24.92	0.00
6-27	52.10	42.61	64.29	54.73	15.05	23.87	0.73
6-28	52.10	42.61	64.52	54.92	17.93	27.80	0.54
6-29	55.17	42.61	64.97	54.92	17.11	26.49	0.00
6-30	55.17	42.81	65.66	54.92	16.08	25.18	0.25
7-1	55.42	43.00	66.11	54.92	16.08	25.70	0.32
7-2	55.42	43.20	66.34	54.92	16.70	26.75	0.15
7-3	55.68	43.20	66.57	54.92	16.08	25.18	0.00
7-4	55.68	43.39	66.57	54.92	15.46	23.87	0.26
7-5	55.93	43.39	66.80	54.92	16.08	25.97	0.59
7-6	62.83	43.59	66.80	55.11	16.70	25.44	0.00
7-7	63.08	43.59	67.25	54.92	15.87	23.87	0.77
7-8	63.08	43.79	67.48	55.11	17.73	26.75	0.42
7-9	63.85	43.79	67.71	55.11	17.11	25.44	0.01
7-10	64.62	43.98	68.17	55.11	15.87	23.87	0.00
7-11	64.87	44.18	67.94	54.92	15.25	22.82	0.13

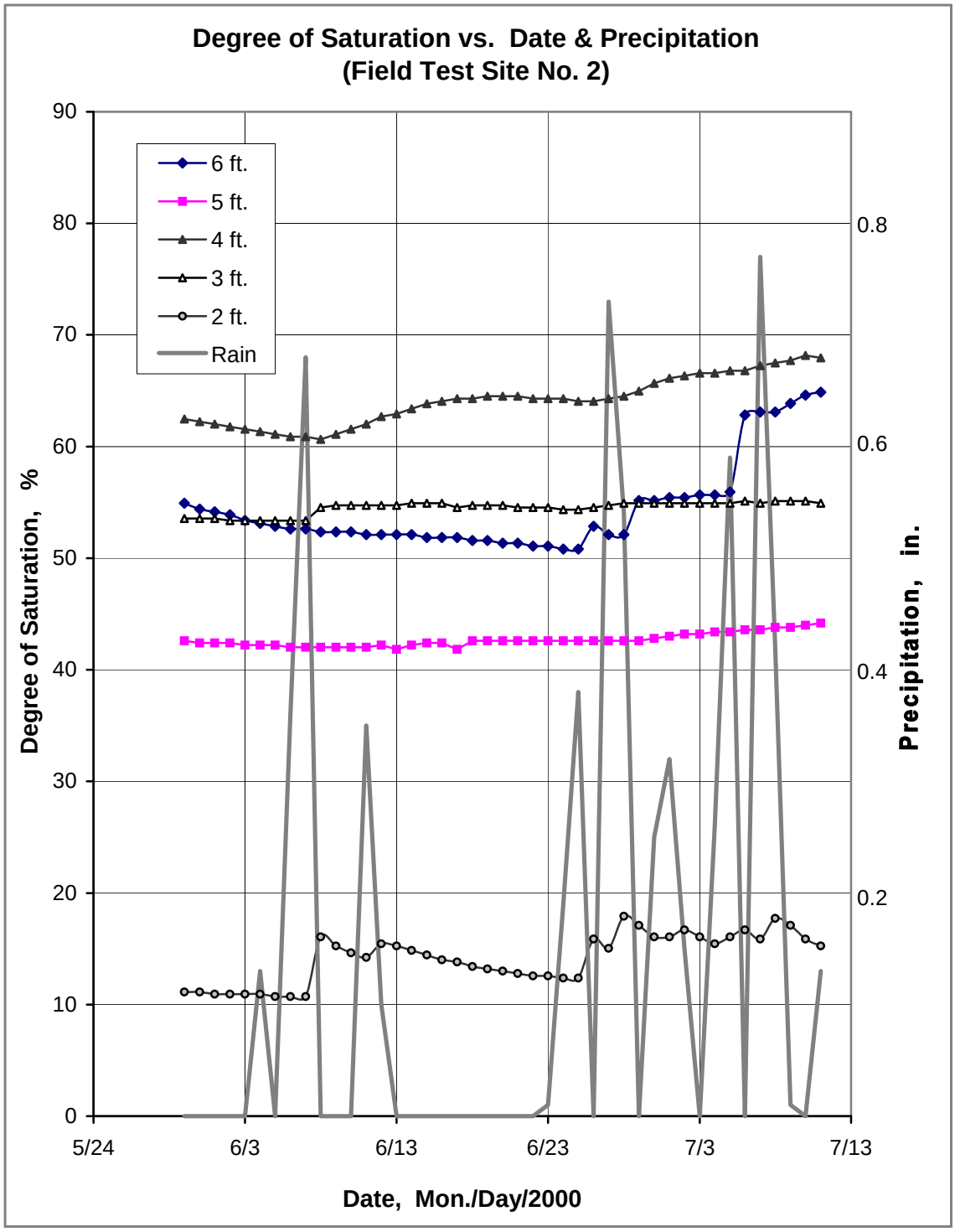


Figure C.7 Degree of Saturation vs. Date and Precipitation (Field Test Site No.2 -- Summer 2000)

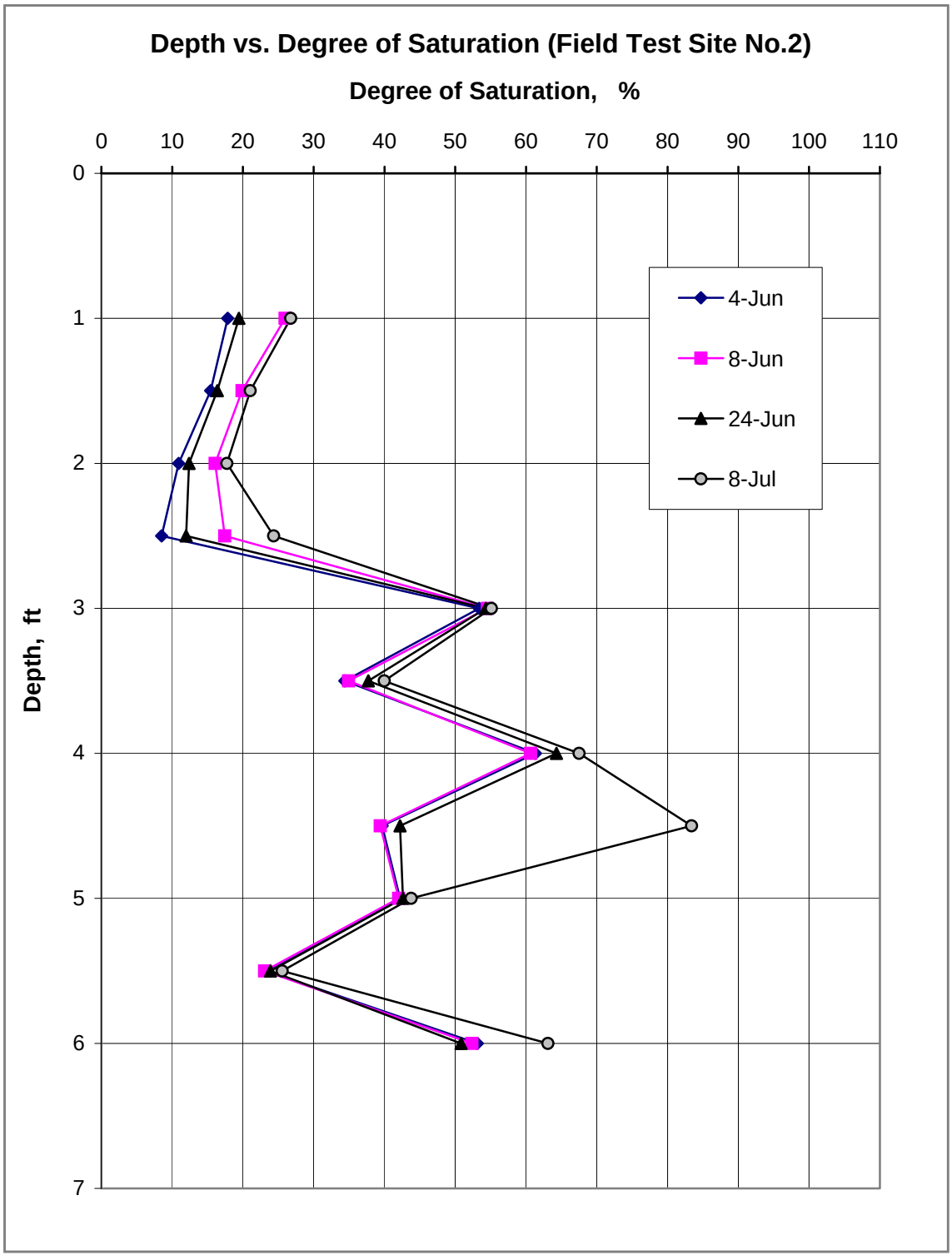


Figure C.8 Degree of Saturation vs. Depth (Field Test Site No.2 -- Summer 2000)

Table C.7 Moisture Profile (%) for SR-70 Field Monitoring Program (Fall, 2000)

Moisture Profile (%) for SR-70 Field Test Site No.1 (Fall,2000)										
Depth (ft.)	31-Aug		4-Sep		16-Sep		19-Sep		26-Sep	
	s	w	s	w	s	w	s	w	s	w
6.0					97.30	26.07	98.98	26.52	97.30	26.07
5.5	94.95	23.18	94.95	23.18	99.28	24.24	100.80	24.61	99.02	24.18
5.0	73.20	24.76	75.95	25.69	87.38	29.55	83.99	28.41	82.09	27.77
4.5	TDR Probe out of order upon 9/8 Volumetric Moisture Content 6999									
4.0	55.12	17.76	55.55	17.90	64.85	20.89	76.52	24.65	65.49	21.10
3.5	33.63	13.77	40.16	16.45	39.01	15.97	83.01	33.99	41.70	17.08
3.0	24.78	9.37	29.17	11.03	26.77	10.12	70.73	26.74	27.77	10.50
2.5	93.67	29.74	99.79	31.69	96.29	30.57	103.73	32.94	101.33	32.17
2.0	19.07	7.30	57.20	21.89	28.40	10.87	57.40	21.97	32.97	12.62
1.5	13.58	4.71	45.12	15.64	16.29	5.65	31.96	11.08	17.96	6.23
1.0	14.21	4.78	41.79	14.06	16.54	5.57	26.30	8.85	18.24	6.14
Moisture Profile (%) for SR-70 Field Test Site No.2 (Fall,2000)										
Depth (ft.)	31-Aug		4-Sep		16-Sep		19-Sep		26-Sep	
	s	w	s	w	s	w	s	w	s	w
6.0	TDR Probe out of order upon 7/27 Volumetric Moisture Content >1.0 to 6999									
5.5	25.56	8.95	25.36	8.87	55.29	19.35	75.45	26.40	74.62	26.11
5.0	43.17	16.93	42.98	16.85	53.58	21.01	77.52	30.39	78.30	30.70
4.5	TDR Probe out of order upon 9/19 Volumetric Moisture Content >1.0 to 6999									
	48.75	12.06	56.80	13.87	82.35	20.36				
4.0	64.95	19.16	64.95	19.16	68.82	20.31	72.47	21.38	74.75	22.06
3.5	37.19	9.17	39.72	9.80	39.72	9.80	41.74	10.30	41.24	10.17
3.0	TDR Probe out of order upon 7/27 Volumetric Moisture Content >1.0 to 6999									
2.5	10.95	4.02	27.57	10.13	16.42	6.03	30.82	11.32	18.45	6.78
2.0	12.16	4.33	22.25	7.92	13.80	4.91	19.98	7.11	14.63	5.21
1.5	16.83	4.75	26.87	7.59	17.53	4.95	22.20	6.27	18.46	5.21
1.0	19.40	4.51	26.75	6.22	20.98	4.88	26.48	6.16	22.55	5.25

Table C.8 Moisture Profile of SR-70 Soils (Field Test No. 1)

Date (Mon./day)	Degree of Saturation (%) (Below the Ground Surface)						Rainfall (inch)
	6.0 ft.	5.0 ft.	4.0 ft.	3.0 ft.	2.0 ft.	1.0 ft.	
8-28		74.05	55.55	24.98	20.26	14.64	0.00
8-29		73.62	55.34	24.78	19.86	14.64	0.00
8-30		73.41	55.34	24.78	19.46	14.42	0.00
8-31		73.20	55.12	24.78	19.07	14.21	0.00
9-1		72.78	55.12	24.58	18.87	21.64	0.54
9-2		72.57	55.55	24.78	20.26	25.45	0.50
9-3		72.36	55.55	24.78	28.40	25.45	0.01
9-4		75.95	55.55	29.17	57.20	41.79	1.71
9-5	103.08	75.74	55.34	29.77	50.45	23.54	0.01
9-6	100.19	76.38	55.34	28.57	41.91	19.94	0.00
9-7	100.19	77.43	55.34	27.57	39.32	26.94	0.61
9-8	100.19	86.74	60.96	32.37	62.76	39.45	1.35
9-9	97.30	87.17	65.93	32.37	59.38	33.30	0.80
9-10	97.54	87.17	71.33	31.77	56.21	25.88	0.00
9-11	97.54	87.17	71.33	30.77	49.25	20.57	0.00
9-12	97.54	87.17	70.47	29.37	39.13	19.09	0.00
9-13	97.30	87.17	69.17	28.37	34.16	18.24	0.00
9-14	97.30	87.38	67.66	27.77	31.78	17.39	0.00
9-15	97.30	87.38	66.14	27.17	29.79	16.97	0.00
9-16	97.30	87.38	64.85	26.77	28.40	16.54	0.00
9-17	97.30	87.38	63.77	26.57	27.21	16.12	0.05
9-18	99.23	87.80	76.52	60.94	58.99	39.24	2.89
9-19	98.98	83.99	76.52	70.73	57.40	26.30	0.05
9-20	97.54	83.15	75.00	44.96	53.62	22.27	0.12
9-21	97.06	82.30	71.33	28.97	41.31	20.36	0.00
9-22	97.30	82.30	68.74	28.17	49.06	30.54	0.69
9-23	97.78	82.51	70.90	30.97	45.88	24.18	0.06
9-24	97.30	82.09	69.60	29.57	40.71	20.57	0.00
9-25	97.30	82.09	68.30	28.37	35.75	19.09	0.00
9-26	97.30	82.09	65.49	27.77	32.97	18.24	0.00
9-27	97.30	81.45	60.09	27.37	31.18	17.61	0.26
9-28	97.30	81.45	58.15	27.17	29.79	19.09	0.00
9-29	97.54	81.45	58.15	27.17	51.84	35.00	0.88
9-30	97.54	82.09	62.25	27.77	46.87	23.54	0.00
10-1	97.54	82.09	59.87	27.77	38.13	20.15	0.00
10-2	97.54	82.09	58.58	27.57	33.96	18.88	0.00
10-3	97.54	82.09	58.58	27.37	31.38	18.03	0.03
10-4	98.50	82.72	68.30	27.37	57.60	34.36	1.73
10-5	99.47	83.36	69.82	60.74	57.60	31.18	0.22
10-6	99.47	83.36	69.82	60.74	56.01	26.09	0.00
10-7	98.26	82.93	68.74	43.36	52.63	22.70	0.11
10-8	98.02	82.72	68.09	29.97	44.09	20.36	0.00
10-9	98.02	82.72	65.71	28.97	38.73	19.51	0.00

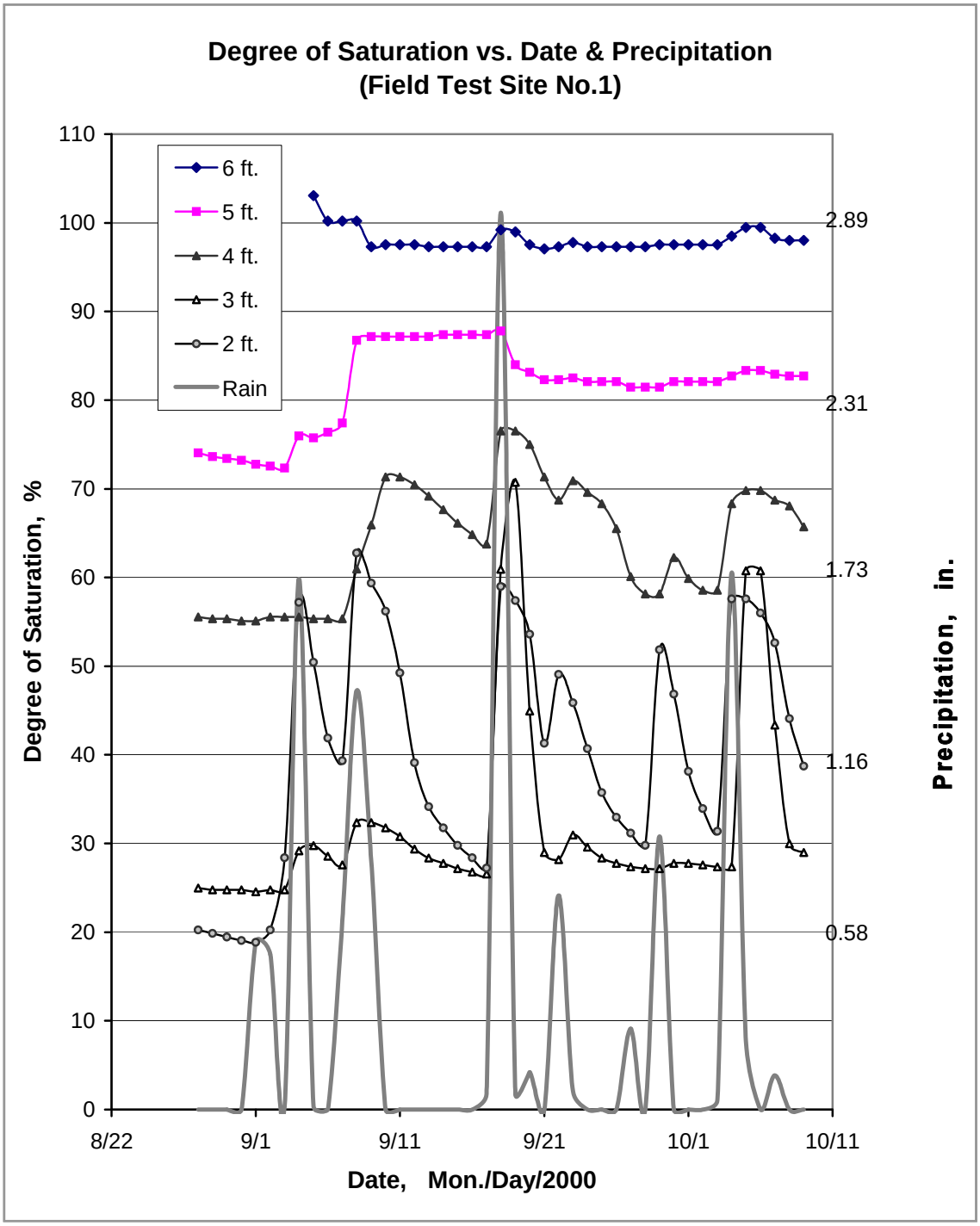


Figure C.9 Degree of Saturation vs. Date and Precipitation (Field Test Site No.1 -- Fall 2000)

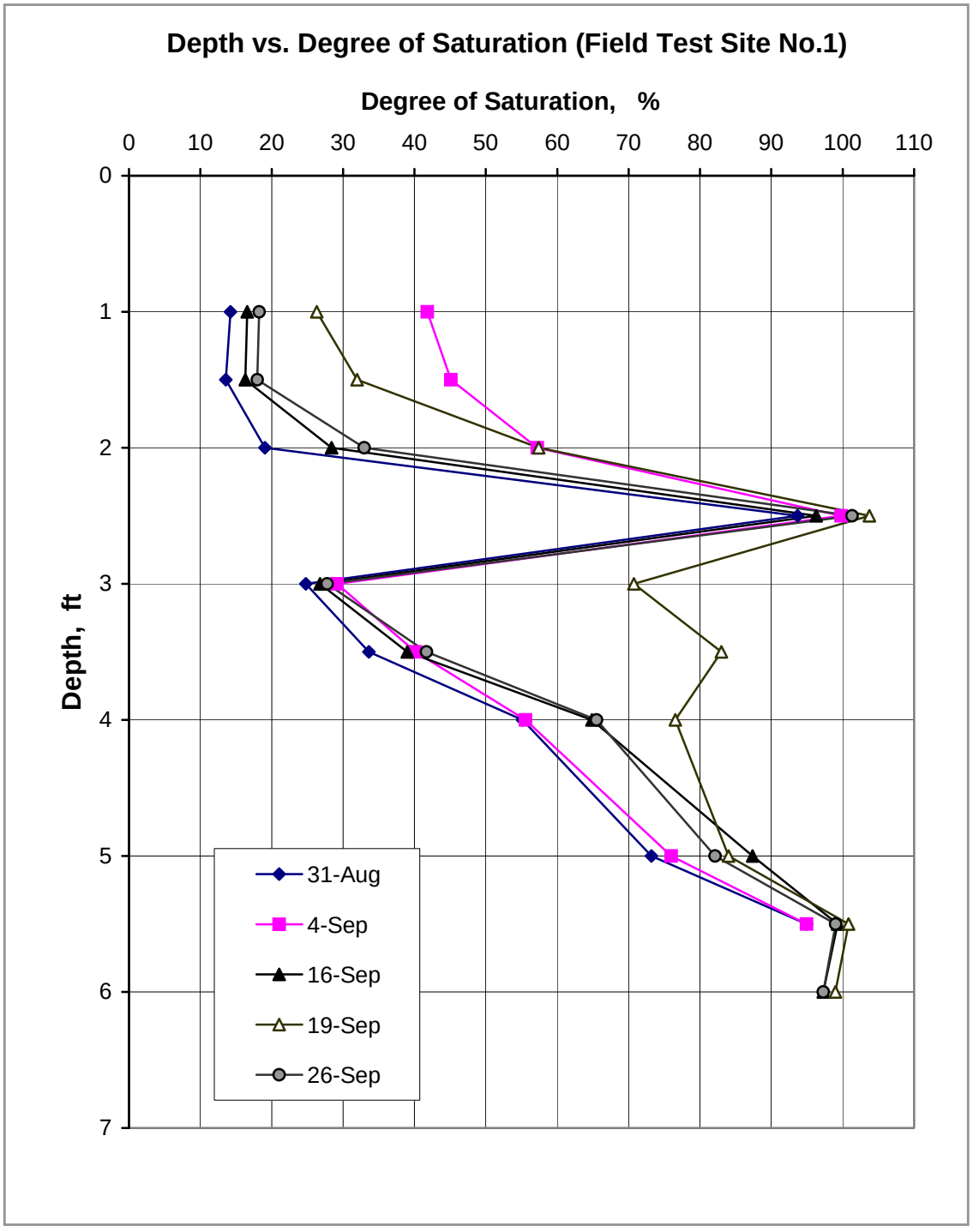


Figure C.10 Degree of Saturation vs. Depth (Field Test Site No.1, -- Fall 2000)

Table C.9 Moisture Profile of SR-70 Soils (Field Test Site No. 2)

Date (Mon./Day)	Degree of Saturation (%) (Below the Ground Surface)							Rainfall (inch)
	5.5 ft.	5.0 ft.	4.0 ft.	3.5 ft.	2.5 ft.	2.0 ft.	1.5 ft.	
8-28	25.98	43.37	65.41	37.70	11.56	12.36	17.06	0.00
8-29	25.77	43.17	65.41	37.44	11.35	12.36	17.06	0.00
8-30	25.77	43.17	65.18	37.44	11.15	12.16	16.83	0.00
8-31	25.56	43.17	64.95	37.19	10.95	12.16	16.83	0.00
9-1	25.36	43.17	64.95	37.19	10.75	12.16	19.86	0.54
9-2	25.36	42.98	64.72	37.70	15.81	12.57	22.90	0.50
9-3	25.15	42.98	64.72	38.71	17.64	15.25	22.90	0.01
9-4	25.36	42.98	64.95	39.72	27.57	22.25	26.87	1.71
9-5	26.40	43.37	65.86	39.97	25.34	18.54	21.73	0.01
9-6	27.64	43.57	66.32	39.97	22.30	16.07	19.16	0.00
9-7	27.02	43.76	66.55	39.97	22.30	16.69	23.14	0.61
9-8	28.06	47.49	67.23	41.24	34.67	25.14	28.04	1.35
9-9	34.50	48.47	68.60	41.74	32.44	21.02	25.00	0.80
9-10	46.76	51.42	69.51	42.00	31.63	20.19	23.14	0.00
9-11	53.83	53.97	69.74	41.49	26.56	17.10	19.40	0.00
9-12	57.36	54.95	69.74	40.99	22.30	15.66	18.70	0.00
9-13	57.99	54.95	69.74	40.48	19.87	14.83	18.23	0.00
9-14	58.20	54.95	69.51	40.23	18.45	14.42	17.99	0.00
9-15	57.16	54.36	69.28	39.97	17.23	14.01	17.76	0.00
9-16	55.29	53.58	68.82	39.72	16.42	13.80	17.53	0.00
9-17	53.42	52.79	68.37	39.47	15.61	13.60	17.29	0.05
9-18	65.05	54.95	67.91	40.99	33.66	25.14	28.51	2.89
9-19	75.45	77.52	72.47	41.74	30.82	19.98	22.20	0.05
9-20	75.86	77.91	74.52	41.74	26.36	17.10	19.63	0.12
9-21	76.07	78.11	74.98	41.74	22.91	15.86	19.40	0.00
9-22	76.90	79.68	74.98	41.74	21.29	17.31	23.14	0.69
9-23	75.03	78.30	75.21	41.74	21.29	17.31	22.67	0.06
9-24	74.82	78.50	75.43	41.74	20.27	15.66	20.10	0.00
9-25	74.82	78.30	75.21	41.49	19.67	15.04	19.16	0.00
9-26	74.62	78.30	74.75	41.24	18.45	14.63	18.46	0.00
9-27	74.41	78.11	73.84	40.73	17.44	14.22	18.23	0.26
9-28	73.99	78.11	72.93	40.23	16.63	14.01	20.33	0.00
9-29	73.58	78.11	72.24	40.48	23.72	18.95	26.17	0.88
9-30	73.58	78.11	72.70	40.73	22.30	17.72	22.20	0.00
10-1	73.78	78.11	72.70	40.73	19.26	15.66	19.86	0.00
10-2	73.78	78.11	72.70	40.73	18.04	14.83	18.93	0.00
10-3	73.37	78.11	72.70	40.23	17.03	14.42	18.46	0.03
10-4	73.37	78.11	71.79	40.99	34.67	24.31	28.74	1.73
10-5	74.82	79.09	76.57	43.01	34.47	23.49	26.41	0.22
10-6	74.82	79.68	79.54	43.77	29.40	18.54	21.73	0.00
10-7	75.03	79.87	80.67	43.77	26.15	17.10	19.86	0.11
10-8	75.24	79.87	80.67	43.77	23.11	15.86	19.40	0.00
10-9	75.45	79.68	80.45	43.01	21.09	15.25	18.93	0.00

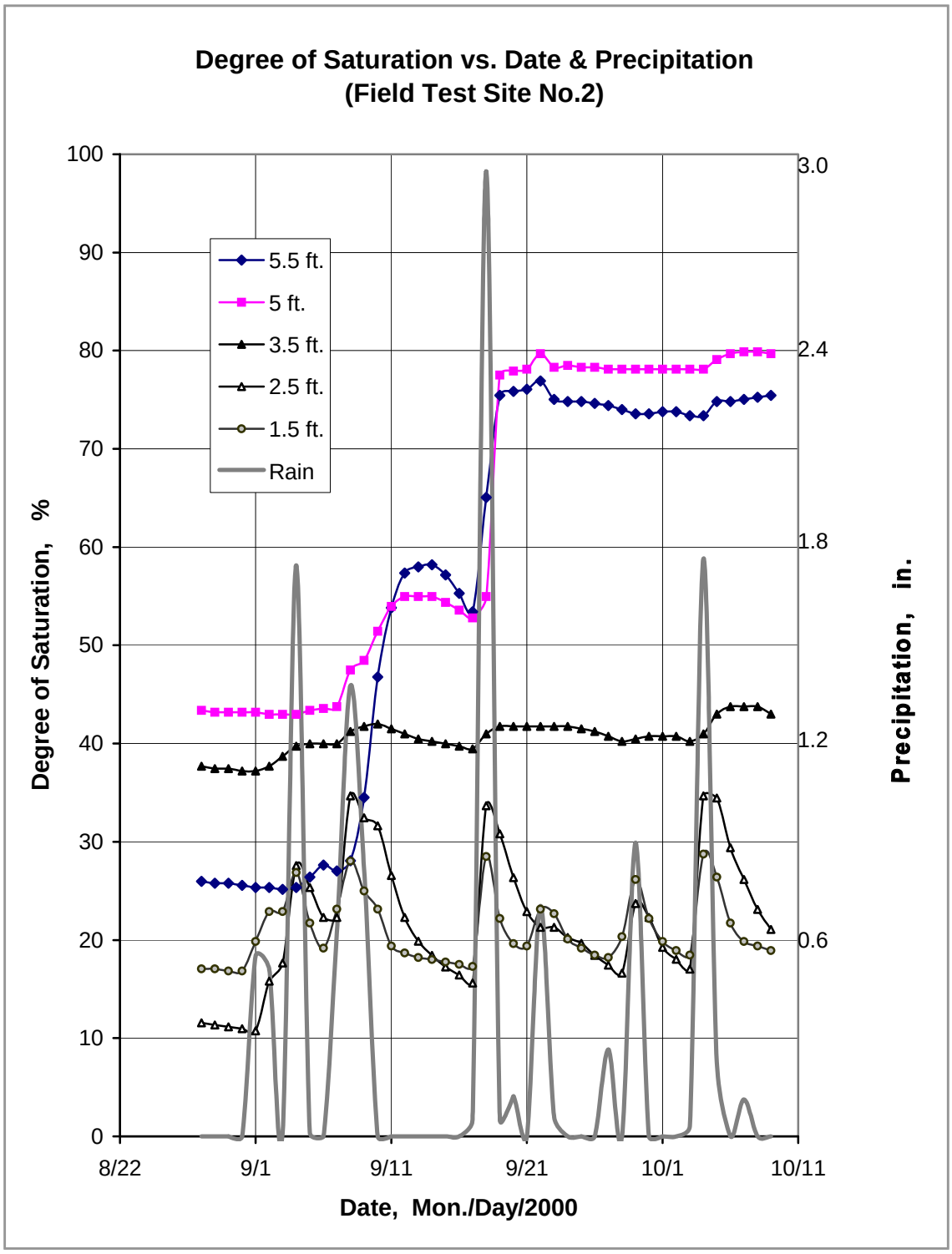


Figure C.11 Degree of Saturation vs. Date and Precipitation (Field Test Site No.2 -- Fall 2000)

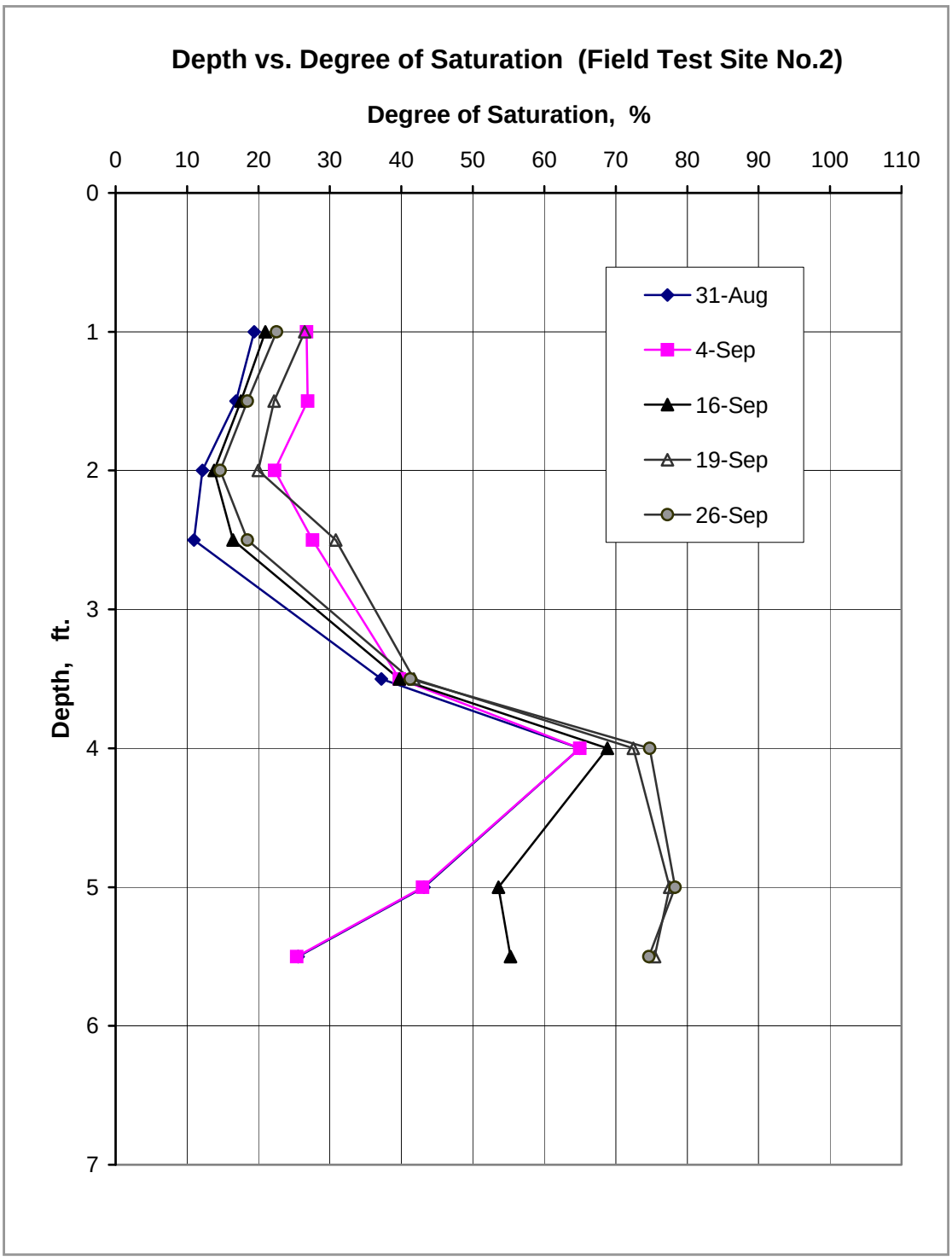


Figure C.12 Degree of Saturation vs. Depth (Field Test Site No.2 -- Fall 2000)

Table C.10 Moisture Profile (%) for SR-70 Field Monitoring Program (Winter, 2000)

Moisture Profile (%) for SR-70 Field Test Site No.1 (Winter,2000/2001)								
Depth (ft.)	13-Dec		30-Dec		19-Jan		24-Jan	
	s	w	s	w	s	w	s	w
6.0	101.15	27.10	102.12	27.36	102.84	27.55	102.84	27.55
5.5	95.20	23.24	92.15	22.50	91.39	22.31	91.39	22.31
5.0	71.51	24.19	70.45	23.83	70.24	23.76	70.24	23.76
4.5	TDR Probe Failed upon 9/8 Volumetric Water Content 6999							
4.0	53.04	16.92	52.60	16.78	52.60	16.78	52.60	16.78
3.5	32.86	13.46	32.47	13.30	32.47	13.30	32.66	13.38
3.0	22.18	8.39	21.78	8.23	21.78	8.23	22.78	8.61
2.5	Converted Degree of Saturation from 100% to 391% According to TDR Reading							
2.0	11.72	4.48	11.32	4.33	11.12	4.26	25.02	9.58
1.5	10.86	3.76	17.76	6.15	14.20	4.92	19.64	6.80
1.0	12.09	4.07	13.15	4.43	14.21	4.78	20.57	6.93
Moisture Profile (%) for SR-70 Field Test Site No.2 (Winter,2000/2001)								
Depth (ft.)	s	w	s	w	s	w	s	w
	13-Dec		30-Dec		19-Jan		24-Jan	
6.0	TDR Probe Failed upon 7/27 Volumetric Water Content >1.0 to 6999							
5.5	28.06	9.82	27.44	9.60	27.23	9.53	27.23	9.53
5.0	45.92	18.00	45.53	17.85	45.14	17.70	45.14	17.70
4.5	38.14	9.43	36.63	9.06	35.62	8.81	37.39	9.24
	TDR Probe Back to normal upon 10/17							
4.0	60.39	17.82	59.48	17.55	59.25	17.48	60.16	17.75
3.5	33.90	8.36	33.65	8.30	34.15	8.42	37.44	9.24
3.0	TDR Probe Failed upon 7/27 Volumetric Water Content >1.0 to 6999							
2.5	8.31	3.05	11.35	4.17	11.56	4.24	17.23	6.33
2.0	9.68	3.45	9.89	3.52	10.30	3.67	13.60	4.84
1.5	15.19	4.29	20.10	5.67	17.06	4.82	21.03	5.94
1.0	16.26	3.78	17.04	3.96	17.83	4.15	22.03	5.12

Table C.11 Moisture Profile of SR-70 Soils (Field Test No. 1)

Date (Mon/Day)	Degree of Saturation (%) (Below the Ground Surface)						Rainfall (inch)
	6.0 ft.	5.0 ft.	4.0 ft.	3.0 ft.	2.0 ft.	1.0 ft.	
12/1	100.43	72.57	53.48	22.98	12.51	12.30	0.00
12/2	100.43	72.36	53.48	22.98	12.51	12.30	0.00
12/3	100.43	72.36	53.26	22.78	12.31	12.09	0.00
12/4	100.43	72.36	53.26	22.78	12.31	12.09	0.00
12/5	100.43	72.14	53.26	22.58	12.31	12.09	0.00
12/6	100.67	72.14	53.26	22.58	12.12	12.09	0.00
12/7	100.67	72.14	53.26	22.58	12.12	12.09	0.00
12/8	100.67	71.93	53.04	22.38	12.12	12.09	0.00
12/9	100.91	71.72	53.04	22.38	11.92	12.09	0.00
12/10	100.91	71.72	53.04	22.38	11.92	12.09	0.00
12/11	101.15	71.51	53.04	22.18	11.92	12.09	0.00
12/12	101.15	71.51	53.04	22.18	11.72	12.09	0.00
12/13	101.15	71.51	53.04	22.18	11.72	12.09	0.00
12/14	101.39	71.51	53.04	22.18	11.72	12.30	0.15
12/15	101.39	71.51	53.04	22.18	11.72	12.30	0.00
12/16	101.39	71.30	52.82	21.98	11.72	12.73	0.00
12/17	101.39	71.09	52.60	21.78	11.52	12.73	0.00
12/18	101.39	71.09	52.60	21.78	11.52	12.73	0.00
12/19	101.63	71.09	52.60	21.78	11.52	12.73	0.00
12/20	101.63	70.87	52.60	21.78	11.52	12.73	0.00
12/21	101.63	70.87	52.60	21.78	11.52	12.73	0.00
12/22	101.63	70.87	52.60	21.78	11.52	12.73	0.00
12/23	101.63	70.87	52.60	21.78	11.52	12.73	0.00
12/24	101.63	70.87	52.60	21.78	11.52	12.73	0.00
12/25	101.63	70.87	52.60	21.78	11.52	12.73	0.00
12/26	101.63	70.87	52.60	21.78	11.52	12.73	0.00
12/27	101.87	70.66	52.60	21.78	11.32	12.73	0.00
12/28	102.12	70.45	52.60	21.78	11.32	12.73	0.00
12/29	102.12	70.45	52.60	21.78	11.32	12.73	0.21
12/30	102.12	70.45	52.60	21.78	11.32	13.15	0.00
12/31	102.12	70.45	52.60	21.78	11.32	13.57	0.00

Table C.12 Moisture Profile of SR-70 Soils (Field Test Site No. 1 Year 2001)

Date (Mon/Day)	Degree of Saturation (%) (Below the Ground Surface)						Rainfall (inch)
	6.0 ft.	5.0 ft.	4.0 ft.	3.0 ft.	2.0 ft.	1.0 ft.	
1-1	102.36	70.45	52.60	21.78	11.32	14.21	0.00
1-2	102.36	70.45	52.60	21.78	11.32	14.21	0.00
1-3	102.36	70.45	52.60	21.78	11.32	14.42	0.00
1-4	102.36	70.45	52.60	21.78	11.32	14.42	0.00
1-5	102.60	70.45	52.60	21.78	11.32	14.42	0.00
1-6	102.60	70.45	52.60	21.78	11.32	14.42	0.00
1-7	102.60	70.45	52.60	21.78	11.32	14.42	0.00
1-8	102.84	70.45	52.60	21.98	11.32	14.42	0.00
1-9	102.84	70.45	52.60	21.98	11.32	14.42	0.00
1-10	102.84	70.45	52.60	21.98	11.32	14.42	0.00
1-11	102.84	70.45	52.60	21.98	11.32	14.42	0.00
1-12	102.84	70.45	52.60	21.98	11.32	14.42	0.00
1-13	102.84	70.45	52.60	21.98	11.32	14.42	0.00
1-14	103.08	70.24	52.60	21.78	11.32	14.42	0.00
1-15	103.08	70.24	52.60	21.78	11.32	14.21	0.00
1-16	103.08	70.24	52.60	21.78	11.32	14.21	0.00
1-17	102.84	70.24	52.60	21.78	11.32	14.21	0.00
1-18	102.84	70.24	52.60	21.78	11.32	14.21	0.00
1-19	102.84	70.24	52.60	21.78	11.12	14.21	0.00
1-20	102.84	70.03	52.38	21.78	22.64	23.54	0.54
1-21	102.84	70.24	52.38	21.98	24.63	21.85	0.00
1-22	102.84	70.24	52.38	21.98	24.63	20.79	0.17
1-23	102.84	70.24	52.38	22.38	25.02	20.79	0.00
1-24	102.84	70.24	52.60	22.78	25.02	20.57	0.00
1-25	102.84	70.24	52.60	22.78	24.63	20.15	0.00
1-26	102.84	70.24	52.60	23.18	24.23	19.51	0.00
1-27	102.84	70.24	52.60	23.38	23.83	19.30	0.00
1-28	102.84	70.24	52.60	23.58	23.44	18.88	0.00
1-29	102.84	70.45	52.82	23.58	23.04	18.67	0.00
1-30	103.08	70.45	53.69	23.98	27.61	18.45	0.00
1-31	103.08	70.45	52.82	23.78	22.44	18.24	0.00

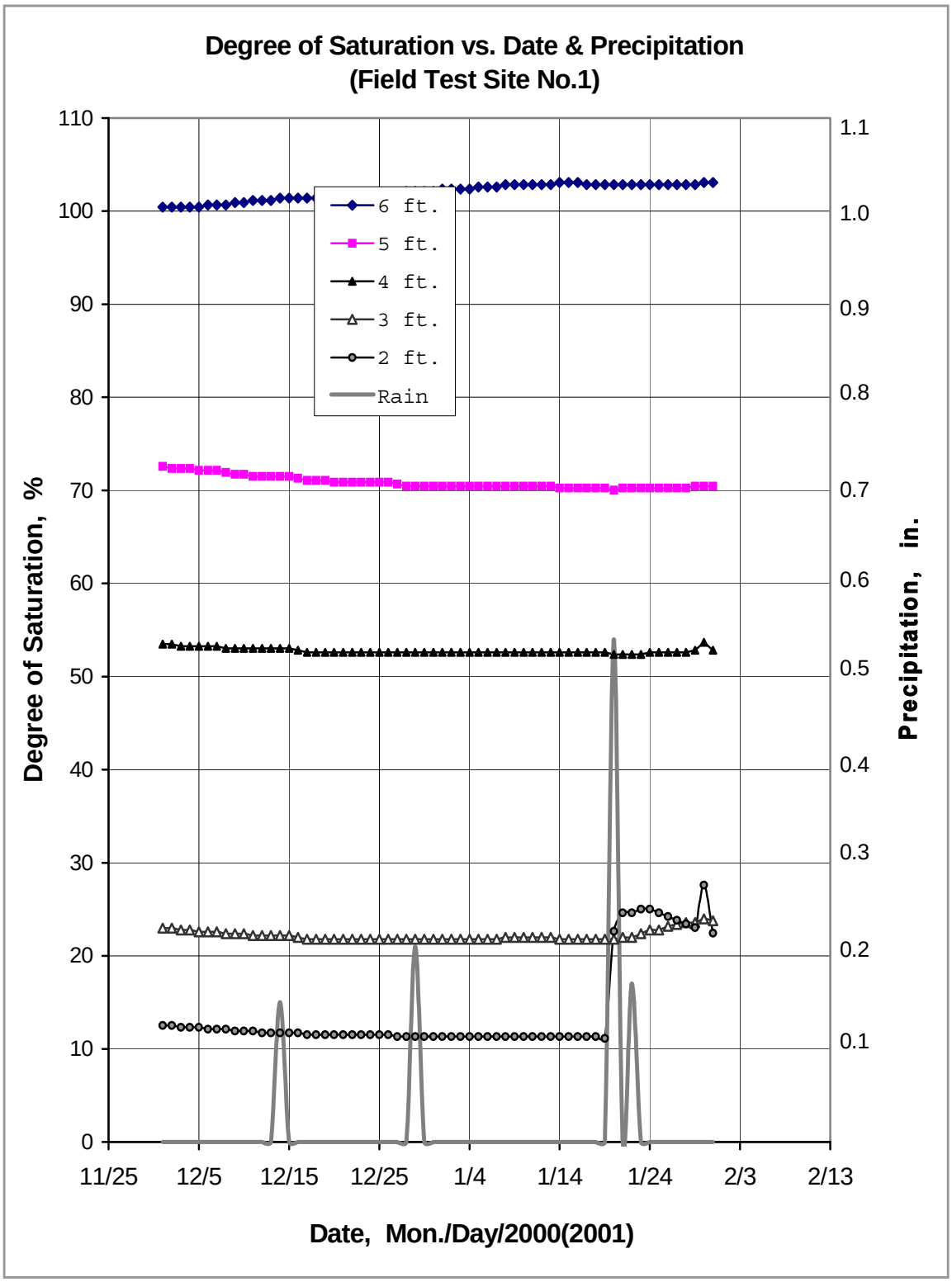


Figure C.13 Degree of Saturation vs. Date and Precipitation (Field Test Site No.1 -- Winter 2000/2001)

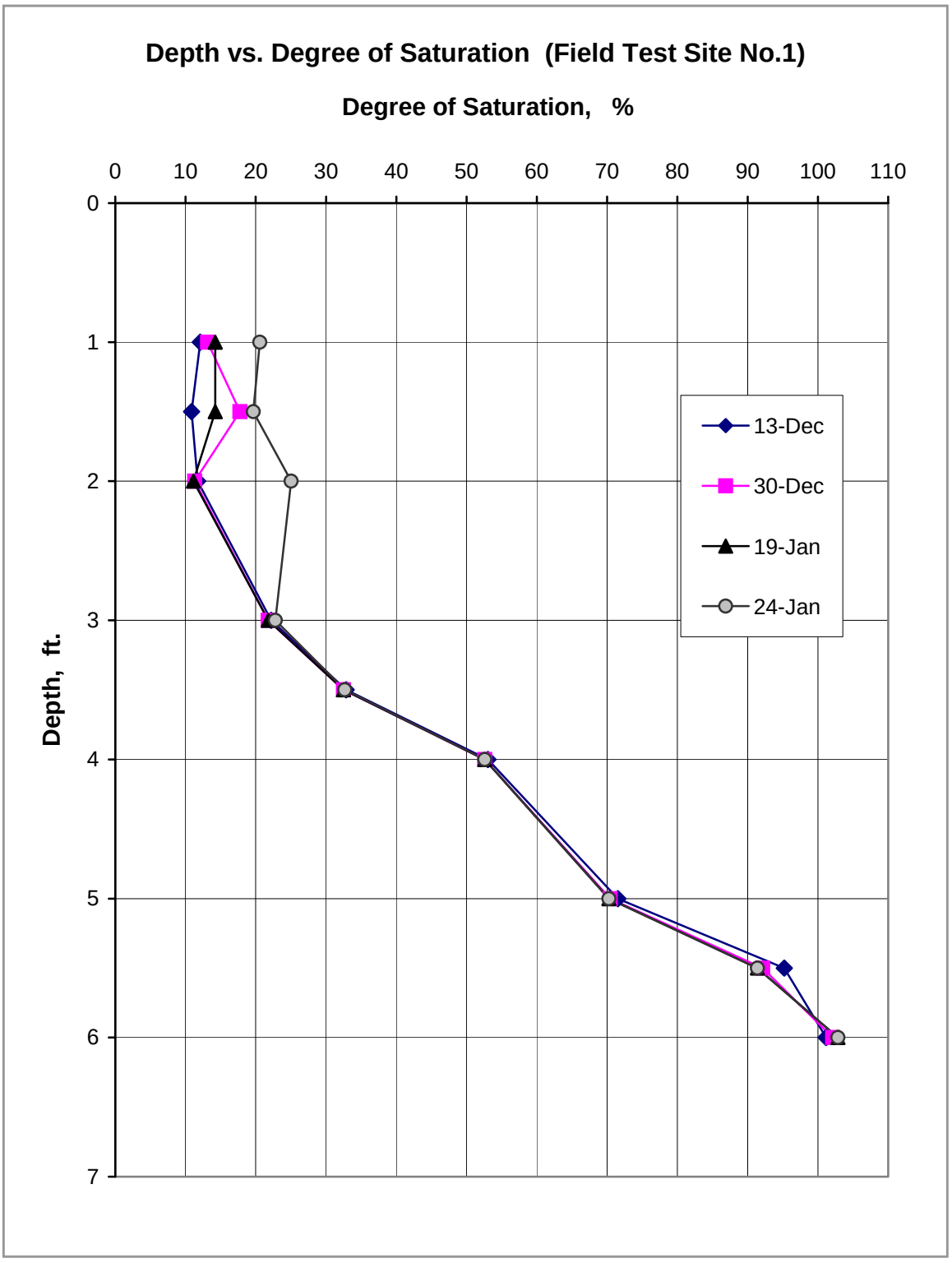


Figure C.14 Degree of Saturation vs. Depth (Field Test Site No.1 -- Winter 2000/2001)

Table C.13 Moisture Profile of SR-70 Soils (Field Test Site No. 2)

Date (Mon/Day)	Degree of Saturation (%) (Below the Ground Surface)						Rainfall (inch)
	5.5 ft.	5.0 ft.	4.0 ft.	3.5 ft.	2.5 ft.	1.5 ft.	
12-1	28.89	46.51	61.08	34.15	8.52	15.66	0.00
12-2	28.68	46.51	60.85	34.15	8.52	15.66	0.00
12-3	28.68	46.31	60.85	34.15	8.52	15.42	0.00
12-4	28.47	46.31	60.85	34.15	8.52	15.42	0.00
12-5	28.47	46.31	60.62	34.15	8.52	15.42	0.00
12-6	28.27	46.12	60.62	33.90	8.52	15.42	0.00
12-7	28.27	46.12	60.62	33.90	8.52	15.42	0.00
12-8	28.27	46.12	60.39	33.90	8.52	15.42	0.00
12-9	28.06	46.12	60.39	33.90	8.31	15.42	0.00
12-10	29.31	48.28	60.39	33.90	8.31	15.42	0.00
12-11	28.06	45.92	60.39	33.90	8.31	15.19	0.00
12-12	28.06	45.92	60.39	33.90	8.31	15.19	0.00
12-13	28.06	45.92	60.39	33.90	8.31	15.19	0.00
12-14	27.85	45.92	59.94	33.65	8.31	18.46	0.15
12-15	27.85	45.92	59.94	33.65	8.31	18.70	0.00
12-16	27.64	45.73	59.94	33.65	8.72	18.70	0.00
12-17	27.64	45.73	59.71	33.65	9.53	18.23	0.00
12-18	27.64	45.73	59.71	33.65	9.93	18.23	0.00
12-19	27.64	45.73	59.71	33.65	10.14	17.99	0.00
12-20	27.64	45.73	59.71	33.65	10.34	17.76	0.00
12-21	27.44	45.53	59.71	33.65	10.34	17.76	0.00
12-22	27.44	45.53	59.48	33.65	10.54	17.76	0.00
12-23	27.44	45.53	59.48	33.65	10.54	17.53	0.00
12-24	27.44	45.53	59.48	33.65	10.54	17.53	0.00
12-25	27.44	45.53	59.48	33.65	10.54	17.53	0.00
12-26	27.44	45.53	59.48	33.65	10.54	17.53	0.00
12-27	27.44	45.53	59.48	33.65	10.34	17.29	0.00
12-28	27.44	45.53	59.48	33.65	10.34	17.06	0.00
12-29	27.44	45.53	59.48	33.65	10.34	18.23	0.21
12-30	27.44	45.53	59.48	33.65	11.35	20.10	0.00
12-31	27.23	45.33	59.25	34.15	12.16	20.10	0.00

Table C.14 Moisture Profile of SR-70 Soils (Field Test Site No. 2 Year 2001)

Deformation at Drained Condition, 1-L1			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.1721	0.3599	0.1879
4	0.2503	0.4608	0.2105
5	0.2875	0.4880	0.2004
10	0.3777	0.5676	0.1899
25	0.5125	0.6954	0.1829
50	0.6254	0.8039	0.1785
100	0.7475	0.9234	0.1759
200	0.8892	1.0647	0.1755
500	1.1378	1.3133	0.1755
1000	1.3168	1.4892	0.1724
2000	1.5255	1.6962	0.1707
5000	1.7185	1.8918	0.1733
10000	1.8857	2.0533	0.1676
15000	2.0253	2.1894	0.1641
20000	2.1246	2.2865	0.1619
25000	2.2086	2.3710	0.1624
30000	2.2795	2.4388	0.1593

Deformation with W.T. at 0.0 in., 1-L2			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.1528	0.3090	0.1562
4	0.2066	0.3580	0.1514
5	0.2258	0.3733	0.1475
10	0.3252	0.4477	0.1225
25	0.4788	0.6057	0.1269
50	0.6144	0.7444	0.1300
100	0.7698	0.9531	0.1834
200	0.9216	1.1221	0.2004
1000	1.2940	1.4980	0.2039
2000	1.4516	1.6699	0.2184
10000	1.8839	2.0927	0.2087
25000	2.1972	2.3902	0.1930
30000			

Deformation with W.T. at +12 in., 1-L3			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.0591	0.2683	0.2092
4	0.0591	0.2814	0.2223
5	0.0569	0.2797	0.2227
10	0.0652	0.2889	0.2236
25	0.0714	0.2902	0.2188
50	0.0775	0.2906	0.2131
100	0.0845	0.3002	0.2157
200	0.0906	0.3059	0.2153
500	0.1016	0.3199	0.2184
1000	0.1278	0.3514	0.2236
2000	0.1585	0.3860	0.2276
5000	0.2398	0.4648	0.2249
30000	0.6626	0.8831	0.2206

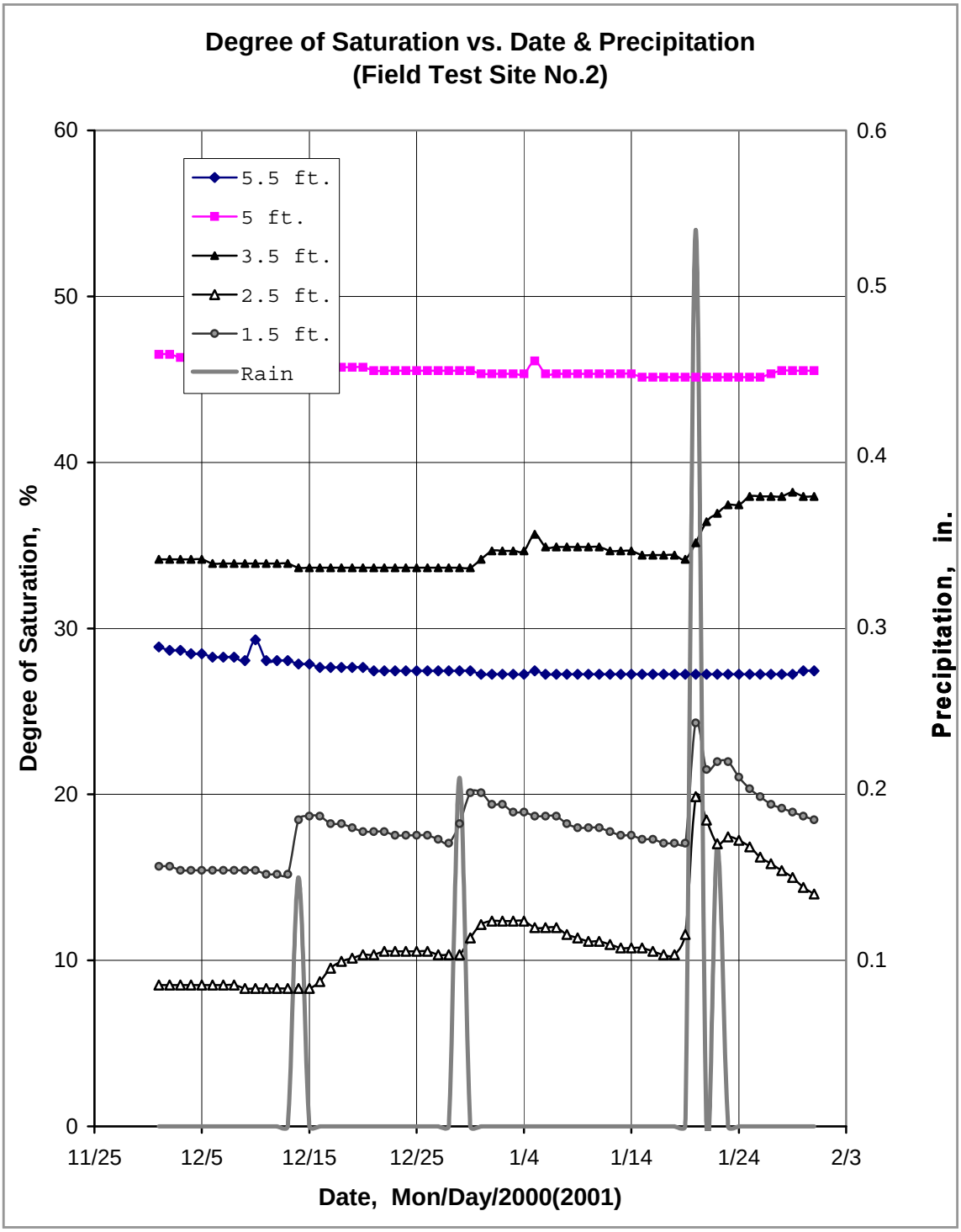


Figure C.15 Degree of Saturation vs. Date and Precipitation (Field Test Site No.2 -- Winter 2000/2001)

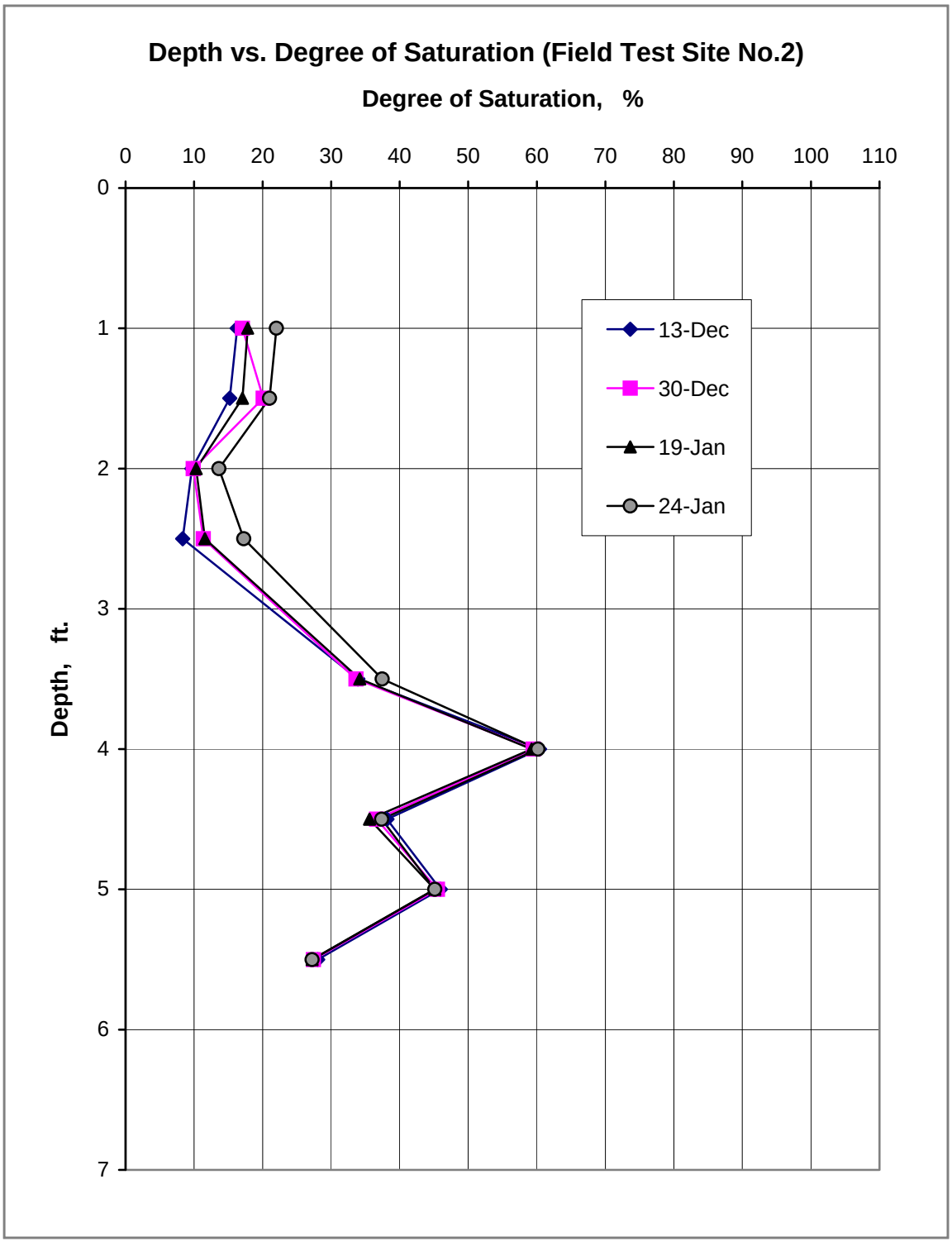


Figure C.16 Degree of Saturation vs. Depth (Field Test Site No.2 -- Winter 2000/2001)

APPENDIX D

LABORATORY RESILIENT MODULUS TEST RESULTS

D.1 Levy County A-3 Soil

Table D.1 Triaxial test results A-3 Levy County after drying (Sample # A3LEVYD1)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample #	A3LEVYD1			A-3, Levy County			
Moisture	8.08%			Opt. Moist.	9.50%		
Lab. Den.	106.0	pcf		Opt. Den.	106.2	pcf	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.374	46.169	356.429	0.0001406	0.0001551	328.286	297.618
103.42	0.542	66.821	377.081	0.0002054	0.0002213	325.253	301.982
103.42	0.821	101.216	411.476	0.0003033	0.0003258	333.674	310.695
68.95	0.261	32.218	239.068	0.0001186	0.0001379	271.703	233.647
68.95	0.372	45.886	252.736	0.0001699	0.0001924	270.015	238.487
68.95	0.542	66.810	273.660	0.0002444	0.0002747	273.369	243.202
68.95	0.821	101.261	308.111	0.0003502	0.0003911	289.139	258.943
34.47	0.150	18.469	121.879	8.411E-05	0.000111	219.593	166.449
34.47	0.262	32.337	135.747	0.000151	0.0001864	214.185	173.510
34.47	0.374	46.133	149.543	0.0002151	0.0002635	214.484	175.076
34.47	0.541	66.685	170.095	0.0002968	0.0003568	224.689	186.898
13.79	0.150	18.448	59.818	0.0001189	0.0001573	155.132	117.294
13.79	0.261	32.220	73.590	0.0001941	0.0002594	166.026	124.204
13.79	0.374	46.118	87.488	0.0002475	0.0003363	186.341	137.122

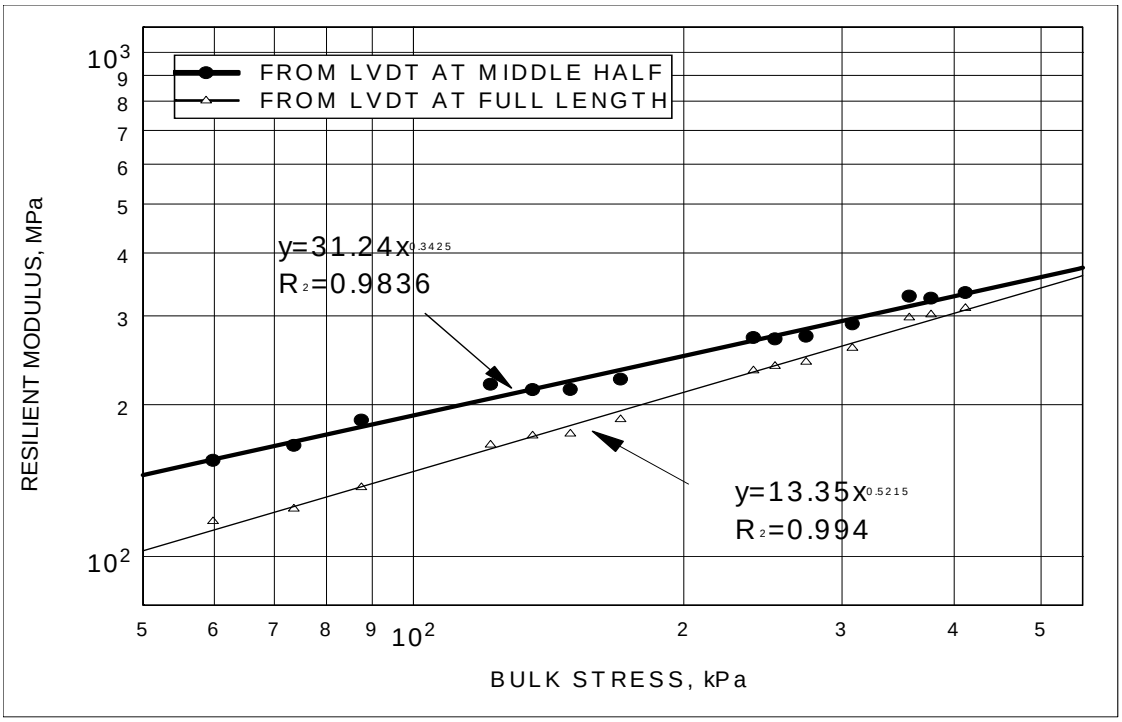


Figure D.1 Resilient Modulus vs. Bulk Stress for A-3 Levy County after drying (Sample # A3LEVYD1)

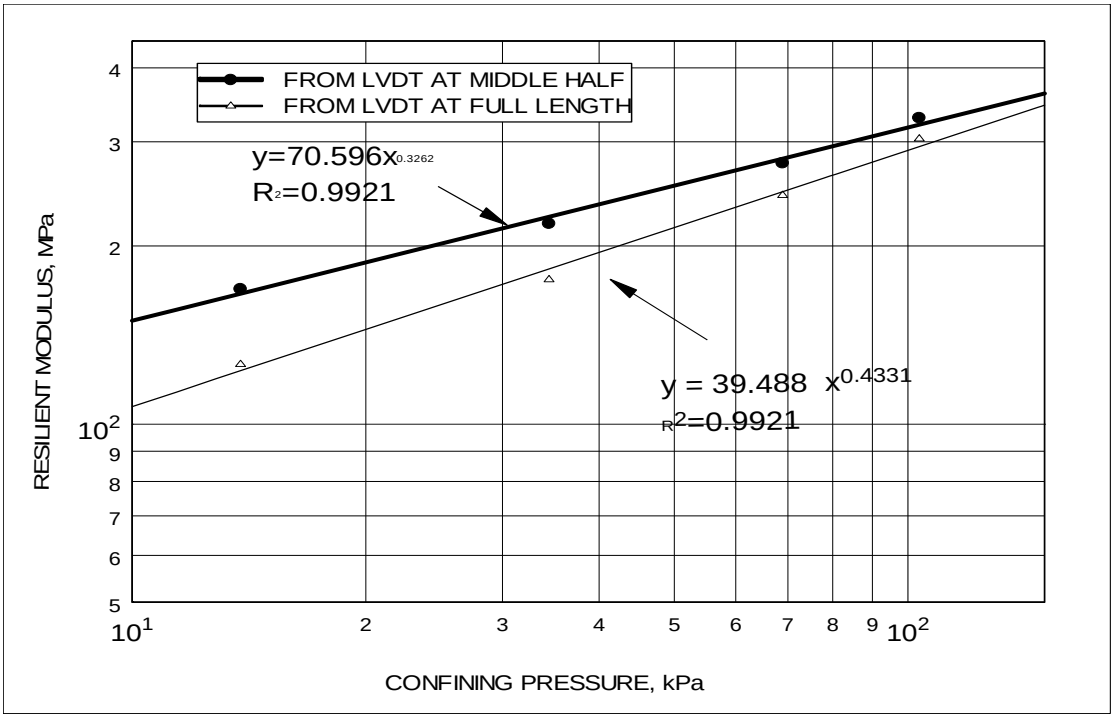


Figure D.2 Resilient Modulus vs. Confining Stress for A-3 Levy County after drying (Sample # A3LEVYD1)

Table D.2 Triaxial test results of A-3 Levy County after drying (Sample # A3LEVYD2)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample No.	A3LEVYD2			Levy A-3			
Moisture	4.30%			Opt. Moist.	9.60%		
Lab. Den.	105.8	pcf		Opt. Den.	106.2	pcf	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.373	46.046	356.306	0.0001396	0.0001629	329.813	282.690
103.42	0.541	66.768	377.028	0.0002011	0.0002277	331.936	293.178
103.42	0.820	101.187	411.447	0.000293	0.0003316	345.332	305.159
68.95	0.262	32.292	239.142	0.0001194	0.0001495	270.343	215.958
68.95	0.374	46.148	252.998	0.0001663	0.0002088	277.453	221.040
68.95	0.541	66.787	273.637	0.0002429	0.0002885	275.003	231.499
68.95	0.821	101.210	308.060	0.0003442	0.0004014	294.037	252.144
34.47	0.150	18.507	121.917	8.997E-05	0.0001273	205.695	145.340
34.47	0.261	32.220	135.630	0.0001579	0.0002135	204.073	150.900
34.47	0.374	46.150	149.560	0.0002234	0.0002889	206.598	159.729
34.47	0.541	66.715	170.125	0.0003023	0.0003775	220.674	176.737
13.79	0.149	18.394	59.764	0.0001213	0.0002083	151.583	88.283
13.79	0.261	32.190	73.560	0.0002005	0.0003081	160.581	104.477
13.79	0.374	46.124	87.494	0.0002587	0.0003753	178.280	122.890

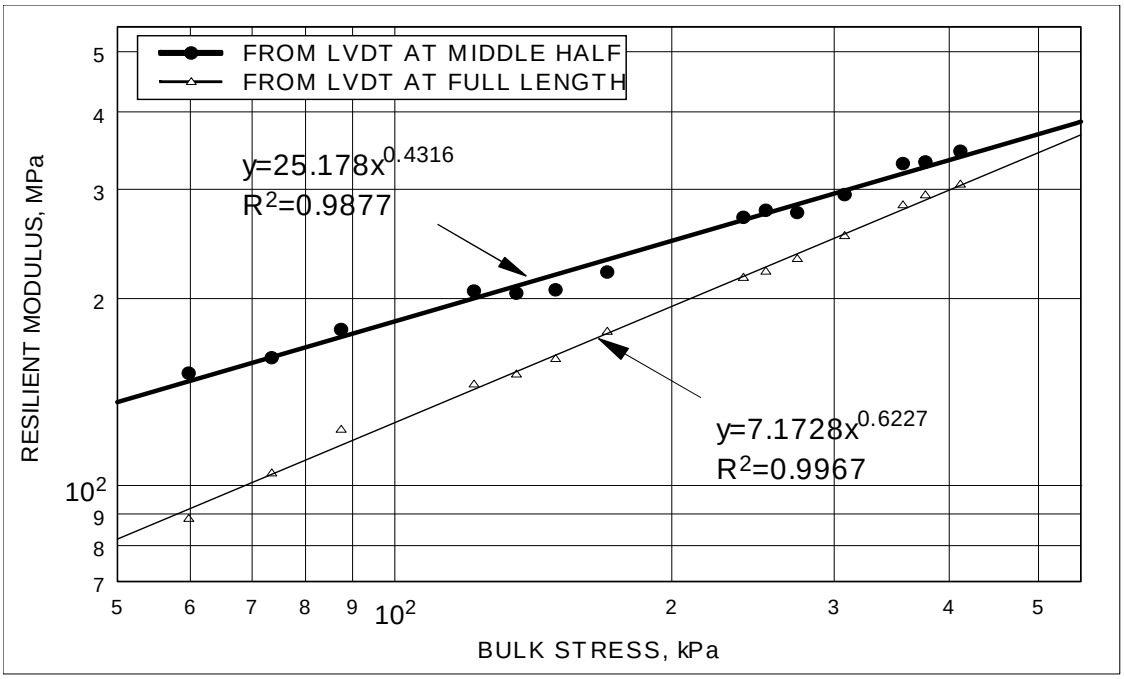


Figure D.3 Resilient Modulus vs. Bulk Stress for A-3 Levy County after drying (Sample # A3LEVYD2)

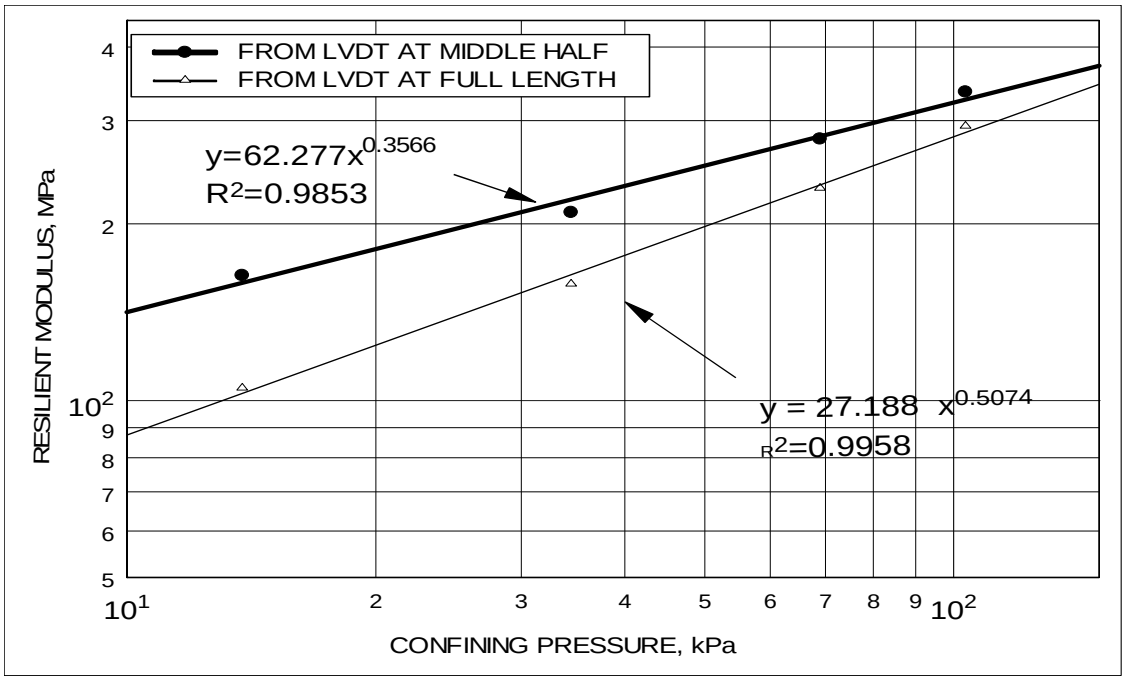


Figure D.4 Resilient Modulus vs. Confining Stress for A-3 Levy County after drying (Sample # A3LEVYD2)

Table D.3 Triaxial test results of A-3 Levy County at optimum condition (A3LEVYO1)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample No:	A3LEVYO1			A-3			
				levy county			
Lab. Moist.	9.50%			Opt. Moist.	9.50%		
Lab. Den.	105.6	pcf		Opt. Den.	106.2	pcf	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			
Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.375	46.219	356.479	0.0001553	0.000178	297.523	259.624
103.42	0.542	66.792	377.052	0.0002251	0.0002551	296.728	261.841
103.42	0.822	101.449	411.709	0.0003338	0.0003769	303.951	269.150
68.95	0.262	32.314	239.164	0.0001319	0.000149	244.945	216.928
68.95	0.375	46.205	253.055	0.000191	0.0002159	241.919	214.005
68.95	0.543	66.945	273.795	0.0002737	0.0003115	244.627	214.922
68.95	0.822	101.392	308.242	0.0003877	0.0004402	261.540	230.326
34.47	0.152	18.774	122.184	9.851E-05	0.0001169	190.577	160.618
34.47	0.263	32.460	135.870	0.000177	0.0002045	183.340	158.726
34.47	0.377	46.440	149.850	0.0002537	0.000293	183.060	158.512
34.47	0.544	67.121	170.531	0.0003395	0.0003959	197.732	169.553
13.79	0.151	18.685	60.055	0.0001448	0.0001761	129.007	106.116
13.79	0.265	32.673	74.043	0.0002299	0.0002822	142.107	115.776
13.79	0.382	47.058	88.428	0.0003069	0.0003771	153.331	124.775

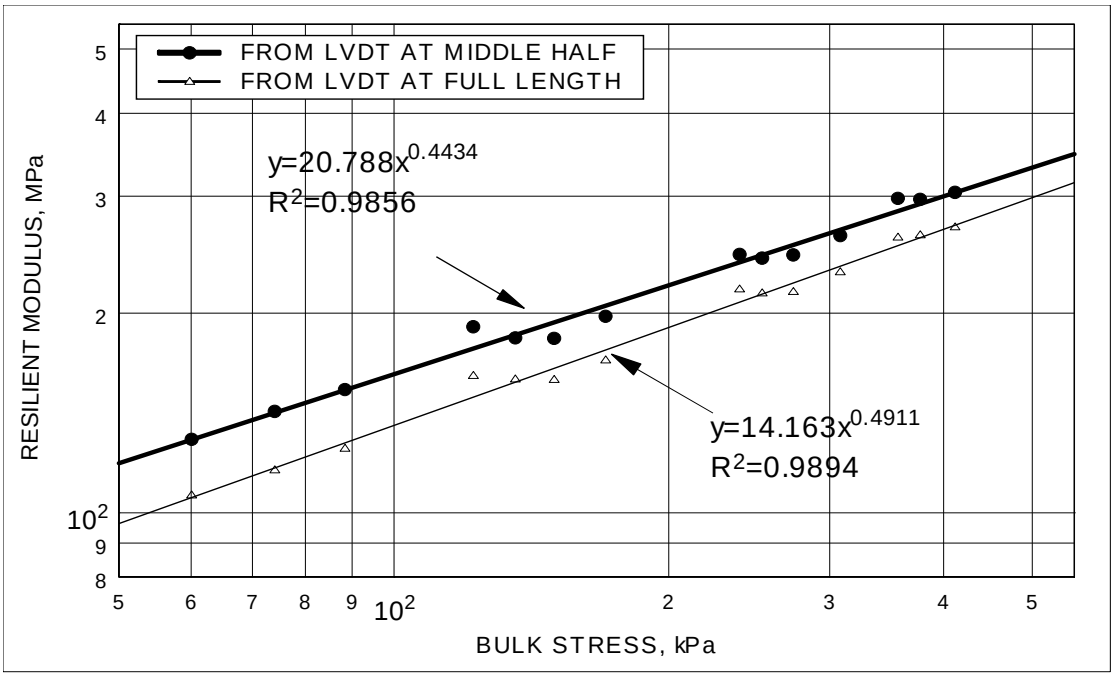


Figure D.5 Resilient Modulus vs. Bulk Stress for A-3 Levy County at optimum moisture (Sample # A3LEVYO1)

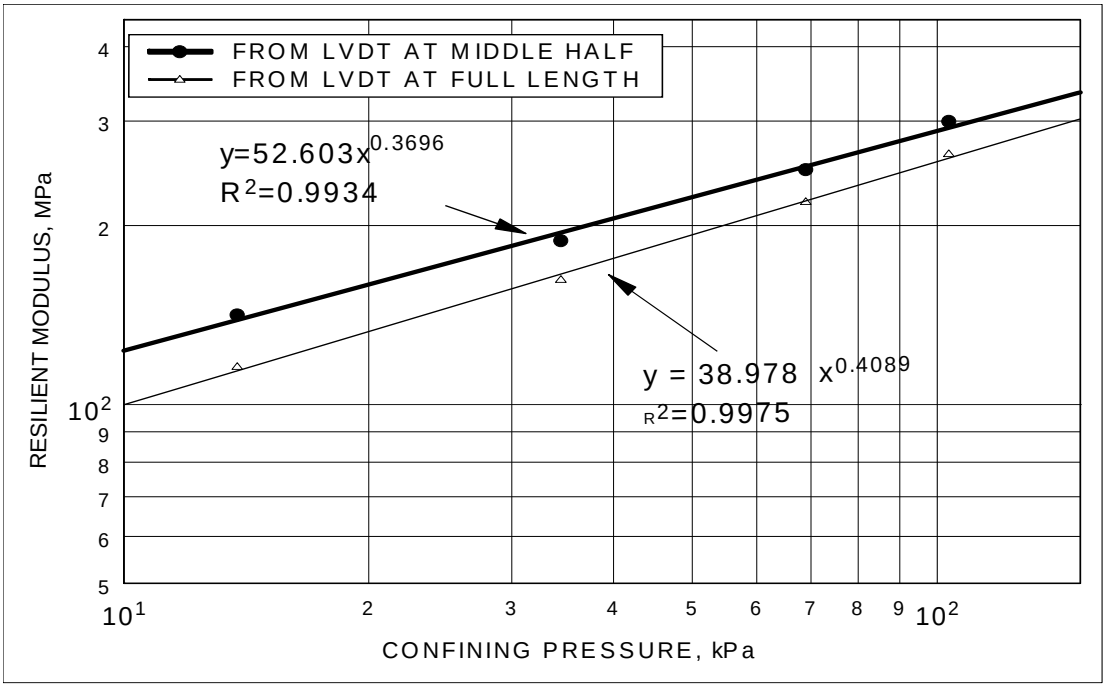


Figure D.6 Resilient Modulus vs. Confining Stress for A-3 Levy County at optimum moisture (Sample # A3LEVYO1)

Table D.4 Triaxial test results of A-3 Levy County at optimum condition (Sample # A3LEVYO2)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample No.	A3LEVYO2			Levy County A-3			
Lab. Moist.	9.60%			Opt. Moist.	9.60%		
Lab. Den.	105.8			Opt. Den.	106.2		
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.373	46.022	356.282	0.0001398	0.0001569	329.230	293.408
103.42	0.541	66.772	377.032	0.0002034	0.0002217	328.300	301.173
103.42	0.822	101.390	411.650	0.0003034	0.0003312	334.226	306.167
68.95	0.262	32.320	239.170	0.0001227	0.0001381	263.360	234.020
68.95	0.373	46.048	252.898	0.0001753	0.0001987	262.694	231.804
68.95	0.541	66.791	273.641	0.0002498	0.0002829	267.427	236.096
68.95	0.822	101.363	308.213	0.0003599	0.0004029	281.649	251.581
34.47	0.150	18.494	121.904	9.687E-05	0.0001349	190.917	137.117
34.47	0.262	32.309	135.719	0.0001687	0.000226	191.466	142.950
34.47	0.374	46.111	149.521	0.0002379	0.0003053	193.856	151.032
34.47	0.542	66.813	170.223	0.0003161	0.0003969	211.359	168.350
13.79	0.150	18.535	59.905	0.0001401	0.0002271	132.273	81.621
13.79	0.262	32.294	73.664	0.0002149	0.0003322	150.248	97.201
13.79	0.374	46.101	87.471	0.0002846	0.0004204	162.003	109.671

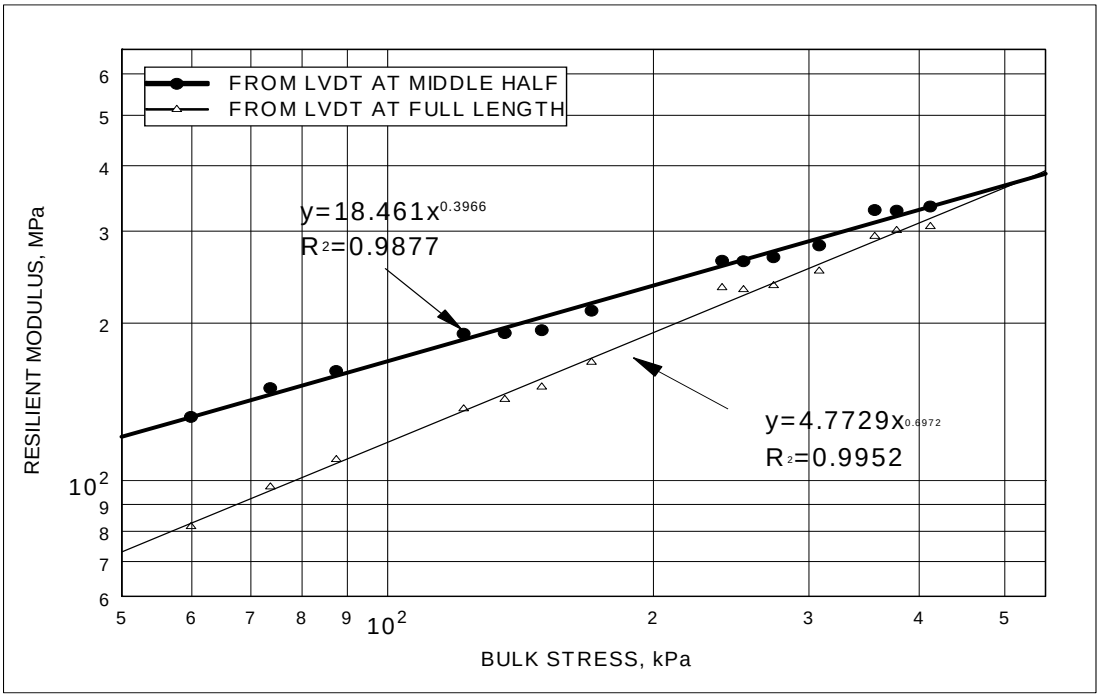


Figure D.7 Resilient Modulus vs. Bulk Stress for A-3 Levy County at optimum moisture (Sample # A3LEVYO2)

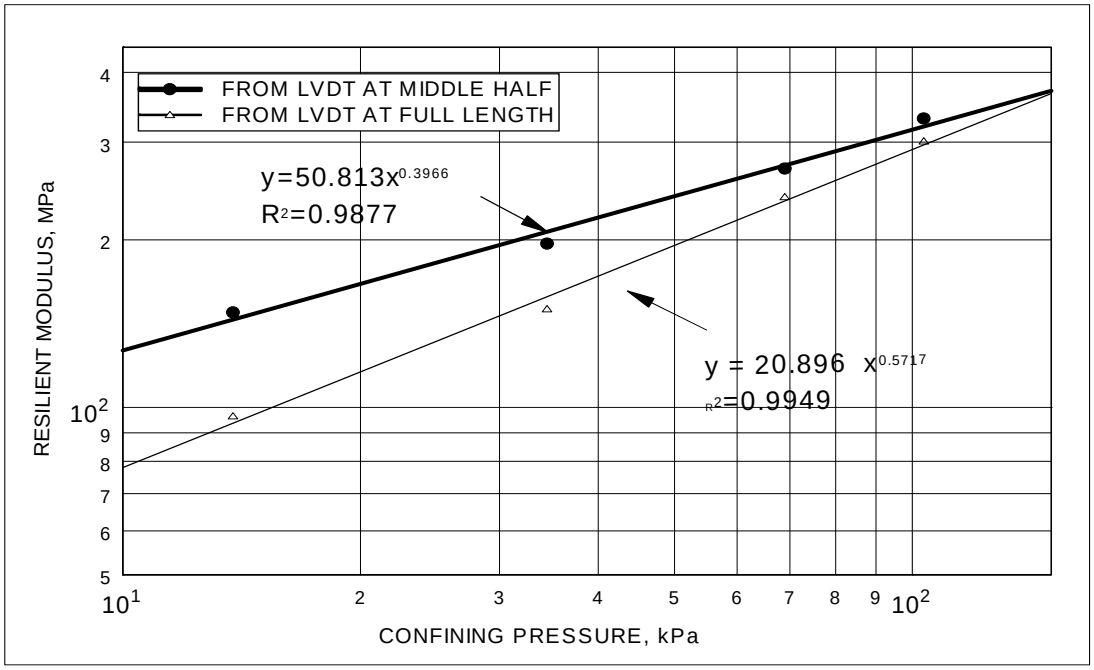


Figure D.8 Resilient Modulus vs. Confining Stress for A-3 Levy County at optimum moisture (Sample # A3LEVYO2)

Table D.5 Triaxial test results of A-3 Levy County after soaking (Sample # A3LEVYS1)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample No.	A3LEVYS1			A-3			
				Levy county			
Moisture	13.47%			Opt. Moist.	9.50%		
Lab. Den.	105.8	pcf		Opt. Den.	106.2	pcf	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.373	46.058	356.318	7.842E-05	0.0001538	587.313	299.393
103.42	0.542	66.804	377.064	0.0001415	0.0002172	472.092	307.595
103.42	0.821	101.295	411.555	0.0002346	0.0003247	431.812	311.971
68.95	0.261	32.228	239.078	5.446E-05	0.000128	591.726	251.813
68.95	0.374	46.130	252.980	0.0001112	0.0001851	414.943	249.244
68.95	0.542	66.808	273.658	0.0001899	0.0002652	351.730	251.887
68.95	0.822	101.333	308.183	0.0003027	0.0003949	334.802	256.582
34.47	0.150	18.467	121.877	3.654E-05	0.0001019	505.423	181.209
34.47	0.261	32.152	135.562	0.0001069	0.0001769	300.873	181.761
34.47	0.373	45.988	149.398	0.0001743	0.0002512	263.910	183.055
34.47	0.541	66.726	170.136	0.0002663	0.0003542	250.572	188.380
13.79	0.150	18.441	59.811	7.67E-05	0.0001472	240.431	125.313
13.79	0.262	32.290	73.660	0.0001686	0.0002512	191.554	128.531
13.79	0.374	46.111	87.481	0.0002408	0.0003404	191.499	135.451

Note: soaked one month, three times conditioning

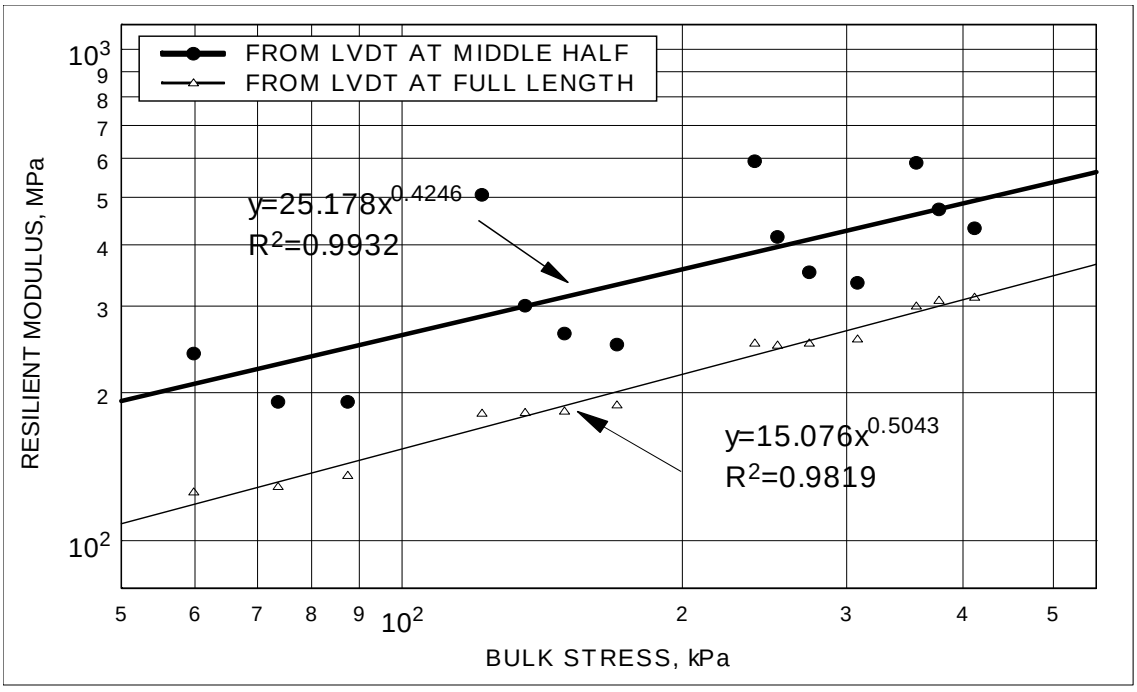


Figure D.9 Resilient Modulus vs. Bulk Stress for A-3 Levy County after soaking (Sample # A3LEVYS1)

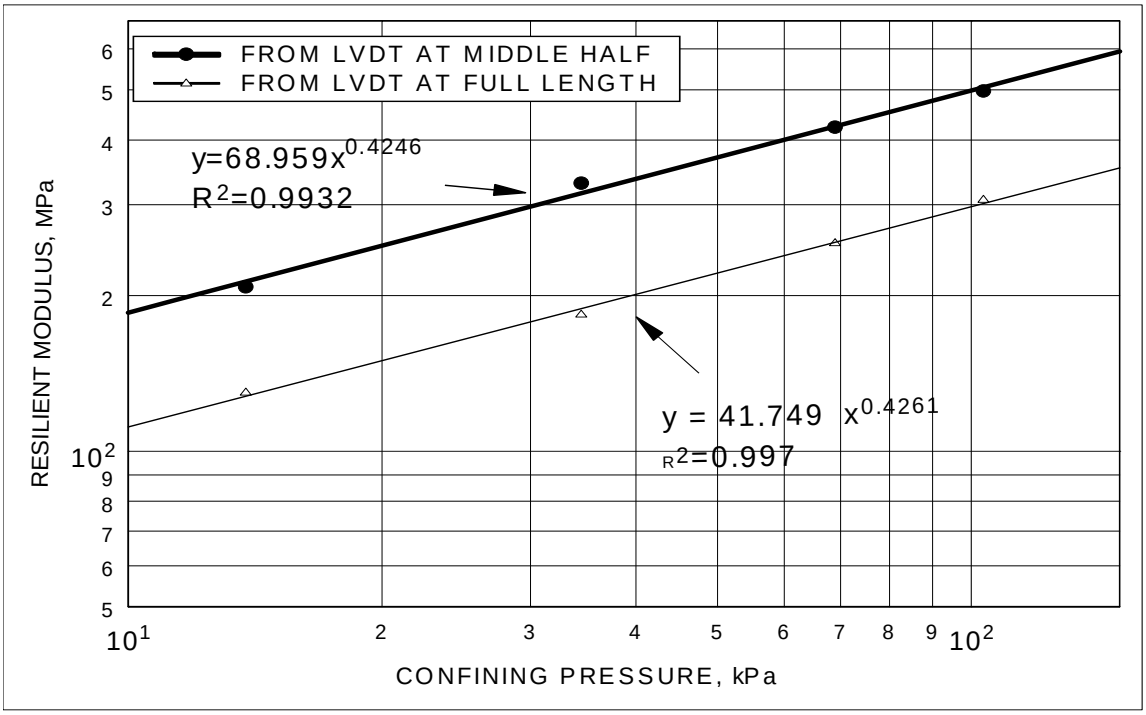


Figure D.10 Resilient Modulus vs. Confining Stress for A-3 Levy County after soaking (Sample # A3LEVYS1)

Table D.6 Triaxial test results of A-3 Levy County after soaking (Sample # A3LEVYS2)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample No.	A3LEVYS2			Levy County A-3			
Moisture	15%			Opt. Moist.	9.60%		
Lab. Den.	105.4	pcf		Opt. Den.	106.2	pcf	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.375	46.200	356.460	0.0001441	0.000189	320.620	244.499
103.42	0.541	66.736	376.996	0.0002055	0.000268	324.819	248.987
103.42	0.821	101.257	411.517	0.0003016	0.0003908	335.697	259.076
68.95	0.261	32.233	239.083	0.0001224	0.0001732	263.396	186.074
68.95	0.374	46.126	252.976	0.0001774	0.000243	260.070	189.790
68.95	0.541	66.709	273.559	0.0002539	0.0003411	262.751	195.589
68.95	0.821	101.254	308.104	0.0003714	0.0004891	272.598	207.025
34.47	0.150	18.551	121.961	0.0001005	0.0001497	184.604	123.882
34.47	0.261	32.229	135.639	0.0001732	0.0002549	186.057	126.446
34.47	0.373	45.990	149.400	0.0002442	0.000351	188.300	131.032
34.47	0.541	66.777	170.187	0.0003308	0.0004697	201.890	142.171
13.79	0.151	18.577	59.947	0.0001579	0.0002635	117.663	70.500
13.79	0.261	32.222	73.592	0.0002391	0.0003842	134.783	83.876
13.79	0.375	46.201	87.571	0.0003497	0.000516	132.109	89.534

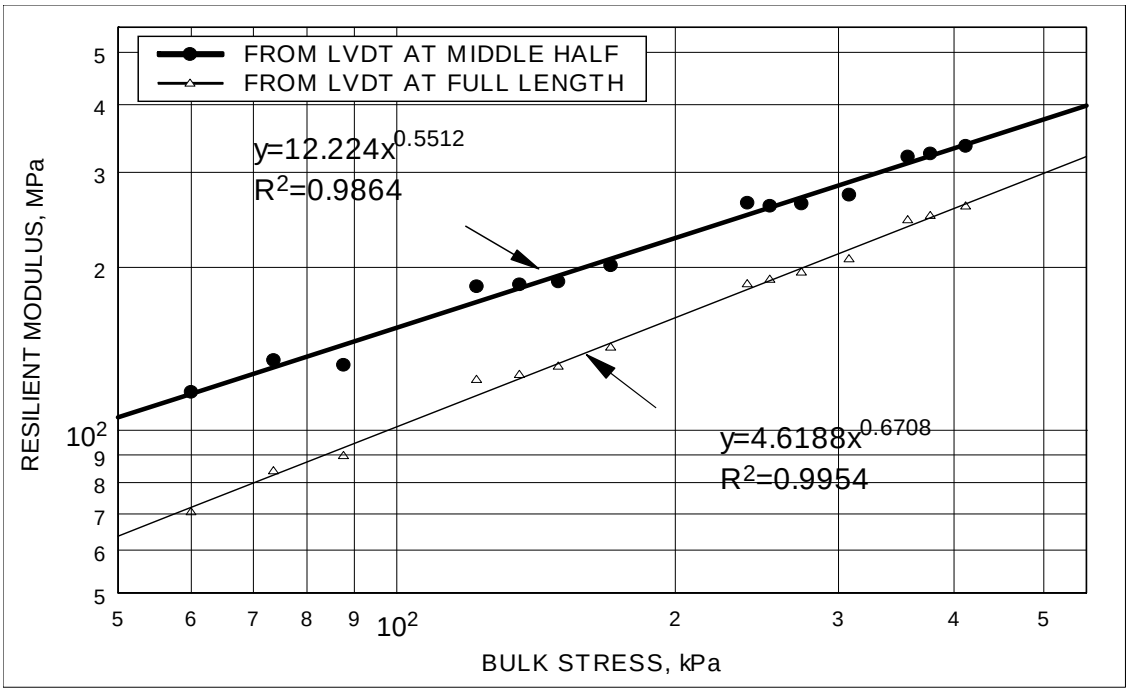


Figure D.11 Resilient Modulus vs. Bulk Stress for A-3 Levy County after soaking (Sample # A3LEVYS2)

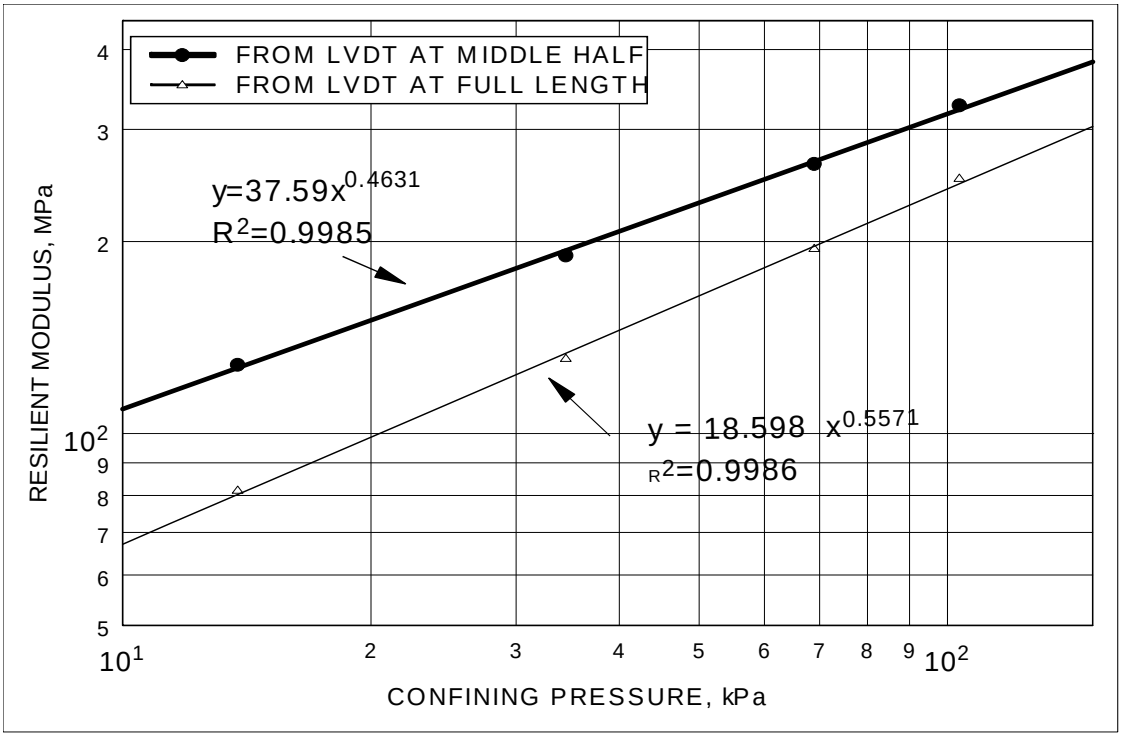


Figure D.12 Resilient Modulus vs. Confining Stress for A-3 Levy County after soaking (Sample # A3LEVYS2)

Table D.7 Triaxial test results of A-3 Levy County after soaking (Sample # A3LEVYS3)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample No.	A3LEVYS3			Levy County, A-3			
Moisture	15.27%			Opt. Moist.	9.60%		
Lab. Den.	105.1	pcf		Opt. Den.	106.2	pcf	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.373	46.067	356.327	0.0001275	0.000187	361.171	246.326
103.42	0.542	66.914	377.174	0.0001925	0.0002639	347.549	253.523
103.42	0.822	101.365	411.625	0.0002928	0.0003861	346.138	262.536
68.95	0.263	32.454	239.304	0.0001039	0.000178	312.254	182.361
68.95	0.375	46.264	253.114	0.0001619	0.0002501	285.844	184.947
68.95	0.543	66.933	273.783	0.0002427	0.0003465	275.799	193.192
68.95	0.823	101.475	308.325	0.0003542	0.0004854	286.486	209.043
34.47	0.151	18.596	122.006	7.205E-05	0.0001627	258.100	114.317
34.47	0.263	32.413	135.823	0.0001524	0.0002719	212.727	119.206
34.47	0.374	46.183	149.593	0.0002234	0.0003723	206.743	124.043
34.47	0.542	66.885	170.295	0.0003111	0.0004947	214.985	135.206
13.79	0.151	18.569	59.939	0.0001193	0.0002648	155.685	70.127
13.79	0.262	32.354	73.724	0.000207	0.0004197	156.294	77.087
13.79	0.375	46.262	87.632	0.0002789	0.0005343	165.883	86.579

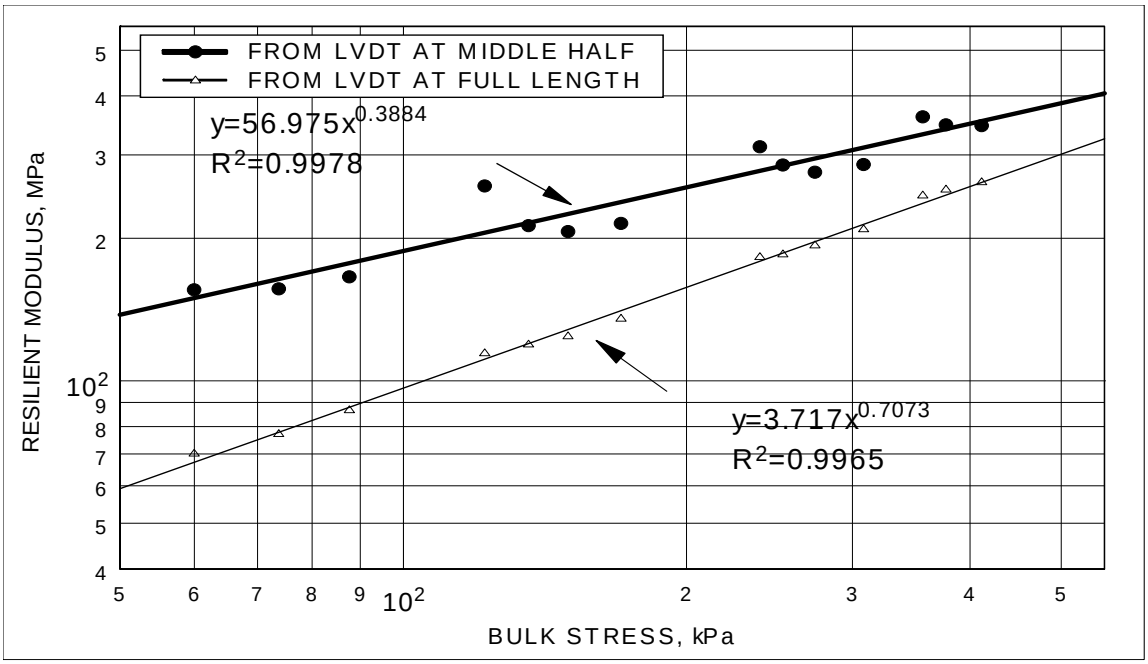


Figure D.13 Resilient Modulus vs. Bulk Stress for A-3 Levy County after soaking (Sample # A3LEVYS3)

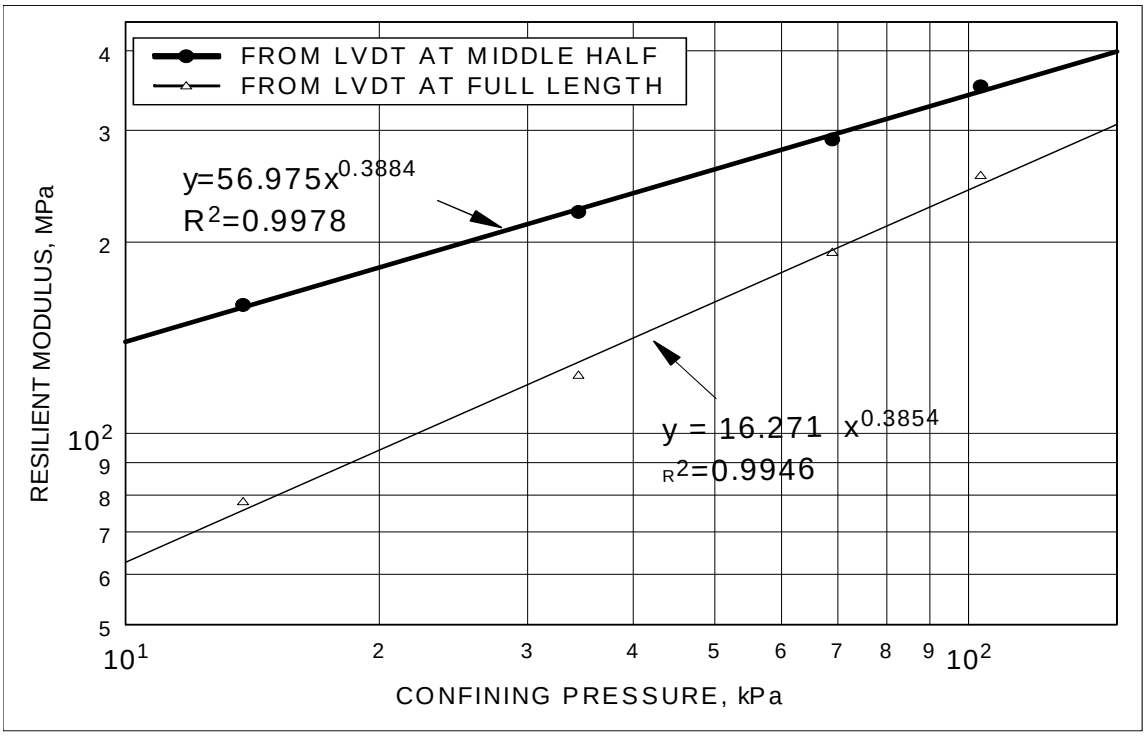


Figure D.14 Resilient Modulus vs. Confining Stress for A-3 Levy County after soaking (Sample # A3LEVYS3)

D.2 SR70 A-3 8% Soil

Table D.8 Triaxial test results of A-3 SR70 after drying (Sample # A3SR70D1)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample No.	A3SR70D1			A-3			
				SR 70			
Moisture	7.82%			Opt. Moist.	11.40%		
Lab. Den.	111.6	pcf		Opt. Den.	112.1	pcf	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.377	46.515	356.775	0.0001734	0.0001879	268.259	247.581
103.42	0.545	67.182	377.442	0.000247	0.0002663	271.997	252.275
103.42	0.826	101.834	412.094	0.000363	0.0003945	280.539	258.133
68.95	0.266	32.778	239.628	0.0001472	0.0001726	222.680	189.927
68.95	0.378	46.655	253.505	0.0002136	0.0002437	218.468	191.460
68.95	0.547	67.454	274.304	0.0003034	0.0003465	222.360	194.699
68.95	0.826	101.936	308.786	0.000418	0.0004835	243.879	210.836
34.47	0.155	19.146	122.556	0.0001163	0.0001456	164.566	131.455
34.47	0.236	29.081	132.491	0.0001613	0.0001959	180.254	148.484
34.47	0.374	46.109	149.519	0.0002658	0.0003307	173.482	139.416
34.47	0.541	66.734	170.144	0.0003597	0.0004475	185.516	149.124
13.79	0.149	18.426	59.796	0.0001474	0.0001967	125.030	93.668
13.79	0.262	32.305	73.675	0.0002451	0.0003221	131.804	100.292
13.79	0.374	46.158	87.528	0.0003123	0.0004087	147.790	112.932

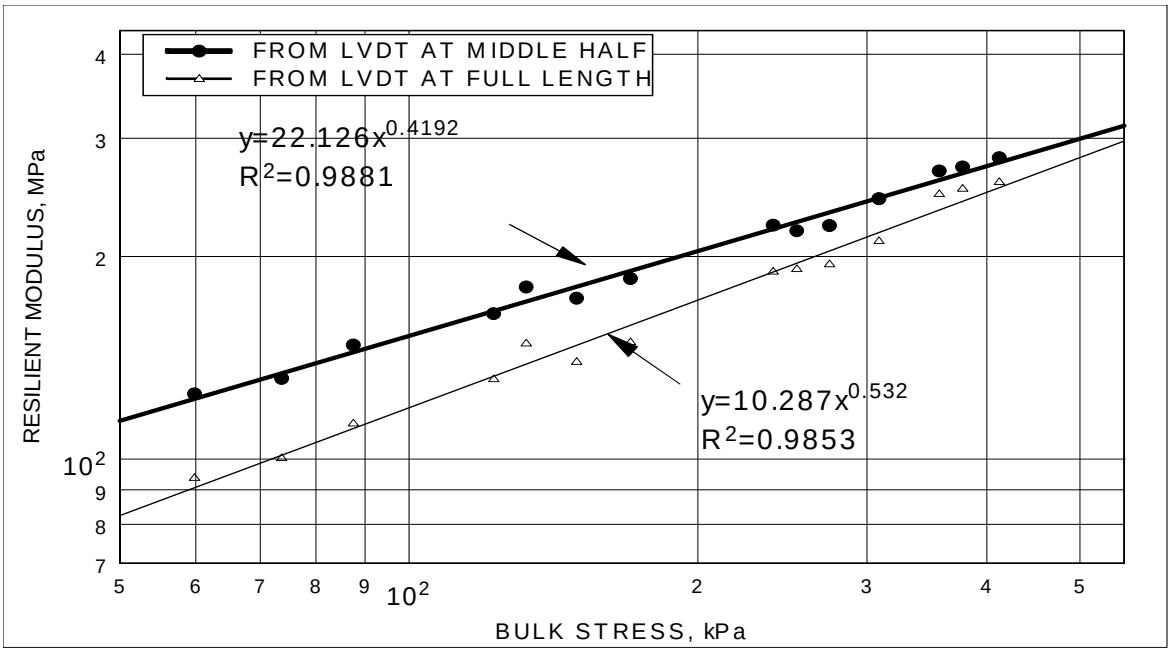


Figure D.15 Resilient Modulus vs. Bulk Stress for A-3 SR70 after drying (Sample # A3SR70D1)

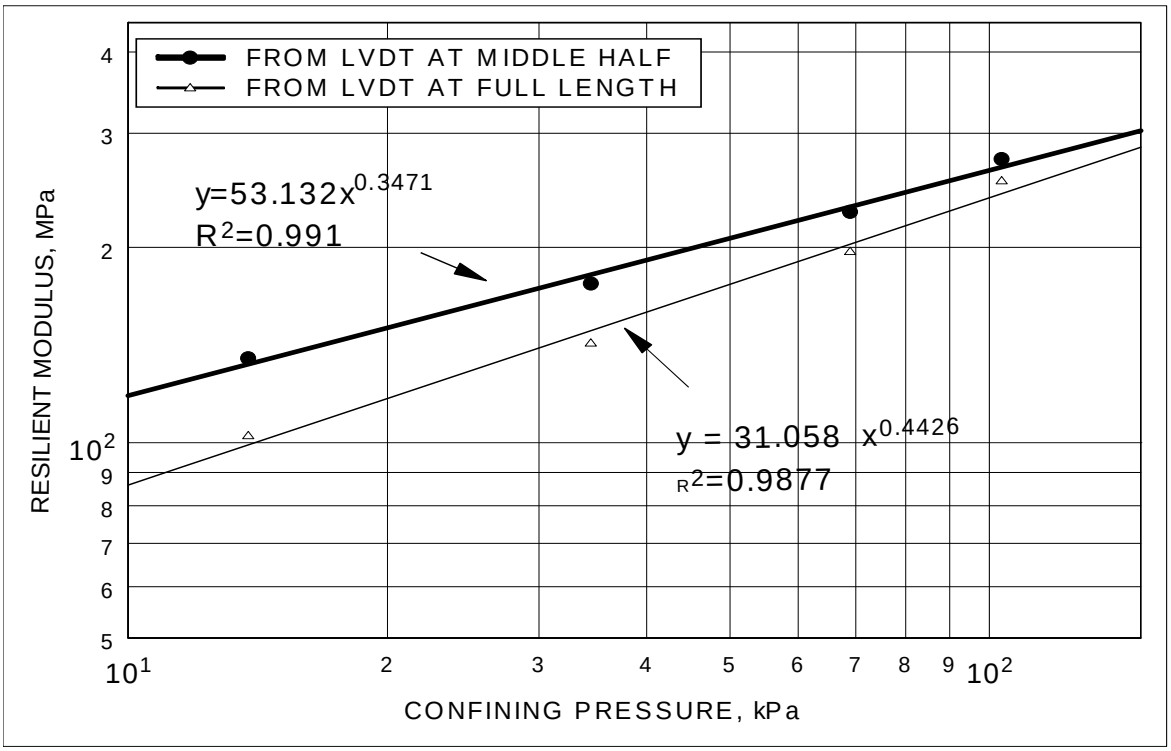


Figure D.16 Resilient Modulus vs. Confining Stress for A-3 SR70 after drying (Sample # A3SR70D1)

Table D.9 Triaxial test results of A-3 SR70 after drying (Sample # A3SR70D2)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample No.	A3SR70D2			A-3			
				SR 70			
Lab. Moist.	5.31%			Opt. Moist.	11.40%		
Lab. Den.	110.7	pcf		Opt. Den.	112.1	pcf	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.374	46.080	356.340	0.0001365	0.0001558	337.563	295.812
103.42	0.539	66.541	376.801	0.0001943	0.0002254	342.553	295.254
103.42	0.821	101.214	411.474	0.0002828	0.0003359	357.843	301.323
68.95	0.260	32.040	238.890	0.0001113	0.0001237	287.755	259.074
68.95	0.376	46.417	253.267	0.0001651	0.0001892	281.108	245.370
68.95	0.540	66.660	273.510	0.0002325	0.0002721	286.691	244.963
68.95	0.820	101.102	307.952	0.0003361	0.0003971	300.807	254.609
34.47	0.151	18.643	122.053	8.067E-05	9.868E-05	231.118	188.926
34.47	0.261	32.182	135.592	0.000145	0.0001773	222.013	181.490
34.47	0.374	46.077	149.487	0.000213	0.0002553	216.283	180.468
34.47	0.542	66.815	170.225	0.0002932	0.000359	227.893	186.140
13.79	0.150	18.471	59.841	0.0001072	0.000156	172.289	118.411
13.79	0.261	32.224	73.594	0.0001932	0.0002682	166.774	120.128
13.79	0.373	46.058	87.428	0.0002615	0.0003622	176.147	127.167

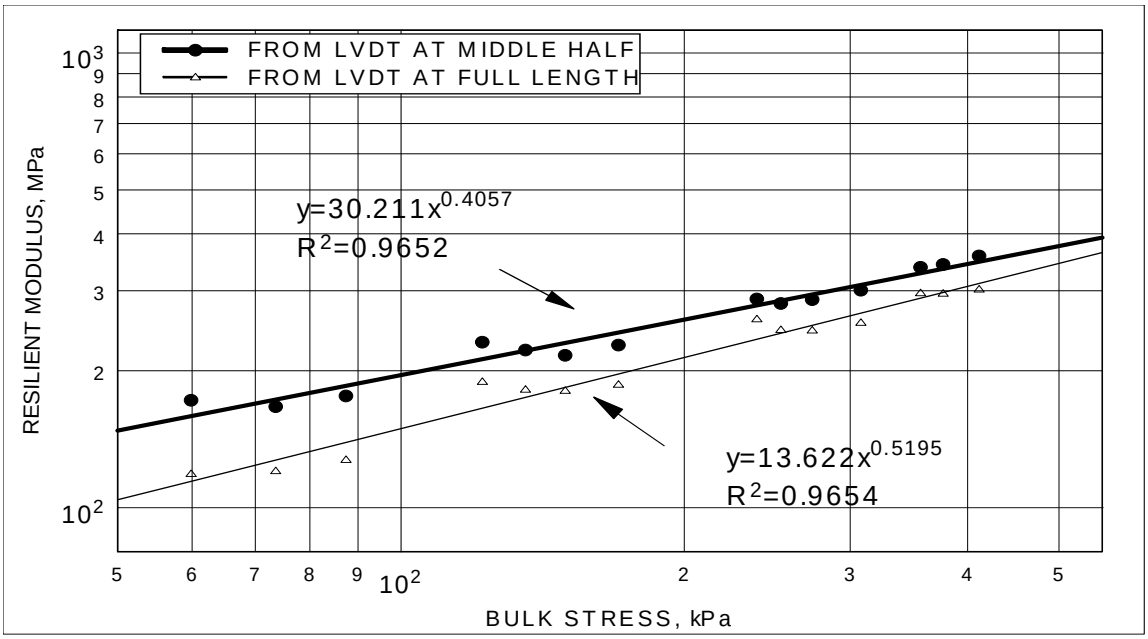


Figure D.17 Resilient Modulus vs. Bulk Stress for A-3 SR70 after drying (Sample # A3SR70D2)

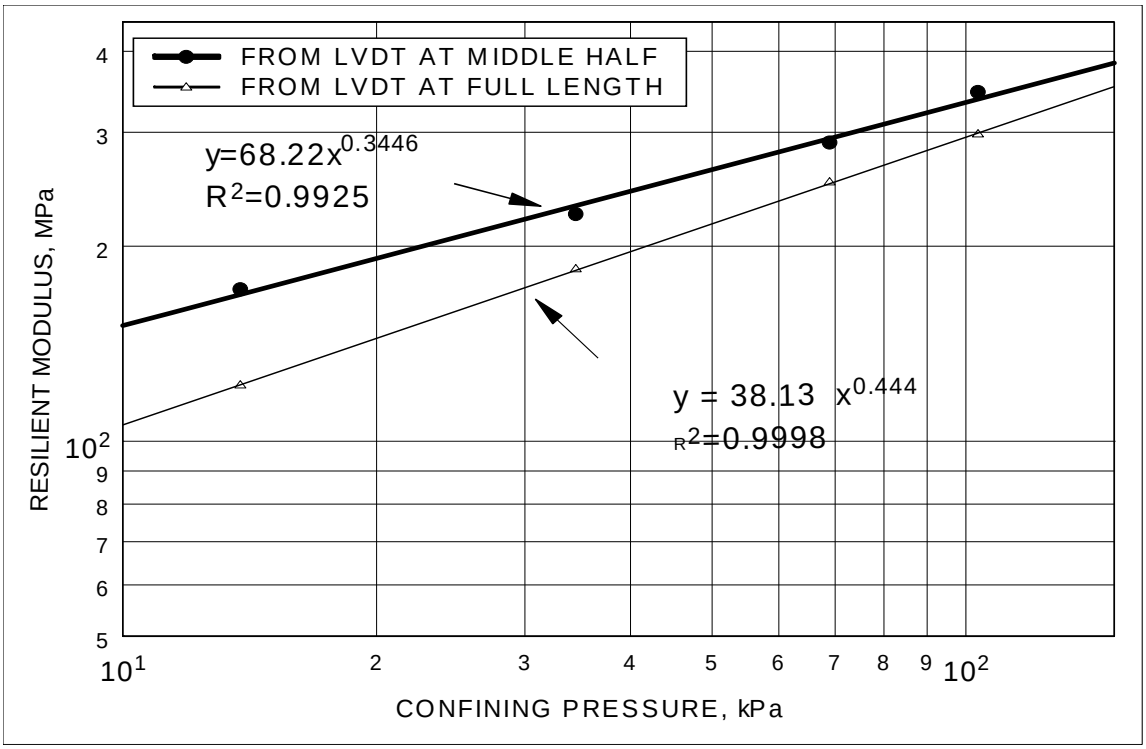


Figure D.18 Resilient Modulus vs. Confining Stress for A-3 SR70 after drying (Sample # A3SR70D2)

Table D.10 Triaxial test results of A-3 SR70 after drying (Sample # A3SR70D3)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample No.	A3SR70D3			A-3, SR70			
Lab. Moist.	4.48%			Opt. Moist.	11.40%		
Lab. Den.	108.8	pcf		Opt. Den.	112.1	pcf	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.374	46.114	356.374	0.0001136	0.0001284	405.987	359.112
103.42	0.541	66.757	377.017	0.0001705	0.0001859	391.616	359.023
103.42	0.821	101.206	411.466	0.000258	0.0002807	392.235	360.497
68.95	0.262	32.301	239.151	8.98E-05	0.0001105	359.705	292.240
68.95	0.374	46.109	252.959	0.0001305	0.0001532	353.386	300.990
68.95	0.542	66.838	273.688	0.0001963	0.0002249	340.459	297.140
68.95	0.821	101.282	308.132	0.0002982	0.0003344	339.660	302.886
34.47	0.149	18.367	121.777	5.808E-05	8.942E-05	316.212	205.414
34.47	0.262	32.320	135.730	0.0001126	0.000151	287.160	213.991
34.47	0.374	46.135	149.545	0.0001603	0.0002124	287.815	217.167
34.47	0.541	66.724	170.134	0.0002384	0.0002995	279.915	222.797
13.79	0.150	18.475	59.845	7.704E-05	0.0001747	239.797	105.731
13.79	0.262	32.267	73.637	0.0001463	0.0003066	220.508	105.243
13.79	0.374	46.131	87.501	0.0002104	0.000396	219.204	116.490

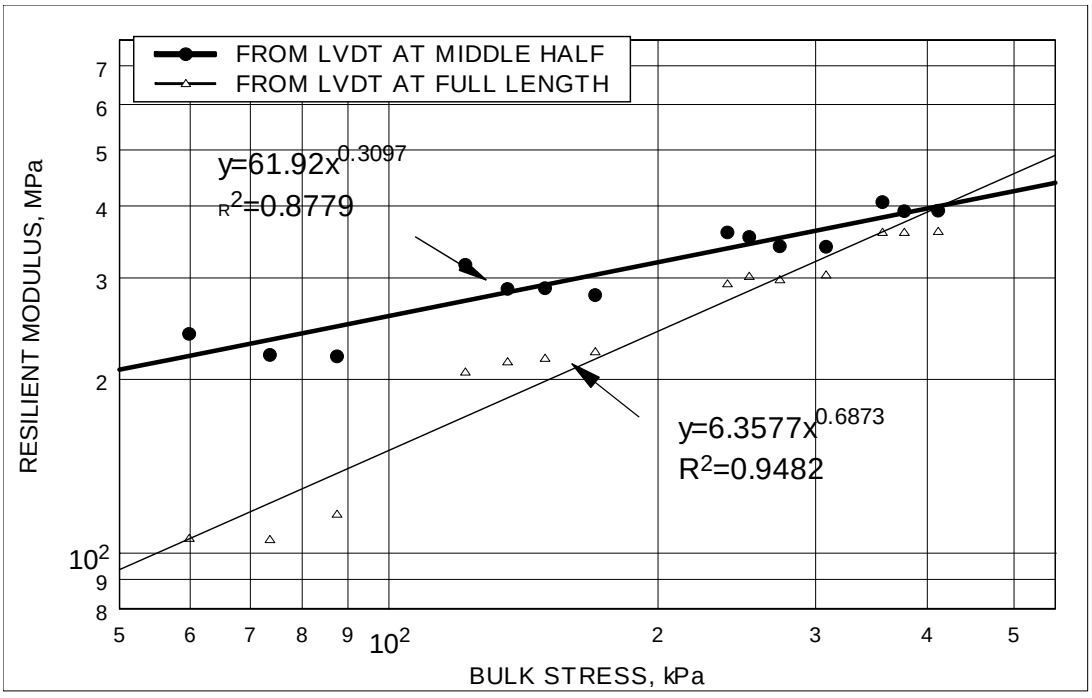


Figure D.19 Resilient Modulus vs. Bulk Stress for A-3 SR70 after drying (Sample # A3SR70D3)

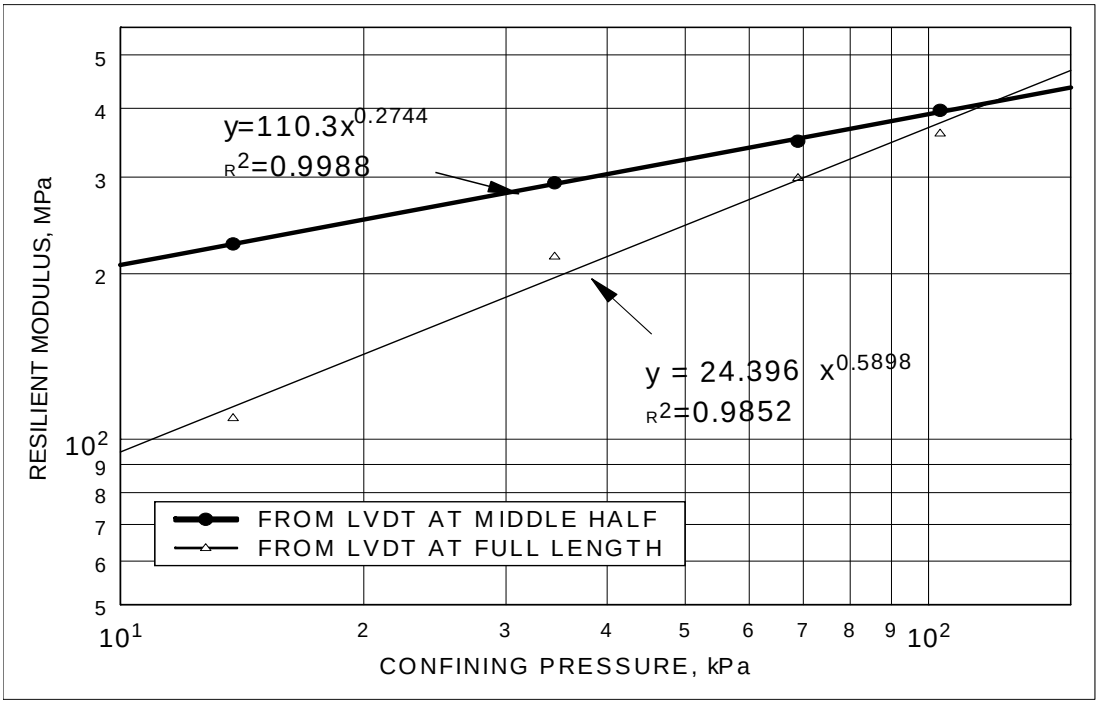


Figure D.20 Resilient Modulus vs. Confining Stress for A-3 SR70 after drying (Sample # A3SR70D3)

Table D.11 Triaxial test results of A-3 SR70 after drying (Sample # A3LEVYD4)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample No.	A3LEVYD4			A-3			
				SR 70			
Moisture	4.00%			Opt. Moist.	11.40%		
Lab. Den.	110.63	pcf		Opt. Den.	112.1	pcf	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.373	45.997	356.257	7.084E-05	0.0001461	649.281	314.876
103.42	0.541	66.706	376.966	0.0001305	0.0002124	511.226	313.996
103.42	0.822	101.446	411.706	0.0002286	0.00032	443.857	317.065
68.95	0.262	32.277	239.127	5.637E-05	0.0001344	572.625	240.074
68.95	0.373	45.999	252.849	0.0001041	0.0001874	441.831	245.397
68.95	0.542	66.813	273.663	0.0001787	0.00027	373.796	247.486
68.95	0.819	101.051	307.901	0.0002875	0.0003956	351.477	255.451
34.47	0.150	18.494	121.904	3.844E-05	0.0001051	481.124	175.892
34.47	0.262	32.315	135.725	9.084E-05	0.0001864	355.742	173.388
34.47	0.373	46.029	149.439	0.0001562	0.0002648	294.753	173.829
34.47	0.541	66.753	170.163	0.0002439	0.000368	273.694	181.393
13.79	0.150	18.534	59.904	5.206E-05	0.0001637	356.019	113.184
13.79	0.262	32.279	73.649	0.0001325	0.0002665	243.520	121.111
13.79	0.374	46.148	87.518	0.0002062	0.0003583	223.858	128.796

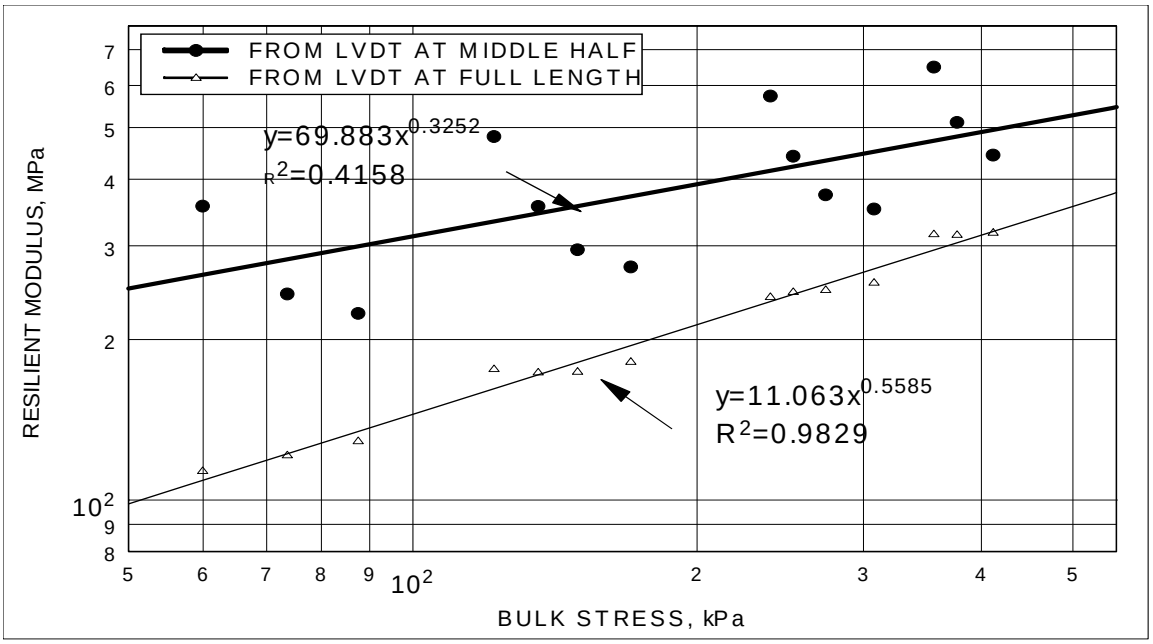


Figure D.21 Resilient Modulus vs. Bulk Stress for A-3 SR70 after drying (Sample # A3SR70D4)

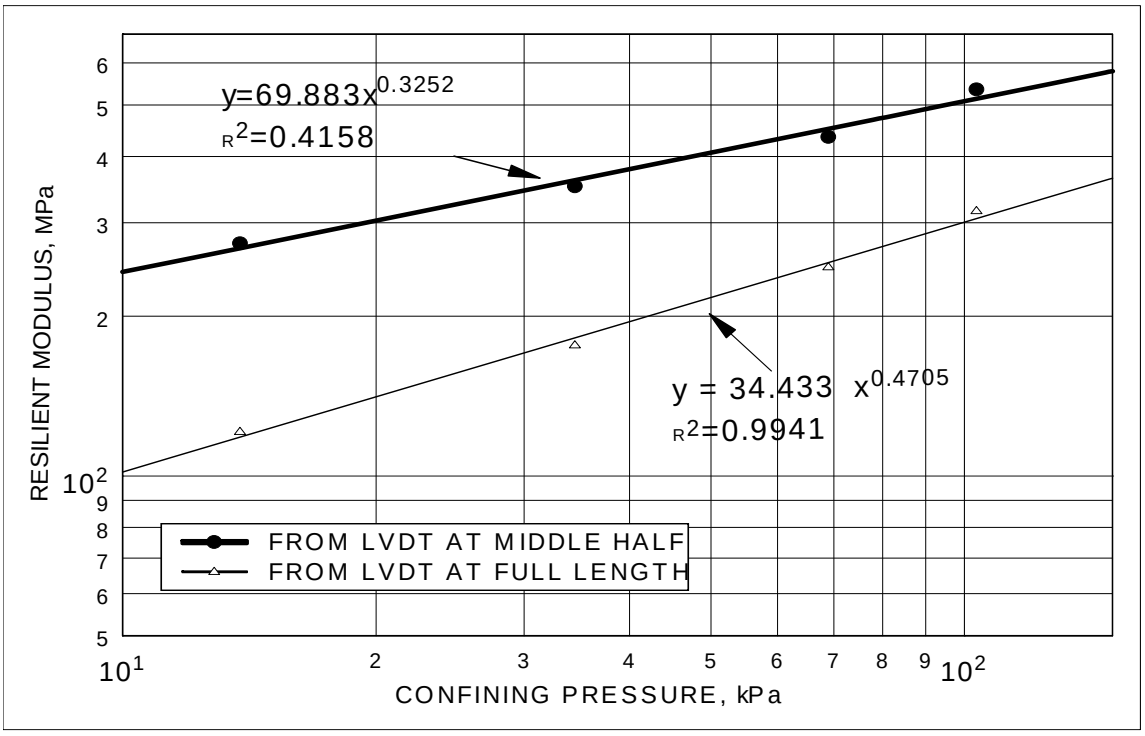


Figure D.22 Resilient Modulus vs. Confining Stress for A-3 SR70 after drying (Sample # A3SR70D4)

Table D.12 Triaxial test results of A-3 SR70 at optimum condition (Sample # A3SR70O1)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample No.	A3SR70O1			A-3, SR70			
Lab. Moist.	11.40%			Opt. Moist.	11.40%		
Lab. Den.	111	pcf		Opt. Den.	112.1	pcf	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.376	46.353	356.613	0.0001462	0.0001638	317.011	282.956
103.42	0.545	67.200	377.460	0.0002105	0.0002338	319.306	287.454
103.42	0.826	101.857	412.117	0.0003066	0.0003464	332.264	294.080
68.95	0.264	32.520	239.370	0.0001226	0.0001468	265.203	221.510
68.95	0.377	46.544	253.394	0.0001776	0.0002105	262.125	221.081
68.95	0.546	67.325	274.175	0.0002532	0.0002971	265.930	226.634
68.95	0.826	101.876	308.726	0.0003651	0.0004243	279.027	240.113
34.47	0.153	18.882	122.292	9.627E-05	0.0001223	196.132	154.429
34.47	0.265	32.626	136.036	0.0001638	0.0002105	199.202	154.971
34.47	0.377	46.476	149.886	0.0002328	0.0002936	199.599	158.285
34.47	0.545	67.204	170.614	0.0003198	0.000401	210.132	167.575
13.79	0.153	18.863	60.233	0.0001269	0.000175	148.612	107.783
13.79	0.264	32.586	73.956	0.0002106	0.000291	154.710	111.966
13.79	0.377	46.440	87.810	0.0002768	0.0003836	167.797	121.062

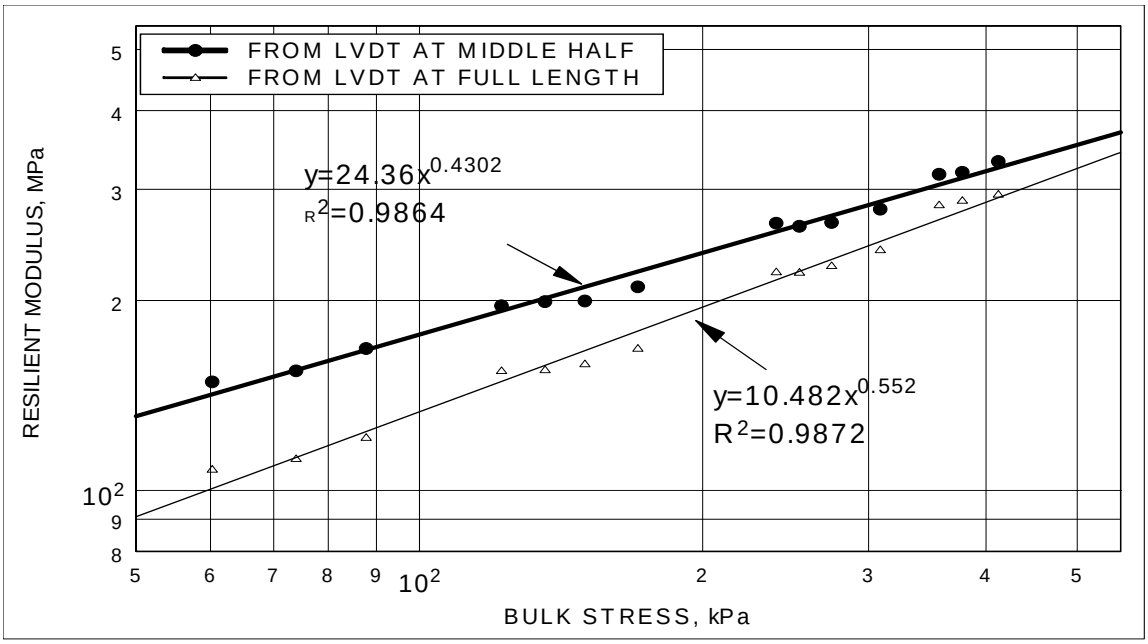


Figure D.23 Resilient Modulus vs. Bulk Stress for A-3 SR70 at optimum moisture (Sample # A3SR70O1)

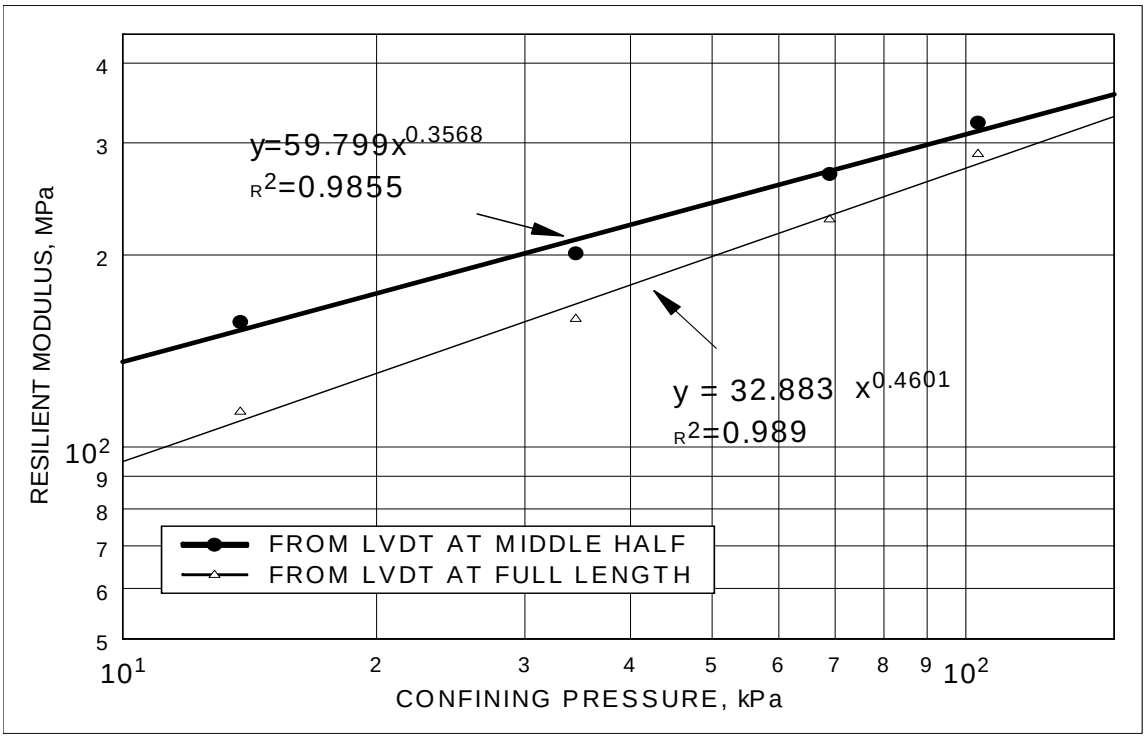


Figure D.24 Resilient Modulus vs. Confining Stress for A-3 SR70 at optimum moisture (Sample # A3SR70O1)

Table D.13 Triaxial test results at optimum condition for SR70, A-3 (Sample # A3SR70O2)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Date:	9/21/99			A-3			
Mold#:	1			SR 70			
Sample#:	2						
Lab. Moist.	11.40%			Opt. Moist.	11.40%		
Lab. Den.	110.8	pcf		Opt. Den.	112.1	pcf	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.376	46.358	356.618	0.0001431	0.0001593	323.918	291.023
103.42	0.542	66.832	377.092	0.000207	0.0002297	322.841	290.970
103.42	0.822	101.349	411.609	0.0003045	0.0003369	332.851	300.841
68.95	0.263	32.433	239.283	0.0001173	0.0001369	276.536	236.899
68.95	0.375	46.279	253.129	0.0001736	0.0001961	266.582	235.992
68.95	0.543	67.015	273.865	0.0002477	0.0002822	270.597	237.465
68.95	0.824	101.614	308.464	0.0003591	0.0004079	282.981	249.100
34.47	0.152	18.716	122.126	8.801E-05	0.0001109	212.665	168.821
34.47	0.263	32.499	135.909	0.0001595	0.0001974	203.785	164.640
34.47	0.375	46.294	149.704	0.0002289	0.0002805	202.261	165.049
34.47	0.544	67.160	170.570	0.0003145	0.0003842	213.562	174.786
13.79	0.151	18.587	59.957	0.0001259	0.0001584	147.641	117.318
13.79	0.262	32.358	73.728	0.0002108	0.0002723	153.499	118.827
13.79	0.376	46.330	87.700	0.0002795	0.000361	165.751	128.340

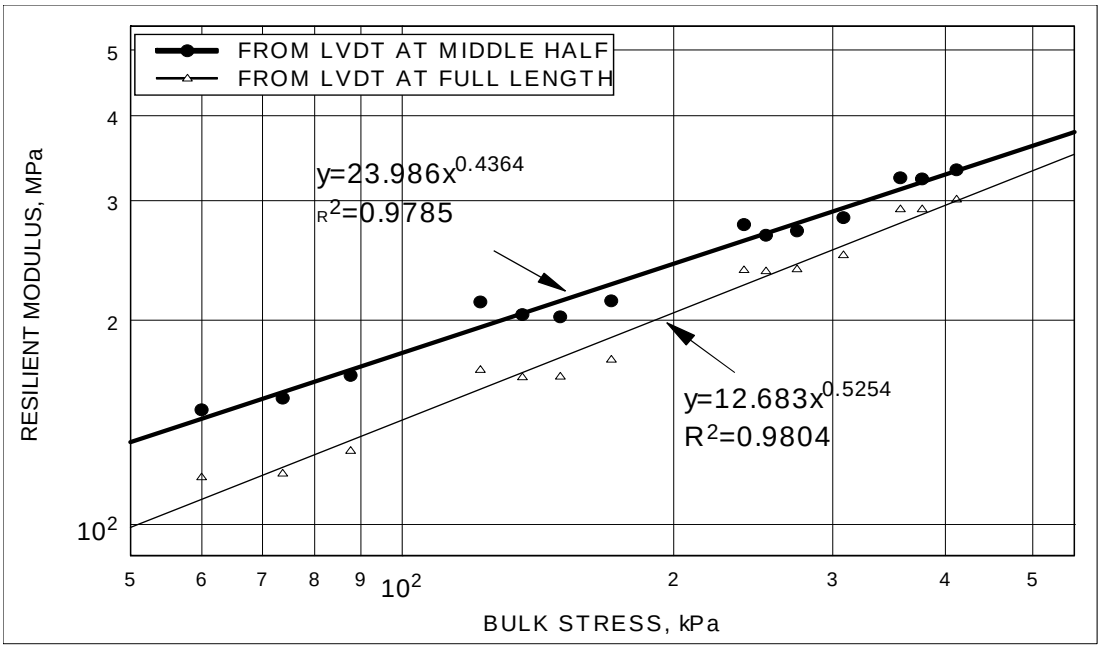


Figure D.25 Resilient Modulus vs. Bulk Stress for A-3 SR70 at optimum moisture (Sample # A3SR70O2)

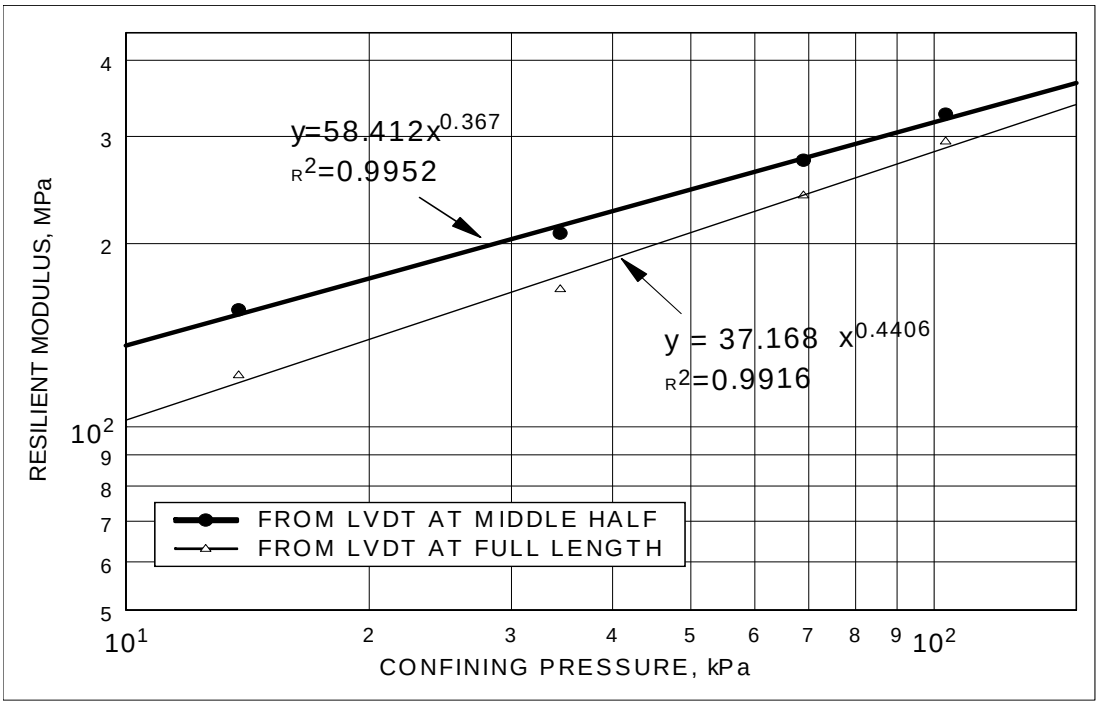


Figure D.26 Resilient Modulus vs. Confining Stress for A-3 SR70 at optimum moisture (Sample # A3SR70O2)

Table D.14 Triaxial test results of A-3 SR70 after soaking (Sample # A3SR70S1)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample No.	A3SR70S1			A-3			
				SR 70			
Lab. Moist.	13.41%			Opt. Moist.	11.40%		
Lab. Den.	109.67	pcf		Opt. Den.	112.1	pcf	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.377	46.455	356.715	8.629E-05	0.0001782	538.348	260.634
103.42	0.545	67.209	377.469	0.000149	0.0002575	451.128	261.054
103.42	0.825	101.797	412.057	0.0002642	0.0003819	385.306	266.570
68.95	0.265	32.656	239.506	7.355E-05	0.0001582	444.023	206.399
68.95	0.376	46.349	253.199	0.0001304	0.0002237	355.494	207.231
68.95	0.544	67.143	273.993	0.0002163	0.0003175	310.393	211.467
68.95	0.824	101.676	308.526	0.0003648	0.0004598	278.738	221.130
34.47	0.151	18.587	121.997	7.199E-05	0.0001358	258.188	136.841
34.47	0.265	32.628	136.038	0.0001486	0.0002323	219.521	140.475
34.47	0.378	46.570	149.980	0.0002279	0.0003222	204.386	144.516
34.47	0.546	67.347	170.757	0.0003288	0.0004331	204.843	155.498
13.79	0.151	18.576	59.946	0.0001149	0.0002082	161.703	89.239
13.79	0.264	32.526	73.896	0.0002101	0.0003309	154.800	98.307
13.79	0.380	46.850	88.220	0.0003026	0.0004421	154.825	105.959

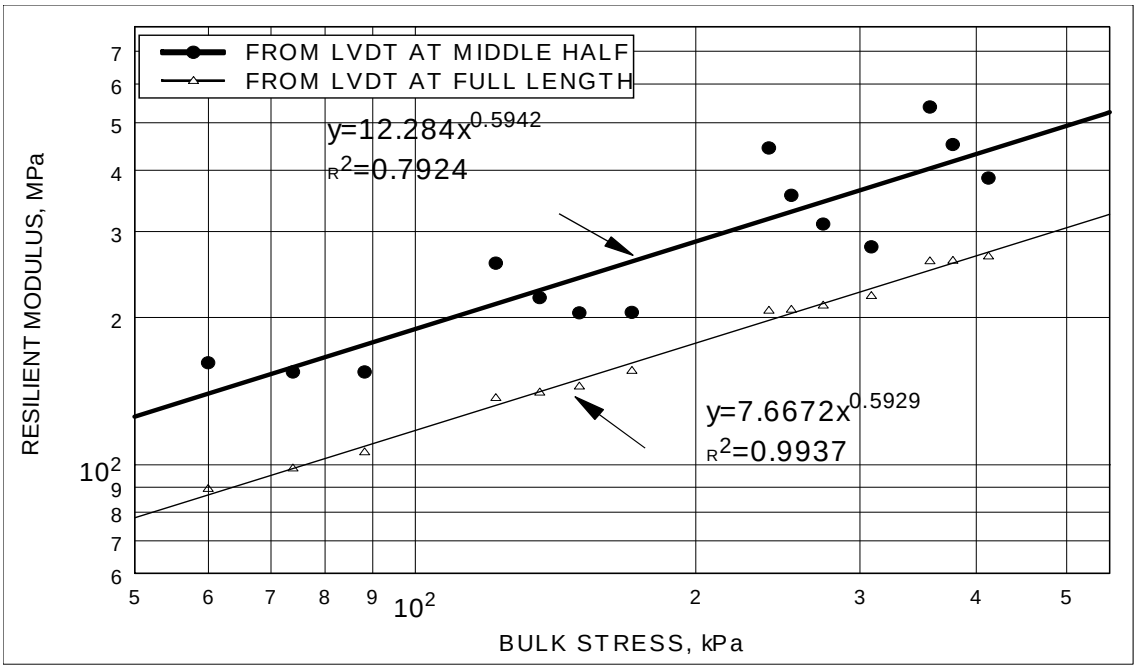


Figure D.27 Resilient Modulus vs. Bulk Stress for A-3 SR70 after soaking (Sample # A3SR70S1)

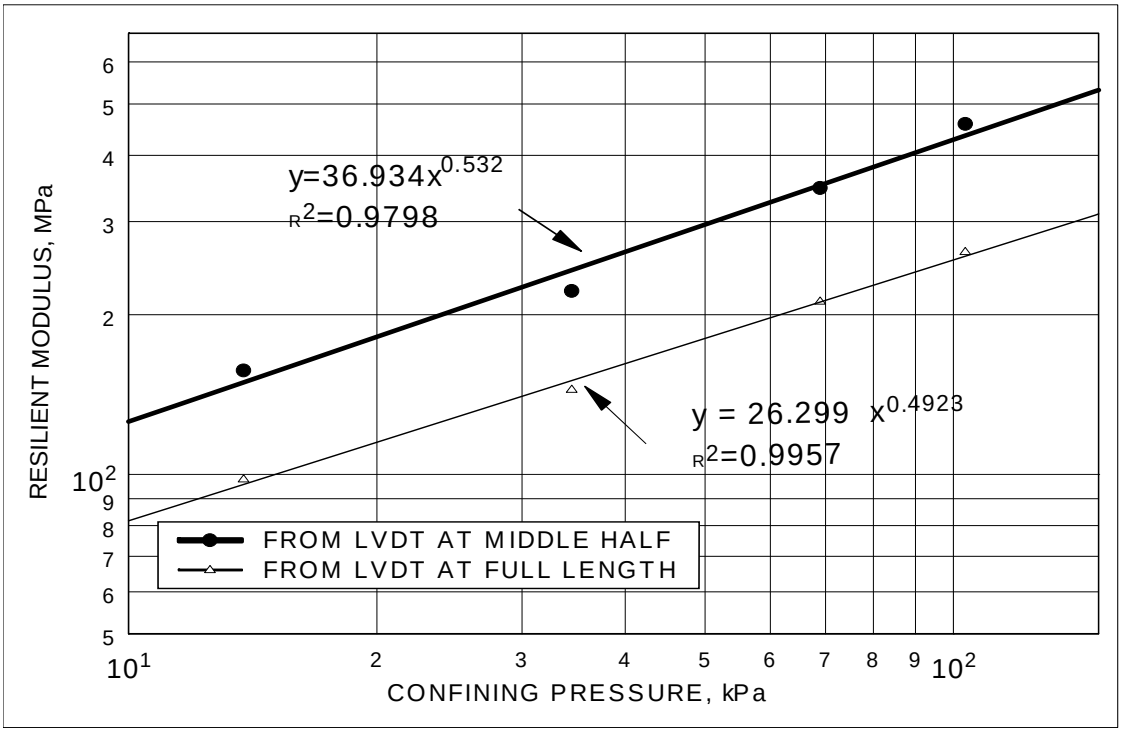


Figure D.28 Resilient Modulus vs. Confining Stress for A-3 SR70 after soaking (Sample # A3SR70S1)

Table D.15 Triaxial test results of A-3 SR70 after soaking (Sample # A3SR70S2)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Date:				A-3			
Mold#:				SR 70			
Moisture	13.69%			Opt. Moist.	11.40%		
Lab. Den.	109.7	pcf		Opt. Den.	112.1	pcf	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.391	48.255	358.515	0.0001553	0.000178	310.725	271.145
103.42	0.559	68.914	379.174	0.0002244	0.0002452	307.080	281.065
103.42	0.837	103.202	413.462	0.0003342	0.0003587	308.790	287.680
68.95	0.362	44.707	251.557	0.0001918	0.000229	233.044	195.202
68.95	0.388	47.875	254.725	0.0002055	0.0002424	233.017	197.513
68.95	0.556	68.542	275.392	0.0002916	0.0003325	235.023	206.171
68.95	0.835	103.001	309.851	0.0004245	0.0004697	242.623	219.292
34.47	0.457	56.397	47.013	0.0003599	0.0004395	156.703	128.311
34.47	0.335	41.381	144.791	0.0002461	0.0003156	168.121	131.099
34.47	0.388	47.860	151.270	0.0002847	0.0003529	168.080	135.612
34.47	0.556	68.534	171.944	0.0003932	0.0004731	174.316	144.849
13.79	0.392	48.380	7.010	0.0004183	0.0005498	115.651	87.988
13.79	0.336	41.404	82.774	0.000309	0.0004199	133.971	98.597
13.79	0.388	47.835	89.205	0.0003458	0.0004641	138.347	103.072

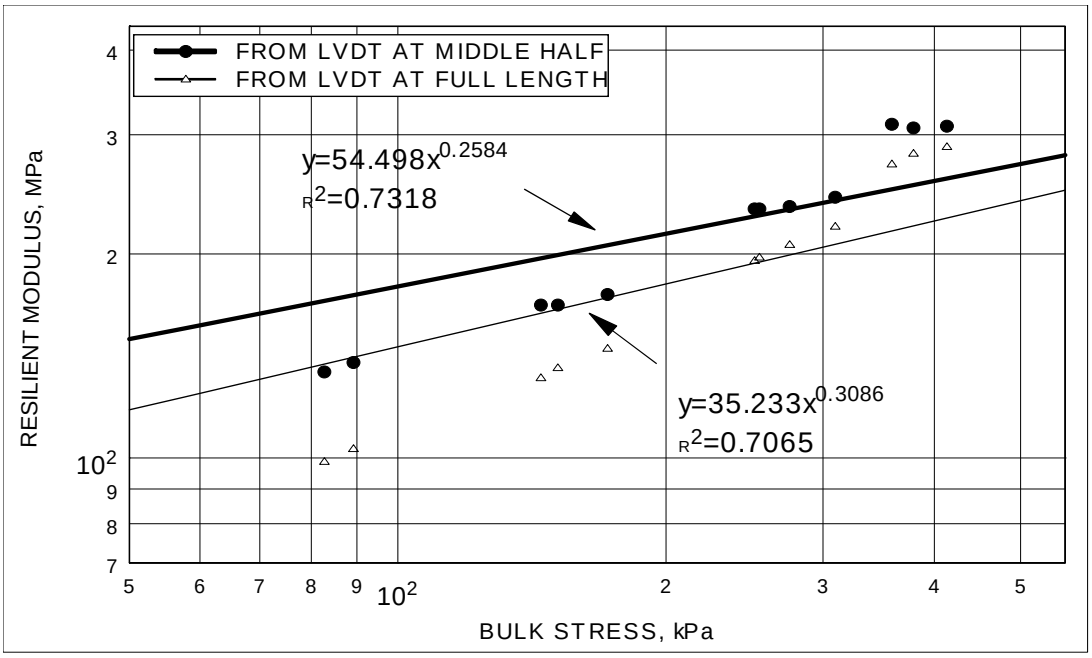


Figure D.29 Resilient Modulus vs. Bulk Stress for A-3 SR70 after soaking (Sample # A3SR70S2)

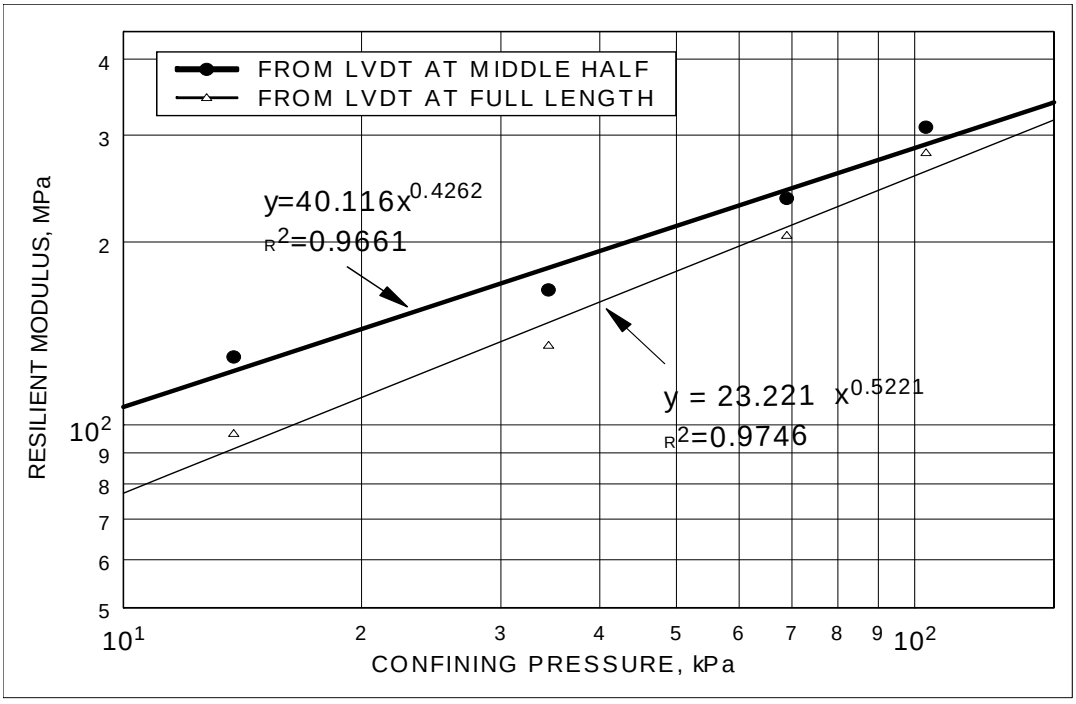


Figure D.30 Resilient Modulus vs. Confining Stress for A-3 SR70 after soaking (Sample # A3SR70S2)

D.3 A-2-4 12% Soil

Table D.16 Triaxial test results of A-2-4 12% at optimum (Sample # A2412%O1)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample No.	A2412%O1			A-2-4, 12%			
Lab Moist.	12.10%			Opt. Moist.	12.10%		
Lab Den.	109.3	lb/ft^3		Opt. Den.	110.6	lb/ft^3	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.375	46.211	356.471	0.0001646	0.00018422	280.737	250.852
103.42	0.541	66.717	376.977	0.0002353	0.00025747	283.571	259.123
103.42	0.821	101.225	411.485	0.0003452	0.00038028	293.202	266.184
68.95	0.262	32.296	239.146	0.000146	0.00016483	221.219	195.939
68.95	0.374	46.114	252.964	0.0002043	0.00023162	225.775	199.098
68.95	0.542	66.838	273.688	0.0002922	0.00032448	228.776	205.985
68.95	0.822	101.411	308.261	0.0004204	0.0004656	241.228	217.804
34.47	0.152	18.709	122.119	0.0001124	0.0001366	166.483	136.965
34.47	0.262	32.301	135.711	0.0001956	0.00022623	165.113	142.781
34.47	0.375	46.237	149.647	0.0002706	0.00031565	170.863	146.485
34.47	0.542	66.810	170.220	0.0003704	0.00042402	180.367	157.562
13.79	0.150	18.496	59.866	0.0001763	0.00022472	104.895	82.305
13.79	0.262	32.309	73.679	0.0002656	0.00035723	121.641	90.443
13.79	0.375	46.198	87.568	0.0003883	0.00051408	118.965	89.864

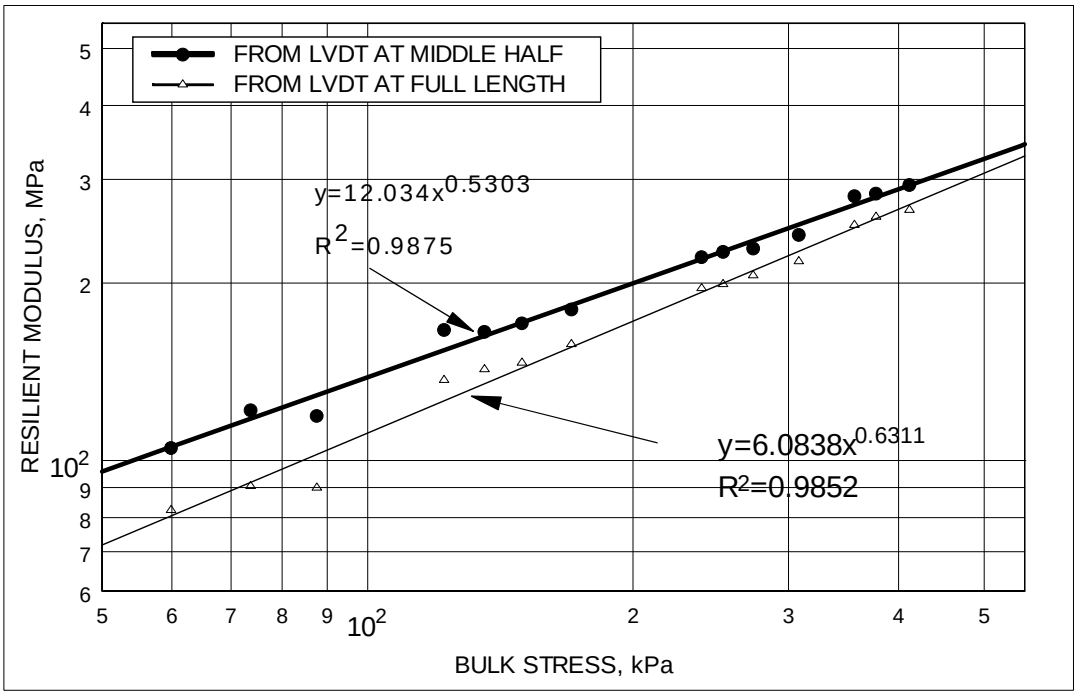


Figure D.31 Resilient Modulus vs. Bulk Stress for A-2-4 12% at optimum moisture (Sample # A2412%O1)

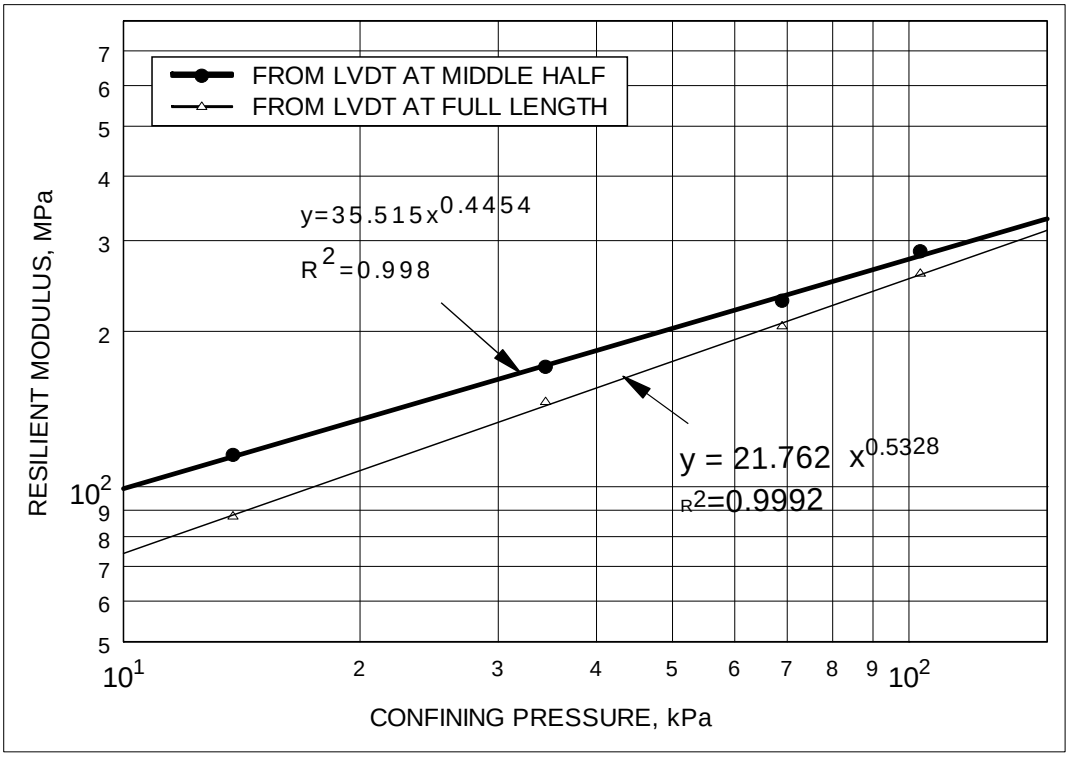


Figure D.32 Resilient Modulus vs. Confining Stress for A-2-4 12% at optimum moisture (Sample # A2412%O1)

Table D.17 Triaxial test results of A-2-4 12% at optimum (Sample # A312%O2)

		Summary Resilient Modulus Test Result					
Test Type:	**T292-91I**			**Soil Identification**			
Sample No.	A2412%O2			A-2-4, 12%			
Lab. Moist.	12.10%			Opt. Moist.	12.10%		
Lab. Den.	109.8	p/ft^3		Opt. Den.	110.6	p/ft^3	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			
Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.374	46.126	356.386	0.0001527	0.00017074	302.115	270.147
103.42	0.542	66.897	377.157	0.0001705	0.00023291	392.440	287.221
103.42	0.824	101.575	411.835	0.0003407	0.00036563	298.104	277.807
68.95	0.261	32.254	239.104	0.0001497	0.00016504	215.451	195.431
68.95	0.374	46.080	252.930	0.0002119	0.00023291	217.492	197.847
68.95	0.541	66.764	273.614	0.0002904	0.00032965	229.904	202.531
68.95	0.821	101.280	308.130	0.0004204	0.00046832	240.920	216.261
34.47	0.150	18.467	121.877	0.0001161	0.00013171	159.112	140.213
34.47	0.262	32.337	135.747	0.0001874	0.00022221	172.598	145.528
34.47	0.374	46.190	149.600	0.0002761	0.00030873	167.281	149.614
34.47	0.542	66.880	170.290	0.0003502	0.00039472	190.995	169.436
13.79	0.151	18.583	59.953	0.0001835	0.00020502	101.294	90.639
13.79	0.262	32.318	73.688	0.0002682	0.00033532	120.485	96.382
13.79	0.374	46.122	87.492	0.0003774	0.00050489	122.212	91.351

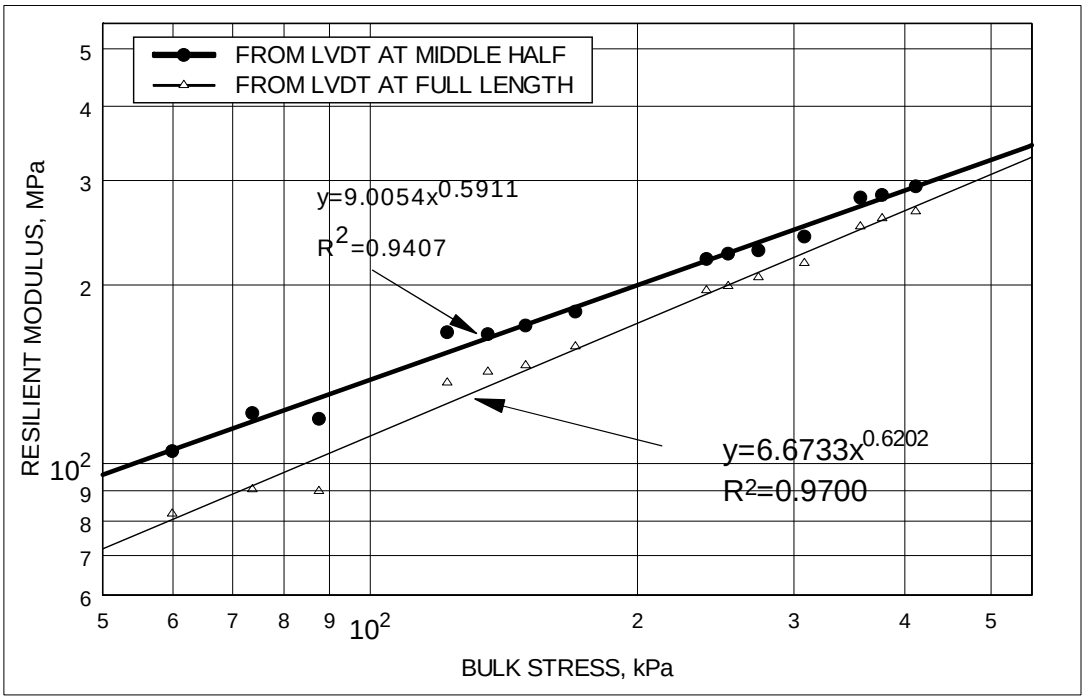


Figure D.33 Resilient Modulus vs. Bulk Stress for A-2-4 12% at optimum moisture (Sample # A2412%O2)

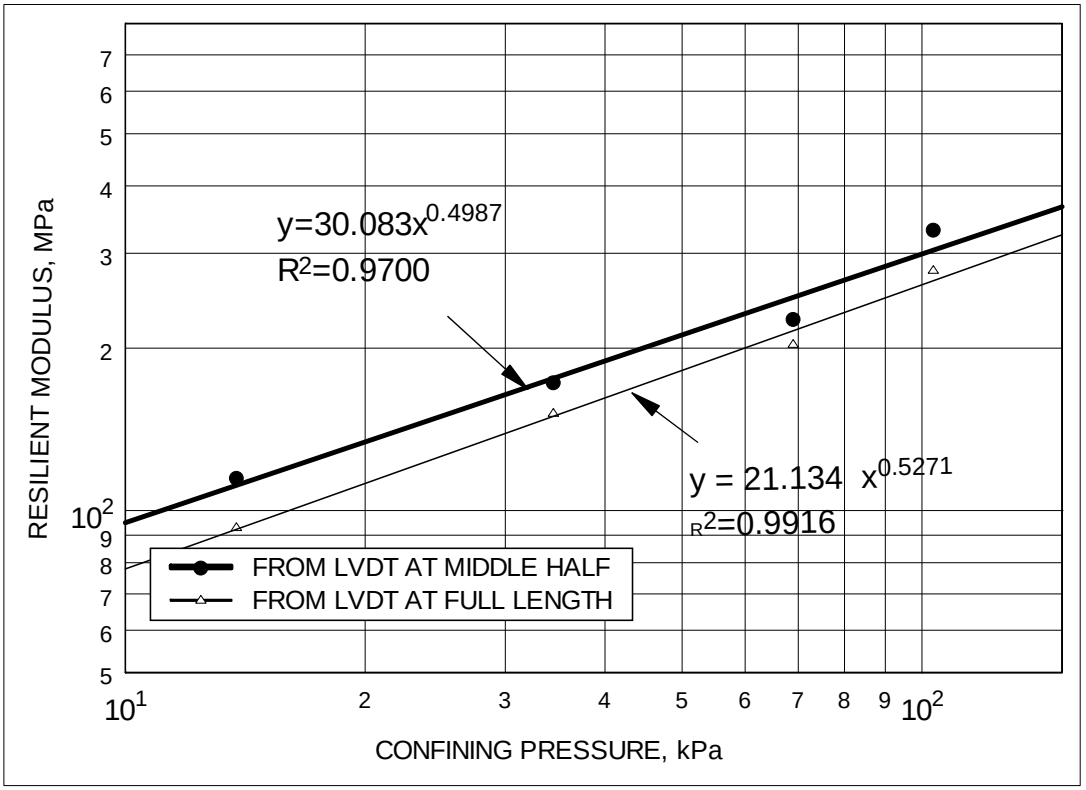


Figure D.34 Resilient Modulus vs. Confining Stress for A-2-4 24% at optimum moisture (Sample # A2412%O2)

Table D.18 Triaxial test results of A-2-4 12% after drying (Sample # A312%D1)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample No.	A2412%D1			A-2-4, 12%			
				SR 70			
Lab. Moist.	12.10%			Opt. Moist.	12.10%		
Lab. Den.	110.69	pcf		Opt. Den.	110.6	pcf	
After Drying	7.10%			**Conditioning Information**			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			
Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.374	46.109	356.369	0.000153058	0.000179045	301.251	257.526
103.42	0.541	66.740	377.000	0.000228209	0.000252086	292.450	264.750
103.42	0.821	101.265	411.525	0.000331625	0.00036003	305.360	281.268
68.95	0.262	32.279	239.129	0.000127377	0.000168273	253.410	191.823
68.95	0.373	45.993	252.843	0.000190289	0.000231833	241.702	198.390
68.95	0.542	66.815	273.665	0.000276124	0.000319309	241.975	209.250
68.95	0.820	101.142	307.992	0.000394367	0.000442766	256.467	228.432
34.47	0.149	18.418	121.828	9.72128E-05	0.000145219	189.462	126.831
34.47	0.262	32.258	135.668	0.000186325	0.000244329	173.126	132.026
34.47	0.374	46.145	149.555	0.000259579	0.000329866	177.768	139.889
34.47	0.541	66.740	170.150	0.000351792	0.000427252	189.713	156.207
13.79	0.150	18.467	59.837	0.000138752	0.000215457	133.096	85.712
13.79	0.261	32.243	73.613	0.000235966	0.000327495	136.641	98.452
13.79	0.374	46.086	87.456	0.000316804	0.000407861	145.472	112.995

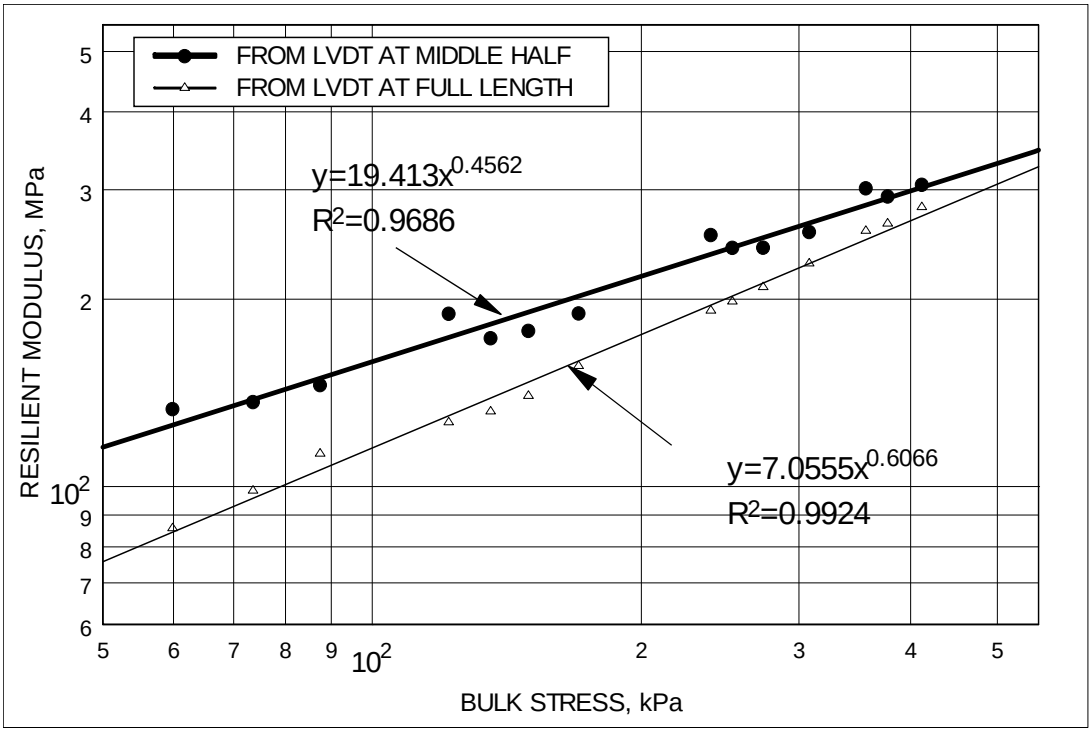


Figure D.35 Resilient Modulus vs. Bulk Stress for A-2-4 12% after drying (Sample # A2412%D1)

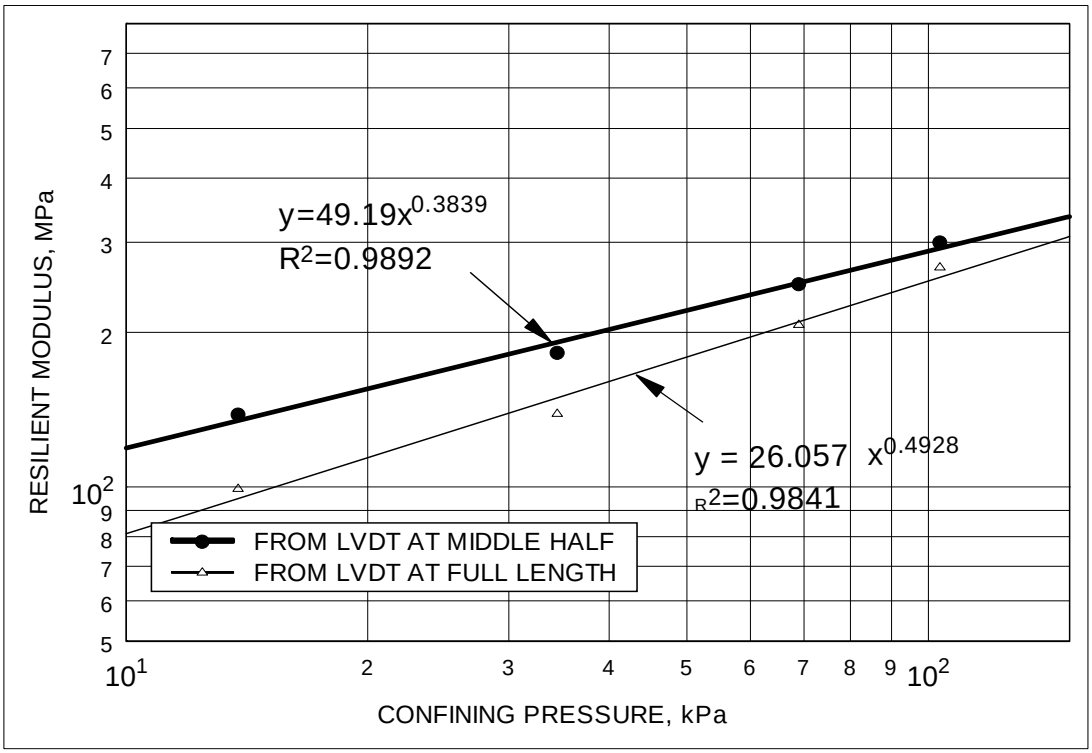


Figure D.36 Resilient Modulus vs. Confining Pressure for A-2-4 12% after drying (Sample # A2412%D1)

Table D.19 Triaxial test results of A-2-4 12% after drying (Sample # A312%D2)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample No.	A2412%D2			A-2-4, 12%			
Lab. Moist.	12.10%			Opt. Moist.	12.10%		
Lab. Den.	110.7	pcf		Opt. Den.	110.6	pcf	
After Drying	7.04%			**Conditioning Information**			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.373	46.050	356.310	0.00014029	0.00016547	328.243	278.296
103.42	0.541	66.742	377.002	0.00020131	0.00023377	331.542	285.499
103.42	0.821	101.276	411.536	0.00029093	0.00033978	348.116	298.067
68.95	0.261	32.195	239.045	0.00012306	0.00015427	261.628	208.698
68.95	0.374	46.075	252.925	0.00017752	0.0002161	259.547	213.206
68.95	0.541	66.760	273.610	0.00024922	0.00030315	267.879	220.223
68.95	0.821	101.220	308.070	0.00035849	0.00043156	282.351	234.543
34.47	0.150	18.445	121.855	9.7206E-05	0.00013919	189.748	132.519
34.47	0.262	32.267	135.677	0.00017201	0.00023506	187.594	137.270
34.47	0.373	46.037	149.447	0.00024267	0.00032103	189.712	143.403
34.47	0.541	66.787	170.197	0.00033264	0.00043329	200.780	154.141
13.79	0.150	18.481	59.851	0.00013926	0.00021416	132.707	86.292
13.79	0.261	32.250	73.620	0.00023336	0.00034279	138.198	94.081
13.79	0.374	46.080	87.450	0.00030782	0.00044233	149.700	104.175

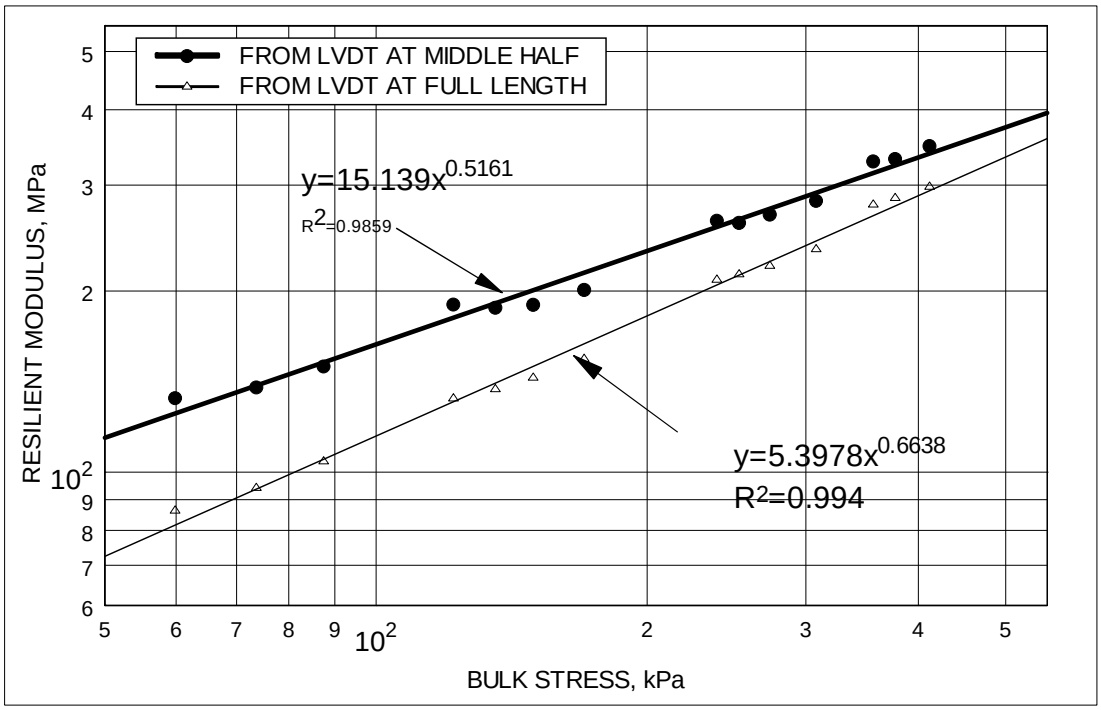


Figure D.37 Resilient Modulus vs. Bulk Stress for A-2-4 12% after drying (Sample # A2412%D2)

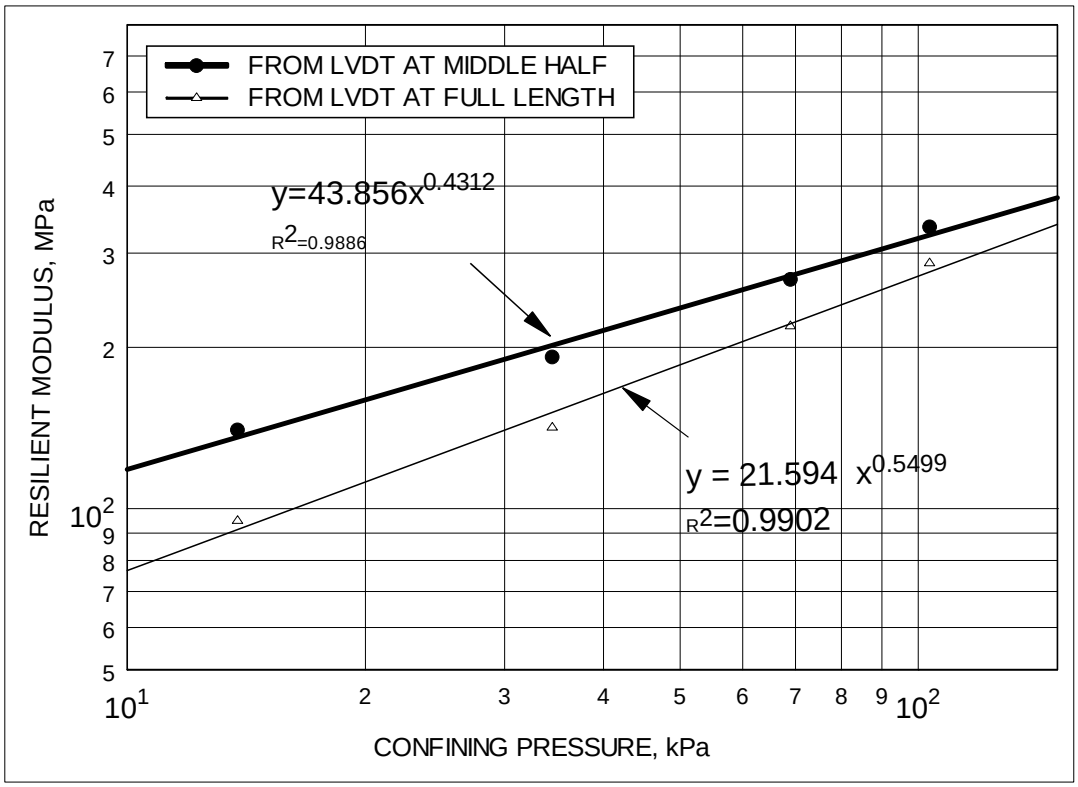


Figure D.38 Resilient Modulus vs. Confining Pressure for A-2-4 12% after drying (Sample # A2412%D2)

Table D.20 Triaxial test results of A-2-4 12% after soaking (Sample # A312%S1)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample #	A2412%S1			A-2-4, 12%			
Lab. Moist.	12.10%			Opt. Moist.	12.10%		
Lab. Den.	109.6	pcf		Opt. Den.	110.6	pcf	
After Soaking	14.60%						
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.374	46.158	356.418	0.00017908	0.00020081	257.744	229.863
103.42	0.540	66.626	376.886	0.00026061	0.00028893	255.652	230.597
103.42	0.821	101.231	411.491	0.0003804	0.00042704	266.114	237.054
68.95	0.262	32.301	239.151	0.00016357	0.000184	197.474	175.550
68.95	0.375	46.254	253.104	0.00023234	0.00026027	199.077	177.715
68.95	0.541	66.779	273.629	0.00032818	0.0003624	203.484	184.270
68.95	0.821	101.231	308.081	0.00047951	0.00052292	211.113	193.589
34.47	0.151	18.566	121.976	0.00013427	0.0001519	138.271	122.225
34.47	0.261	32.243	135.653	0.00023062	0.0002579	139.809	125.019
34.47	0.373	46.035	149.445	0.00032318	0.00036175	142.444	127.255
34.47	0.541	66.742	170.152	0.00044159	0.00049189	151.139	135.684
13.79	0.150	18.498	59.868	0.00019942	0.00022882	92.756	80.840
13.79	0.262	32.320	73.690	0.00031956	0.0003652	101.140	88.500
13.79	0.374	46.116	87.486	0.0004166	0.00048155	110.697	95.767

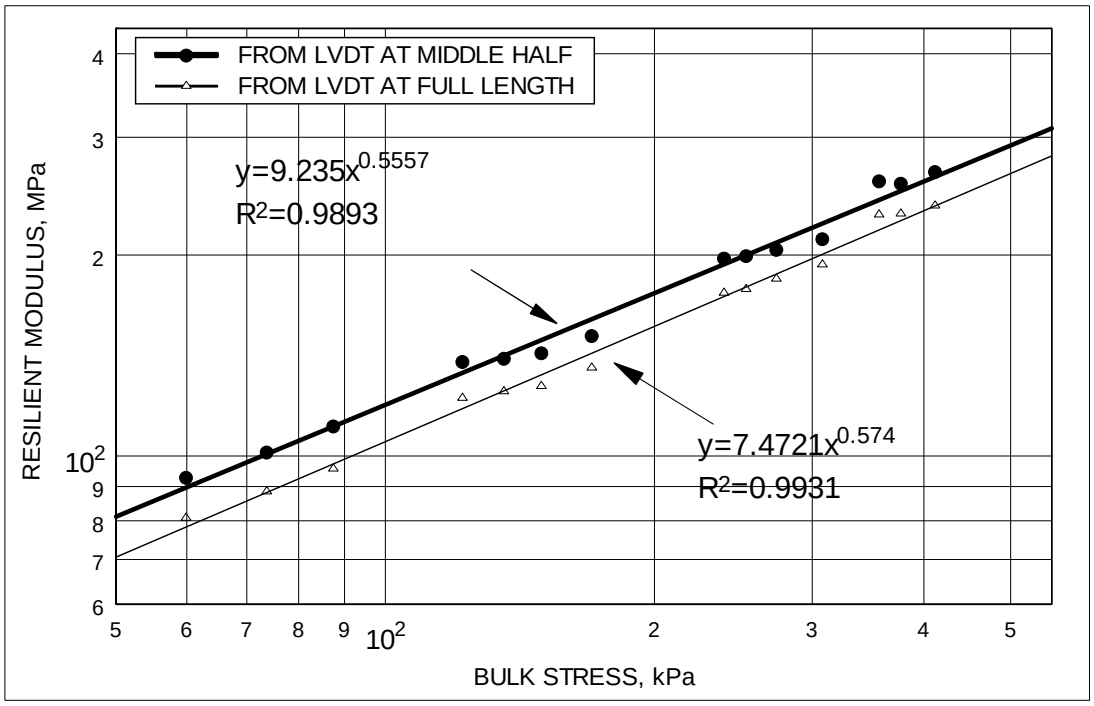


Figure D.39 Resilient Modulus vs. Bulk Stress for A-2-4 12% after soaking) (Sample # A2412%S1)

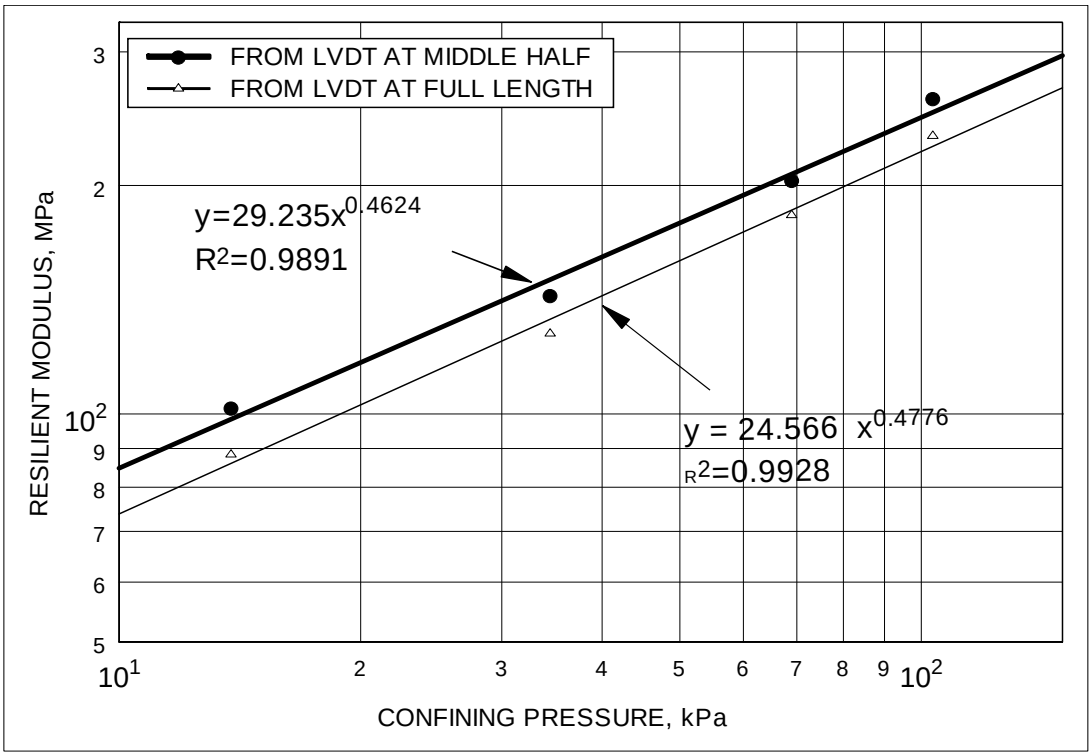


Figure D.40 Resilient Modulus vs. Confining Stress for A-2-4 12% after soaking (Sample # A2412%S1)

Table D.21 Resilient Modulus of A-2-4 12% after soaking (Sample # A2412%S2)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample #:	A2412%S2			A-2-4, 12%			
Lab. Moist.	12.10%			Opt. Moist.	12.10%		
Lab. Den.	110.3	pcf		Opt. Den.	110.6	pcf	
Afer Soaking	13.60%						
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.374	46.130	356.390	0.0001732	0.0001879	266.345	245.529
103.42	0.542	66.808	377.068	0.000252	0.0002717	265.147	245.896
103.42	0.823	101.539	411.799	0.0003701	0.0003992	274.378	254.329
68.95	0.262	32.335	239.185	0.0001555	0.0001704	207.987	189.732
68.95	0.374	46.088	252.938	0.0002121	0.0002409	217.321	191.331
68.95	0.541	66.787	273.637	0.0003073	0.0003419	217.312	195.323
68.95	0.820	101.201	308.051	0.0004492	0.0004843	225.312	208.942
34.47	0.150	18.513	121.923	0.0001248	0.0001467	148.312	126.171
34.47	0.261	32.231	135.641	0.0002203	0.0002484	146.311	129.744
34.47	0.374	46.116	149.526	0.0003044	0.0003413	151.522	135.126
34.47	0.542	66.796	170.206	0.0003995	0.0004602	167.212	145.141
13.79	0.150	18.517	59.887	0.0001728	0.0002288	107.130	80.923
13.79	0.261	32.245	73.615	0.0002902	0.0003544	111.123	90.976
13.79	0.375	46.205	87.575	0.0003917	0.0004643	117.971	99.513

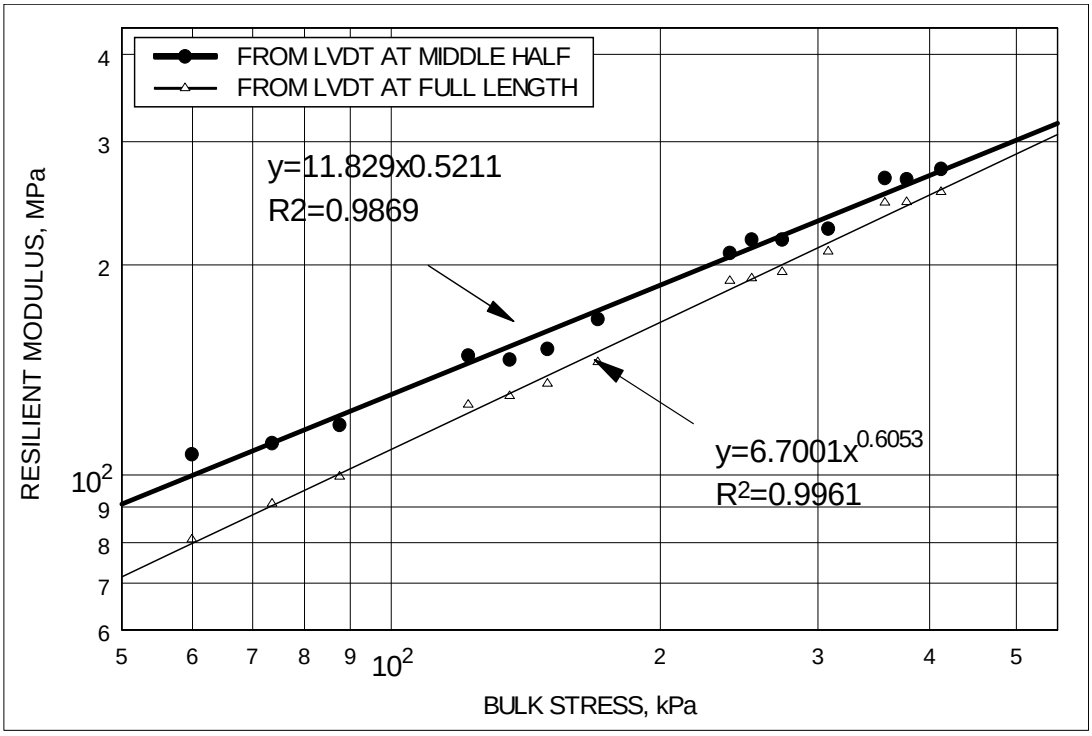


Figure D.41 Resilient Modulus vs. Bulk Stress for A-2-4 12% (Sample # A2412%S2)

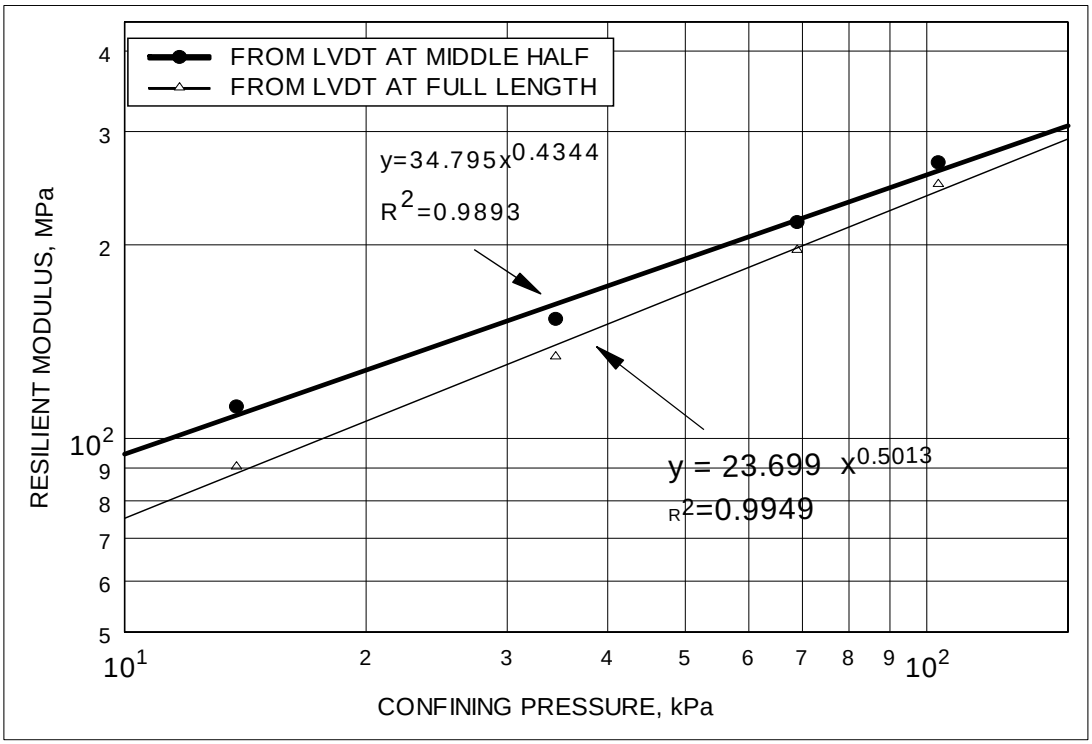


Figure D.42 Resilient Modulus vs. Confining Pressure for A-2-4 12% after soaking (Sample # A2412%S2)

D.4 SR 70 A-2-4 14% Soil

Table D.22 Triaxial test results of A-2-4, SR70 after drying (Sample #A24SR70D1)

		Summary Resilient Modulus Test Result					
Test Type:	**T292-91I**			**Soil Identification**			
Sample No.	A24SR70D1			A-2-4, SR70			
Lab. Moist.	8.41%			Opt. Moist.	10.60%		
Lab. Den.	120.3	pcf		Opt. Den.	122.4	pcf	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.373	45.971	356.231	7.273E-05	7.692E-05	632.065	597.661
103.42	0.541	66.751	377.011	0.0001113	0.0001196	599.534	558.219
103.42	0.822	101.333	411.593	0.0001755	0.0001874	577.551	540.592
68.95	0.260	32.108	238.958	5.102E-05	6.227E-05	629.370	515.648
68.95	0.374	46.103	252.953	7.79E-05	8.597E-05	591.806	536.287
68.95	0.542	66.838	273.688	0.0001182	0.0001377	565.313	485.468
68.95	0.822	101.371	308.221	0.0001875	0.0002124	540.591	477.171
34.47	0.150	18.460	121.870	2.896E-05	4.503E-05	637.513	409.942
34.47	0.262	32.326	135.736	5.86E-05	7.864E-05	551.648	411.048
34.47	0.374	46.131	149.541	8.859E-05	0.0001155	520.741	399.454
34.47	0.541	66.753	170.163	0.0001289	0.0001724	517.797	387.273
13.79	0.150	18.558	59.928	3.171E-05	6.593E-05	585.207	281.482
13.79	0.261	32.243	73.613	6.308E-05	0.000111	511.143	290.579
13.79	0.374	46.092	87.462	9.204E-05	0.0001584	500.806	291.055

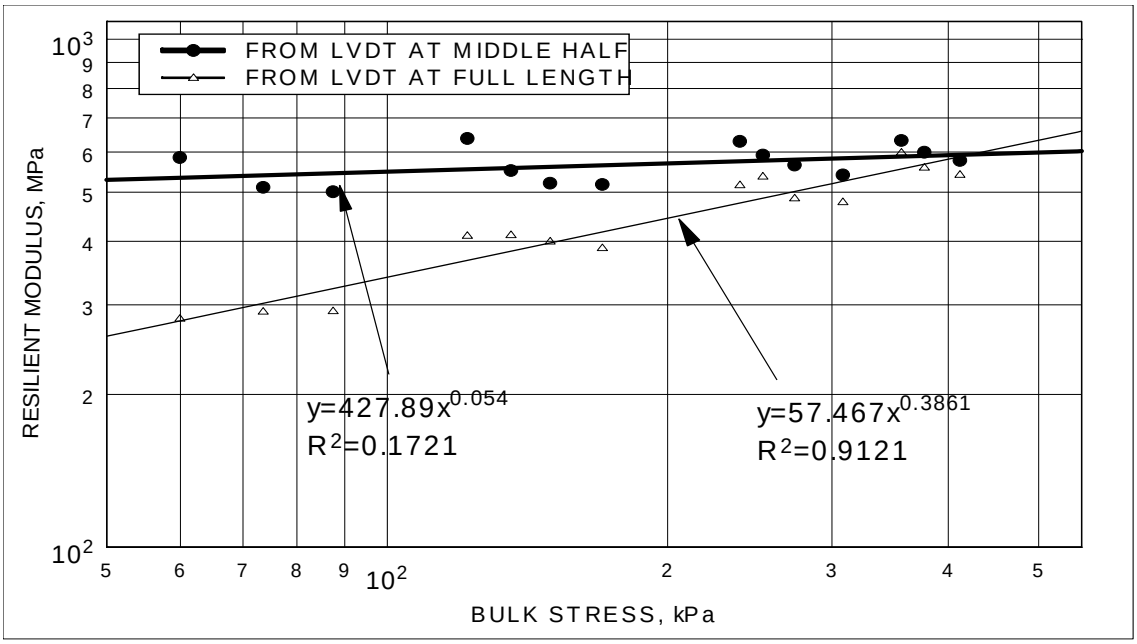


Figure D.43 Resilient Modulus vs. Bulk Stress for A-2-4 SR70 after drying (Sample # A24SR70D1)

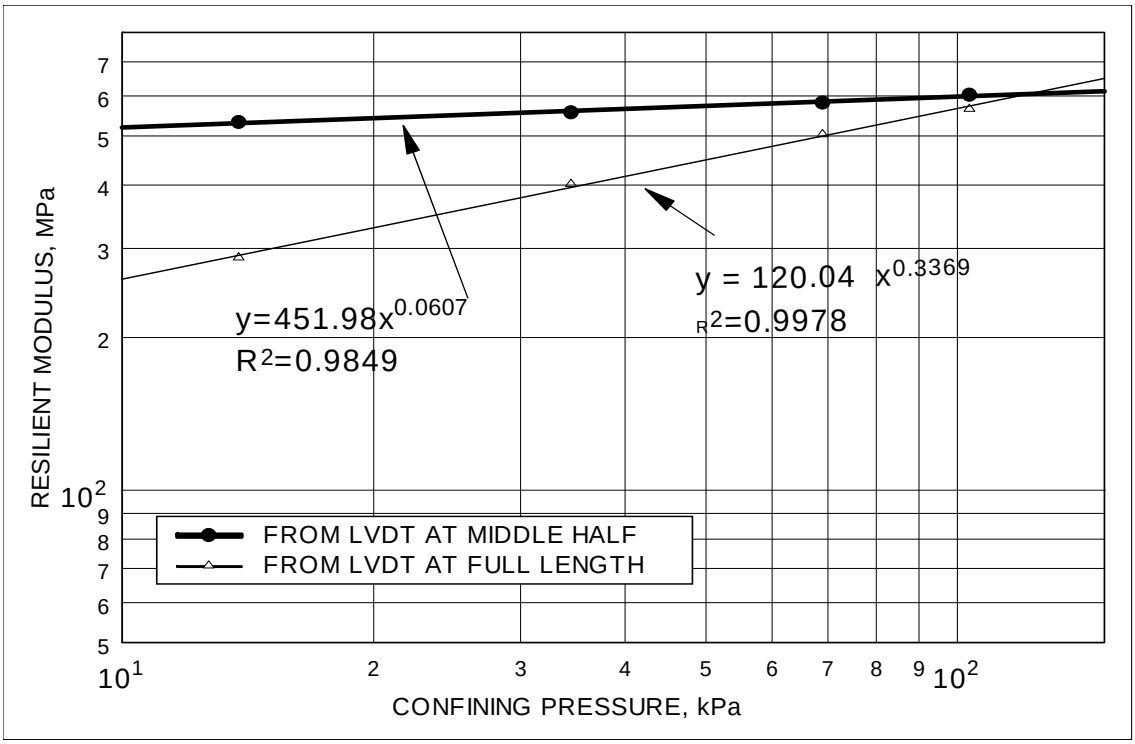


Figure D.44 Resilient Modulus vs. Confining Stress for A-2-4 SR70 after drying (Sample # A24SR70D1)

Table D.23 Triaxial test results of A-2-4 SR70 after drying (Sample # A24SR70D2)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample No.	A24SR70D2			A-2-4			
				SR 70			
Lab. Moist.	7.76%			Opt. Moist.	10.60%		
Lab. Den.	120.6	pcf		Opt. Den.	122.1	pcf	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.376	46.334	356.594	6.36E-05	8.748E-05	728.479	529.675
103.42	0.543	66.946	377.206	0.0001017	0.0001269	658.291	527.527
103.42	0.823	101.552	411.812	0.0001675	0.0002008	606.150	505.721
68.95	0.262	32.349	239.199	3.775E-05	8.704E-05	856.956	371.633
68.95	0.374	46.082	252.932	6.378E-05	0.0001215	722.562	379.220
68.95	0.543	66.993	273.843	0.0001003	0.0001683	667.815	398.124
68.95	0.822	101.433	308.283	0.0001765	0.0002433	574.691	416.989
34.47	0.151	18.592	122.002	2.086E-05	0.0001034	891.496	179.775
34.47	0.263	32.405	135.815	4.206E-05	0.0001668	770.532	194.319
34.47	0.375	46.290	149.700	6.86E-05	0.0002174	674.774	212.930
34.47	0.543	67.001	170.411	0.0001096	0.0002713	611.184	246.997
13.79	0.150	18.520	59.890	1.999E-05	0.0001924	926.316	96.258
13.79	0.262	32.337	73.707	4.637E-05	0.0002926	697.430	110.520
13.79	0.374	46.082	87.452	7.325E-05	0.0003641	629.069	126.557

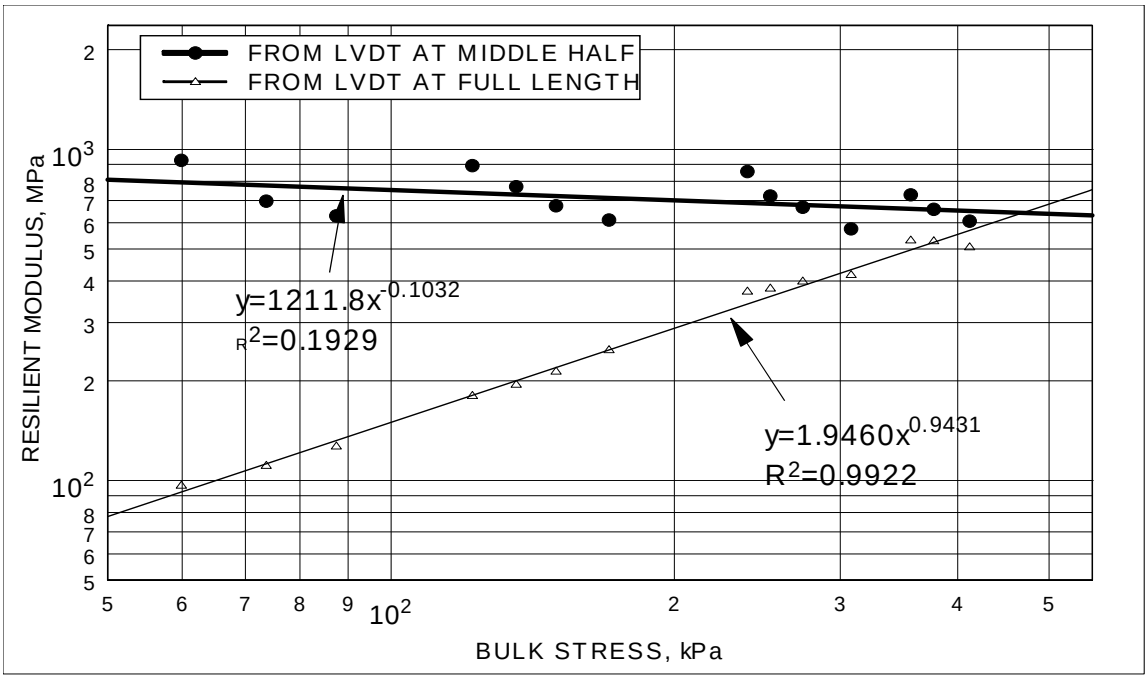


Figure D.45 Resilient Modulus vs. Bulk Stress for A-2-4 SR70 after drying (Sample # A24SR70D2)

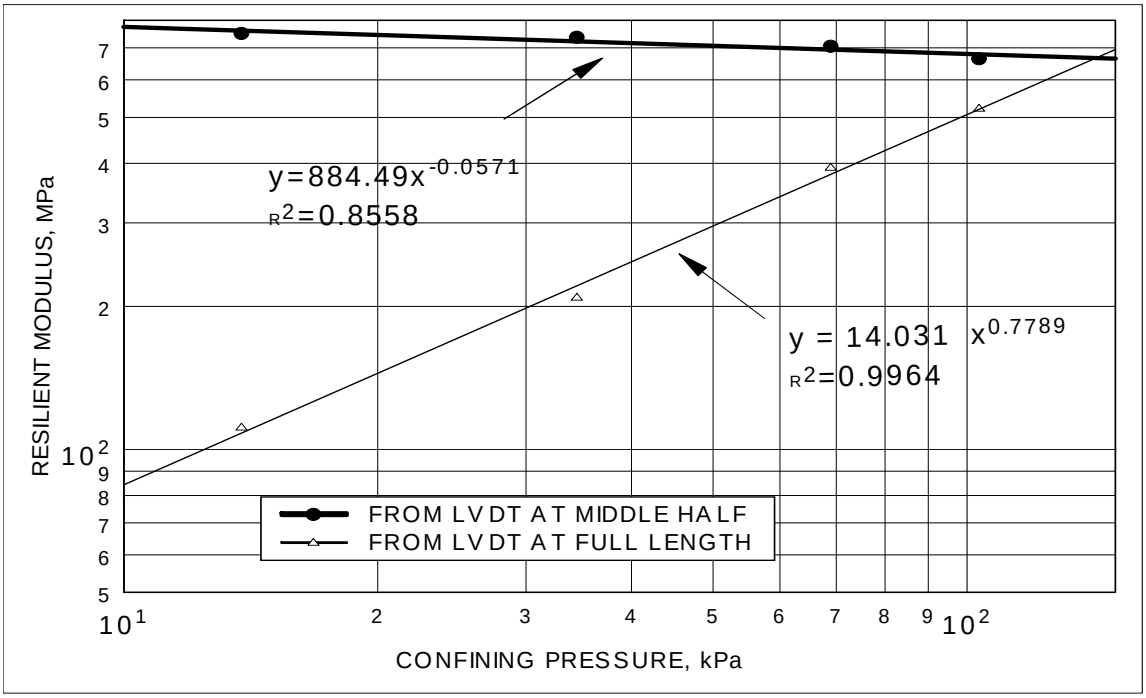


Figure D.46 Resilient Modulus vs. Confining Stress for A-2-4 SR70 after drying (Sample # A24SR70D2)

Table D.24 Triaxial test results of A-2-4 SR70 at optimum condition (Sample # A24SR70O1)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample #	A24SR70O1			A-2-4			
				SR 70			
Lab. Moist.	10.80%			Opt. Moist.	10.60%		
Lab. Den.	120.4	pcf		Opt. Den.	122.09	pcf	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.376	46.415	356.675	0.0001078	0.0001429	430.511	324.730
103.42	0.545	67.243	377.503	0.0001777	0.0002172	378.332	309.592
103.42	0.824	101.591	411.851	0.0002838	0.0003302	357.937	307.653
68.95	0.262	32.257	239.107	7.63E-05	0.0001076	422.781	299.698
68.95	0.375	46.296	253.146	0.0001314	0.0001662	352.308	278.584
68.95	0.544	67.047	273.897	0.0002108	0.0002564	318.055	261.516
68.95	0.823	101.557	308.407	0.0003345	0.0003892	303.646	260.941
34.47	0.150	18.525	121.935	5.301E-05	7.384E-05	349.487	250.893
34.47	0.261	32.218	135.628	0.0001008	0.0001447	319.770	222.717
34.47	0.375	46.275	149.685	0.000171	0.0002228	270.588	207.701
34.47	0.543	66.932	170.342	0.000273	0.0003369	245.195	198.677
13.79	0.152	18.753	60.123	5.89E-05	0.0001053	318.385	178.157
13.79	0.266	32.836	74.206	0.0001211	0.00019	271.177	172.864
13.79	0.376	46.417	87.787	0.0001939	0.0002762	239.356	168.067

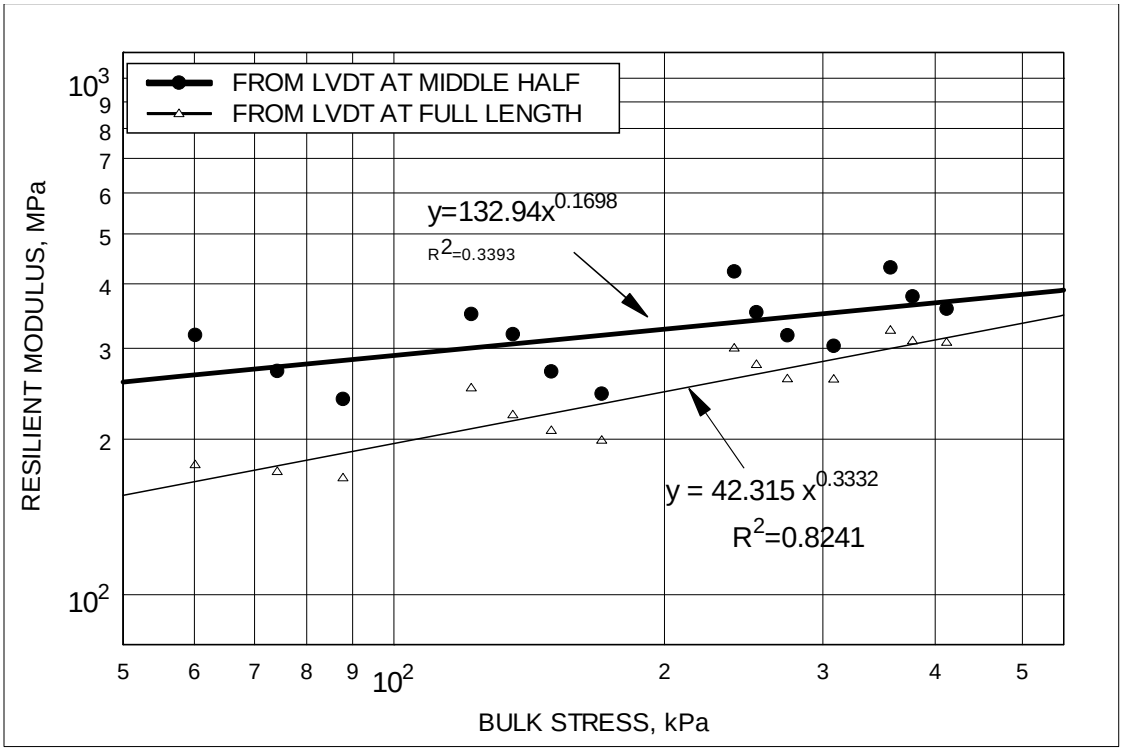


Figure D.47 Resilient Modulus vs. Bulk Stress for A-2-4 SR70 at optimum moisture (Sample # A24SR70O1)

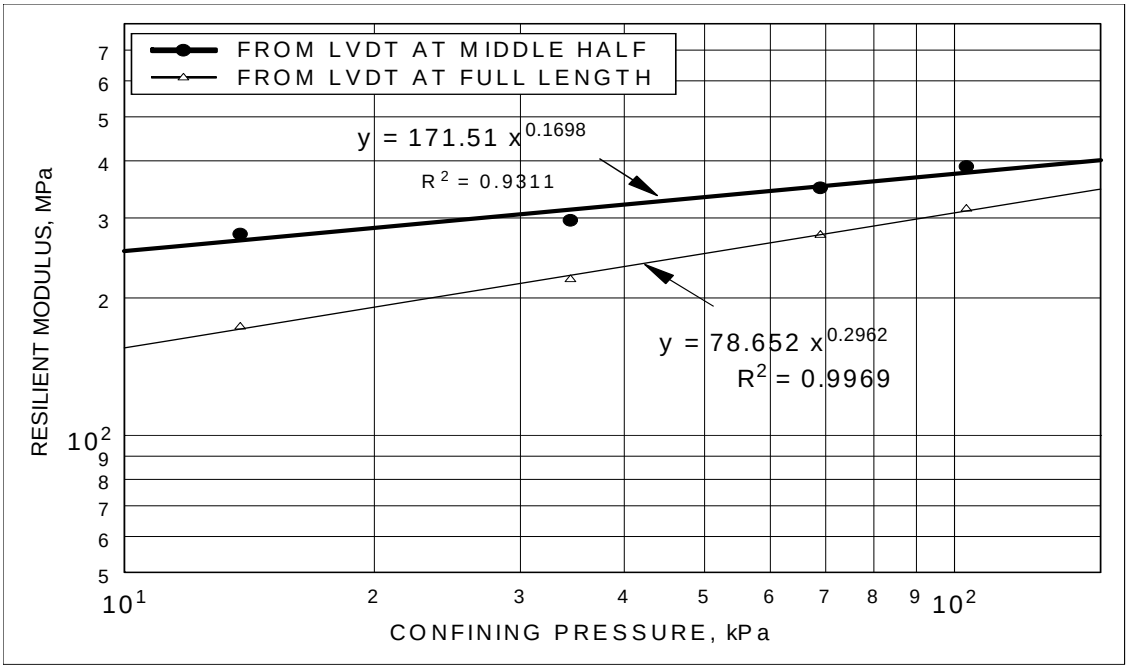


Figure D.48 Resilient Modulus vs. Confining Stress for A-2-4 SR70 at optimum moisture (Sample # A24SR70O1)

Table D.25 Triaxial test results of A-2-4 SR70 at optimum condition (Sample # A24SR70O2)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample No.	A24SR70O2			A-2-4			
				SR 70			
Lab. Moist.	10.39%			Opt. Moist.	10.60%		
Lab. Den.	119.8	pcf		Opt. Den.	122.09	pcf	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.376	46.356	356.616	0.000125	0.0001427	370.752	324.812
103.42	0.544	67.055	377.315	0.0001915	0.0002114	350.134	317.212
103.42	0.826	101.880	412.140	0.0002997	0.0003386	339.979	300.879
68.95	0.266	32.866	239.716	9.489E-05	0.000113	346.344	290.816
68.95	0.378	46.665	253.515	0.00015	0.0001748	311.086	266.972
68.95	0.547	67.502	274.352	0.0002337	0.0002624	288.835	257.246
68.95	0.825	101.744	308.594	0.0003596	0.0004142	282.937	245.661
34.47	0.152	18.799	122.209	6.079E-05	8.46E-05	309.218	222.215
34.47	0.264	32.620	136.030	0.0001238	0.000161	263.430	202.590
34.47	0.375	46.262	149.672	0.0001962	0.0002422	235.837	191.032
34.47	0.545	67.164	170.574	0.0003033	0.000367	221.457	182.998
13.79	0.153	18.827	60.197	7.767E-05	0.0001173	242.388	160.481
13.79	0.265	32.713	74.083	0.0001646	0.000226	198.687	144.731
13.79	0.377	46.532	87.902	0.000252	0.0003324	184.681	140.004

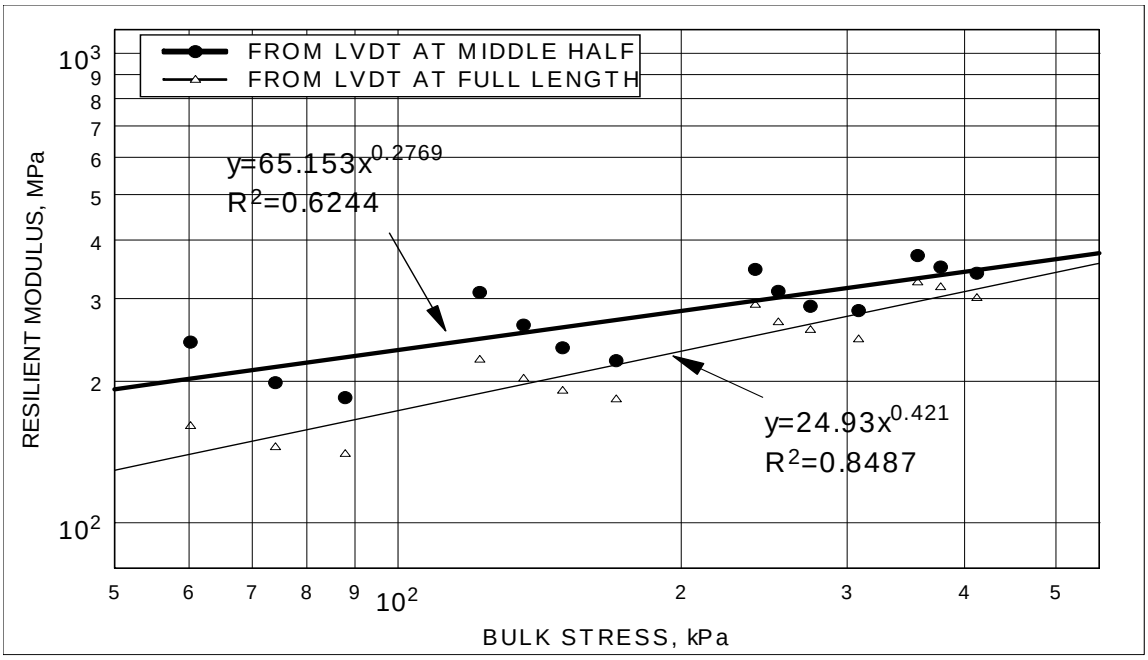


Figure D.49 Resilient Modulus vs. Bulk Stress for A-2-4 SR70 at optimum moisture (Sample # A24SR70O2)

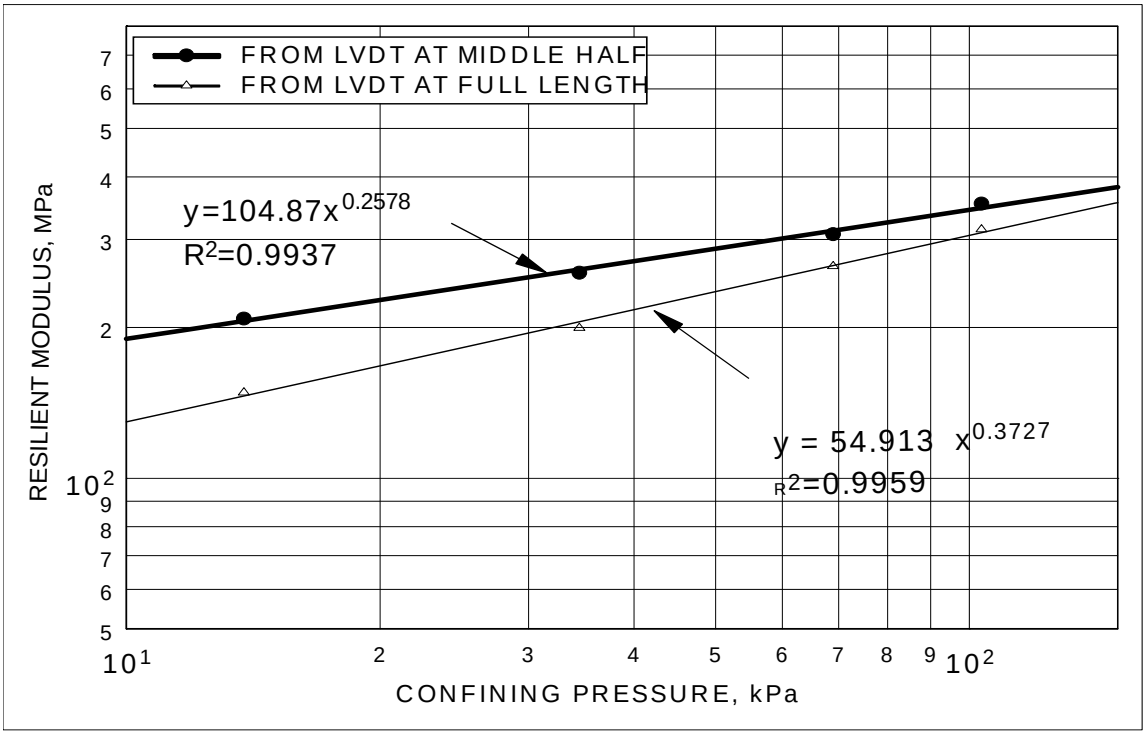


Figure D.50 Resilient Modulus vs. Confining Stress for A-2-4 SR70 at optimum moisture (Sample # A24SR70O2)

Table D.26 Triaxial test results of A-2-4 SR70 after soaking (Sample # A24SR70S1)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample No.	A24SR70S1			A-2-4			
				SR 70			
Moisture	11.23%			Opt. Moist.	10.60%		
Lab. Den.	121.4	pcf		Opt. Den.	122.4	pcf	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.373	46.056	356.316	0.0001413	0.0001681	325.882	274.049
103.42	0.542	66.863	377.123	0.0002089	0.0002424	320.088	275.847
103.42	0.821	101.267	411.527	0.000314	0.0003665	322.481	276.313
68.95	0.262	32.360	239.210	0.0001089	0.0001403	297.084	230.709
68.95	0.374	46.126	252.976	0.0001648	0.0002075	279.946	222.308
68.95	0.541	66.781	273.631	0.0002478	0.0003053	269.452	218.737
68.95	0.821	101.246	308.096	0.000373	0.000455	271.461	222.496
34.47	0.150	18.549	121.959	7.79E-05	0.0001071	238.102	173.219
34.47	0.262	32.260	135.670	0.0001468	0.000204	219.690	158.106
34.47	0.374	46.073	149.483	0.0002247	0.0002997	205.001	153.729
34.47	0.540	66.658	170.068	0.0003309	0.0004335	201.437	153.768
13.79	0.150	18.473	59.843	0.0001138	0.0001719	162.396	107.441
13.79	0.262	32.263	73.633	0.0002241	0.0003212	143.997	100.432
13.79	0.374	46.105	87.475	0.0003206	0.0004566	143.821	100.985

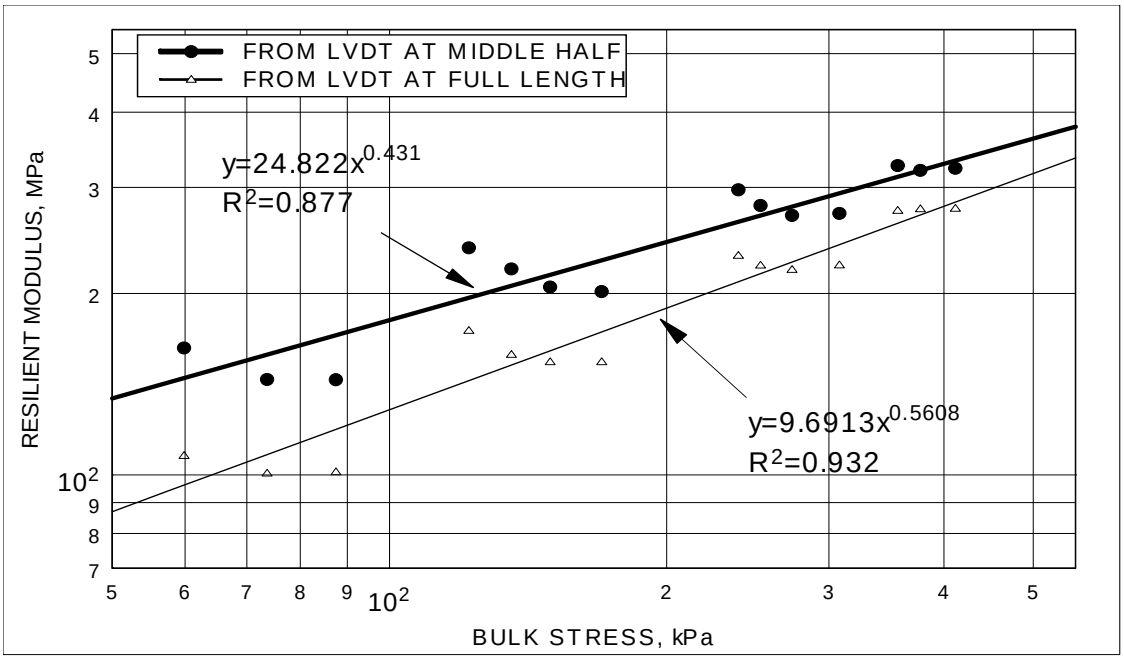


Figure D.51 Resilient Modulus vs. Bulk Stress for A-2-4 SR70 after soaking (Sample # A24SR70S1)

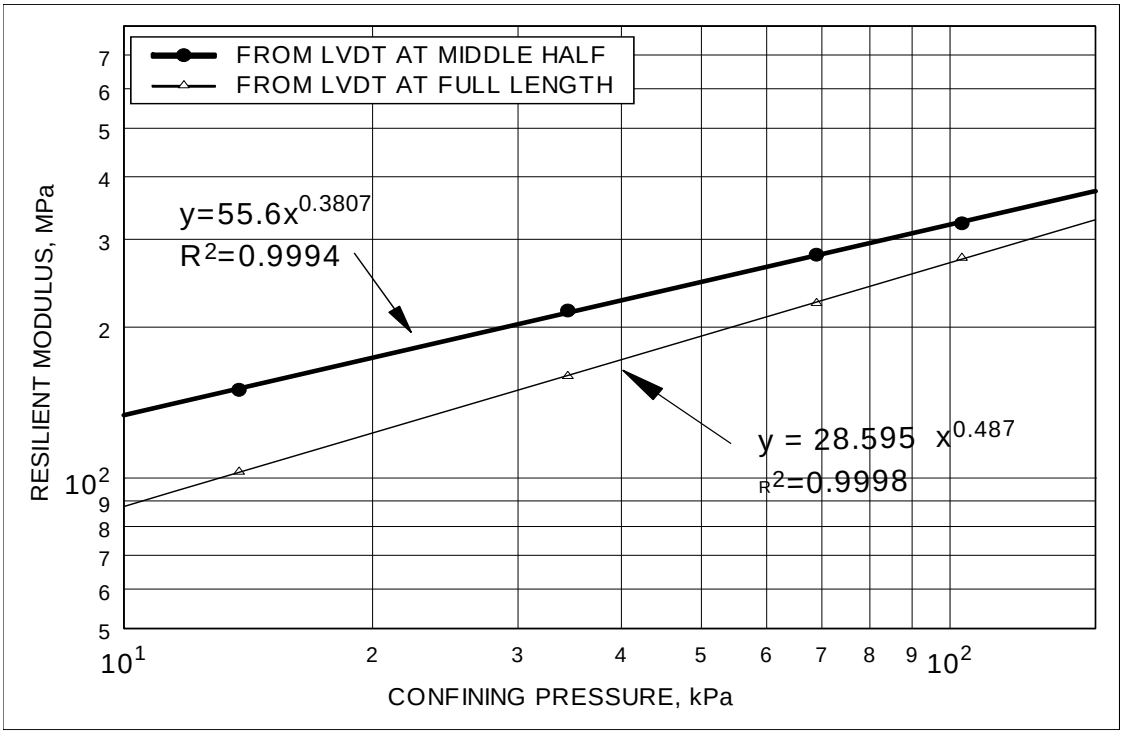


Figure D.52 Resilient Modulus vs. Confining Stress for A-2-4 SR70 after soaking (Sample # A24SR70S1)

Table D.27 Triaxial test results of A-2-4 SR70 after soaking (Sample # A24SR70S2)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample No.	A24SR70S2			A-2-4			
				SR 70			
Lab. Moist.	11.70%			Opt. Moist.	10.60%		
Lab. Den.	120	pcf		Opt. Den.	122.1	pcf	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.376	46.438	356.698	8.239E-05	0.0001922	563.602	241.627
103.42	0.542	66.874	377.134	0.000167	0.0002816	400.387	237.476
103.42	0.823	101.473	411.733	0.000286	0.0004176	354.858	243.016
68.95	0.262	32.367	239.217	6.809E-05	0.0001685	475.379	192.106
68.95	0.374	46.094	252.944	0.0001041	0.0002499	442.730	184.426
68.95	0.541	66.751	273.601	0.0002201	0.0003605	303.261	185.183
68.95	0.821	101.231	308.081	0.0003554	0.0005139	284.825	196.998
34.47	0.150	18.556	121.966	4.844E-05	0.0001478	383.102	125.546
34.47	0.261	32.211	135.621	0.0001064	0.000265	302.868	121.543
34.47	0.374	46.113	149.523	0.0002115	0.0003833	218.035	120.304
34.47	0.541	66.711	170.121	0.0003242	0.0005221	205.762	127.786
13.79	0.150	18.522	59.892	6.826E-05	0.0002299	271.350	80.569
13.79	0.261	32.197	73.567	0.0002115	0.0003958	152.239	81.348
13.79	0.374	46.099	87.469	0.0003094	0.0005458	148.999	84.469

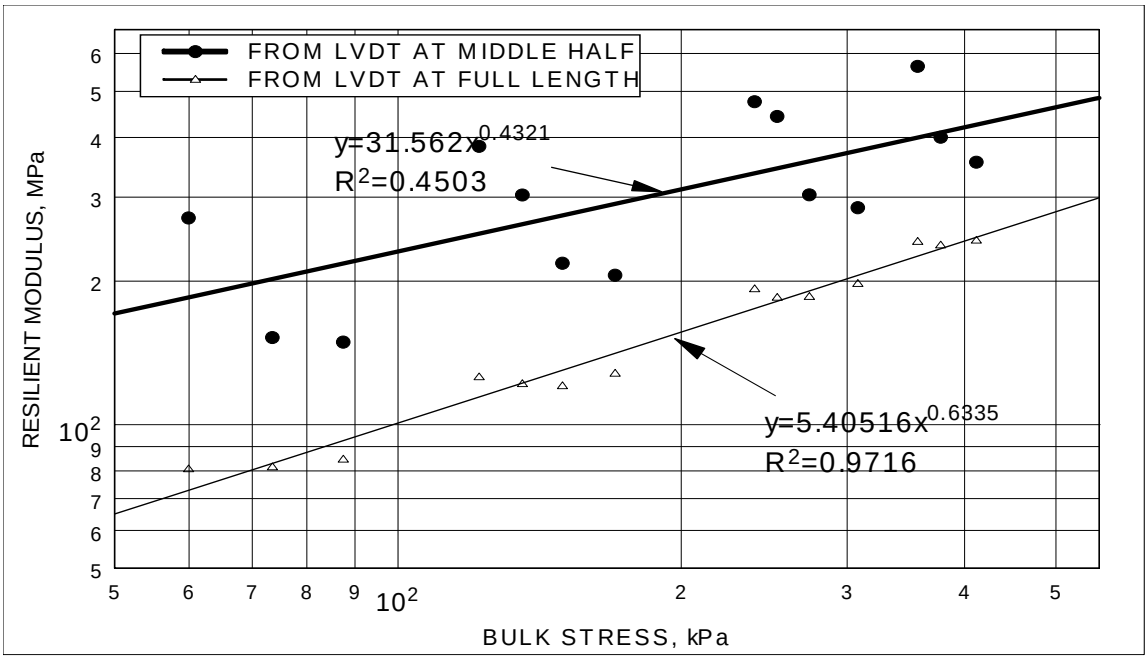


Figure D.53 Resilient Modulus vs. Bulk Stress for A-2-4 SR70 after soaking (Sample # A24SR70S2)

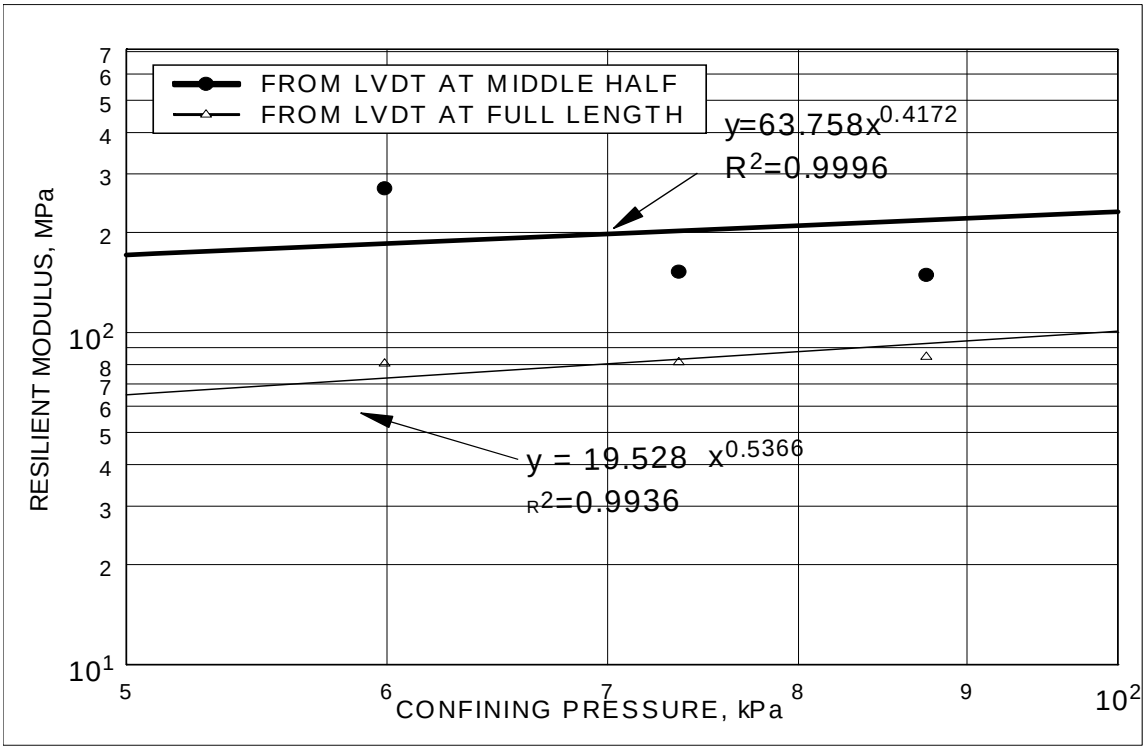


Figure D.54 Resilient Modulus vs. Confining Stress for A-2-4 SR70 after soaking (Sample # A24SR70S2)

Table D.28 Triaxial test results of A-2-4 SR70 after drying (Sample # A24SR70D3)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample No.	A24SR70D3 (without mold)			A-2-4			
				SR 70			
Lab. Moist.	10.60%			Opt. Moist.	10.60%		
Lab. Den.	120.9	pcf		Opt. Den.	122.1	pcf	
After Dying	3.12%			**Conditioning Information**			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.374	46.130	356.390	9.48E-06	4.762E-05	4866.117	968.775
103.42	0.541	66.723	376.983	1.344E-05	6.334E-05	4963.279	1053.331
103.42	0.821	101.250	411.510	2.396E-05	8.941E-05	4226.182	1132.365
68.95	0.260	32.101	238.951	4.827E-06	5.58E-05	6650.954	575.248
68.95	0.374	46.114	252.964	1.155E-05	7.95E-05	3993.025	580.028
68.95	0.541	66.687	273.537	1.534E-05	0.0001015	4347.028	657.138
68.95	0.819	101.042	307.892	2.43E-05	0.0001241	4157.499	814.174
34.47	0.150	18.473	121.883	8.617E-07	6.571E-05	21436.627	281.112
34.47	0.262	32.301	135.711	7.754E-06	0.0001079	4165.625	299.242
34.47	0.374	46.088	149.498	8.964E-06	0.0001332	5141.738	346.128
34.47	0.542	66.827	170.237	9.826E-06	0.0001599	6801.172	418.008
13.79	0.150	18.462	59.832	5.17E-06	0.0001161	3570.749	158.972
13.79	0.262	32.273	73.643	6.894E-06	0.0001713	4681.476	188.412
13.79	0.374	46.145	87.515	1.172E-05	0.0002058	3937.261	224.262

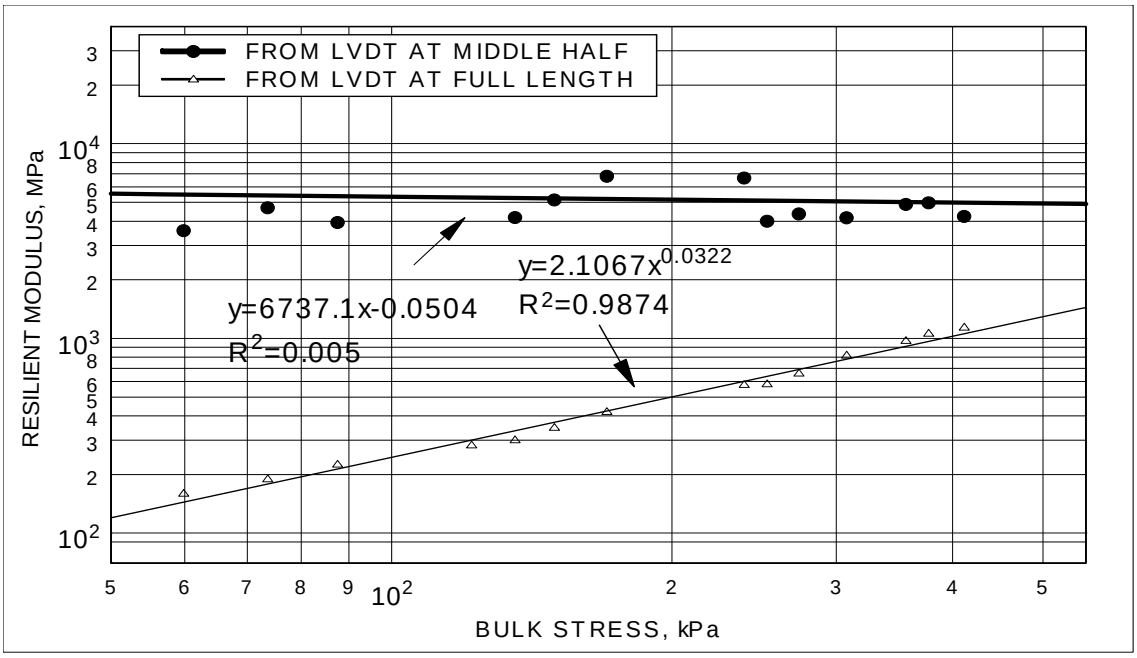


Figure D.55 Resilient Modulus vs. Bulk Stress for A-2-4 SR70 after drying (Sample # A24SR70D3)

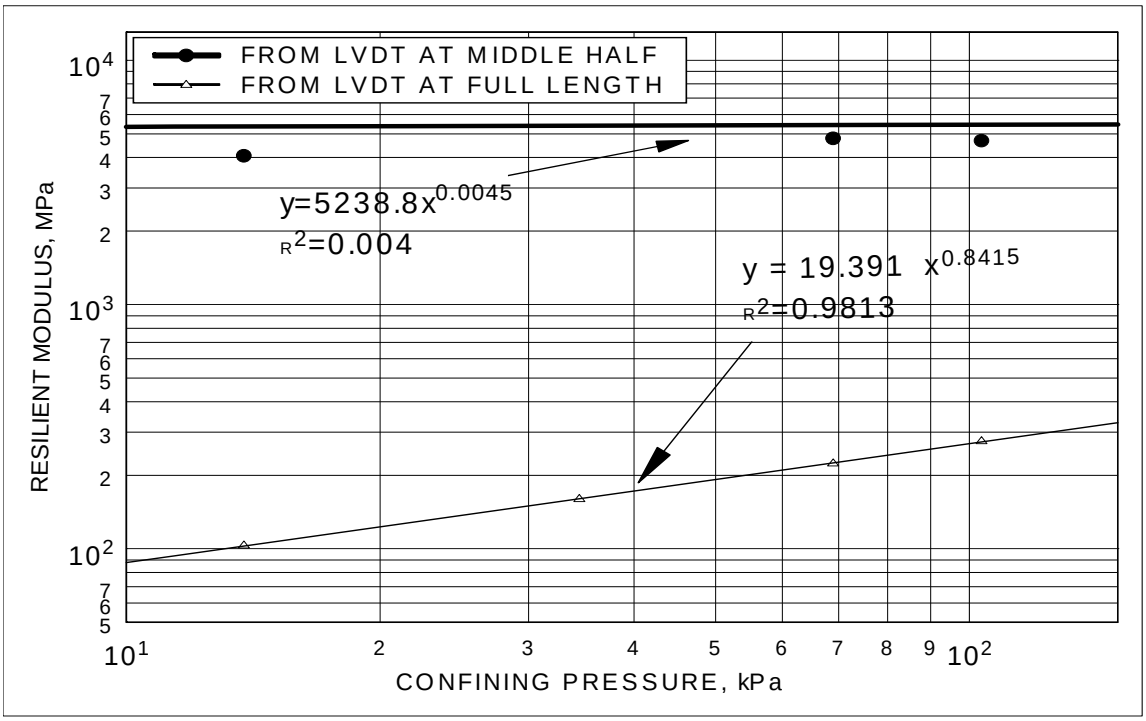


Figure D.56 Resilient Modulus vs. Confining Stress for A-2-4 SR70 after drying (Sample # A24SR70D3)

D.5 A-2-4, 20% Soil

Table D.29 Resilient Modulus of A-2-4, 20% at OMC (Sample # A2420%O1)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample #	A2420%O1			A-2-4, 20%			
Lab. Moist.	10%			Opt. Moist.	10%		
Lab. Den.	117.9	pcf		Opt. Den.	124.4	pcf	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.373	46.065	356.325	0.0001448	0.000158	318.213	291.681
103.42	0.540	66.656	376.916	0.0002072	0.000225	321.635	296.617
103.42	0.819	101.076	411.336	0.0003021	0.000335	334.532	301.686
68.95	0.263	32.420	239.270	0.0001275	0.000144	254.234	224.585
68.95	0.374	46.073	252.923	0.0001764	0.000205	261.236	224.383
68.95	0.541	66.707	273.557	0.0002647	0.000293	251.982	227.486
68.95	0.822	101.395	308.245	0.0003839	0.000419	264.135	241.956
34.47	0.150	18.467	121.877	0.0001125	0.000123	164.210	149.585
34.47	0.262	32.292	135.702	0.0001896	0.000216	170.290	149.726
34.47	0.374	46.086	149.496	0.0002662	0.0003	173.140	153.773
34.47	0.541	66.681	170.091	0.0003526	0.000405	189.130	164.620
13.79	0.149	18.369	59.739	0.0001492	0.000185	123.103	99.134
13.79	0.263	32.396	73.766	0.0002489	0.000308	130.153	105.146
13.79	0.374	46.103	87.473	0.0003279	0.000401	140.592	115.104

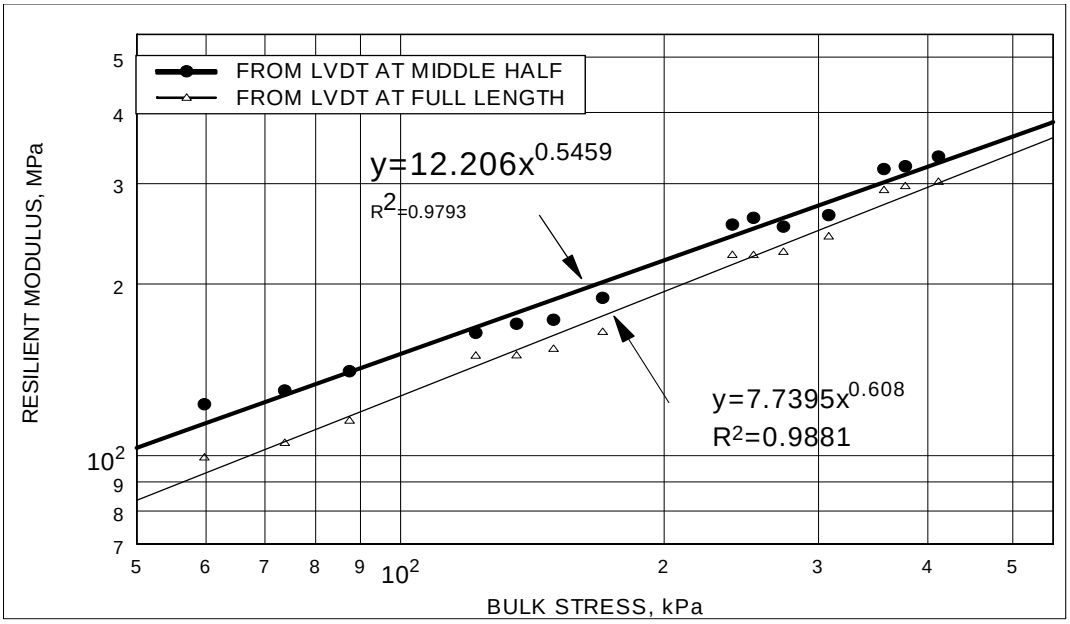


Figure D.57 Resilient Modulus vs. Bulk Stress for A-2-4 20% at OMC (Sample # A2420%O1)

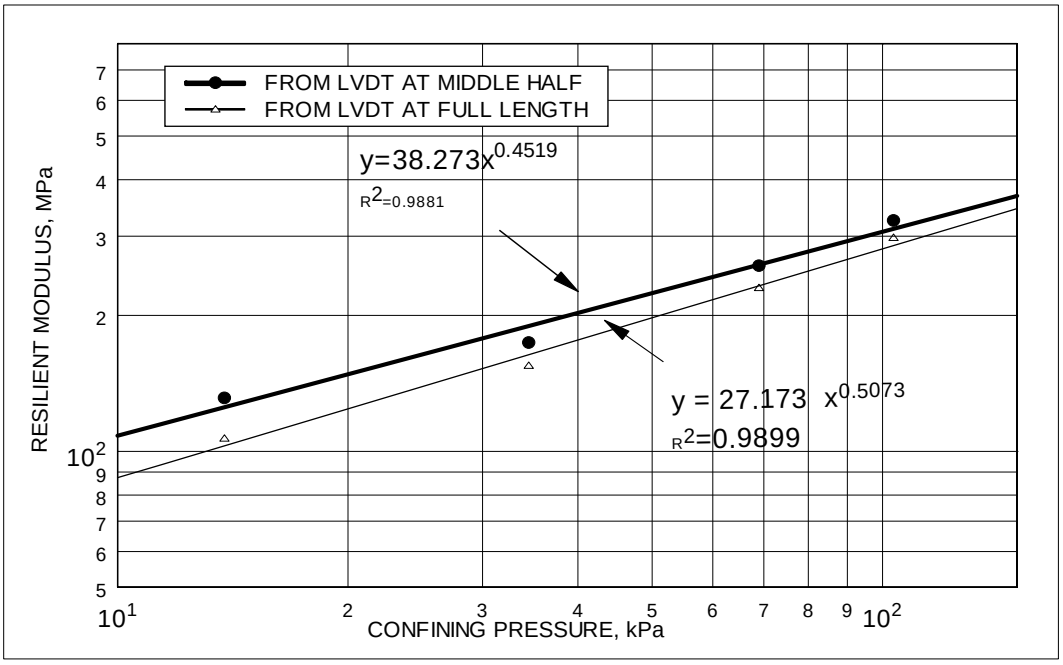


Figure D.58 Resilient Modulus vs. Confining Stress for A-2-4 20% at OMC (Sample # A2420%O1)

Table D.30 Resilient Modulus of A-2-4, 20% at OMC (Sample # A2420%O2)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample #	A2420%O2			A-2-4, 20%			
Lab. Moist.	10%			Opt. Moist.	10%		
Lab. Den.	118.9	pcf		Opt. Den.	124.4	pcf	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.373	45.976	356.236	0.000138	0.148152	332.234	310.332
103.42	0.542	66.802	377.062	0.0002	0.208078	333.234	321.043
103.42	0.821	101.265	411.525	0.000279	0.303149	362.954	334.044
68.95	0.261	32.226	239.076	0.000117	0.131173	274.825	245.672
68.95	0.374	46.114	252.964	0.000169	0.177752	272.934	259.431
68.95	0.541	66.785	273.635	0.000247	0.258765	270.109	258.091
68.95	0.821	101.310	308.160	0.00035	0.387608	289.171	261.373
34.47	0.151	18.588	121.998	0.0001	0.115485	185.064	160.959
34.47	0.261	32.205	135.615	0.00017	0.196497	189.687	163.895
34.47	0.373	46.005	149.415	0.000252	0.276647	182.518	166.294
34.47	0.541	66.707	170.117	0.000337	0.387177	197.876	172.292
13.79	0.151	18.568	59.938	0.000152	0.184	122.483	100.911
13.79	0.262	32.284	73.654	0.000256	0.30121	125.877	107.182
13.79	0.374	46.154	87.524	0.000343	0.399458	134.448	115.542

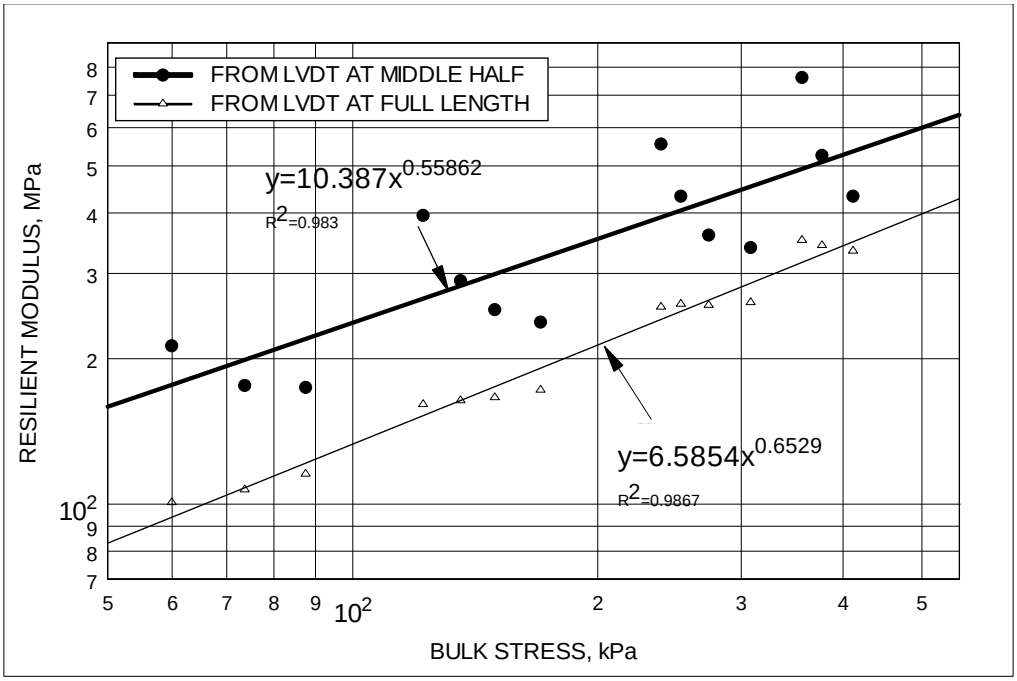


Figure D.59 Resilient Modulus vs. Bulk Stress for A-2-4 20% at OMC (Sample # A2420%O2)

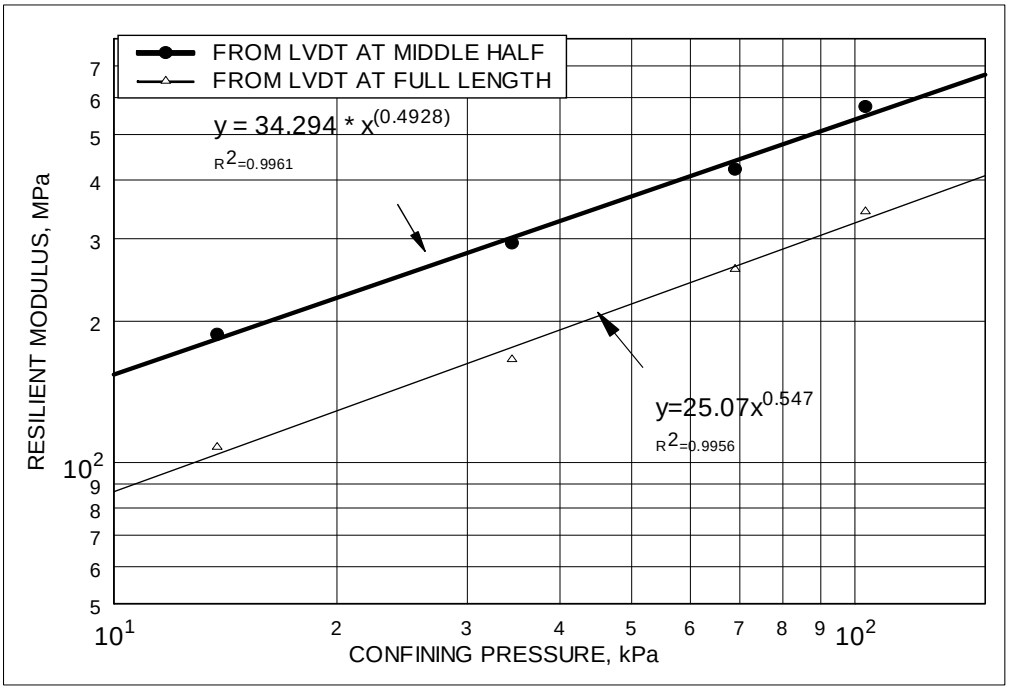


Figure D.60 Resilient Modulus vs. Confining Stress for A-2-4 20% at OMC (Sample # A2420%O2)

Table D.31 Resilient Modulus of A-2-4 20% after drying (Sample # A2420%D1)

		Summary Resilient Modulus Test Result					
Test Type:	**T292-91I**			**Soil Identification**			
Sample #	A2420%D1			A-2-4.20%			
Lab. Moist.	10.00%			Opt. Moist.	10.00%		
Lab. Den.	117.3	pcf		Opt. Den.	124.4	pcf	
After drying	8.26%						
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.374	46.107	356.367	0.0001327	0.000128	347.405	339.051
103.42	0.542	66.811	377.071	0.0001937	0.000189	344.861	343.582
103.42	0.820	101.174	411.434	0.0002901	0.000283	348.774	337.093
68.95	0.262	32.260	239.110	0.000107	0.000111	301.387	291.865
68.95	0.374	46.139	252.989	0.0001562	0.000162	295.460	285.526
68.95	0.541	66.791	273.641	0.0002273	0.000235	293.784	284.138
68.95	0.821	101.320	308.170	0.0003335	0.000345	303.788	293.908
34.47	0.151	18.568	121.978	7.17E-05	9.31E-05	258.951	199.484
34.47	0.262	32.349	135.759	0.0001338	0.000165	241.852	195.748
34.47	0.373	46.041	149.451	0.0001872	0.000227	245.964	202.740
34.47	0.542	66.829	170.239	0.000272	0.000317	245.704	210.857
13.79	0.151	18.581	59.951	9.032E-05	0.000155	205.727	119.776
13.79	0.262	32.258	73.628	0.000162	0.000253	199.097	127.745
13.79	0.374	46.071	87.441	0.0002308	0.000338	199.618	136.283

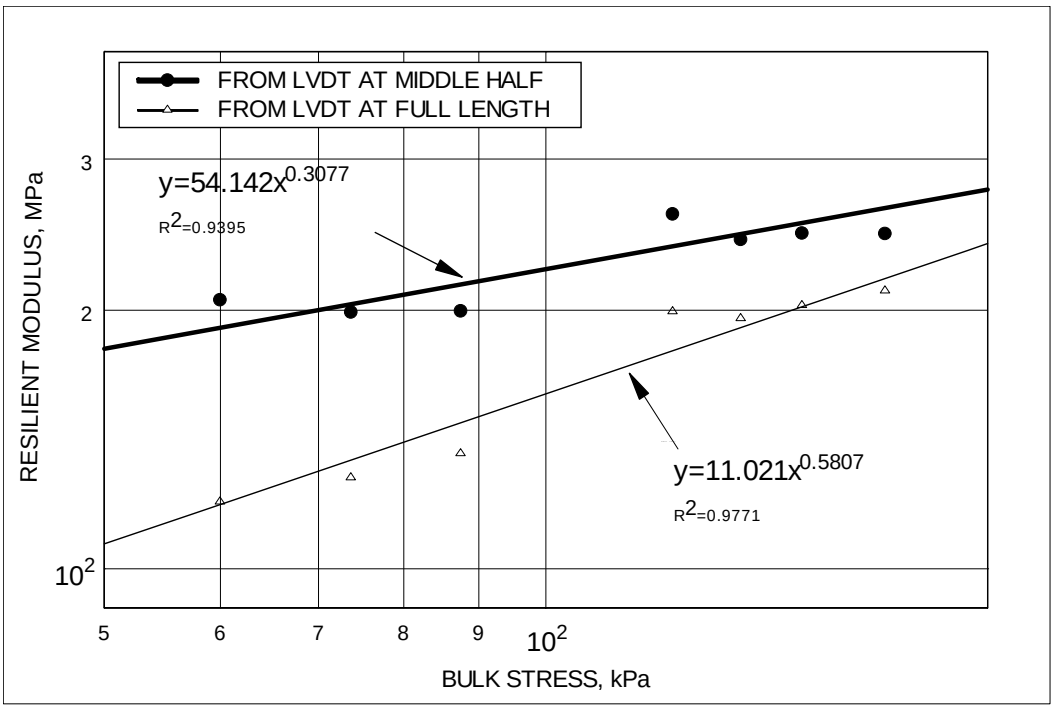


Figure D.61 Resilient Modulus vs. Bulk Stress for A-2-4 20% after drying (Sample # A2420%D1)

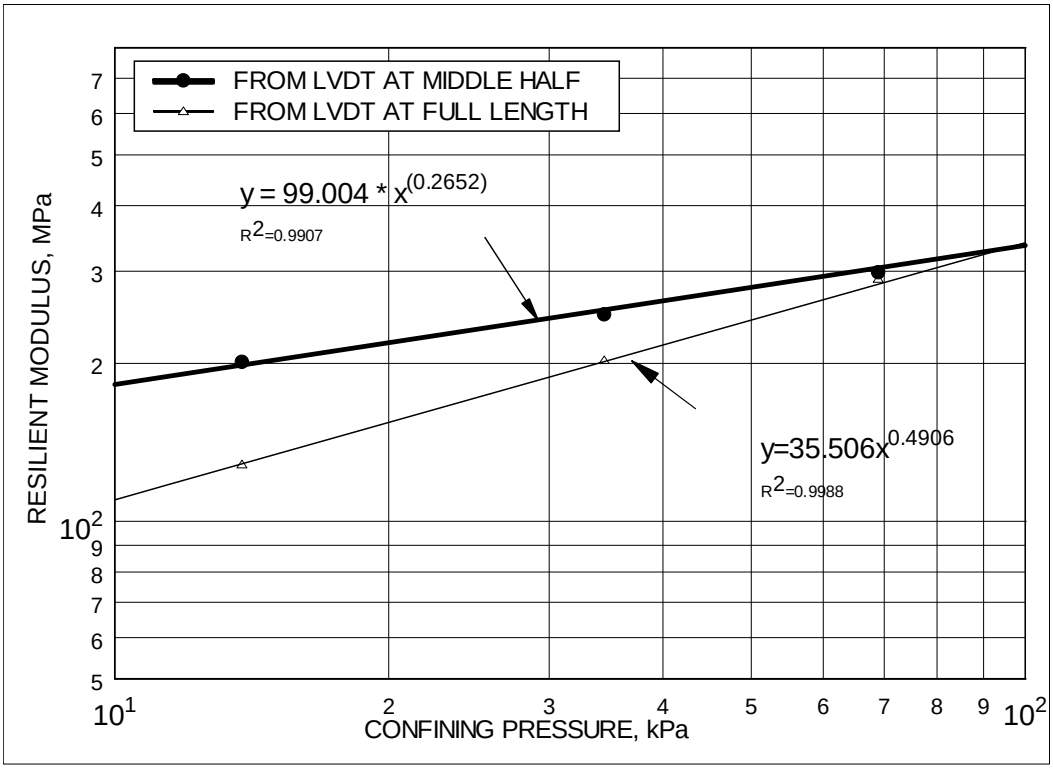


Figure D.62 Resilient Modulus vs. Confining Stress for A-2-4 20% after drying (Sample # A2420%D1)

Table D.32 Resilient Modulus of A-2-4 20% after drying (Sample # A2420%D2)

		Summary Resilient Modulus Test Result					
Test Type:	**T292-91I**			**Soil Identification**			
Sample #	A2420%D2			A-2-4, 20%			
Lab. Moist.	10.00%			Opt. Moist.	10%		
Lab. Den.	117.9	pcf		Opt. Den.	124.4	pcf	
After drying	7.32%						
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.373	45.969	356.229	0.000108	0.000117	426.041	394.371
103.42	0.541	66.709	376.969	0.000163	0.000169	409.559	394.920
103.42	0.821	101.288	411.548	0.000257	0.000262	394.130	386.599
68.95	0.261	32.209	239.059	8.65E-05	0.000101	372.248	320.106
68.95	0.373	46.046	252.896	0.000132	0.000146	348.762	316.145
68.95	0.540	66.641	273.491	0.000196	0.000215	339.455	310.543
68.95	0.821	101.263	308.113	0.000311	0.000328	325.129	308.798
34.47	0.150	18.482	121.892	6.2E-05	8.08E-05	297.871	228.753
34.47	0.261	32.222	135.632	0.000119	0.000148	270.155	218.322
34.47	0.374	46.082	149.492	0.000177	0.000215	260.840	214.525
34.47	0.541	66.751	170.161	0.000263	0.000307	254.285	217.716
13.79	0.150	18.488	59.858	8.29E-05	0.000137	223.008	134.707
13.79	0.261	32.254	73.624	0.000153	0.000229	211.213	140.960
13.79	0.374	46.103	87.473	0.000224	0.000313	206.232	147.064

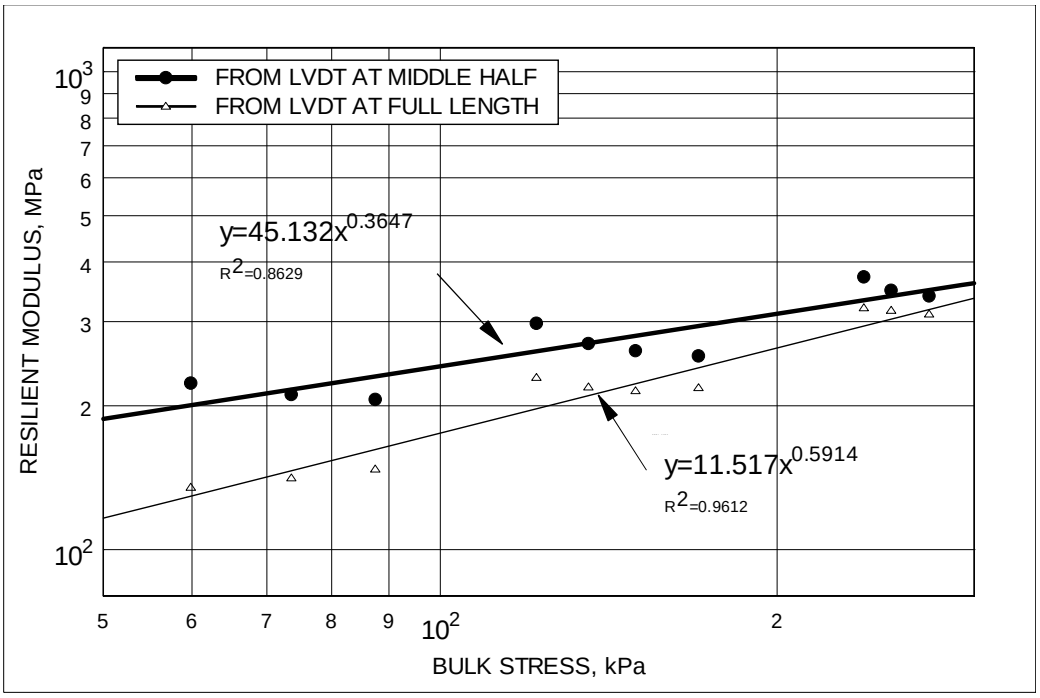


Figure D.63 Resilient Modulus vs. Bulk Stress for A-2-4 20% after drying (Sample # A2420%D2)

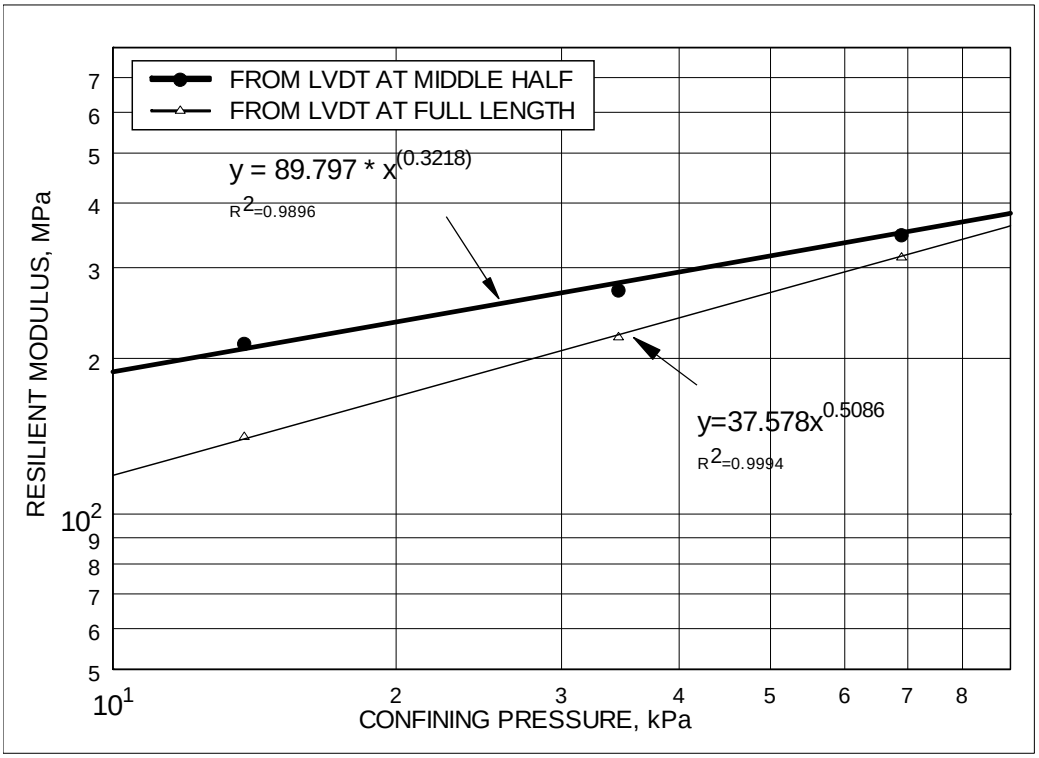


Figure D.64 Resilient Modulus vs. Confining Pressure for A-2-4 20% after drying (Sample # A2420%D2)

Table D.33 Resilient Modulus of A-2-4 20% after soaking (Sample # A2420%S1)

		Summary Resilient Modulus Test Result					
Test Type:	**T292-91I**			**Soil Identification**			
Sample #	A2420%S1			A-2-4, 20%			
Lab. Moist.	10.00%			Opt. Moist.	10.00%		
Lab. Den.	119	pcf		Opt. Den.	124.4	pcf	
After soaking	11.57%						
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.373	46.022	356.282	0.00015	0.000172	306.904	267.669
103.42	0.541	66.738	376.998	0.000221	0.000246	302.262	270.997
103.42	0.820	101.100	411.360	0.000328	0.000366	308.553	276.021
68.95	0.262	32.284	239.134	0.000132	0.000154	245.163	209.861
68.95	0.374	46.103	252.953	0.000189	0.000221	244.273	208.962
68.95	0.542	66.868	273.718	0.000274	0.000319	243.690	209.416
68.95	0.821	101.233	308.083	0.000402	0.00046	251.965	219.968
34.47	0.150	18.496	121.906	0.000104	0.000129	178.253	142.835
34.47	0.261	32.203	135.613	0.000187	0.00023	172.356	139.816
34.47	0.373	46.058	149.468	0.000266	0.000324	172.844	142.227
34.47	0.541	66.675	170.085	0.000371	0.000445	179.505	149.859
13.79	0.150	18.464	59.834	0.000151	0.000196	122.284	94.170
13.79	0.261	32.220	73.590	0.000258	0.000327	124.955	98.383
13.79	0.374	46.092	87.462	0.000346	0.00043	133.042	107.284

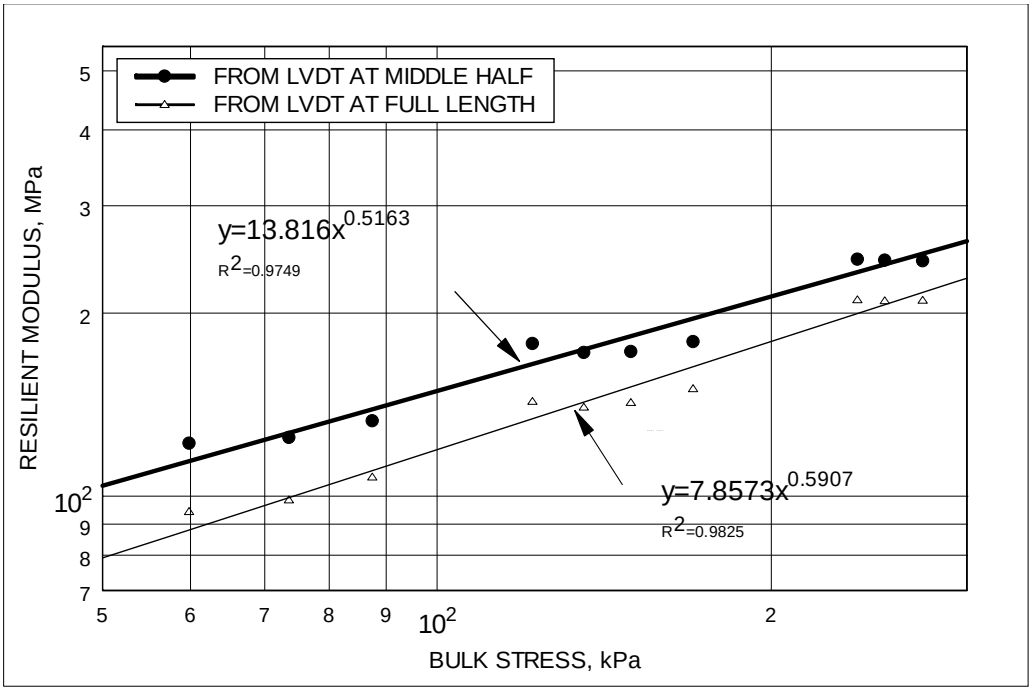


Figure D.65 Resilient Modulus vs. Bulk Stress for A-2-4 20% after soaking (Sample# A2420%S1)

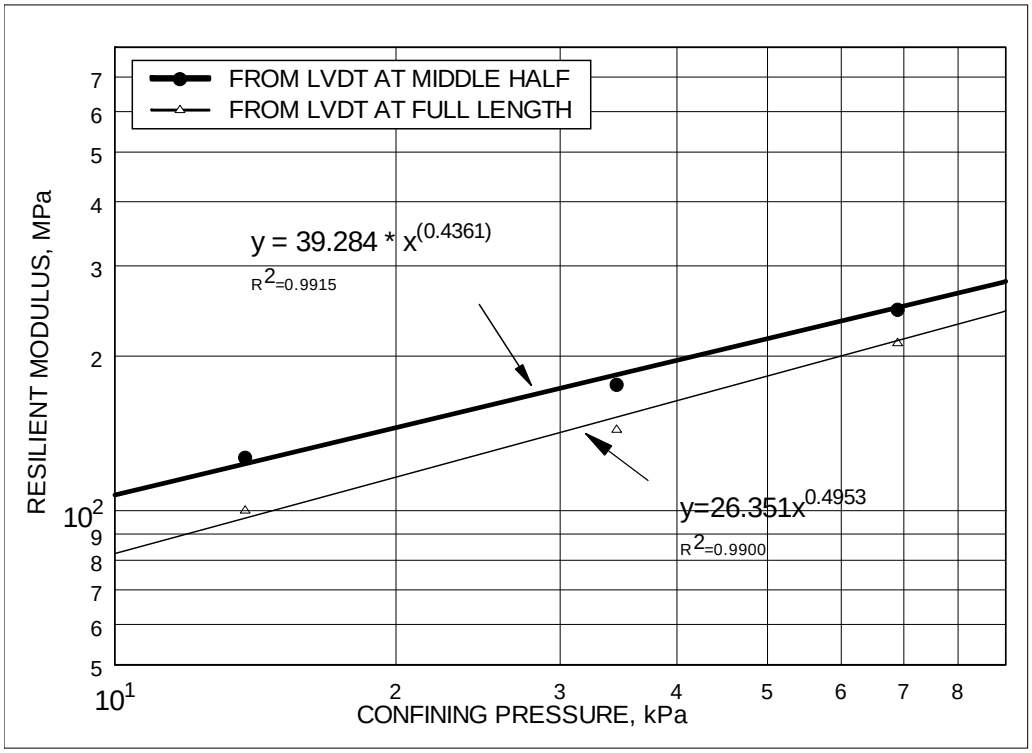


Figure D.66 Resilient Modulus vs. Confining Pressure for A-2-4 20% after soaking (Sample # A2420%S1)

Table D.34 Resilient Modulus of A-2-4 20% after soaking (Sample # A2420%S2)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample #	A2420%S2			A-2-4, 20%			
Lab. Moist.	10%			Opt. Moist.	10%		
Lab. Den.	118	pcf		Opt. Den.	124.4	pcf	
After Soaking	12.27%						
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.374	46.088	356.348	0.0001565	0.000171	294.505	270.085
103.42	0.541	66.770	377.030	0.0002323	0.000245	287.395	272.798
103.42	0.820	101.131	411.391	0.0003468	0.000365	291.637	277.245
68.95	0.262	32.330	239.180	0.0001424	0.000156	227.094	206.683
68.95	0.374	46.111	252.961	0.0002092	0.00022	220.378	209.816
68.95	0.541	66.742	273.592	0.0002989	0.000318	223.324	209.727
68.95	0.821	101.320	308.170	0.0004236	0.000455	239.167	222.553
34.47	0.150	18.507	121.917	0.0001151	0.000132	160.750	139.896
34.47	0.263	32.392	135.802	0.0002044	0.000232	158.467	139.462
34.47	0.373	46.052	149.462	0.0002899	0.000324	158.859	141.926
34.47	0.541	66.681	170.091	0.0003916	0.000438	170.287	152.306
13.79	0.150	18.513	59.883	0.0001827	0.000208	101.333	88.855
13.79	0.262	32.320	73.690	0.0002944	0.000336	109.793	96.159
13.79	0.374	46.186	87.556	0.0003702	0.000433	124.757	106.649

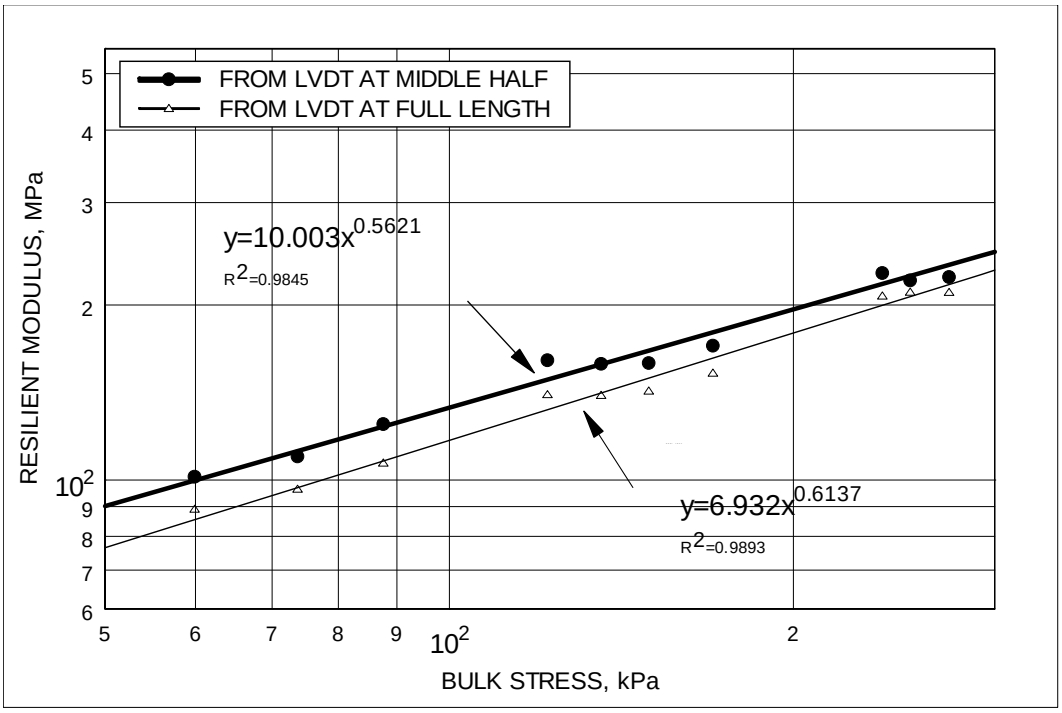


Figure D.67 Resilient Modulus vs. Bulk Stress for A-2-4 20% after soaking (Sample # A2420%S2)

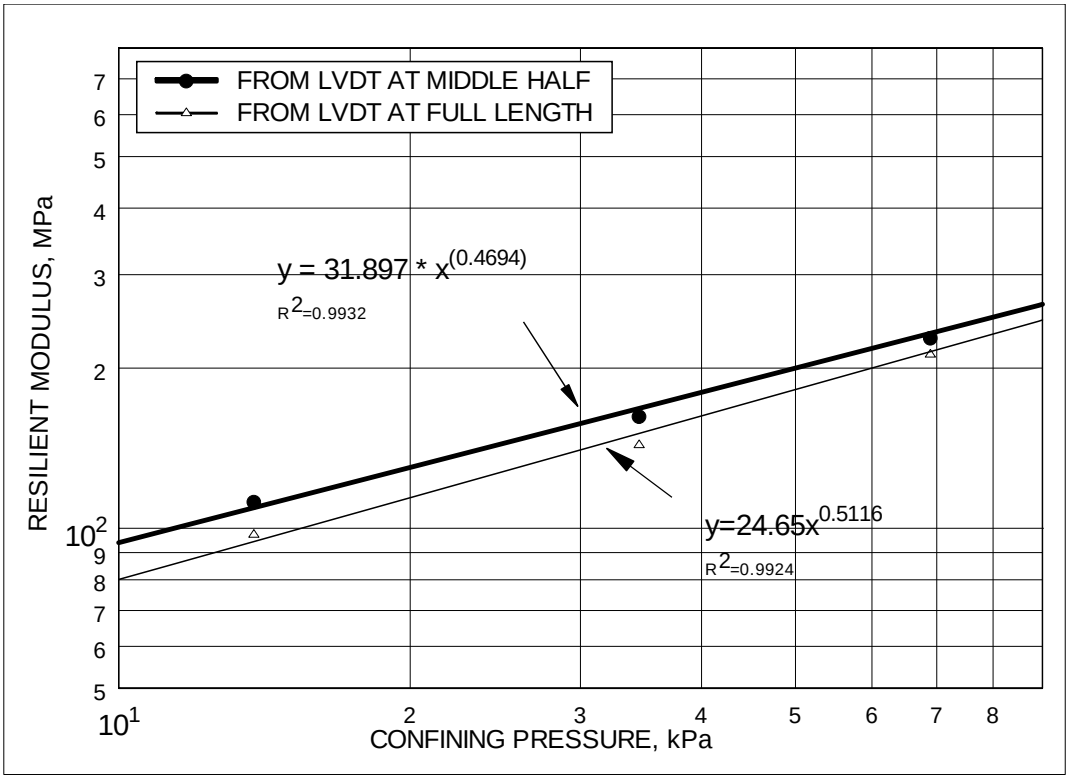


Figure D.68 Resilient Modulus vs. Confining Pressure for A-2-4 20% after soaking (Sample # A2420%S2)

D.6 A-2-4, 24% Soil

Table D.35 Resilient Modulus of A-2-4 24% at OMC (Sample # A2424%O1)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample #	A2424%O1			A-2-4, 24%			
Lab. Moist.	10.70%			Opt. Moist.	10.70%		
Lab. Den.	115.1	pcf		Opt. Den.	116.3	pcf	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			
Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.373	46.046	356.306	0.000213	0.000208	216.153	221.236
103.42	0.541	66.685	376.945	0.000308	0.000298	216.395	223.629
103.42	0.820	101.178	411.438	0.000452	0.000434	223.893	233.050
68.95	0.262	32.316	239.166	0.000171	0.000188	189.398	171.810
68.95	0.374	46.177	253.027	0.000249	0.000265	185.801	174.528
68.95	0.542	66.840	273.690	0.00036	0.00037	185.735	180.467
68.95	0.821	101.316	308.166	0.000518	0.000529	195.428	191.386
34.47	0.151	18.645	122.055	0.000121	0.000157	154.105	118.707
34.47	0.261	32.250	135.660	0.000222	0.000265	145.054	121.693
34.47	0.374	46.099	149.509	0.000317	0.000369	145.366	125.050
34.47	0.542	66.847	170.257	0.000445	0.0005	150.333	133.617
13.79	0.150	18.477	59.847	0.00017	0.00022	108.948	84.157
13.79	0.262	32.332	73.702	0.000292	0.000358	110.739	90.235
13.79	0.374	46.107	87.477	0.00039	0.000472	118.371	97.625

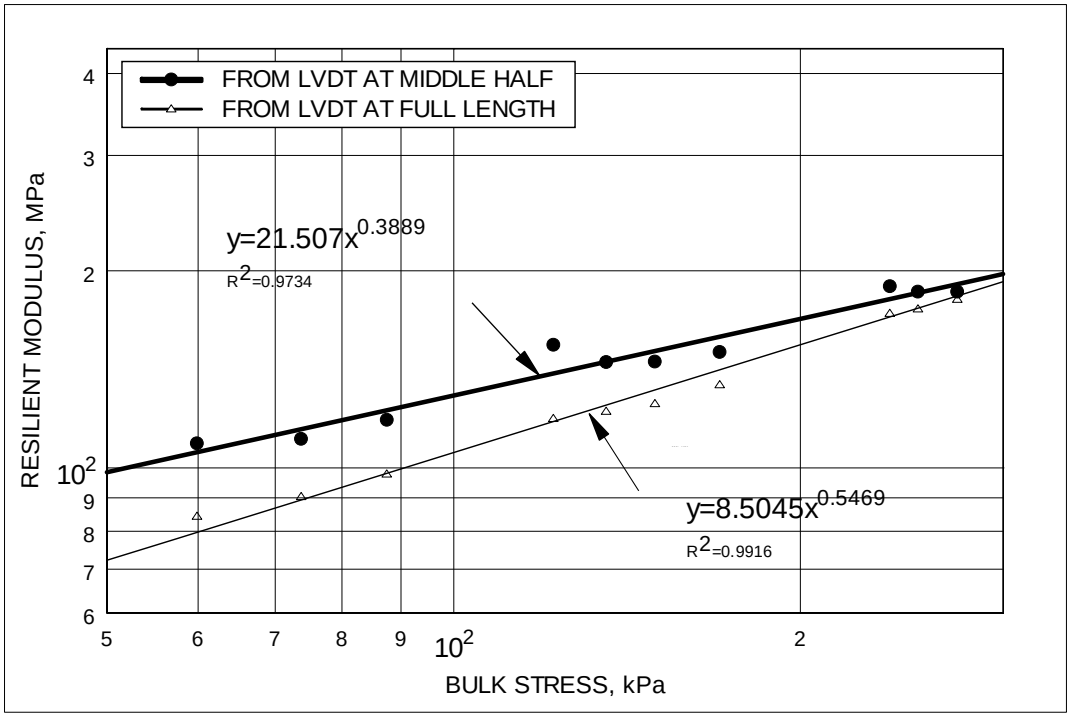


Figure D.69 Resilient Modulus vs. Bulk Stress for A-2-4 24% at OMC (Sample # A2424%O1)

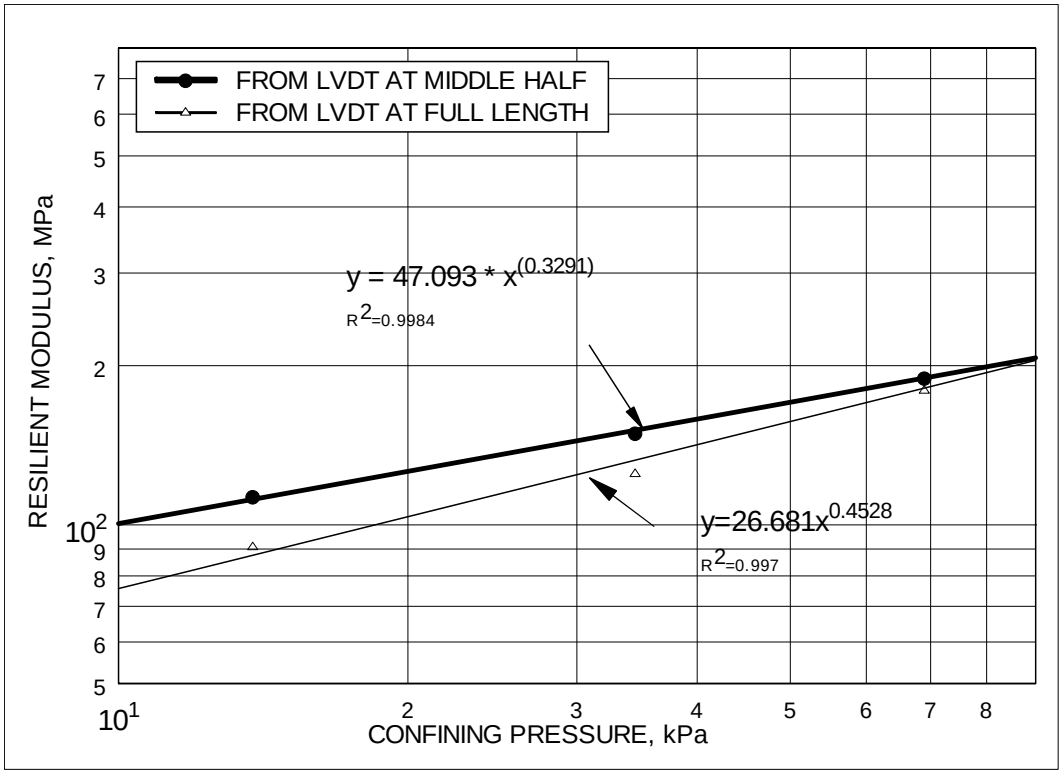


Figure D.70 Resilient Modulus vs. Confining Pressure for A-2-4 24% at OMC (Sample # A2424%O1)

Table D.36 Resilient Modulus of A-2-4 24% at OMC (Sample # A2424%O2)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample #	A2424%O2			A-2-4, 24%			
Lab. Moist.	10.70%			Opt. Moist.	10.70%		
Lab. Den.	115.7	pcf		Opt. Den.	116.3	pcf	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			
Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.373	46.067	356.327	0.00017	0.000173	271.634	266.267
103.42	0.541	66.751	377.011	0.000261	0.00026	256.149	256.253
103.42	0.821	101.318	411.578	0.000408	0.000404	248.042	251.065
68.95	0.262	32.265	239.115	0.000151	0.000168	214.197	191.745
68.95	0.373	45.988	252.838	0.000224	0.000238	205.568	193.335
68.95	0.541	66.774	273.624	0.000324	0.000342	205.860	195.161
68.95	0.820	101.150	308.000	0.000491	0.000508	206.213	199.263
34.47	0.150	18.505	121.915	0.000113	0.000144	163.673	128.767
34.47	0.261	32.245	135.655	0.000209	0.000249	154.363	129.685
34.47	0.375	46.224	149.634	0.000301	0.000346	153.783	133.586
34.47	0.541	66.760	170.170	0.000428	0.000482	155.939	138.451
13.79	0.150	18.458	59.828	0.000166	0.000211	111.325	87.595
13.79	0.262	32.282	73.652	0.000286	0.000351	112.971	91.865
13.79	0.373	46.010	87.380	0.000393	0.00047	116.984	97.958

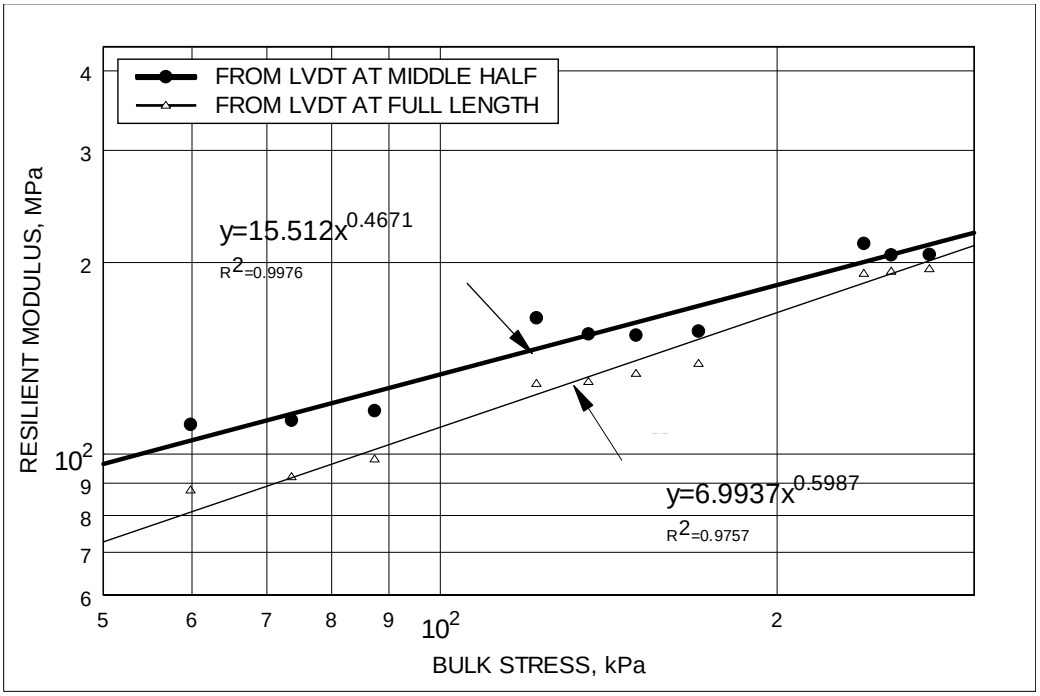


Figure D.71 Resilient Modulus vs. Bulk Stress for A-2-4 24% at OMC (Sample # A2424%O2)

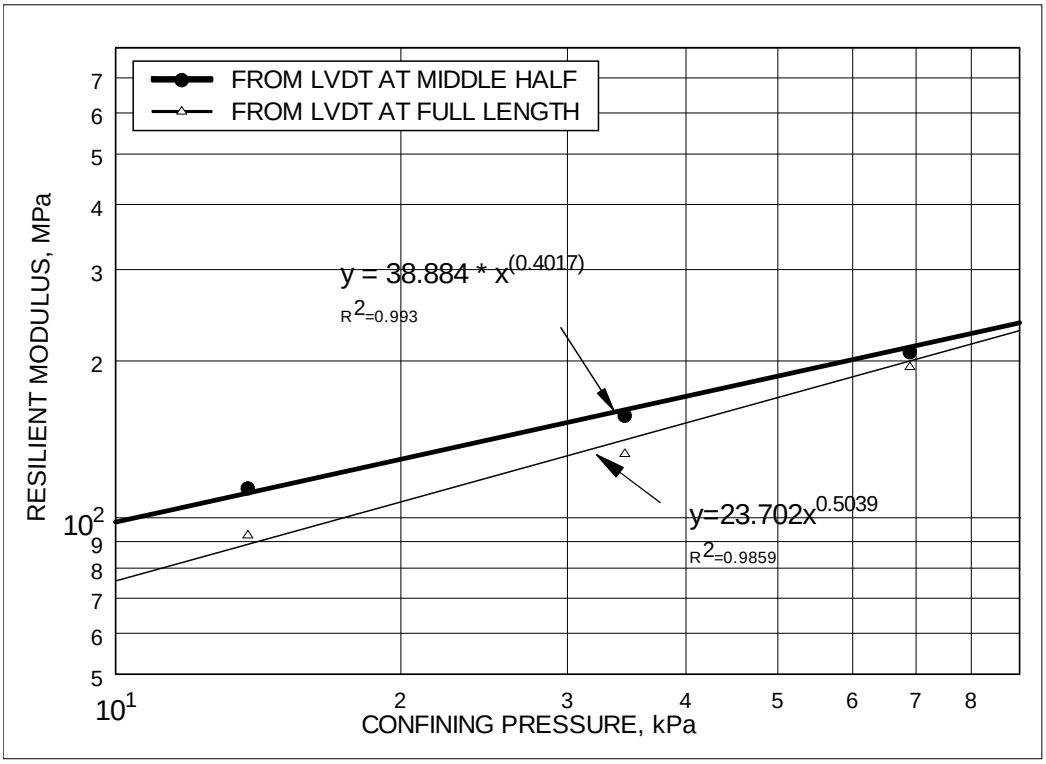


Figure D.72 Resilient Modulus vs. Confining Pressure for A-2-4 24% at OMC (Sample # A2424%O2)

Table D.37 Resilient Modulus of A-2-4, 24% after drying (Sample # A2424%D1)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample #	A2424%D1			A-2-4, 24%			
Lab. Moist.	10.70%			Opt. Moist.	10.70%		
Lab. Den.	114.0	pcf		Opt. Den.	116.3	pcf	
After drying	7.65%						
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	Axial Load	Dev. Stress	Bulk Stress	Middle Strain	Full Length Strain	Middle Modulus	Full Length Modulus
kPa	kN	kPa	kPa			MPa	Mpa
103.42	0.373	45.999	356.259	0.000176	0.000189	260.875	243.439
103.42	0.543	66.950	377.210	0.000259	0.000271	258.090	247.398
103.42	0.820	101.119	411.379	0.000388	0.000394	260.858	256.882
68.95	0.261	32.199	239.049	0.000155	0.000168	207.569	192.089
68.95	0.374	46.088	252.938	0.000227	0.000239	203.184	192.883
68.95	0.541	66.690	273.540	0.000326	0.000337	204.612	198.035
68.95	0.821	101.290	308.140	0.000483	0.000494	209.727	205.200
34.47	0.149	18.426	121.836	0.000115	0.000132	160.513	139.966
34.47	0.261	32.224	135.634	0.000214	0.000233	150.527	138.481
34.47	0.374	46.186	149.596	0.000307	0.00033	150.625	140.016
34.47	0.541	66.747	170.157	0.000429	0.000453	155.585	147.310
13.79	0.150	18.528	59.898	0.000156	0.000191	118.517	96.948
13.79	0.262	32.316	73.686	0.000282	0.000322	114.675	100.260
13.79	0.374	46.099	87.469	0.000382	0.000428	120.749	107.626

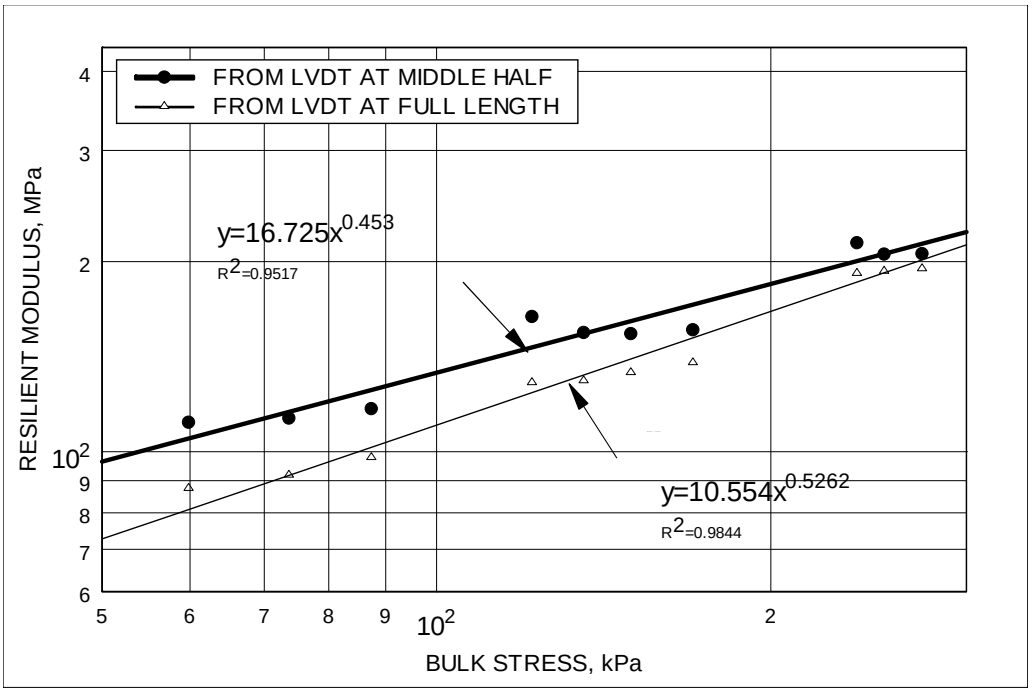


Figure D.73 Resilient Modulus vs. Bulk Stress for A-2-4, 24% after drying (Sample # A2424%D1)

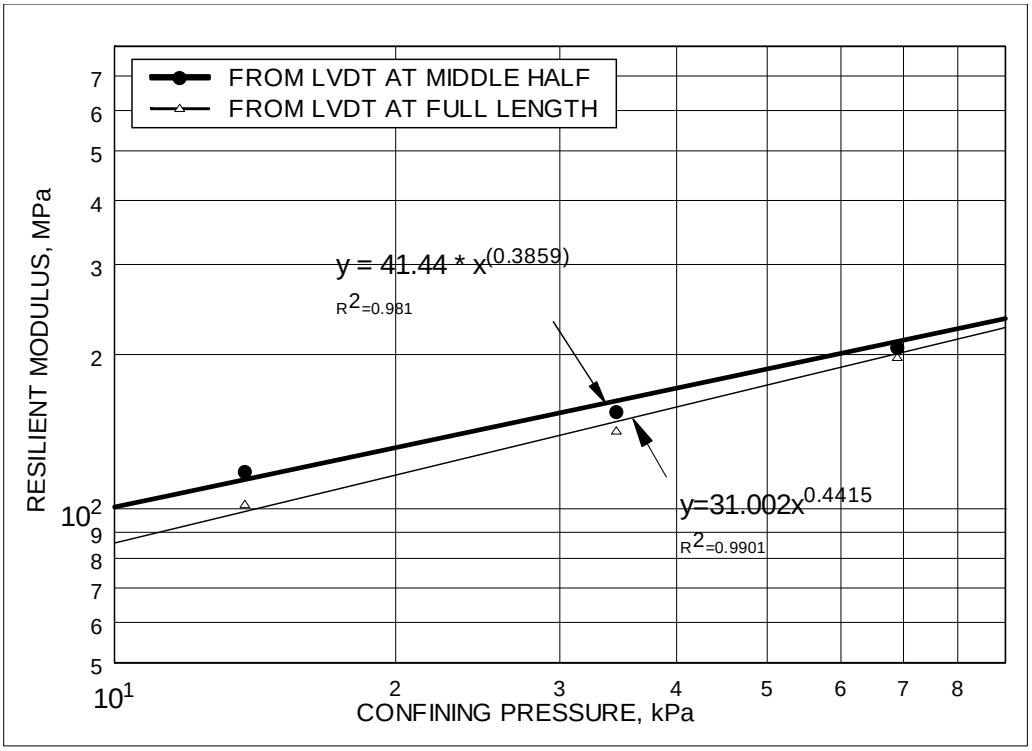


Figure D.74 Resilient Modulus vs. Confining Pressure for A-2-4, 24% after drying (Sample # A2424%D1)

Table D.38 Resilient Modulus of A-2-4, 24% after drying (A2424%D2)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample #	A2424%D2			A-2-4, 24%			
Lab. Moist.	10.70%			Opt. Moist.	10.70%		
Lab. Den.	116	pcf		Opt. Den.	116.3	pcf	
After drying	7.72%						
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.372	45.912	356.172	0.0001667	0.000176	275.411	260.503
103.42	0.542	66.811	377.071	0.0002293	0.000253	291.412	264.133
103.42	0.821	101.238	411.498	0.0003487	0.000373	290.342	271.135
68.95	0.261	32.222	239.072	0.0001341	0.000152	240.310	212.430
68.95	0.375	46.222	253.072	0.0002064	0.000216	223.975	213.890
68.95	0.541	66.736	273.586	0.0002977	0.000313	224.134	213.320
68.95	0.821	101.235	308.085	0.0004373	0.000462	231.512	219.151
34.47	0.150	18.518	121.928	0.0001027	0.000118	180.351	156.841
34.47	0.262	32.337	135.747	0.0001877	0.000209	172.241	154.410
34.47	0.374	46.145	149.555	0.0002722	0.000293	169.512	157.710
34.47	0.541	66.675	170.085	0.0003691	0.000418	180.651	159.433
13.79	0.149	18.428	59.798	0.0001446	0.000167	127.412	110.501
13.79	0.261	32.237	73.607	0.0002485	0.000286	129.712	112.836
13.79	0.374	46.179	87.549	0.0003522	0.000396	131.132	116.610

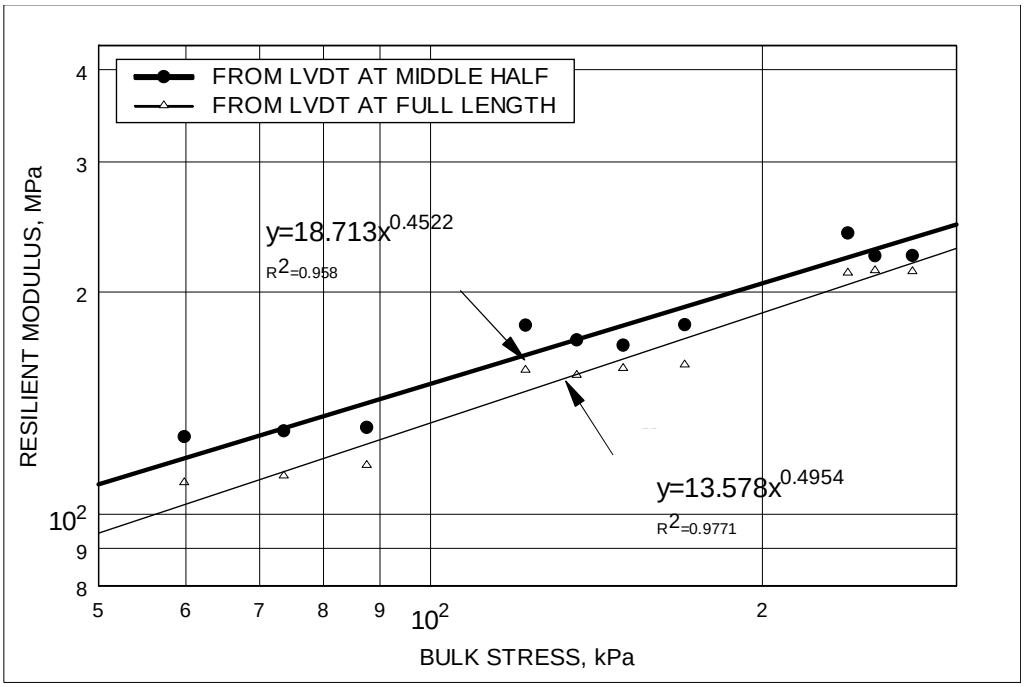


Figure D.75 Resilient Modulus vs. Bulk Stress for A-2-4, 24% (Sample # A24224%D2)

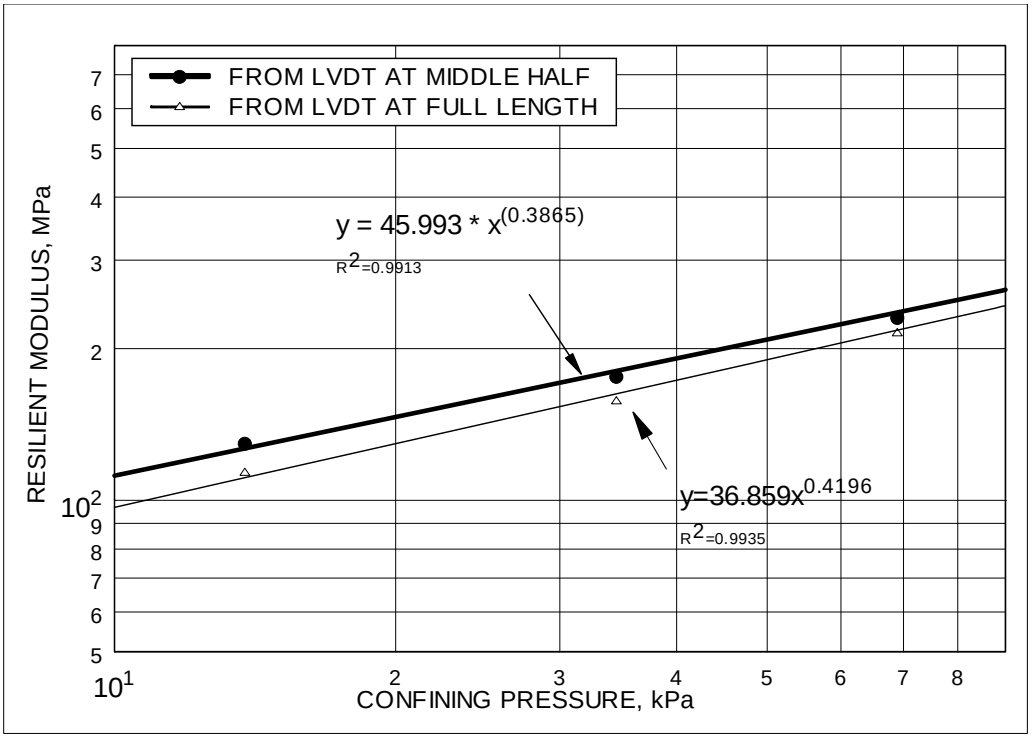


Figure D.76 Resilient Modulus vs. Confining Pressure for A-2-4, 24% (A2424%D2)

Table D.39 Resilient Modulus of A-2-4, 24% after soaking (Sample # A2424%S1)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample #	A2424%S1			A-2-4, 24%			
Lab. Moist.	10.70%			Opt. Moist.	10.70%		
Lab. Den.	116.9	pcf		Opt. Den.	116.3	pcf	
After soaking:	12.00%						
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.373	46.018	356.278	0.000218	0.00028	211.056	164.548
103.42	0.541	66.734	376.994	0.000328	0.000386	203.562	173.035
103.42	0.821	101.269	411.529	0.00048	0.000556	210.965	182.037
68.95	0.261	32.180	239.030	0.000196	0.00026	164.350	123.641
68.95	0.374	46.145	252.995	0.000297	0.000365	155.472	126.579
68.95	0.542	66.810	273.660	0.000425	0.000499	157.375	133.888
68.95	0.820	101.201	308.051	0.0006	0.000686	168.573	147.427
34.47	0.150	18.503	121.913	0.000156	0.000225	118.358	82.418
34.47	0.262	32.330	135.740	0.000296	0.000375	109.052	86.237
34.47	0.373	46.014	149.424	0.000417	0.000511	110.361	90.113
34.47	0.542	66.864	170.274	0.00057	0.000675	117.235	99.086
13.79	0.150	18.503	59.873	0.000291	0.000359	63.634	51.610
13.79	0.262	32.313	73.683	0.000448	0.000541	72.076	59.703
13.79	0.374	46.094	87.464	0.000598	0.000703	77.090	65.584

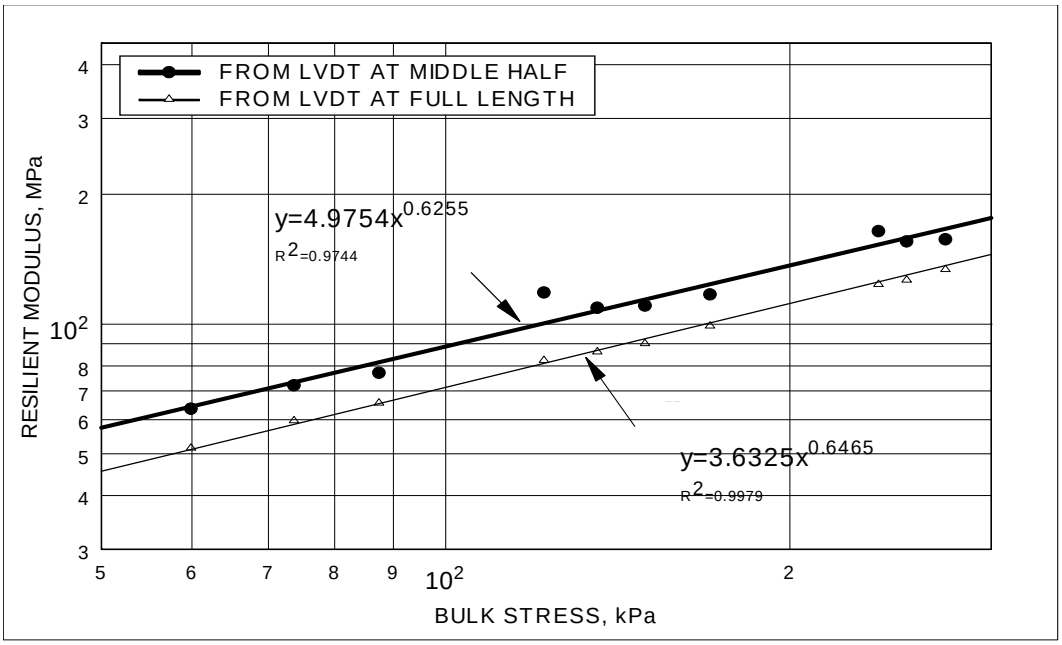


Figure D.77 Resilient Modulus vs. Bulk Stress for A-2-4, 24% after soaking (A2424%S1)

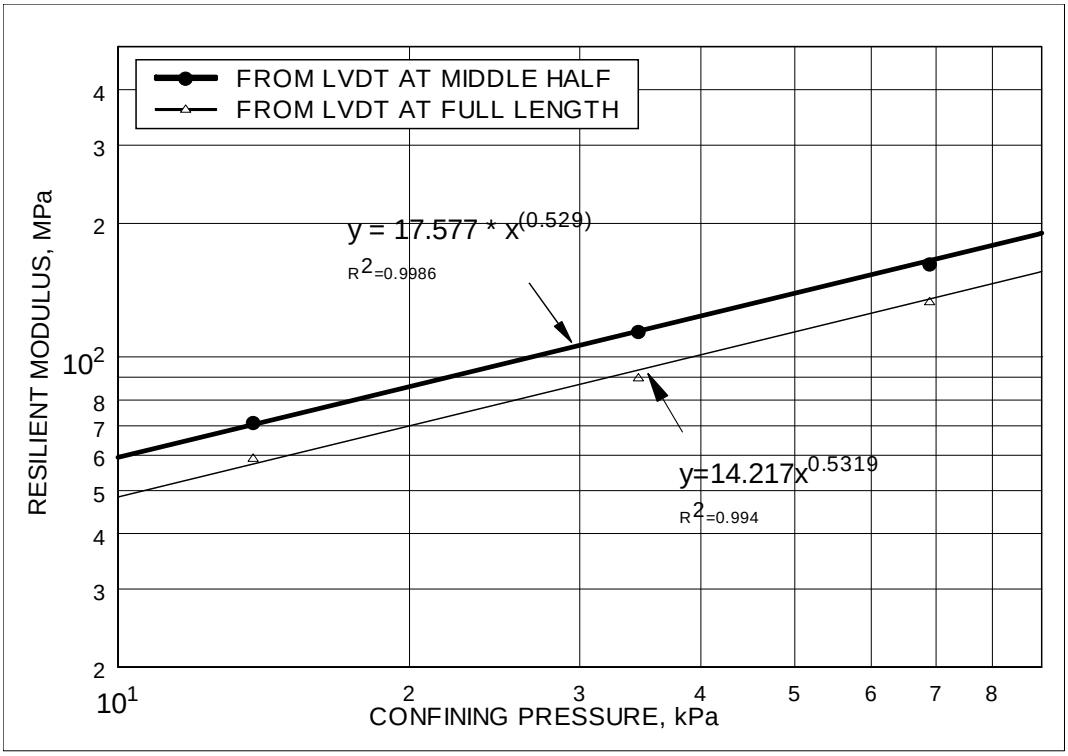


Figure D.78 Resilient Modulus vs. Confining Pressure for A-2-4, 24% after soaking (A2424%S1)

Table D.40 Resilient Modulus of A-2-4, 24% after soaking (Sample # A2424%S2)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample #	A2424%S2			A-2-4, 24%			
Lab. Moist.	10.70%			Opt. Moist.	10.70%		
Lab. Den.	116.9	pcf		Opt. Den.	116.3	pcf	
Afer Soaking	11.40%						
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.374	46.154	356.414	0.000138	0.000171	333.471	269.792
103.42	0.542	66.808	377.068	0.000218	0.000262	306.408	255.417
103.42	0.821	101.301	411.561	0.000336	0.000399	301.552	253.871
68.95	0.261	32.205	239.055	0.000113	0.000176	283.965	182.730
68.95	0.374	46.088	252.938	0.000188	0.000253	245.090	182.205
68.95	0.541	66.721	273.571	0.000291	0.000364	228.919	183.455
68.95	0.821	101.269	308.119	0.000439	0.000525	230.860	192.947
34.47	0.150	18.513	121.923	8.2E-05	0.000168	225.654	110.441
34.47	0.262	32.345	135.755	0.000186	0.000284	173.598	114.075
34.47	0.374	46.114	149.524	0.000297	0.000393	155.190	117.342
34.47	0.541	66.730	170.140	0.000423	0.000534	157.701	124.986
13.79	0.150	18.488	59.858	0.000174	0.000257	106.204	71.988
13.79	0.262	32.324	73.694	0.000325	0.000414	99.331	78.139
13.79	0.373	46.029	87.399	0.000428	0.000538	107.465	85.523

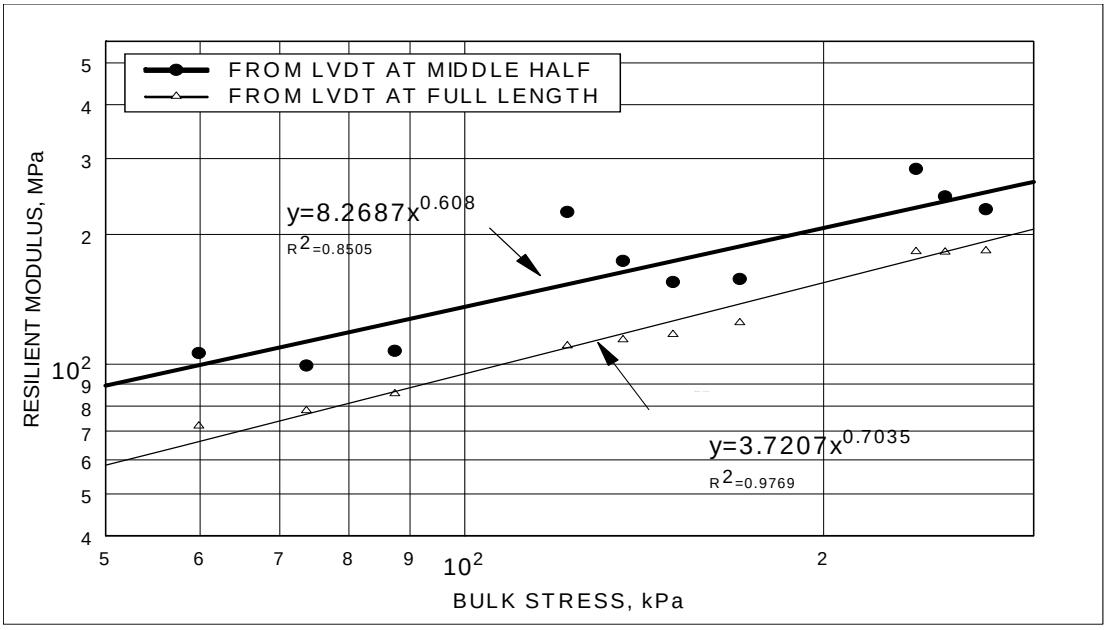


Figure D.79 Resilient Modulus vs. Bulk Stress for A-2-4, 24% (Sample # A2424%S2)

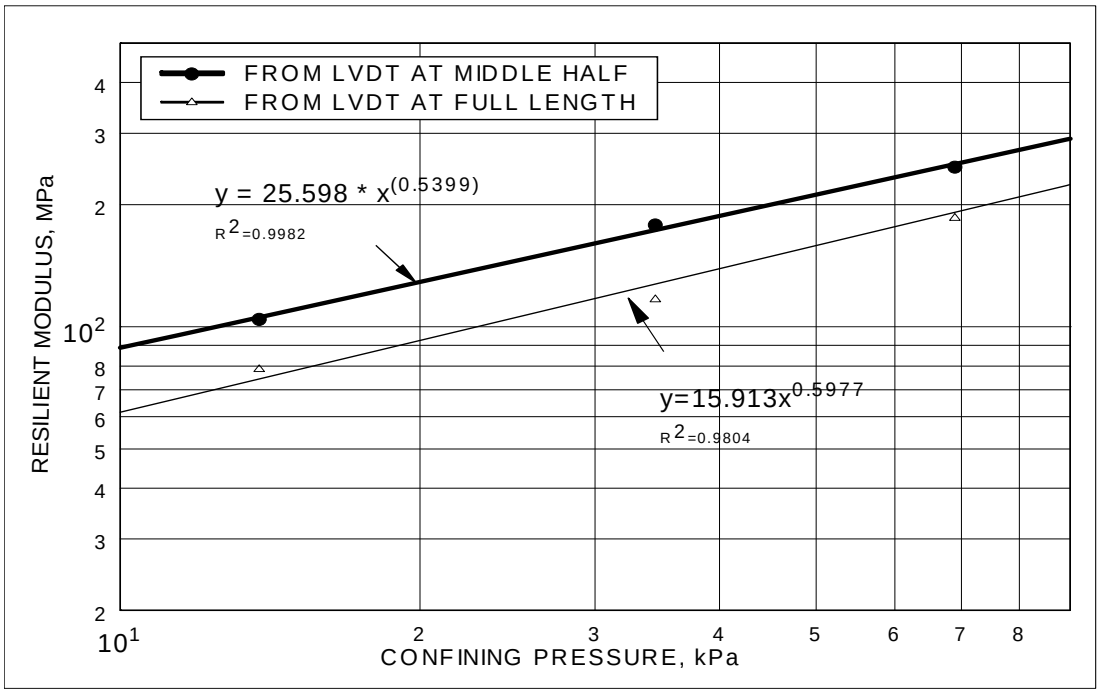


Figure D.80 Resilient Modulus vs. Confining Pressure for A-2-4, 24% (Sample # A2424%S2)

D.7 A-2-4, 30% Soil

Table D.41 Triaxial test results of A-2-4 30% fine after drying (A2430%D1)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample No	A2430%D1			A-2-4,30% fine			
				Dried			
Moisture	6.30%			Opt. Moist.	12.00%		
Lab. Den.	116.1	pcf		Opt. Den.	115.7	pcf	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.374	46.097	356.357	4.34E-05	5.71E-05	1061.272	807.369
103.42	0.540	66.630	376.890	7.38E-05	8.86E-05	903.212	752.431
103.42	0.820	101.093	411.353	0.000128	0.000146	789.396	694.085
68.95	0.262	32.262	239.112	3.07E-05	4.89E-05	1051.542	659.635
68.95	0.372	45.912	252.762	4.96E-05	7.02E-05	924.901	653.652
68.95	0.541	66.675	273.525	8.36E-05	0.000105	797.602	634.135
68.95	0.821	101.314	308.164	0.000148	0.000171	682.697	591.481
34.47	0.149	18.437	121.847	1.47E-05	4.03E-05	1258.461	457.607
34.47	0.261	32.218	135.628	3.79E-05	7.26E-05	849.650	443.721
34.47	0.373	46.003	149.413	6.15E-05	0.000102	747.622	450.448
34.47	0.541	66.673	170.083	9.95E-05	0.000149	670.405	446.538
13.79	0.150	18.524	59.894	2.02E-05	7.86E-05	918.614	235.550
13.79	0.261	32.237	73.607	4.67E-05	0.000126	690.152	255.326
13.79	0.374	46.094	87.464	7.83E-05	0.000165	589.043	278.560

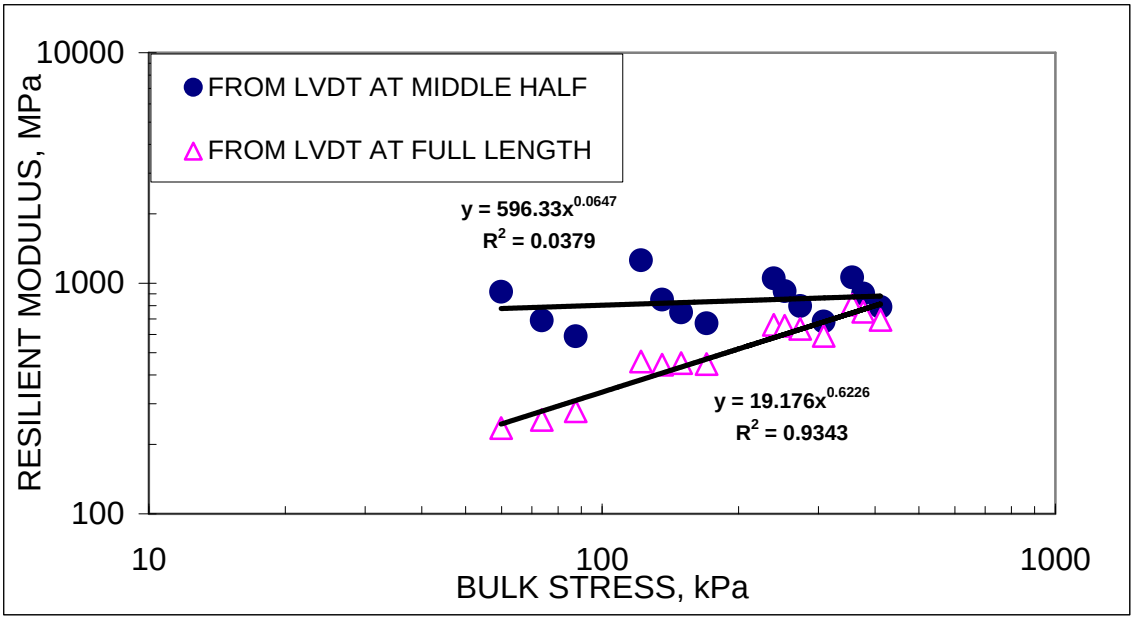


Figure D.81 Resilient Modulus vs. Bulk Stress for A-2-4 30% after drying (Sample # A2430%D1)

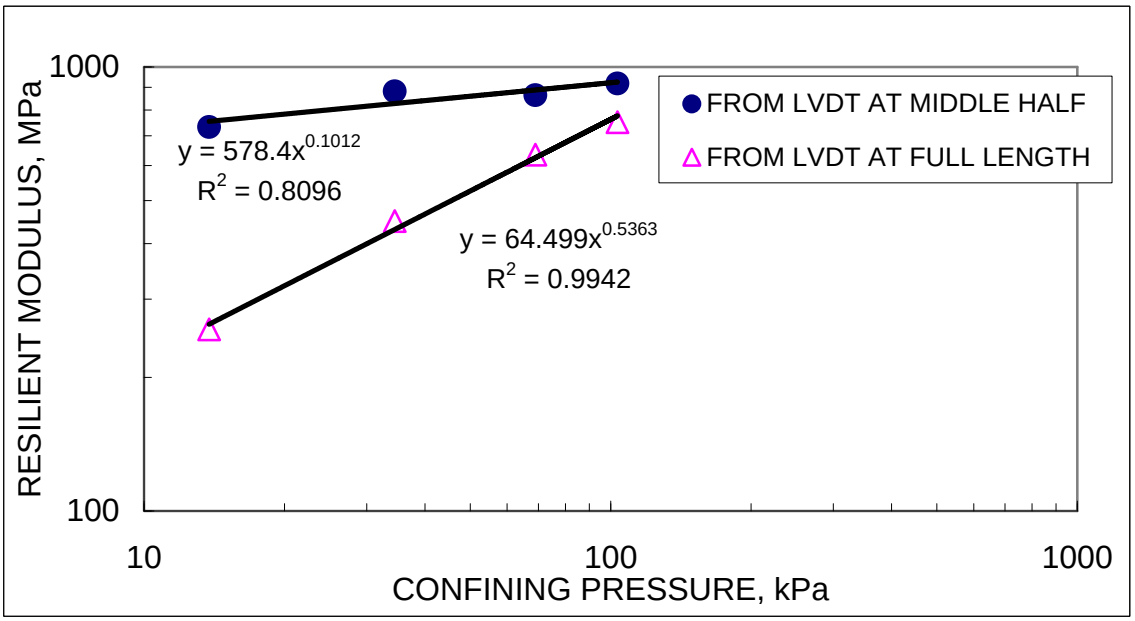


Figure D.82 Resilient Modulus vs. Confining Stress for A-2-4 30% fine after drying (Sample # A2430%D1)

Table D.42 Triaxial test results of A-2-4 30% fine after drying (Sample # A2430%D2)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample No	A2430%D2			A-2-4, 30%			
Moisture	7.00%			Opt. Moist.	12.00%		
Lab. Den.	115.15	pcf		Opt. Den.	115.7	pcf	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.375	46.235	356.495	4.52E-05	6.1E-05	1023.860	758.273
103.42	0.543	66.916	377.176	7.57E-05	7.93E-05	884.351	843.948
103.42	0.820	101.138	411.398	0.000133	0.000147	760.081	686.273
68.95	0.262	32.320	239.170	2.84E-05	5.04E-05	1136.465	641.056
68.95	0.374	46.173	253.023	5.22E-05	7.52E-05	884.114	614.049
68.95	0.541	66.764	273.614	8.5E-05	0.000111	785.697	600.527
68.95	0.821	101.257	308.107	0.000148	0.000175	685.500	580.202
34.47	0.149	18.431	121.841	1.57E-05	4.24E-05	1175.210	434.243
34.47	0.262	32.286	135.696	3.79E-05	7.41E-05	851.462	435.609
34.47	0.373	46.005	149.415	6.21E-05	0.000107	741.414	428.759
34.47	0.541	66.704	170.114	0.000106	0.000153	627.227	436.045
13.79	0.151	18.575	59.945	2.17E-05	7.26E-05	855.327	255.823
13.79	0.261	32.158	73.528	4.79E-05	0.000121	671.124	266.523
13.79	0.373	46.041	87.411	7.86E-05	0.000167	585.789	276.440

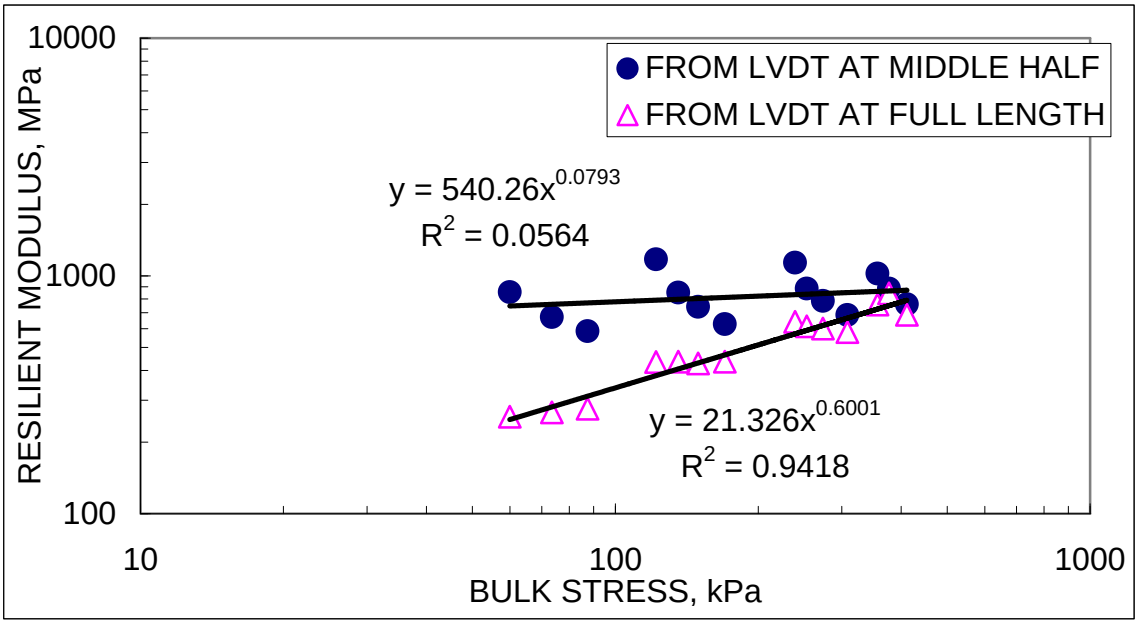


Figure D.83 Resilient Modulus vs. Bulk Stress for A-2-4 30% after drying (Sample # A2430%D2)

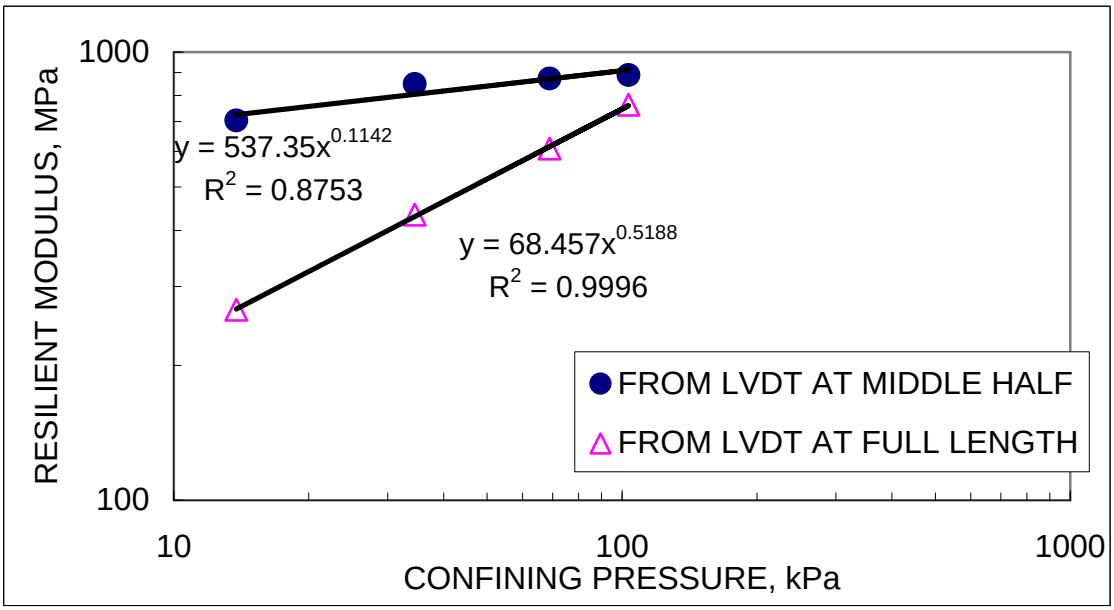


Figure D.84 Resilient Modulus vs. Confining Stress for A-2-4 30% fine after drying (Sample # A2430%D2)

Table D.43 Triaxial test results of A-2-4 30% at optimum condition (Sample # A2430%O1)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample No	A2430%O1			A-2-4, 30% fine			
Lab. Moist.	12%			Opt. Moist.	12%		
Lab. Den.	115.8	pcf		Opt. Den.	115.7	pcf	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.375	46.201	356.461	7.1E-05	0.000172	650.568	268.043
103.42	0.541	66.726	376.986	0.000156	0.000265	427.282	251.581
103.42	0.820	101.170	411.430	0.000376	0.000444	268.878	227.611
68.95	0.262	32.277	239.127	6.41E-05	0.000167	503.364	193.547
68.95	0.374	46.154	253.004	0.000106	0.000242	434.672	190.752
68.95	0.541	66.774	273.624	0.000271	0.000369	246.280	181.025
68.95	0.821	101.257	308.107	0.000525	0.000589	192.929	171.896
34.47	0.151	18.605	122.015	4.98E-05	0.000152	373.487	122.313
34.47	0.262	32.301	135.711	0.000145	0.000284	222.564	113.748
34.47	0.373	46.054	149.464	0.0003	0.00041	153.382	112.381
34.47	0.542	66.796	170.206	0.000492	0.00059	135.739	113.188
13.79	0.149	18.388	59.758	8.88E-05	0.00026	207.138	70.590
13.79	0.261	32.243	73.613	0.000313	0.000458	102.895	70.323
13.79	0.374	46.113	87.483	0.000502	0.000639	91.873	72.183

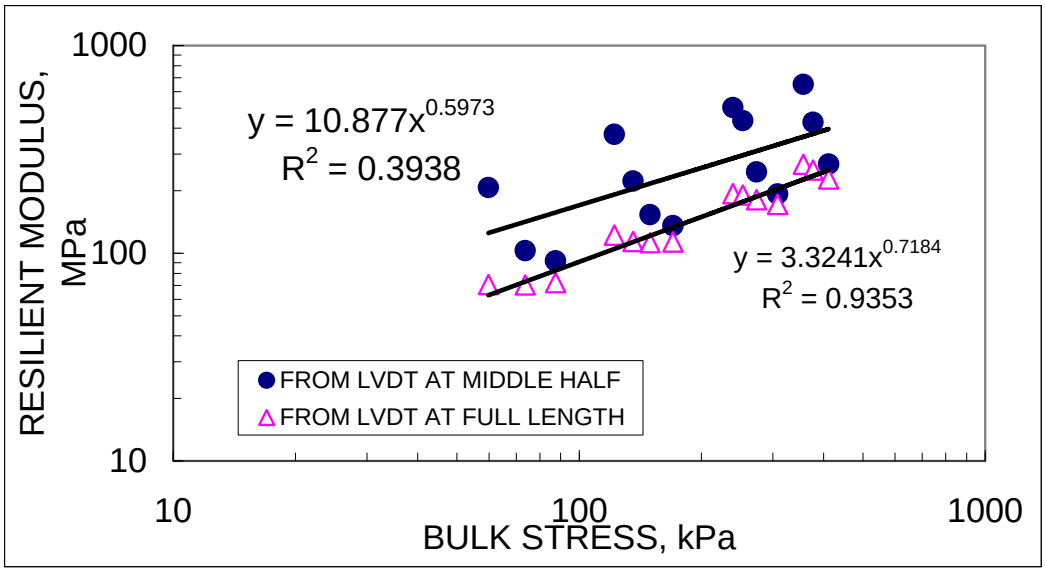


Figure D.85 Resilient Modulus vs. Bulk Stress for A-2-4 30% at optimum moisture (Sample # A2430%O1)

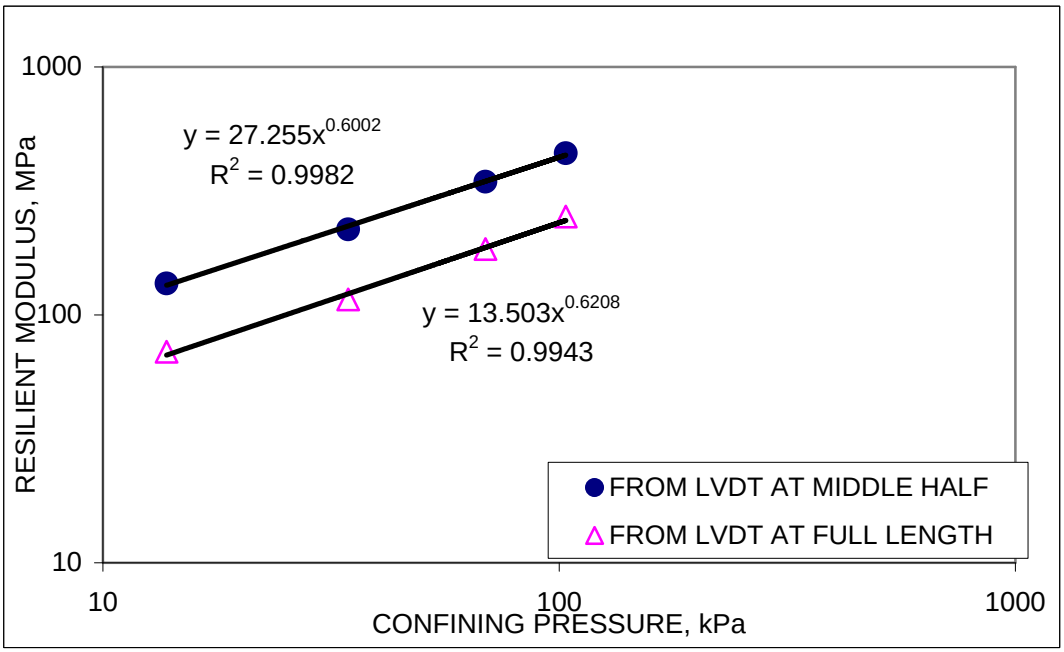


Figure D.86 Resilient Modulus vs. Confining Stress for A-2-4 30% at optimum moisture (Sample # A2430%O1)

Table D.44 Triaxial test results of A-2-4 30% at optimum condition (Sample # A2430%O2)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample No	A2430%O2			A-2-4, 30% fine			
Lab. Moist.	12.30%			Opt. Moist.	12%		
Lab. Den.	115.1	pcf		Opt. Den.	115.7	pcf	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.373	46.058	356.318	8.91E-05	0.000199	516.825	231.851
103.42	0.542	66.819	377.079	0.000202	0.000295	330.766	226.701
103.42	0.821	101.235	411.495	0.000406	0.000468	249.081	216.226
68.95	0.262	32.326	239.176	8.24E-05	0.000184	392.331	176.096
68.95	0.374	46.073	252.923	0.000167	0.000267	275.279	172.868
68.95	0.542	66.811	273.661	0.000322	0.000391	207.283	170.849
68.95	0.821	101.284	308.134	0.000573	0.000633	176.781	159.894
34.47	0.150	18.490	121.900	6.14E-05	0.000162	301.316	114.119
34.47	0.262	32.299	135.709	0.000178	0.000305	181.403	106.019
34.47	0.374	46.175	149.585	0.000337	0.000441	137.170	104.746
34.47	0.541	66.759	170.169	0.000539	0.000637	123.822	104.855
13.79	0.149	18.324	59.694	0.000108	0.000283	169.541	64.821
13.79	0.262	32.256	73.626	0.000358	0.000494	90.145	65.261
13.79	0.374	46.167	87.537	0.000588	0.000692	78.503	66.753

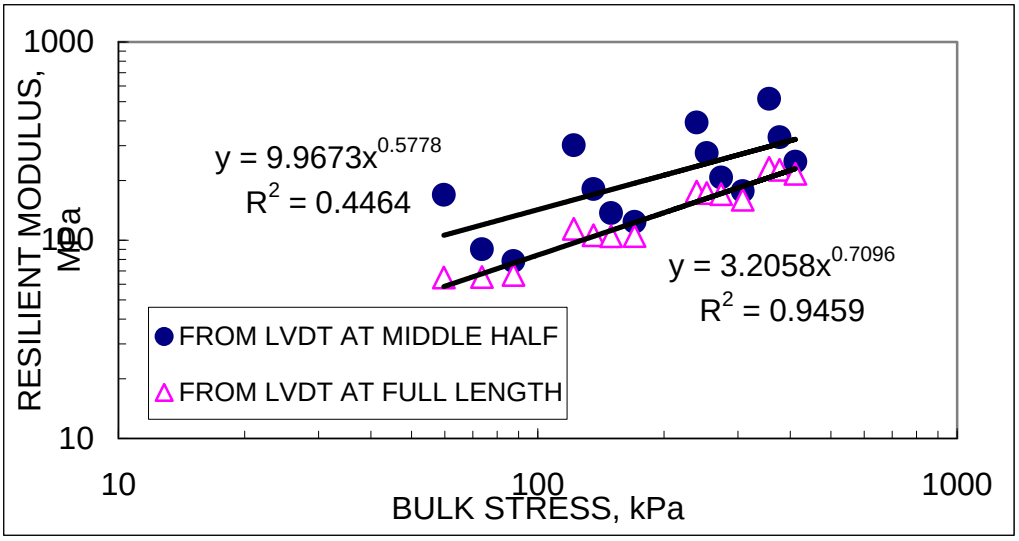


Figure D.87 Resilient Modulus vs. Bulk Stress for A-2-4 30% at optimum moisture (Sample # A2430%O2)

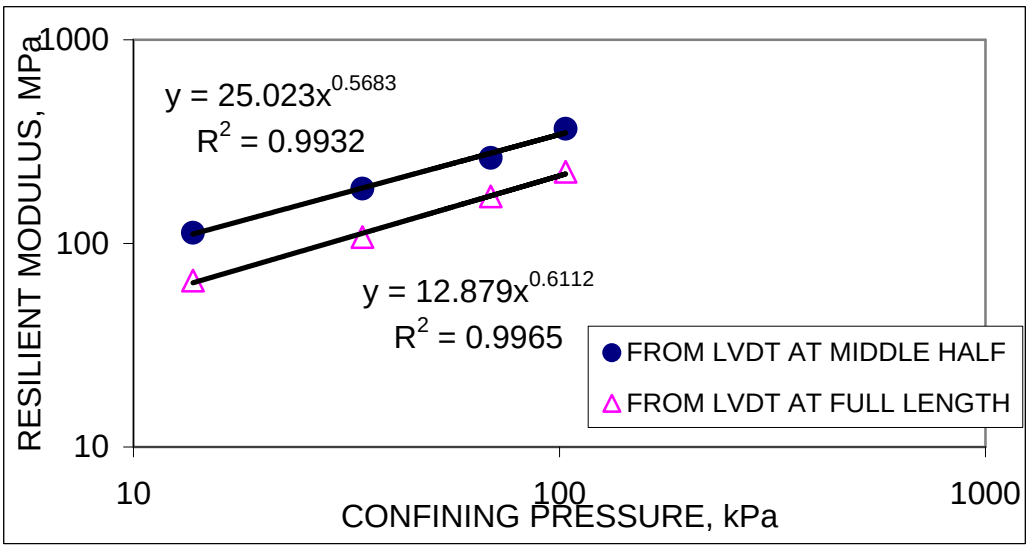


Figure D.88 Resilient Modulus vs. Confining Stress for A-2-4 30% at optimum moisture (Sample # A2430%O2)

Table D.45 Triaxial test results of A-2-4 30% after soaking (Sample # A2430%S1)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample No	A2430%S1			A-2-4, 30% fine			
Lab. Moist.	13.40%			Opt. Moist.	12%		
Lab. Den.	116.4	pcf		Opt. Den.	115.7	pcf	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.374	46.171	356.431	6.34E-05	0.000168		274.737
103.42	0.541	66.728	376.988	0.000168	0.000255	398.318	261.577
103.42	0.820	101.140	411.400	0.000327	0.000407	308.857	248.372
68.95	0.261	32.205	239.055	4.24E-05	0.000168		192.124
68.95	0.375	46.201	253.051	0.000127	0.000233	364.222	198.184
68.95	0.542	66.872	273.722	0.000246	0.000351	272.091	190.647
68.95	0.821	101.267	308.117	0.000452	0.000546	224.090	185.336
34.47	0.150	18.560	121.970	7.24E-06	0.000156		119.311
34.47	0.262	32.294	135.704	0.000144	0.00028	224.668	115.296
34.47	0.374	46.094	149.504	0.000255	0.000402	180.703	114.649
34.47	0.542	66.851	170.261	0.000414	0.000567	161.347	117.976
13.79	0.150	18.477	59.847	0.000115	0.00027	160.008	68.386
13.79	0.262	32.358	73.728	0.000269	0.000459	120.350	70.443
13.79	0.374	46.073	87.443	0.000431	0.000633	107.014	72.833

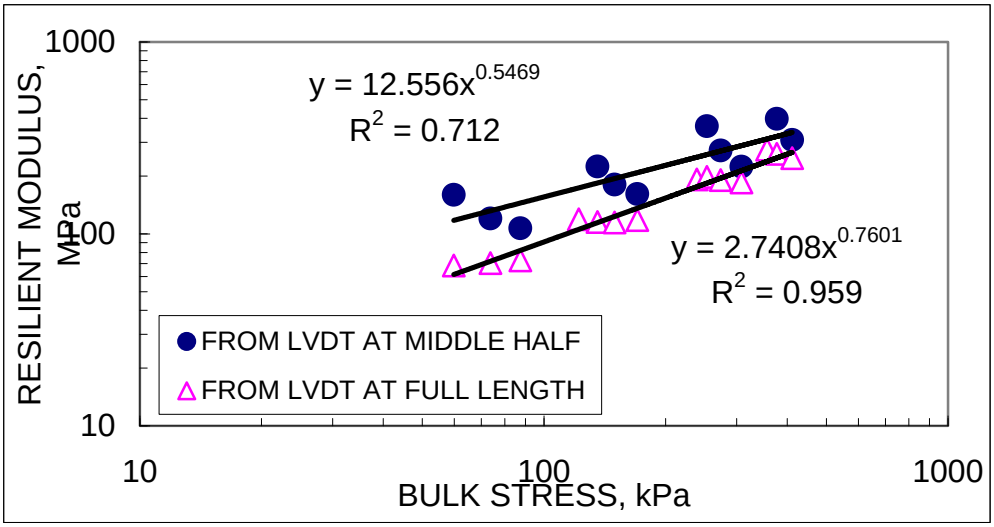


Figure D.89 Resilient Modulus vs. Bulk Stress for A-2-4 30% after soaking (Sample # A2430%S1)

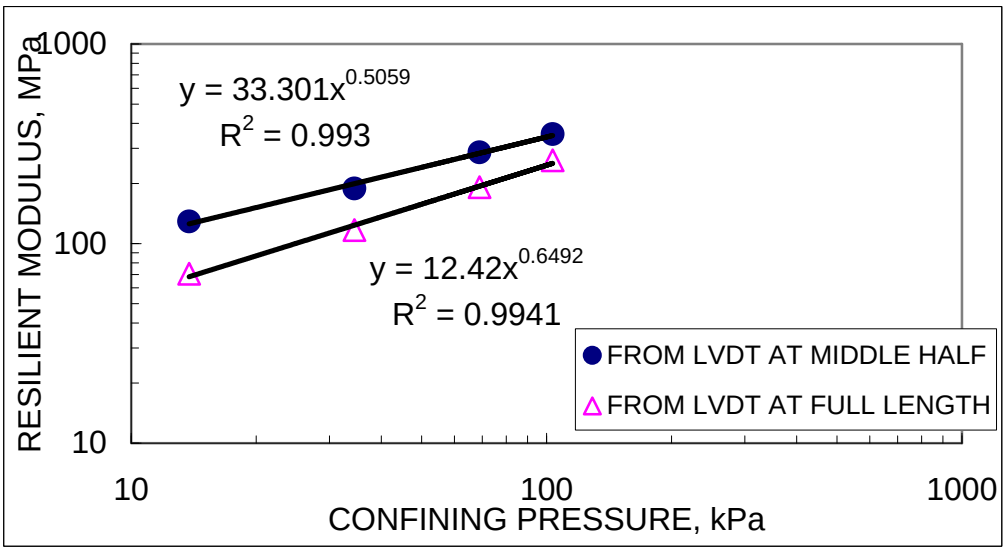


Figure D.90 Resilient Modulus vs. Confining Stress for A-2-4 30% after soaking (Sample # A2430%S1)

Table D.46 Triaxial test results of A-2-4 30% after soaking (Sample # A2430%S2)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample No	A2430%S2			A-2-4, 30% fine			
Lab. Moist.	13.20%			Opt. Moist.	12%		
Lab. Den.	116	pcf		Opt. Den.	115.7	pcf	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.373	45.990	356.250	3.344E-05	0.000199		231.510
103.42	0.541	66.779	377.039	0.0001561	0.00029	427.664	229.928
103.42	0.821	101.265	411.525	0.000324	0.00044	312.528	230.393
68.95	0.261	32.237	239.087	2.034E-05	0.000193		166.989
68.95	0.374	46.141	252.991	0.0001158	0.000281	398.384	164.481
68.95	0.541	66.690	273.540	0.0002454	0.000397	271.732	168.041
68.95	0.820	101.199	308.049	0.0004495	0.000594	225.141	170.426
34.47	0.150	18.511	121.921	6.549E-06	0.000172		107.393
34.47	0.261	32.224	135.634	0.0001324	0.000314	243.447	102.720
34.47	0.374	46.141	149.551	0.0002447	0.00044	188.532	104.978
34.47	0.541	66.687	170.097	0.0004133	0.000612	161.353	108.984
13.79	0.150	18.477	59.847	0.0001048	0.000276	176.325	66.893
13.79	0.262	32.298	73.668	0.0002634	0.000477	122.641	67.768
13.79	0.374	46.071	87.441	0.0004536	0.00066	101.561	69.788

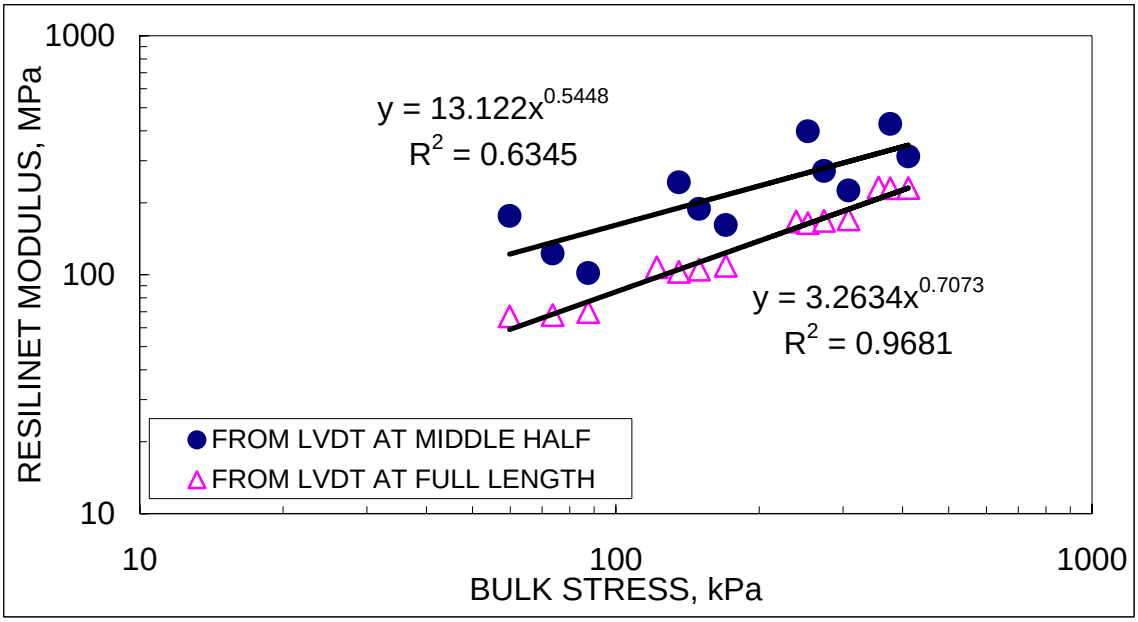


Figure D.91 Resilient Modulus vs. Bulk Stress for A-2-4 30% after soaking (Sample # A2430%S2)

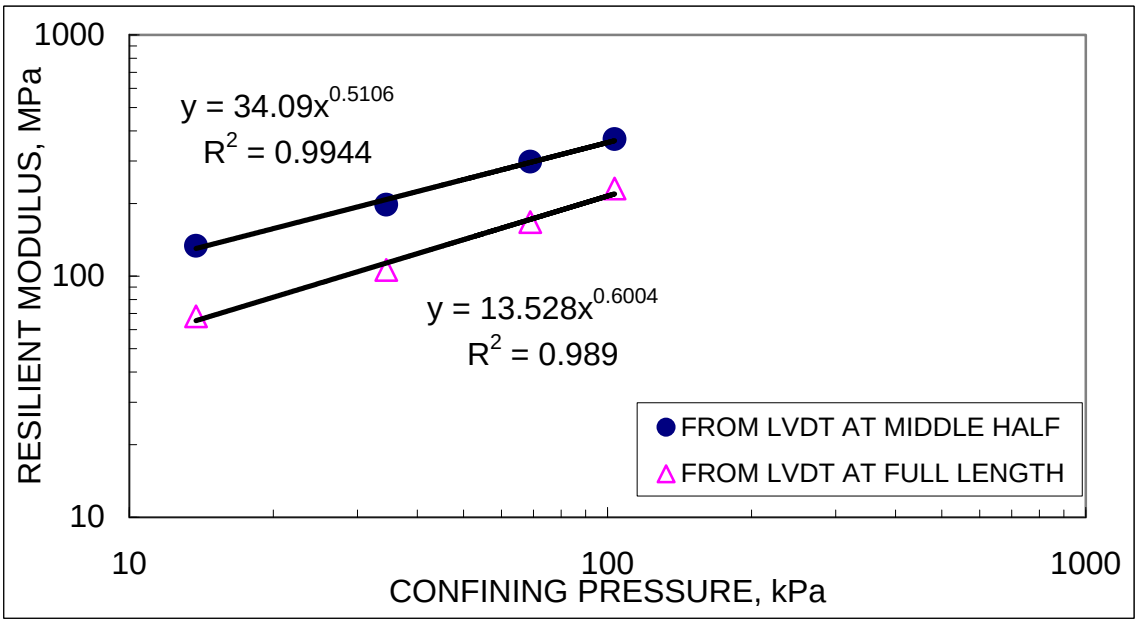


Figure D.92 Resilient Modulus vs. Confining Stress for A-2-4 30% after soaking (Sample # A2430%S2)

D.8 Oolite A-1 Soil

Table D.47 Triaxial test results of Oolite after drying (Sample # OOLITED1)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample #	OOLITED1			Oolite			
Lab. Moist	5.60%			Opt. Moist.	7.80%		
Lab. Den.	131.35			Opt. Den.	131.30		
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.375	46.232	356.492	6.119E-05	9.2431E-05	755.568	500.174
103.42	0.541	66.690	376.950	9.066E-05	0.00014112	735.584	472.564
103.42	0.821	101.324	411.584	0.000155	0.00022451	653.902	451.317
68.95	0.262	32.347	239.197	5.912E-05	9.9325E-05	547.129	325.664
68.95	0.373	46.069	252.919	8.722E-05	0.00014112	528.219	326.443
68.95	0.541	66.785	273.635	0.0001246	0.00019822	535.920	336.922
68.95	0.820	101.125	307.975	0.0001986	0.00029539	509.291	342.341
34.47	0.150	18.511	121.921	5.274E-05	9.8248E-05	350.968	188.409
34.47	0.262	32.265	135.675	8.946E-05	0.00016202	360.684	199.140
34.47	0.374	46.101	149.511	0.0001272	0.00021481	362.425	214.613
34.47	0.543	66.938	170.348	0.0001774	0.00029625	377.413	225.949
13.79	0.150	18.445	59.815	6.808E-05	0.00015642	270.911	117.916
13.79	0.262	32.311	73.681	0.0001208	0.00024971	267.418	129.391
13.79	0.374	46.156	87.526	0.0001618	0.00032297	285.181	142.911

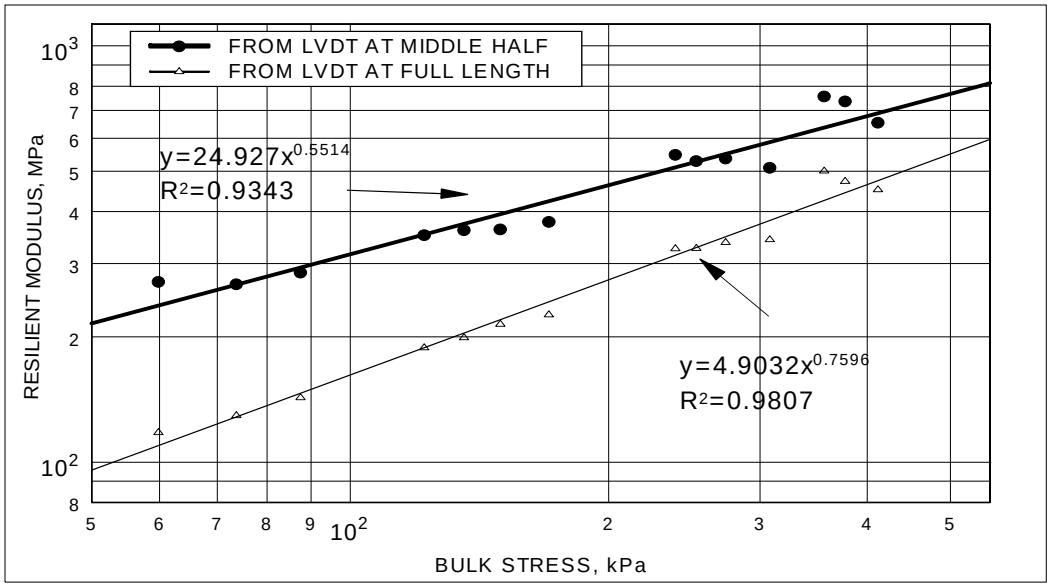


Figure D.93 Resilient Modulus vs. Bulk Stress for Oolite (crushed) after drying (OOLITED1)

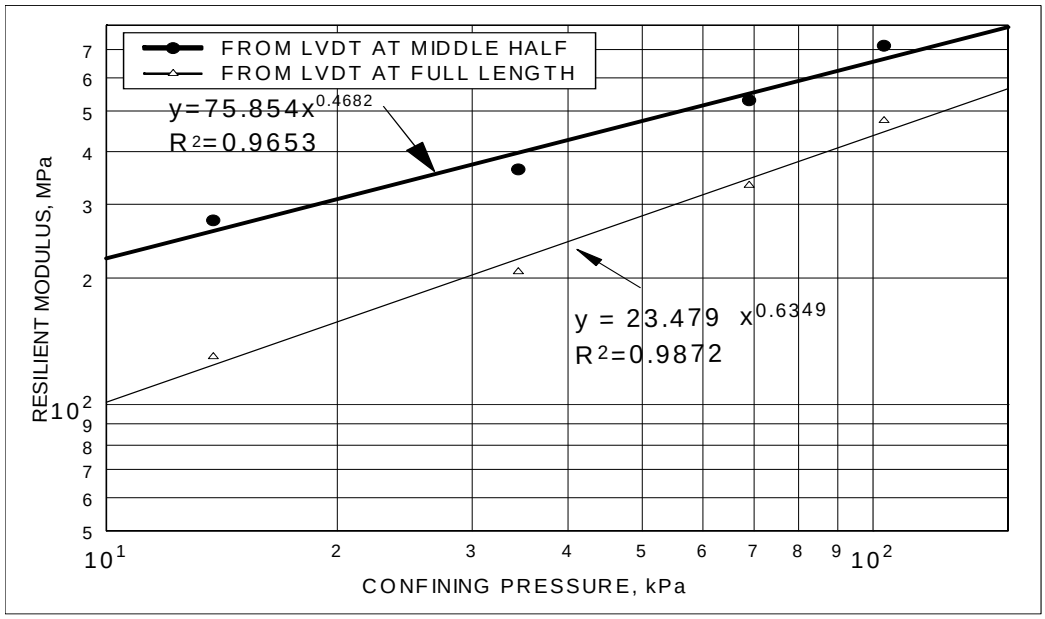


Figure D.94 Resilient Modulus vs. Confining Stress for Oolite (crushed) after drying (Sample # OOLITED1)

Table D.48 Triaxial test results of Oolite (crushed) after drying (Sample # OOLITED2)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample No.	OOLITED2			Oolite (A-1, crushed)			
Moisture	4.40%			Opt. Moist.	7.80%		
Lab Density	131.3	pcf		Opt. Den.	131.3	pcf	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			
Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.373	46.039	356.299	5.843E-05	7.756E-05	787.907	593.552
103.42	0.541	66.670	376.930	8.808E-05	0.0001107	756.949	602.009
103.42	0.821	101.255	411.515	0.0001556	0.0001818	650.558	556.820
68.95	0.261	32.246	239.096	5.567E-05	7.326E-05	579.225	440.192
68.95	0.373	46.041	252.891	8.205E-05	0.0001073	561.162	429.095
68.95	0.541	66.726	273.576	0.0001203	0.000151	554.630	441.792
68.95	0.822	101.354	308.204	0.0001963	0.0002381	516.269	425.713
34.47	0.150	18.507	121.917	4.309E-05	6.722E-05	429.495	275.309
34.47	0.263	32.394	135.804	8.463E-05	0.0001204	382.775	268.962
34.47	0.374	46.171	149.581	0.0001193	0.0001709	387.102	270.232
34.47	0.541	66.679	170.089	0.0001699	0.0002336	392.351	285.495
13.79	0.150	18.549	59.919	6.05E-05	0.0001049	306.603	176.776
13.79	0.261	32.180	73.550	0.0001113	0.0001769	289.015	181.922
13.79	0.373	46.054	87.424	0.0001546	0.0002413	297.876	190.848

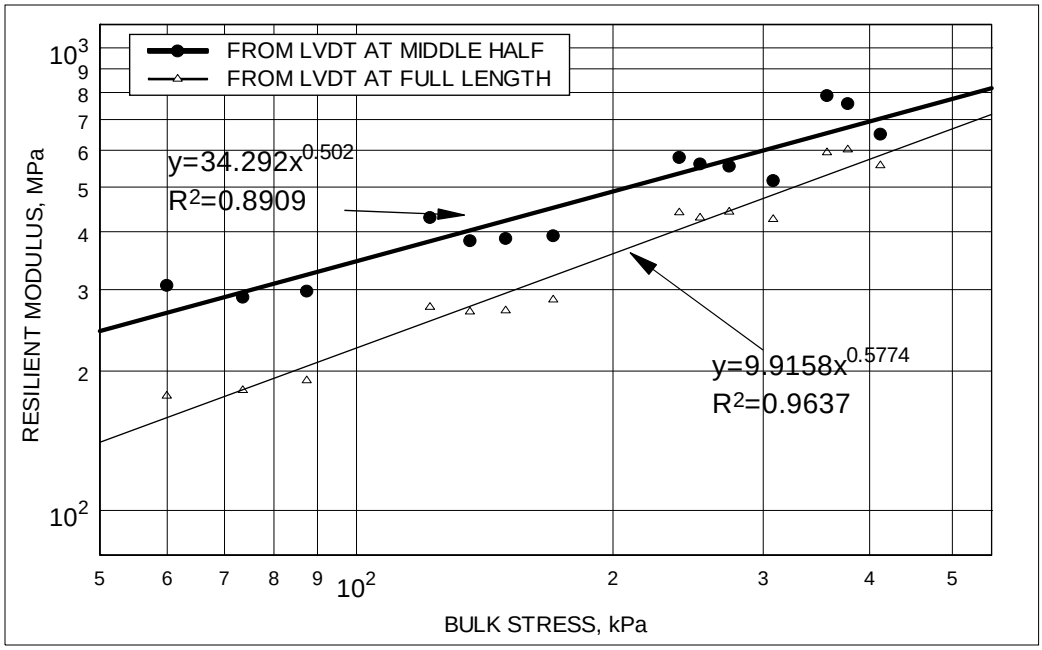


Figure D.95 Resilient Modulus vs. Bulk Stress for Oolite (crushed) after drying (OOLITED2)

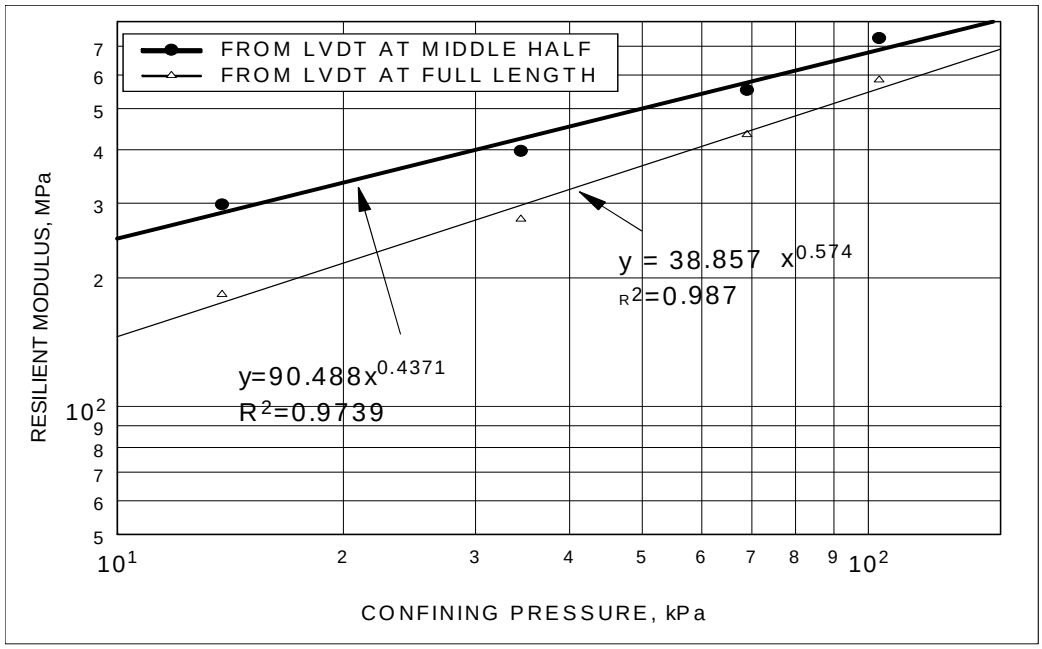


Figure D.96 Resilient Modulus vs. Confining Stress for Oolite (crushed) after drying (Sample # OOLITED2)

Table D.49 Triaxial test results of Oolite (crushed) at optimum condition (Sample # OOLITEO1)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample No.	OOLITEO1			Oolite (A-1, crushed)			
Lab. Moist.	7.80%			Opt. Moist.	7.80%		
Lab. Den.	131.08	pcf		Opt. Den.	131.3	pcf	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.372	45.910	356.170	9.135E-05	0.0001049	502.562	437.540
103.42	0.542	66.846	377.106	0.0001341	0.0001534	498.490	435.742
103.42	0.820	101.150	411.410	0.0002246	0.0002461	450.379	411.090
68.95	0.261	32.212	239.062	0.0001013	0.0001112	317.836	289.741
68.95	0.374	46.120	252.970	0.0001431	0.0001564	322.387	294.844
68.95	0.541	66.787	273.637	0.0001998	0.0002198	334.322	303.899
68.95	0.820	101.131	307.981	0.000332	0.000362	304.638	279.391
34.47	0.149	18.437	121.847	0.0001113	0.0001241	165.584	148.561
34.47	0.262	32.292	135.702	0.0001915	0.0002109	168.631	153.091
34.47	0.375	46.211	149.621	0.0002527	0.0002827	182.882	163.474
34.47	0.542	66.808	170.218	0.0003549	0.0003984	188.247	167.698
13.79	0.150	18.505	59.875	0.0001451	0.0001859	127.509	99.523
13.79	0.261	32.235	73.605	0.0002286	0.0002924	141.041	110.252
13.79	0.374	46.073	87.443	0.0003171	0.0004014	145.273	114.781

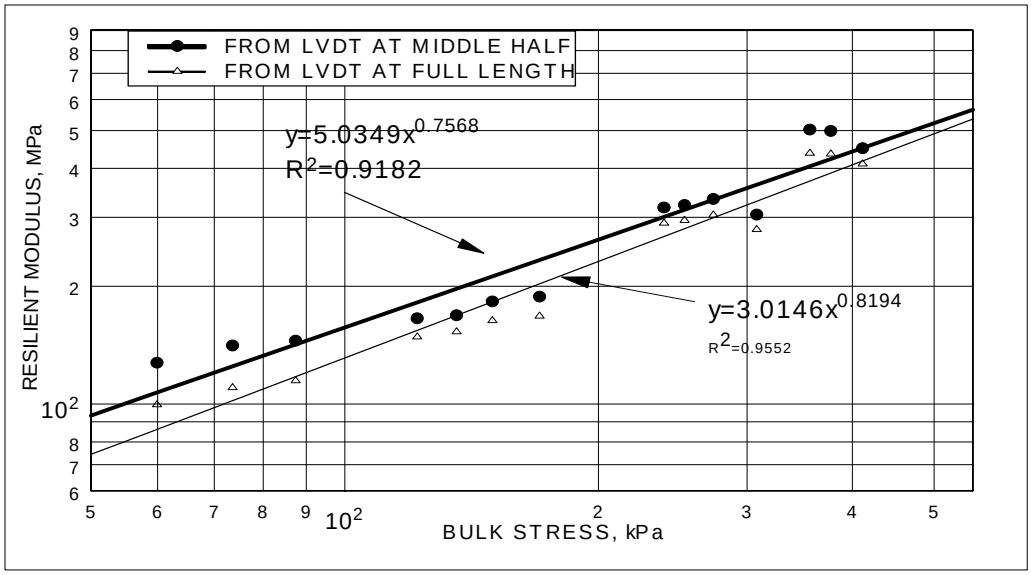


Figure D.97 Resilient Modulus vs. Bulk Stress for Oolite (crushed) at optimum moisture(Sample # OOLITEO1)

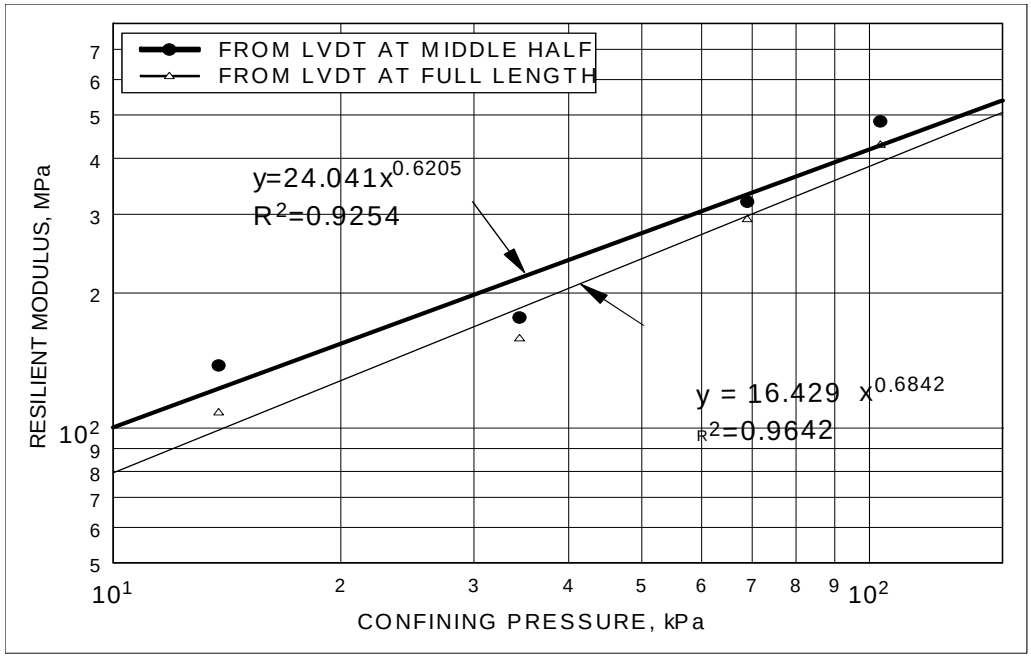


Figure D.98 Resilient Modulus vs. Confining Stress for Oolite (crushed) after drying (Sample # OOLITEO1)

Table D.50 Triaxial test results of Oolite (crushed) at optimum condition (Sample # OOLITEO2)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample No.	OOLITEO2			Oolite (A-1, crushed)			
Lab. Moist.	7.80%			Opt. Moist.	7.80%		
Lab. Den.	131.22	pcf		Opt. Den.	131.3	pcf	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.374	46.077	356.337	8.773E-05	0.0001008	525.197	456.958
103.42	0.541	66.689	376.949	0.0001388	0.0001553	480.631	429.295
103.42	0.820	101.180	411.440	0.0002267	0.0002473	446.402	409.063
68.95	0.262	32.279	239.129	9.704E-05	0.0001092	332.629	295.492
68.95	0.374	46.154	253.004	0.0001391	0.0001558	331.816	296.286
68.95	0.541	66.721	273.571	0.0001991	0.0002185	335.146	305.393
68.95	0.822	101.331	308.181	0.0003218	0.0003529	314.888	287.122
34.47	0.150	18.513	121.923	0.0001069	0.0001209	173.235	153.160
34.47	0.261	32.250	135.660	0.0001829	0.0002027	176.351	159.068
34.47	0.374	46.079	149.489	0.0002434	0.0002745	189.332	167.868
34.47	0.540	66.636	170.046	0.0003354	0.0003814	198.665	174.732
13.79	0.150	18.484	59.854	0.0001439	0.0001806	128.434	102.376
13.79	0.262	32.288	73.658	0.0002153	0.0002762	149.983	116.894
13.79	0.374	46.141	87.511	0.0002903	0.0003695	158.965	124.871

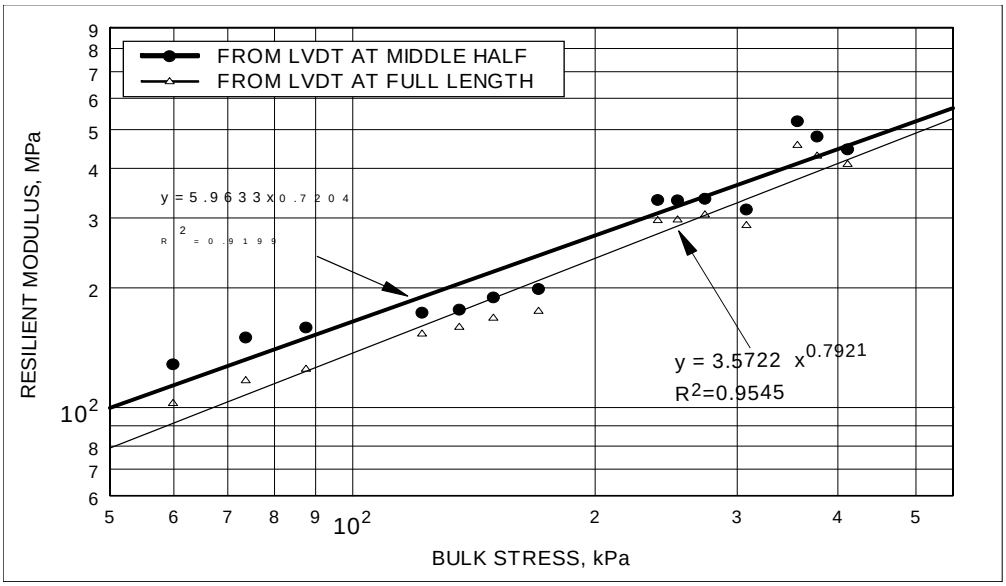


Figure D.99 Resilient Modulus vs. Bulk Stress for Oolite (crushed) at optimum moisture (Sample # OOLITEO2)

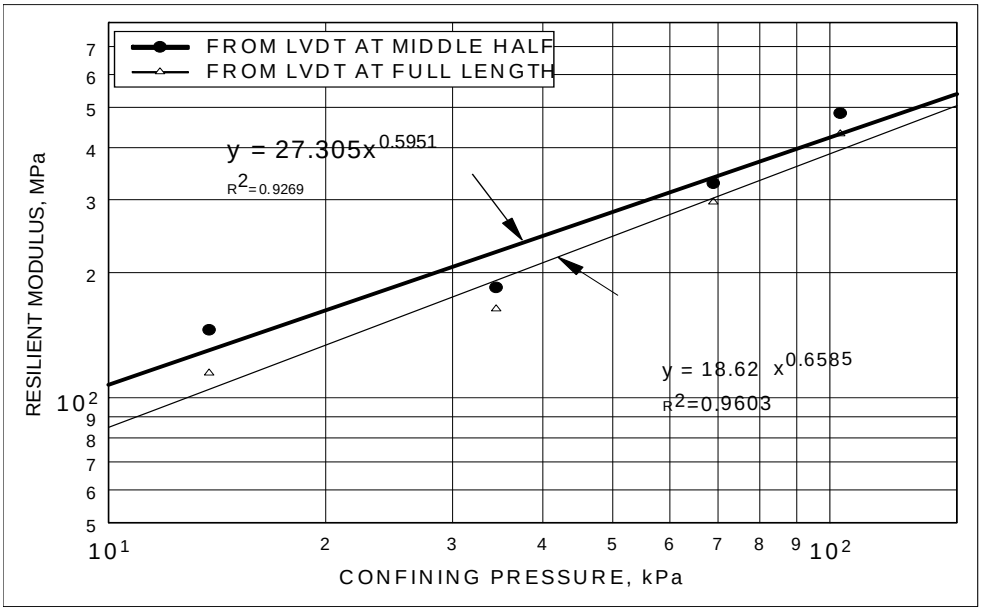


Figure D.100 Resilient Modulus vs. Confining Stress for Oolite (crushed) after drying (Sample # OOLITEO1)

Table D.51 Triaxial test results of Oolite (crushed) after soaking (Sample # OOLITES1)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample No.	OOLITES1			Oolite	(A-1, crushed)		
Lab. Moist.	8.20%			Opt. Moist.	7.80%		
Lab. Den.	131.52	pcf		Opt. Den.	131.3	pcf	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.374	46.162	356.422	0.0001224	0.0001295	377.206	356.489
103.42	0.542	66.859	377.119	0.0001765	0.0001827	378.806	365.932
103.42	0.822	101.337	411.597	0.000283	0.0002907	358.057	348.654
68.95	0.262	32.292	239.142	0.0001379	0.0001437	234.188	224.701
68.95	0.374	46.101	252.951	0.0001891	0.0002023	243.816	227.869
68.95	0.542	66.819	273.669	0.0002611	0.0002745	255.884	243.427
68.95	0.821	101.295	308.145	0.0004238	0.0004234	238.994	239.257
34.47	0.150	18.524	121.934	0.0001718	0.0001838	107.795	100.792
34.47	0.261	32.201	135.611	0.0002806	0.0002975	114.756	108.222
34.47	0.374	46.107	149.517	0.0003695	0.0003932	124.767	117.258
34.47	0.541	66.683	170.093	0.0005207	0.0005436	128.063	122.669
13.79	0.150	18.486	59.856	0.000251	0.0003044	73.663	60.722
13.79	0.261	32.246	73.616	0.0003711	0.0004563	86.895	70.663
13.79	0.374	46.088	87.458	0.0004809	0.0005977	95.839	77.112

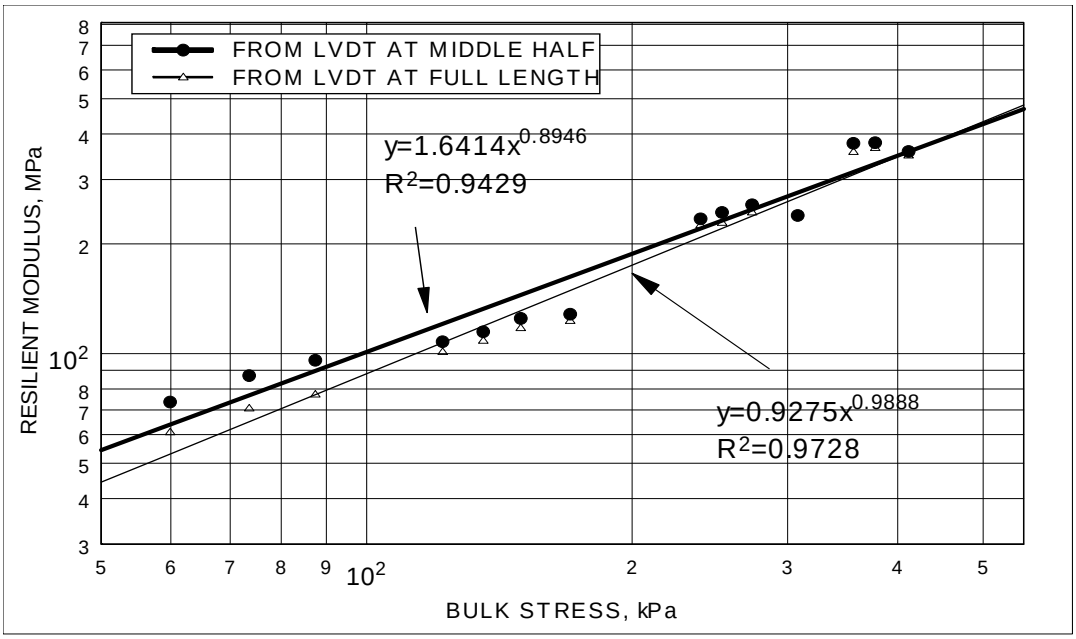


Figure D.101 Resilient Modulus vs. Bulk Stress for Oolite (crushed) after soaking (Sample # OOLITES1)

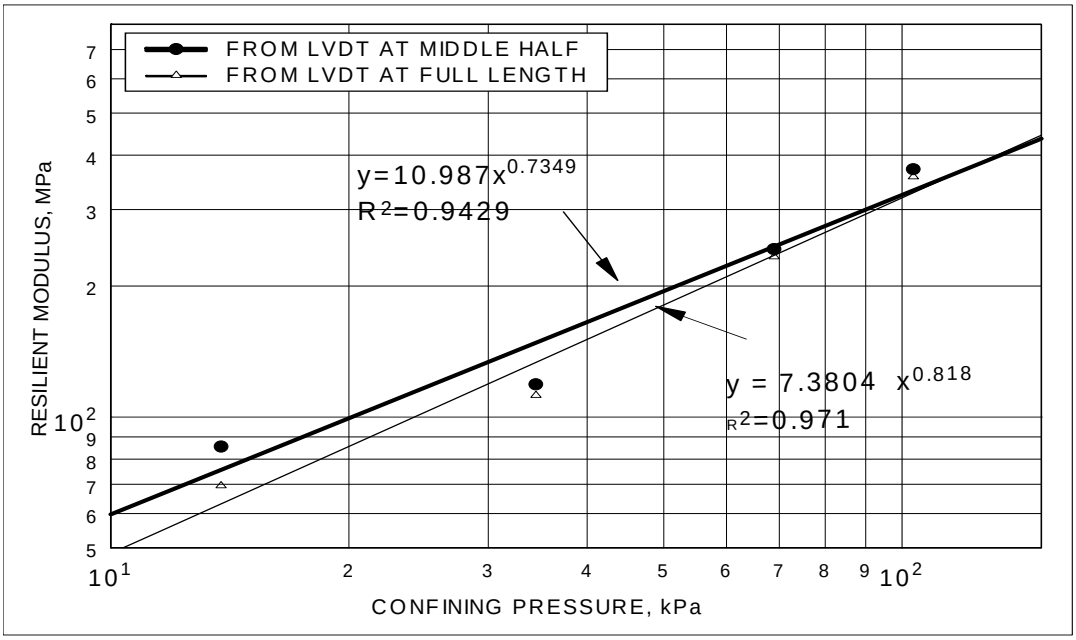


Figure D.102 Resilient Modulus vs. Confining Stress for Oolite (crushed) after soaking (Sample # OOLITES1)

Table D.52 Triaxial test results of Oolite (crushed) after soaking (Sample # OOLITES2)

		Summary Resilient Modulus Test Result					
Test Type: T292-91I				**Soil Identification**			
Sample No.	OOLITES2			Oolite (A-1, crushed)			
Lab. Moist.	8.09%			Opt. Moist.	7.80%		
Lab. Den.	131.2	pcf		Opt. Den.	131.3	pcf	
				Conditioning Information			
				Load Type: Dynamic			
				Dev. Stress: 82.74 kPa			
				Conf. Stress: 103.42 kPa			
				No. Reps.: 1000			

Confining Pressure	**Axial Load**	**Dev. Stress**	**Bulk Stress**	**Middle Strain**	**Full Length Strain**	**Middle Modulus**	**Full Length Modulus**
kPa	**kN**	**kPa**	**kPa**			**MPa**	**Mpa**
103.42	0.374	46.173	356.433	0.000108	0.0001133	427.531	407.419
103.42	0.541	66.677	376.937	0.0001672	0.0001747	398.723	381.588
103.42	0.823	101.458	411.718	0.0002773	0.0002902	365.925	349.588
68.95	0.264	32.515	239.365	0.0001205	0.0001291	269.816	251.939
68.95	0.375	46.279	253.129	0.0001698	0.0001834	272.567	252.402
68.95	0.543	66.985	273.835	0.0002437	0.0002577	274.845	259.949
68.95	0.822	101.424	308.274	0.0003798	0.0004098	267.012	247.496
34.47	0.150	18.513	121.923	0.0001179	0.0001319	157.021	140.397
34.47	0.261	32.167	135.577	0.0002089	0.0002323	154.010	138.494
34.47	0.374	46.145	149.555	0.0002791	0.0003176	165.311	145.299
34.47	0.540	66.660	170.070	0.0003876	0.0004369	172.001	152.558
13.79	0.150	18.467	59.837	0.0001884	0.0002178	98.001	84.780
13.79	0.261	32.226	73.596	0.0002932	0.0003503	109.925	91.985
13.79	0.373	46.052	87.422	0.0004104	0.0004837	112.214	95.207

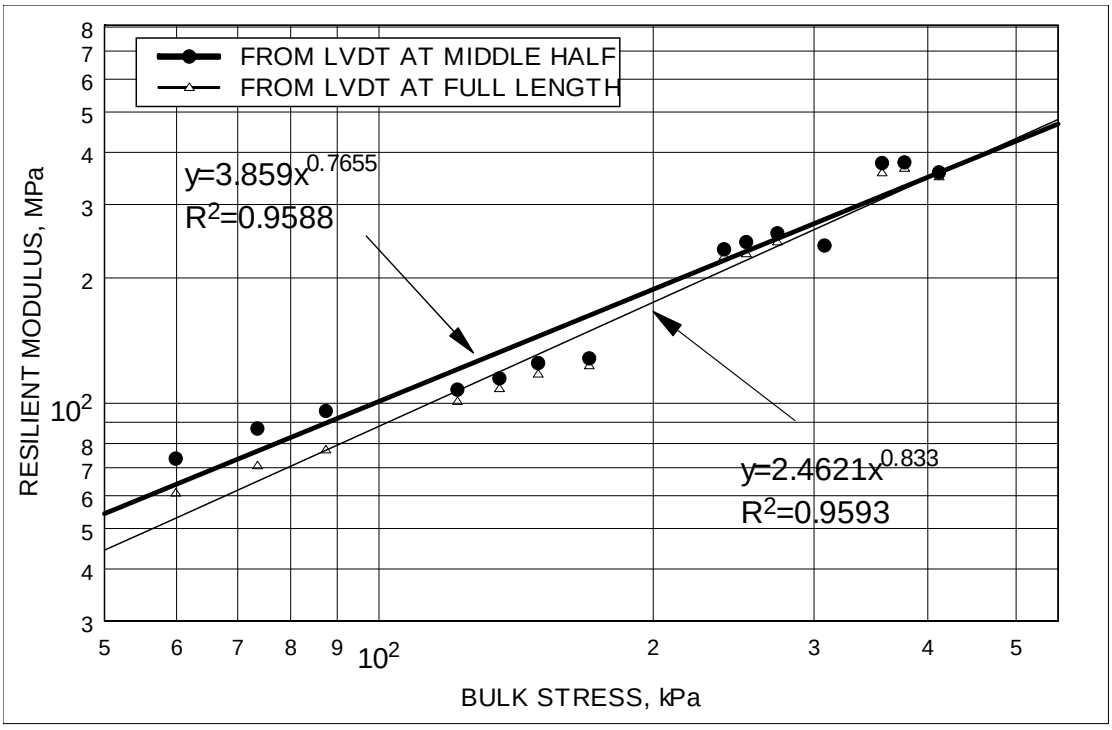


Figure D.103 Resilient Modulus vs. Bulk Stress for Oolite (crushed) after soaking (Sample # OOLITES2)

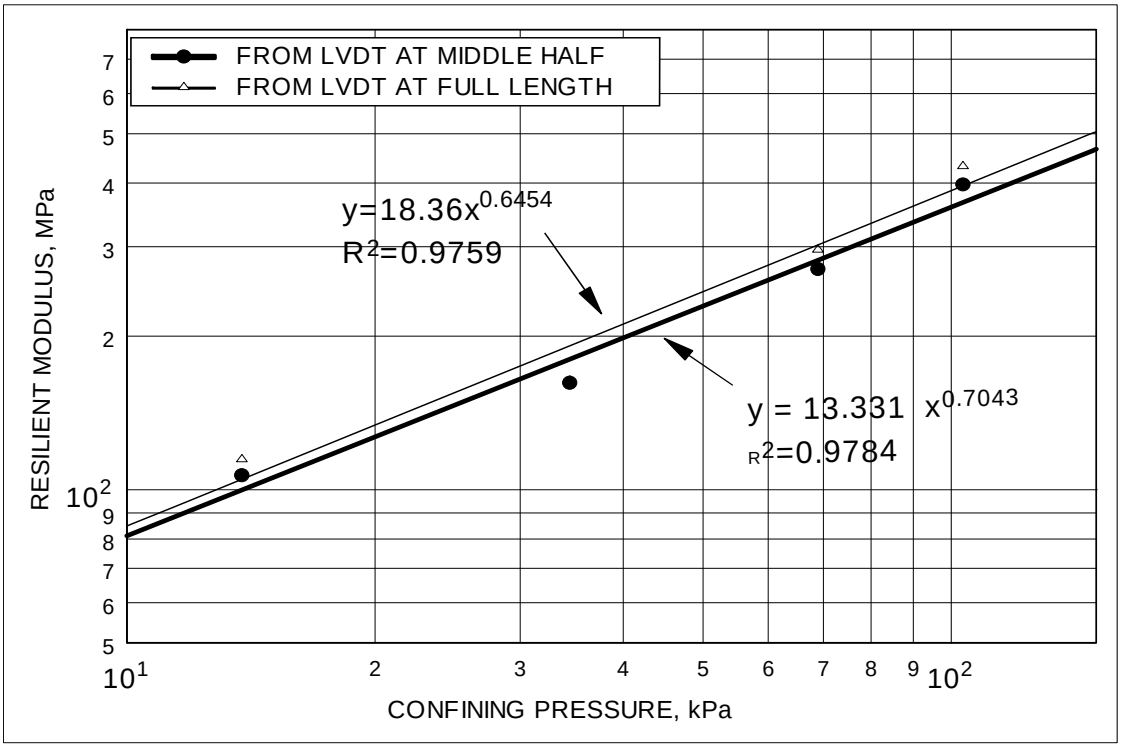


Figure D.104 Resilient Modulus vs. Confining Stress for Oolite (crushed) after soaking (Sample # OOLITES2)

D.9 Spring Cemetery A-2-4, 15% Soil

Table D.53 Triaxial test results of Spring Cemetery (Sample # SC001C1)

RESILIENT MODULUS TEST RESULTS

SOILS LABORATORY, FAMU-FSU COLLEGE OF ENGINEERING

SAMPLE ID:	SC001	TEST NO:	C1
PROJECT ID:		SPECIMEN PREPARATION DATE:	11/16/2005
LAB NO:	21665~7	SPECIMEN DIAMETER, TOP, (in):	4
SOIL CLASS:	A-2-4	SPECIMEN DIAMETER, MIDDLE, (in):	4
LBR	83	SPECIMEN DIAMETER, BOTTOM, (in):	4
STD MAX DEN (pcf):	118.2	SPECIMEN HEIGHT (in):	8
STD OPT MIS (%):	9.2	COMPACTION MC, (%):	9.2
		COMPACTION DRY DEN, (pcf):	116
		MC AFTER TESTING, (%):	8.8
		TESTED BY:	Ginger
		TEST DATE:	11/17/2005

PRECONDITION INFORMATION	
CONFINING STRESS (psi):	6
MAX. AXIAL STRESS (psi):	4
REPETITIONS:	500

REMARKS: Light brown, very soft

TEST SEQ. #	CONFINING STRESS	MAX. AXIAL STRESS	CONTACT STRESS	CYCLIC STRESS	BULK STRESS	RESILIENT STRAIN	RESILIENT MODULUS
	psi	psi	psi	psi	psi	in/in	psi
1	5.2	2.005515207	0.1668112	1.838704	17.60552	0.00010319	17818.2585
2	5.2	3.979742468	0.3581288	3.621614	19.57974	0.00020571	17605.1124
3	5.2	5.882095892	0.5433121	5.338784	21.4821	0.00030496	17506.4834
4	5.2	7.834399029	0.7085798	7.125819	23.4344	0.00040799	17465.7731
5	5.2	9.814375	0.8832058	8.931169	25.41438	0.0005069	17619.1458
6	3.4	2.000474697	0.1730089	1.827466	12.20047	0.00014887	12275.3342
7	3.4	3.950922341	0.3609797	3.589943	14.15092	0.00029287	12257.6875
8	3.4	5.915918041	0.5340028	5.381915	16.11592	0.00041143	13080.931
9	3.4	7.893090701	0.6746429	7.218448	18.09309	0.00051799	13935.6108
10	3.4	9.92071465	0.8374954	9.083219	20.12071	0.00065192	13932.99
11	1.6	1.998650892	0.1818761	1.816775	6.798651	0.0002011	9034.32616
12	1.6	3.980885573	0.3828407	3.598045	8.780886	0.00039254	9165.97461
13	1.6	5.942940939	0.5604942	5.382447	10.74294	0.00051883	10374.166
14	1.6	7.902905669	0.7234926	7.179413	12.70291	0.00067946	10566.3805
15	1.6	9.874803025	0.9665529	8.90825	14.6748	0.00085142	10462.792

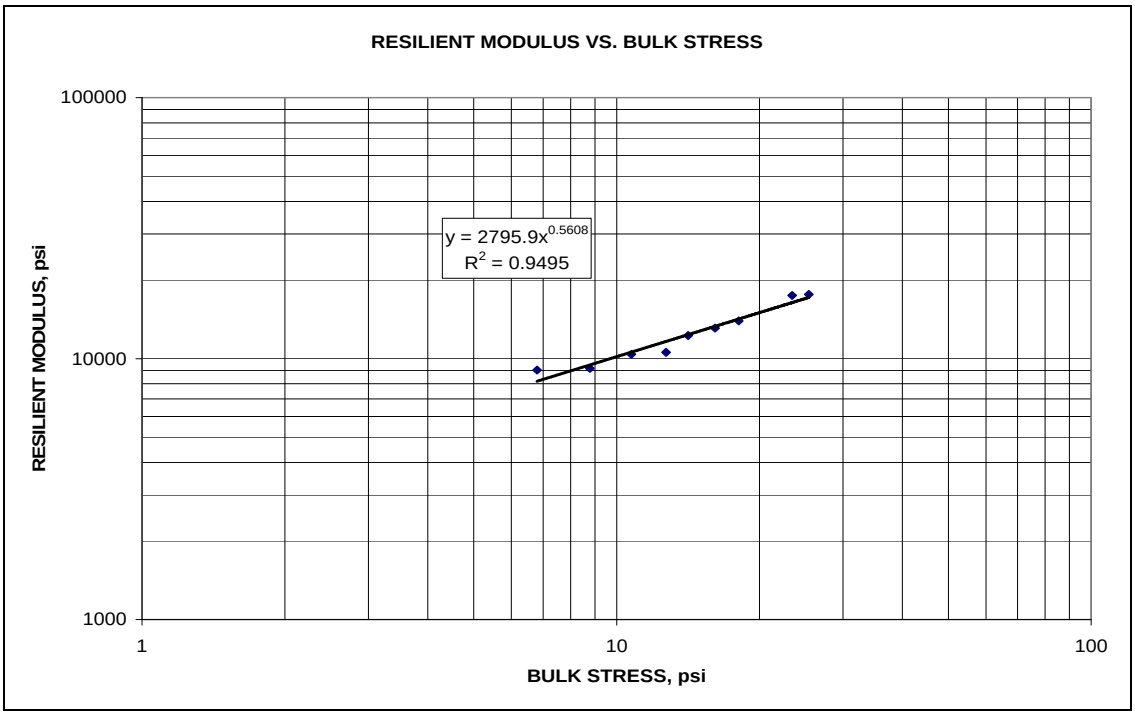


Figure D.105 Resilient Modulus vs. Bulk Stress for Spring Cemetery at Optimum Condition (Sample #SC001C1)

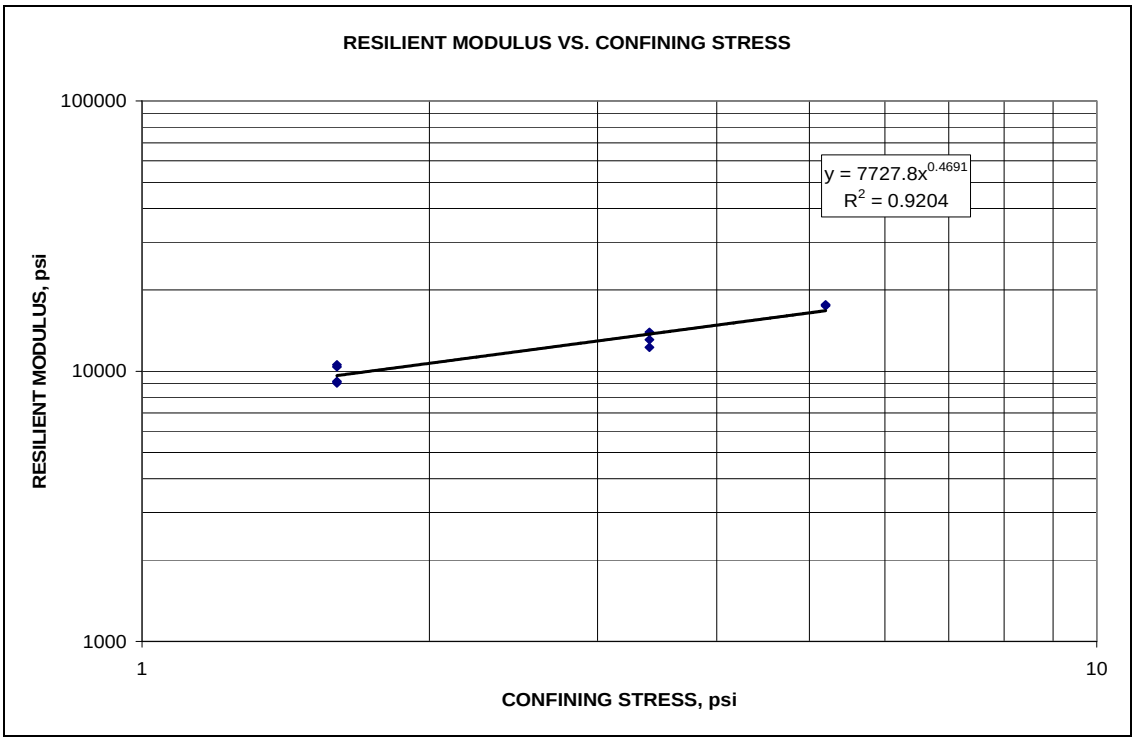


Figure D.106 Resilient Modulus vs. Confining Stress for Spring Cemetery at Optimum Condition (Sample #SC001C1)

Table D.54 Triaxial test results of Spring Cemetery (Sample # SC001D2)

RESILIENT MODULUS TEST RESULTS

SOILS LABORATORY, FAMU-FSU COLLEGE OF ENGINEERING

SAMPLE ID:	SC001	TEST NO:	D2
PROJECT ID:		SPECIMEN PREPARATION DATE:	11/16/2005
LAB NO:	21665~7	SPECIMEN DIAMETER, TOP, (in):	4
SOIL CLASS:	A-2-4	SPECIMEN DIAMETER, MIDDLE, (in):	4
LBR	83	SPECIMEN DIAMETER, BOTTOM, (in):	4
MDF MAX DEN (pcf):	118.2	SPECIMEN HEIGHT (in):	8
MDF OPT MIS (%):	9.2	COMPACTION MC, (%):	9.2
		COMPACTION DRY DEN, (pcf):	116.2
		MC AFTER TESTING, (%):	9.5
		TESTED BY:	Ginger
		TEST DATE:	11/18/2005

PRECONDITION INFORMATION	
CONFINING STRESS (psi):	6
MAX. AXIAL STRESS (psi):	4
REPETITIONS:	500

REMARKS:

TEST SEQ. #	CONFINING STRESS	MAX. AXIAL STRESS	CONTACT STRESS	CYCLIC STRESS	BULK STRESS	RESILIENT STRAIN	RESILIENT MODULUS
	psi	psi	psi	psi	psi	in/in	psi
1	5.2	2.040477771	0.1506224	1.889855	17.64048	0.00012503	15115.0041
2	5.2	3.97776129	0.3433914	3.63437	19.57776	0.00023444	15502.1139
3	5.2	5.960225876	0.5137338	5.446492	21.56023	0.0003525	15450.9645
4	5.2	7.883983424	0.6708485	7.213135	23.48398	0.00046746	15430.6055
5	5.2	9.843511943	0.8398821	9.00363	25.44351	0.00057922	15544.3942
6	3.4	2.000046306	0.1868367	1.81321	12.20005	0.00016584	10933.6277
7	3.4	3.934884538	0.3856349	3.54925	14.13488	0.00032613	10882.8372
8	3.4	5.878440462	0.5834968	5.294944	16.07844	0.00046133	11477.6771
9	3.4	7.90720121	0.6694204	7.237781	18.1072	0.00057989	12481.3103
10	3.4	9.929545541	0.8678144	9.061731	20.12955	0.00068418	13244.7224
11	1.6	2.010212723	0.1953149	1.814898	6.810213	0.00023763	7637.38606
12	1.6	3.993040016	0.3896652	3.603375	8.79304	0.00044697	8061.82059
13	1.6	5.972337197	0.5680488	5.404288	10.77234	0.00058493	9239.24088
14	1.6	7.909542484	0.7490859	7.160457	12.70954	0.00075387	9498.2613
15	1.6	9.873573567	0.985392	8.888182	14.67357	0.00099561	8927.34655

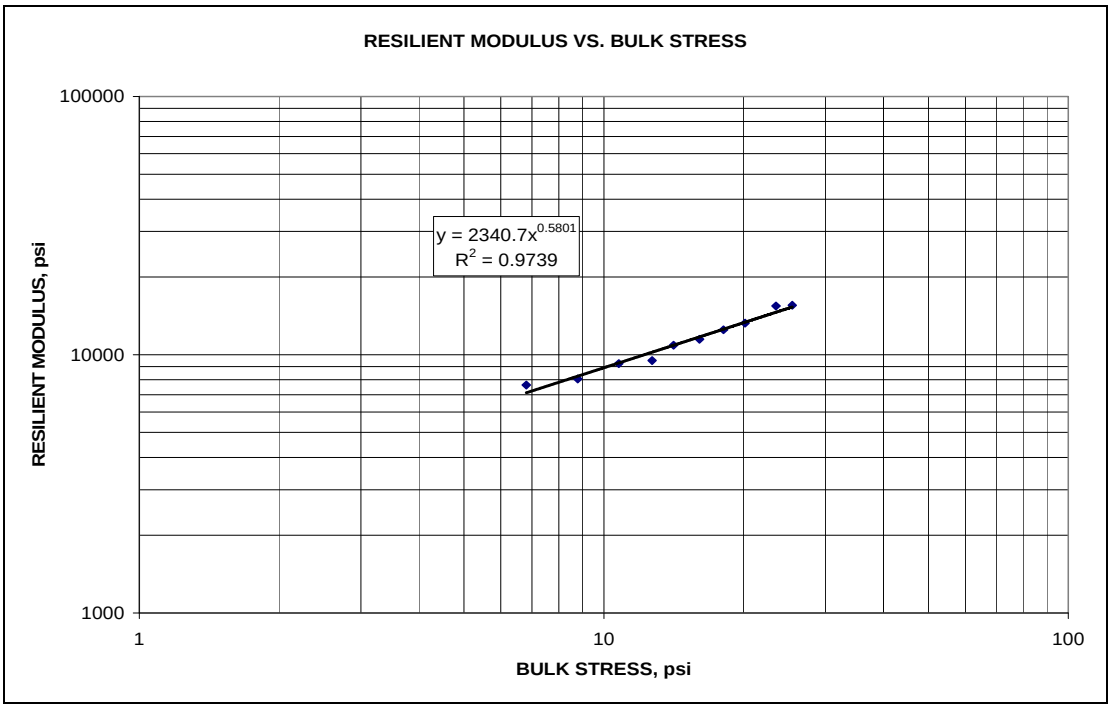


Figure D.107 Resilient Modulus vs. Bulk Stress for Spring Cemetery at Optimum Condition (Sample #SC001D2)

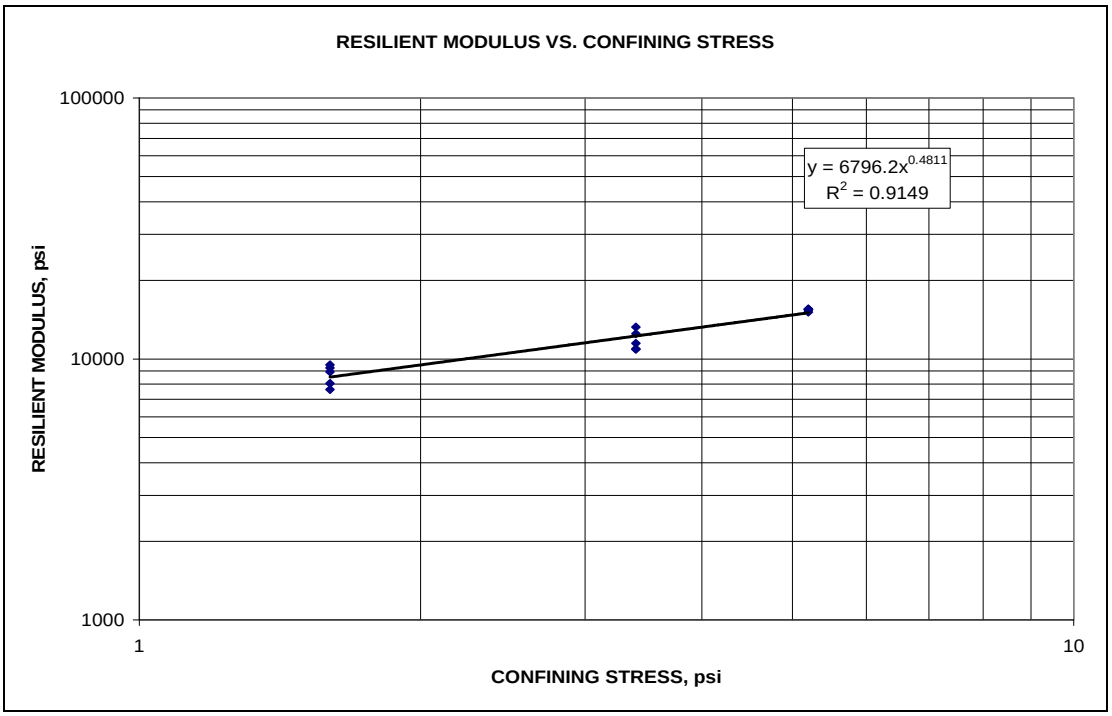


Figure D.108 Resilient Modulus vs. Confining Stress for Spring Cemetery at Optimum Condition (Sample #SC001D2)

Table D.55 Triaxial test results of Spring Cemetery (Sample # SC001E1)

RESILIENT MODULUS TEST RESULTS

SOILS LABORATORY, FAMU-FSU COLLEGE OF ENGINEERING

SAMPLE ID:	SC001	TEST NO:	E1
PROJECT ID:		SPECIMEN PREPARATION DATE:	02/02/2006
LAB NO:	21665~21667	SPECIMEN DIAMETER, TOP, (in):	4
SOIL CLASS:	A-2-4	SPECIMEN DIAMETER, MIDDLE, (in):	4
LBR	83	SPECIMEN DIAMETER, BOTTOM, (in):	4
STD OPT MOIST (%):	9.2	SPECIMEN HEIGHT (in):	8
STD MAX DRY DEN (pcf):	118.2	COMPACTION MC, (%):	9.3
		COMPACTION DRY DEN, (pcf):	114.9
		MC AFTER TESTING, (%):	9.2
		TESTED BY:	Ed
		TEST DATE:	02/06/2006

PRECONDITION INFORMATION	
CONFINING STRESS (psi):	6
MAX. AXIAL STRESS (psi):	4
REPETITIONS:	500

REMARKS: Test Stopped at Seq. 14.

TEST SEQ. #	CONFINING STRESS	MAX. AXIAL STRESS	CONTACT STRESS	CYCLIC STRESS	BULK STRESS	RESILIENT STRAIN	RESILIENT MODULUS
	psi	psi	psi	psi	psi	in/in	psi
1	6	2.004756194	0.1817417	1.823015	20.00476	0.00012948	14079.629
2	6	3.941177787	0.3006315	3.640546	21.94118	0.00025072	14520.2087
3	6	6.017077866	0.2798148	5.737263	24.01708	0.00040043	14327.749
4	6	8.090489013	0.3559042	7.734585	26.09049	0.00053628	14422.5634
5	6	10.07426592	0.7082643	9.366002	28.07427	0.000621	15082.1197
6	4	2.008678169	0.1441234	1.864555	14.00868	0.00017356	10743.0906
7	4	3.984450987	0.2664855	3.717966	15.98445	0.00033947	10952.2206
8	4	5.998252086	0.3447274	5.653525	17.99825	0.00049522	11416.0761
9	4	8.079654777	0.455485	7.62417	20.07965	0.00063108	12081.2262
10	4	10.03280605	0.7835051	9.249301	22.03281	0.00072058	12835.909
11	2	2.021859156	0.1523178	1.869541	8.021859	0.00024218	7719.74062
12	2	4.072945732	0.2428525	3.830093	10.07295	0.00046376	8258.8078
13	2	5.992376242	0.409711	5.582665	11.99238	0.00060843	9175.56145
14							
15							

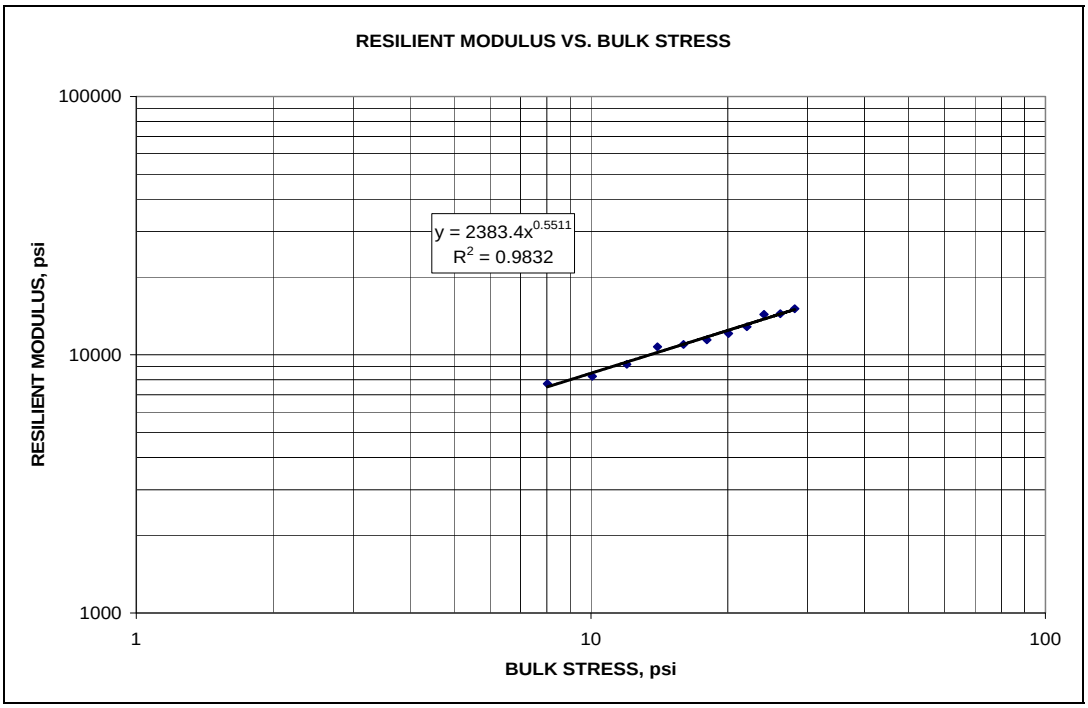


Figure D.109 Resilient Modulus vs. Bulk Stress for Spring Cemetery at Optimum Condition (Sample #SC001E1)

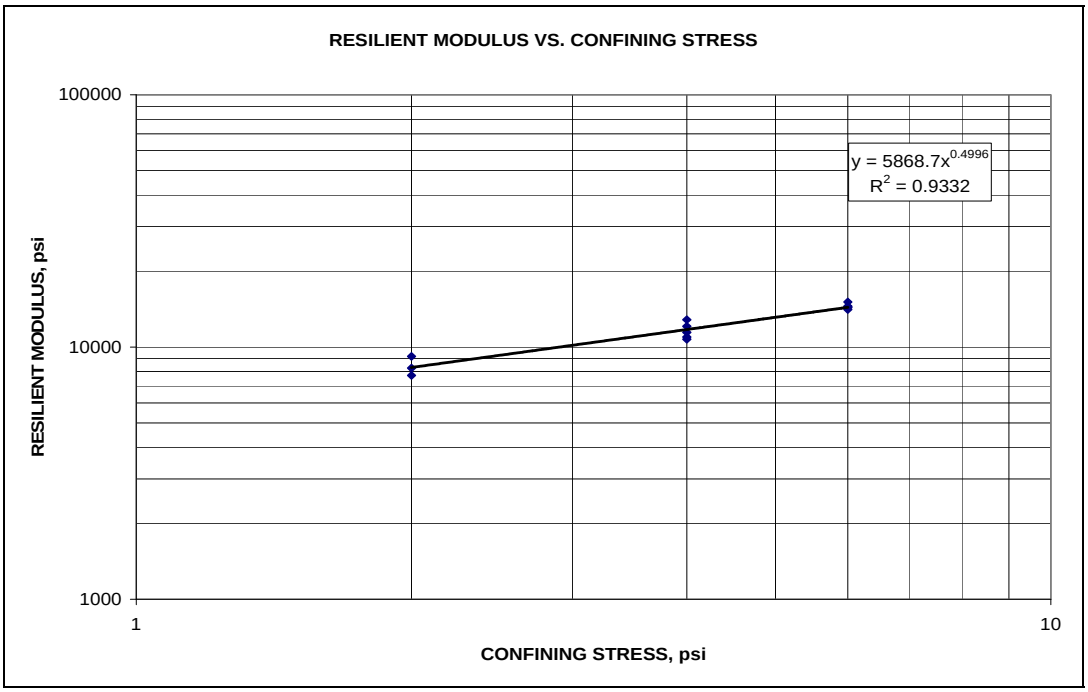


Figure D.110 Resilient Modulus vs. Confining Stress for Spring Cemetery at Optimum Condition (Sample #SC001E1)

Table D.56 Triaxial test results of Spring Cemetery (Sample # SC001F1)

RESILIENT MODULUS TEST RESULTS

SOILS LABORATORY, FAMU-FSU COLLEGE OF ENGINEERING

SAMPLE ID:	SC001	TEST NO:	F1
PROJECT ID:		SPECIMEN PREPARATION DATE:	02/02/2006
LAB NO:	21665~21667	SPECIMEN DIAMETER, TOP, (in):	4
SOIL CLASS:	A-2-4	SPECIMEN DIAMETER, MIDDLE, (in):	4
LBR	83	SPECIMEN DIAMETER, BOTTOM, (in):	4
STD OPT MOIST (%):	9.2	SPECIMEN HEIGHT (in):	8
STD MAX DRY DEN (pcf):	118.2	COMPACTION MC, (%):	9.3
		COMPACTION DRY DEN, (pcf):	114.1
		MC AFTER TESTING, (%):	9.7
		TESTED BY:	Ed
		TEST DATE:	02/03/2006

PRECONDITION INFORMATION	
CONFINING STRESS (psi):	6
MAX. AXIAL STRESS (psi):	4
REPETITIONS:	500

REMARKS:

TEST SEQ. #	CONFINING STRESS	MAX. AXIAL STRESS	CONTACT STRESS	CYCLIC STRESS	BULK STRESS	RESILIENT STRAIN	RESILIENT MODULUS
	psi	psi	psi	psi	psi	in/in	psi
1	6	2.001154841	0.1624553	1.8387	20.00115	0.00010034	18324.97
2	6	3.97832164	0.2789824	3.699339	21.97832	0.00020253	18265.9819
3	6	5.985225255	0.2740088	5.711216	23.98523	0.0003179	17965.5796
4	6	7.980391879	0.3030669	7.677325	25.98039	0.00043847	17509.2408
5	6	9.995384873	0.4874052	9.50798	27.99538	0.00054234	17531.4154
6	4	1.984990143	0.1770359	1.807954	13.98499	0.00013955	12955.5694
7	4	3.977135812	0.2987847	3.678351	15.97714	0.00028523	12896.2036
8	4	6.020817022	0.3135915	5.707226	18.02082	0.00043527	13111.781
9	4	8.037308599	0.3752908	7.662018	20.03731	0.00056207	13631.8429
10	4	9.983038535	0.645514	9.337525	21.98304	0.00065956	14157.2791
11	2	2.015094666	0.1795367	1.835558	8.015095	0.00020992	8744.21461
12	2	3.998142818	0.3744239	3.623719	9.998143	0.00038977	9297.06236
13	2	6.004622994	0.4496965	5.554927	12.00462	0.00055703	9972.39493
14	2	8.045032484	0.5303618	7.514671	14.04503	0.00074411	10098.8812
15	2	10.1031551	0.7334381	9.369717	16.10316	0.00092884	10087.587

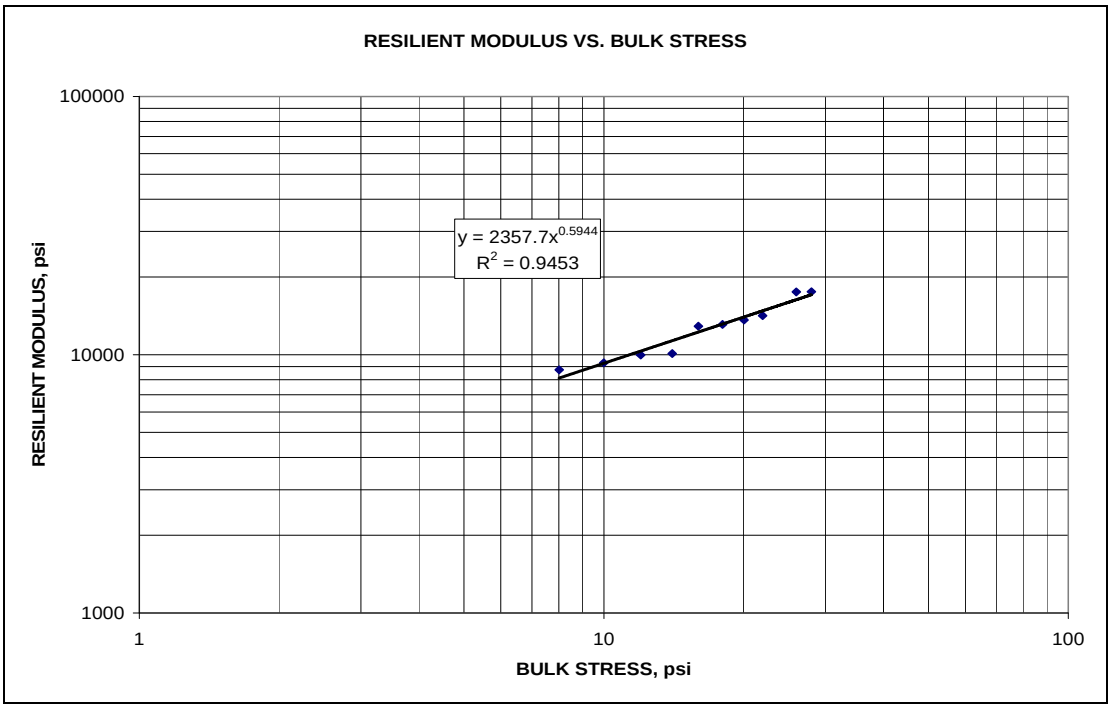


Figure D.111 Resilient Modulus vs. Bulk Stress for Spring Cemetery at Optimum Condition (Sample #SC001F1)

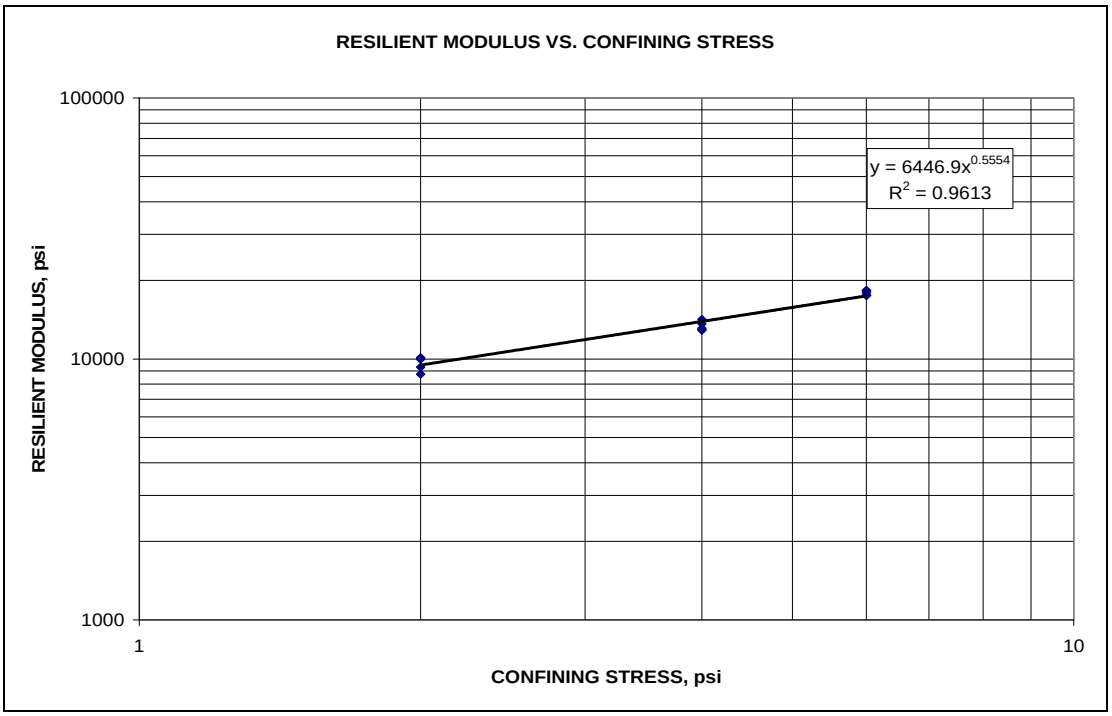


Figure D.112 Resilient Modulus vs. Confining Stress for Spring Cemetery at Optimum Condition (Sample #SC001F1)

D.10 Branch A-2-4, 23% Soil

Table D.57 Triaxial test results of Branch (Sample # BH001C1)

RESILIENT MODULUS TEST RESULTS

SOILS LABORATORY, FAMU-FSU COLLEGE OF ENGINEERING

SAMPLE ID:	BH001	TEST NO:	C1
PROJECT ID:		SPECIMEN PREPARATION DATE:	11/17/2005
LAB NO:	21671~3	SPECIMEN DIAMETER, TOP, (in):	4
SOIL CLASS:	A-2-4	SPECIMEN DIAMETER, MIDDLE, (in):	4
LBR	132	SPECIMEN DIAMETER, BOTTOM, (in):	4
STD MAX DEN (pcf):	128.4	SPECIMEN HEIGHT (in):	8
STD OPT MIS (%):	8.8	COMPACTION MC, (%):	8.7
		COMPACTION DRY DEN, (pcf):	119.4
		MC AFTER TESTING, (%):	8.7
		TESTED BY:	Ginger
		TEST DATE:	11/18/2005

PRECONDITION INFORMATION	
CONFINING STRESS (psi):	6
MAX. AXIAL STRESS (psi):	4
REPETITIONS:	500

REMARKS:

TEST SEQ. #	CONFINING STRESS	MAX. AXIAL STRESS	CONTACT STRESS	CYCLIC STRESS	BULK STRESS	RESILIENT STRAIN	RESILIENT MODULUS
	psi	psi	psi	psi	psi	in/in	psi
1	5.2	2.013462166	0.1640162	1.849446	17.61346	4.6432E-05	39830.851
2	5.2	3.954775494	0.3521591	3.602616	19.55478	0.00010202	35313.0612
3	5.2	5.884181608	0.2639192	5.620262	21.48418	0.00017003	33054.1453
4	5.2	7.263250398	0.7366594	6.526591	22.86325	0.00020219	32278.8558
5	5.2	9.384580414	0.9267104	8.45787	24.98458	0.00027189	31107.9483
6	3.4	1.996003296	0.1960551	1.799948	12.196	6.1208E-05	29406.8935
7	3.4	3.890356863	0.3491568	3.5412	14.09036	0.00011982	29554.6097
8	3.4	5.741855987	0.4834279	5.258428	15.94186	0.00018632	28222.1094
9	3.4	7.697297006	0.5743364	7.122961	17.8973	0.00025786	27622.989
10	3.4	9.833015605	0.7507342	9.082281	20.03302	0.00033595	27034.2605
11	1.6	2.006270096	0.1959058	1.810364	6.80627	8.3625E-05	21648.5042
12	1.6	3.931943869	0.3512368	3.580707	8.731944	0.00016188	22119.2077
13	1.6	5.849467596	0.4678145	5.381653	10.64947	0.00024585	21890.0305
14	1.6	7.73506285	0.6299736	7.105089	12.53506	0.00032243	22036.1955
15	1.6	9.930031369	0.8160683	9.113963	14.73003	0.00040993	22233.2385

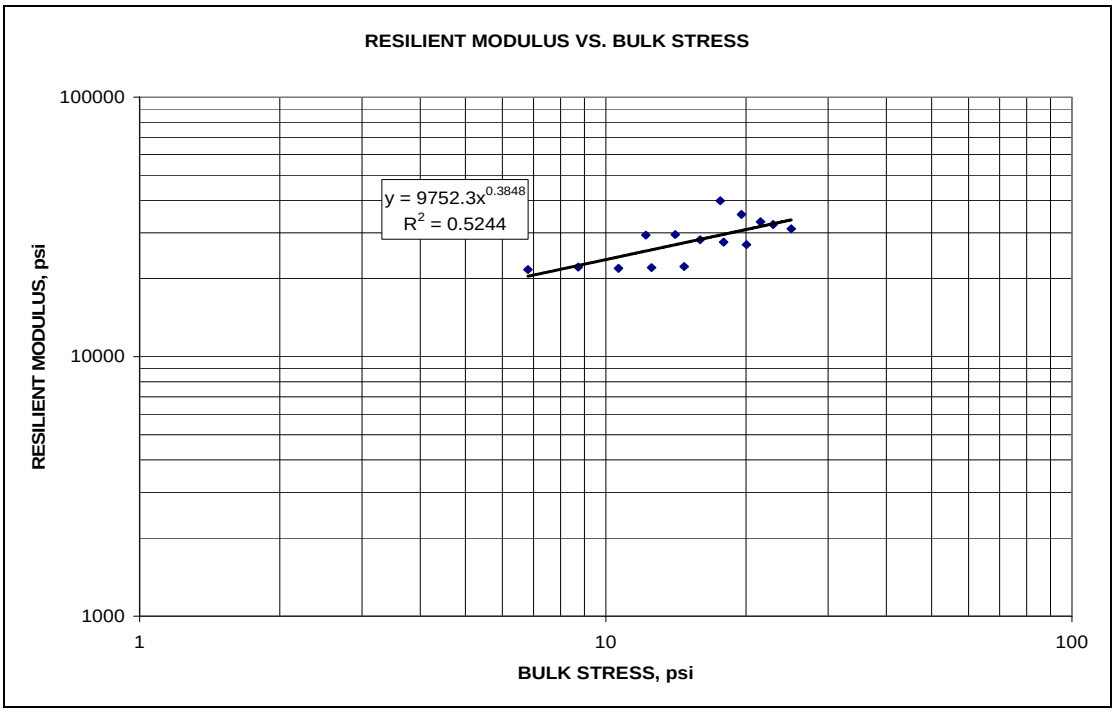


Figure D.113 Resilient Modulus vs. Bulk Stress for Branch at Optimum Condition (Sample #BH001C1)

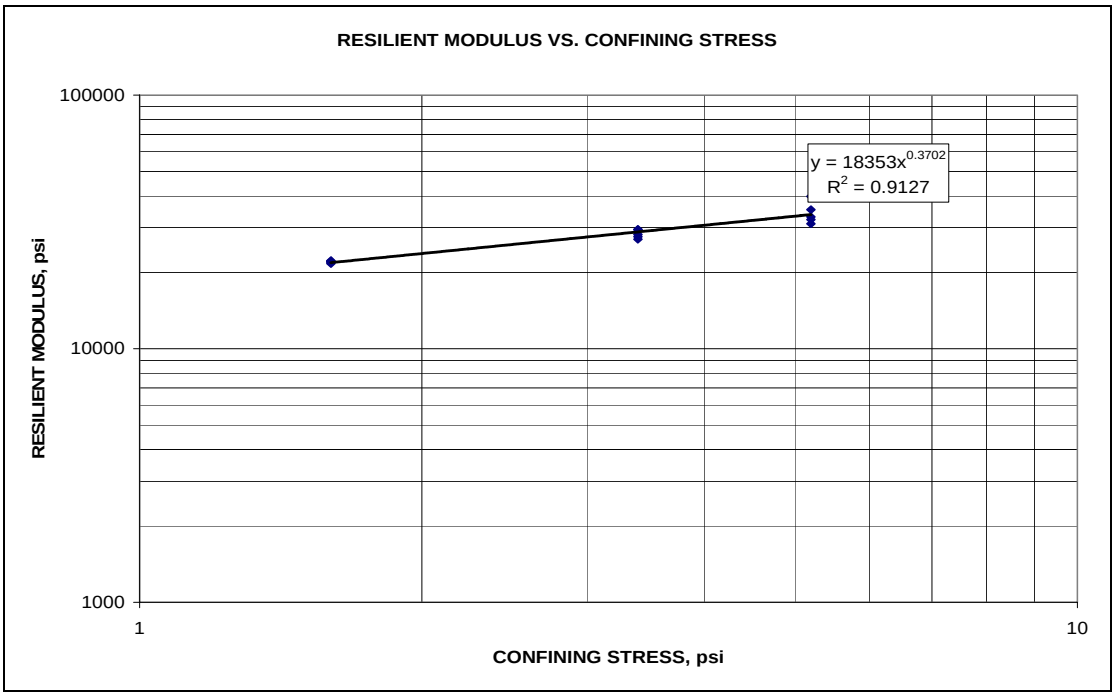


Figure D.114 Resilient Modulus vs. Confining Stress for Branch at Optimum Condition (Sample #BH001C1)

Table D.58 Triaxial test results of Branch (Sample # BH001D2)

RESILIENT MODULUS TEST RESULTS

SOILS LABORATORY, FAMU-FSU COLLEGE OF ENGINEERING

SAMPLE ID:	BH001	TEST NO:	D2
PROJECT ID:		SPECIMEN PREPARATION DATE:	11/17/2005
LAB NO:	21671~3	SPECIMEN DIAMETER, TOP, (in):	4
SOIL CLASS:	A-2-4	SPECIMEN DIAMETER, MIDDLE, (in):	4
LBR	132	SPECIMEN DIAMETER, BOTTOM, (in):	4
STD MAX DEN (pcf):	128.4	SPECIMEN HEIGHT (in):	8
STD OPT MIS (%):	8.8	COMPACTION MC, (%):	8.7
		COMPACTION DRY DEN, (pcf):	119.8
		MC AFTER TESTING, (%):	8.3
		TESTED BY:	Ginger
		TEST DATE:	11/18/2005

PRECONDITION INFORMATION	
CONFINING STRESS (psi):	6
MAX. AXIAL STRESS (psi):	4
REPETITIONS:	500

REMARKS:

TEST SEQ. #	CONFINING STRESS	MAX. AXIAL STRESS	CONTACT STRESS	CYCLIC STRESS	BULK STRESS	RESILIENT STRAIN	RESILIENT MODULUS
	psi	psi	psi	psi	psi	in/in	psi
1	5.2	1.991279204	0.1509486	1.840331	17.59128	3.468E-05	53065.6684
2	5.2	3.982617452	0.3281514	3.654466	19.58262	7.5239E-05	48571.7563
3	5.2	5.860455016	0.4273944	5.433061	21.46046	0.00011756	46216.2953
4	5.2	7.582602404	0.6720354	6.910567	23.1826	0.00015475	44655.1034
5	5.2	9.669064968	0.8855799	8.783485	25.26906	0.0002027	43332.8917
6	3.4	2.008666338	0.1675419	1.841124	12.20867	4.8872E-05	37672.4732
7	3.4	3.907129889	0.3500563	3.557074	14.10713	9.5977E-05	37061.5841
8	3.4	5.710358455	0.509745	5.200613	15.91036	0.0001404	37042.3298
9	3.4	7.731697532	0.6418109	7.089887	17.9317	0.00019221	36886.9643
10	3.4	9.890901274	0.8628568	9.028045	20.0909	0.00024779	36434.1834
11	1.6	1.991016943	0.1863091	1.804708	6.791017	8.236E-05	21912.3314
12	1.6	3.891407436	0.3669582	3.524449	8.691407	0.0001471	23959.872
13	1.6	5.74622172	0.5153605	5.230861	10.54622	0.00020235	25850.2267
14	1.6	7.745380398	0.6286578	7.116723	12.54538	0.00026617	26737.4957
15	1.6	10.0941914	0.8478906	9.246301	14.89419	0.00033209	27843.1542

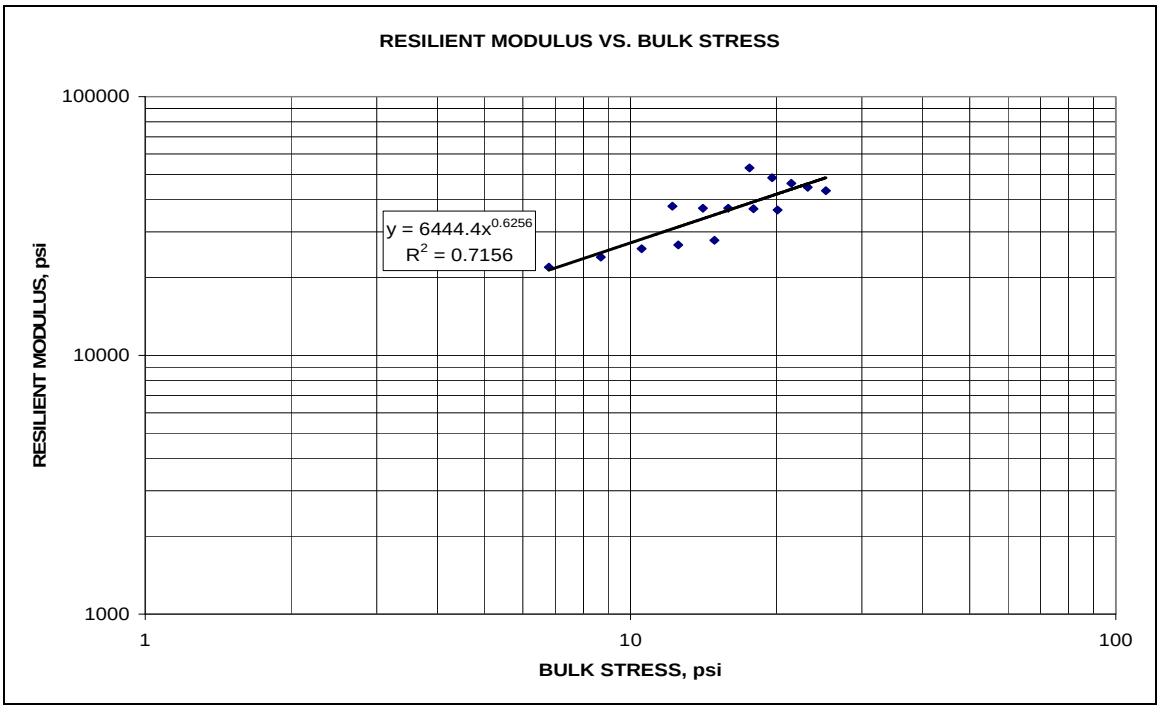


Figure D.115 Resilient Modulus vs. Bulk Stress for Branch at Optimum Condition (Sample #BH001D2)

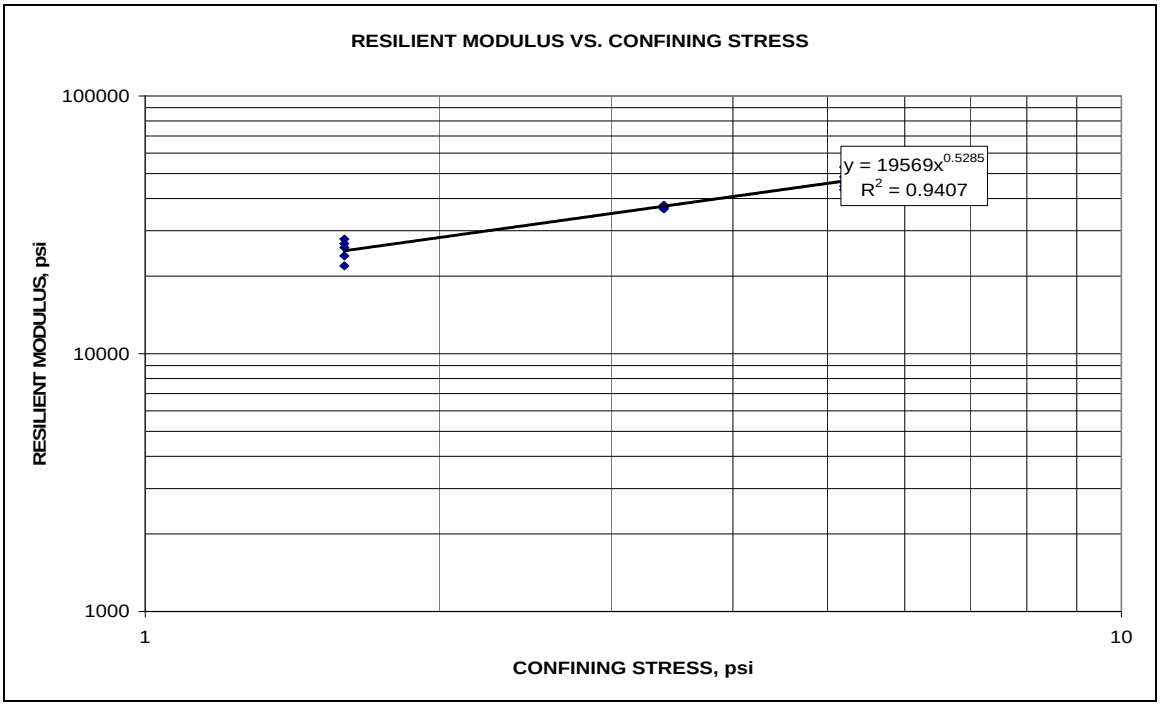


Figure D.116 Resilient Modulus vs. Confining Stress for Branch at Optimum Condition (Sample #BH001D2)

Table D.59 Triaxial test results of Branch (Sample # BH001E1)

RESILIENT MODULUS TEST RESULTS

SOILS LABORATORY, FAMU-FSU COLLEGE OF ENGINEERING

SAMPLE ID:	BH001	TEST NO:	E1
PROJECT ID:		SPECIMEN PREPARATION DATE:	12/07/2005
LAB NO:	21671~3	SPECIMEN DIAMETER, TOP, (in):	4
SOIL CLASS:	A-2-4	SPECIMEN DIAMETER, MIDDLE, (in):	4
LBR	132	SPECIMEN DIAMETER, BOTTOM, (in):	4
STD MAX DEN (pcf):	128.4	SPECIMEN HEIGHT (in):	8
STD OPT MIS (%):	8.8	COMPACTION MC, (%):	8.9
		COMPACTION DRY DEN, (pcf):	121.87
		MC AFTER TESTING, (%):	8.8
		TESTED BY:	Ginger
		TEST DATE:	12/07/2005

PRECONDITION INFORMATION	
CONFINING STRESS (psi):	6
MAX. AXIAL STRESS (psi):	4
REPETITIONS:	500

REMARKS: 31 blows per layer to achieve the max dry density

TEST SEQ. #	CONFINING STRESS	MAX. AXIAL STRESS	CONTACT STRESS	CYCLIC STRESS	BULK STRESS	RESILIENT STRAIN	RESILIENT MODULUS
	psi	psi	psi	psi	psi	in/in	psi
1	6	2.075271465	0.1659004	1.909371	20.07527	4.6277E-05	41259.1655
2	6	3.951580016	0.374809	3.576771	21.95158	9.2449E-05	38688.9694
3	6	5.871104459	0.5458617	5.325243	23.8711	0.00014694	36241.057
4	6	7.793001433	0.6450726	7.147929	25.793	0.00020353	35119.392
5	6	9.829745541	0.7980615	9.031684	27.82975	0.00026944	33519.6762
6	4	2.021647962	0.1824516	1.839196	14.02165	5.4242E-05	33906.9242
7	4	3.942120366	0.341583	3.600537	15.94212	0.00011159	32265.8432
8	4	5.849660637	0.4787896	5.370871	17.84966	0.00017406	30856.5011
9	4	7.82546742	0.6638	7.161667	19.82547	0.00023896	29969.6344
10	4	9.85358121	0.7844058	9.069175	21.85358	0.00030496	29738.7188
11	2	2.02394242	0.1670946	1.856848	8.023942	6.8599E-05	27068.0984
12	2	3.947343089	0.3465916	3.600751	9.947343	0.00014165	25420.4636
13	2	5.824761131	0.4833436	5.341417	11.82476	0.00021545	24791.4232
14	2	7.782073885	0.6080799	7.173994	13.78207	0.0002927	24509.5281
15	2	9.825946656	0.7840605	9.041886	15.82595	0.00036701	24636.5453

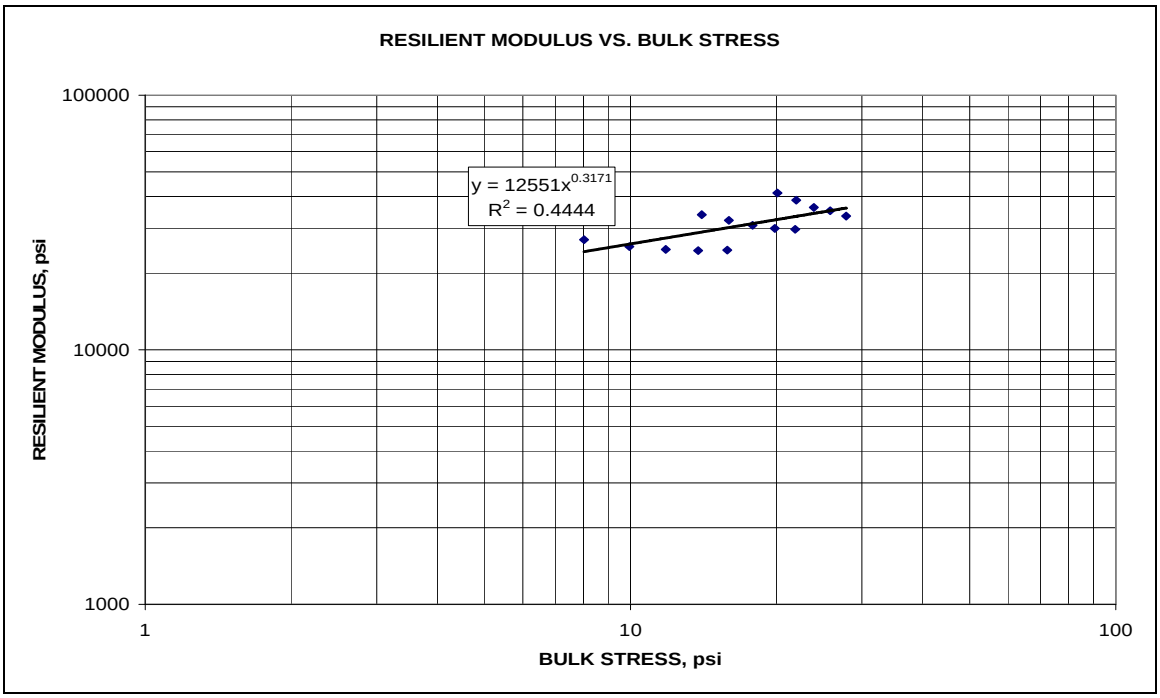


Figure D.117 Resilient Modulus vs. Bulk Stress for Branch at Optimum Condition (Sample #BH001E1)

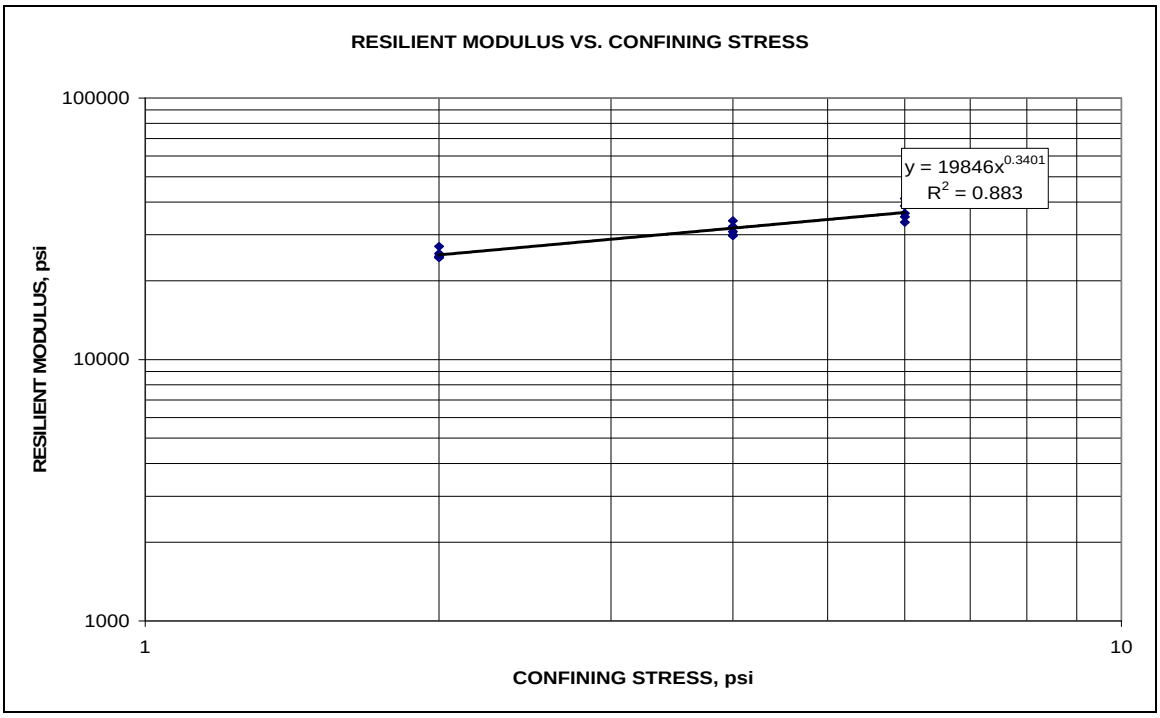


Figure D.118 Resilient Modulus vs. Confining Stress for Branch at Optimum Condition (Sample #BH001E1)

Table D.60 Triaxial test results of Branch (Sample # BH001F1)

RESILIENT MODULUS TEST RESULTS

SOILS LABORATORY, FAMU-FSU COLLEGE OF ENGINEERING

SAMPLE ID:	BH001	TEST NO:	F1
PROJECT ID:		SPECIMEN PREPARATION DATE:	12/07/2005
LAB NO:	21671~3	SPECIMEN DIAMETER, TOP, (in):	4
SOIL CLASS:	A-2-4	SPECIMEN DIAMETER, MIDDLE, (in):	4
LBR	132	SPECIMEN DIAMETER, BOTTOM, (in):	4
STD MAX DEN (pcf):	128.4	SPECIMEN HEIGHT (in):	8
STD OPT MIS (%):	8.8	COMPACTION MC, (%):	8.9
		COMPACTION DRY DEN, (pcf):	120.4
		MC AFTER TESTING, (%):	
		TESTED BY:	Ginger
		TEST DATE:	12/07/2005

PRECONDITION INFORMATION	
CONFINING STRESS (psi):	6
MAX. AXIAL STRESS (psi):	4
REPETITIONS:	500

REMARKS:

TEST SEQ. #	CONFINING STRESS	MAX. AXIAL STRESS	CONTACT STRESS	CYCLIC STRESS	BULK STRESS	RESILIENT STRAIN	RESILIENT MODULUS
	psi	psi	psi	psi	psi	in/in	psi
1	6	2.027237803	0.164337	1.862901	20.02724	4.173E-05	44641.7639
2	6	3.862848838	0.3480794	3.514769	21.86285	8.3712E-05	41986.6981
3	6	5.872005303	0.4772919	5.394713	23.87201	0.0001356	39783.5451
4	6	7.963938965	0.6438592	7.32008	25.96394	0.00019631	37288.4641
5	6	10.03605955	0.7344793	9.30158	28.03606	0.00026071	35677.8123
6	4	2.024563105	0.1678883	1.856675	14.02456	5.0377E-05	36855.6972
7	4	3.966306752	0.3210212	3.645286	15.96631	0.00010546	34566.3943
8	4	5.821077022	0.4509885	5.370088	17.82108	0.00016625	32301.5999
9	4	7.900737484	0.5805647	7.320173	19.90074	0.00023031	31783.6192
10	4	9.876334076	0.7841979	9.092136	21.87633	0.00029094	31251.3273
11	2	2.023696465	0.1777503	1.845946	8.023696	6.8679E-05	26877.884
12	2	3.926261354	0.3501878	3.576074	9.926261	0.00013786	25939.14
13	2	5.771383057	0.4836669	5.287716	11.77138	0.00020218	26153.4591
14	2	7.78313	0.5945203	7.18861	13.78313	0.00027918	25749.1638
15	2	9.945631529	0.7886593	9.156972	15.94563	0.00035449	25831.0609

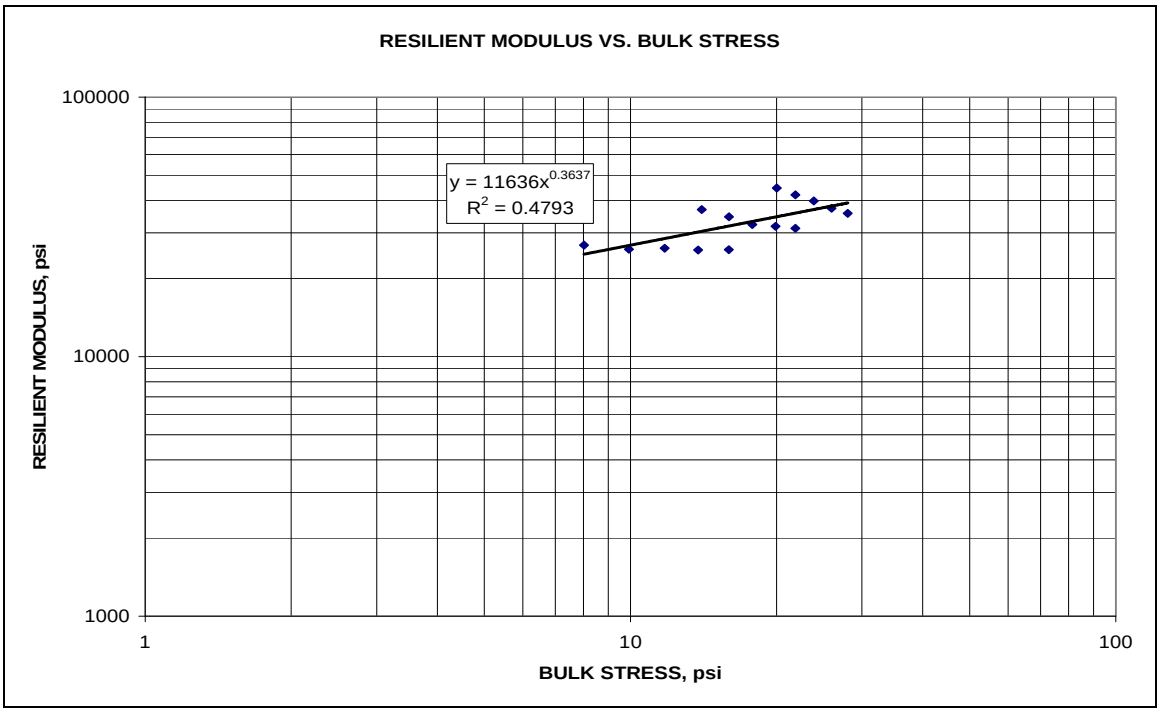


Figure D.119 Resilient Modulus vs. Bulk Stress for Branch at Optimum Condition (Sample #BH001F1)

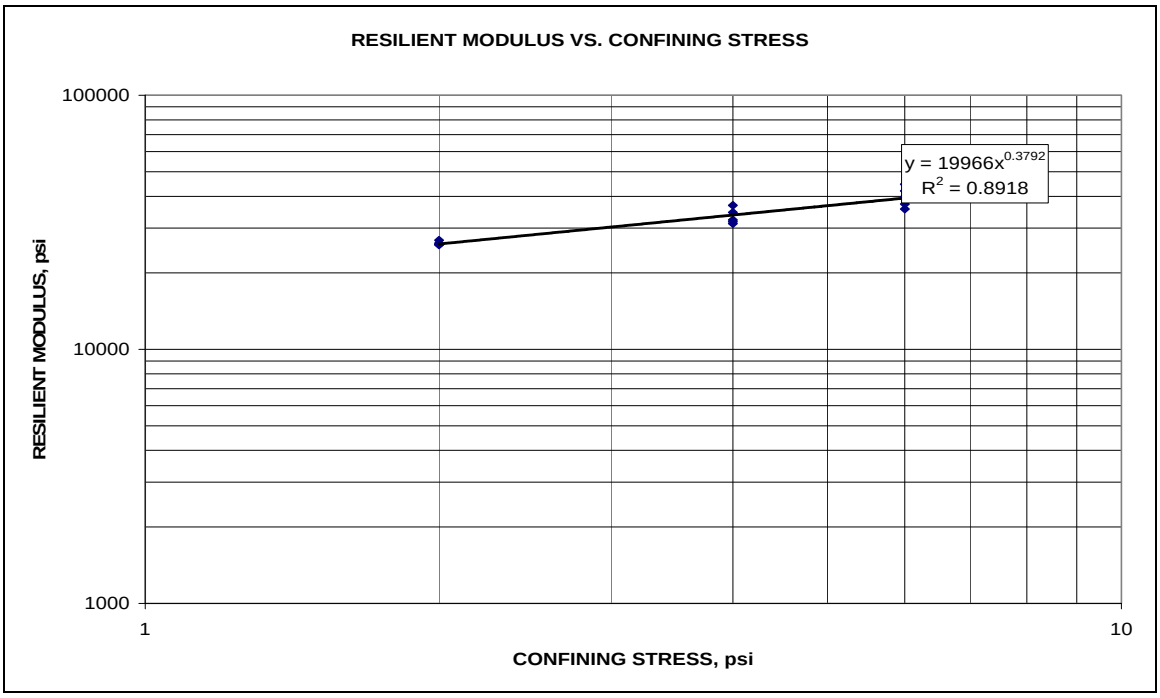


Figure D.120 Resilient Modulus vs. Confining Stress for Branch at Optimum Condition (Sample #BH001F1)

Table D.61 Triaxial test results of Branch (Sample # BH001G1)

RESILIENT MODULUS TEST RESULTS

SOILS LABORATORY, FAMU-FSU COLLEGE OF ENGINEERING

SAMPLE ID:	BH001	TEST NO:	G1
PROJECT ID:		SPECIMEN PREPARATION DATE:	3/20/2006
LAB NO:	21671~21673	SPECIMEN DIAMETER, TOP, (in):	4
SOIL CLASS:	A-2-4	SPECIMEN DIAMETER, MIDDLE, (in):	4
LBR	132	SPECIMEN DIAMETER, BOTTOM, (in):	4
STD OPT MOIST (%):	8.8	SPECIMEN HEIGHT (in):	8
STD MAX DRY DEN (pcf):	128.4	COMPACTION MC, (%):	9.3
		COMPACTION DRY DEN, (pcf):	122
		MC AFTER TESTING, (%):	8.9
		TESTED BY:	Ed
		TEST DATE:	32/22/2006

PRECONDITION INFORMATION	
CONFINING STRESS (psi):	6
MAX. AXIAL STRESS (psi):	4
REPETITIONS:	500

REMARKS:

TEST SEQ. #	CONFINING STRESS	MAX. AXIAL STRESS	CONTACT STRESS	CYCLIC STRESS	BULK STRESS	RESILIENT STRAIN	RESILIENT MODULUS
	psi	psi	psi	psi	psi	in/in	psi
1	6	1.985694363	0.1244007	1.861294	19.98569	7.3306E-05	25390.5943
2	6	3.953659283	0.323758	3.629901	21.95366	0.00014199	25563.8619
3	6	5.884988248	0.3343084	5.55068	23.88499	0.00022521	24647.0212
4	6	7.90320172	0.3677679	7.535434	25.9032	0.0003169	23778.5519
5	6	10.04926115	0.3806828	9.668578	28.04926	0.00040952	23609.6686
6	4	2.027898487	0.1347846	1.893114	14.0279	0.00010177	18601.8882
7	4	3.954511608	0.3408602	3.613651	15.95451	0.00020295	17805.4144
8	4	5.997801959	0.3306143	5.667188	17.9978	0.00032101	17654.0662
9	4	7.950416306	0.4038372	7.546579	19.95042	0.00041758	18072.2822
10	4	10.00434857	0.5173362	9.487012	22.00435	0.00050642	18733.6311
11	2	1.997699586	0.1715123	1.826187	7.9977	0.0001341	13618.2287
12	2	3.909985127	0.3813518	3.528633	9.909985	0.00026685	13223.1475
13	2	5.954153201	0.3969472	5.557206	11.95415	0.00040322	13782.1421
14	2	7.938910557	0.489639	7.449272	13.93891	0.00052371	14223.9625
15	2	9.994170223	0.6248065	9.369364	15.99417	0.00061893	15137.9631

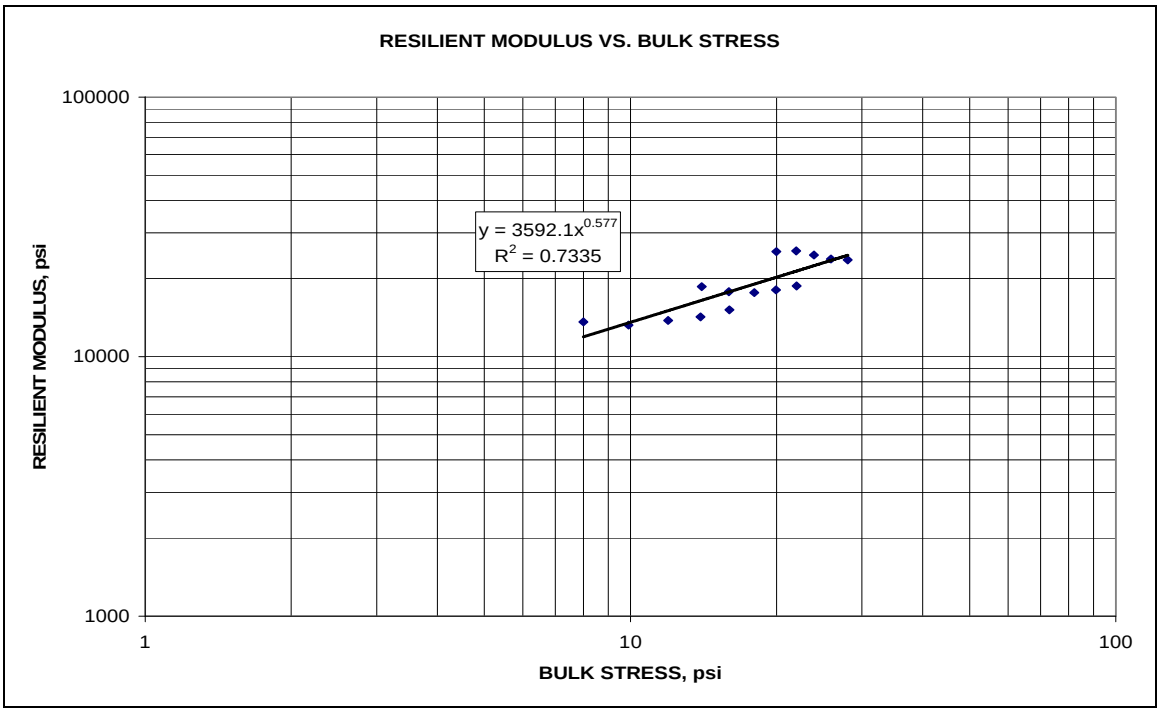


Figure D.121 Resilient Modulus vs. Bulk Stress for Branch at Optimum Condition (Sample #BH001G1)

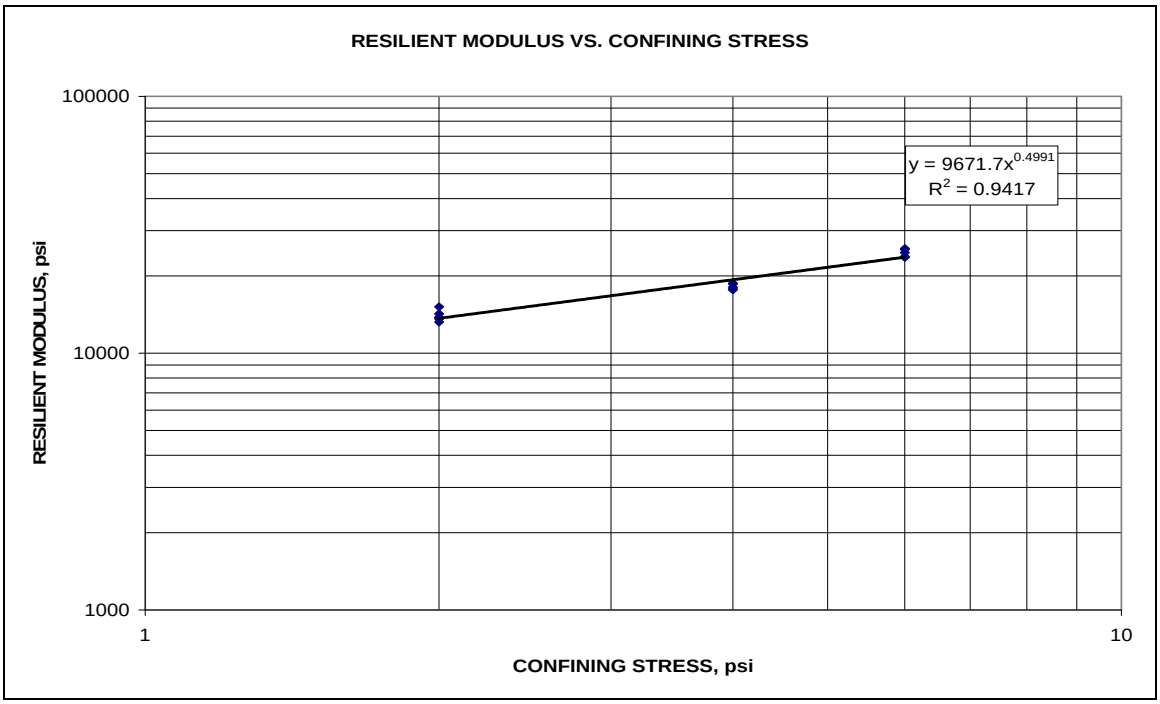


Figure D.122 Resilient Modulus vs. Confining Stress for Branch at Optimum Condition (Sample #BH001G1)

Table D.62 Triaxial test results of Branch (Sample # BH001H1)

RESILIENT MODULUS TEST RESULTS

SOILS LABORATORY, FAMU-FSU COLLEGE OF ENGINEERING

SAMPLE ID:	BH001	TEST NO:	H1
PROJECT ID:		SPECIMEN PREPARATION DATE:	3/20/2006
LAB NO:	21671~21673	SPECIMEN DIAMETER, TOP, (in):	4
SOIL CLASS:	A-2-4	SPECIMEN DIAMETER, MIDDLE, (in):	4
LBR	132	SPECIMEN DIAMETER, BOTTOM, (in):	4
STD OPT MOIST (%):	8.8	SPECIMEN HEIGHT (in):	8
STD MAX DRY DEN (pcf):	128.4	COMPACTION MC, (%):	9.3
		COMPACTION DRY DEN, (pcf):	124.7
		MC AFTER TESTING, (%):	8.2
		TESTED BY:	Ed
		TEST DATE:	3/22/2006

PRECONDITION INFORMATION	
CONFINING STRESS (psi):	6
MAX. AXIAL STRESS (psi):	4
REPETITIONS:	500

REMARKS:

TEST SEQ. #	CONFINING STRESS	MAX. AXIAL STRESS	CONTACT STRESS	CYCLIC STRESS	BULK STRESS	RESILIENT STRAIN	RESILIENT MODULUS
	psi	psi	psi	psi	psi	in/in	psi
1	6	2.002379092	0.1047868	1.897592	20.00238	6.1046E-05	31084.6611
2	6	3.876477197	0.31716	3.559317	21.87648	0.00012939	27507.3915
3	6	5.923512436	0.3419112	5.581601	23.92351	0.00020782	26857.775
4	6	7.850061035	0.4097213	7.44034	25.85006	0.00028012	26561.6415
5	6	9.859067994	0.5508922	9.308176	27.85907	0.00035023	26577.5135
6	4	1.995436258	0.1739502	1.821486	13.99544	7.4562E-05	24428.999
7	4	3.960514061	0.3076244	3.65289	15.96051	0.00015971	22872.6638
8	4	5.979230717	0.3004178	5.678813	17.97923	0.00025996	21844.6801
9	4	7.919578169	0.2981789	7.621399	19.91958	0.00035308	21585.3038
10	4	9.990978662	0.4064441	9.584535	21.99098	0.00043671	21946.9249
11	2	1.987590366	0.1665322	1.821058	7.98759	0.00011033	16504.8941
12	2	3.984161194	0.3089201	3.675241	9.984161	0.00022503	16331.9933
13	2	6.013697373	0.2585161	5.755181	12.0137	0.00035829	16062.9089
14	2	8.027025637	0.2855004	7.741525	14.02703	0.00047702	16228.9074
15	2	9.972047611	0.6147813	9.357266	15.97205	0.00055721	16793.0994

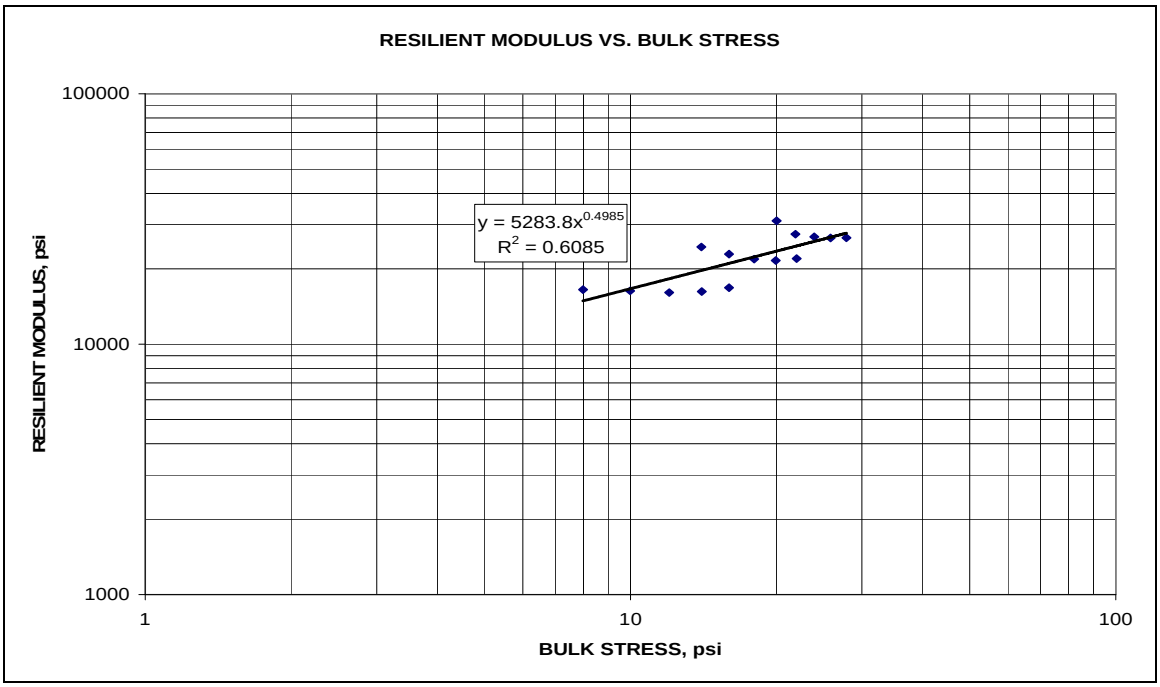


Figure D.123 Resilient Modulus vs. Bulk Stress for Branch at Optimum Condition (Sample #BH001H1)

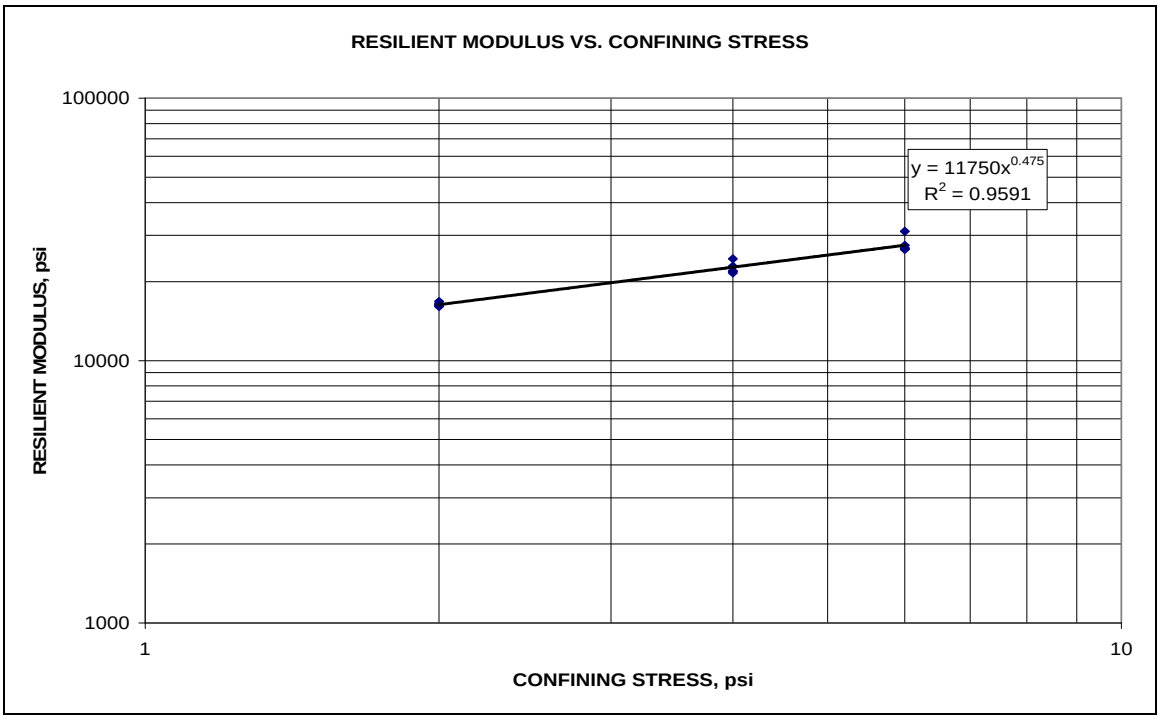


Figure D.124 Resilient Modulus vs. Confining Stress for Branch at Optimum Condition (Sample #BH001H1)

D.11 Iron Bridge A-2-6, 31% Soil

Table D.63 Triaxial test results of Iron Bridge (Sample # IB001C1)

RESILIENT MODULUS TEST RESULTS

SOILS LABORATORY, FAMU-FSU COLLEGE OF ENGINEERING

SAMPLE ID:	IB001	TEST NO:	C1
PROJECT ID:		SPECIMEN PREPARATION DATE:	11/20/2005
LAB NO:	21668~70	SPECIMEN DIAMETER, TOP, (in):	4
SOIL CLASS:	A-2-6	SPECIMEN DIAMETER, MIDDLE, (in):	4
LBR	127	SPECIMEN DIAMETER, BOTTOM, (in):	4
STD MAX DEN (pcf):	123.3	SPECIMEN HEIGHT (in):	8
STD OPT MIS (%):	10.3	COMPACTION MC, (%):	10.3
		COMPACTION DRY DEN, (pcf):	121.4
		MC AFTER TESTING, (%):	9.3
		TESTED BY:	Ginger
		TEST DATE:	11/22/2005

PRECONDITION INFORMATION	
CONFINING STRESS (psi):	6
MAX. AXIAL STRESS (psi):	4
REPETITIONS:	500

REMARKS:

TEST SEQ. #	CONFINING STRESS	MAX. AXIAL STRESS	CONTACT STRESS	CYCLIC STRESS	BULK STRESS	RESILIENT STRAIN	RESILIENT MODULUS
	psi	psi	psi	psi	psi	in/in	psi
1	5.2	2.04520086	0.1472696	1.897931	17.6452	0.0001508	12585.417
2	5.2	3.985863535	0.3555535	3.63031	19.58586	0.00029766	12195.9793
3	5.2	5.914285016	0.5410702	5.373215	21.51429	0.00046627	11523.7229
4	5.2	7.898081768	0.6922141	7.205868	23.49808	0.00059634	12083.4206
5	5.2	9.922165127	0.8613314	9.060834	25.52217	0.00070835	12791.446
6	3.4	2.037418089	0.1656778	1.87174	12.23742	0.00023217	8061.80022
7	3.4	4.042256417	0.372462	3.669794	14.24226	0.00038995	9410.92651
8	3.4	5.976768901	0.5745343	5.402235	16.17677	0.00050725	10650.048
9	3.4	7.92207	0.7359321	7.186138	18.12207	0.000608	11819.2115
10	3.4	9.915204777	0.8917315	9.023473	20.1152	0.00073454	12284.5333
11	1.6	2.043383774	0.1932085	1.850175	6.843384	0.00024359	7595.47728
12	1.6	4.018622118	0.3801575	3.638465	8.818622	0.00040287	9031.25467
13	1.6	5.957823583	0.5795718	5.378252	10.75782	0.00053755	10005.0292
14	1.6	7.892085271	0.7719836	7.120102	12.69209	0.00064403	11055.6008
15	1.6	9.872484554	0.9537947	8.91869	14.67248	0.00075293	11845.2793

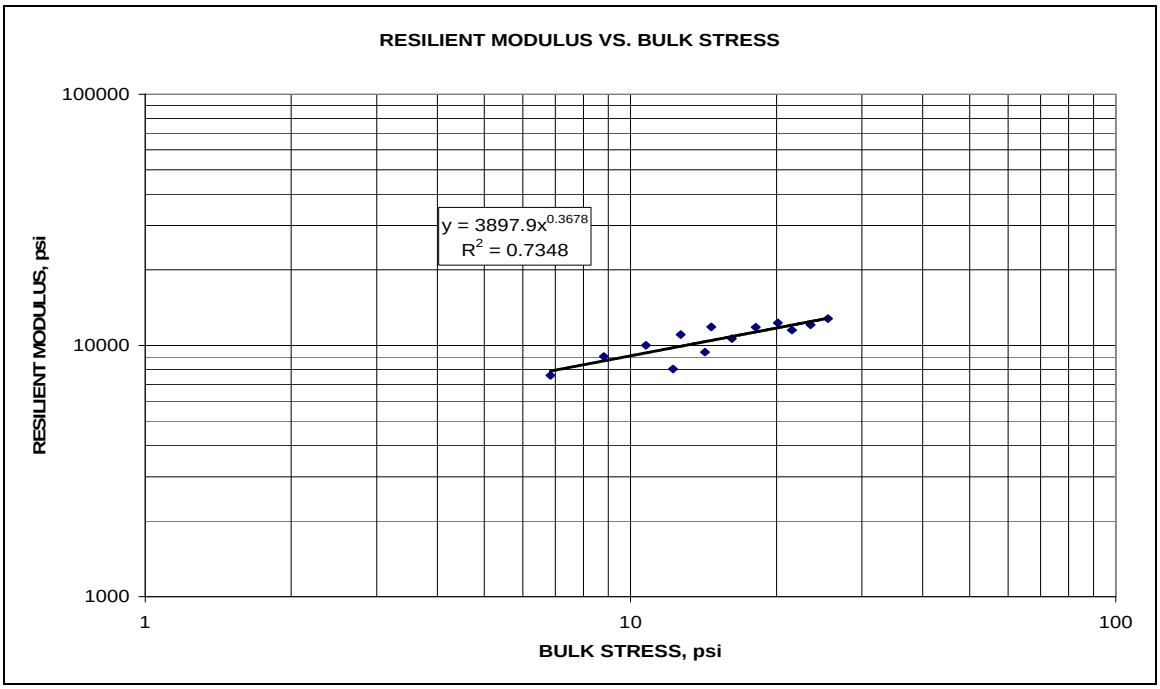


Figure D.125 Resilient Modulus vs. Bulk Stress for Iron Bridge at Optimum Condition (Sample #IB001C1)

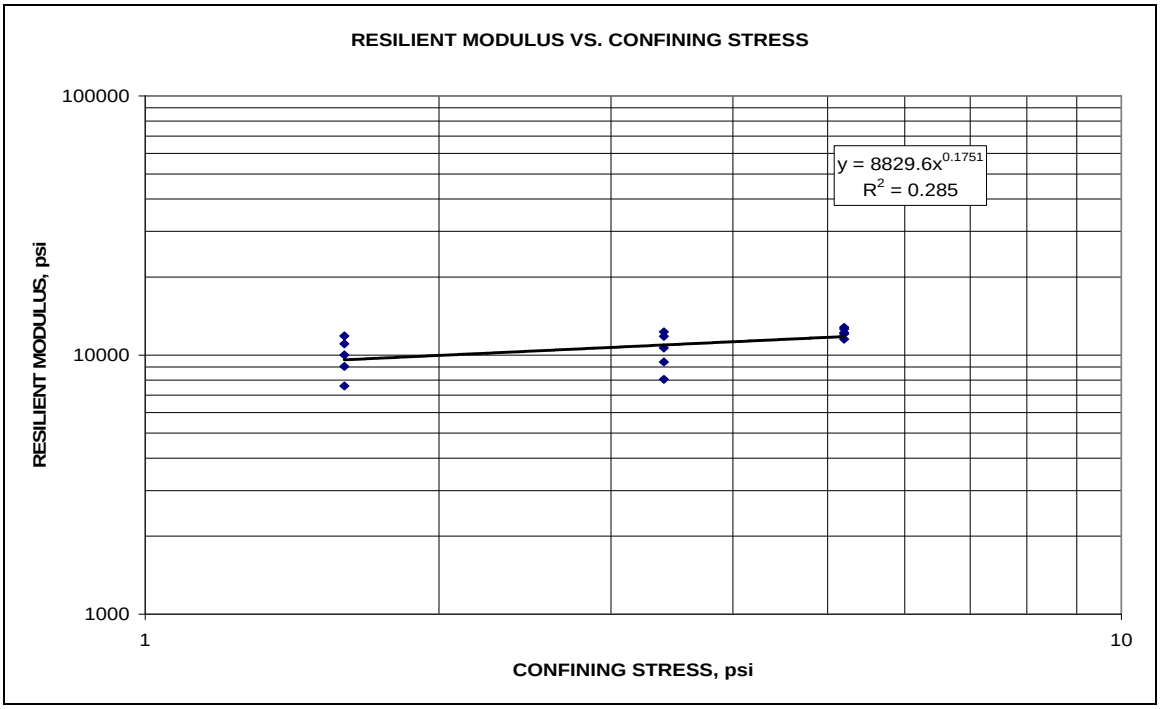


Figure D.126 Resilient Modulus vs. Confining Stress for Iron Bridge at Optimum Condition (Sample #IB001C1)

Table D.64 Triaxial test results of Iron Bridge (Sample # IB001D1)

RESILIENT MODULUS TEST RESULTS

SOILS LABORATORY, FAMU-FSU COLLEGE OF ENGINEERING

SAMPLE ID:	IB001	TEST NO:	D1
PROJECT ID:		SPECIMEN PREPARATION DATE:	11/21/2005
LAB NO:	21668~70	SPECIMEN DIAMETER, TOP, (in):	4
SOIL CLASS:	A-2-6	SPECIMEN DIAMETER, MIDDLE, (in):	4
LBR	127	SPECIMEN DIAMETER, BOTTOM, (in):	4
STD MAX DEN (pcf):	123.3	SPECIMEN HEIGHT (in):	8
STD OPT MIS (%):	10.3	COMPACTION MC, (%):	10.3
		COMPACTION DRY DEN, (pcf):	121.7
		MC AFTER TESTING, (%):	9.6
		TESTED BY:	Ginger
		TEST DATE:	11/22/2005

PRECONDITION INFORMATION	
CONFINING STRESS (psi):	6
MAX. AXIAL STRESS (psi):	4
REPETITIONS:	500

REMARKS:

TEST SEQ. #	CONFINING STRESS	MAX. AXIAL STRESS	CONTACT STRESS	CYCLIC STRESS	BULK STRESS	RESILIENT STRAIN	RESILIENT MODULUS
	psi	psi	psi	psi	psi	in/in	psi
1	5.2	2.031681783	0.1656255	1.866056	17.63168	0.0001425	13095.3732
2	5.2	3.940747436	0.370462	3.570285	19.54075	0.00028281	12624.5151
3	5.2	5.855494697	0.5756314	5.279863	21.45549	0.00042831	12327.0783
4	5.2	7.794409825	0.768237	7.026173	23.39441	0.0005923	11862.5237
5	5.2	9.910198885	0.9287675	8.981431	25.5102	0.00071346	12588.609
6	3.4	2.000613583	0.1832253	1.817388	12.20061	0.00023619	7694.52041
7	3.4	3.994871736	0.3816206	3.613251	14.19487	0.00040497	8922.35438
8	3.4	5.94227043	0.5829105	5.35936	16.14227	0.00052218	10263.3647
9	3.4	7.922203774	0.7371973	7.185006	18.1222	0.0006174	11637.4609
10	3.4	10.00137086	0.9282225	9.073148	20.20137	0.00074142	12237.4749
11	1.6	2.002032898	0.1846511	1.817382	6.802033	0.00024921	7292.44527
12	1.6	4.036896704	0.3838762	3.653021	8.836897	0.00041673	8765.94182
13	1.6	5.955528328	0.5770714	5.378457	10.75553	0.00053512	10050.8648
14	1.6	7.93875871	0.7390146	7.199744	12.73876	0.00065856	10932.6181
15	1.6	10.04588344	0.9212691	9.124614	14.84588	0.00079123	11532.2587

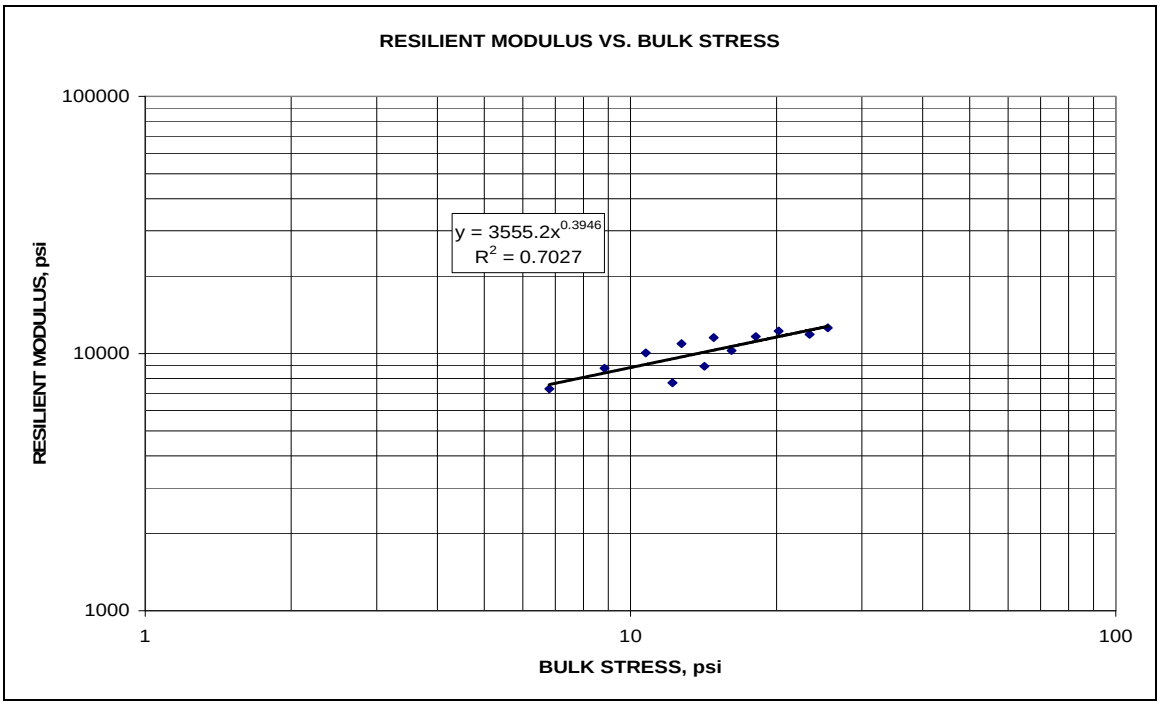


Figure D.127 Resilient Modulus vs. Bulk Stress for Iron Bridge at Optimum Condition (Sample #IB001D1)

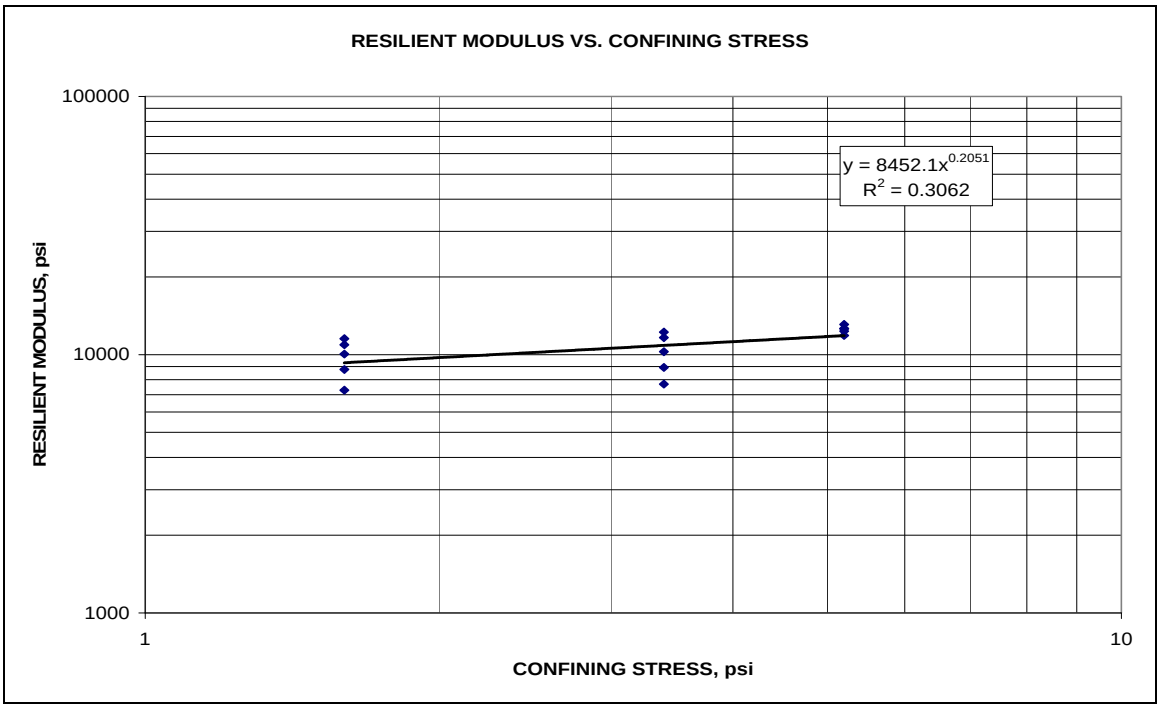


Figure D.128 Resilient Modulus vs. Confining Stress for Iron Bridge at Optimum Condition (Sample #IB001D1)

Table D.65 Triaxial test results of Iron Bridge (Sample # IB001E1)

RESILIENT MODULUS TEST RESULTS

SOILS LABORATORY, FAMU-FSU COLLEGE OF ENGINEERING

SAMPLE ID:	IB001	TEST NO:	E1
PROJECT ID:		SPECIMEN PREPARATION DATE:	02/06/2006
LAB NO:	21668~21670	SPECIMEN DIAMETER, TOP, (in):	4
SOIL CLASS:	A-2-6	SPECIMEN DIAMETER, MIDDLE, (in):	4
LBR	127	SPECIMEN DIAMETER, BOTTOM, (in):	4
STD OPT MOIST (%):	10.3	SPECIMEN HEIGHT (in):	8
STD MAX DRY DEN (pcf):	123.3	COMPACTION MC, (%):	10.4
		COMPACTION DRY DEN, (pcf):	124.1
		MC AFTER TESTING, (%):	9.7
		TESTED BY:	Ed
		TEST DATE:	02/07/2006

PRECONDITION INFORMATION	
CONFINING STRESS (psi):	6
MAX. AXIAL STRESS (psi):	4
REPETITIONS:	500

REMARKS:

TEST SEQ. #	CONFINING STRESS	MAX. AXIAL STRESS	CONTACT STRESS	CYCLIC STRESS	BULK STRESS	RESILIENT STRAIN	RESILIENT MODULUS
	psi	psi	psi	psi	psi	in/in	psi
1	6	2.003843312	0.1697418	1.834102	20.00384	0.00014728	12453.3245
2	6	3.990847707	0.3762782	3.61457	21.99085	0.00029338	12320.4901
3	6	5.98976258	0.539662	5.450101	23.98976	0.00044645	12207.6266
4	6	8.188478185	0.430405	7.758073	26.18848	0.00064713	11988.4409
5	6	10.11303455	0.7174875	9.395547	28.11303	0.00072127	13026.3299
6	4	2.003259713	0.1794318	1.823828	14.00326	0.00021479	8491.2908
7	4	4.038238949	0.3737873	3.664452	16.03824	0.00037474	9778.5592
8	4	6.059404252	0.4831335	5.576271	18.0594	0.00049884	11178.3646
9	4	7.987192834	0.6282229	7.35897	19.98719	0.00060674	12128.6666
10	4	10.1092086	0.7690862	9.340122	22.10921	0.00072866	12818.2374
11	2	2.036021146	0.1737725	1.862249	8.036021	0.00023846	7809.38203
12	2	3.994583073	0.3775786	3.617005	9.994583	0.00040404	8952.02586
13	2	5.990687213	0.5799719	5.410715	11.99069	0.00052823	10243.1147
14	2	7.975225318	0.6921262	7.283099	13.97523	0.00062109	11726.2594
15	2	10.02827102	0.9382194	9.090052	16.02827	0.00072068	12613.2358

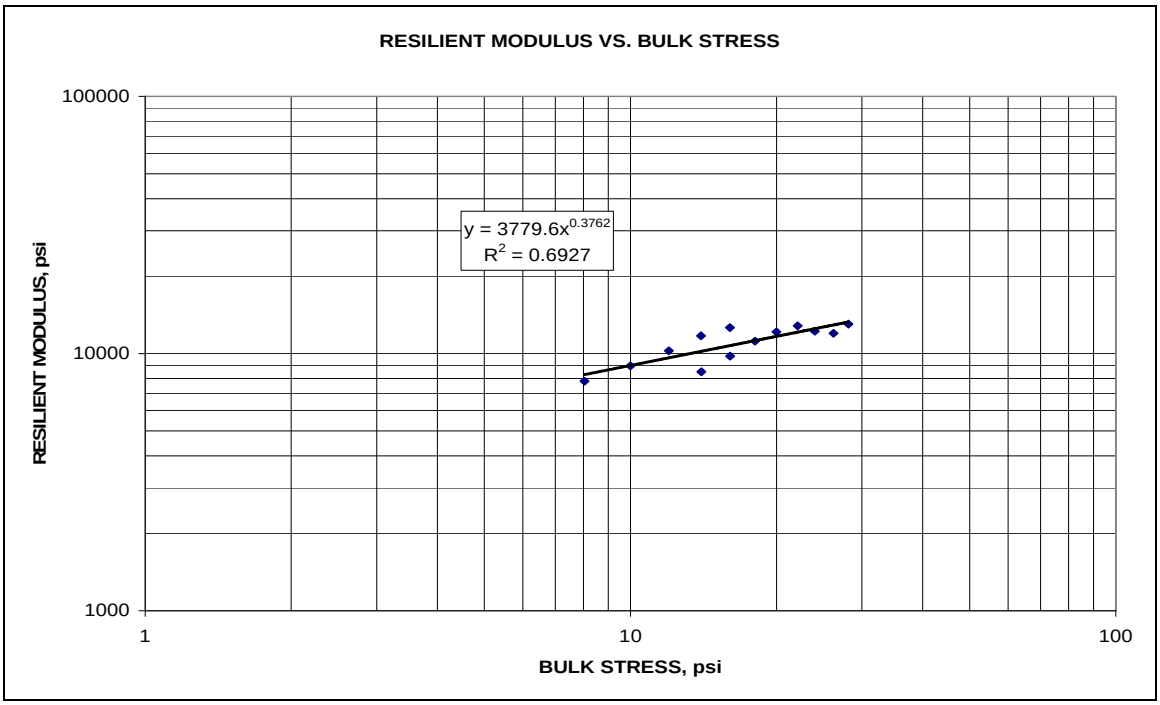


Figure D.129 Resilient Modulus vs. Bulk Stress for Iron Bridge at Optimum Condition (Sample #IB001E1)

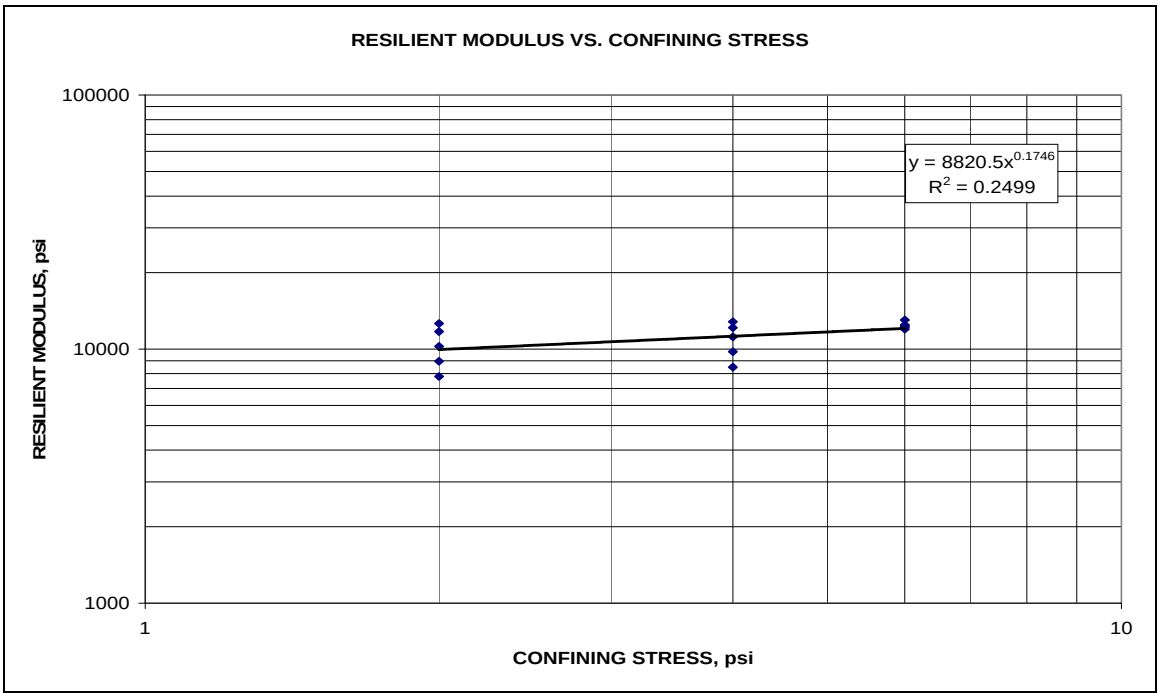


Figure D.130 Resilient Modulus vs. Confining Stress for Iron Bridge at Optimum Condition (Sample #IB001E1)

Table D.66 Triaxial test results of Iron Bridge (Sample # IB001F1)

RESILIENT MODULUS TEST RESULTS

SOILS LABORATORY, FAMU-FSU COLLEGE OF ENGINEERING

SAMPLE ID:	IB001	TEST NO:	F1
PROJECT ID:		SPECIMEN PREPARATION DATE:	02/06/2006
LAB NO:	21668~21670	SPECIMEN DIAMETER, TOP, (in):	4
SOIL CLASS:	A-2-6	SPECIMEN DIAMETER, MIDDLE, (in):	4
LBR	127	SPECIMEN DIAMETER, BOTTOM, (in):	4
STD OPT MOIST (%):	10.3	SPECIMEN HEIGHT (in):	8
STD MAX DRY DEN (pcf):	123.3	COMPACTION MC, (%):	10.4
		COMPACTION DRY DEN, (pcf):	123.9
		MC AFTER TESTING, (%):	10.3
		TESTED BY:	Ed
		TEST DATE:	02/07/2006

PRECONDITION INFORMATION	
CONFINING STRESS (psi):	6
MAX. AXIAL STRESS (psi):	4
REPETITIONS:	500

REMARKS: Sample is very soft and the MR value doesn't change much

TEST SEQ. #	CONFINING STRESS	MAX. AXIAL STRESS	CONTACT STRESS	CYCLIC STRESS	BULK STRESS	RESILIENT STRAIN	RESILIENT MODULUS
	psi	psi	psi	psi	psi	in/in	psi
1	6	1.997324522	0.1760898	1.821235	19.99732	0.00017154	10616.6705
2	6	4.009422611	0.3779357	3.631487	22.00942	0.00033486	10844.8058
3	6	6.025898694	0.5045828	5.521316	24.0259	0.00049616	11128.1067
4	6	8.107008917	0.5078442	7.599165	26.10701	0.00067124	11321.1646
5	6	10.04107946	0.8196099	9.22147	28.04108	0.00073639	12522.5627
6	4	2.031102213	0.1762741	1.854828	14.0311	0.00021454	8645.72579
7	4	4.032015541	0.3761197	3.655896	16.03202	0.00038398	9521.02079
8	4	6.009813169	0.5380148	5.471798	18.00981	0.00048953	11177.6826
9	4	8.021163376	0.6258435	7.39532	20.02116	0.00061741	11977.9674
10	4	9.991923567	0.9005788	9.091345	21.99192	0.00070785	12843.6761
11	2	2.005395573	0.1840093	1.821386	8.005396	0.00023948	7605.58434
12	2	4.026819092	0.3800846	3.646734	10.02682	0.00040834	8930.67346
13	2	6.007255876	0.5571191	5.450137	12.00726	0.00051968	10487.4735
14	2	8.046323726	0.6470476	7.399276	14.04632	0.00065092	11367.347
15	2	10.09528758	0.9075859	9.187702	16.09529	0.00039263	23400.3098

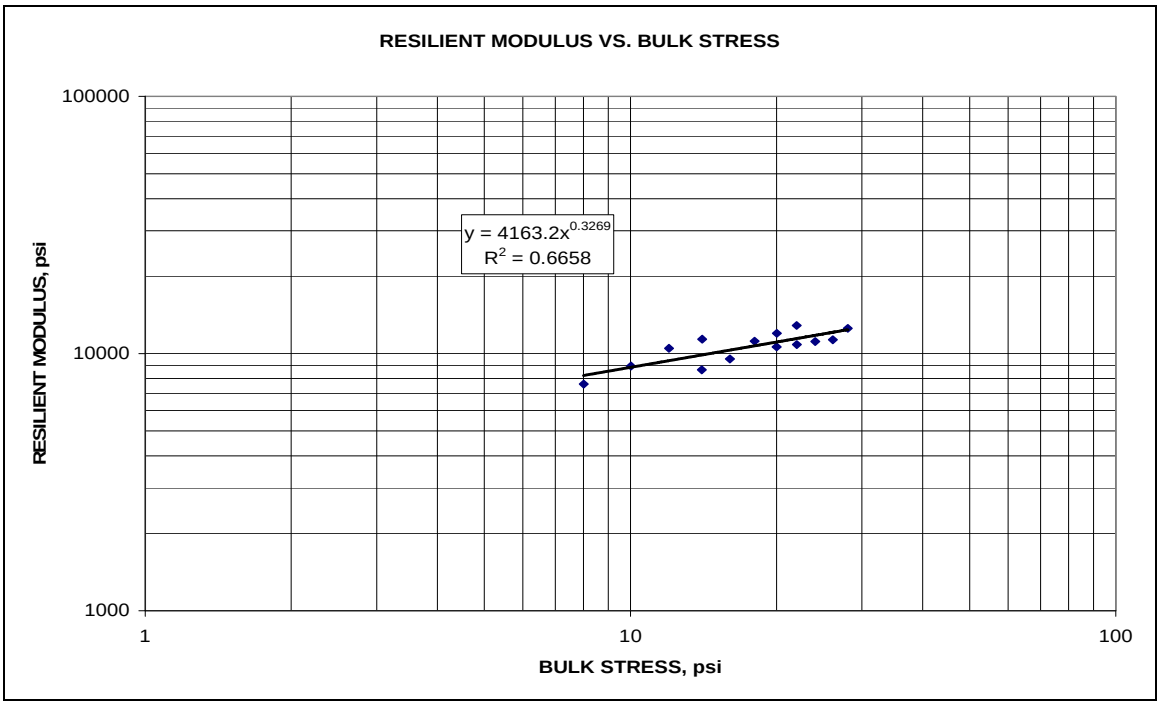


Figure D.131 Resilient Modulus vs. Bulk Stress for Iron Bridge at Optimum Condition (Sample #IB001F1)

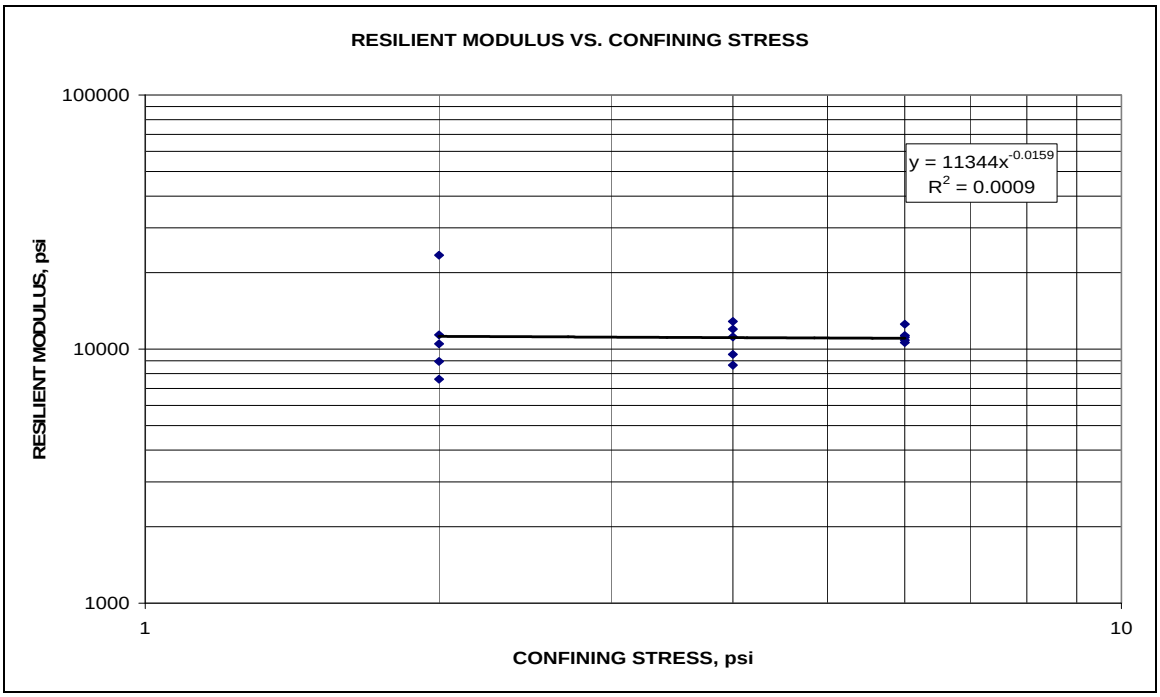


Figure D.132 Resilient Modulus vs. Confining Stress for Iron Bridge at Optimum Condition (Sample #IB001F1)

APPENDIX E

MOISTURE CHANGE VERSUS TIME IN TEST PIT

E.1 Levy County A-3, 4% Soil

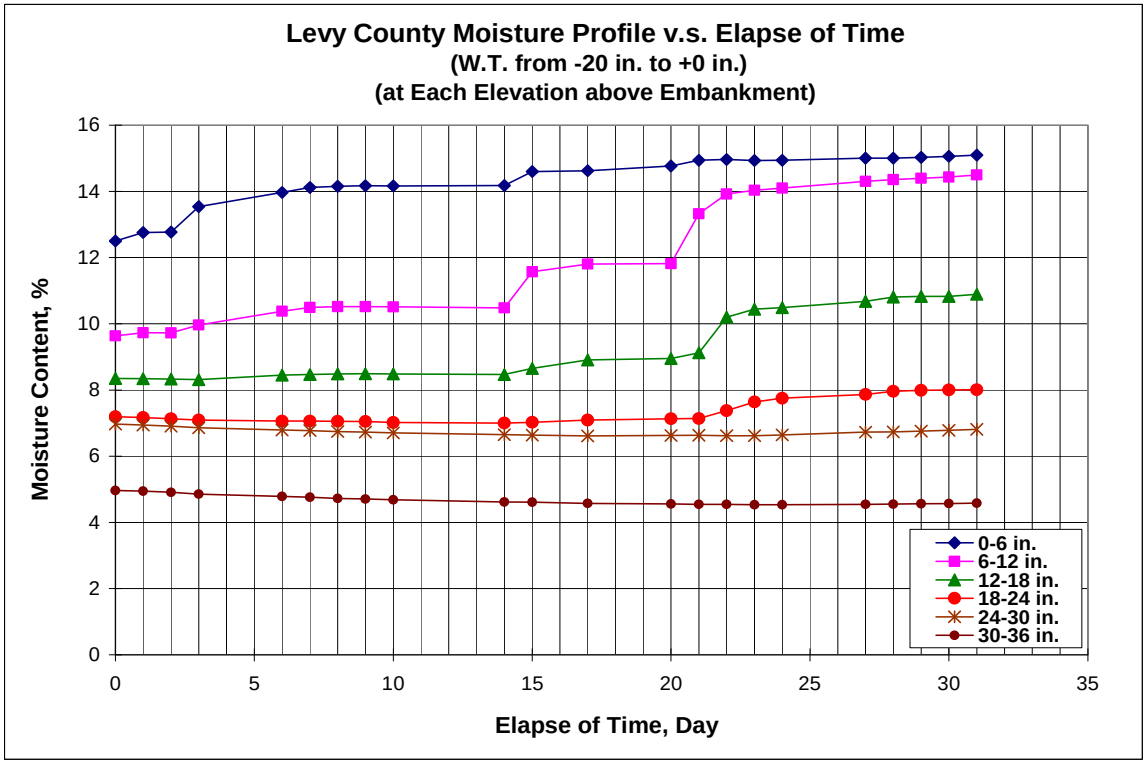


Figure E.1 Moisture Profile versus Time for Levy County A-3 Soil (W.T. from -20 in. to +0 in. above Embankment)

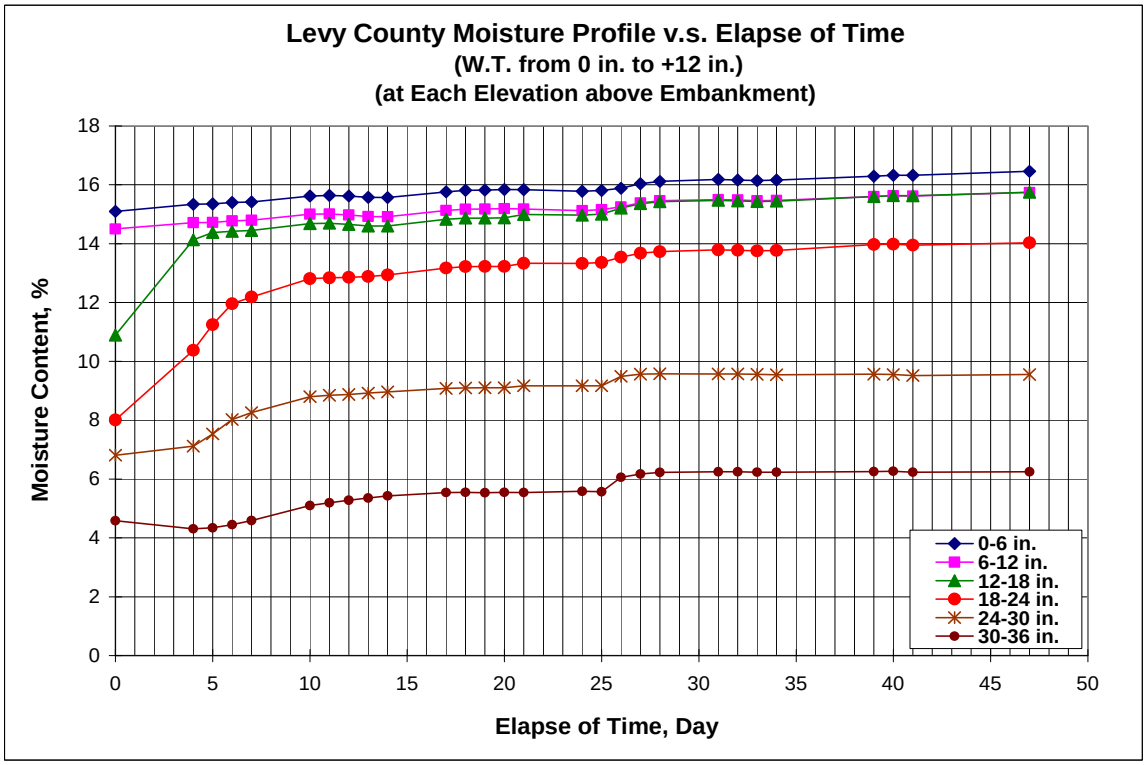


Figure E.2 Moisture Profile versus Time for Levy County A-3 Soil (W.T. from +0 in. to +12 in. above Embankment)

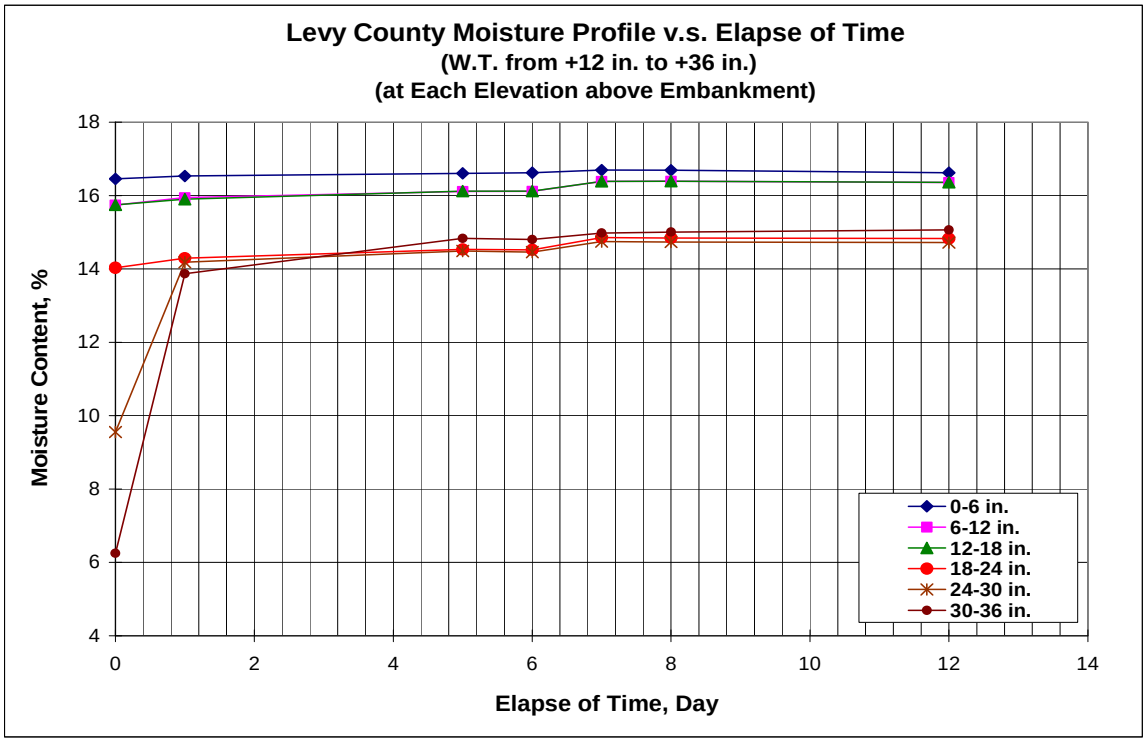


Figure E.3 Moisture Profile versus Time for Levy County A-3 Soil (W.T. from +12 in. to +36 in. above Embankment)

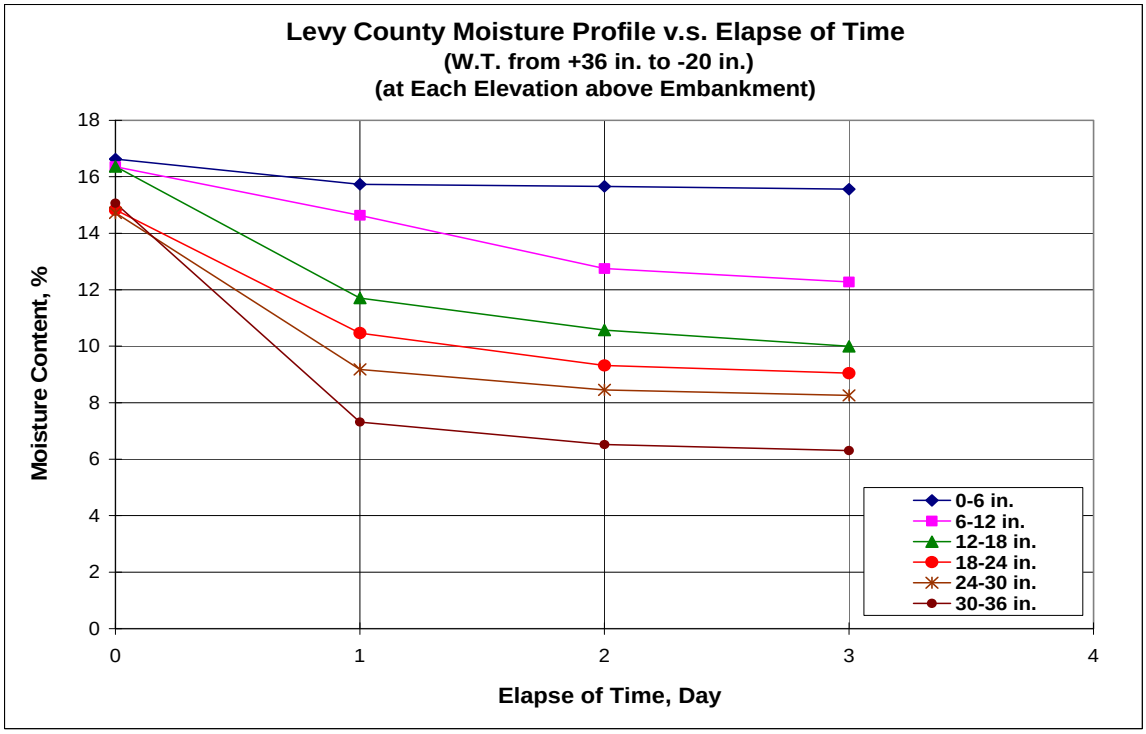


Figure E.4 Moisture Profile versus Time for Levy County A-3 Soil (W.T. from +36 in. to -20 in. above Embankment)

E.2 SR70 A-3, 8% Soil

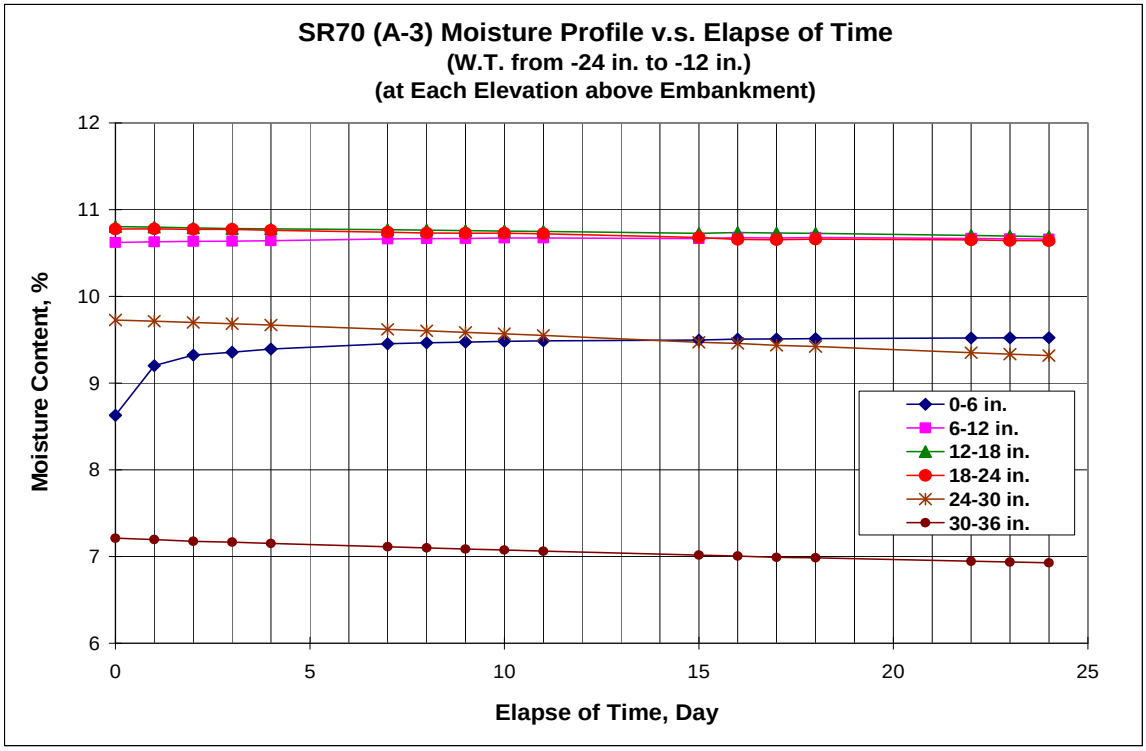


Figure E.5 Moisture Profile versus Time for SR70 A-3 Soil (W.T. from -24 in. to -12 in. above Embankment)

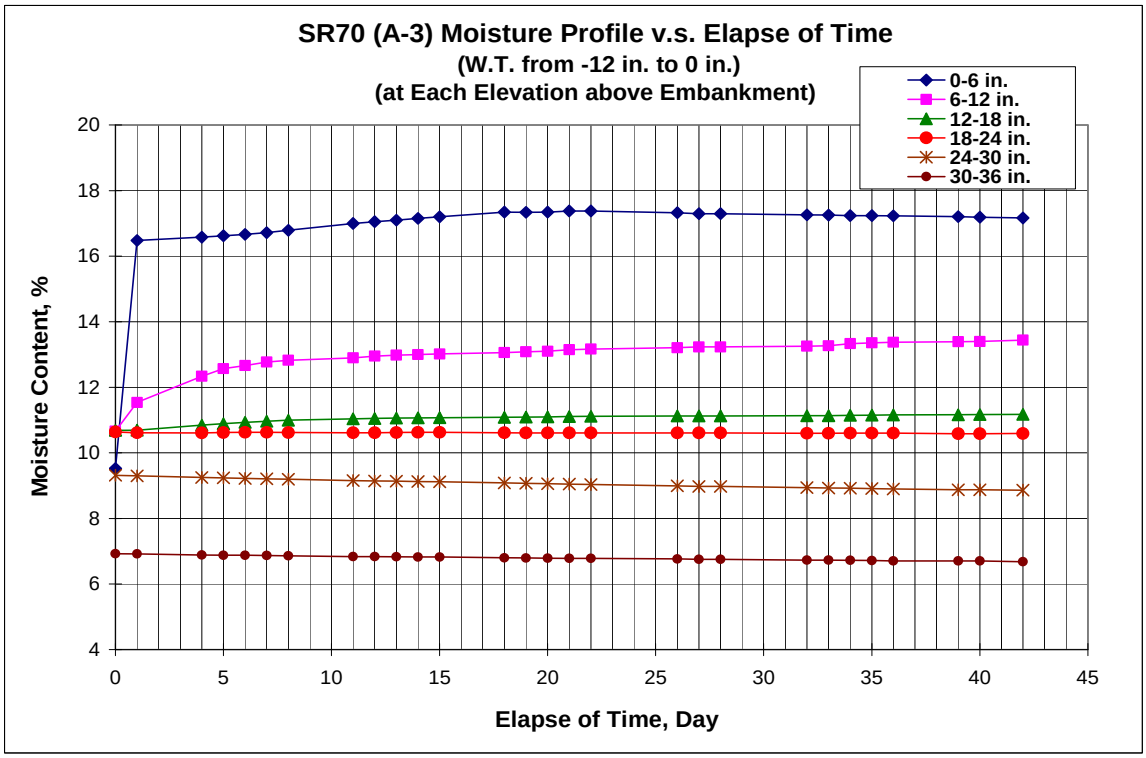


Figure E.6 Moisture Profile versus Time for SR70 A-3 Soil (W.T. from -12 in. to +0 in. above Embankment)

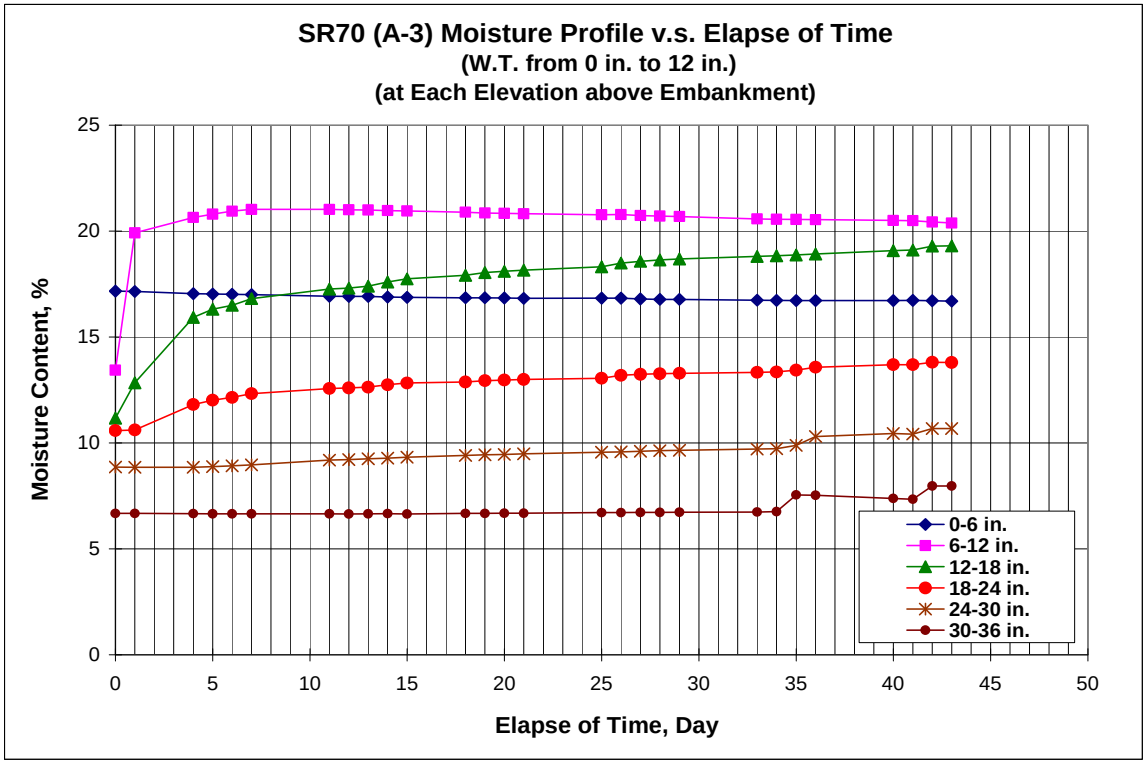


Figure E.7 Moisture Profile versus Time for SR70 A-3 Soil (W.T. from +0 in. to +12 in. above Embankment)

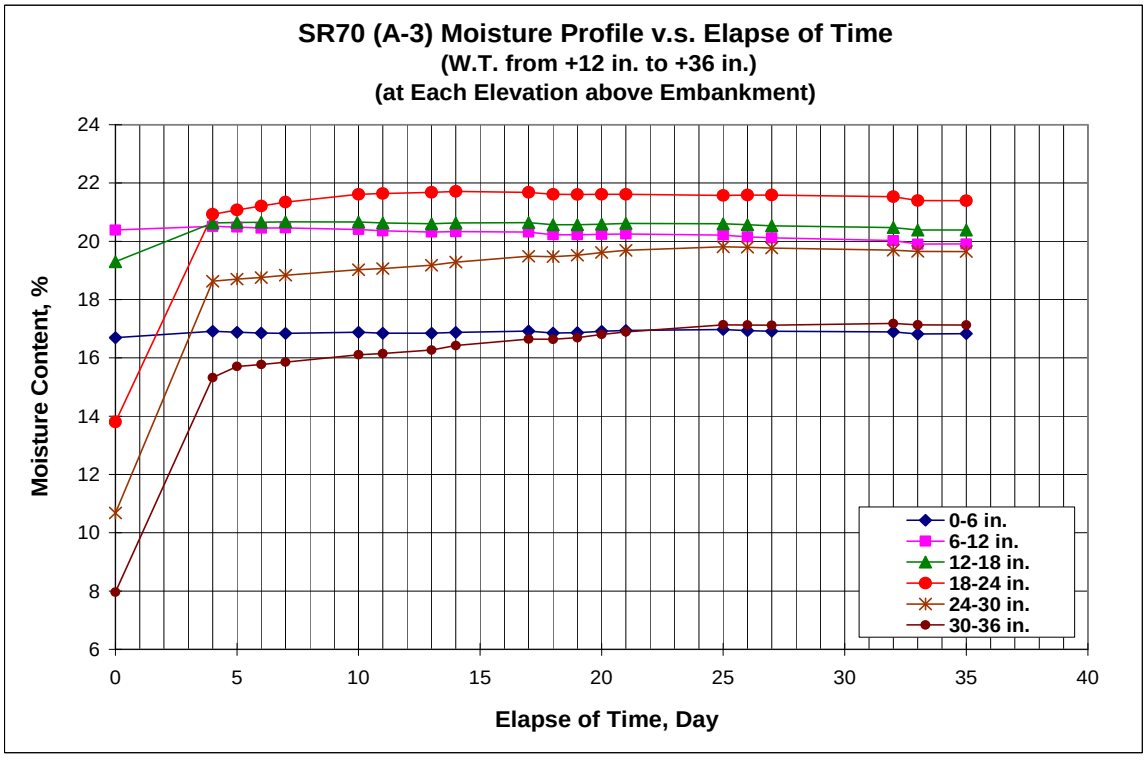


Figure E.8 Moisture Profile versus Time for SR70 A-3 Soil (W.T. from +12 in. to +36 in. above Embankment)

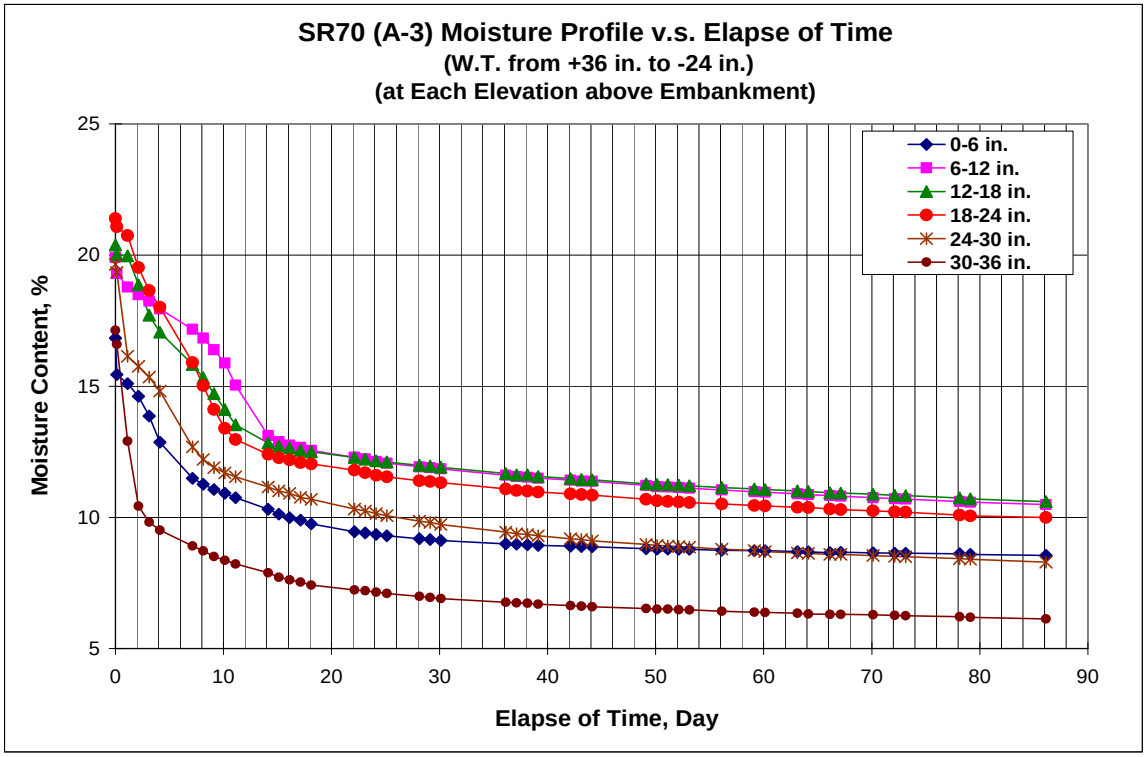


Figure E.9 Moisture Profile versus Time for SR70 A-3 Soil (W.T. from +36 in. to -24 in. above Embankment)

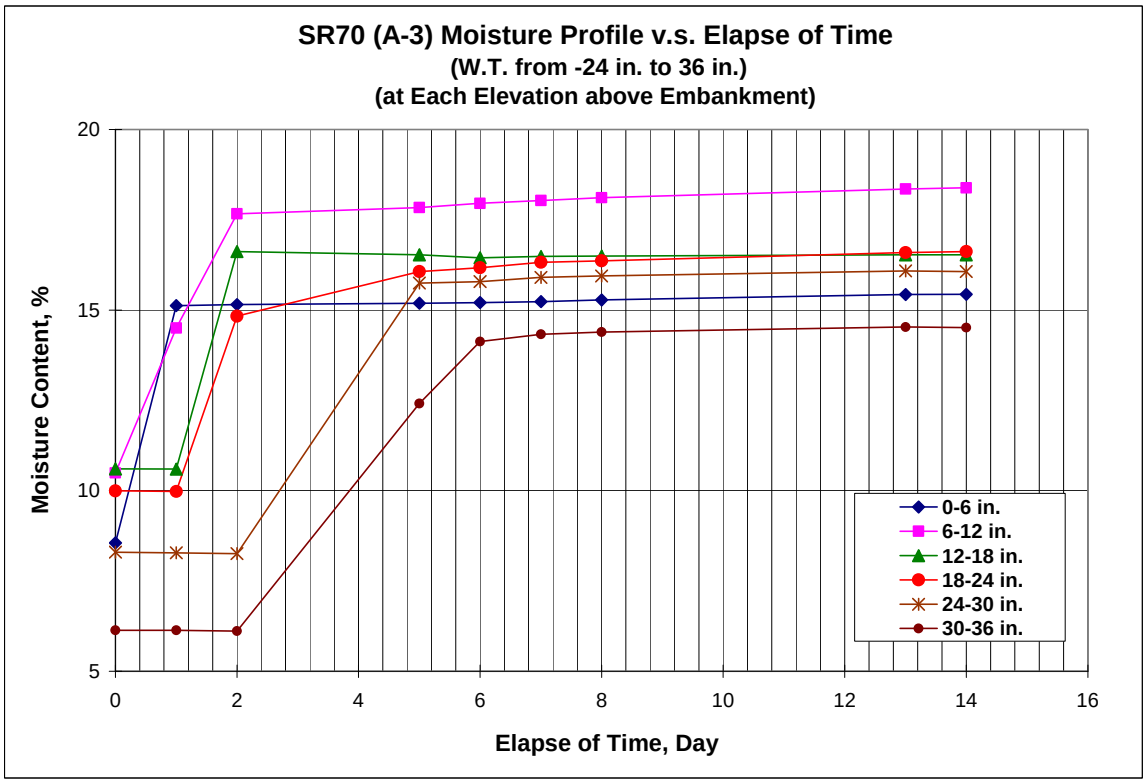


Figure E.10 Moisture Profile versus Time for SR70 A-3 Soil (W.T. from -24 in. to +36 in. above Embankment)

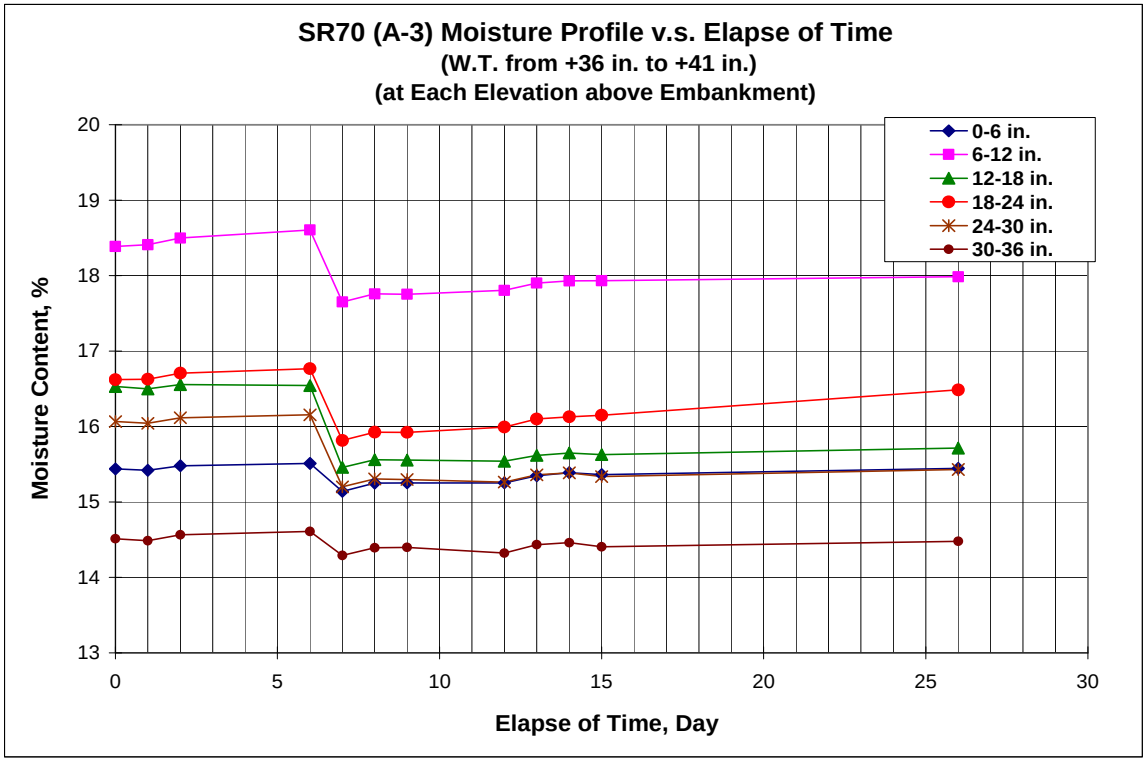


Figure E.11 Moisture Profile versus Time for SR70 A-3 Soil (W.T. from +36 in. to +41 in. above Embankment)

E.3 SR70 A-2-4, 14% Soil

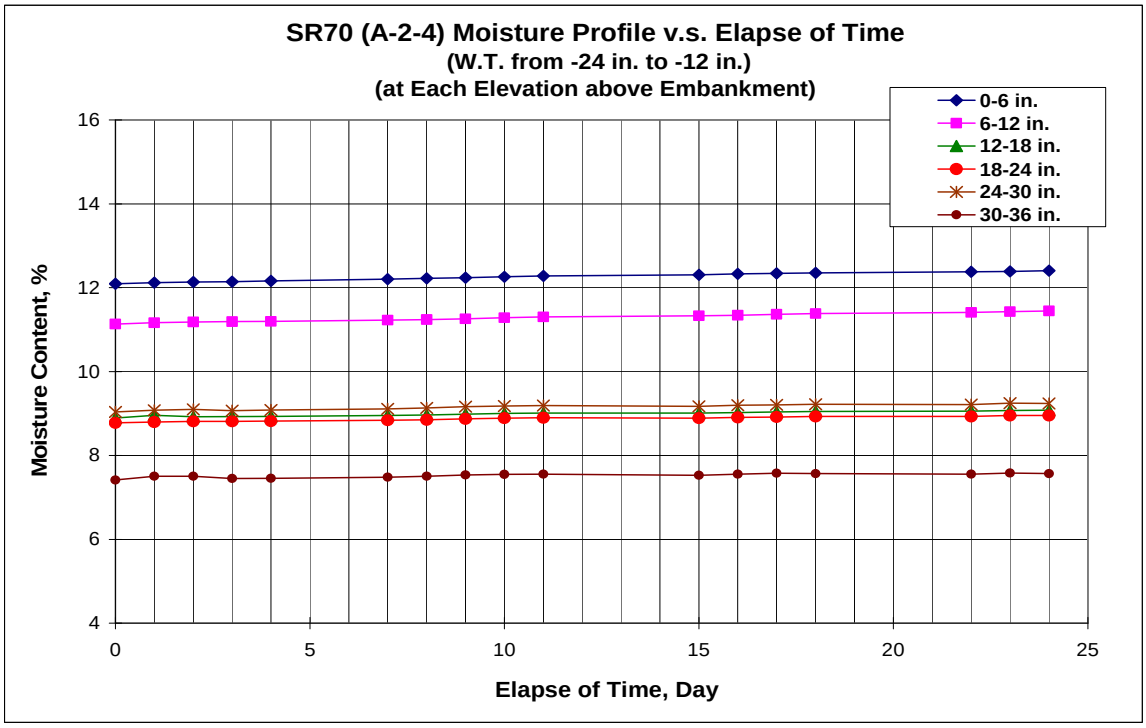


Figure E.12 Moisture Profile versus Time for SR70 A-2-4 Soil (W.T. from -24 in. to -12 in. above Embankment)

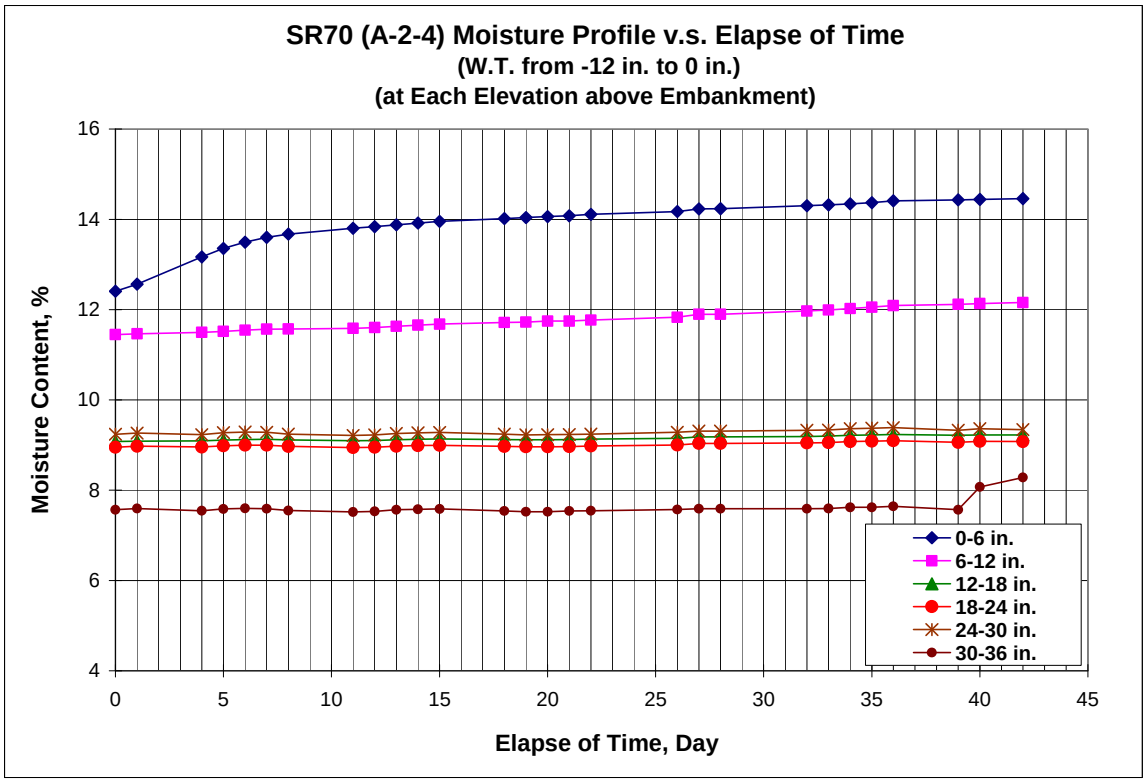


Figure E.13 Moisture Profile versus Time for SR70 A-2-4 Soil (W.T. from -12 in. to 0 in. above Embankment)

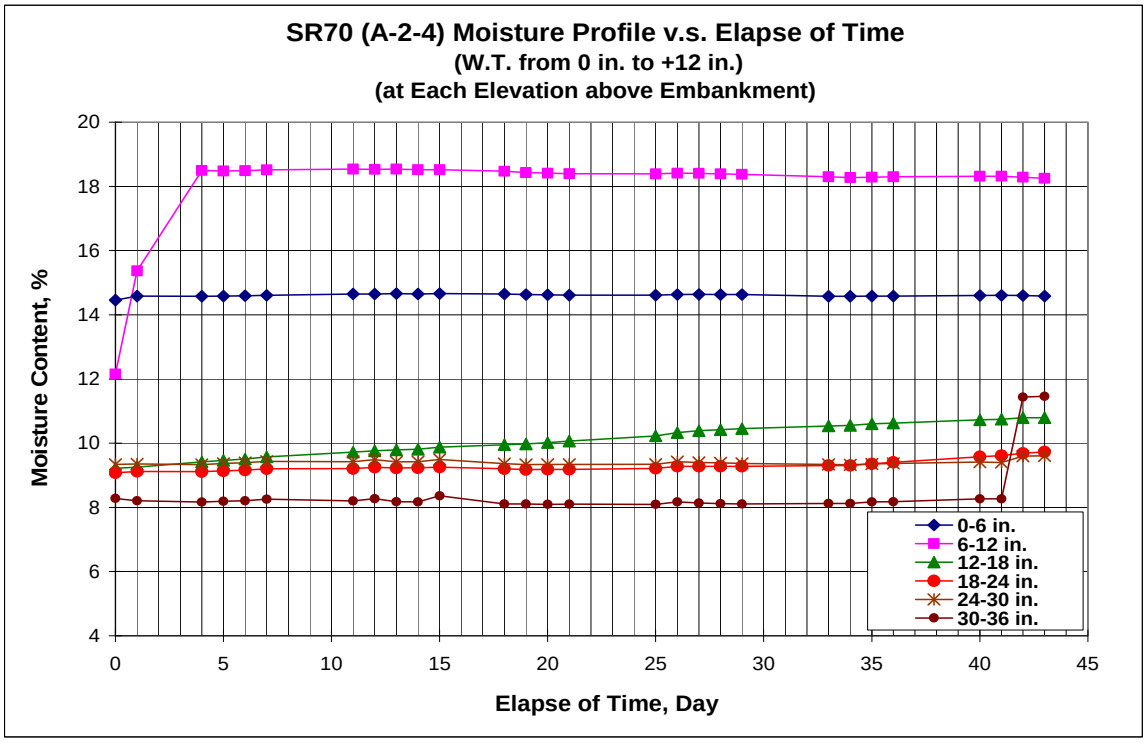


Figure E.14 Moisture Profile versus Time for SR70 A-2-4 Soil (W.T. from 0 in. to +12 in. above Embankment)

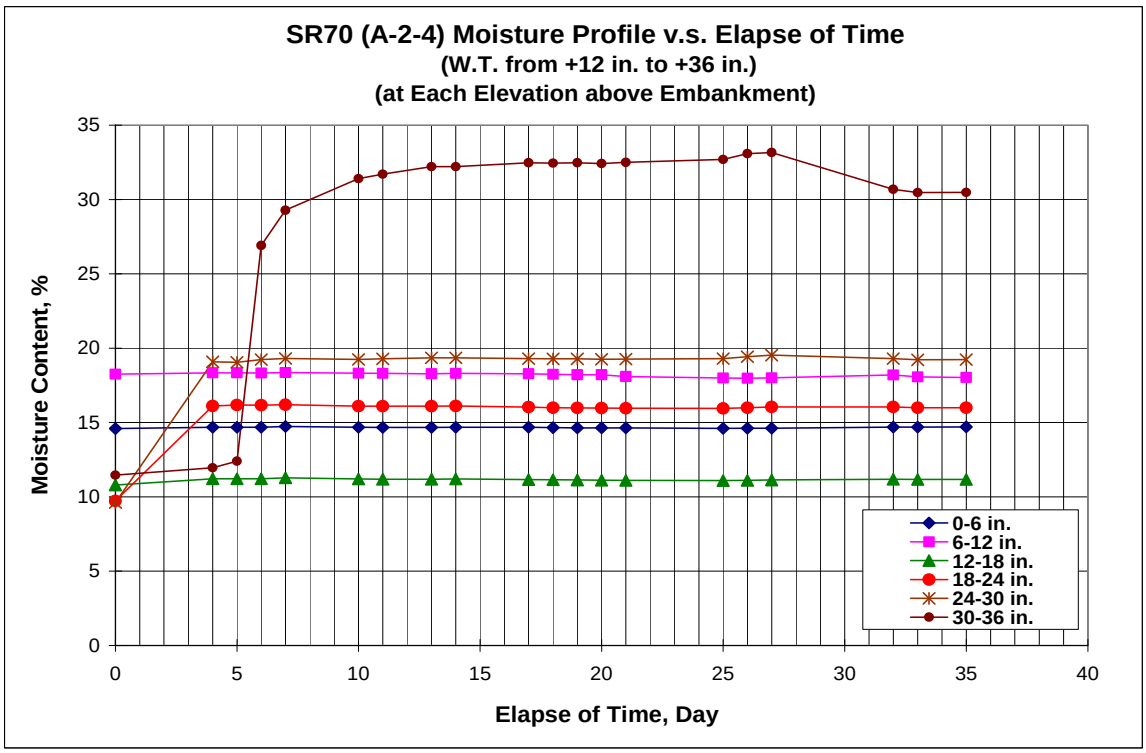


Figure E.15 Moisture Profile versus Time for SR70 A-2-4 Soil (W.T. from +12 in. to +36 in. above Embankment)

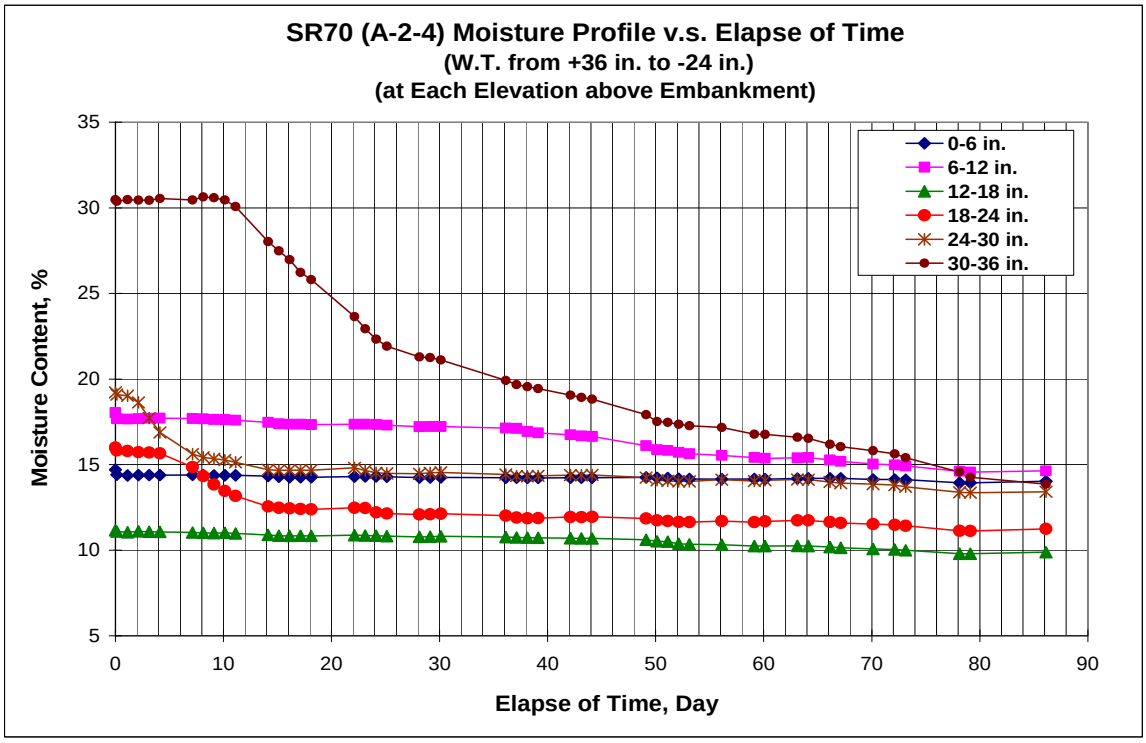


Figure E.16 Moisture Profile versus Time for SR70 A-2-4 Soil (W.T. from +36 in. to -24 in. above Embankment)

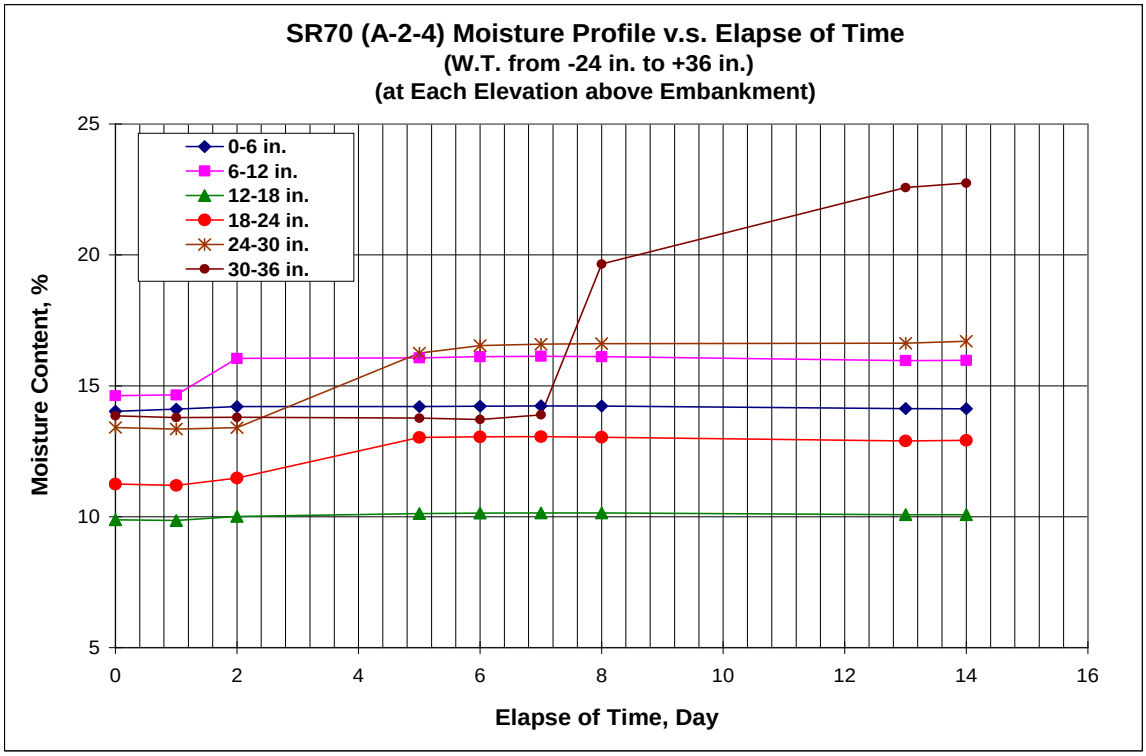


Figure E.17 Moisture Profile versus Time for SR70 A-2-4 Soil (W.T. from -24 in. to +36 in. above Embankment)

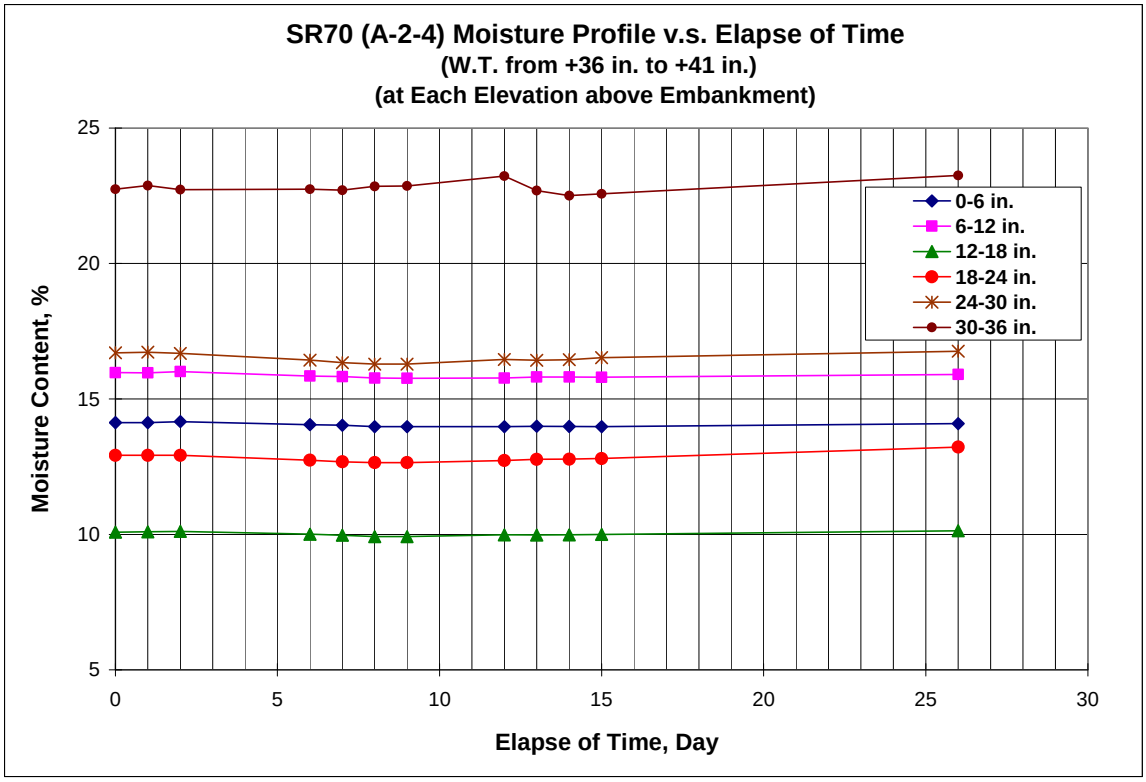


Figure E.18 Moisture Profile versus Time for SR70 A-2-4 Soil (W.T. from +36 in. to +41 in. above Embankment)

E.4 A-2-4, 12% Soil

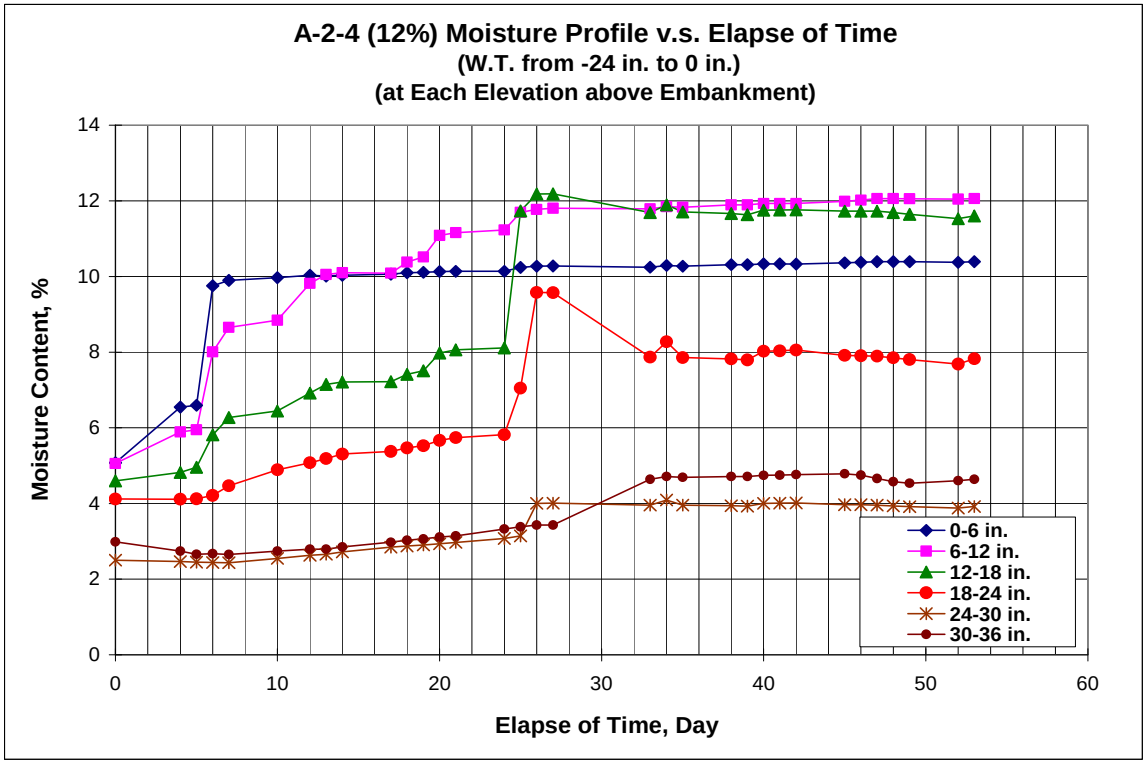


Figure E.19 Moisture Profile versus Time for A-2-4, 12% Soil (W.T. from -24 in. to 0 in. above Embankment)

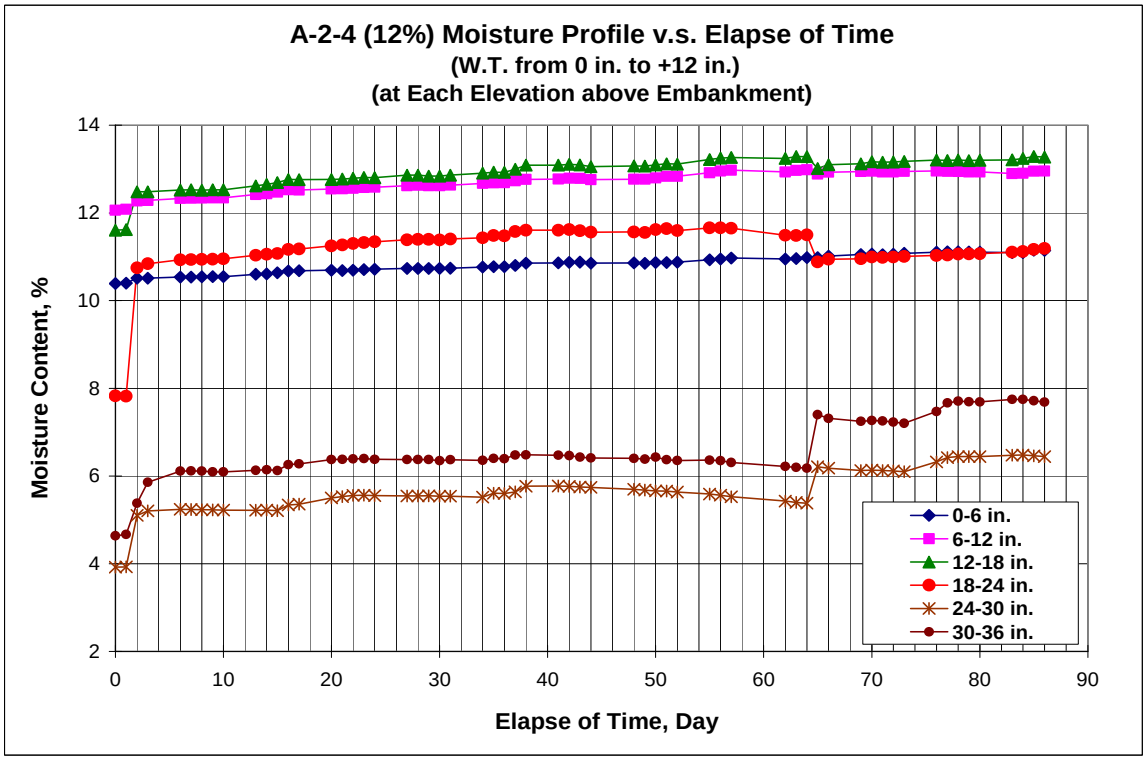


Figure E.20 Moisture Profile versus Time for A-2-4, 12% Soil (W.T. from 0 in. to +12 in. above Embankment)

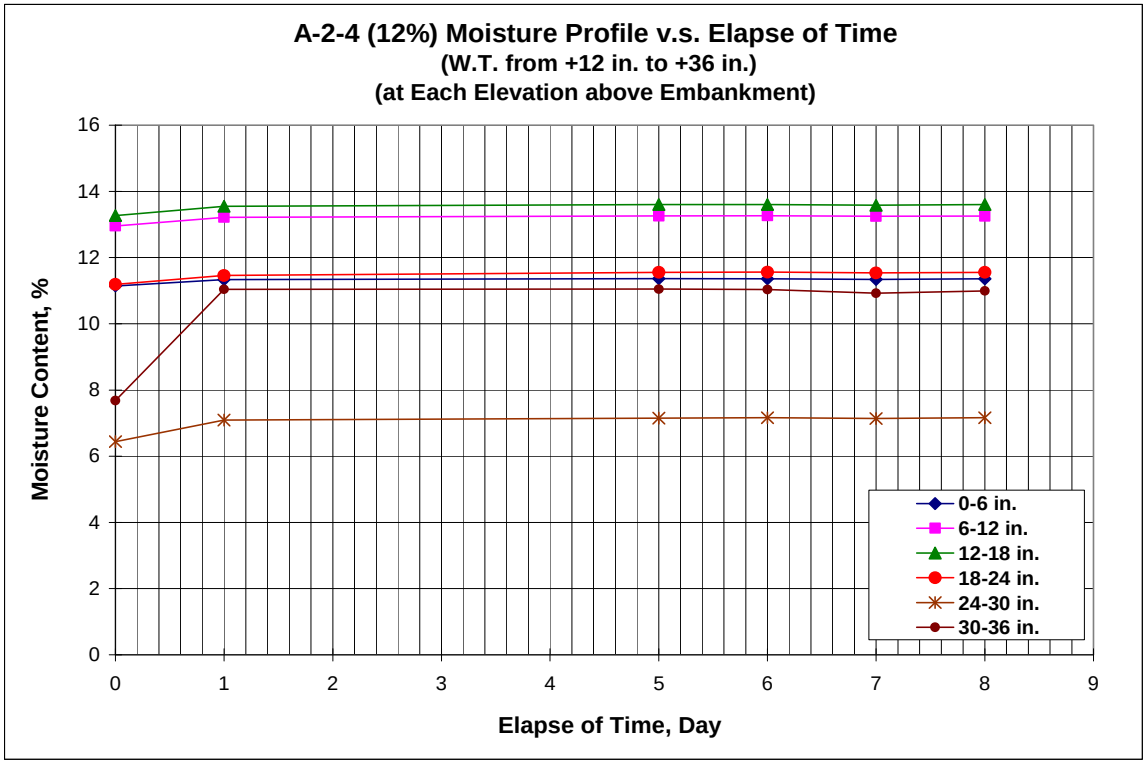


Figure E.21 Moisture Profile versus Time for A-2-4, 12% Soil (W.T. from +12 in. to +36 in. above Embankment)

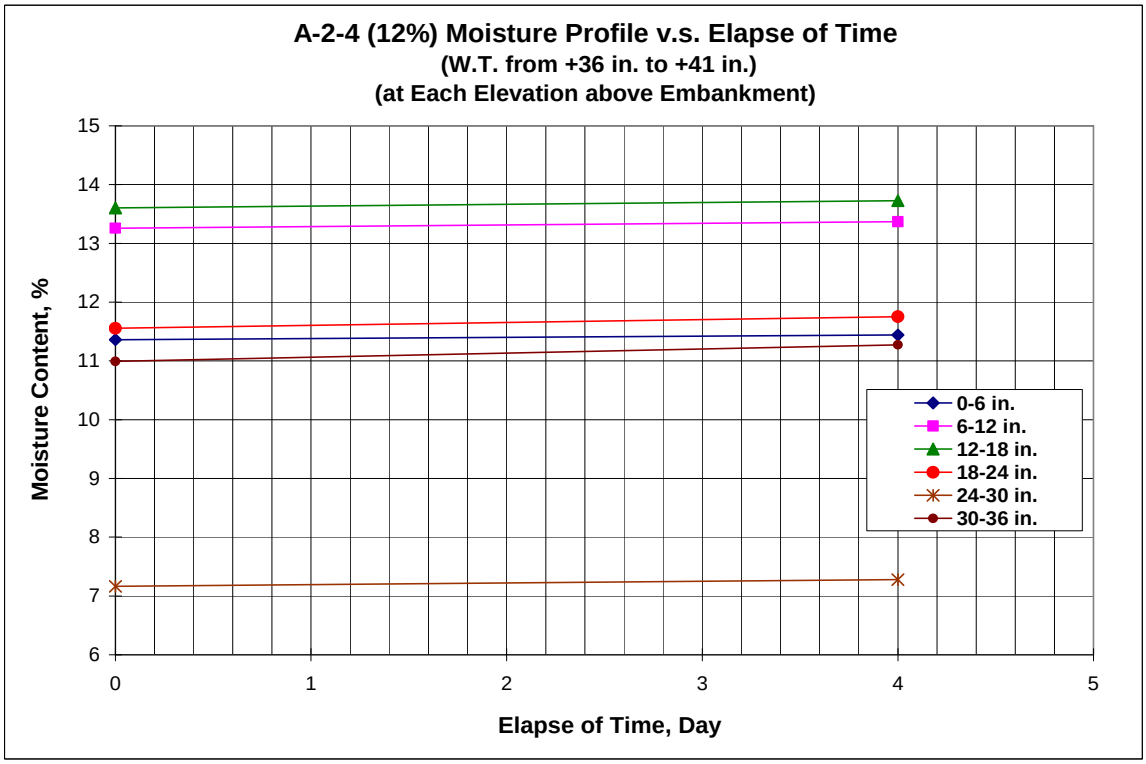


Figure E.22 Moisture Profile versus Time for A-2-4, 12% Soil (W.T. from +36 in. to +41 in. above Embankment)

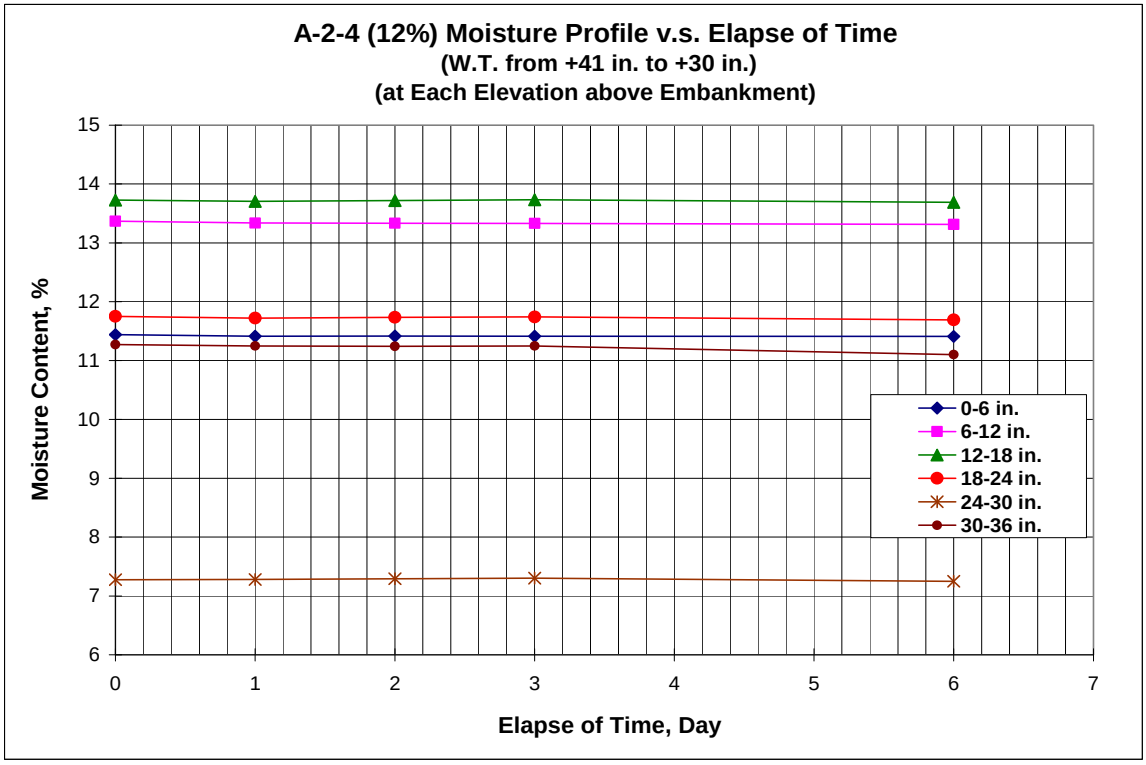


Figure E.23 Moisture Profile versus Time for A-2-4, 12% Soil (W.T. from +41 in. to +30 in. above Embankment)

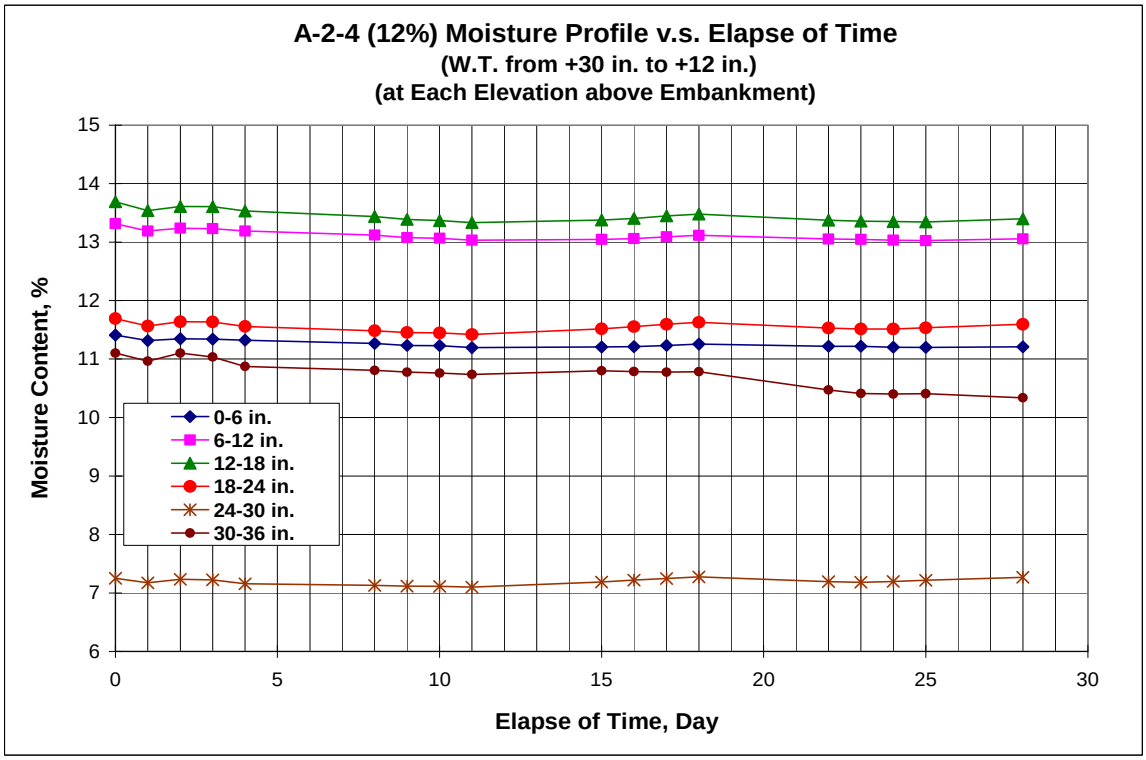


Figure E.24 Moisture Profile versus Time for A-2-4, 12% Soil (W.T. from +30 in. to +12 in. above Embankment)

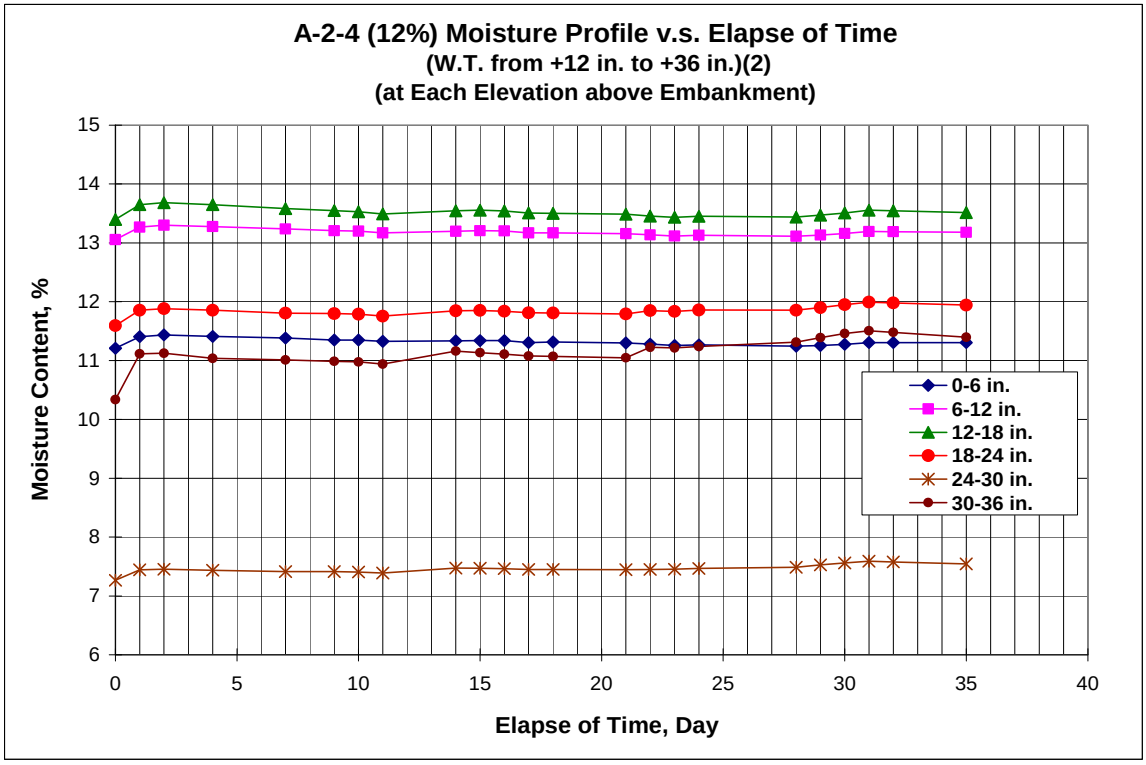


Figure E.25 Moisture Profile versus Time for A-2-4, 12% Soil (W.T. from +12 in. to +36 in. above Embankment, Reflood)

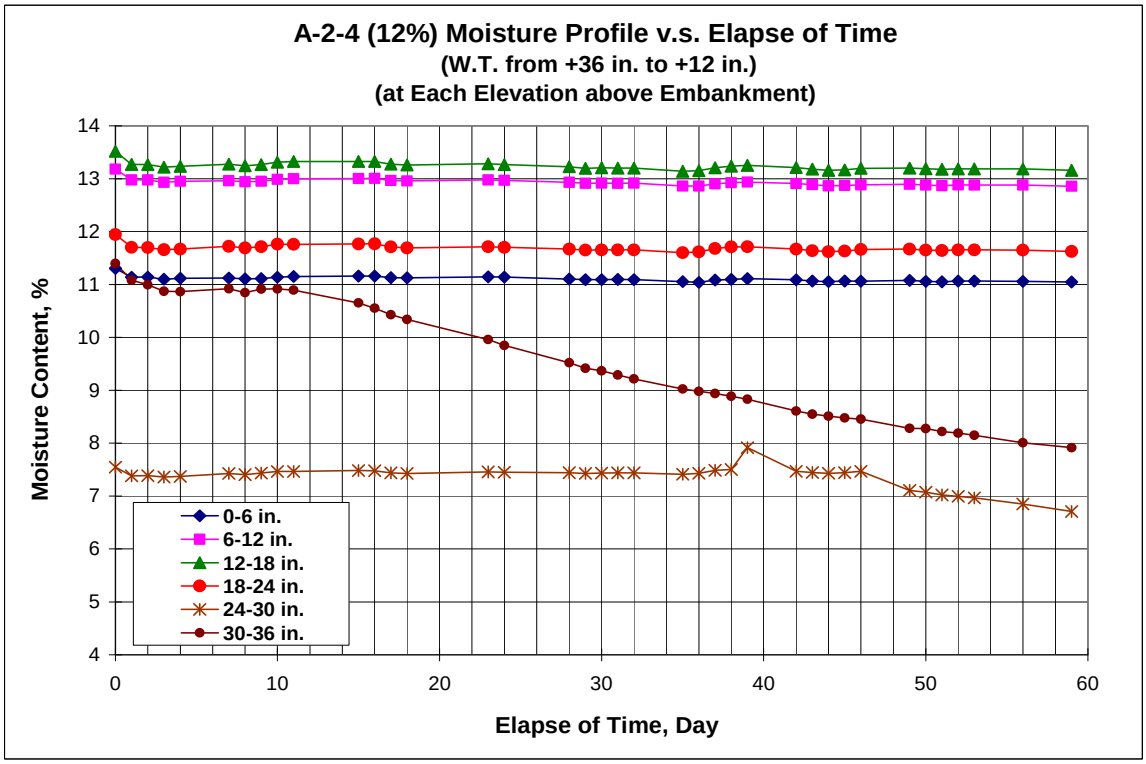


Figure E.26 Moisture Profile versus Time for A-2-4, 12% Soil (W.T. from +36 in. to +12 in. above Embankment)

E.5 A-2-4, 20% Soil

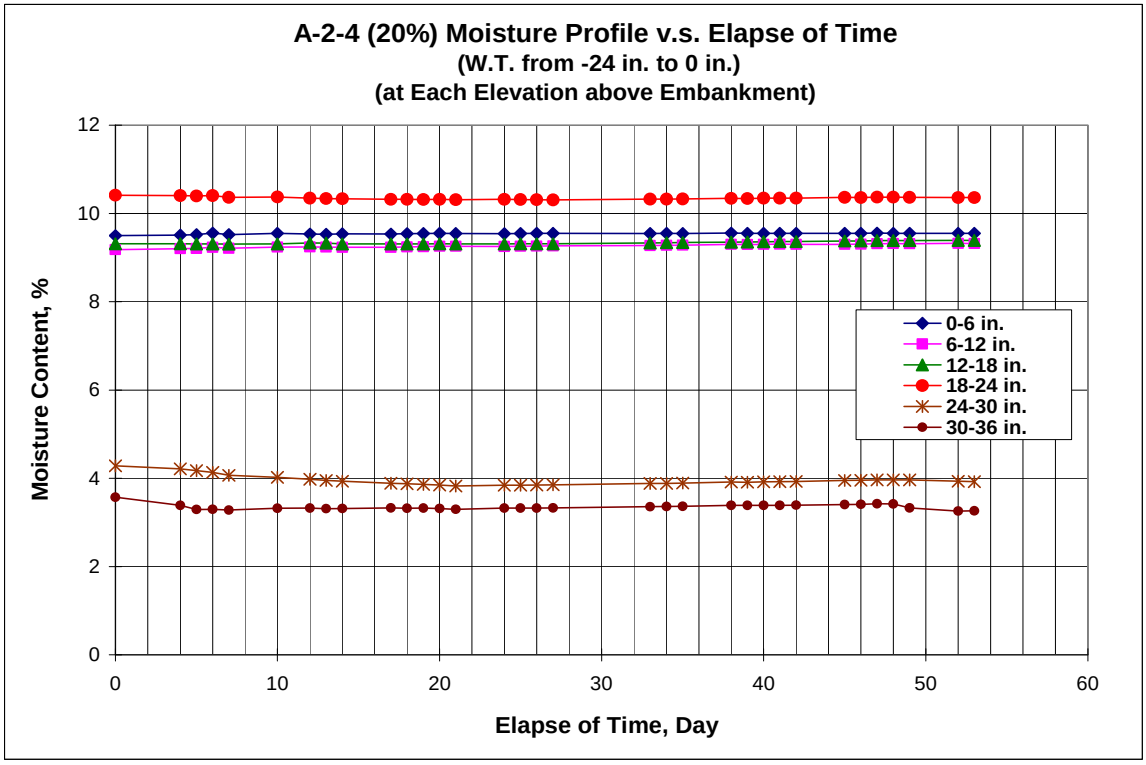


Figure E.27 Moisture Profile versus Time for A-2-4, 20% Soil (W.T. from -24 in. to 0 in. above Embankment)

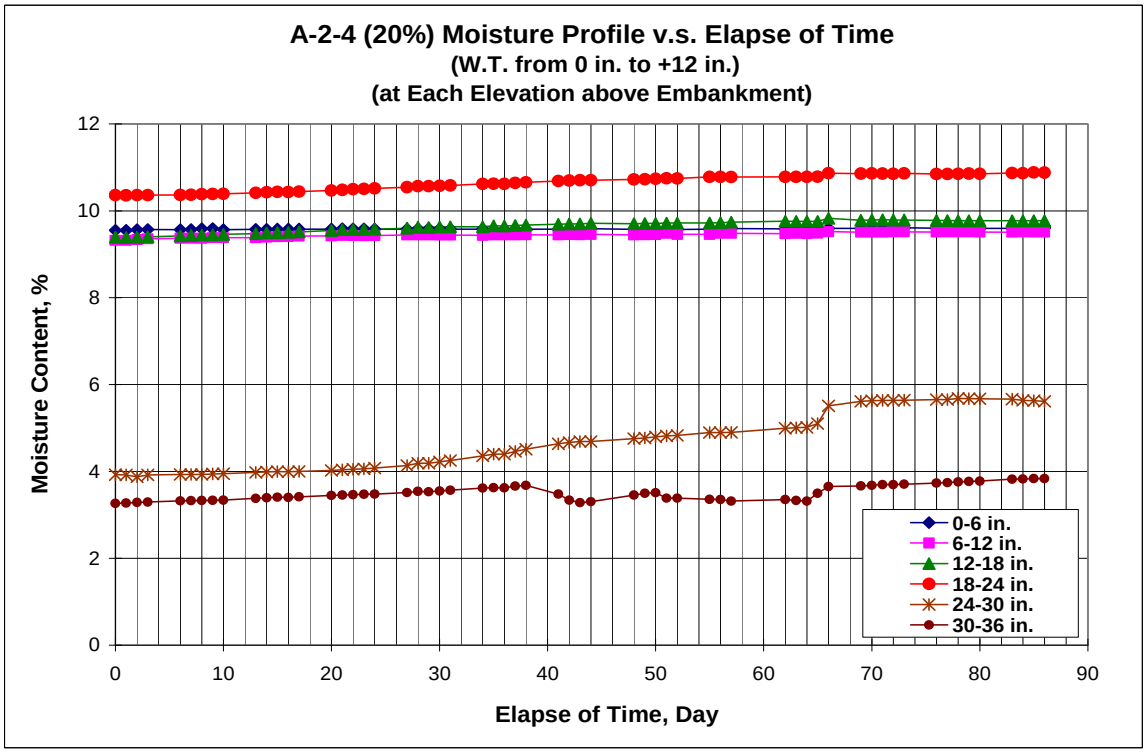


Figure E.28 Moisture Profile versus Time for A-2-4, 20% Soil (W.T. from +0 in. to +12 in. above Embankment)

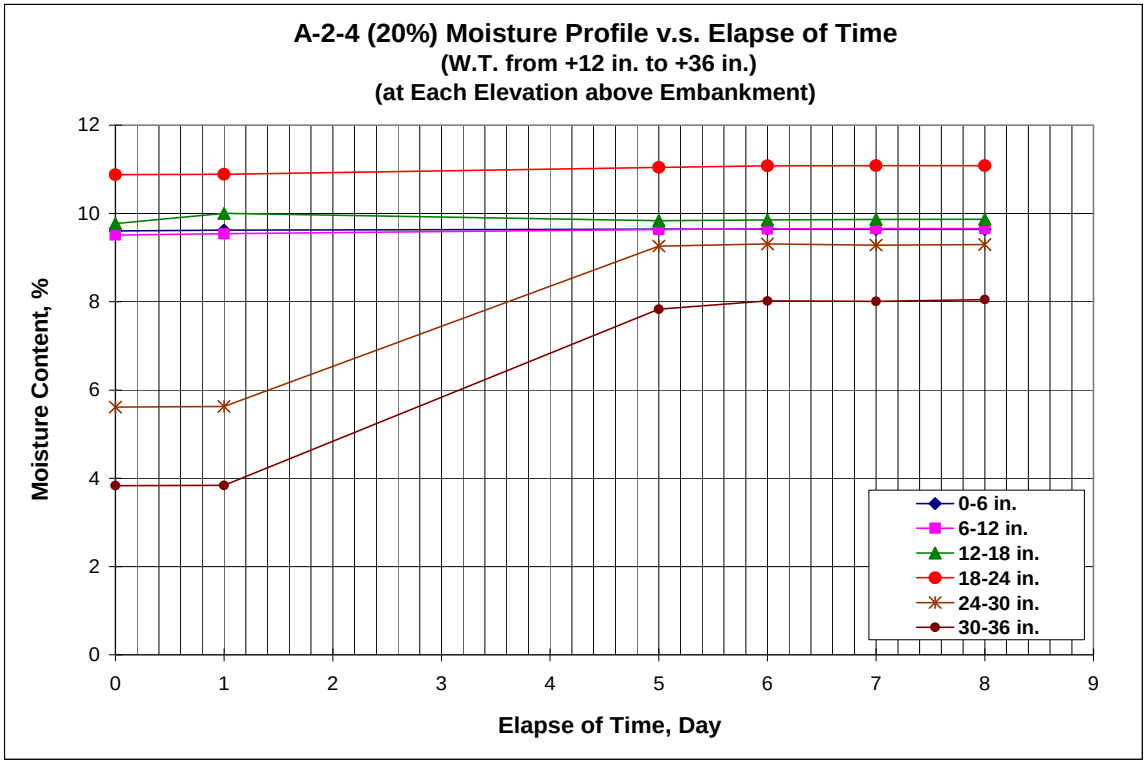


Figure E.29 Moisture Profile versus Time for A-2-4, 20% Soil (W.T. from +12 in. to +36 in. above Embankment)

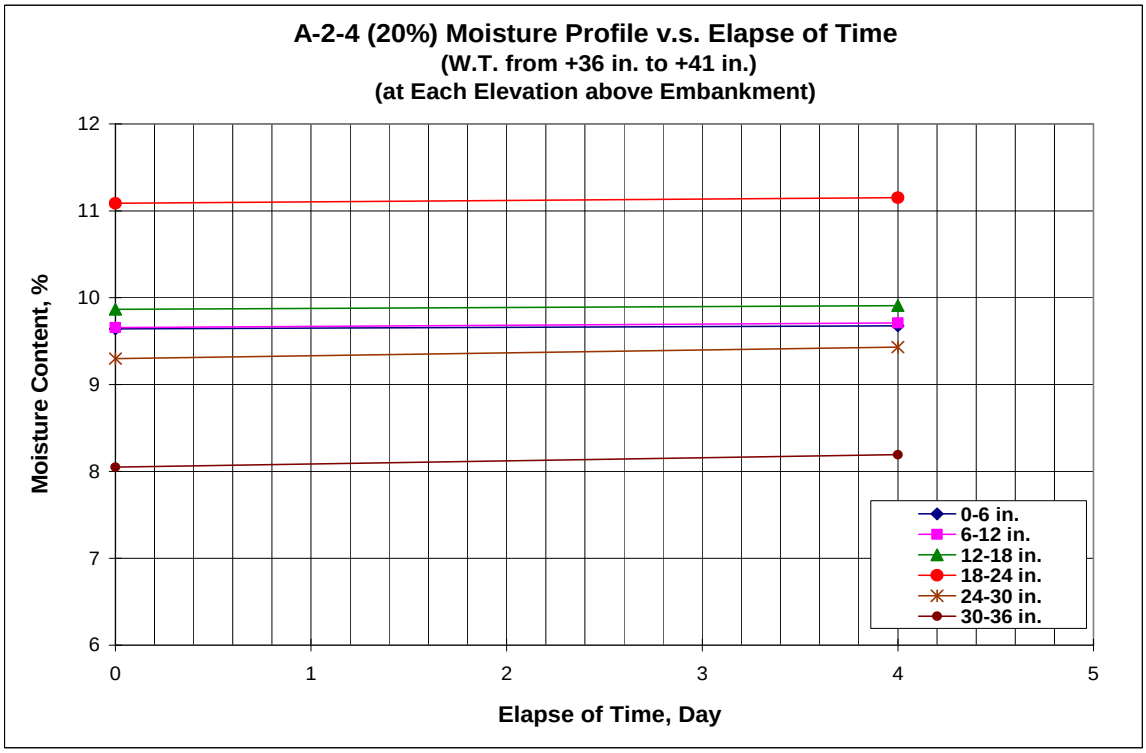


Figure E.30 Moisture Profile versus Time for A-2-4, 20% Soil (W.T. from +36 in. to +41 in. above Embankment)

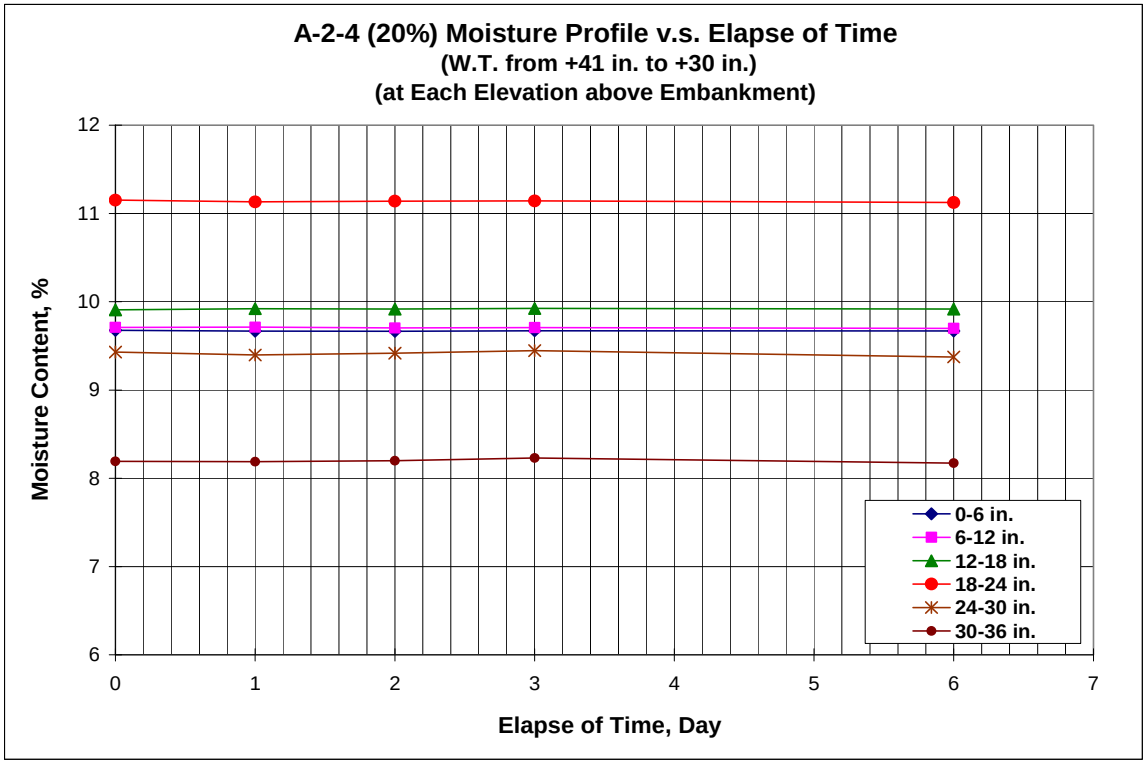


Figure E.31 Moisture Profile versus Time for A-2-4, 20% Soil (W.T. from +41 in. to +30 in. above Embankment)

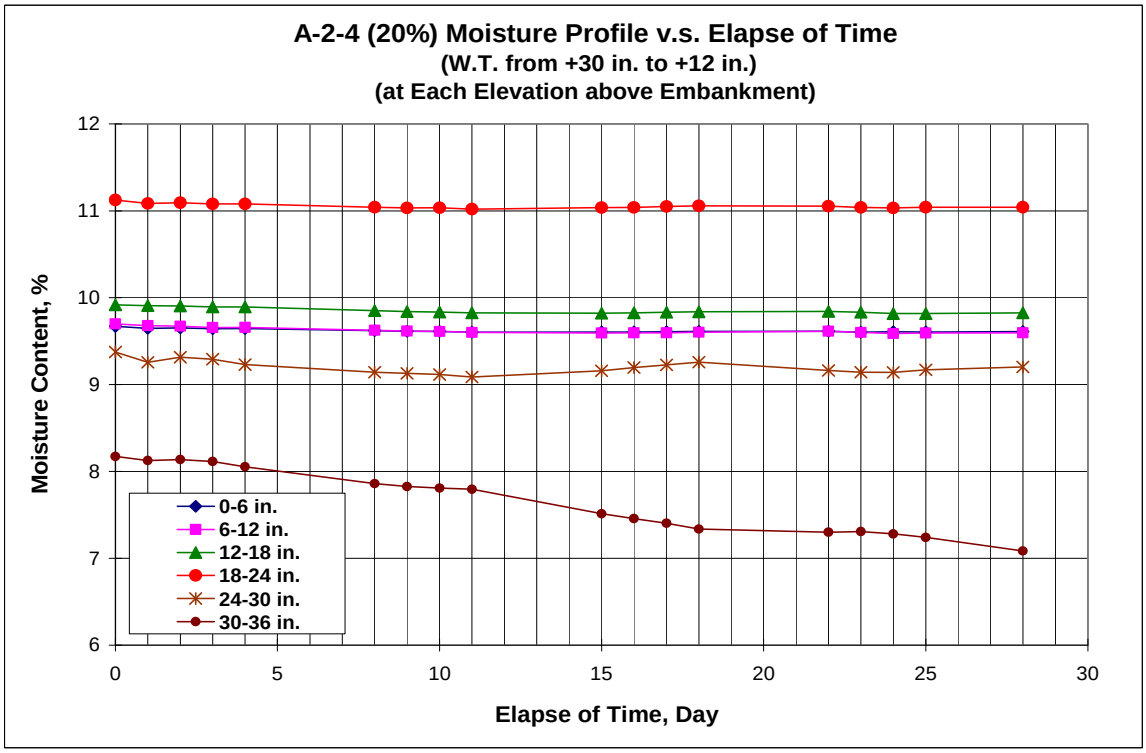


Figure E.32 Moisture Profile versus Time for A-2-4, 20% Soil (W.T. from +30 in. to +12 in. above Embankment)

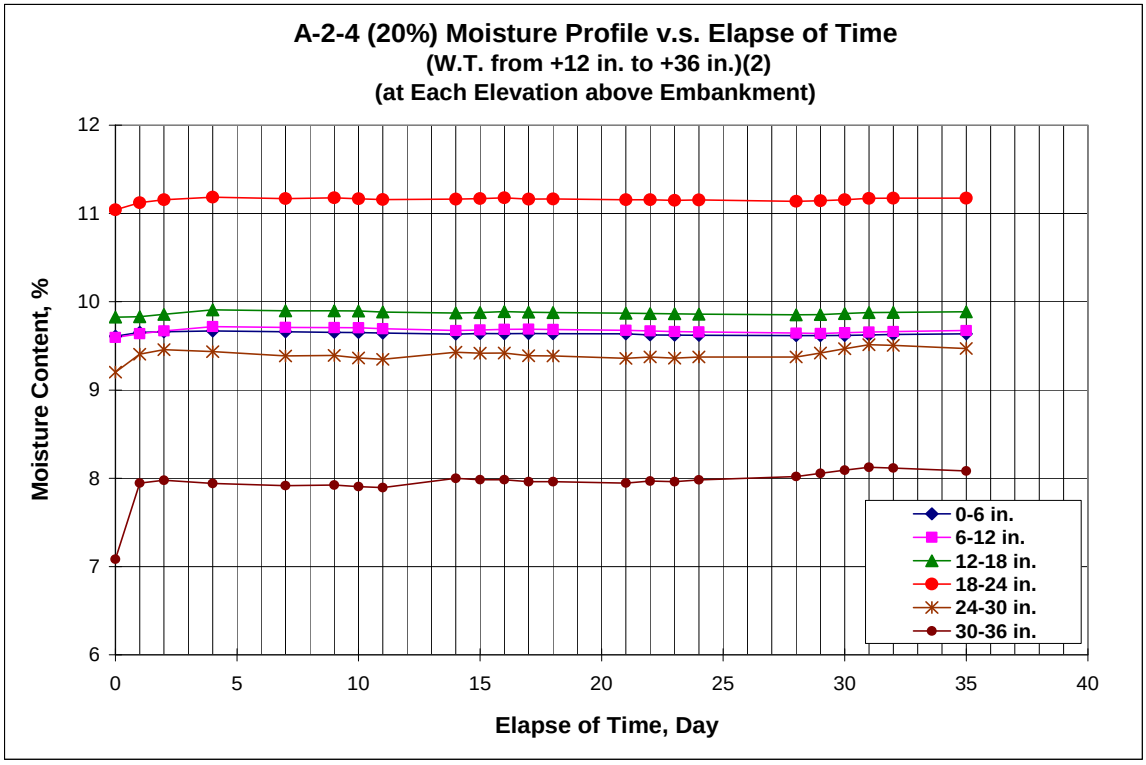


Figure E.33 Moisture Profile versus Time for A-2-4, 20% Soil (W.T. from +12 in. to +36 in. above Embankment, Reflood)

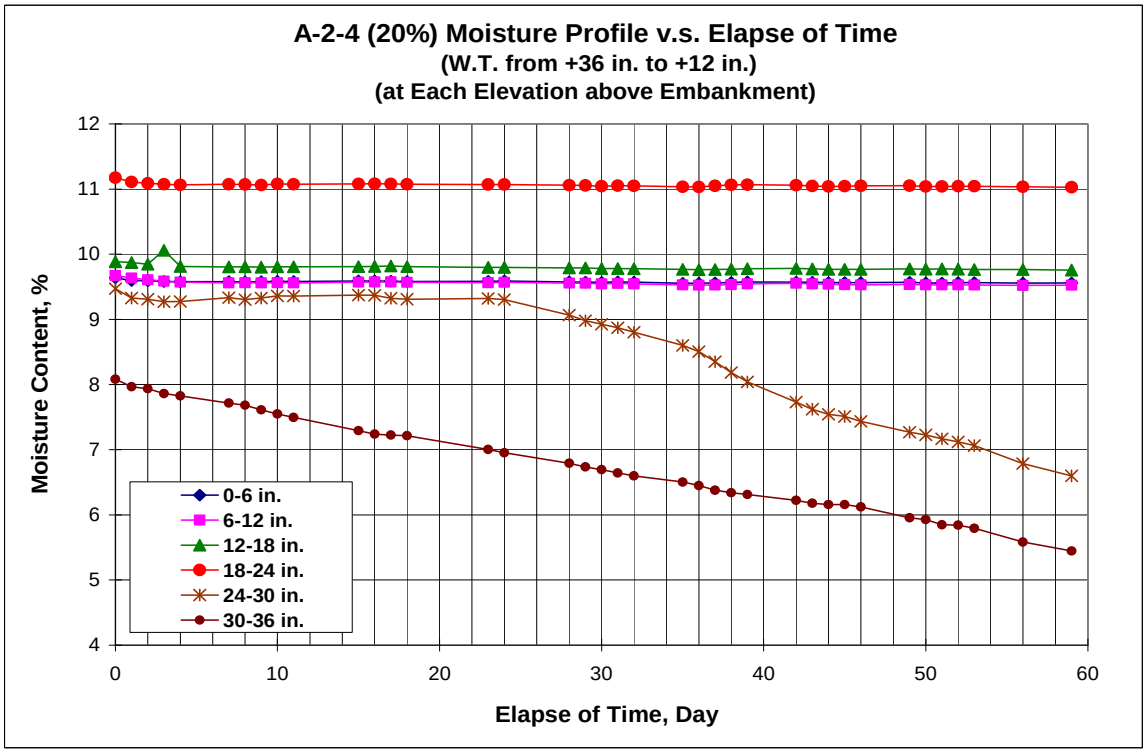


Figure E.34 Moisture Profile versus Time for A-2-4, 20% Soil (W.T. from +36 in. to +41 in. above Embankment)

E.6 A-2-4, 24% Soil

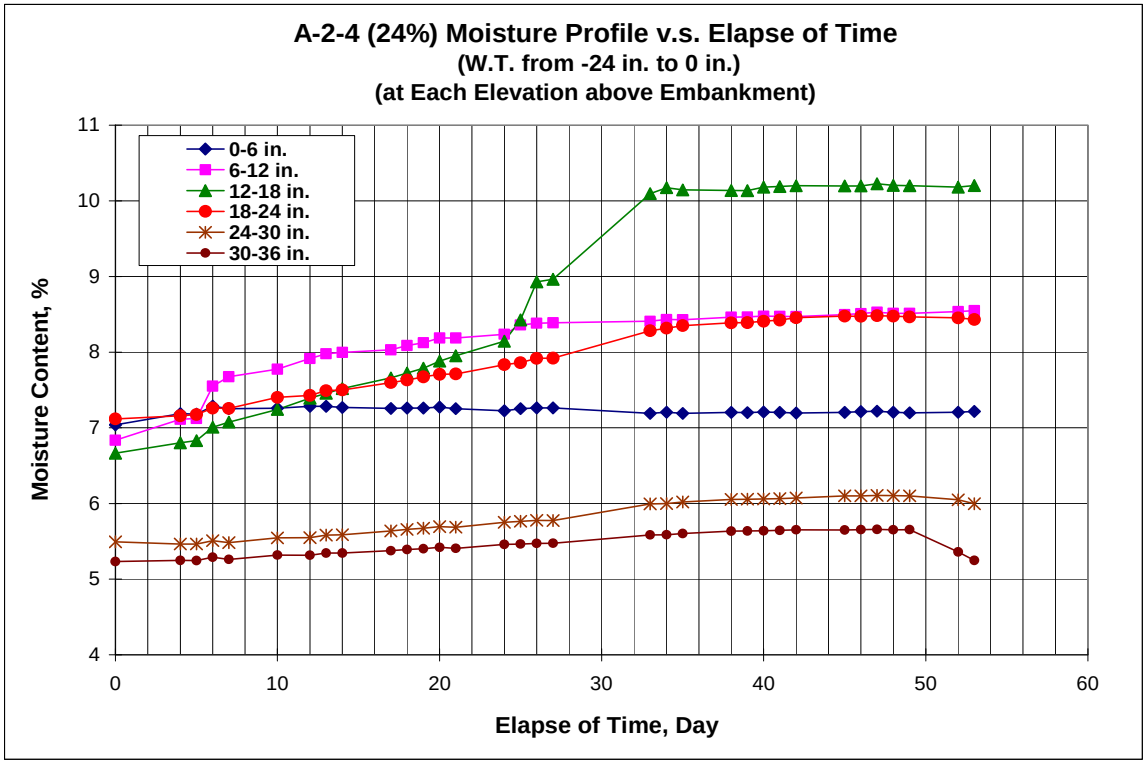


Figure E.35 Moisture Profile versus Time for A-2-4, 24% Soil (W.T. from -24 in. to 0 in. above Embankment)

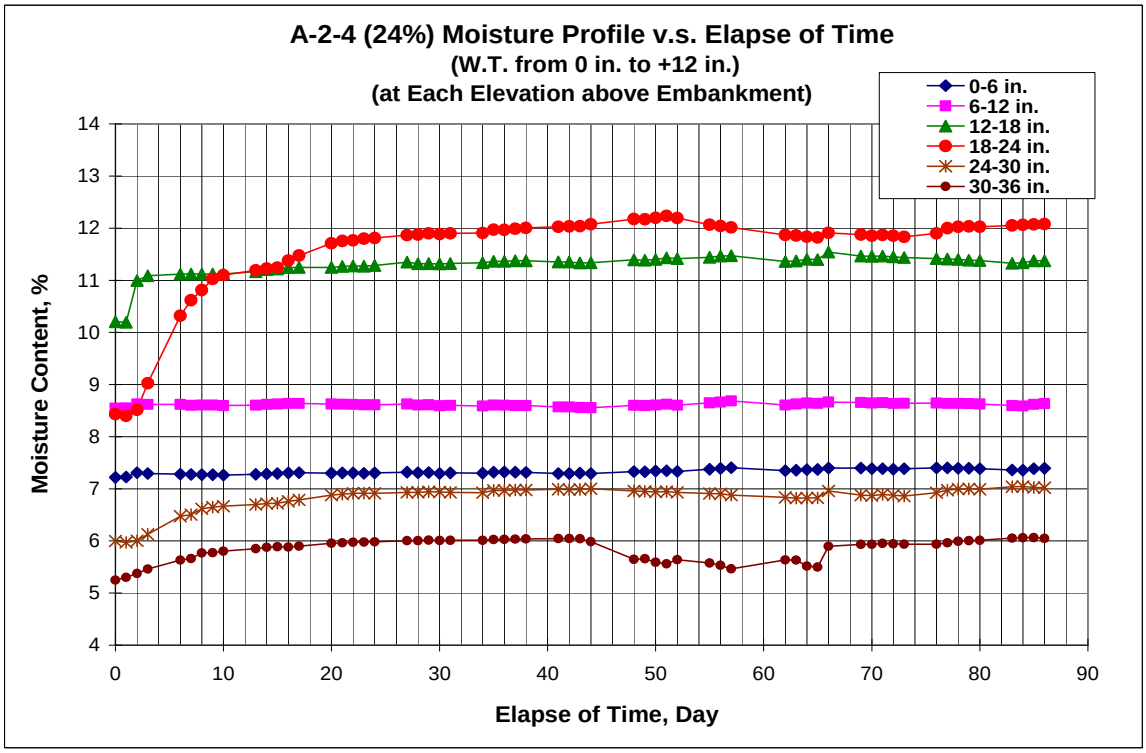


Figure E.36 Moisture Profile versus Time for A-2-4, 24% Soil (W.T. from +0 in. to +12 in. above Embankment)

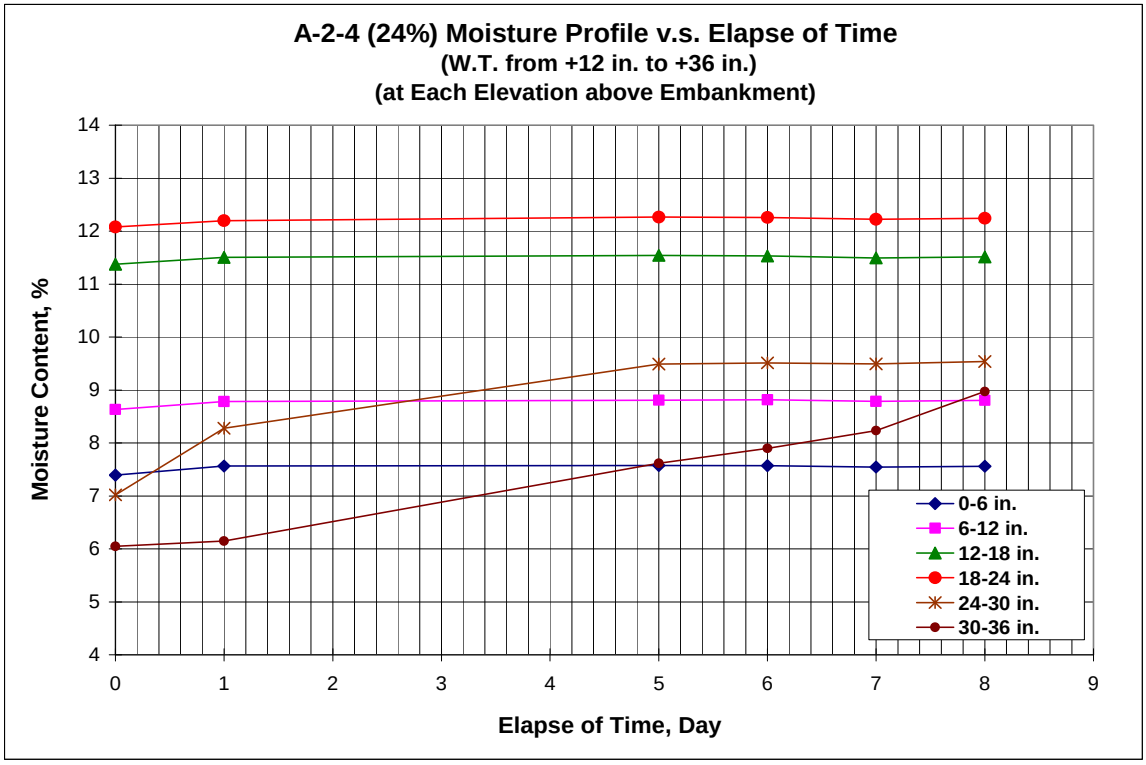


Figure E.37 Moisture Profile versus Time for A-2-4, 24% Soil (W.T. from +12 in. to +36 in. above Embankment)

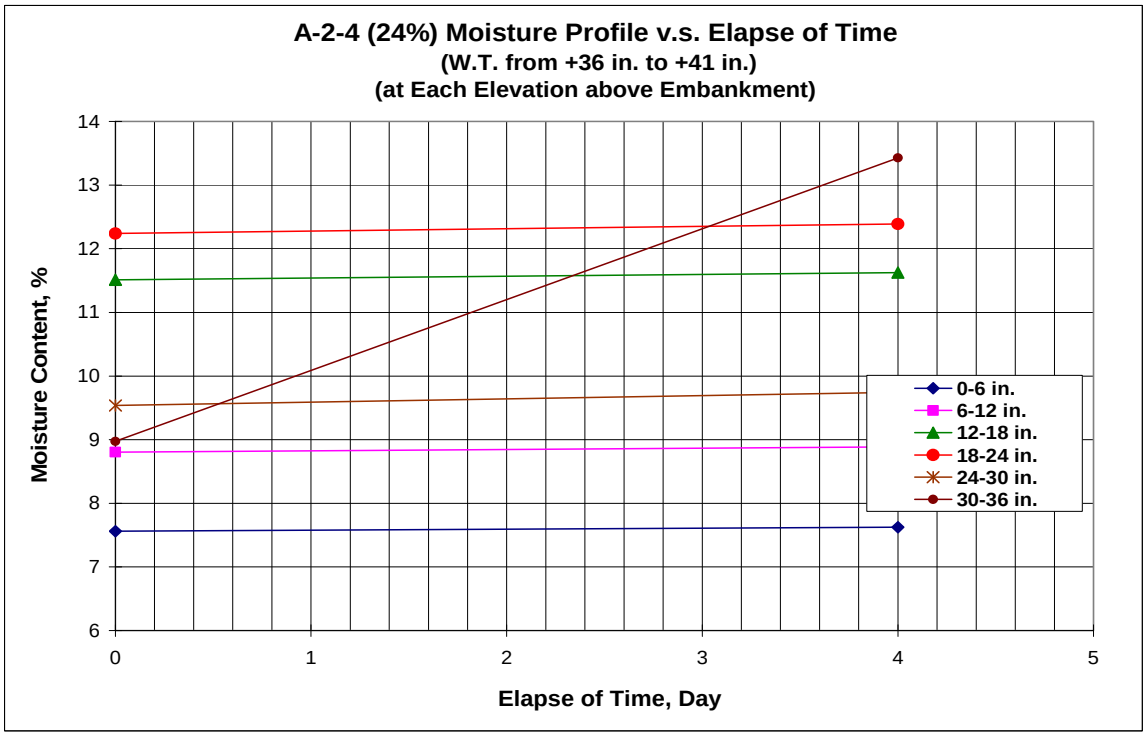


Figure E.38 Moisture Profile versus Time for A-2-4, 24% Soil (W.T. from +36 in. to +41 in. above Embankment)

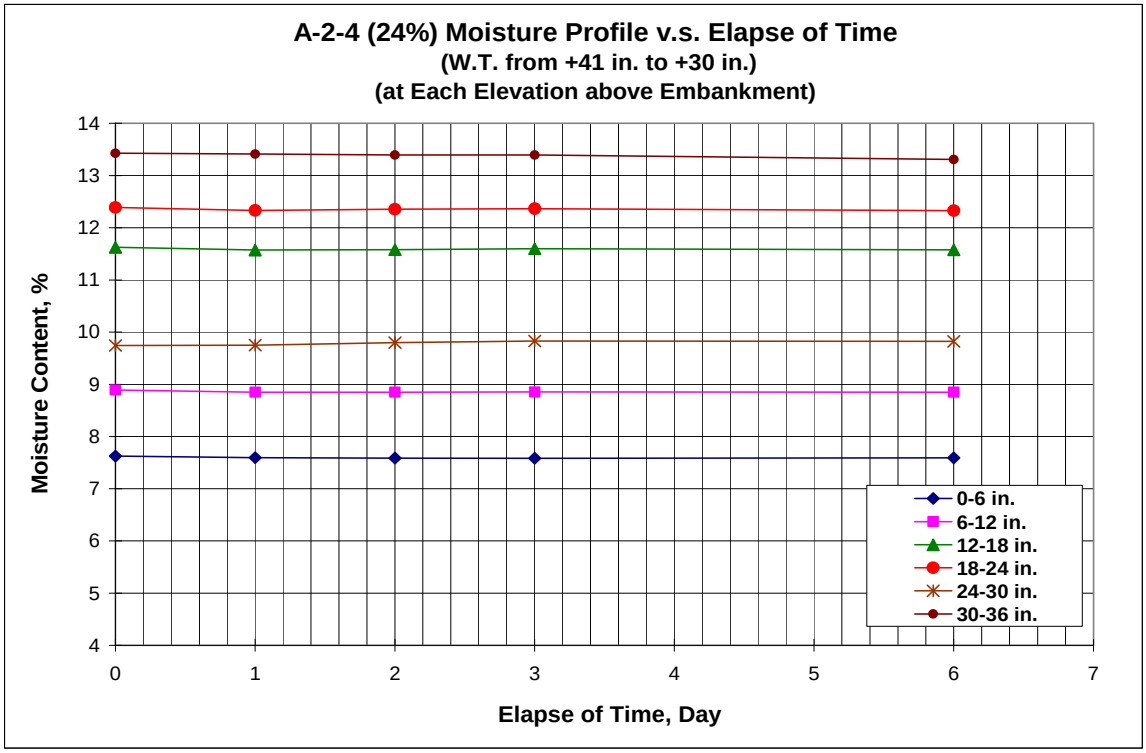


Figure E.39 Moisture Profile versus Time for A-2-4, 24% Soil (W.T. from +41 in. to +30 in. above Embankment)

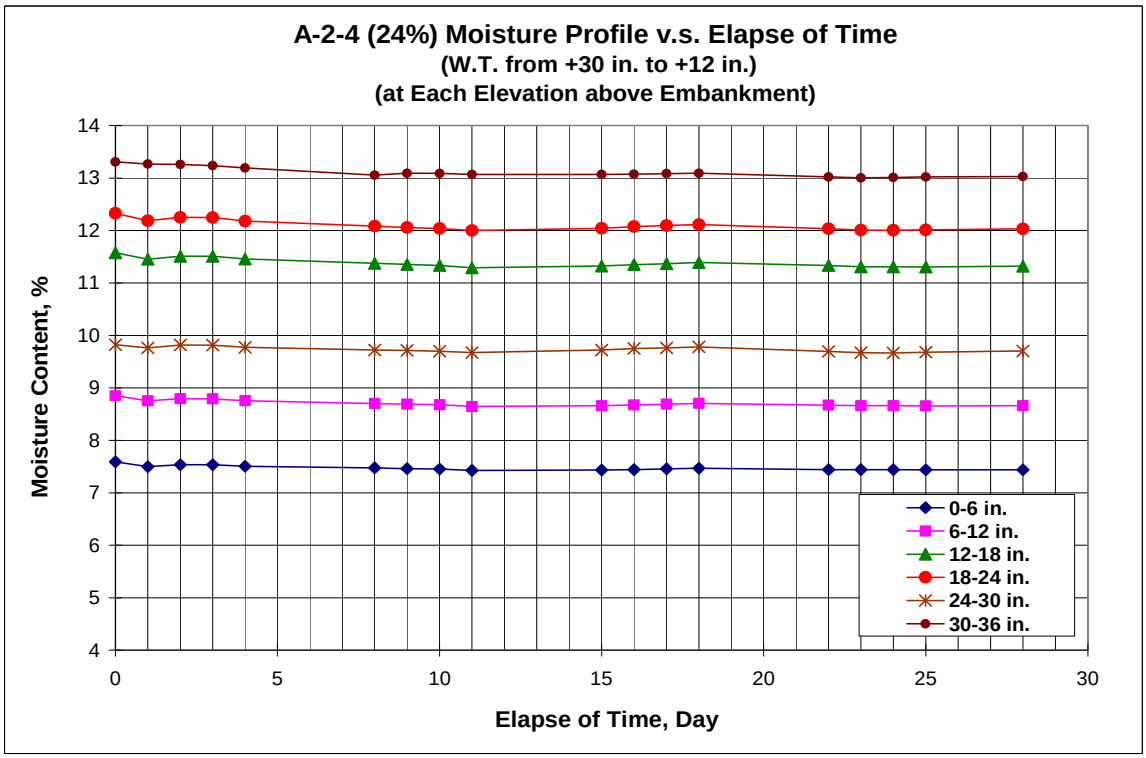


Figure E.40 Moisture Profile versus Time for A-2-4, 24% Soil (W.T. from +30 in. to +12 in. above Embankment)

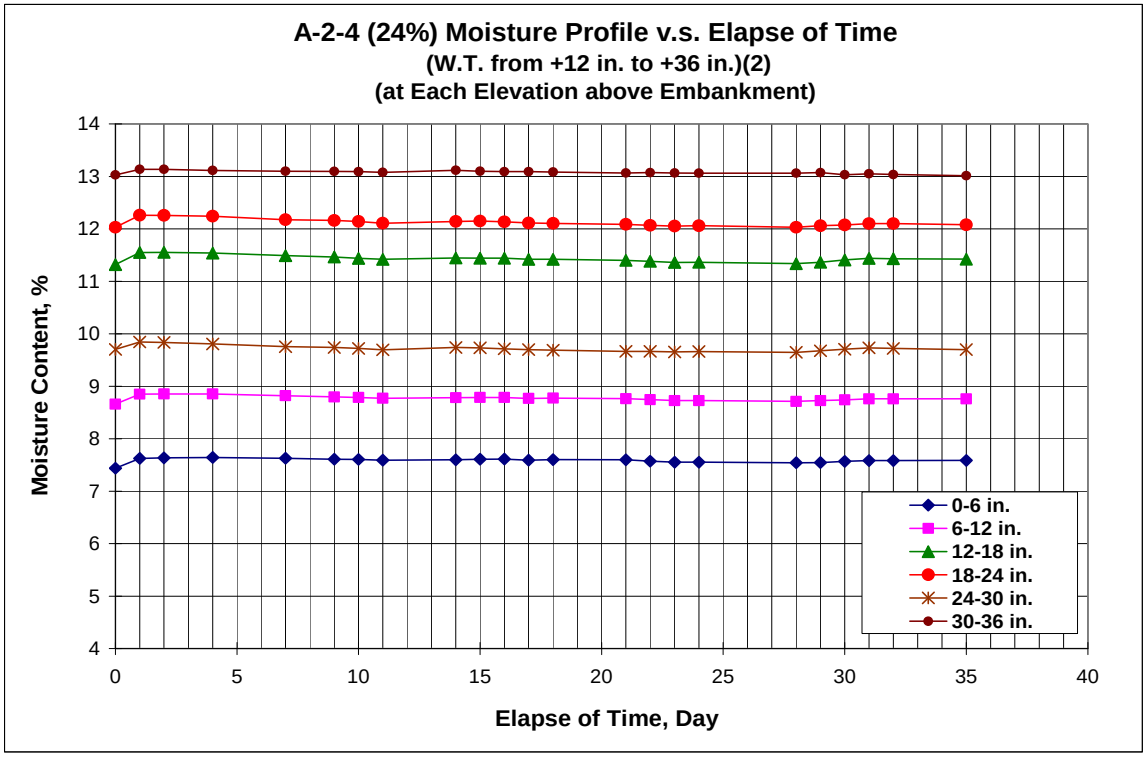


Figure E.41 Moisture Profile versus Time for A-2-4, 24% Soil (W.T. from +12 in. to +36 in. above Embankment, Reflood)

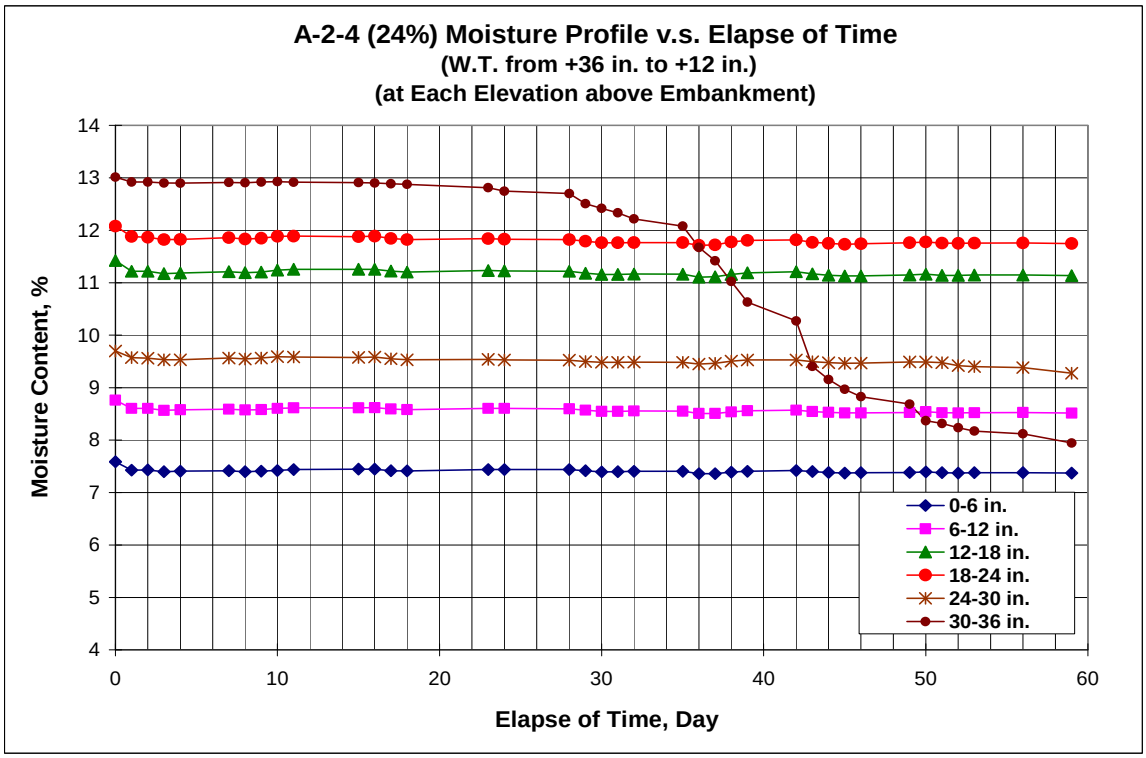


Figure E.42 Moisture Profile versus Time for A-2-4, 24% Soil (W.T. from +36 in. to +41 in. above Embankment)

E.7 A-2-4, 30% Soil

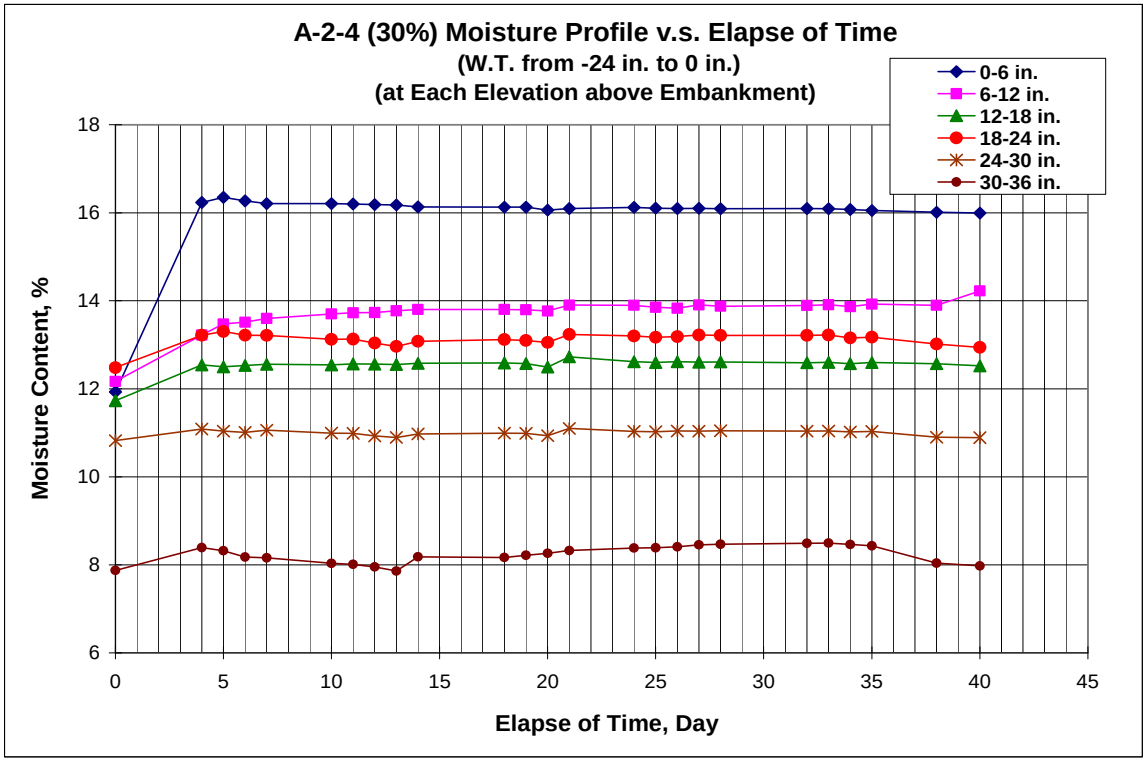


Figure E.43 Moisture Profile versus Time for A-2-4, 30% Soil (W.T. from -24 in. to +0 in. above Embankment)

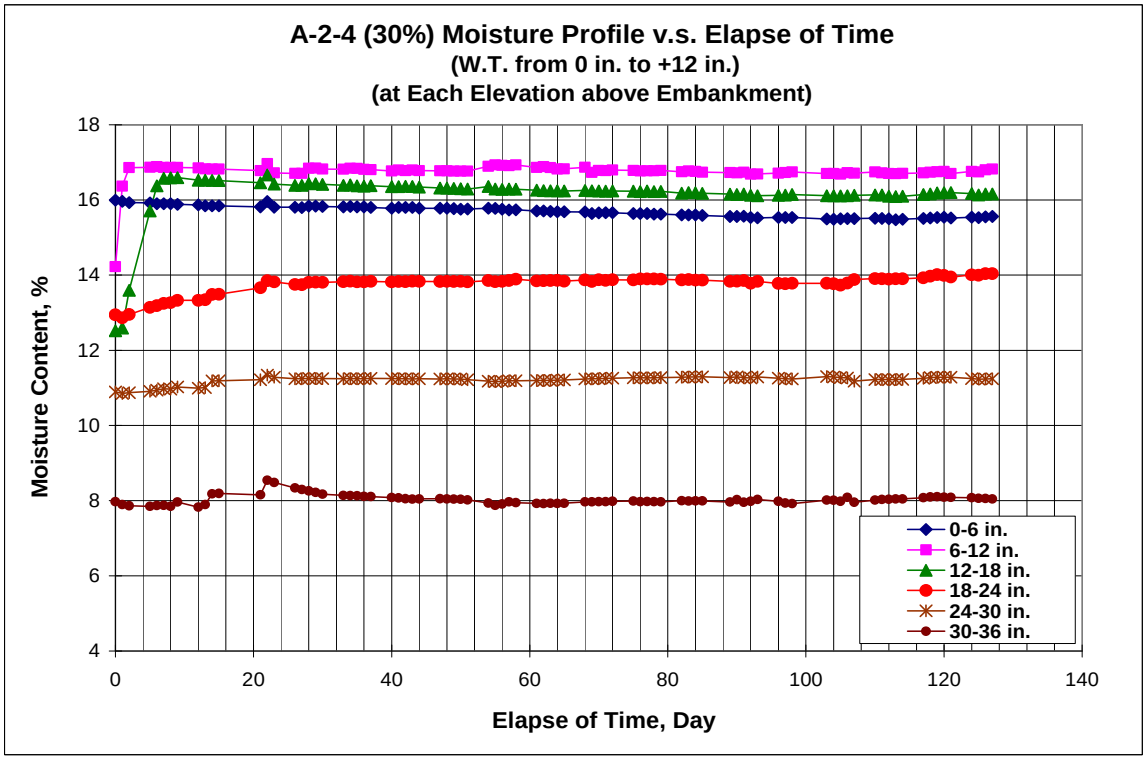


Figure E.44 Moisture Profile versus Time for A-2-4, 30% Soil (W.T. from +0 in. to +12 in. above Embankment)

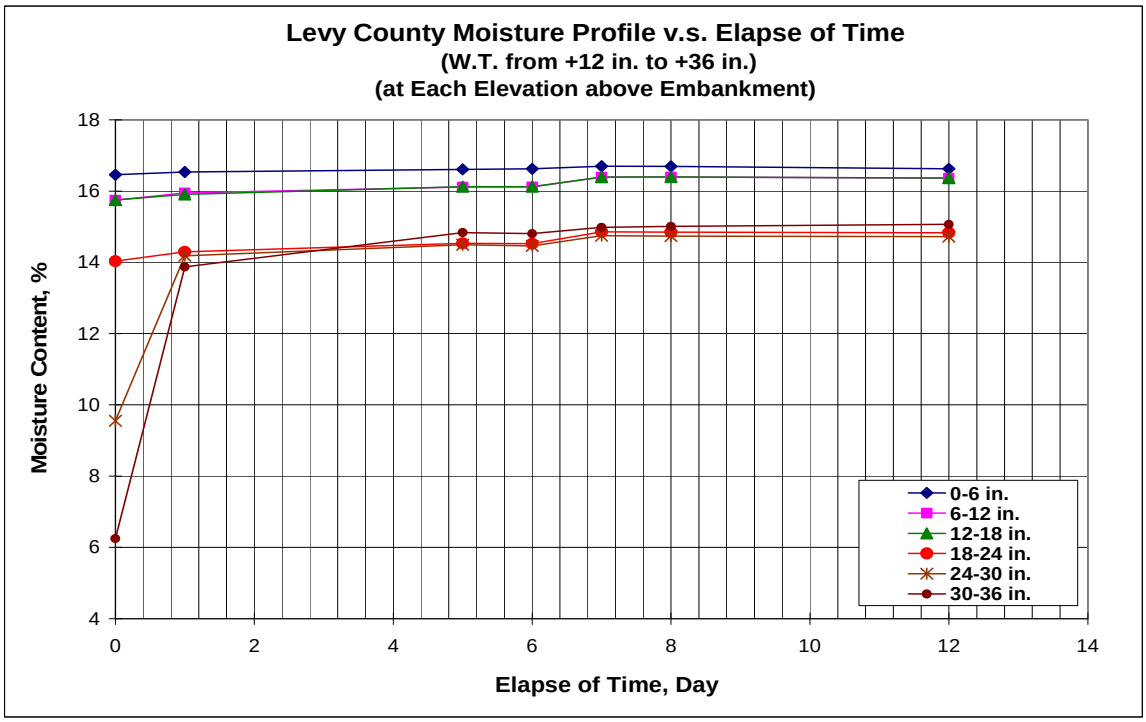


Figure E.45 Moisture Profile versus Time for A-2-4, 30% Soil (W.T. from +12 in. to +36 in. above Embankment)

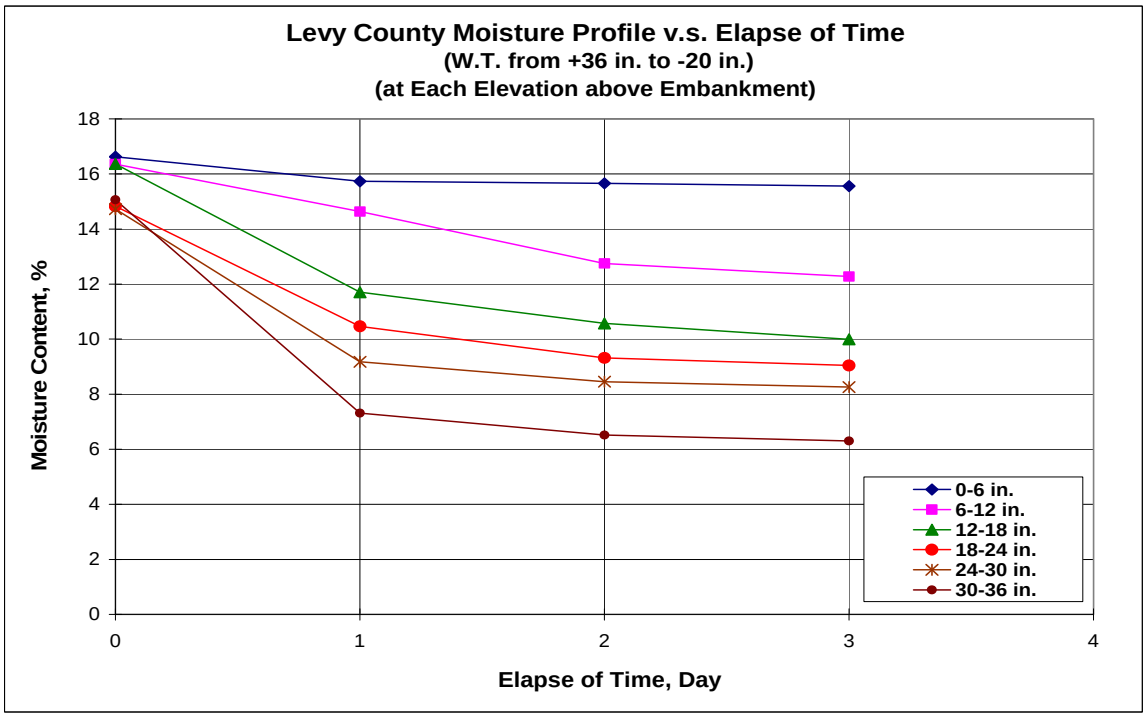


Figure E.46 Moisture Profile versus Time for A-2-4, 30% Soil (W.T. from +36 in. to -20 in. above Embankment)

E.8 Oolite A-1 Soil

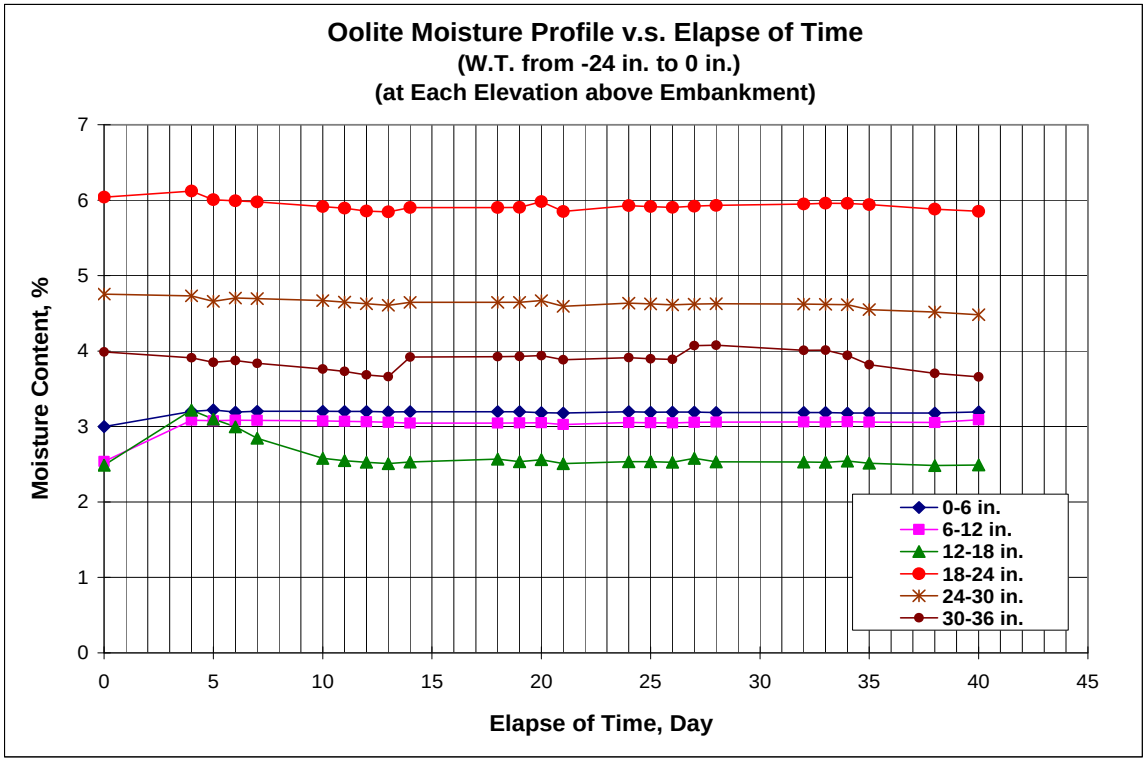


Figure E.47 Moisture Profile versus Time for Oolite A-1 Soil (W.T. from -24 in. to +0 in. above Embankment)

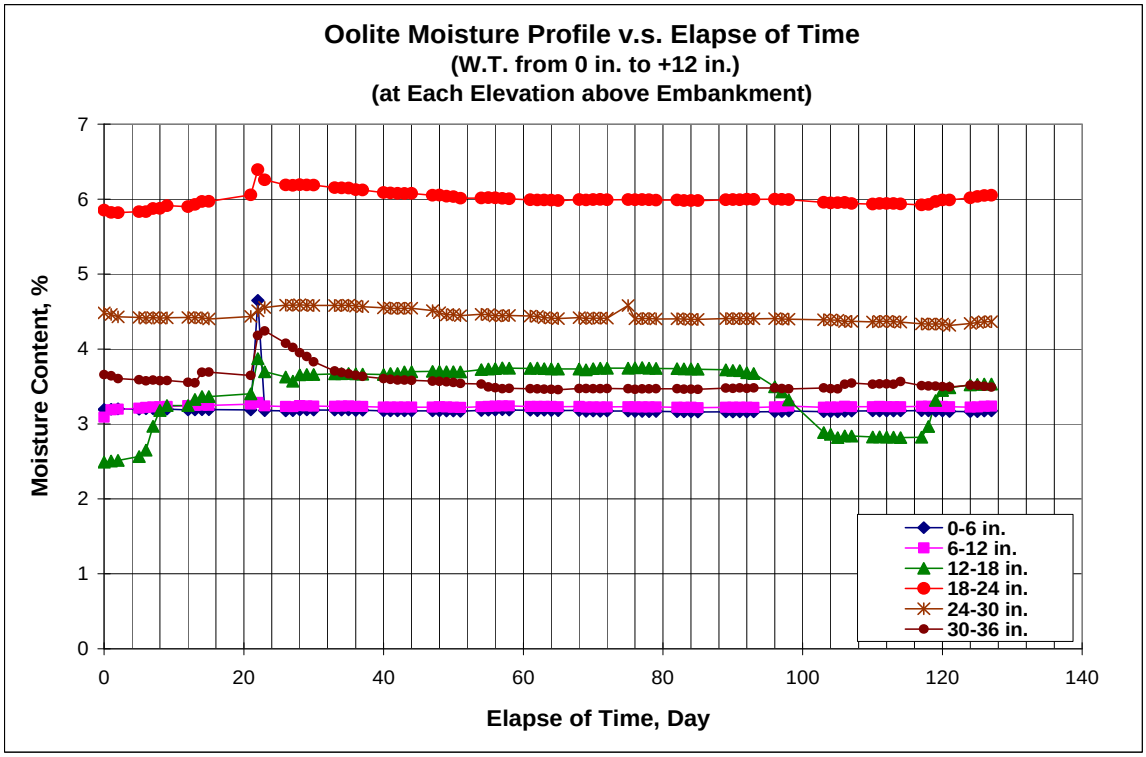


Figure E.48 Moisture Profile versus Time for Oolite A-1 Soil (W.T. from +0 in. to +12 in. above Embankment)

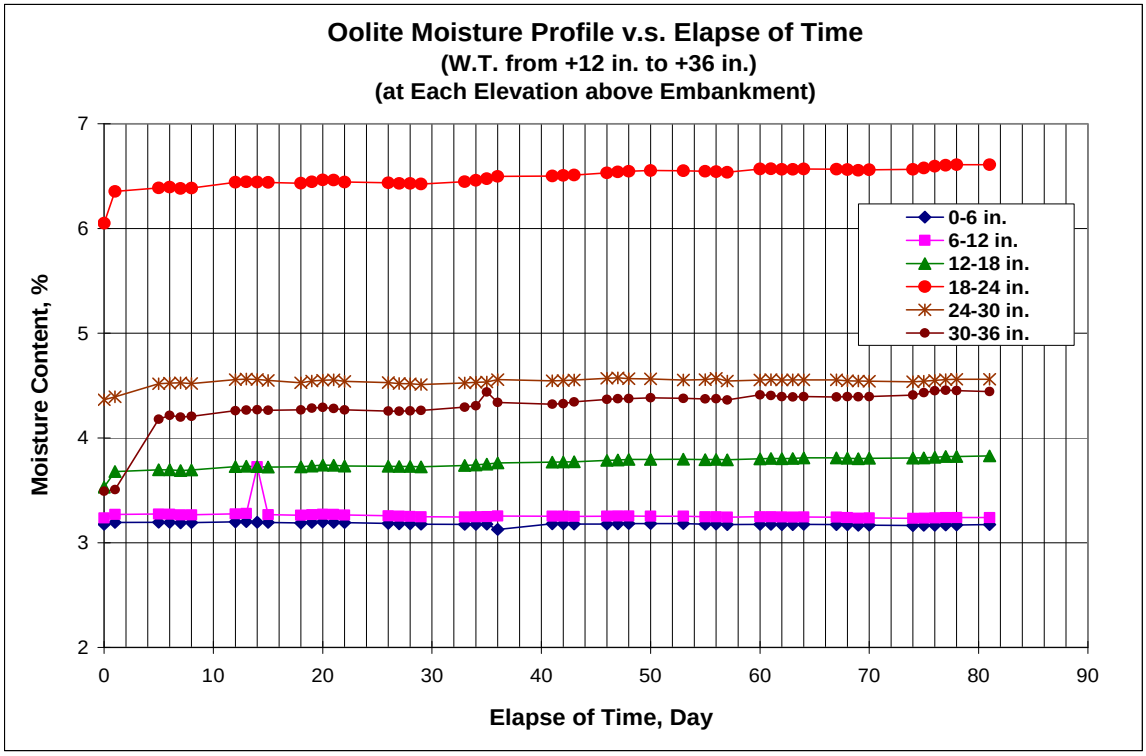


Figure E.49 Moisture Profile versus Time for Oolite A-1 Soil (W.T. from +12 in. to +36 in. above Embankment)

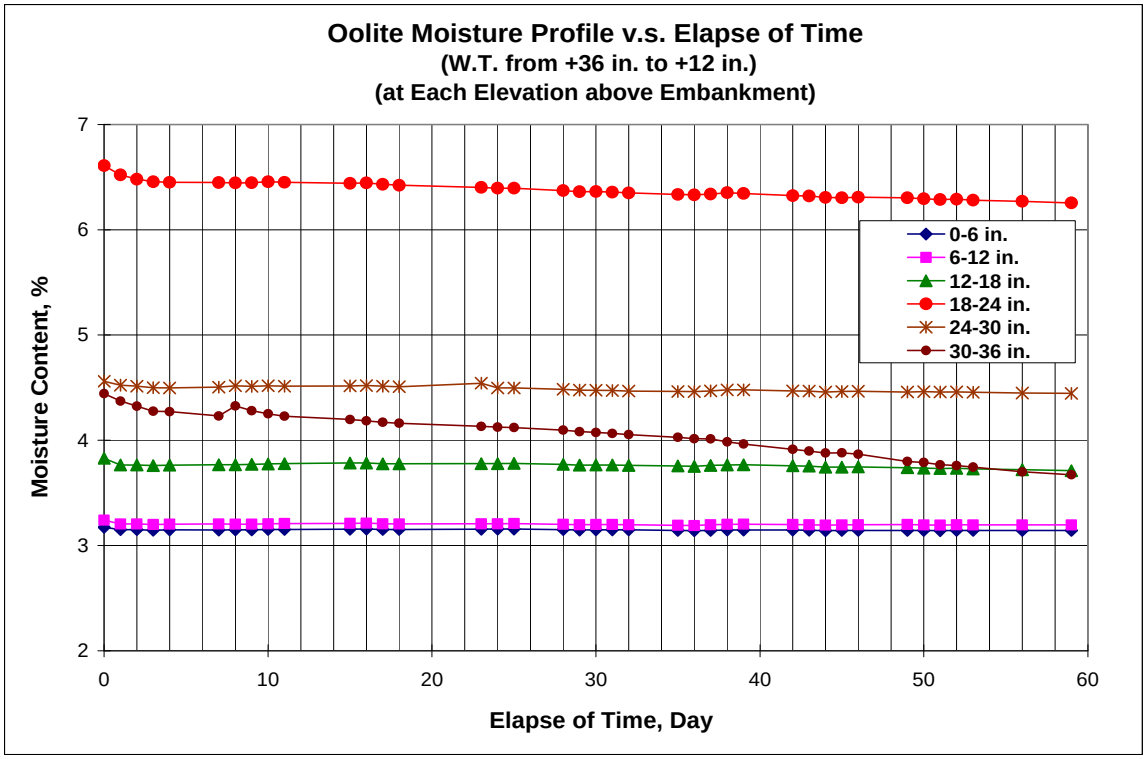


Figure E.50 Moisture Profile versus Time for Oolite A-1 Soil (W.T. from +36 in. to -20 in. above Embankment)

E.9 Spring Cemetery A-2-4, 15% Soil

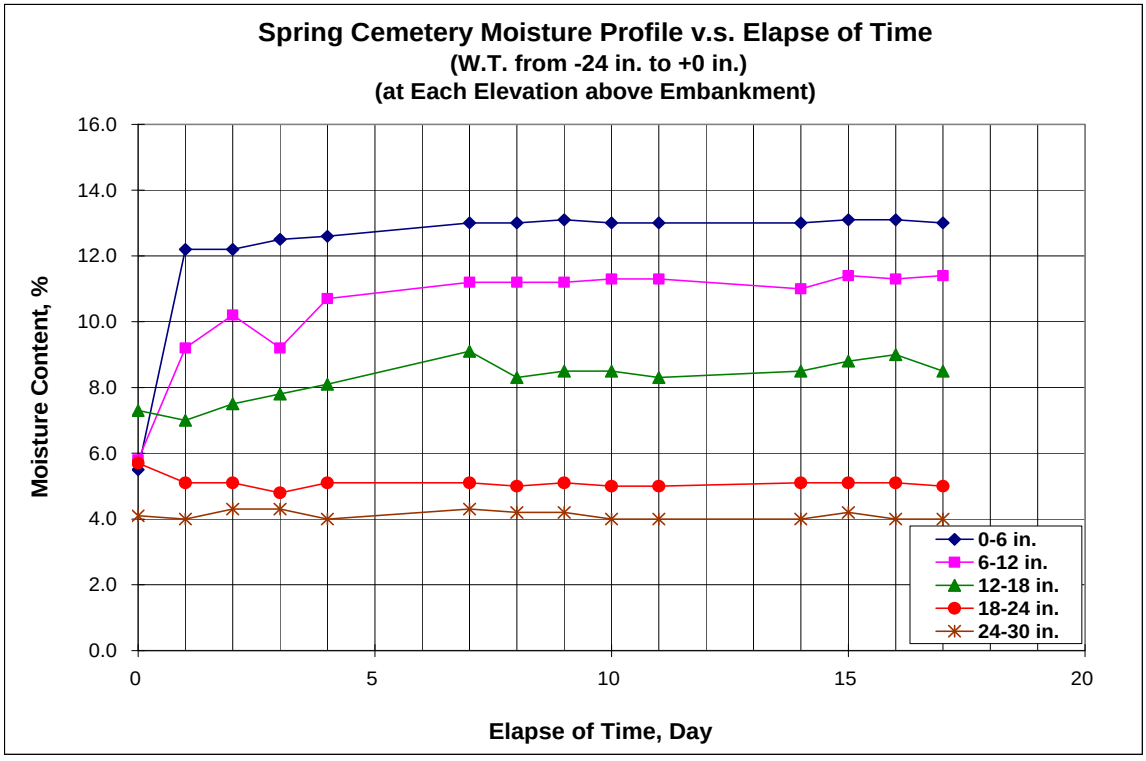


Figure E.51 Moisture Profile versus Time for Spring Cemetery A-2-4 Soil (W.T. from -24 in. to 0 in. above Embankment)

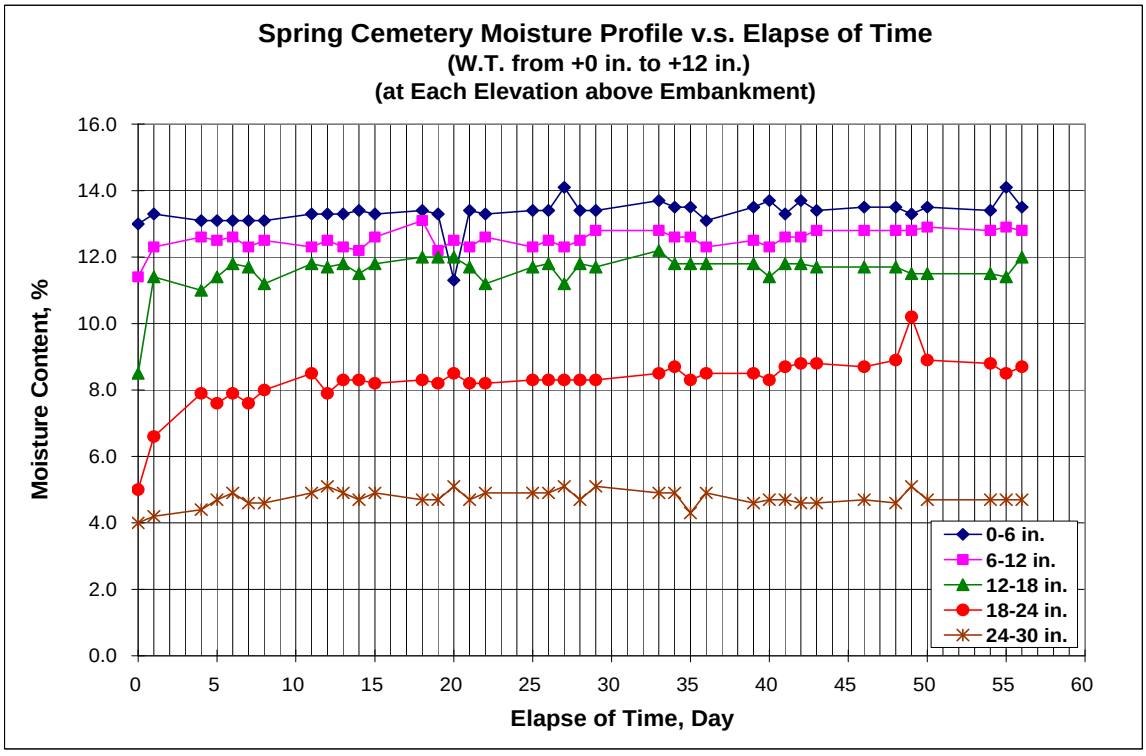


Figure E.52 Moisture Profile versus Time for Spring Cemetery A-2-4 Soil (W.T. from +0 in. to +12 in. above Embankment)

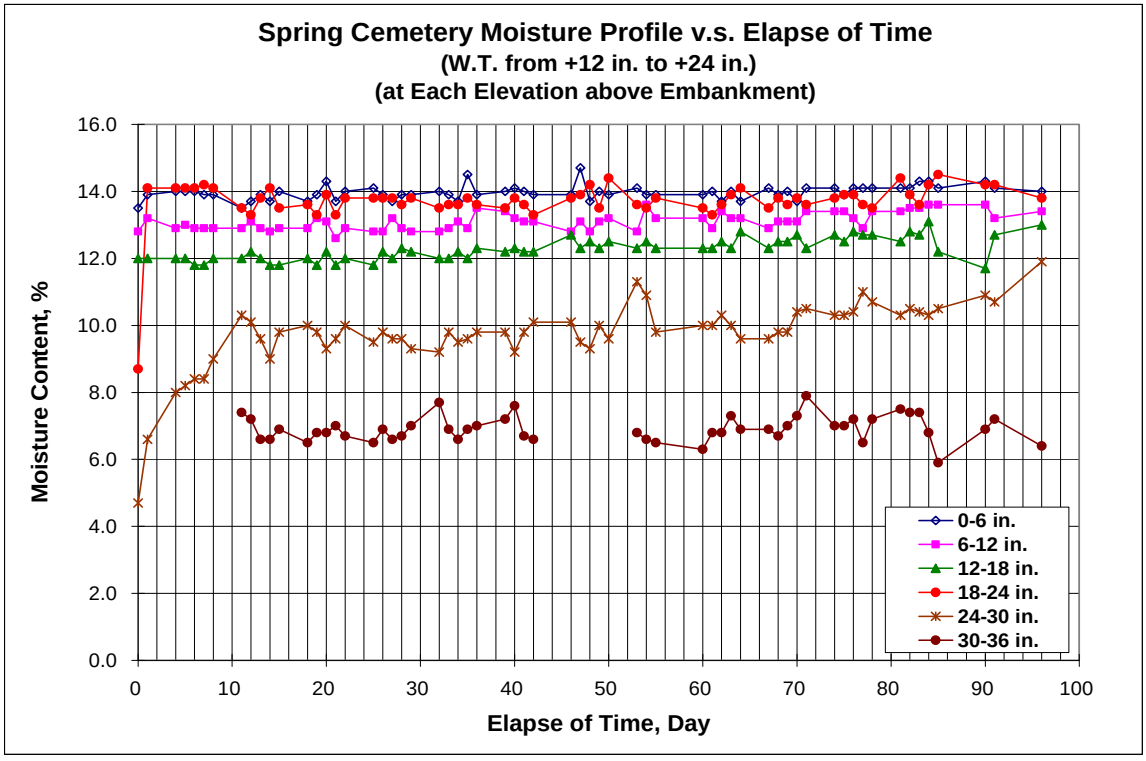


Figure E.53 Moisture Profile versus Time for Spring Cemetery A-2-4 Soil (W.T. from +12 in. to +24 in. above Embankment)

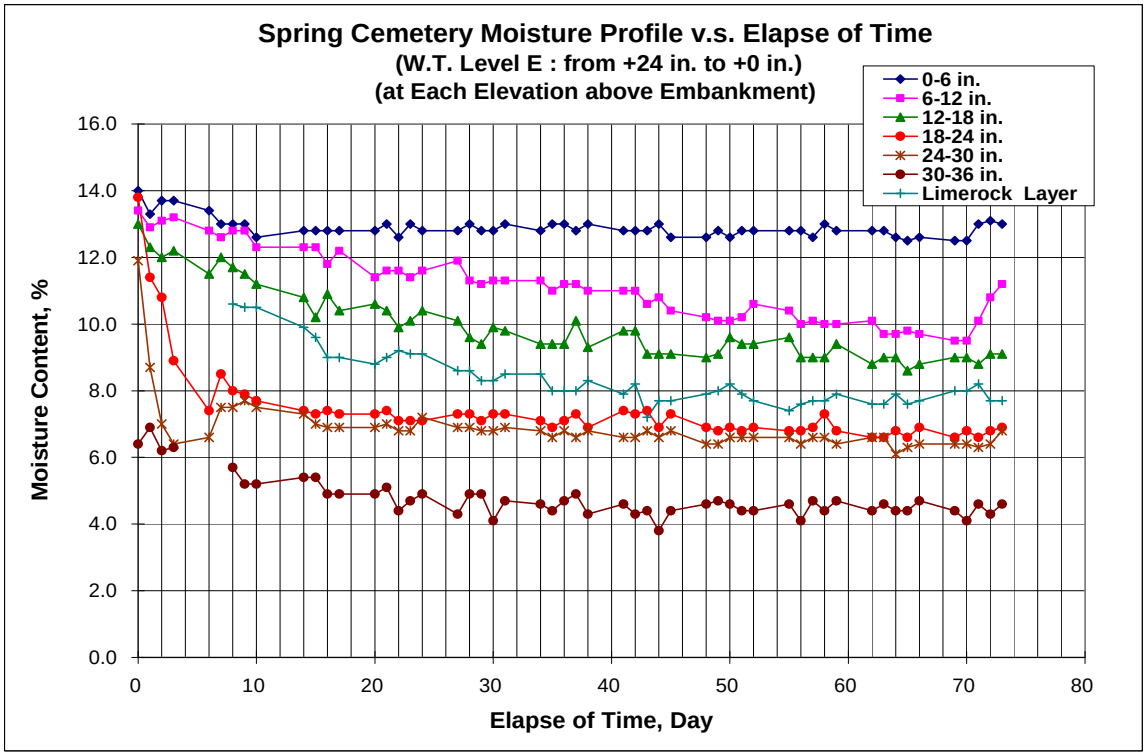


Figure E.54 Moisture Profile versus Time for Spring Cemetery A-2-4 Soil (W.T. from +24 in. to 0 in. above Embankment)

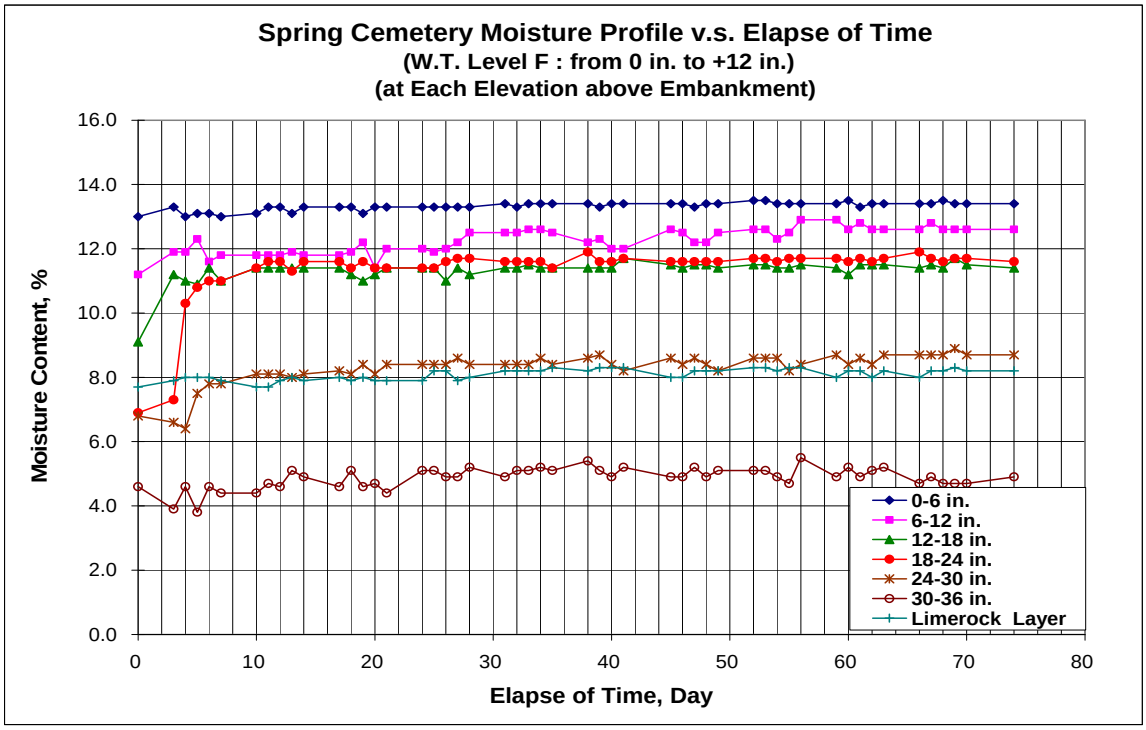


Figure E.55 Moisture Profile versus Time for Spring Cemetery A-2-4 Soil (W.T. from 0 in. to +12 in. above Embankment, Reflood)

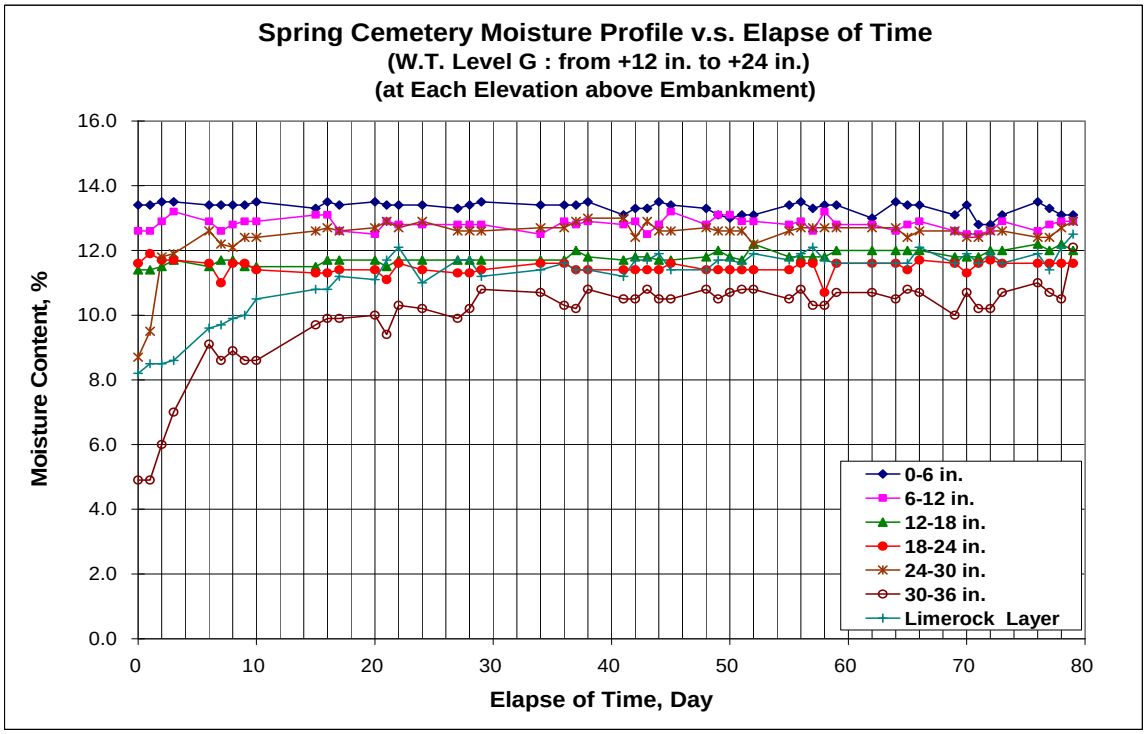


Figure E.56 Moisture Profile versus Time for Spring Cemetery A-2-4 Soil (W.T. from +12 in. to +24 in. above Embankment, Reflood)

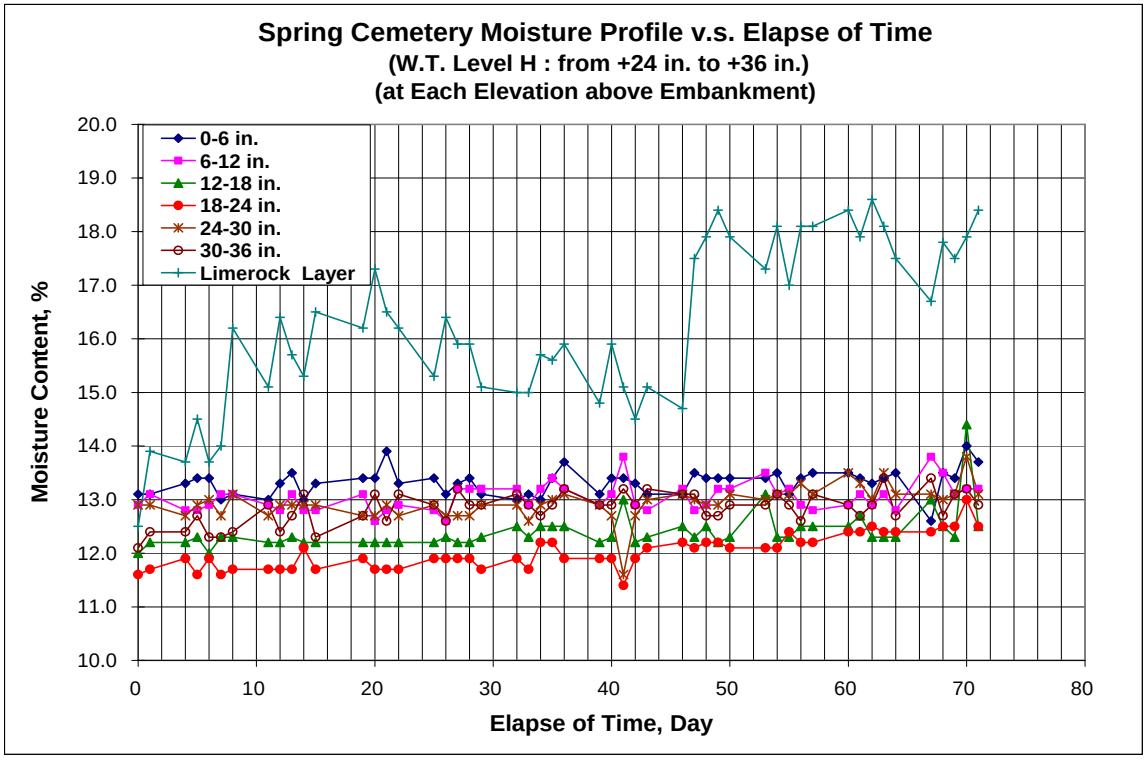


Figure E.57 Moisture Profile versus Time for Spring Cemetery A-2-4 Soil (W.T. from +24 in. to +36 in. above Embankment)

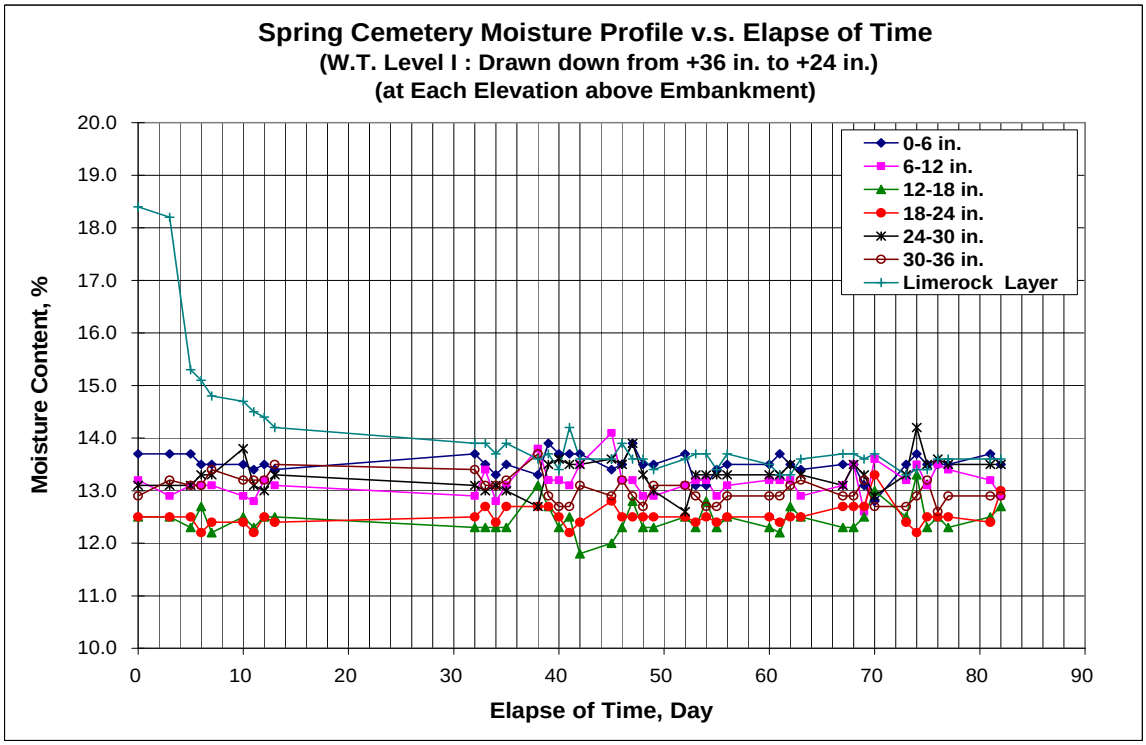


Figure E.58 Moisture Profile versus Time for Spring Cemetery A-2-4 Soil (W.T. from +36 in. to +24 in. above Embankment)

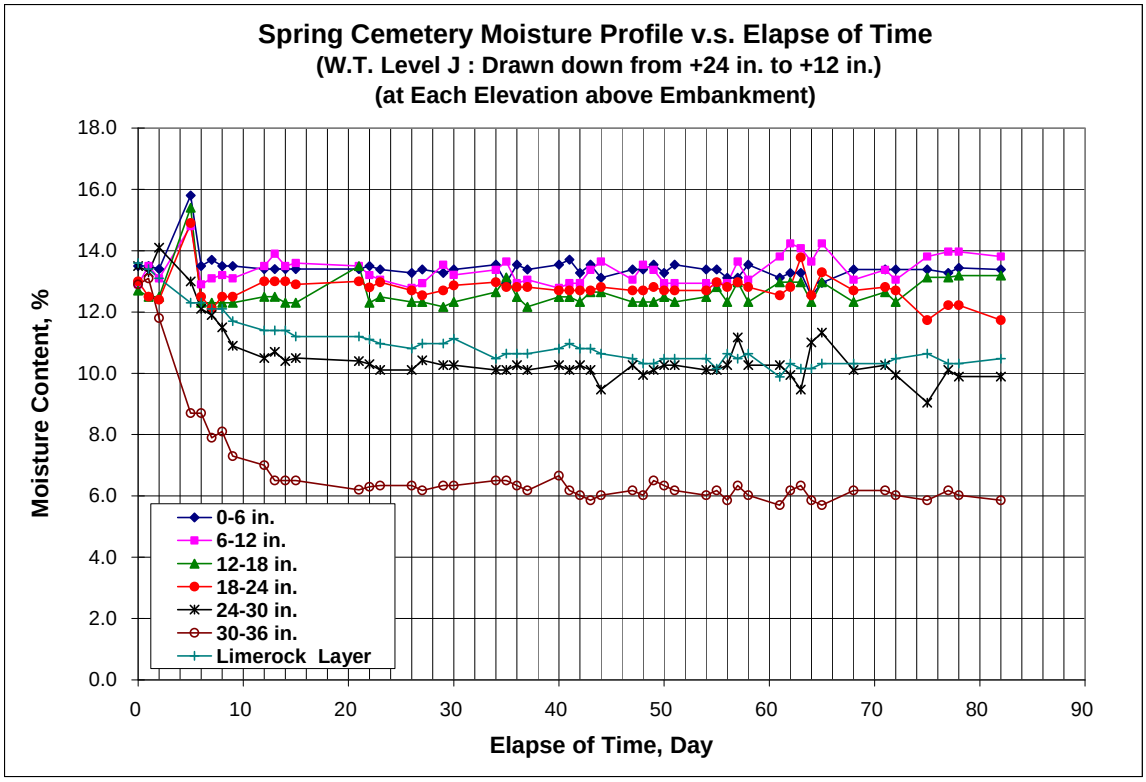


Figure E.59 Moisture Profile versus Time for Spring Cemetery A-2-4 Soil (W.T. from +24 in. to +12 in. above Embankment)

E.10 Branch A-2-4, 23% Soil

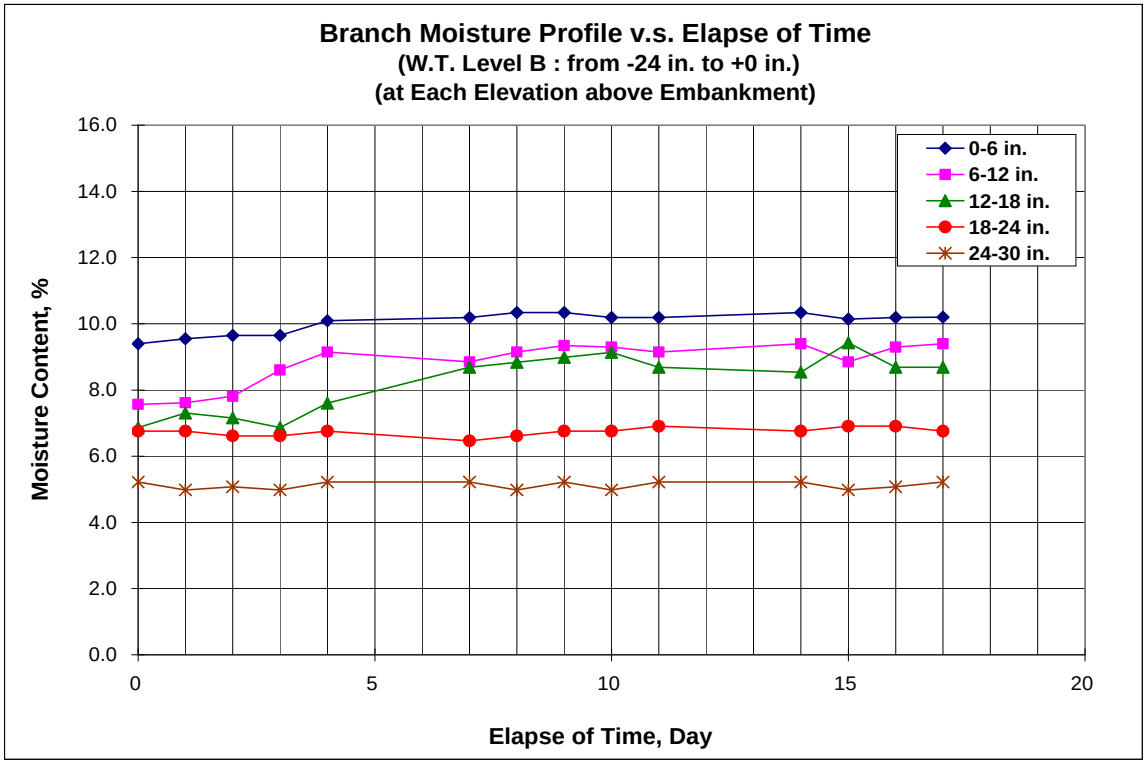


Figure E.60 Moisture Profile versus Time for Branch A-2-4 Soil (W.T. from -24 in. to 0 in. above Embankment)

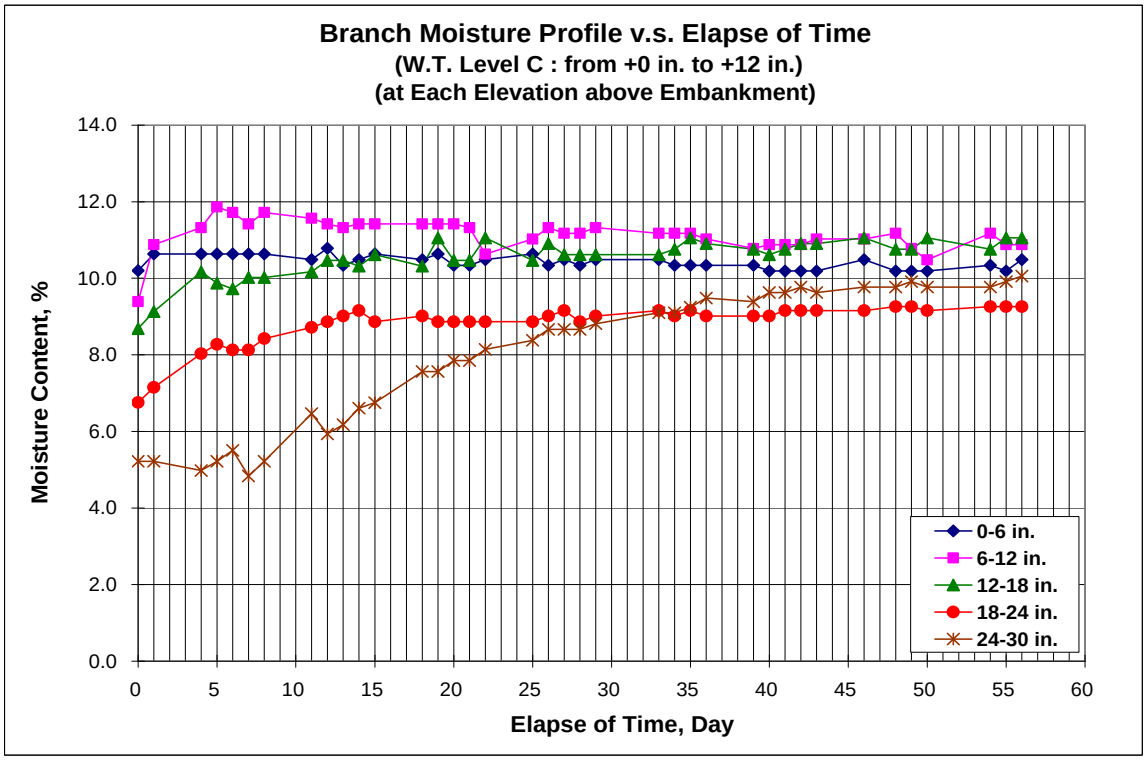


Figure E.61 Moisture Profile versus Time for Branch A-2-4 Soil (W.T. from +0 in. to +12 in. above Embankment)

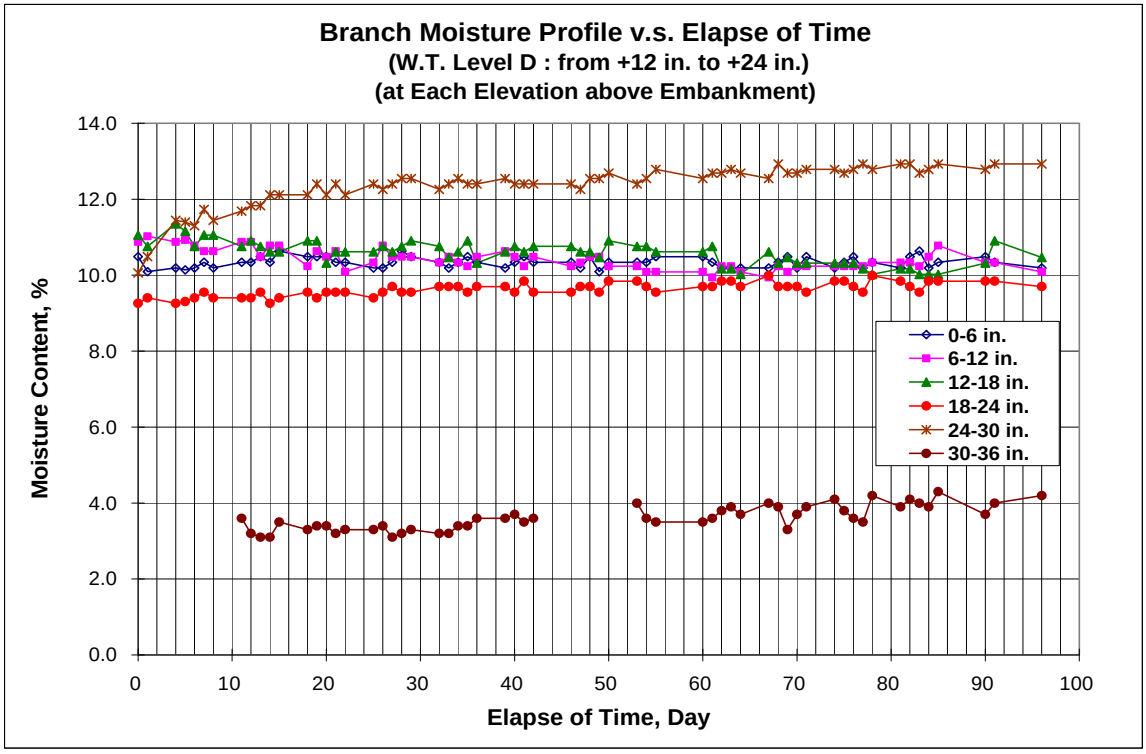


Figure E.62 Moisture Profile versus Time for Branch A-2-4 Soil (W.T. from +12 in. to +24 in. above Embankment)

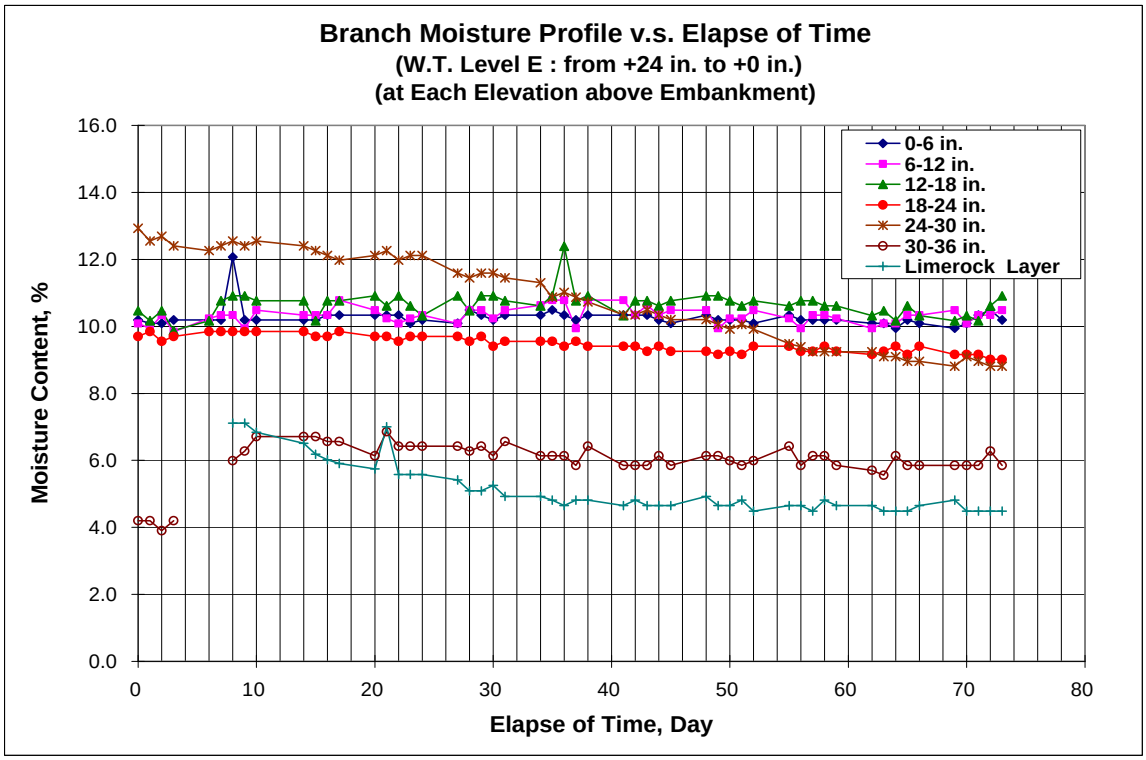


Figure E.63 Moisture Profile versus Time for Branch A-2-4 Soil (W.T. from +24 in. to 0 in. above Embankment)

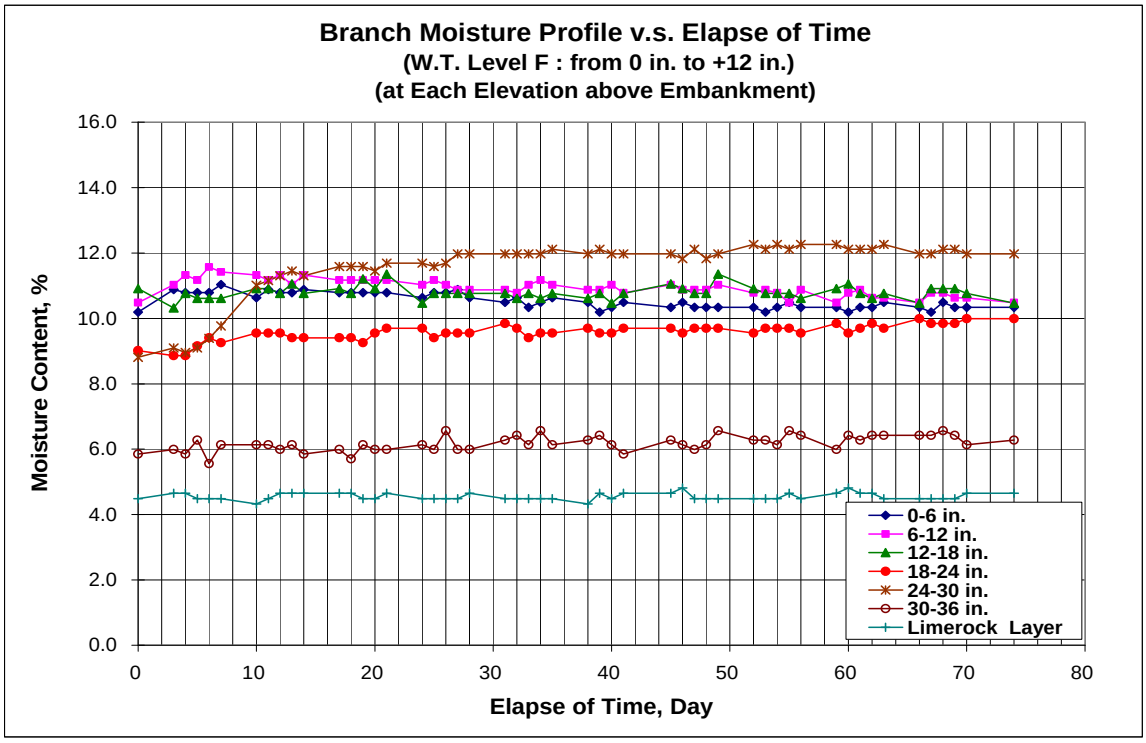


Figure E.64 Moisture Profile versus Time for Branch A-2-4 Soil (W.T. from 0 in. to +12 in. above Embankment, Reflood)

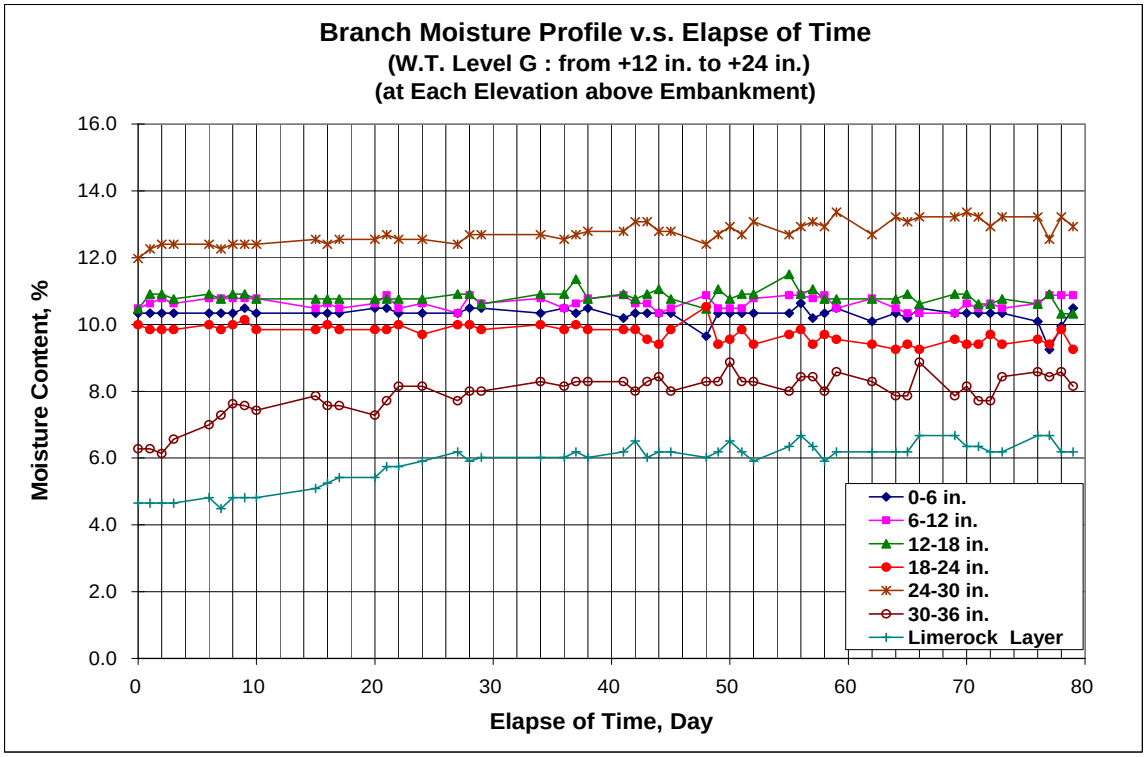


Figure E.65 Moisture Profile versus Time for Branch A-2-4 Soil (W.T. from +12 in. to +24 in. above Embankment, Reflood)

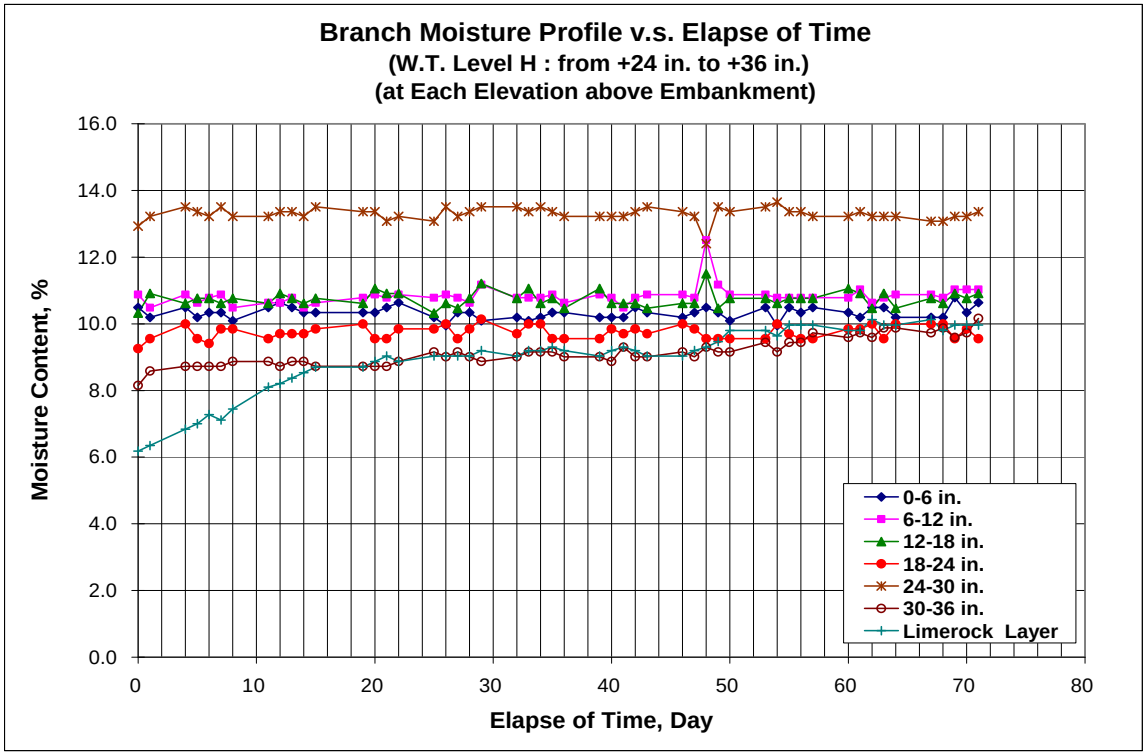


Figure E.66 Moisture Profile versus Time for Branch A-2-4 Soil (W.T. from +24 in. to +36 in. above Embankment)

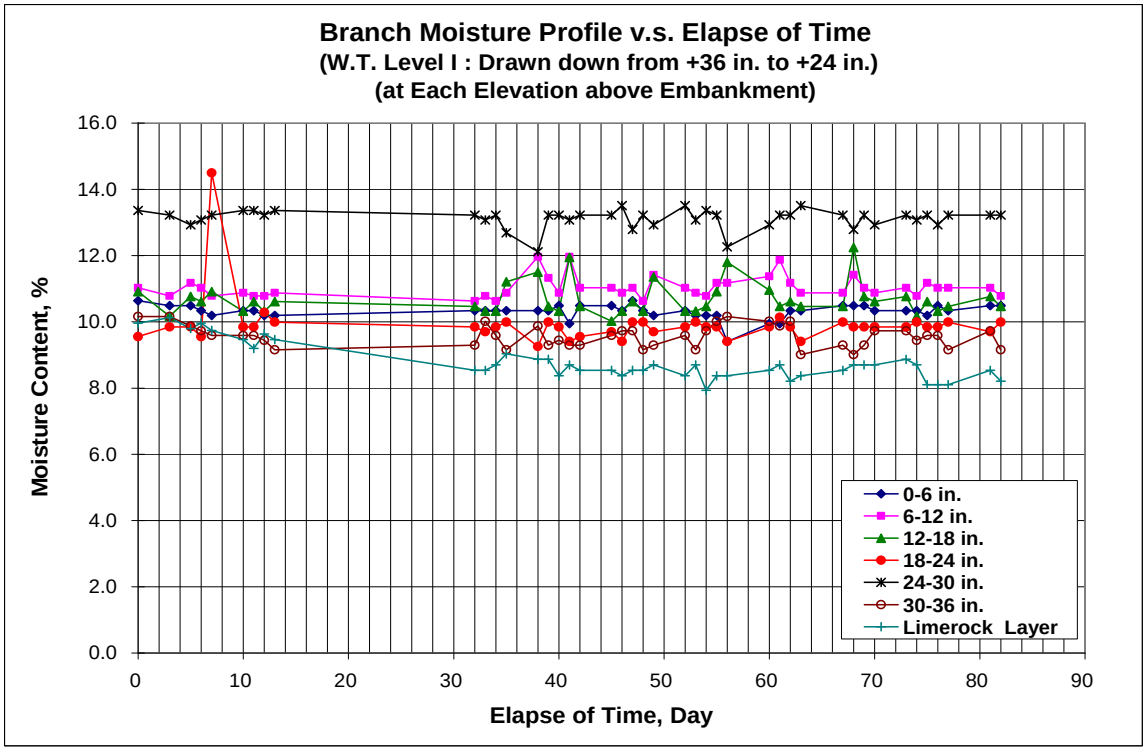


Figure E.67 Moisture Profile versus Time for Branch A-2-4 Soil (W.T. from +36 in. to +24 in. above Embankment)

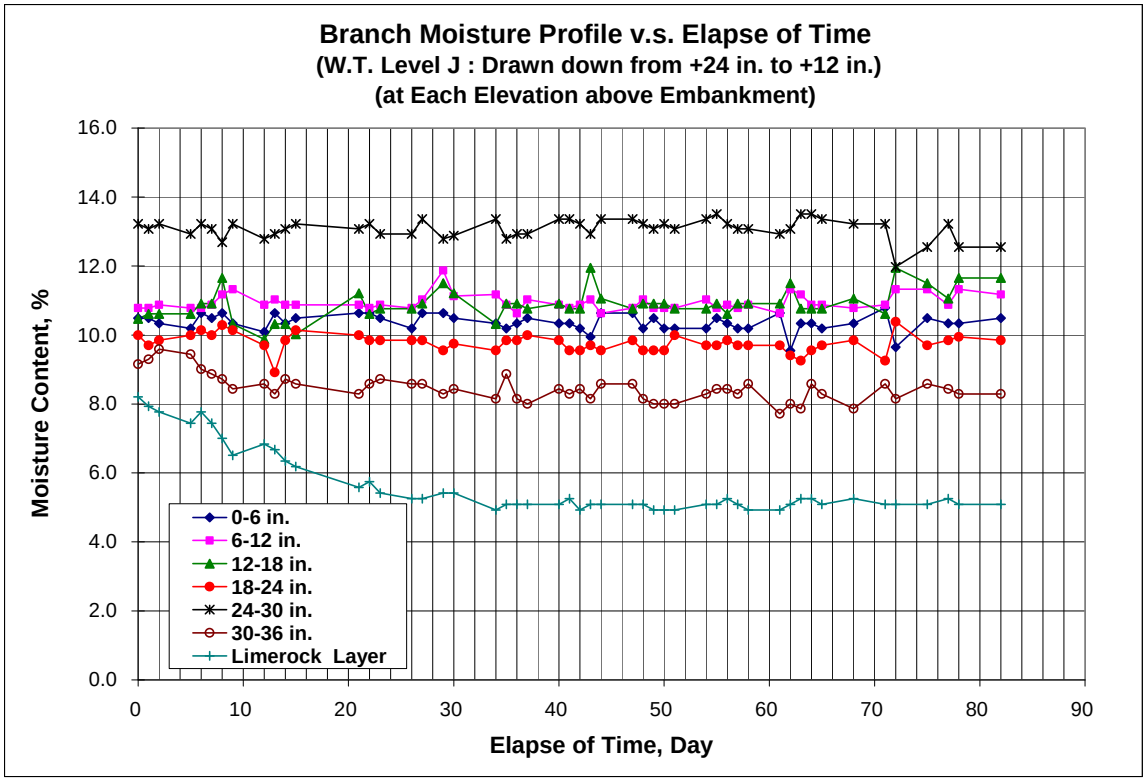


Figure E.68 Moisture Profile versus Time for Branch A-2-4 Soil (W.T. from +24 in. to +12 in. above Embankment)

E.11 Iron Bridge A-2-6, 31% Soil

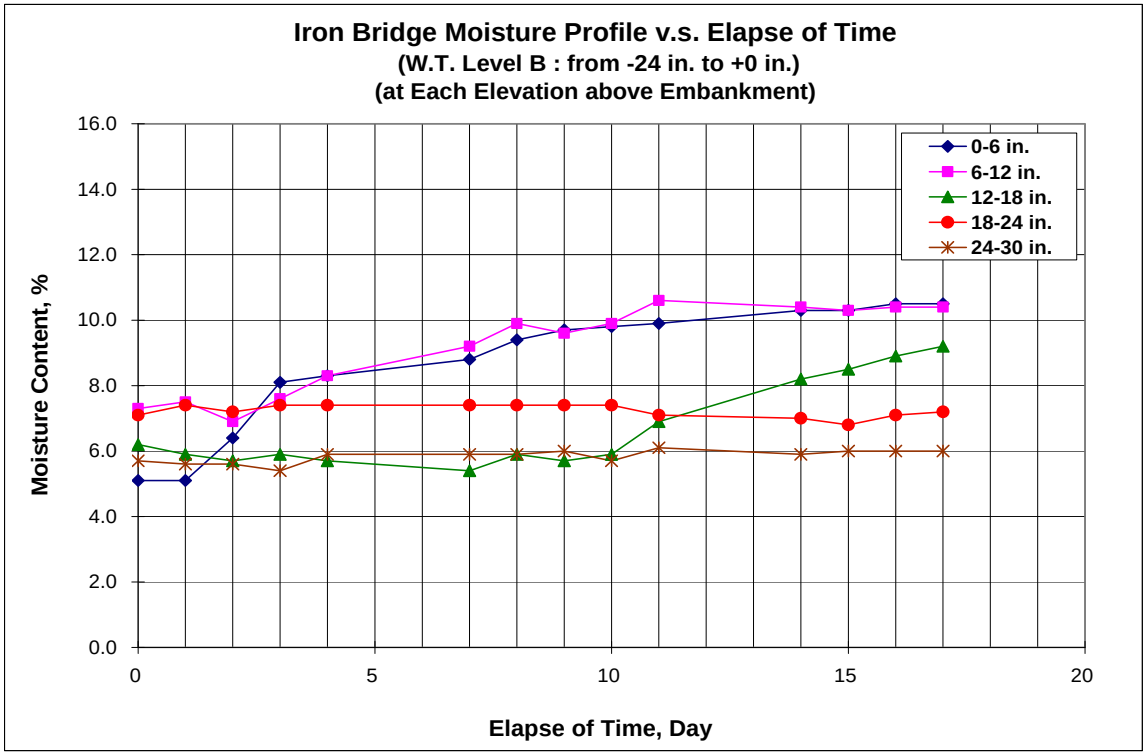


Figure E.69 Moisture Profile versus Time for Iron Bridge A-2-6 Soil (W.T. from -24 in. to 0 in. above Embankment)

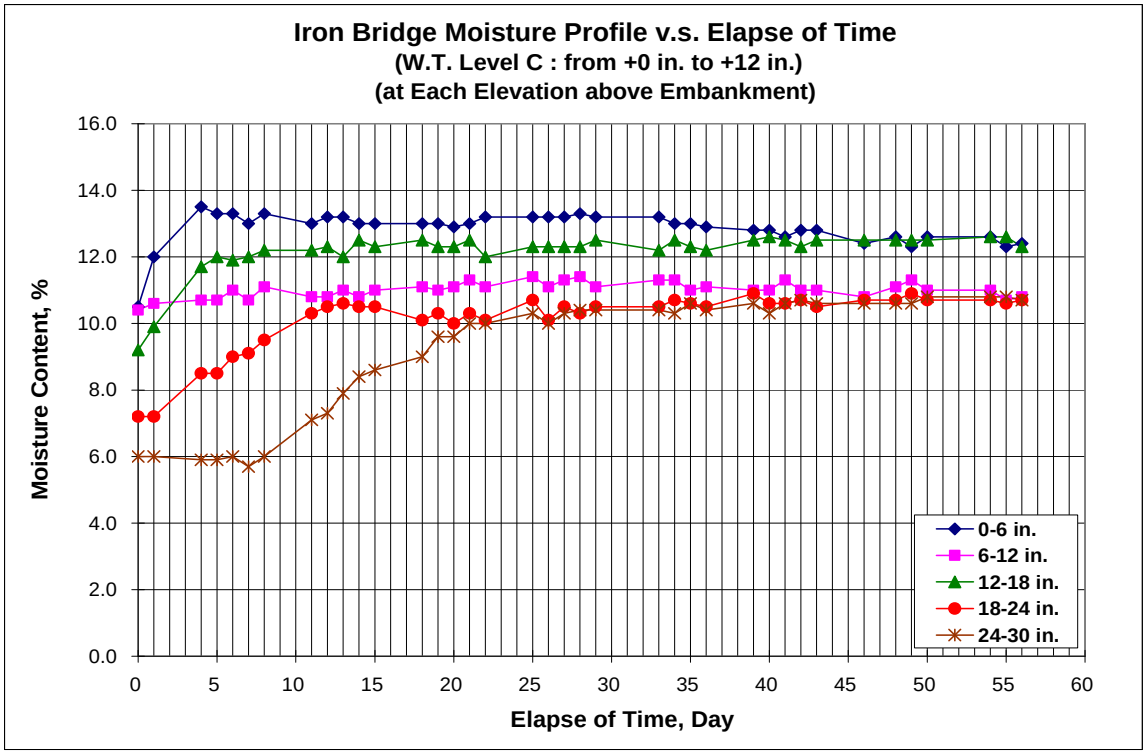


Figure E.70 Moisture Profile versus Time for Iron Bridge A-2-6 Soil (W.T. from +0 in. to +12 in. above Embankment)

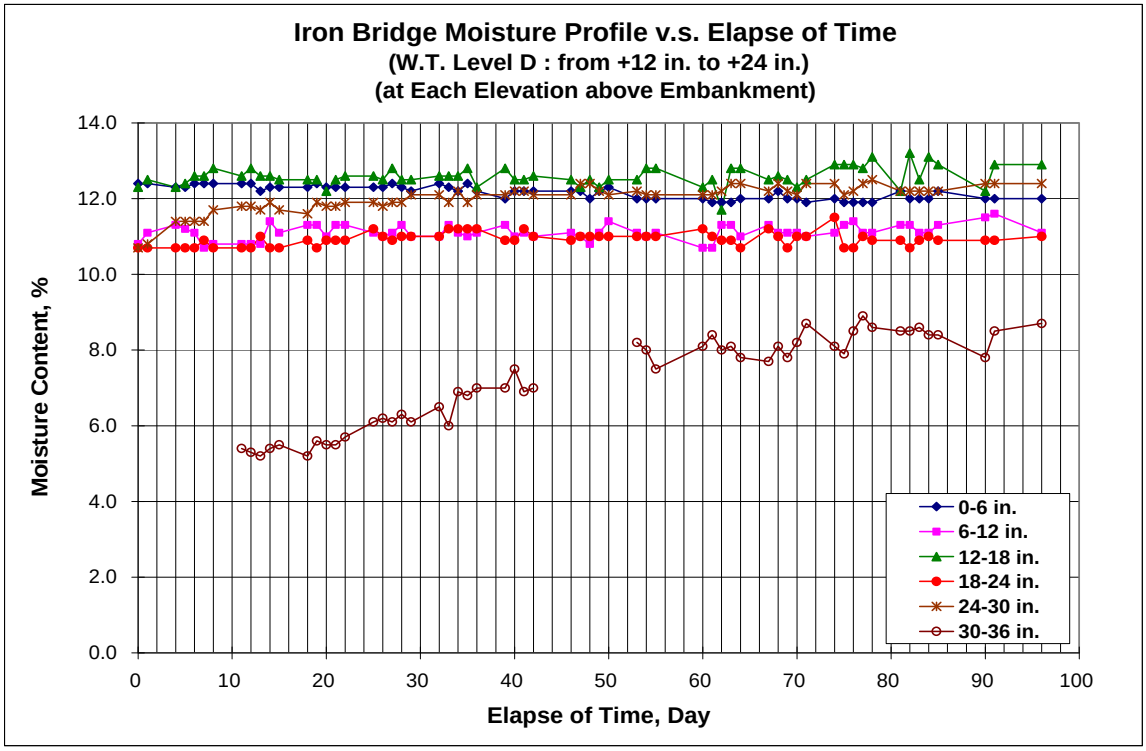


Figure E.71 Moisture Profile versus Time for Iron Bridge A-2-6 Soil (W.T. from +12 in. to +24 in. above Embankment)

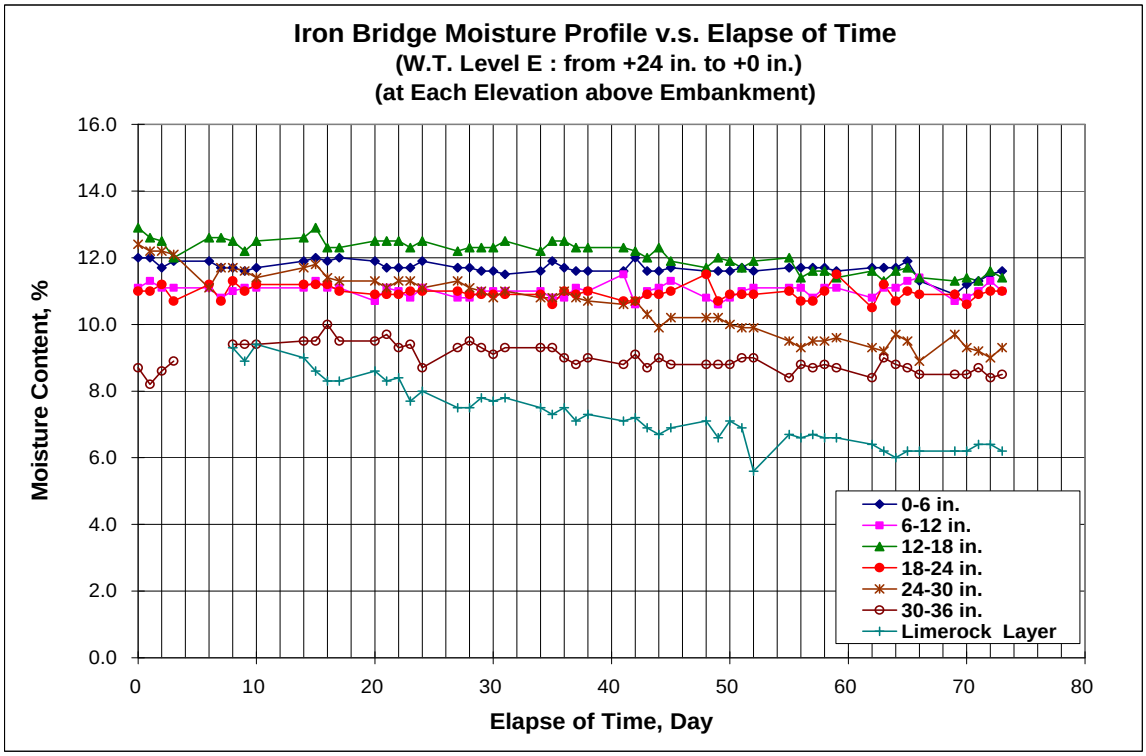


Figure E.72 Moisture Profile versus Time for Iron Bridge A-2-6 Soil (W.T. from +24 in. to 0 in. above Embankment)

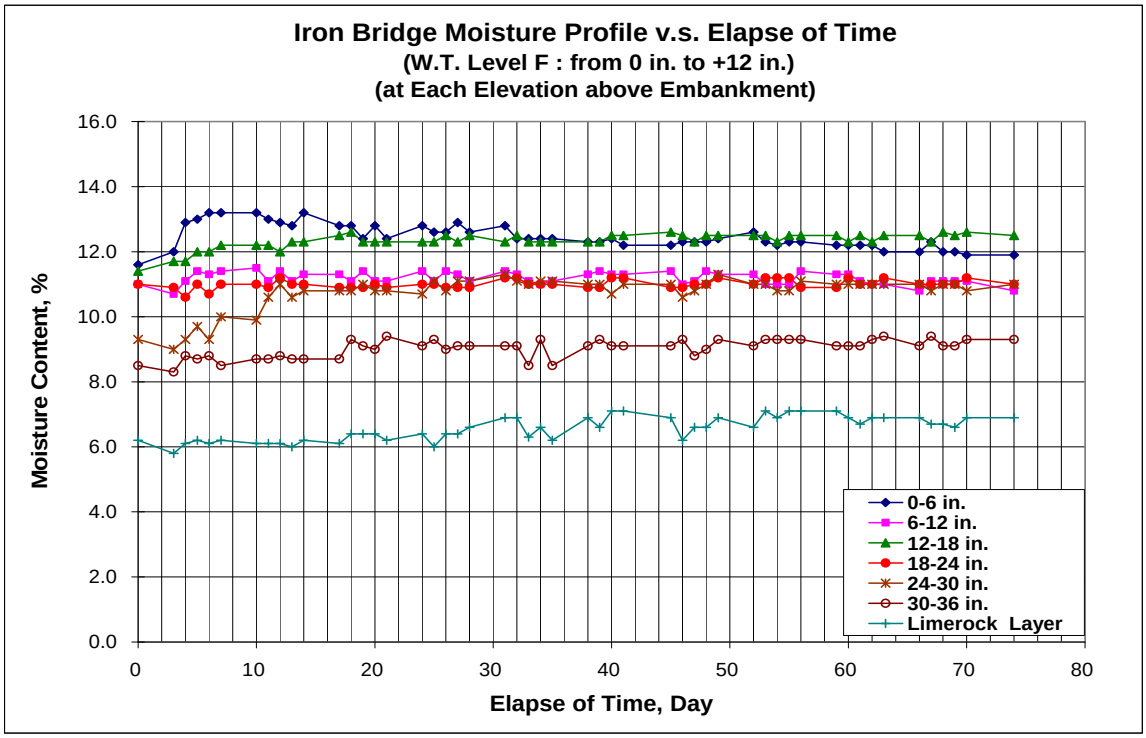


Figure E.73 Moisture Profile versus Time for Iron Bridge A-2-6 Soil (W.T. from 0 in. to +12 in. above Embankment, Reflood)

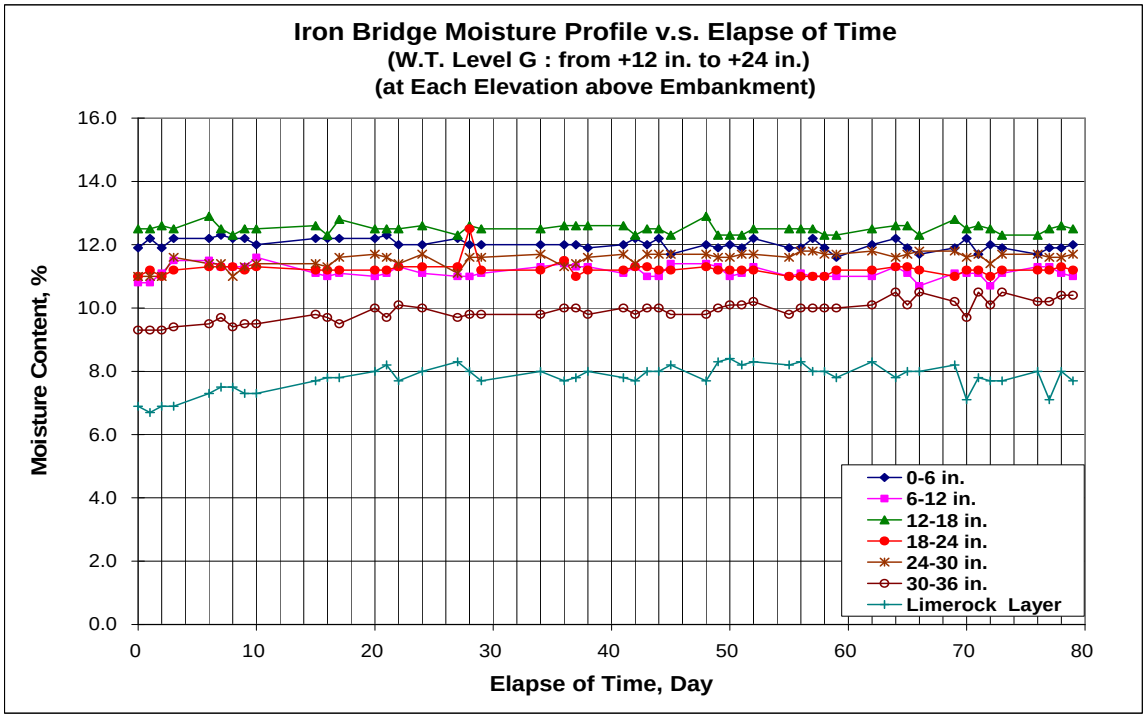


Figure E.74 Moisture Profile versus Time for Iron Bridge A-2-6 Soil (W.T. from +12 in. to +24 in. above Embankment, Reflood)

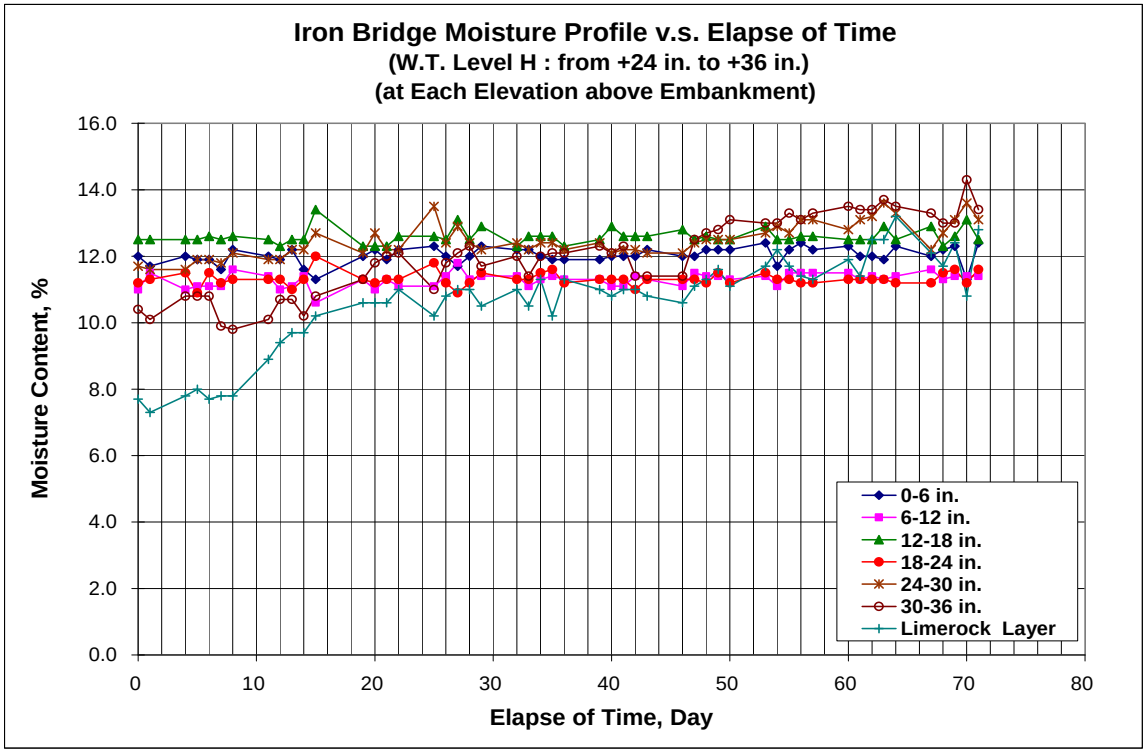


Figure E.75 Moisture Profile versus Time for Iron Bridge A-2-6 Soil (W.T. from +24 in. to +36 in. above Embankment)

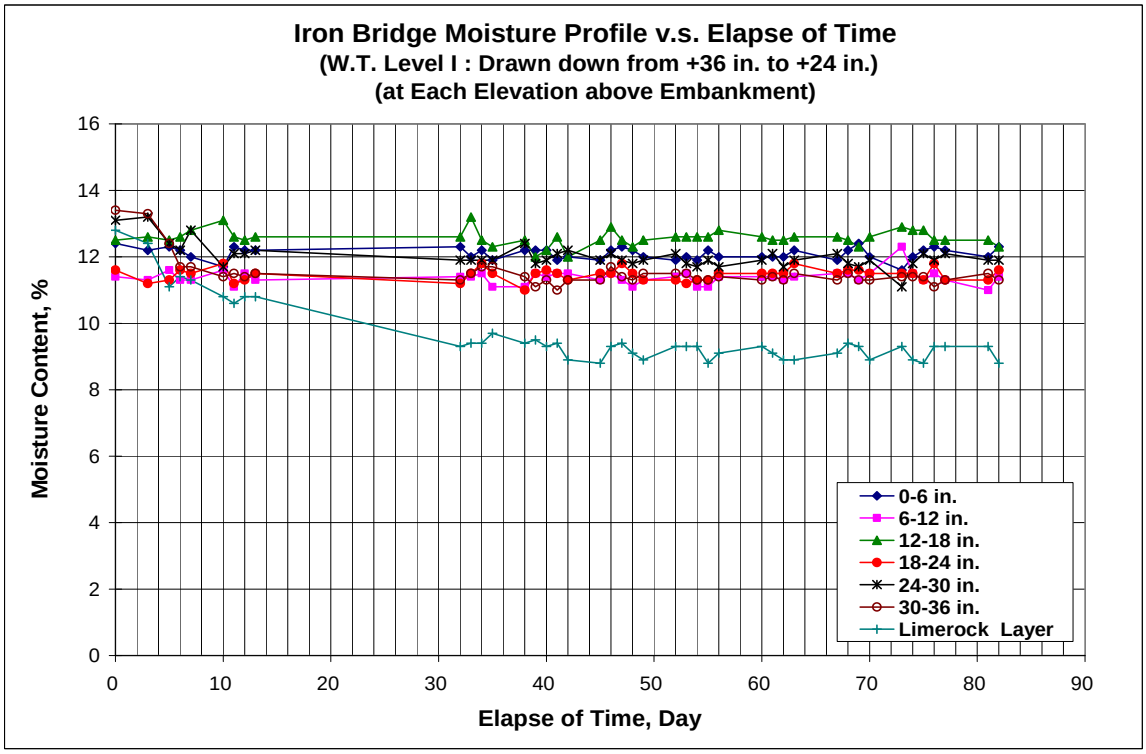


Figure E.76 Moisture Profile versus Time for Iron Bridge A-2-6 Soil (W.T. from +36 in. to +24 in. above Embankment)

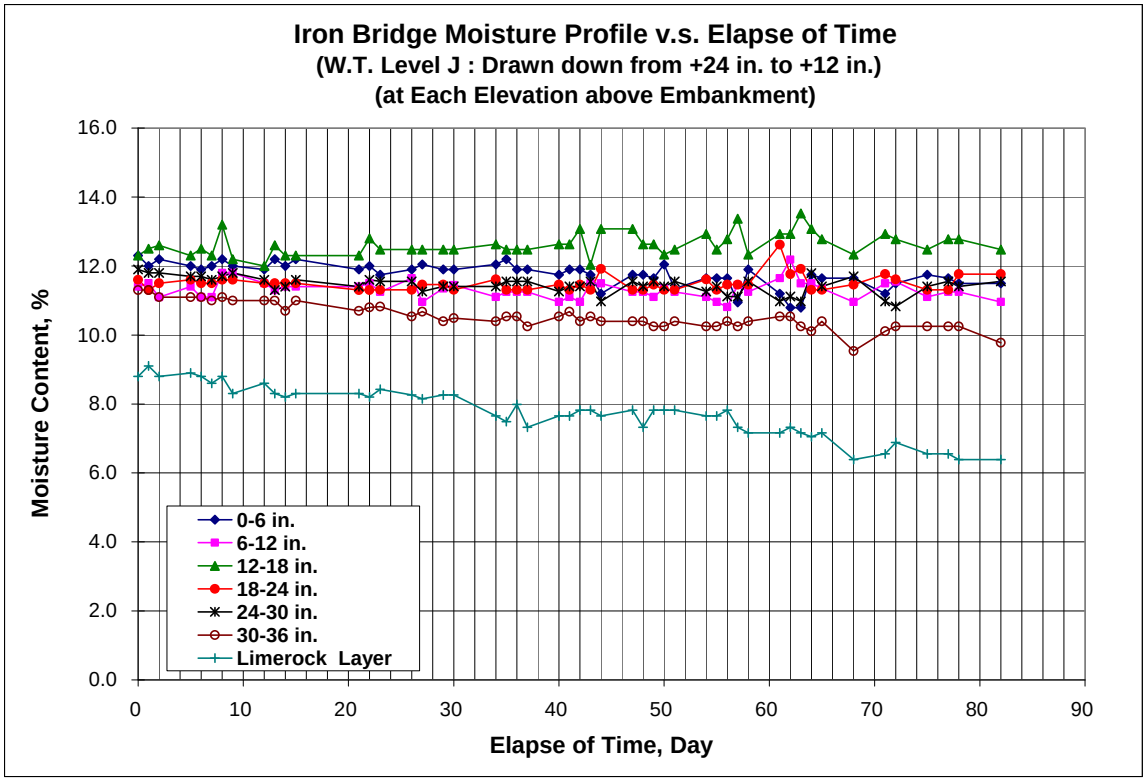


Figure E.77 Moisture Profile versus Time for Iron Bridge A-2-6 Soil (W.T. from +24 in. to +12 in. above Embankment)

APPENDIX F

DEFORMATION DATA IN PLATE LOAD TEST

F.1 Levy County A-3, 4% Soil

Table F.1 Levy County A-3 Soil Plate Load Test, 20 psi w/o Limerock

Deformation at Drained Condition (-20 in.), Test 1-1			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.1721	0.3599	0.1879
4	0.2503	0.4608	0.2105
5	0.2875	0.4880	0.2004
10	0.3777	0.5676	0.1899
25	0.5125	0.6954	0.1829
50	0.6254	0.8039	0.1785
100	0.7475	0.9234	0.1759
200	0.8892	1.0647	0.1755
500	1.1378	1.3133	0.1755
1000	1.3168	1.4892	0.1724
2000	1.5255	1.6962	0.1707
5000	1.7185	1.8918	0.1733
10000	1.8857	2.0533	0.1676
15000	2.0253	2.1894	0.1641
20000	2.1246	2.2865	0.1619
25000	2.2086	2.3710	0.1624
30000	2.2795	2.4388	0.1593

Deformation with W.T. at 0.0 in., Test 1-2			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.1528	0.3090	0.1562
4	0.2066	0.3580	0.1514
5	0.2258	0.3733	0.1475
10	0.3252	0.4477	0.1225
25	0.4788	0.6057	0.1269
50	0.6144	0.7444	0.1300
100	0.7698	0.9531	0.1834
200	0.9216	1.1221	0.2004
1000	1.2940	1.4980	0.2039
2000	1.4516	1.6699	0.2184
10000	1.8839	2.0927	0.2087
25000	2.1972	2.3902	0.1930
30000			

Deformation with W.T. at +12 in., Test 1-3			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.0591	0.2683	0.2092
4	0.0591	0.2814	0.2223
5	0.0569	0.2797	0.2227
10	0.0652	0.2889	0.2236
25	0.0714	0.2902	0.2188
50	0.0775	0.2906	0.2131
100	0.0845	0.3002	0.2157
200	0.0906	0.3059	0.2153
500	0.1016	0.3199	0.2184
1000	0.1278	0.3514	0.2236
2000	0.1585	0.3860	0.2276
5000	0.2398	0.4648	0.2249
30000	0.6626	0.8831	0.2206

Table F.2 Levy County A-3 Soil Plate Load Test, 20 psi w/ Limerock

Deformation with W.T. at +12 in., Test 1-4				Deformation with W.T. at +36 in., Test 1-7			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)	Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.1261	0.2757	0.1497	1	0.0686	0.2614	0.1928
4				4	0.0912	0.2496	0.1585
5				5	0.0855	0.2572	0.1718
10				10	0.0984	0.2865	0.1882
25				25	0.1133	0.3049	0.1917
50				50	0.1371	0.3286	0.1915
100				100	0.1785	0.3819	0.2035
200	0.3689	0.5090	0.1400	200	0.2347	0.4388	0.2041
500	0.3969	0.5418	0.1448	500	0.3349	0.5329	0.1980
1000	0.4258	0.5685	0.1427	1000	0.4207	0.6161	0.1954
2000	0.4451	0.5899	0.1448	2000	0.5180	0.7112	0.1932
5000	0.5037	0.6490	0.1453	5000	0.6373	0.8268	0.1895
10000	0.5895	0.7203	0.1308	10000	0.7869	0.9683	0.1814
15000	0.6543	0.7807	0.1265	15000	0.8815	1.0561	0.1746
20000	0.6971	0.8267	0.1295	20000	0.9655	1.1335	0.1680
25000	0.7348	0.8612	0.1265	25000	1.0309	1.1957	0.1648
30000	0.7628	0.8906	0.1278	30000	1.0839	1.2491	0.1652

Table F.3 Levy County A-3 Soil Plate Load Test, 50 psi w/ Limerock

Deformation with W.T. at +12 in., Test 1-5				Deformation with W.T. at +36 in., Test 1-6			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)	Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.9278	1.2730	0.3453	1	0.1740	0.4915	0.3175
4	1.1417	1.4227	0.2809	4	0.2096	0.5652	0.3556
5	1.1623	1.4682	0.3059	5	0.2311	0.5817	0.3505
10	1.2656	1.5807	0.3151	10	0.3073	0.6426	0.3353
25	1.4231	1.7281	0.3050	25	0.4483	0.7887	0.3404
50	1.5540	1.8634	0.3094	50	0.5779	0.9347	0.3569
100	1.6905	2.0113	0.3208	100	0.7595	1.1138	0.3543
200	1.8222	2.1242	0.3019	200	0.9792	1.3538	0.3747
500	1.9609	2.2598	0.2989	500	1.4961	1.8631	0.3670
1000	2.0638	2.3684	0.3046	1000	1.9660	2.3711	0.4051
2000	2.1513	2.4603	0.3089	2000	2.7038	3.0963	0.3924
5000	2.2813	2.5828	0.3015	5000	3.6932	4.1021	0.4089
10000	2.4139	2.7027	0.2888	10000	4.7396	5.1321	0.3924
15000	2.5115	2.7828	0.2713	15000	5.5372	5.9055	0.3683
20000	2.5780	2.8598	0.2818	20000	6.1709	6.5367	0.3658
25000	2.6432	2.9171	0.2739	25000	6.6853	7.0498	0.3645
30000	2.7071	2.9661	0.2591	30000	7.1158	7.4740	0.3581

Table F.4 Summary of Deformation for Levy County A-3 Soil Plate Load Test

Resilient Deformation (in.) for Levy County A-3 Soil							
Test No.	1-1	1-2	1-3	1-4	1-5	1-6	1-7
Test Date	12/30/1998	2/5/1999	2/26/1999	3/23/1999	3/24/1999	3/31/1999	4/1/1999
Loads (psi)	20	20	20	20	50	50	20
Limerock Layer	No	No	No	Yes	Yes	Yes	Yes
No.of Plate Load Cycles	Water Table (in. above Embankment)						
	-20	0	12	12	12	36	36
1	0.00740	0.00615	0.00824	0.00589	0.01359	0.01250	0.00759
4	0.00829	0.00596	0.00875		0.01106	0.01400	0.00624
5	0.00789	0.00581	0.00877		0.01204	0.01380	0.00676
10	0.00748	0.00482	0.00880		0.01240	0.01320	0.00741
25	0.00720	0.00500	0.00861		0.01201	0.01340	0.00755
50	0.00703	0.00512	0.00839		0.01218	0.01405	0.00754
100	0.00693	0.00722	0.00849		0.01263	0.01395	0.00801
200	0.00691	0.00789	0.00848	0.00551	0.01189	0.01475	0.00804
500	0.00691		0.00860	0.00570	0.01177	0.01445	0.00780
1000	0.00679	0.00803	0.00880	0.00562	0.01199	0.01595	0.00769
2000	0.00672	0.00860	0.00896	0.00570	0.01216	0.01545	0.00761
5000	0.00682		0.00886	0.00572	0.01187	0.01610	0.00746
10000	0.00660	0.00822		0.00515	0.01137	0.01545	0.00714
15000	0.00646			0.00498	0.01068	0.01450	0.00687
20000	0.00637			0.00510	0.01110	0.01440	0.00662
25000	0.00639	0.00760		0.00498	0.01079	0.01435	0.00649
30000	0.00627		0.00868	0.00503	0.01020	0.01410	0.00650

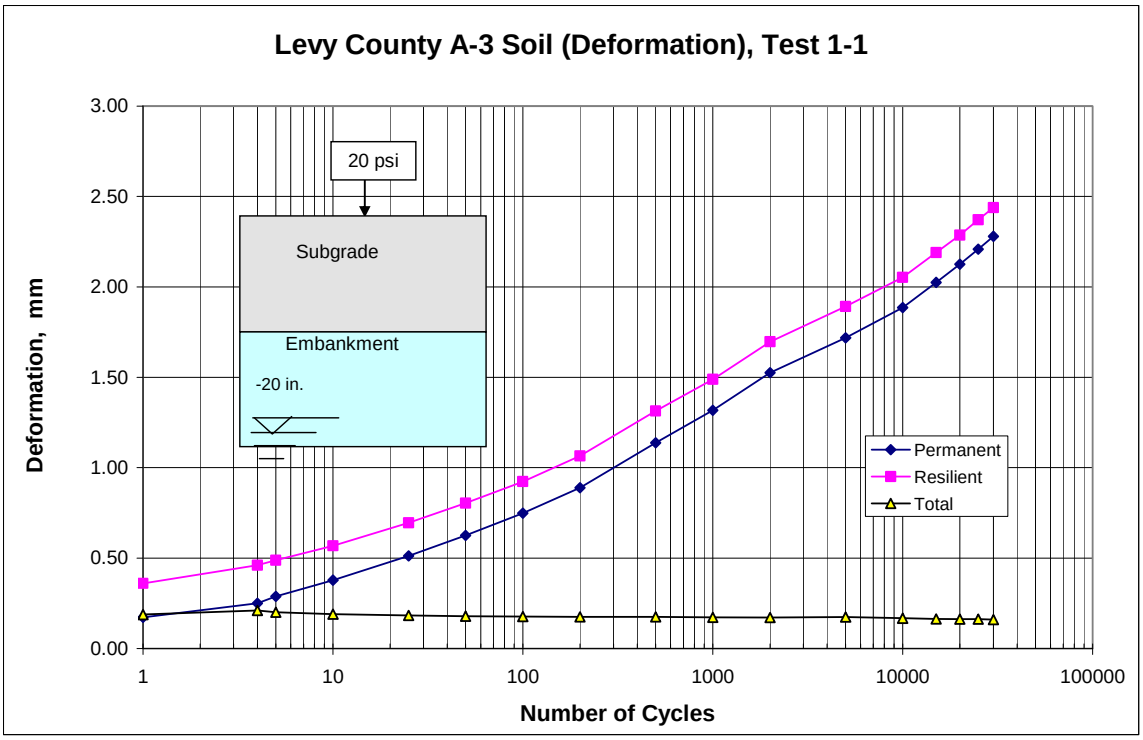


Figure F.1 Levy County A-3 Soil, Deformation under 20 psi Plate Load (Water Table at -20 in., without Limerock, Test 1-1)

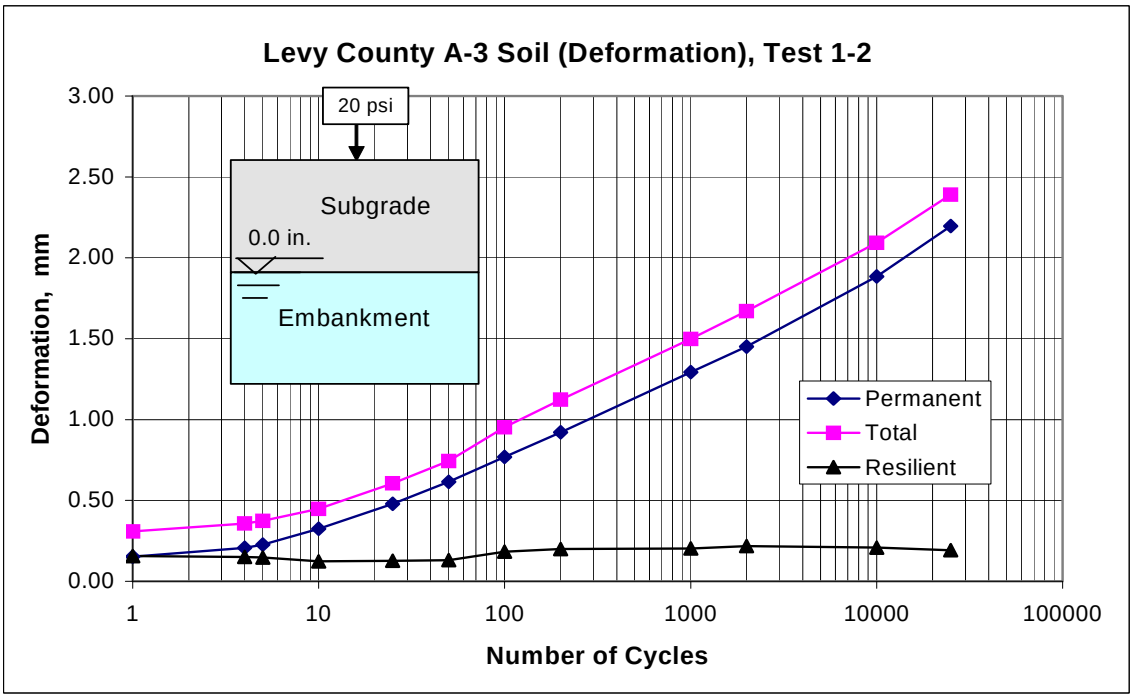


Figure F.2 Levy County A-3 Soil, Deformation under 20 psi Plate Load (Water Table at 0.0 in., without Limerock, Test 1-2)

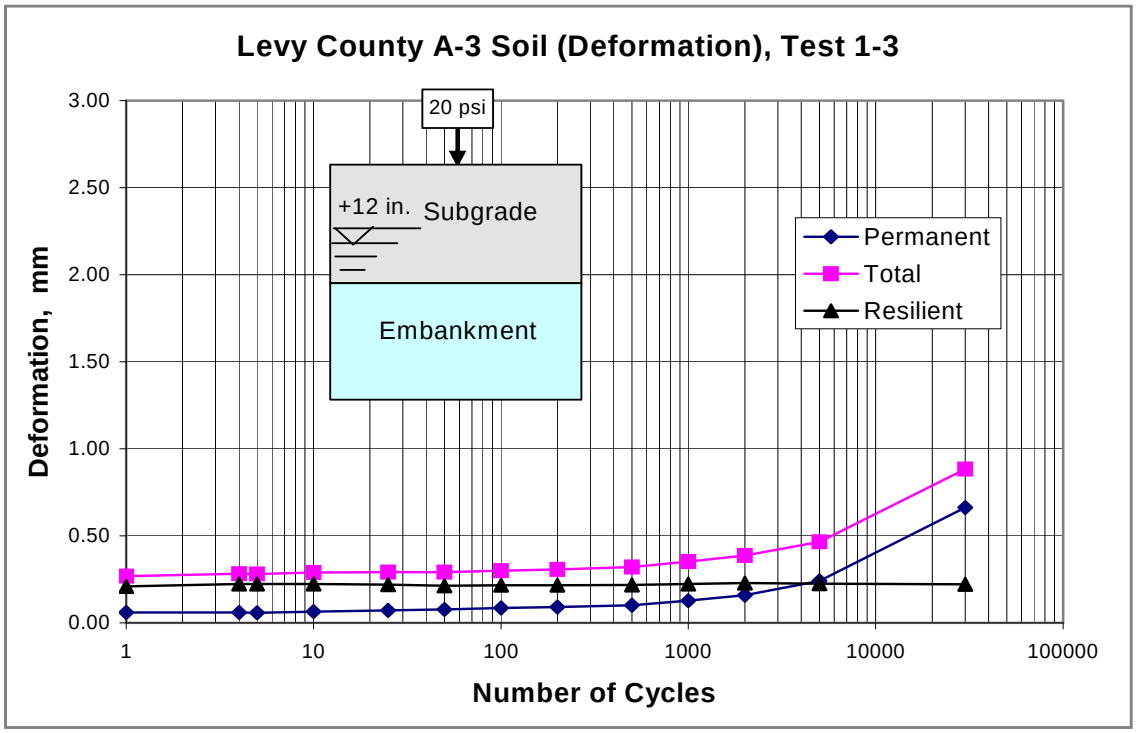


Figure F.3 Levy County A-3 Soil, Deformation under 20 psi Plate Load (Water Table at 12 in., without Limerock, Test 1-3)

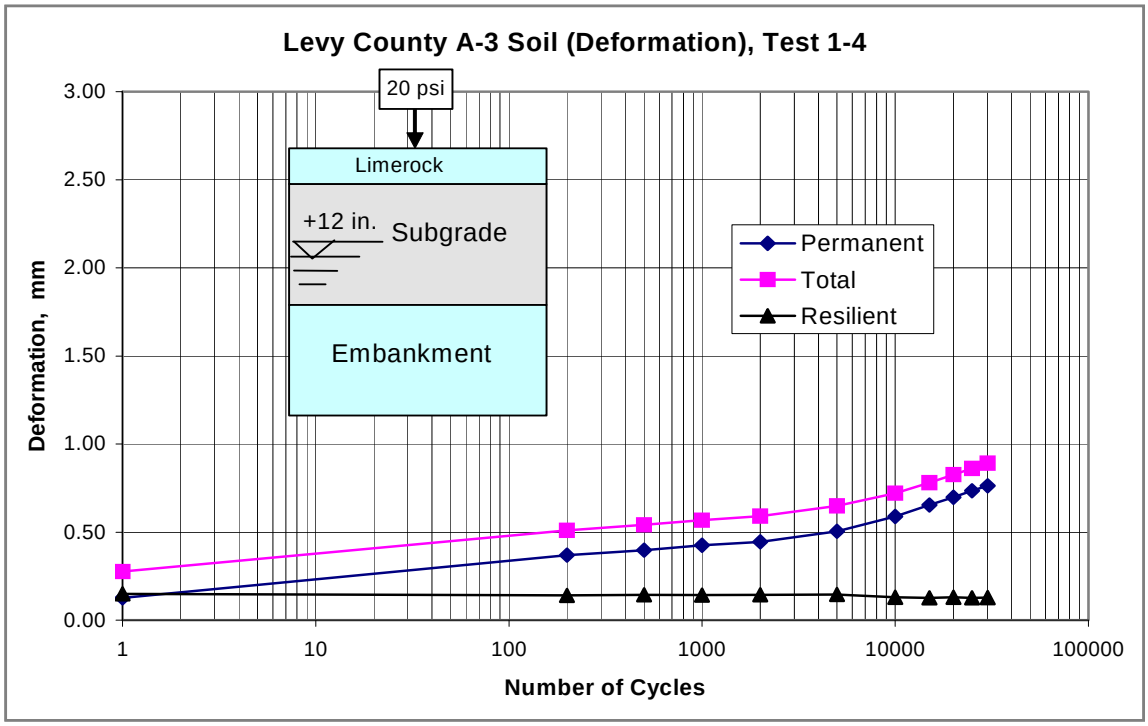


Figure F.4 Levy County A-3 Soil, Deformation under 20 psi Plate Load (Water Table at 12 in., with Limerock, Test 1-4)

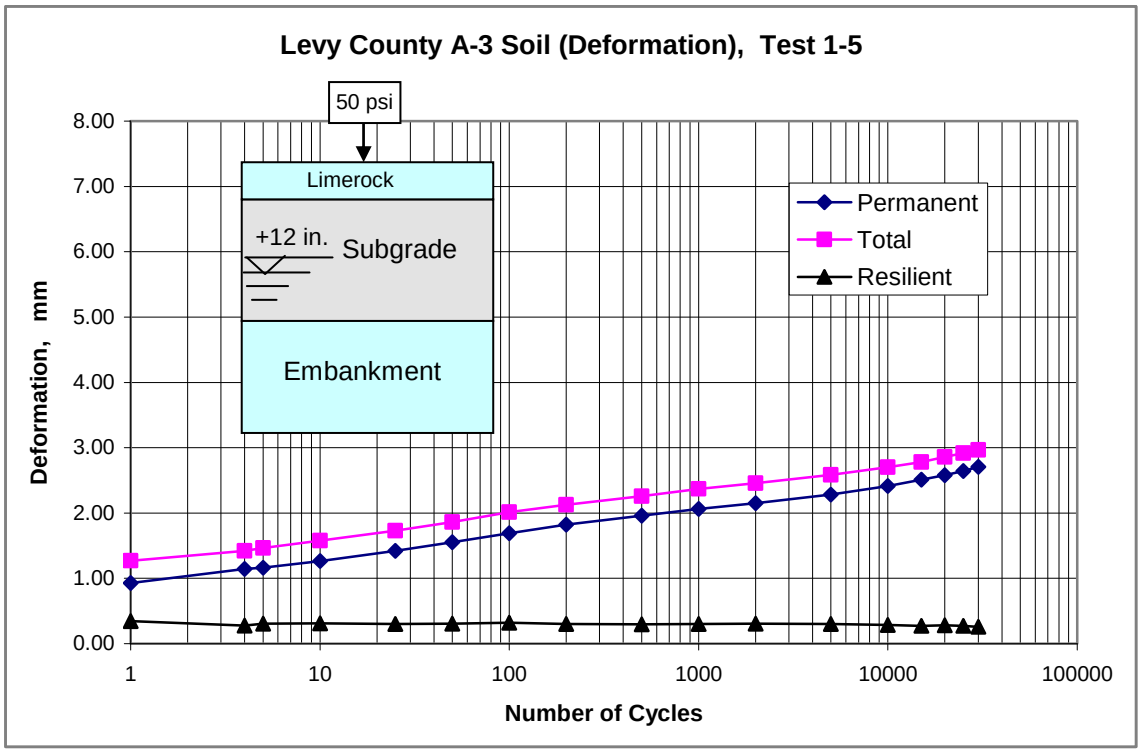


Figure F.5 Levy County A-3 Soil, Deformation under 20 psi Plate Load (Water Table at 36 in., with Limerock, Test 1-5)

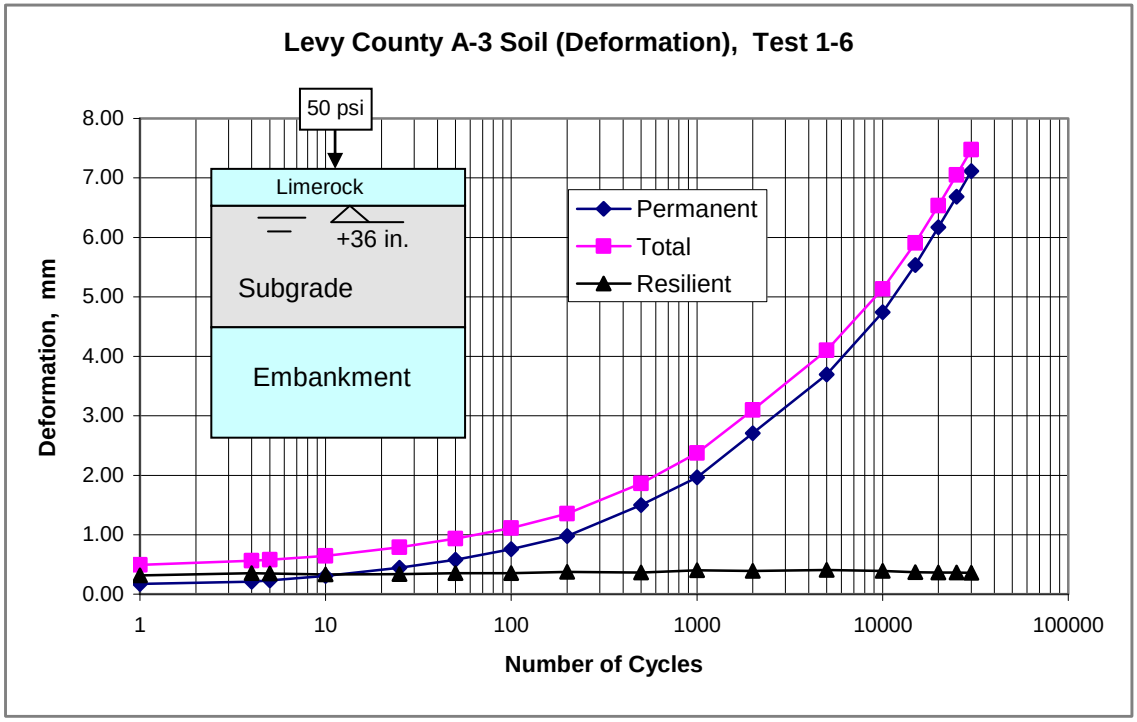


Figure F.6 Levy County A-3 Soil, Deformation under 50 psi Plate Load (Water Table at 36 in., with Limerock, Test 1-6)

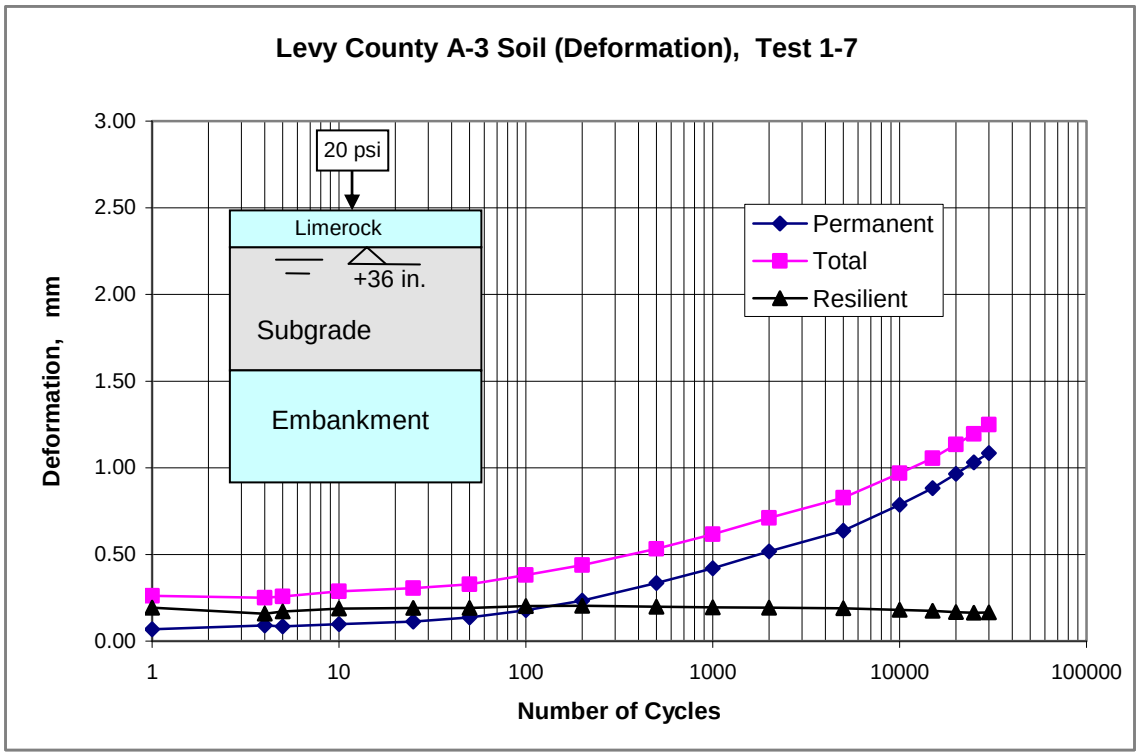


Figure F.7 Levy County A-3 Soil, Deformation under 50 psi Plate Load (Water Table at 36 in., with Limerock, Test 1-7)

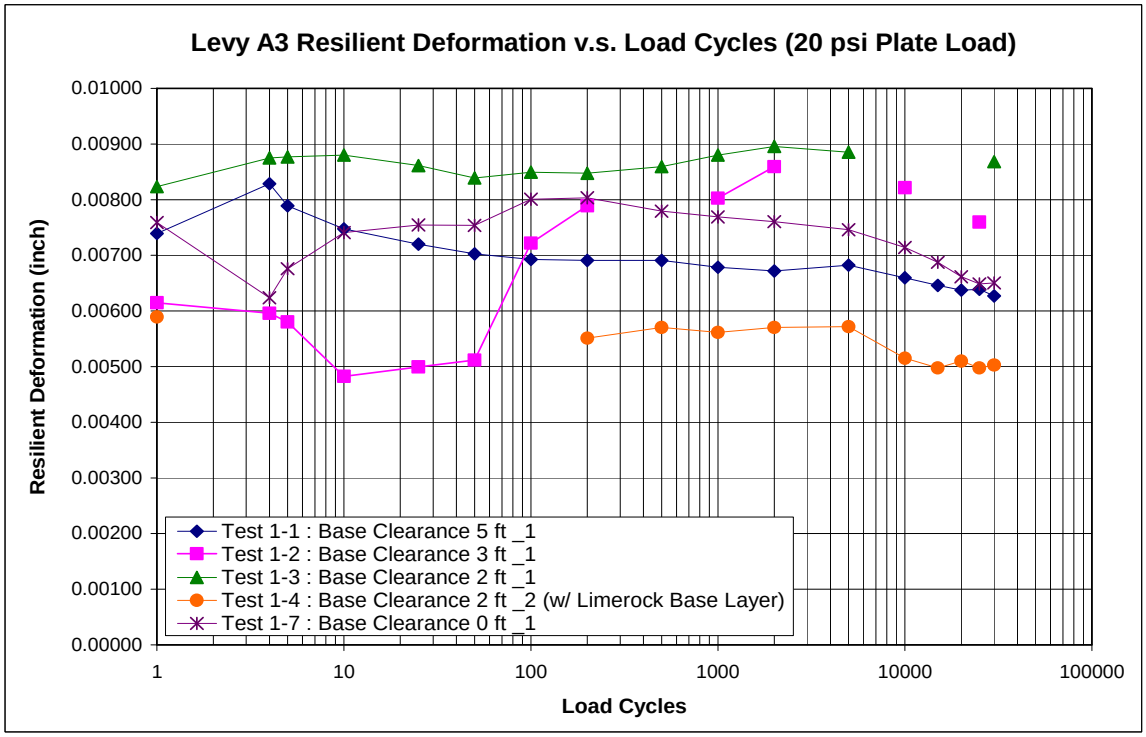


Figure F.8 Levy County A-3 Soil, Deformation Summary under 20 psi Plate Load at Different Water Table Level

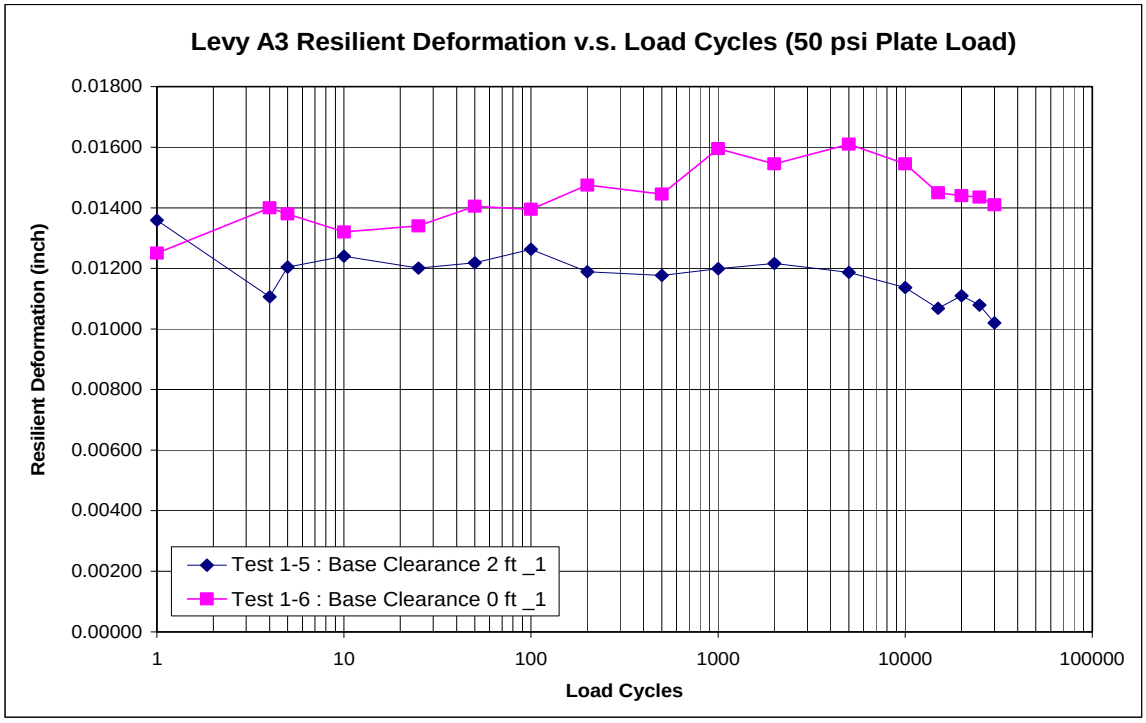


Figure F.9 Levy County A-3 Soil, Deformation Summary under 50 psi Plate Load at Different Water Table Level

F.2 SR70 A-3, 8% Soil

Table F.5 SR-70 A-3 Soil Plate Load Test, 20 psi w/o Limerock

Deformation with W.T. at 0.0 in., Test 2-1				Deformation with W.T. at 12.0 in., Test 2-2			
Load Cycles	Permanent	Total	Resilient	Load Cycles	Permanent	Total	Resilient
	mm	mm	mm		mm	mm	mm
1	0.8044	0.9711	0.1667	1	0.4039	0.6858	0.2819
4	1.0538	1.2754	0.2216	4	0.5690	0.7976	0.2286
5	1.0936	1.3213	0.2277	5	0.6020	0.8407	0.2388
10	1.2406	1.4546	0.2140	10	0.7264	0.9550	0.2286
25	1.4695	1.6629	0.1934	25	0.9144	1.1125	0.1981
50	1.6559	1.8380	0.1820	50	1.0516	1.2243	0.1727
100	1.7845	1.9600	0.1755	100	1.1862	1.3411	0.1549
200	1.9999	2.1832	0.1834	200	1.3056	1.4707	0.1626
500	2.1815	2.3583	0.1768	500	1.4376	1.5951	0.1600
1000	2.2861	2.4638	0.1777	1000	1.5138	1.6764	0.1651
2000	2.3675	2.5381	0.1707	2000	1.5748	1.7501	0.1727
5000	2.4458	2.6130	0.1672	5000	1.6637	1.8313	0.1676
10000	2.5097	2.6650	0.1553	10000	1.7297	1.8999	0.1702
15000	2.5583	2.6987	0.1405	15000	1.8390	2.0066	0.1702
20000	2.5915	2.7254	0.1339	20000	1.8923	2.0599	0.1651
25000	2.6186	2.7603	0.1417	25000	1.9431	2.1057	0.1626
				30000	1.9837	2.1463	0.1626

Table F.6 SR-70 A-3 Soil Plate Load Test, 50 psi w/Limerock

Deformation with W.T.at 12.0 in., Test 2-3				Deformation with W.T. at +36.0 in., Test 2-4			
Load Cycles	Permanent	Total	Resilient	Load Cycles	Permanent	Total	Resilient
	mm	mm	mm		mm	mm	mm
1	0.5766	0.8839	0.3073	1	0.1121	0.3786	0.2665
4	0.7061	0.9804	0.2718	4	0.1051	0.3457	0.2407
5	0.7239	0.9982	0.2743	5	0.1046	0.3523	0.2477
10	0.7823	1.0617	0.2794	10	0.1090	0.3624	0.2534
25	0.8788	1.1557	0.2769	25	0.1195	0.3681	0.2486
50	0.9677	1.2446	0.2769	50	0.1243	0.3803	0.2560
100	1.0541	1.3360	0.2819	100	0.1300	0.3873	0.2573
200	1.1455	1.4199	0.2718	200	0.1392	0.4044	0.2652
500	1.2522	1.5240	0.2718	500	0.1606	0.4328	0.2722
1000	1.3284	1.6027	0.2743	1000	0.1825	0.4687	0.2862
2000	1.4122	1.6866	0.2743	2000	0.2245	0.5230	0.2984
5000	1.5494	1.8186	0.2692	5000	0.3576	0.6512	0.2936
10000	1.6942	1.9507	0.2565	10000	0.5449	0.8525	0.3076
15000	1.8085	2.0549	0.2489	15000	0.7107	1.0249	0.3142
20000	1.9101	2.1514	0.2413	20000	0.8757	1.1930	0.3173
25000	2.0066	2.2403	0.2337	25000	1.0319	1.3509	0.3190
30000	2.0904	2.3190	0.2311	30000	1.1719	1.4940	0.3221

Table F.6 – Continued

Deformation with W.T. at +36.0 in., Test 2-5				Deformation with W.T. at +36.0 in., Test 2-8			
Load Cycles	Permanent	Total	Resilient	Load Cycles	Permanent	Total	Resilient
	mm	mm	mm		mm	mm	mm
1	0.7287	1.1299	0.4013	1	0.4175	0.7483	0.3308
4	1.0083	1.2153	0.2070	4	0.5182	0.8205	0.3024
5	1.0337	1.2525	0.2188	5	0.5304	0.8542	0.3238
10	1.1229	1.3658	0.2429	10	0.6022	0.9273	0.3251
25	1.2914	1.5448	0.2534	25	0.7195	1.0350	0.3155
50	1.4809	1.7373	0.2564	50	0.8153	1.1387	0.3234
100	1.6056	1.9561	0.3505	100	0.9107	1.2446	0.3339
200	1.7404	2.0839	0.3435	200	1.0118	1.3426	0.3308
500	1.9286	2.2721	0.3435	500	1.1347	1.4691	0.3343
1000	2.0861	2.4191	0.3330	1000	1.2284	1.5702	0.3418
2000	2.2611	2.5928	0.3317	2000	1.3444	1.6931	0.3488
5000	2.5447	2.8852	0.3405	5000	1.5290	1.8769	0.3479
10000	2.8239	3.1622	0.3383	10000	1.7189	2.0668	0.3479
15000	3.0571	3.3748	0.3177	15000	1.8585	2.2108	0.3523
20000	3.2374	3.5783	0.3409	20000	1.9911	2.3316	0.3405
25000	3.4274	3.7577	0.3304	25000	2.0927	2.4476	0.3549
30000	3.5862	3.9122	0.3260	30000	2.2078	2.5570	0.3492
Deformation with W.T. at -24.0 in., Test 2-6				Deformation with W.T. at -24.0 in., Test 2-7			
Load Cycles	Permanent	Total	Resilient	Load Cycles	Permanent	Total	Resilient
	mm	mm	mm		mm	mm	mm
1	0.1042	0.3055	0.2013	1	0.0884	0.2407	0.1523
4	0.1961	0.2788	0.0827	4	0.0819	0.2105	0.1287
5	0.1974	0.2880	0.0906	5	0.0827	0.2280	0.1453
10	0.2040	0.2967	0.0928	10	0.0902	0.2372	0.1470
25	0.2167	0.3059	0.0893	25	0.0981	0.2433	0.1453
50	0.2215	0.3103	0.0888	50	0.1007	0.2644	0.1637
100	0.2324	0.3208	0.0884	100	0.1108	0.2604	0.1497
200	0.2315	0.3506	0.1190	200	0.1125	0.2622	0.1497
500	0.2390	0.3650	0.1260	500	0.1090	0.2626	0.1536
1000	0.2447	0.3729	0.1282	1000	0.1033	0.2595	0.1562
2000	0.2460	0.3794	0.1335	2000	0.0968	0.2578	0.1610
5000	0.2464	0.3869	0.1405	5000	0.0928	0.2613	0.1685
10000	0.2517	0.3939	0.1422	10000	0.0994	0.2731	0.1737
15000	0.2482	0.3891	0.1409	15000	0.1055	0.2823	0.1768
20000	0.2517	0.3978	0.1462	20000	0.1151	0.2875	0.1724
25000	0.2574	0.4039	0.1466	25000	0.1248	0.3064	0.1816
30000	0.2622	0.4136	0.1514	30000	0.1331	0.3177	0.1847

Table F.7 Summary of Deformation for SR-70 A-3 Soil Plate Load Test

Resilient Deformation (in.) for SR70 A-3 Soil								
Test No.	2-1	2-2	2-3	2-4	2-5	2-6	2-7	2-8
Test Date	7/19/1999	8/25/1999	9/3/1999	9/29/1999	10/5/1999	12/29/1999	1/4/2000	2/2/2000
Loads (psi)	20	20	50	50	50	50	50	50
Limerock Layer	No	No	Yes	Yes	Yes	Yes	Yes	Yes
No.of Plate Load Cycles	Water Table (in. above Embankment)							
	0	12	12	36	36	-24	-24	36
1	0.00656	0.01110	0.01211	0.01049	0.01580	0.00793	0.00600	0.01302
4	0.00873	0.00899	0.01072	0.00948	0.00815	0.00326	0.00507	0.01190
5	0.00896	0.00941	0.01077	0.00975	0.00861	0.00357	0.00572	0.01275
10	0.00842	0.00896	0.01104	0.00998	0.00956	0.00365	0.00579	0.01280
25	0.00761	0.00780	0.01089	0.00979	0.00998	0.00351	0.00572	0.01242
50	0.00717	0.00681	0.01092	0.01008	0.01010	0.00350	0.00644	0.01273
100	0.00691	0.00606	0.01110	0.01013	0.01380	0.00348	0.00589	0.01315
200	0.00722	0.00644	0.01073	0.01044	0.01352	0.00469	0.00589	0.01302
500	0.00696	0.00627	0.01070	0.01072	0.01352	0.00496	0.00605	0.01316
1000	0.00699	0.00648	0.01080	0.01127	0.01311	0.00505	0.00615	0.01346
2000	0.00672	0.00684	0.01079	0.01175	0.01306	0.00525	0.00634	0.01373
5000	0.00658	0.00658	0.01065	0.01156	0.01340	0.00553	0.00663	0.01370
10000	0.00612	0.00674	0.01015	0.01211	0.01332	0.00560	0.00684	0.01370
15000	0.00553	0.00668	0.00977	0.01237	0.01251	0.00555	0.00696	0.01387
20000	0.00527	0.00653	0.00951	0.01249	0.01342	0.00575	0.00679	0.01340
25000	0.00558	0.00641	0.00920	0.01256	0.01301	0.00577	0.00715	0.01397
30000		0.00639	0.00910	0.01268	0.01284	0.00596	0.00727	0.01375

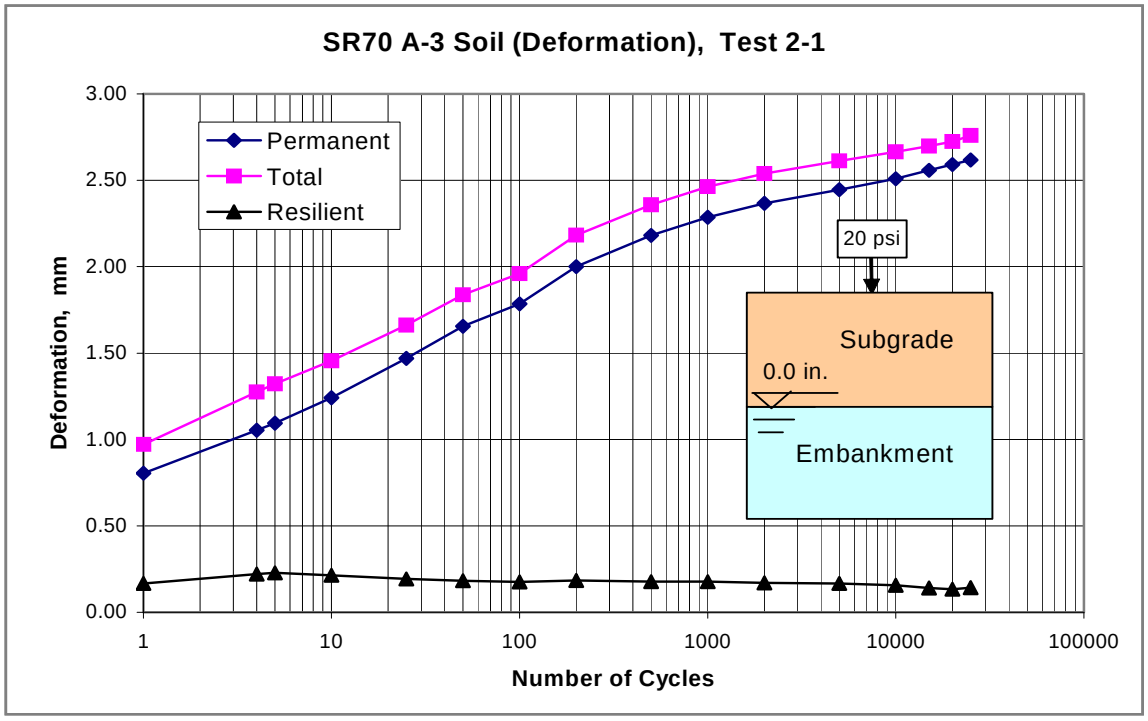


Figure F.10 SR-70 A-3 Soil, Deformation under 20 psi Plate Load (Water Table at 0.0 in., without Limerock, Test 2-1)

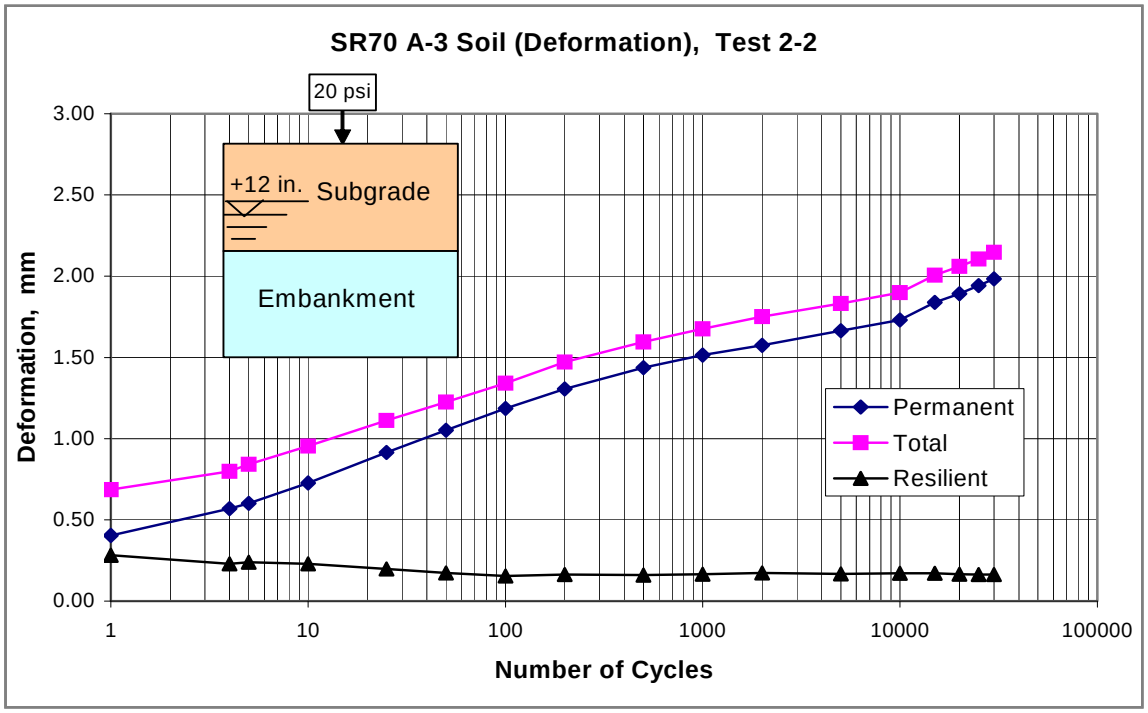


Figure F.11 SR-70 A-3 Soil, Deformation under 20 psi Plate Load (Water Table at 12 in., without Limerock, Test 2-2)

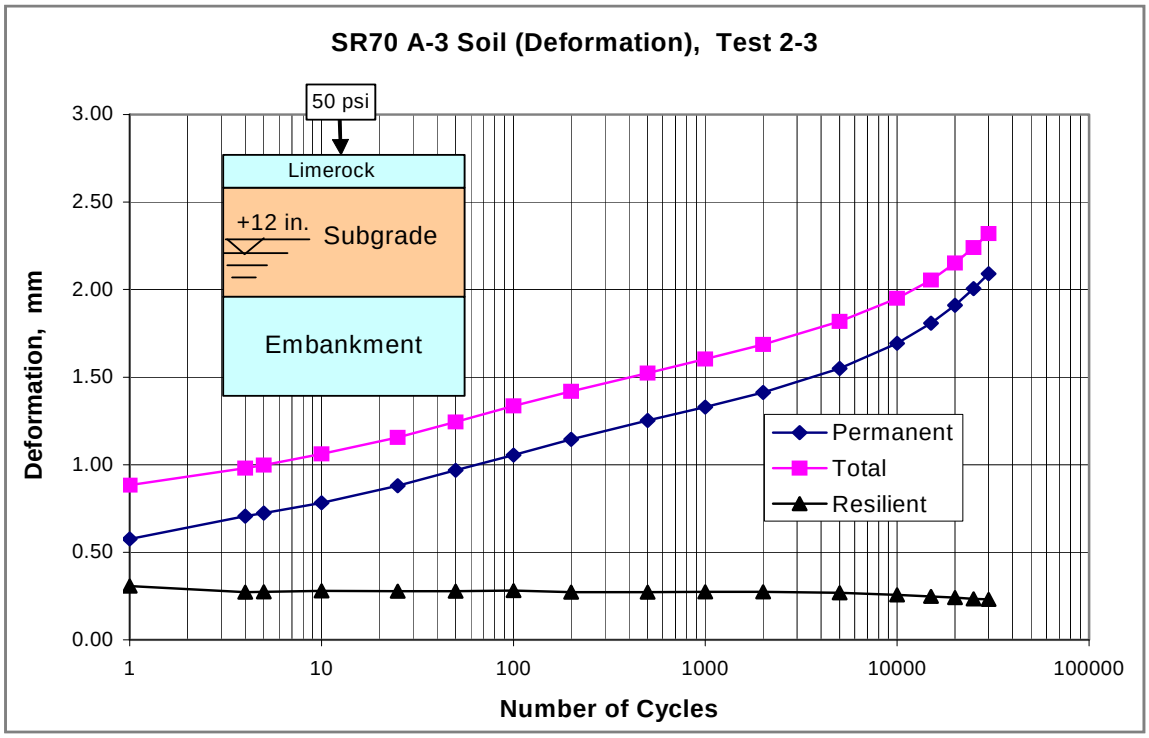


Figure F.12 SR-70 A-3 Soil, Deformation under 50 psi Plate Load (Water Table at +12 in., with Limerock, Test 2-3)

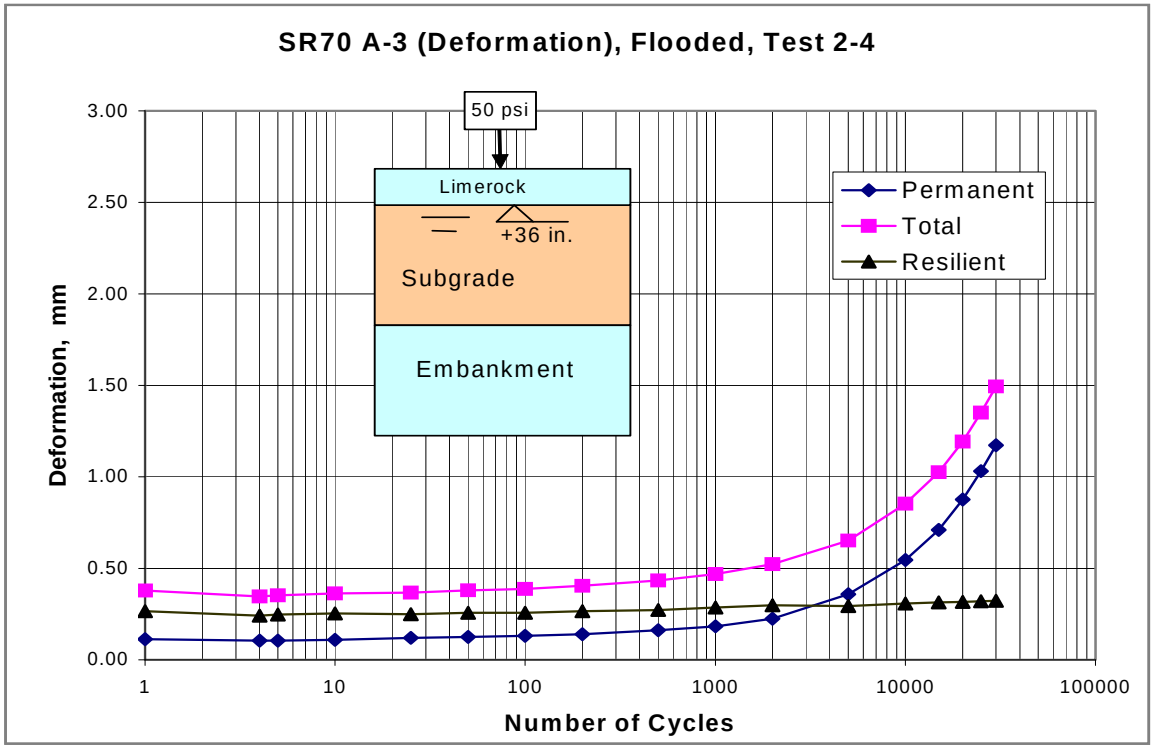


Figure F.13 SR-70 A-3 Soil, Deformation under 50 psi Plate Load (Water Table at +36 in., with Limerock, Test 2-4)

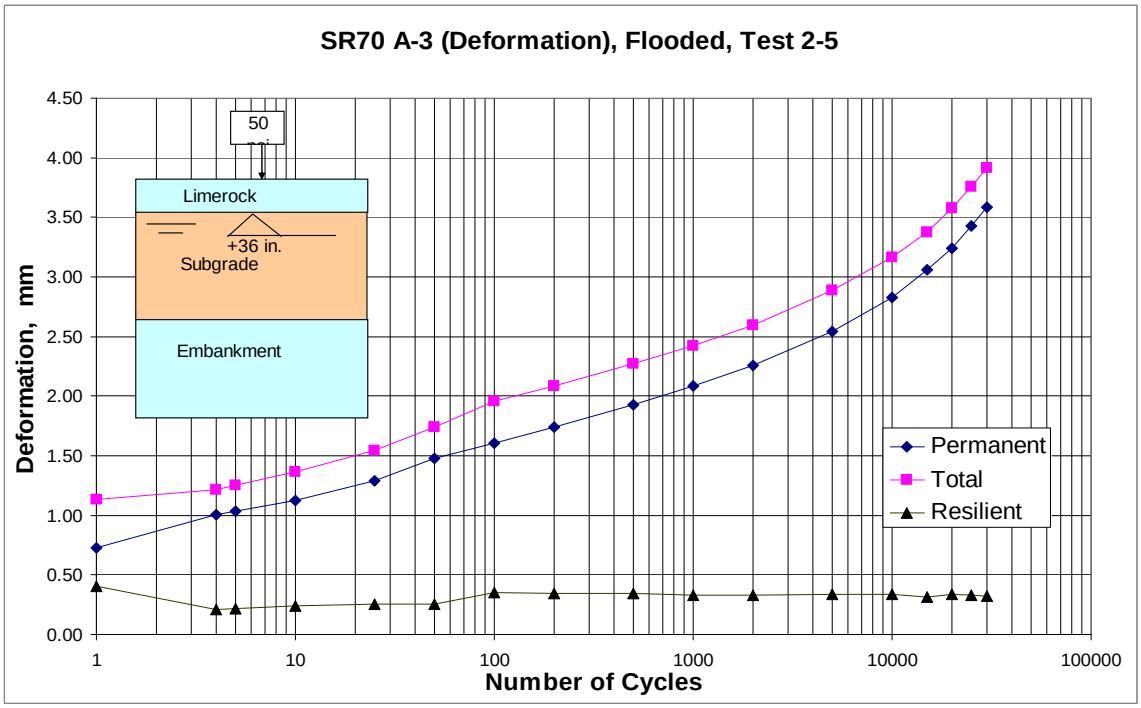


Figure F.14 SR-70 A-3 Soil, Deformation under 50 psi Plate Load (Water Table at +36 in., with Limerock, Test 2-5)

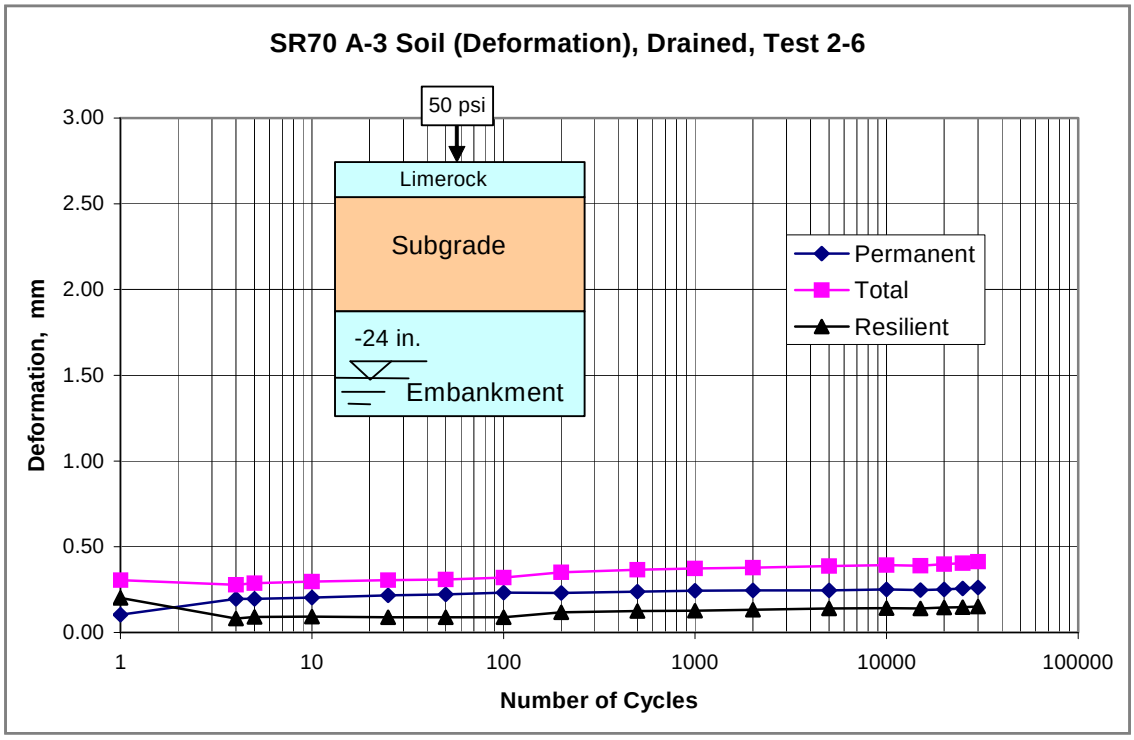


Figure F.15 SR-70 A-3 Soil, Deformation under 50 psi Plate Load (Water Table at -24 in., with Limerock, Test 2-6)

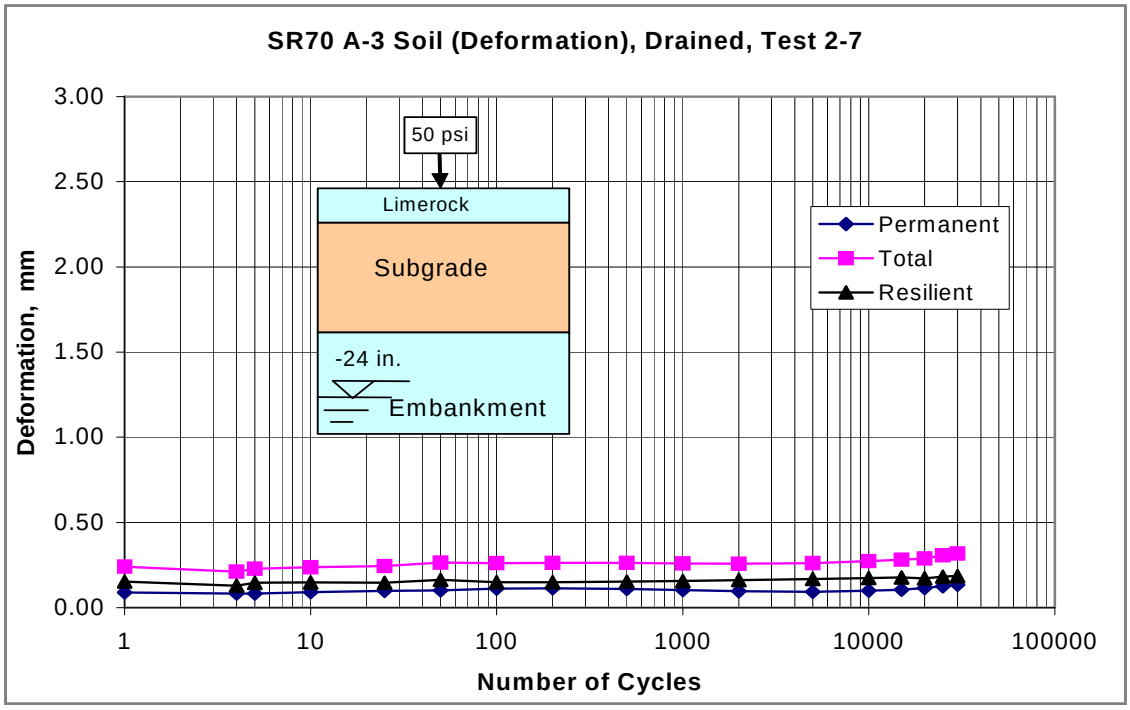


Figure F.16 SR-70 A-3 Soil, Deformation under 50 psi Plate Load (Water Table at –24 in., with Limerock, Test 2-7)

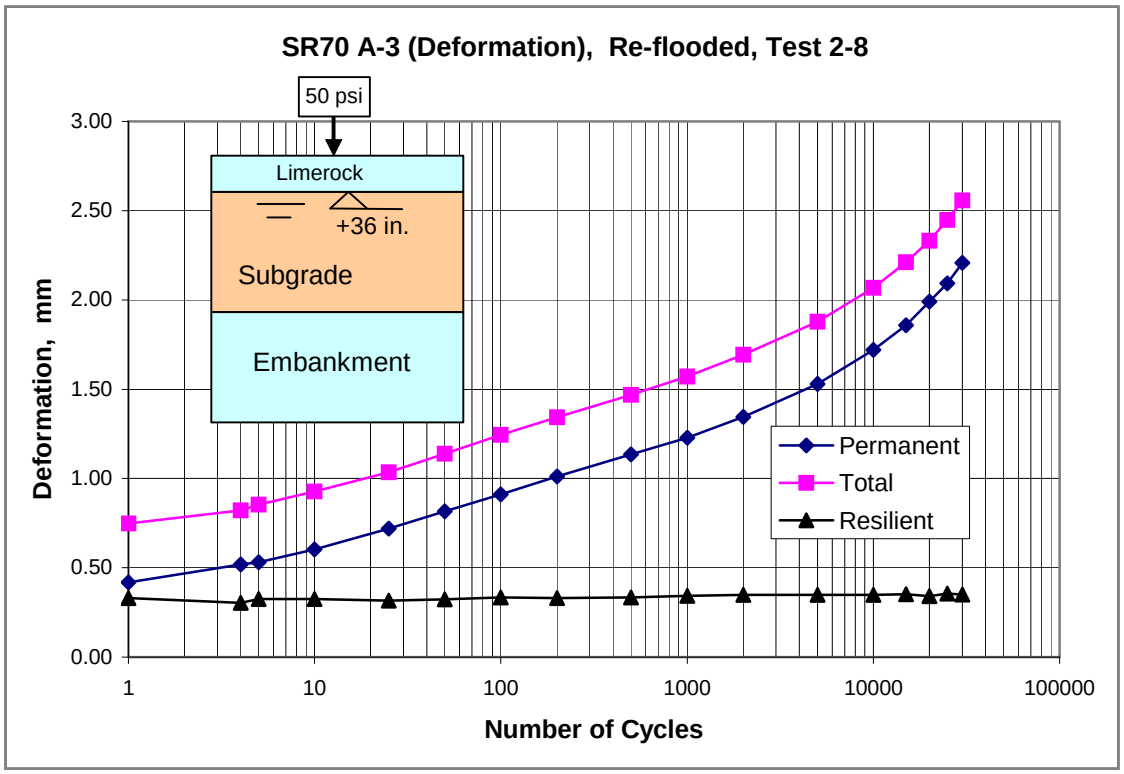


Figure F.17 SR-70 A-3 Soil, Deformation under 50 psi Plate Load (Water Table at +36 in., with Limerock, Test 2-8)

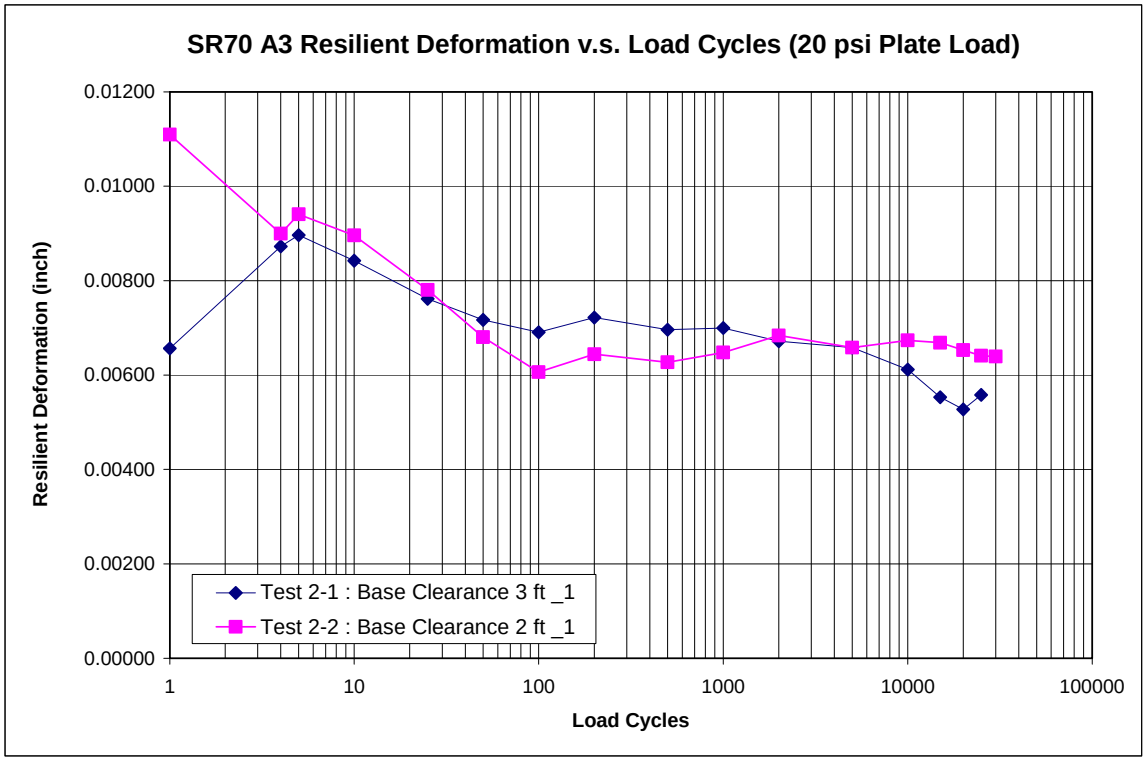


Figure F.18 SR70 A-3 Soil, Deformation Summary under 20 psi Plate Load at Different Water Table Level

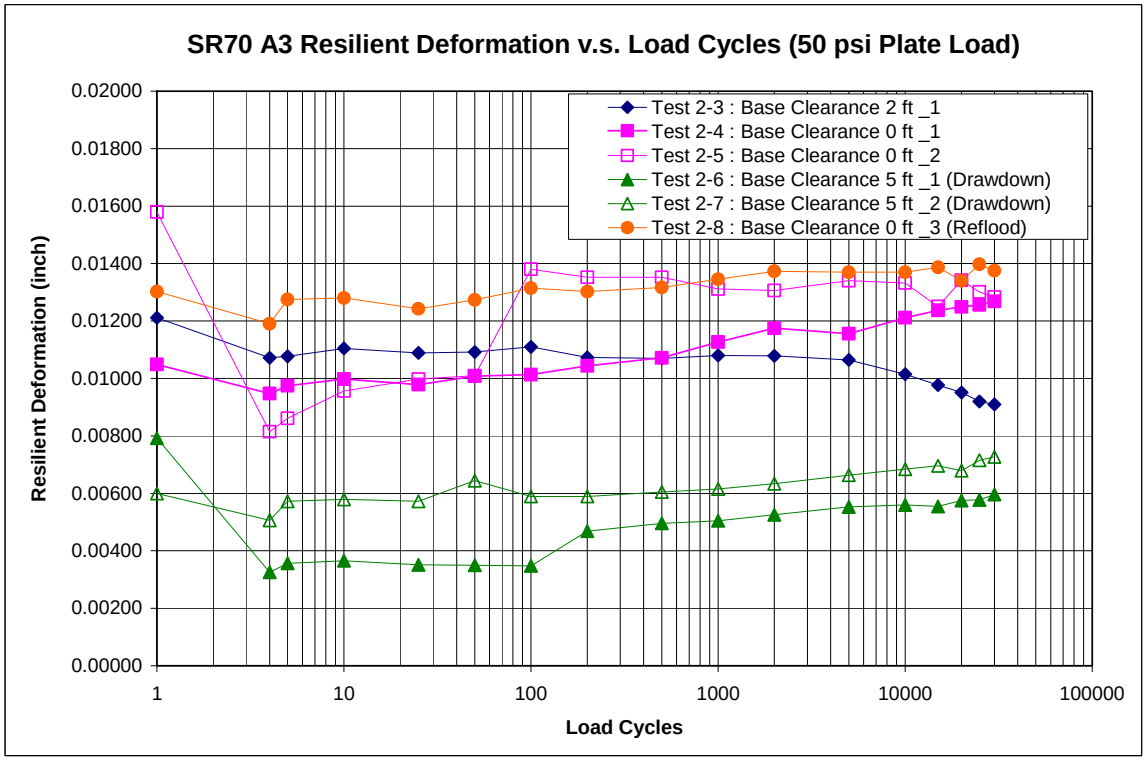


Figure F.19 SR70 A-3 Soil, Deformation Summary under 50 psi Plate Load at Different Water Table Level

F.3 SR70 A-2-4, 14% Soil

Table F.8 SR-70 A-2-4 Soil Plate Load Test, 20 psi w/o Limerock

Deformation with W.T. at 0.0 in., Test 3-1				Deformation with W.T. at +12.0 in., Test 3-2			
Load Cycles	Permanent	Total	Resilient	Load Cycles	Permanent	Total	Resilient
	mm	mm	mm		mm	mm	mm
1	0.3173	0.5886	0.2713	1	0.9119	1.2090	0.2972
4	0.4210	0.5838	0.1628	4	1.0389	1.2319	0.1930
5	0.4315	0.5908	0.1593	5	1.0541	1.2395	0.1854
10	0.4648	0.6219	0.1571	10	1.0998	1.2776	0.1753
25	0.5112	0.6718	0.1606	25	1.1659	1.3437	0.1778
50	0.5453	0.7020	0.1567	50	1.2090	1.3919	0.1803
100	0.5702	0.7330	0.1628	100	1.2446	1.4275	0.1803
200	0.5899	0.7558	0.1659	200	1.2675	1.4529	0.1854
500	0.6074	0.7711	0.1637	500	1.2903	1.4707	0.1803
1000	0.6118	0.7759	0.1641	1000	1.3005	1.4783	0.1803
2000	0.6171	0.7812	0.1641	2000	1.3081	1.4910	0.1829
5000	0.6319	0.7982	0.1663	5000	1.3233	1.5138	0.1905
10000	0.6586	0.8262	0.1676	10000	1.3513	1.5418	0.1905
15000	0.6884	0.8468	0.1584	15000	1.3741	1.5646	0.1905
20000	0.7129	0.8674	0.1545	20000	1.3945	1.5824	0.1880
25000	0.7286	0.8827	0.1540	25000	1.4072	1.5926	0.1854
30000	0.7440	0.9033	0.1593	30000	1.4173	1.6053	0.1905

Table F.9 SR-70 A-2-4 Soil Plate Load Test, 50 psi w/ Limerock

Deformation with W.T. at +12.0 in., Test 3-3			
Load Cycles	Permanent	Total	Resilient
	mm	mm	mm
1	0.5182	0.8687	0.3505
4	0.6020	0.8814	0.2819
5	0.6071	0.8712	0.2642
10	0.6325	0.9169	0.2845
25	0.6782	0.9652	0.2845
50	0.7163	1.0109	0.2946
100	0.7620	1.0516	0.2896
200	0.8103	1.0973	0.2870
500	0.8712	1.1659	0.2946
1000	0.9093	1.2192	0.3099
2000	0.9652	1.2776	0.3124
5000	1.0465	1.3665	0.3200
10000	1.1278	1.4605	0.3327
15000	1.1913	1.5240	0.3327
20000	1.2497	1.5723	0.3200
25000	1.3056	1.6104	0.3048
30000	1.3487	1.6586	0.3099

Table F.9 Continued

Deformation with W.T. at -24.0 in., Test 3-5				Deformation with W.T. at -24.0 in., Test 3-6			
Load Cycles	Permanent	Total	Resilient	Load Cycles	Permanent	Total	Resilient
	mm	mm	mm		mm	mm	mm
1	0.5589	0.9873	0.4284	1	0.5899	0.9531	0.3632
4	0.6783	0.9168	0.2385	4	0.6709	0.8556	0.1847
5	0.6963	0.9348	0.2385	5	0.6801	0.8866	0.2065
10	0.7168	0.9623	0.2455	10	0.7046	0.9111	0.2065
25	0.7663	0.9960	0.2297	25	0.7405	0.9378	0.1974
50	0.8109	1.0179	0.2070	50	0.7553	0.9593	0.2039
100	0.8459	1.0682	0.2223	100	0.7816	0.9833	0.2017
200	0.9348	1.2722	0.3374	200	0.8065	1.0109	0.2044
500	0.9917	1.3247	0.3330	500	0.8411	1.0442	0.2030
1000	1.0433	1.3632	0.3199	1000	0.9203	1.0735	0.1532
2000	1.0796	1.3999	0.3203	2000	0.9549	1.1312	0.1764
5000	1.1444	1.4603	0.3159	5000	1.0337	1.2061	0.1724
10000	1.1951	1.5089	0.3138	10000	1.0884	1.2761	0.1877
15000	1.2323	1.5435	0.3111	15000	1.1404	1.3238	0.1834
20000	1.2603	1.5689	0.3085	20000	1.1763	1.3570	0.1807
25000	1.2827	1.5942	0.3116	25000	1.1921	1.3899	0.1978
30000	1.2971	1.6087	0.3116	30000	1.2113	1.4091	0.1978
Deformation with W.T. at +36.0 in., Test 3-4				Deformation with W.T. at +36.0 in., Test 3-7			
Load Cycles	Permanent	Total	Resilient	Load Cycles	Permanent	Total	Resilient
	mm	mm	mm		mm	mm	mm
1	0.8516	2.0030	1.1513	1	1.1776	2.1640	0.9864
200	2.5373	3.3298	0.7925	4	1.5487	2.4631	0.9144
500	3.2786	4.0776	0.7991	5	1.5899	2.4774	0.8876
1000	3.9897	4.7892	0.7995	10	1.7238	2.5299	0.8062
2000	4.8526	5.6574	0.8048	25	1.9636	2.7256	0.7620
5000	6.3068	7.0800	0.7732	50	2.1955	2.9197	0.7242
10000	7.6038	8.3307	0.7269	100	2.4813	3.1267	0.6455
15000	8.3933	9.0632	0.6700	200	2.8182	3.4733	0.6551
20000	8.9849	9.6413	0.6564	500	3.3578	4.0461	0.6883
25000	9.4798	10.1721	0.6923	1000	3.9092	4.6540	0.7448
30000	9.9122	10.6014	0.6892	2000	4.7297	5.5598	0.8301
				5000	6.7623	7.6148	0.8525
				10000	9.7971	10.9817	1.1846
				15000	12.9803	14.3583	1.3780
				20000	15.4068	16.4702	1.0634

Table F.10 Summary of Deformation for SR-70 A-2-4 Soil Plate Load Test

Resilient Deformation (in.) for SR70 A-2-4 Soil							
Test No.	3-1	3-2	3-3	3-4	3-5	3-6	3-7
Test Date	7/20/1999	8/24/1999	9/2/1999	9/30/1999	12/28/1999	1/5/2000	2/1/2000
Loads (psi)	20	20	50	50	50	50	50
Limerock Layer	No	No	Yes	Yes	Yes	Yes	Yes
No.of Plate Load Cycles	Water Table (in. above Embankment)						
	0	12	12	36	-24	-24	36
1	0.01068	0.01172	0.01377	0.04533	0.01687	0.01430	0.03883
4	0.00641	0.00761	0.01108		0.00939	0.00727	0.03600
5	0.00627	0.00729	0.01044		0.00939	0.00813	0.03494
10	0.00619	0.00693	0.01122		0.00967	0.00813	0.03174
25	0.00632	0.00698	0.01122		0.00905	0.00777	0.03000
50	0.00617	0.00713	0.01156		0.00815	0.00803	0.02851
100	0.00641	0.00715	0.01139		0.00875	0.00794	0.02541
200	0.00653	0.00732	0.01134	0.03120	0.01328	0.00805	0.02579
500	0.00644	0.00713	0.01163	0.03146	0.01311	0.00799	0.02710
1000	0.00646	0.00708	0.01225	0.03148	0.01259	0.00603	0.02932
2000	0.00646	0.00720	0.01234	0.03168	0.01261	0.00694	0.03268
5000	0.00655	0.00746	0.01261	0.03044	0.01244	0.00679	0.03356
10000	0.00660	0.00749	0.01313	0.02862	0.01235	0.00739	0.04664
15000	0.00624	0.00755	0.01308	0.02638	0.01225	0.00722	0.05425
20000	0.00608	0.00737	0.01265	0.02584	0.01215	0.00712	0.04187
25000	0.00606	0.00732	0.01203	0.02726	0.01227	0.00779	
30000	0.00627	0.00746	0.01223	0.02713	0.01227	0.00779	

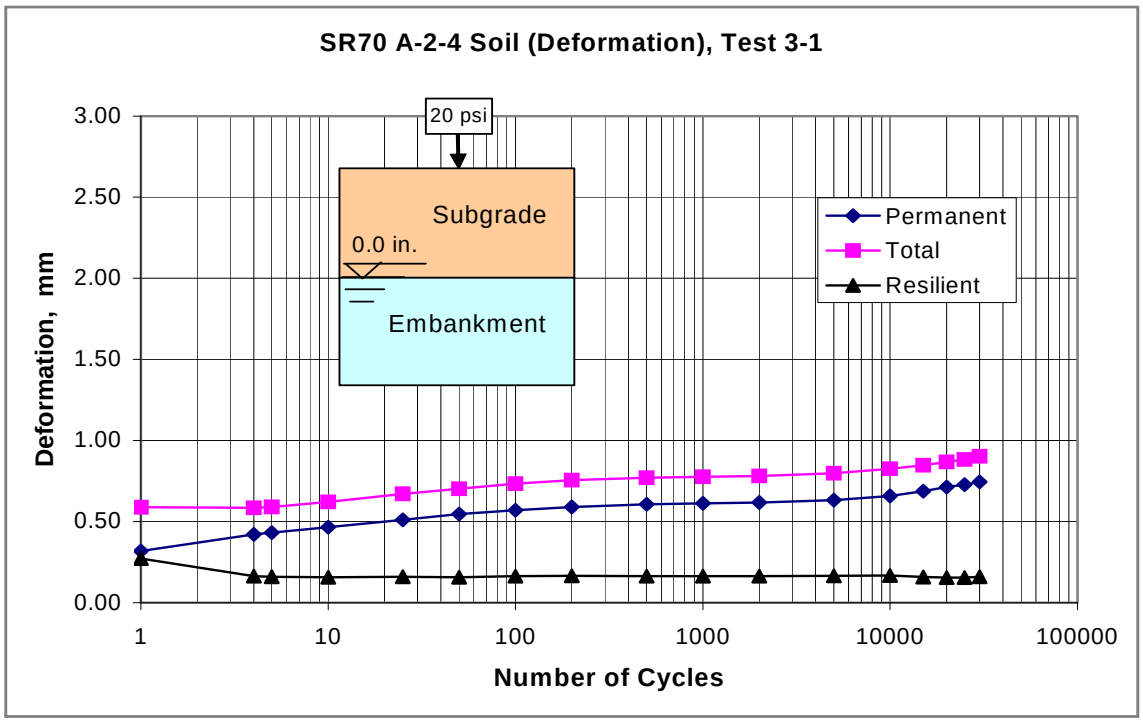


Figure F.20 SR-70 A-2-4 Soil, Deformation under 20 psi Plate Load (Water Table at 0.0 in., without Limerock, Test 3-1)

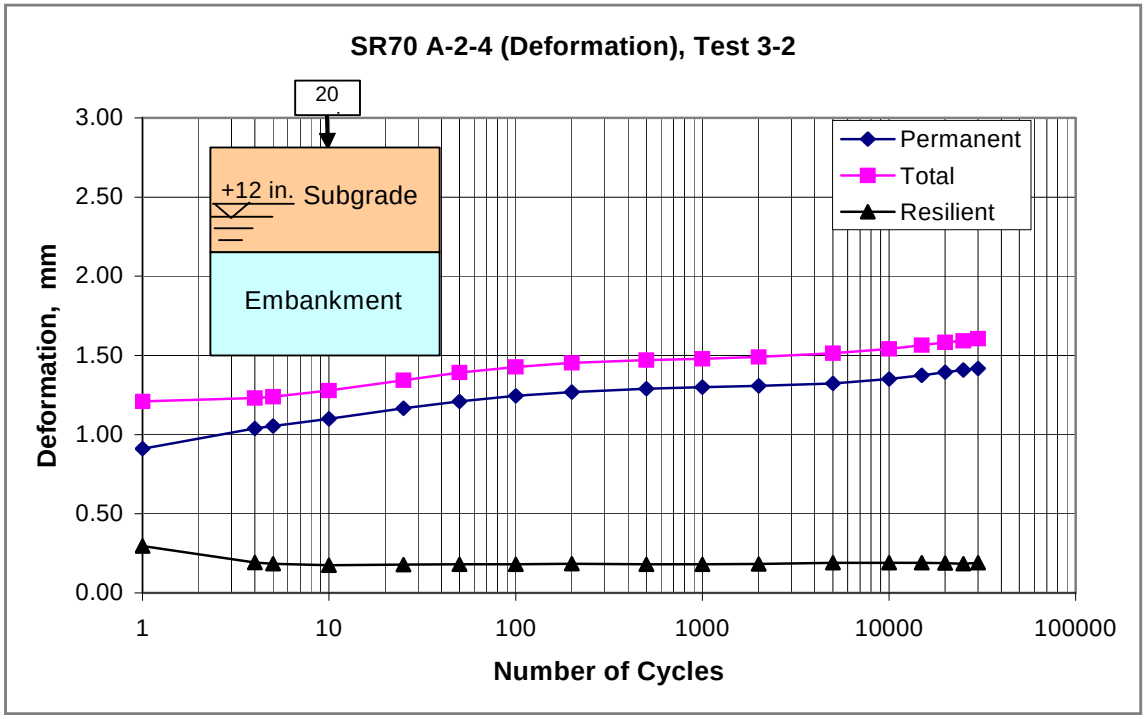


Figure F.21 SR-70 A-2-4 Soil, Deformation under 20 psi Plate Load (Water Table at +12 in., without Limerock, Test 3-2)

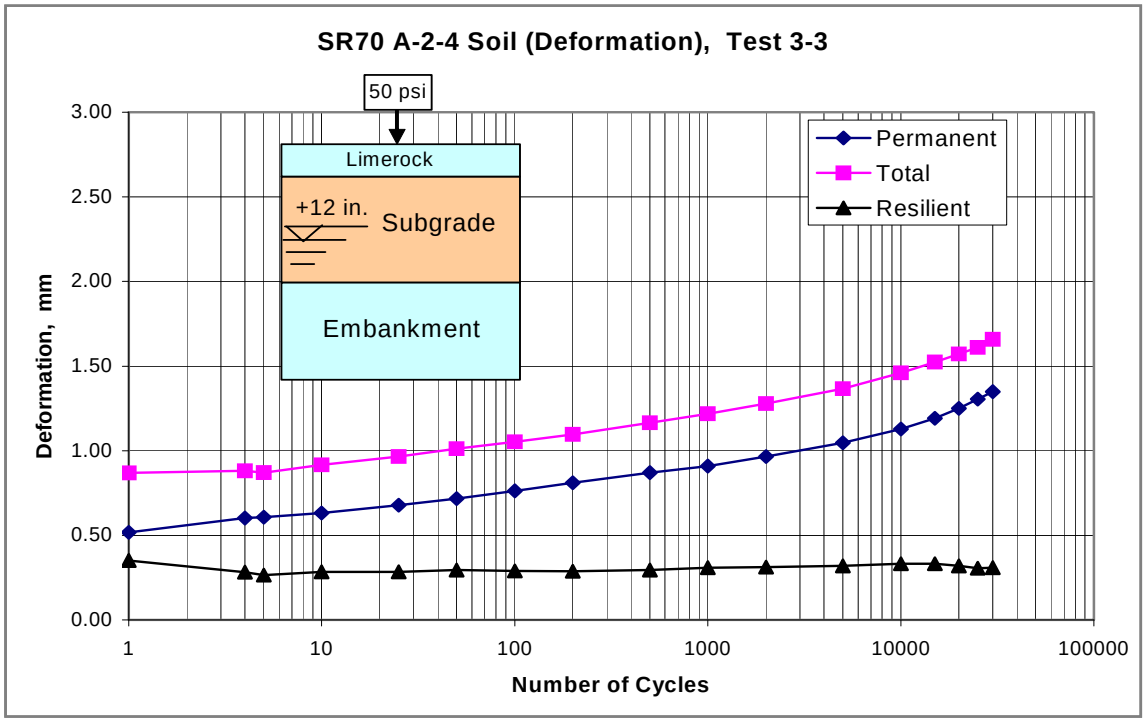


Figure F.22 SR-70 A-2-4 Soil, Deformation under 50 psi Plate Load (Water Table at +12 in., with Limerock, Test 3-3)

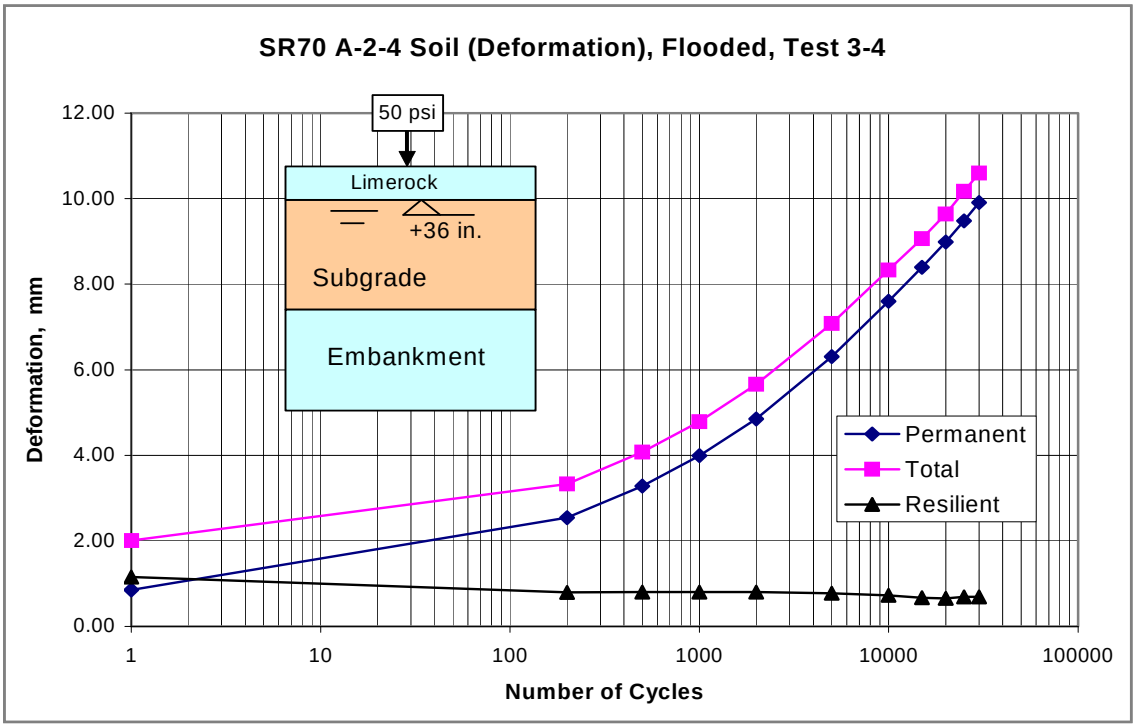


Figure F.23 SR-70 A-2-4 Soil, Deformation under 50 psi Plate Load (Water Table at +36 in., with Limerock, Test 3-4)

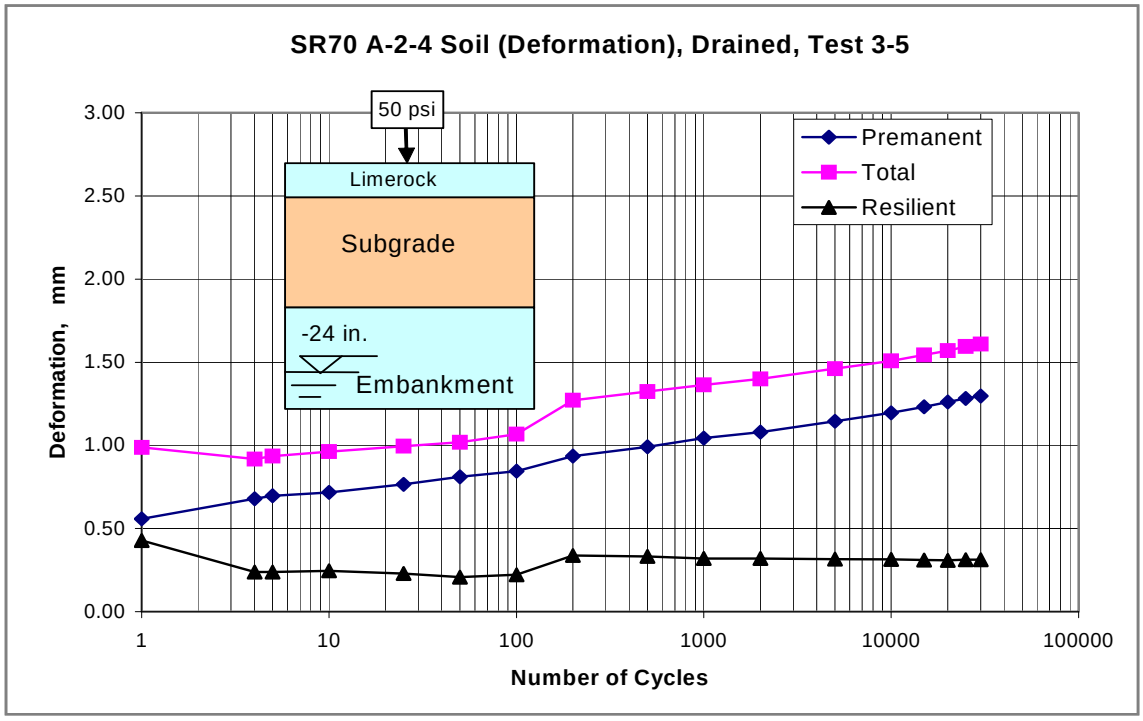


Figure F.24 SR-70 A-2-4 Soil, Deformation under 50-psi Plate Load (Water Table at –24 in., with Limerock, Test 3-5)

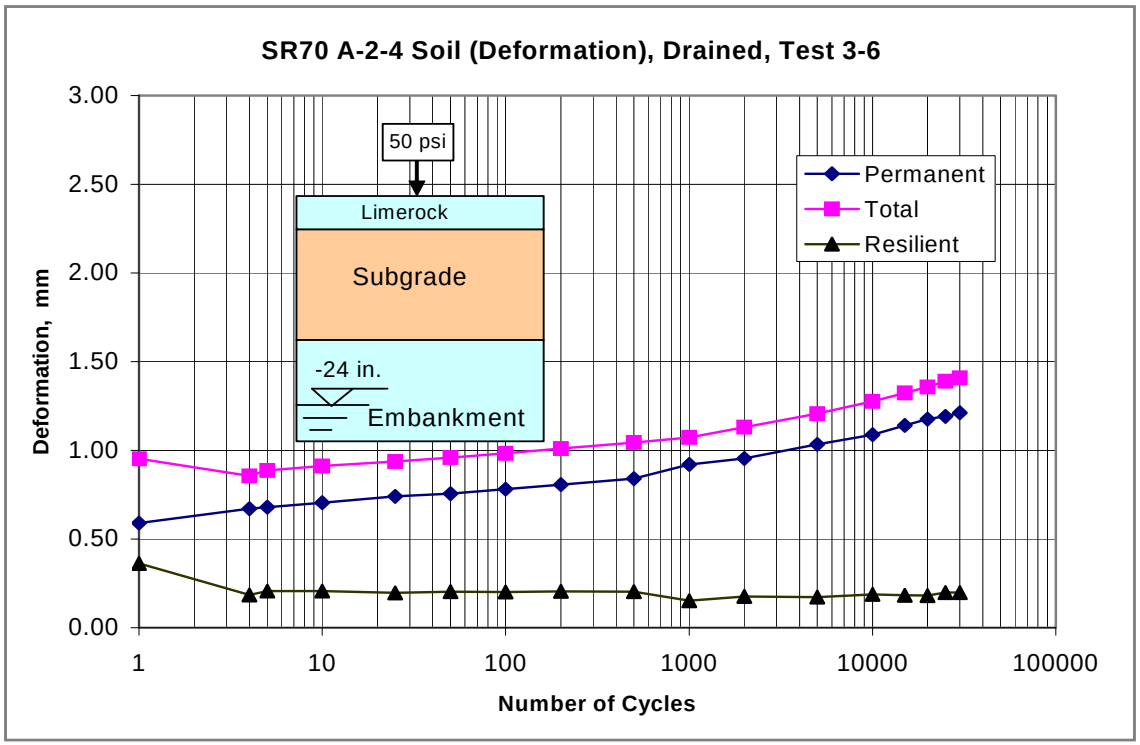


Figure F.25 SR-70 A-2-4 Soil, Deformation under 50 psi Plate Load (Water Table at –24 in., with Limerock, Test 3-6)

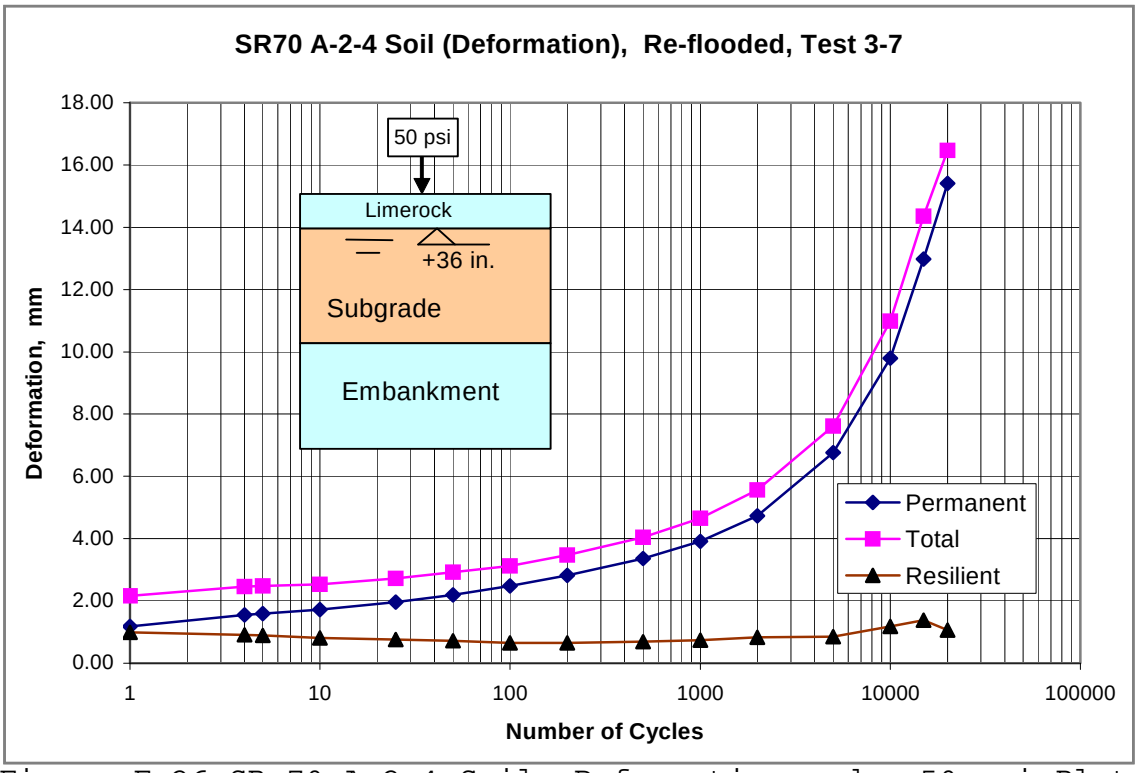


Figure F.26 SR-70 A-2-4 Soil, Deformation under 50 psi Plate Load (Water Table at +36 in., with Limerock, Test 3-7)

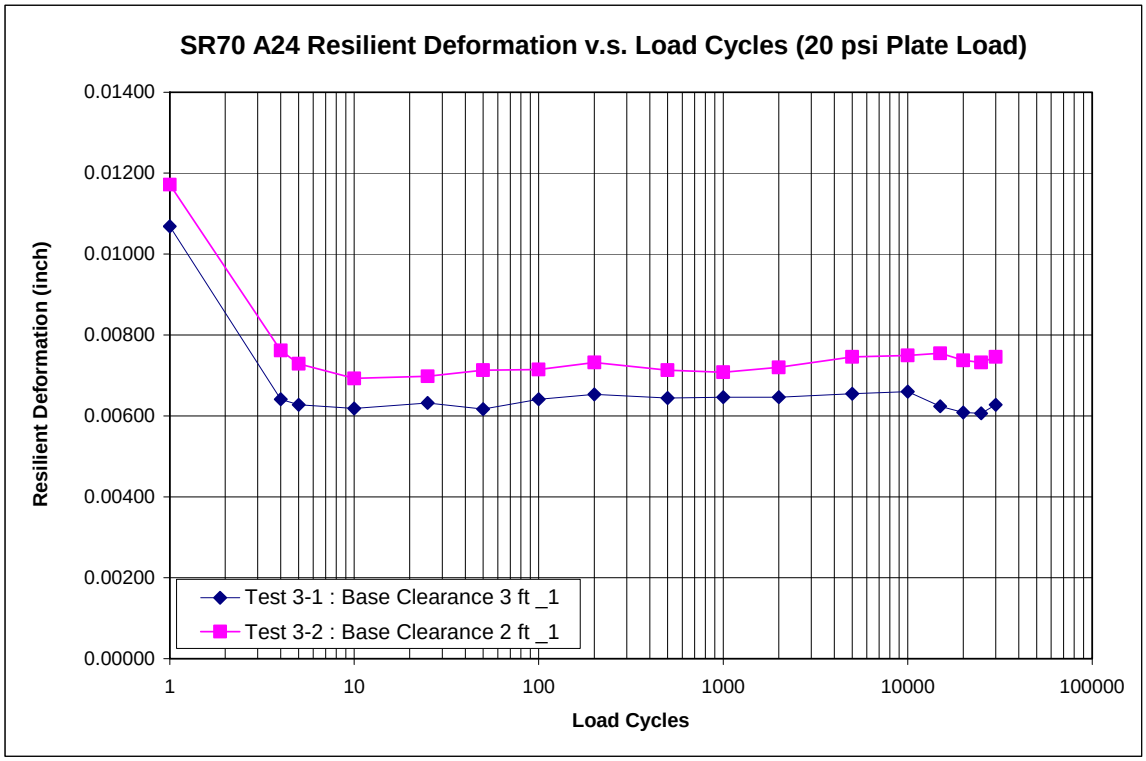


Figure F.27 SR70 A-2-4 Soil, Deformation Summary under 20 psi Plate Load at Different Water Table Level

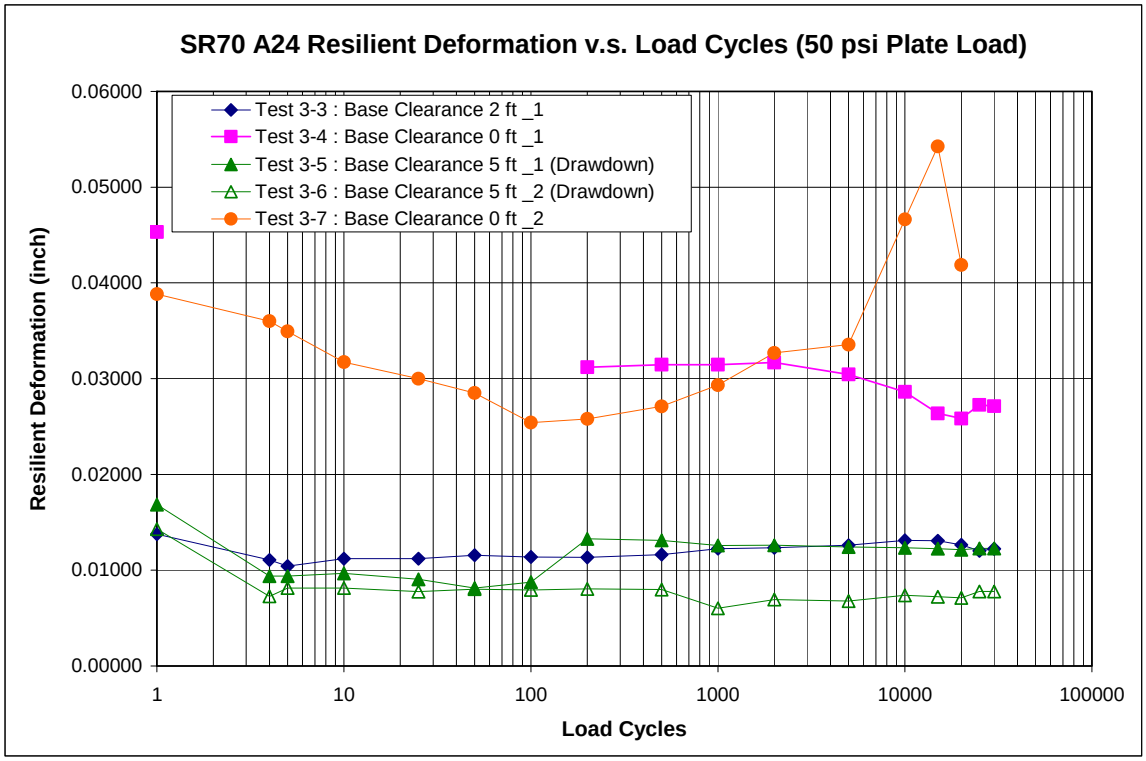


Figure F.28 SR70 A-2-4 Soil, Deformation Summary under 50 psi Plate Load at Different Water Table Level

F.4 A-2-4, 12% Soil

Table F.11 A-2-4, 12% Soil Plate Load Test, 20 psi w/out Limerock

Deformation with W.T. at -24 in., Test 4-1				Deformation with W.T. at -24 in., Test 4-2			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)	Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.1787	0.3682	0.1895	1	0.5429	0.7858	0.2429
4				4			
5				5			
10				10			
25	0.4146	0.5805	0.1659	25	0.6667	0.8829	0.2162
50	0.4943	0.6628	0.1685	50	0.7293	0.9438	0.2145
100	0.5739	0.7429	0.1690	100	0.8033	1.0147	0.2114
200	0.6527	0.8204	0.1676	200	0.8786	1.0856	0.2070
500	0.7521	0.9245	0.1725	500	0.9814	1.1779	0.1965
1000	0.8208	0.9924	0.1716	1000	1.0633	1.2515	0.1882
2000	0.8952	1.0685	0.1733	2000	1.1372	1.3267	0.1895
5000	1.0094	1.1876	0.1782	5000	1.2466	1.4226	0.1759
10000	1.1250	1.2856	0.1606	10000	1.3456	1.5189	0.1733
15000	1.1897	1.3495	0.1598	15000	1.4143	1.5876	0.1733
20000	1.2405	1.4060	0.1654	20000	1.4677	1.6366	0.1689
25000	1.2944	1.4559	0.1615	25000	1.5106	1.6817	0.1711
30000	1.3127	1.4804	0.1676	30000	1.5434	1.7093	0.1659
Deformation with W.T. at +0 in., Test 4-3				Deformation with W.T. at +0 in., Test 4-4			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)	Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.1398	0.3529	0.2131	1	0.3542	0.6562	0.3020
4	0.1748	0.3748	0.2000	4			
5				5			
10	0.1962	0.4124	0.2162	10			
25	0.2286	0.4374	0.2088	25	0.8120	1.0637	0.2517
50	0.2531	0.4619	0.2088	50	0.9569	1.2051	0.2482
100	0.2837	0.4956	0.2118	100	1.0965	1.3442	0.2477
200	0.3166	0.5293	0.2127	200	1.2335	1.4755	0.2420
500	0.3647	0.5849	0.2202	500	1.4099	1.6467	0.2368
1000	0.4107	0.6396	0.2289	1000	1.5368	1.7832	0.2464
2000	0.4606	0.6965	0.2359	2000	1.6454	1.8835	0.2381
5000	0.5626	0.7993	0.2368	5000	1.8095	2.0467	0.2372
10000	0.6777	0.9140	0.2363	10000	1.9587	2.1929	0.2342
15000	0.7669	1.0042	0.2372	15000	2.0581	2.2883	0.2302
20000	0.8440	1.0816	0.2377	20000	2.1378	2.3614	0.2237
25000	0.9149	1.1504	0.2355	25000	2.2052	2.4288	0.2237
30000	0.9775	1.2112	0.2337	30000	2.2634	2.4853	0.2219

Table F.11 Continued

Deformation with W.T. at 12 in., Test 4-5				Deformation with W.T. at 12 in., Test 4-6			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)	Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.2198	0.4807	0.2609	1	0.2190	0.4558	0.2368
4	0.3091	0.5272	0.2181	4	0.3004	0.5140	0.2136
5	0.3249	0.5500	0.2251	5	0.3126	0.5281	0.2154
10	0.3949	0.6243	0.2293	10	0.3665	0.5853	0.2188
25	0.5306	0.7516	0.2210	25	0.4623	0.6742	0.2118
50	0.6527	0.8785	0.2258	50	0.5520	0.7783	0.2263
100	0.7884	1.0138	0.2254	100	0.6470	0.8751	0.2280
200	0.9424	1.1652	0.2228	200	0.7543	0.9858	0.2315
500	1.1762	1.3823	0.2061	500	0.9123	1.1302	0.2180
1000	1.3784	1.5736	0.1952	1000	1.0370	1.2628	0.2258
2000	1.5937	1.7959	0.2022	2000	1.1797	1.4138	0.2342
5000	1.9092	2.1250	0.2158	5000	1.3876	1.6239	0.2363
10000	2.2112	2.4358	0.2246	10000	1.5876	1.8222	0.2346
15000	2.4278	2.6498	0.2220	15000	1.7390	1.9727	0.2337
20000	2.5986	2.8393	0.2407	20000	1.8603	2.0909	0.2307
25000	2.7487	2.9750	0.2263	25000	1.9644	2.1933	0.2289
30000	2.8678	3.0953	0.2276	30000	2.0572	2.2883	0.2311
				40000	2.2143	2.4415	0.2272
				50000	2.3566	2.5811	0.2245
				60000	2.4853	2.7111	0.2258
				70000	2.6052	2.8293	0.2241
				80000	2.7190	2.9391	0.2202
				90000	2.8302	3.0542	0.2241
				100000	2.9299	3.1510	0.2210

Table F.12 A-2-4, 12% Soil Plate Load Test, 50 psi w/ Limerock

Deformation with W.T. at +12 in., Test 4-7				Deformation with W.T. at +12 in., Test 4-8			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)	Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.7227	1.1302	0.4075	1	0.4225	0.8077	0.3852
4	0.9398	1.2768	0.3370	4	0.5271	0.8856	0.3585
5	0.9613	1.2909	0.3296	5	0.5459	0.9144	0.3685
10	1.0558	1.4681	0.4123	10	0.6238	0.9749	0.3510
25	1.2042	1.6077	0.4035	25	0.7284	1.0891	0.3606
50	1.3324	1.7281	0.3957	50	0.8199	1.1740	0.3541
100	1.5018	1.8629	0.3611	100	0.9131	1.2615	0.3484
200	1.6257	1.9837	0.3580	200	1.0160	1.3626	0.3466
500	1.7876	2.1344	0.3468	500	1.1477	1.4848	0.3370
1000	1.9040	2.2450	0.3410	1000	1.2418	1.5762	0.3344
2000	2.0266	2.3566	0.3300	2000	1.3491	1.6769	0.3278
5000	2.2244	2.5444	0.3199	5000	1.5014	1.8253	0.3239
10000	2.4376	2.7492	0.3116	10000	1.6751	2.0021	0.3269
15000	2.6704	2.9545	0.2841	15000	1.8056	2.1238	0.3182
20000	2.8118	3.0915	0.2797	20000	1.9119	2.2244	0.3125
25000	2.9252	3.2035	0.2784	25000	1.9933	2.3137	0.3204
30000	3.0280	3.3051	0.2770	30000	2.0695	2.3776	0.3081
40000	3.1943	3.4871	0.2928				
50000	3.3488	3.6281	0.2792				
60000	3.4946	3.7852	0.2906				
70000	3.6197	3.9082	0.2884				
80000	3.7366	4.0229	0.2862				
90000	3.8452	4.1314	0.2862				
100000	3.9511	4.2369	0.2858				

Table F.12 Continued

Deformation with W.T. at +36 in., Test 4-9				Deformation with W.T. at +36 in., Test 4-10			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)	Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.5595	1.0335	0.4740	1	0.4632	0.9123	0.4491
4	0.7521	1.1858	0.4337	4	0.6177	1.0173	0.3996
5	0.7810	1.2361	0.4552	5	0.6400	1.0462	0.4062
10	0.9066	1.3561	0.4495	10	0.7214	1.1363	0.4149
25	1.0991	1.5578	0.4587	25	0.8702	1.2992	0.4289
50	1.2751	1.7237	0.4486	50	1.0072	1.4488	0.4416
100	1.4559	1.9049	0.4491	100	1.1613	1.5845	0.4232
200	1.6335	2.0743	0.4407	200	1.3320	1.7513	0.4193
500	1.8861	2.3159	0.4298	500	1.5837	1.9933	0.4097
1000	2.1520	2.5953	0.4433	1000	1.7981	2.2047	0.4066
2000	2.4474	2.8573	0.4099	2000	2.0493	2.4546	0.4053
5000	2.8949	3.3274	0.4324	5000	2.4660	2.8656	0.3996
10000	3.3033	3.7226	0.4193	10000	2.9033	3.3024	0.3992
15000	3.6070	4.0167	0.4097	15000	3.2311	3.6425	0.4114
20000	3.8675	4.2929	0.4254	20000	3.5182	3.9331	0.4149
25000	4.0767	4.4951	0.4184	25000	3.7887	4.2110	0.4224
30000	4.2728	4.6925	0.4197	30000	4.0342	4.4596	0.4254
40000	4.6404	5.0544	0.4140				
50000	4.9761	5.4037	0.4276				
60000	5.2851	5.7018	0.4167				
70000	5.5556	5.9661	0.4105				
80000	5.8064	6.2134	0.4070				
90000	6.0637	6.4598	0.3961				
100000	6.2751	6.6778	0.4027				

Table F.13 Summary of Deformation for A-2-4 (12%) Soil Plate Load Test

Resilient Deformation (in.) for A-2-4, 12% Soil										
Test No.	4-1	4-2	4-3	4-4	4-5	4-6	4-7	4-8	4-9	4-10
Test Date	8/3/00	8/42000	9/19/00	9/19/00	11/1/00	11/1/00	12/14/00	12/21/00	2/26/01	2/28/01
Loads (psi)	20	20	20	20	20	20	50	50	50	50
Limerock Layer	No	No	No	No	No	No	Yes	Yes	Yes	Yes
No.of Plate Load Cycles	Water Table (in. above Embankment)									
	-24	-24	0	0	12	12	12	12	36	36
1	0.00746	0.00956	0.00839	0.01189	0.01027	0.00932	0.01604	0.01516	0.01866	0.01768
4			0.00787	0.00787	0.00858	0.00841	0.01327	0.01411	0.01708	0.01573
5			0.00851		0.00886	0.00848	0.01298	0.01451	0.01792	0.01599
10			0.00822	0.00851	0.00903	0.00862	0.01623	0.01382	0.01770	0.01634
25	0.00653	0.00851	0.00822	0.00991	0.00870	0.00834	0.01589	0.01420	0.01806	0.01689
50	0.00663	0.00844	0.00834	0.00977	0.00889	0.00891	0.01558	0.01394	0.01766	0.01739
100	0.00665	0.00832	0.00837	0.00975	0.00887	0.00898	0.01422	0.01372	0.01768	0.01666
200	0.00660	0.00815	0.00867	0.00953	0.00877	0.00912	0.01410	0.01365	0.01735	0.01651
500	0.00679	0.00774	0.00901	0.00932	0.00812	0.00858	0.01365	0.01327	0.01692	0.01613
1000	0.00676	0.00741	0.00929	0.00970	0.00769	0.00889	0.01342	0.01316	0.01745	0.01601
2000	0.00682	0.00746	0.00932	0.00937	0.00796	0.00922	0.01299	0.01291	0.01614	0.01596
5000	0.00701	0.00693	0.00930	0.00934	0.00850	0.00930	0.01260	0.01275	0.01702	0.01573
10000	0.00632	0.00682	0.00934	0.00922	0.00884	0.00924	0.01227	0.01287	0.01651	0.01572
15000	0.00629	0.00682	0.00936	0.00906	0.00874	0.00920	0.01118	0.01253	0.01613	0.01620
20000	0.00651	0.00665	0.00927	0.00881	0.00948	0.00908	0.01101	0.01230	0.01675	0.01634
25000	0.00636	0.00674	0.00920	0.00881	0.00891	0.00901	0.01096	0.01261	0.01647	0.01663
30000	0.00660	0.00653		0.00874	0.00896	0.00910	0.01091	0.01213	0.01652	0.01675
Average from 10,000 Cycles	0.00642	0.00671	0.00929	0.00893	0.00899	0.00913	0.01127	0.01249	0.01648	0.01633

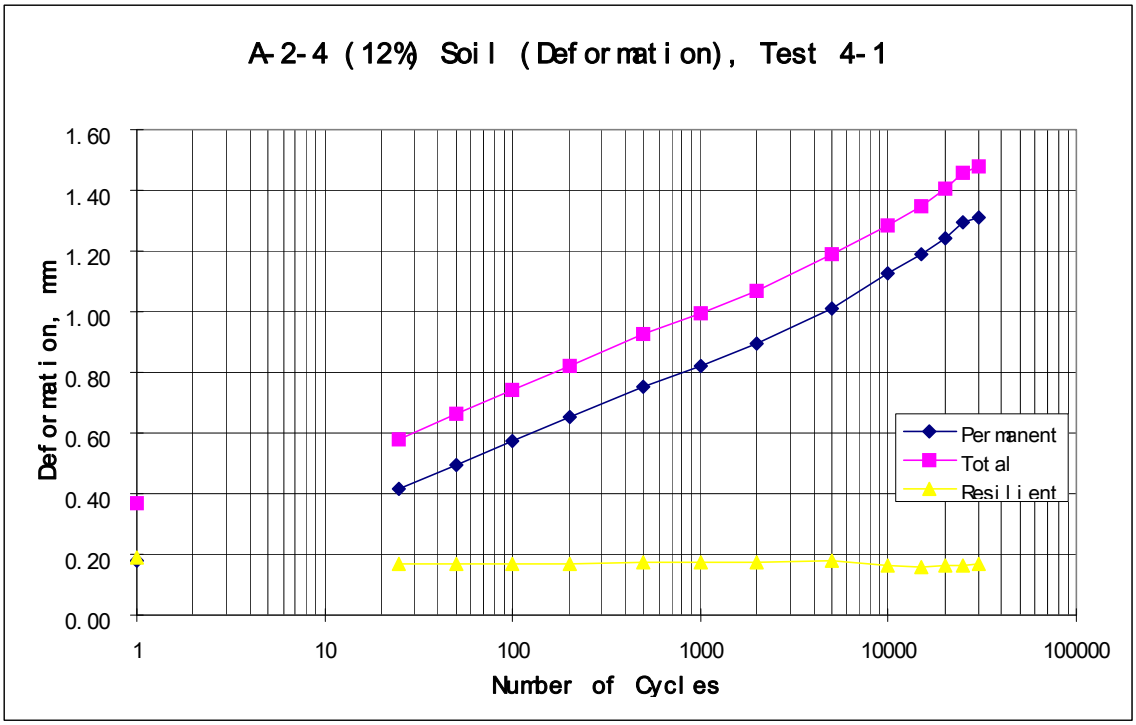


Figure F.29 A-2-4 (12%) Soil, Deformation under 20 psi Plate Load (Water Table at -24.0 in., w/out Limerock, Test 4-1)

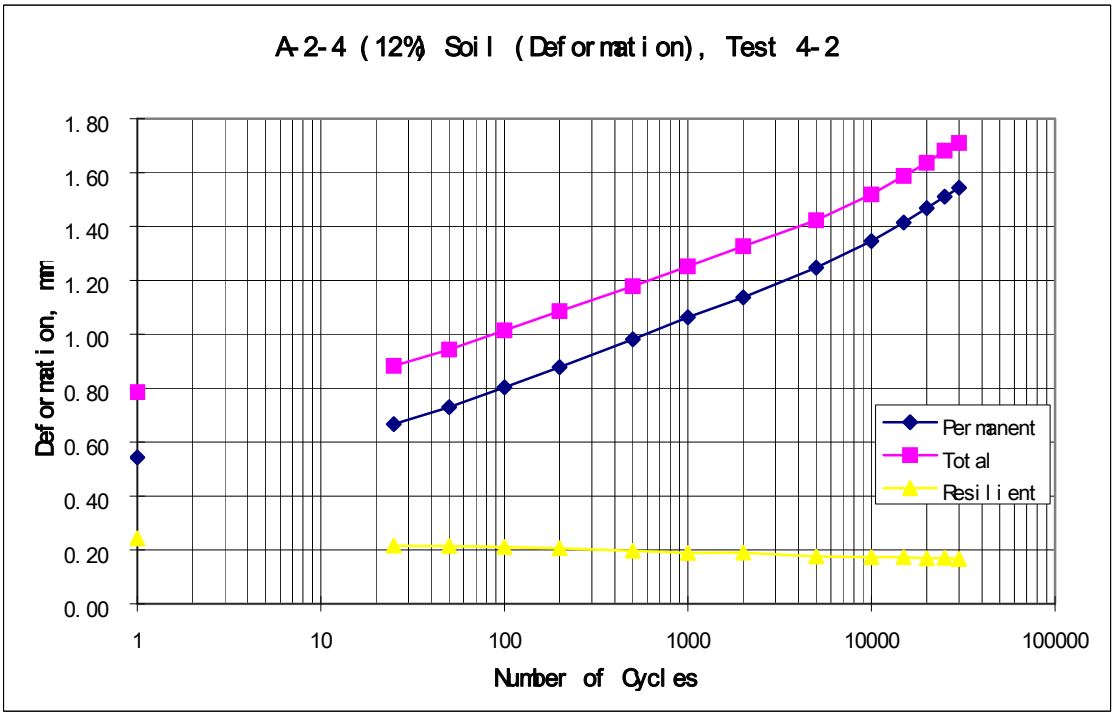


Figure F.30 A-2-4 (12%) Soil, Deformation under 20 psi Plate Load (Water Table at -24.0 in., w/out Limerock, Test 4-2)

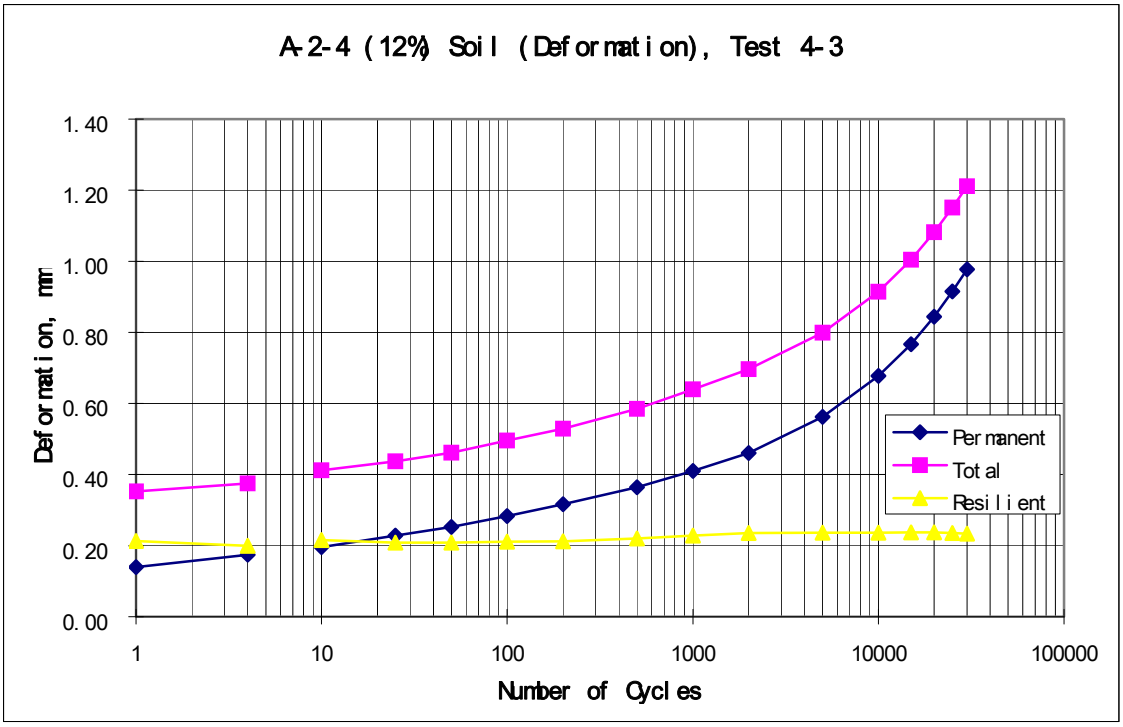


Figure F.31 A-2-4 (12%) Soil, Deformation under 20 psi Plate Load (Water Table at 0.0 in., w/out Limerock, Test 4-3)

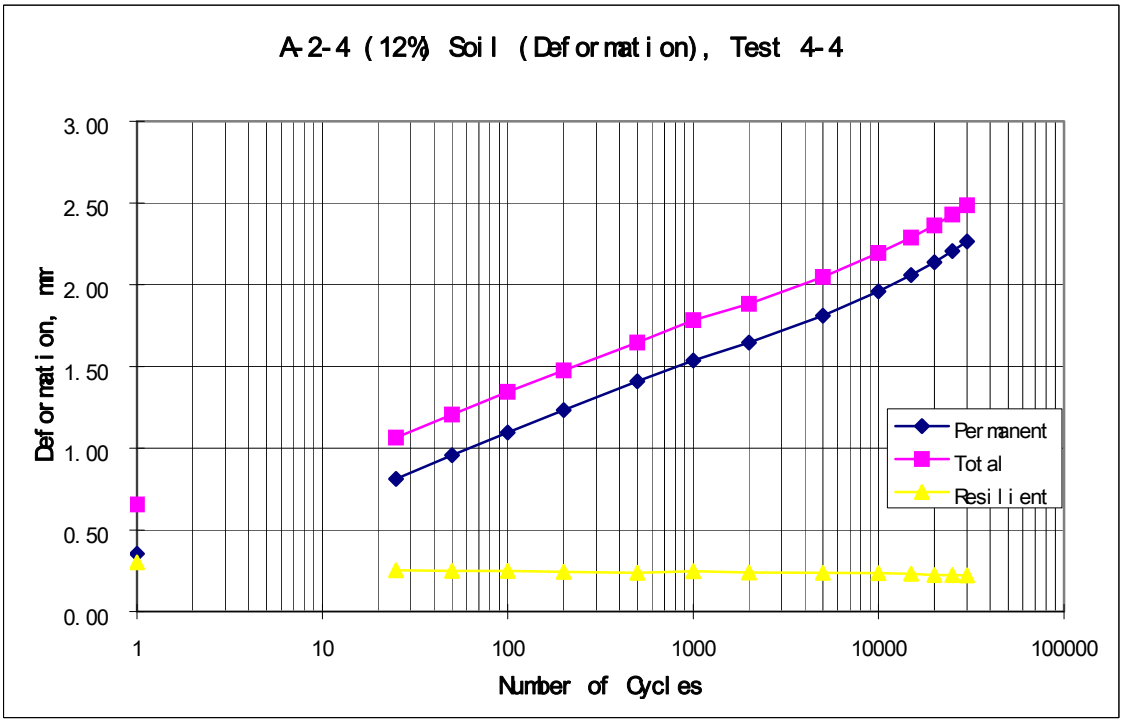


Figure F.32 A-2-4 (12%) Soil, Deformation under 20 psi Plate Load (Water Table at 0.0 in., w/out Limerock, Test 4-4)

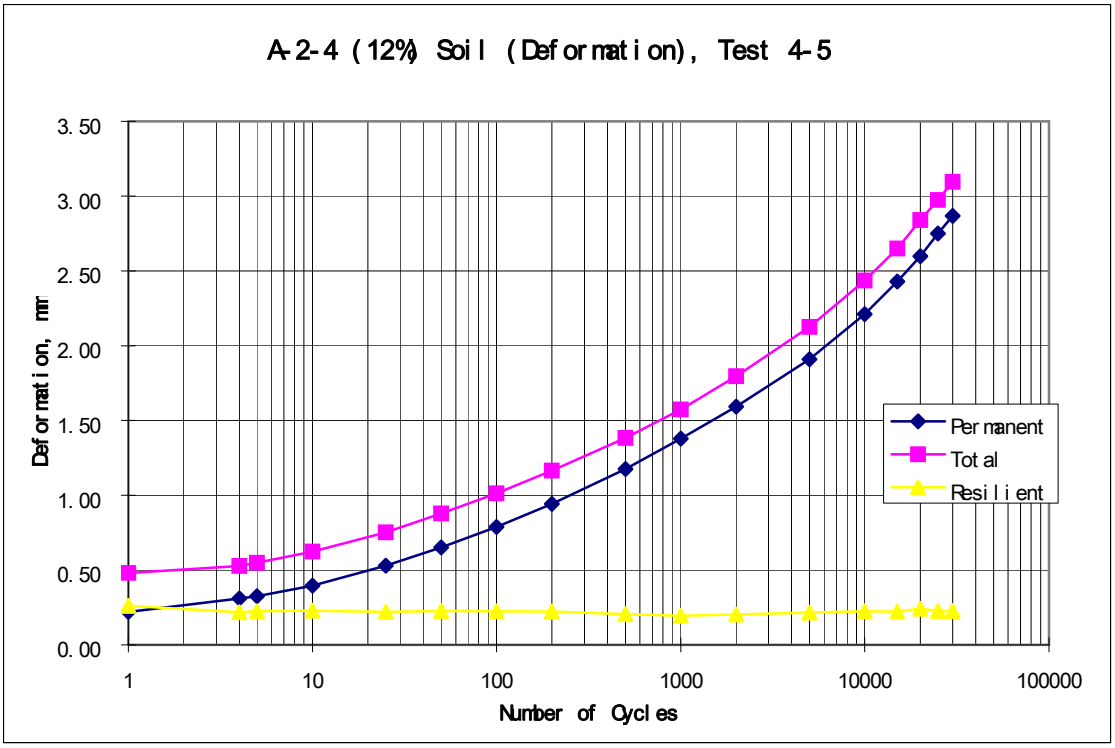


Figure F.33 A-2-4 (12%) Soil, Deformation under 20 psi Plate Load (Water Table at +12.0 in., no Limerock, Test 4-5)

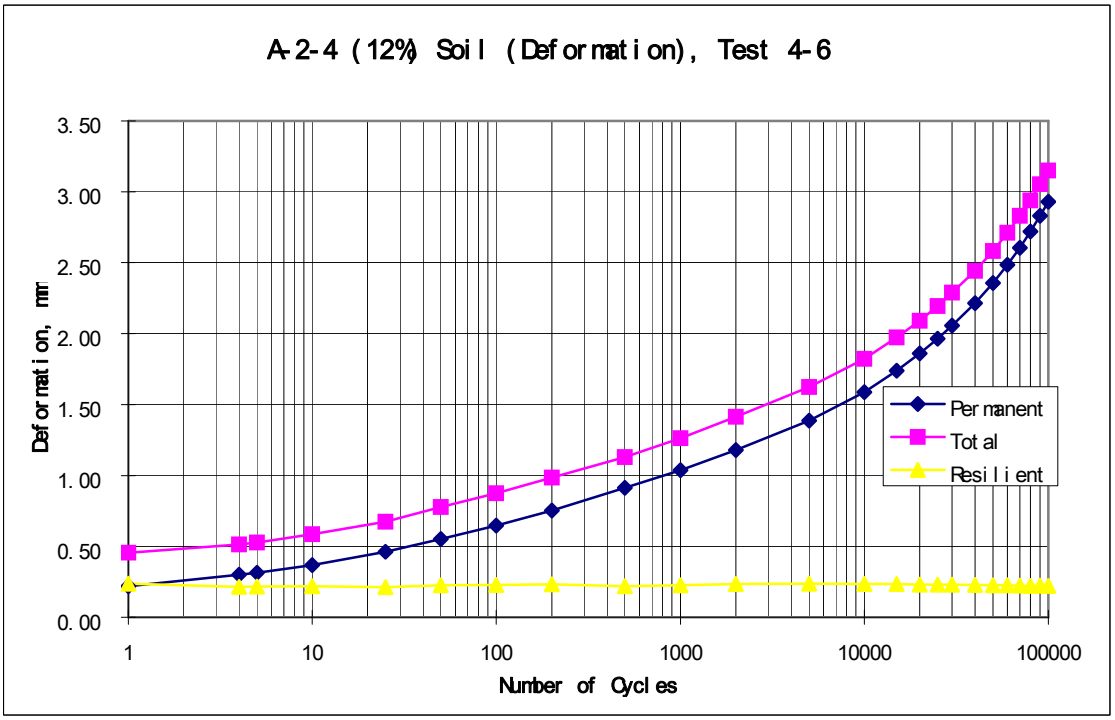


Figure F.34 A-2-4 (12%) Soil, Deformation under 20 psi Plate Load (Water Table at +12.0 in., no Limerock, Test 4-6)

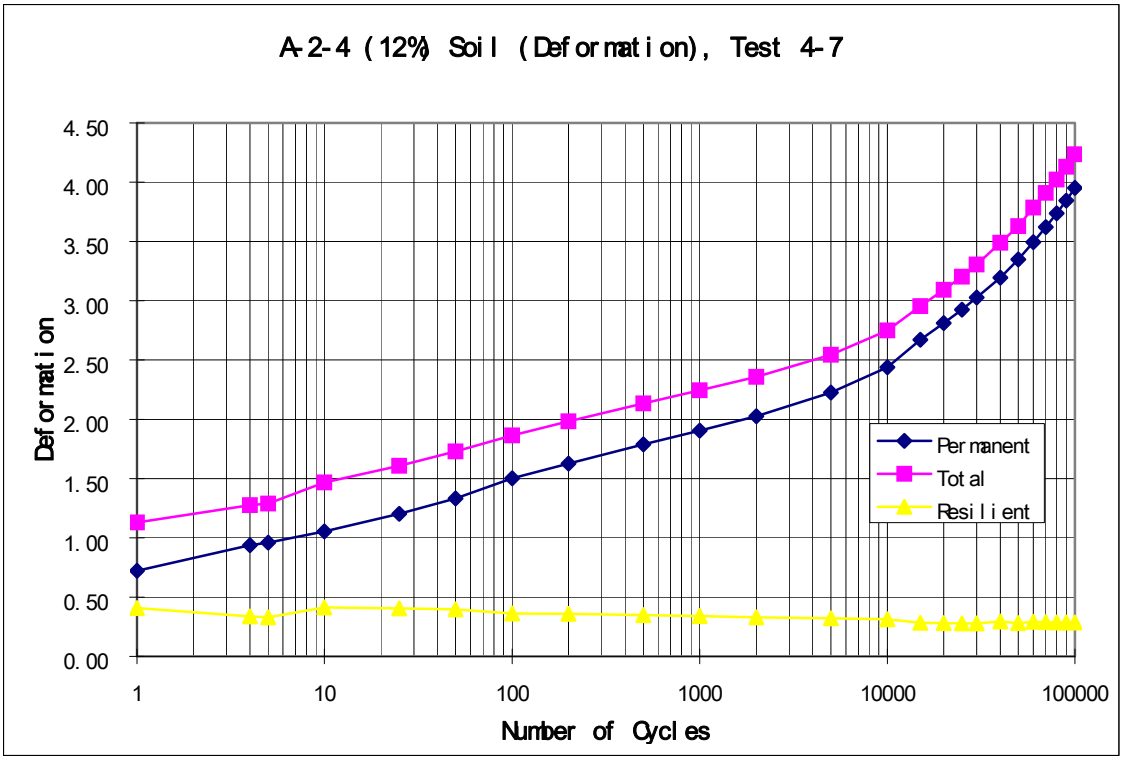


Figure F.35 A-2-4 (12%) Soil, Deformation under 50 psi Plate Load (Water Table at +12.0 in., with Limerock, Test 4-7)

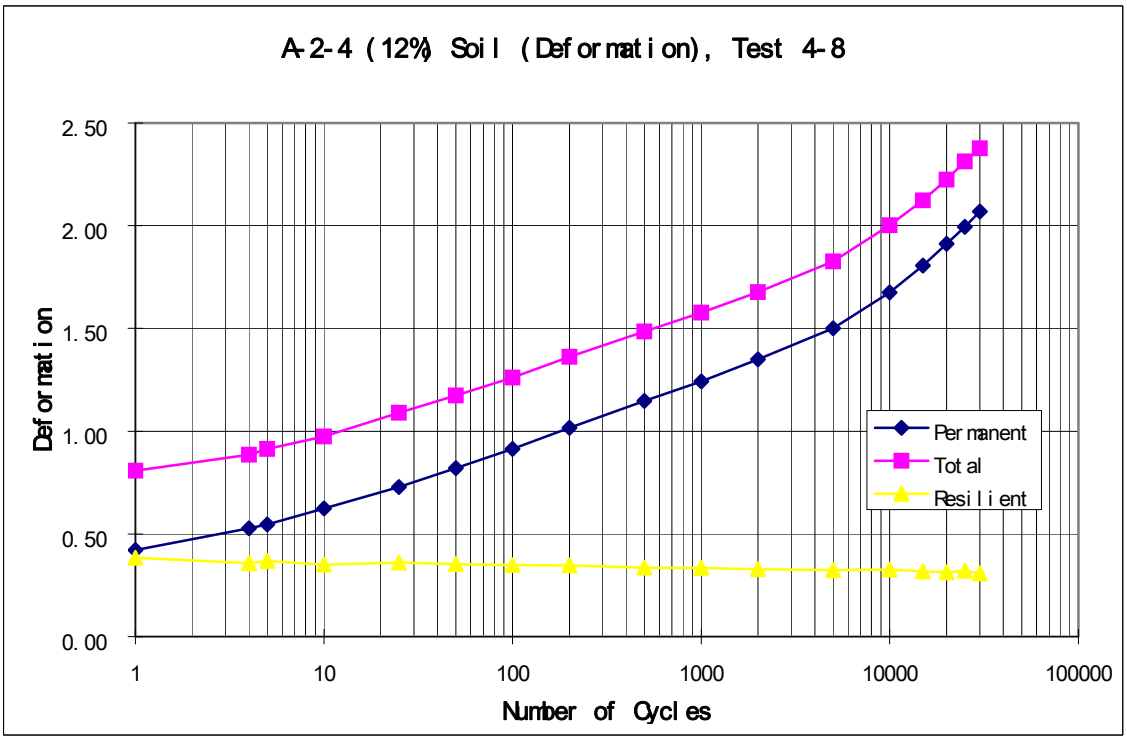


Figure F.36 A-2-4 (12%) Soil, Deformation under 50 psi Plate Load (Water Table at +12.0 in., with Limerock, Test 4-8)

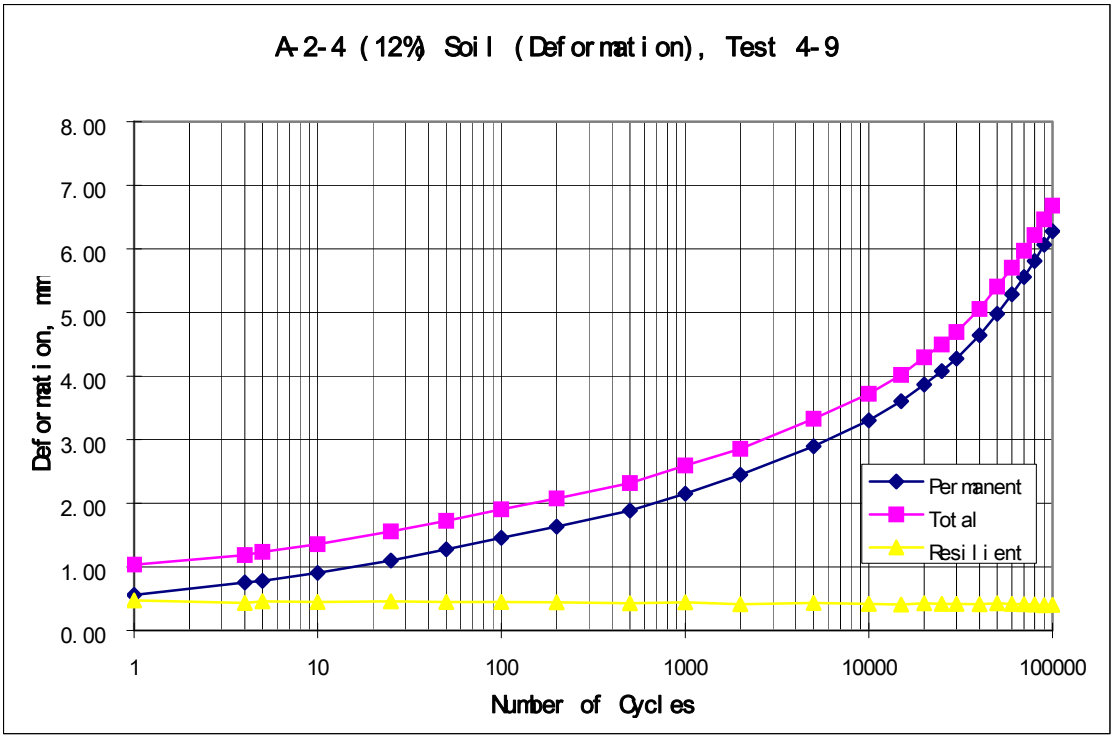


Figure F.37 A-2-4 (12%) Soil, Deformation under 50 psi Plate Load (Water Table at +36.0 in., with Limerock, Test 4-9)

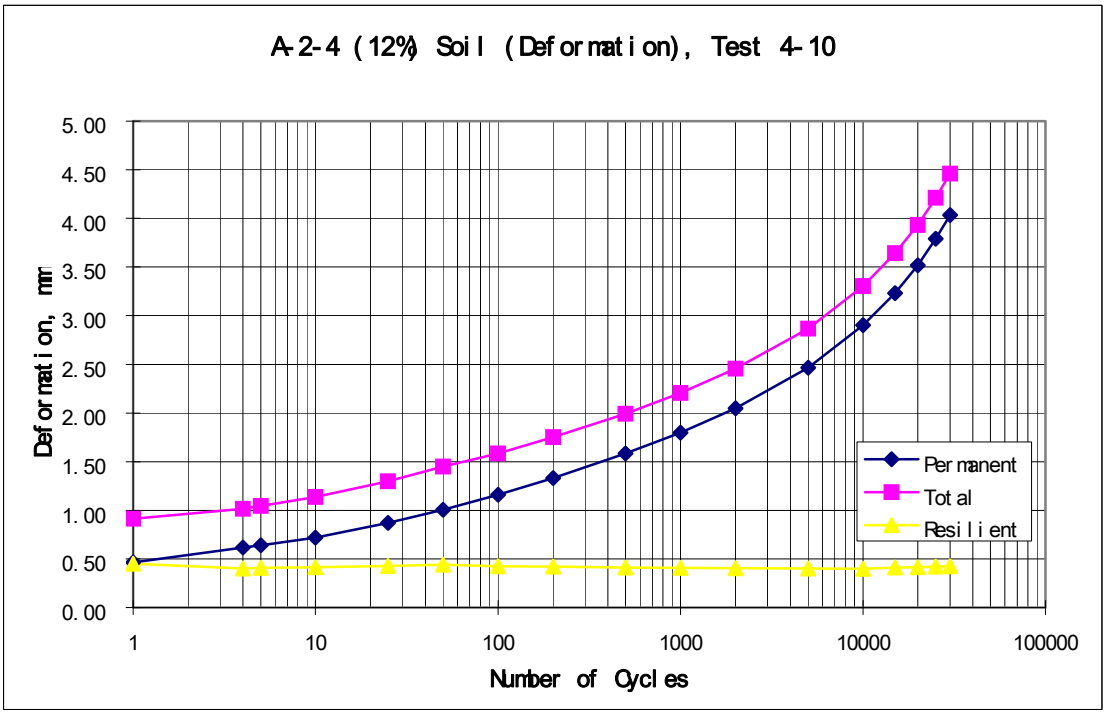


Figure F.38 A-2-4 (12%) Soil, Deformation under 50 psi Plate Load (Water Table at +36.0 in., with Limerock, Test 4-10)

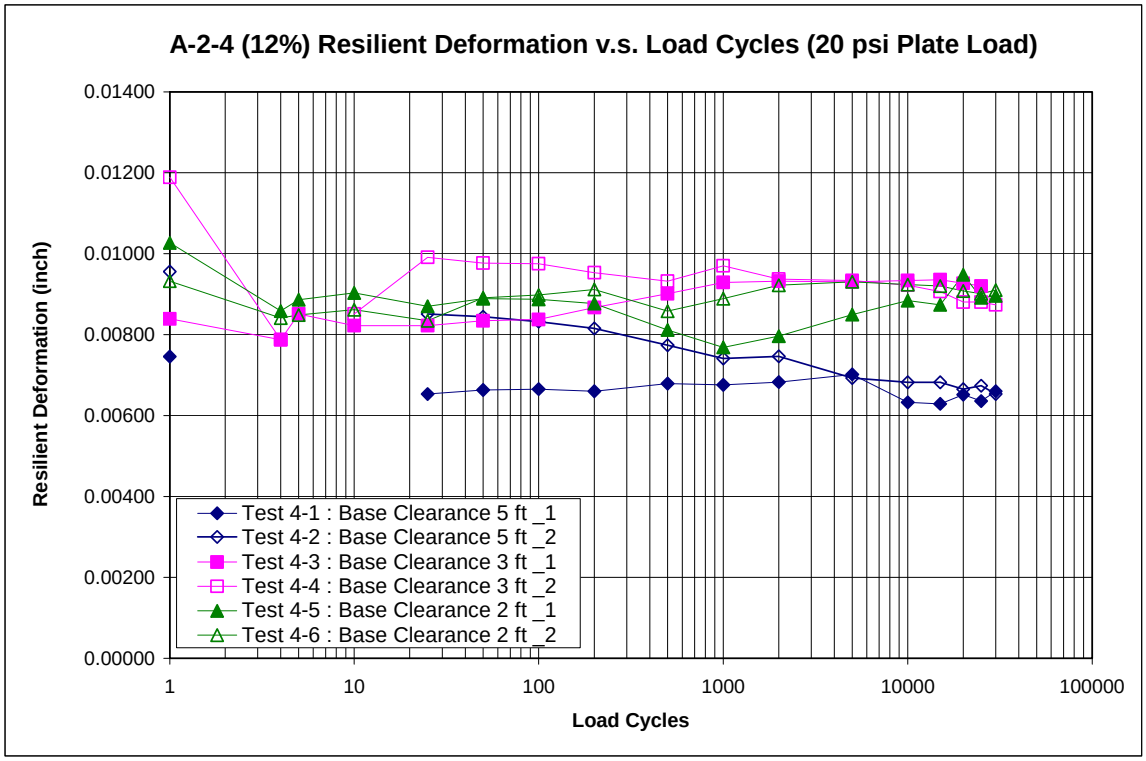


Figure F.39 A-2-4 (12%) Soil, Deformation Summary under 20 psi Plate Load at Different Water Table Level

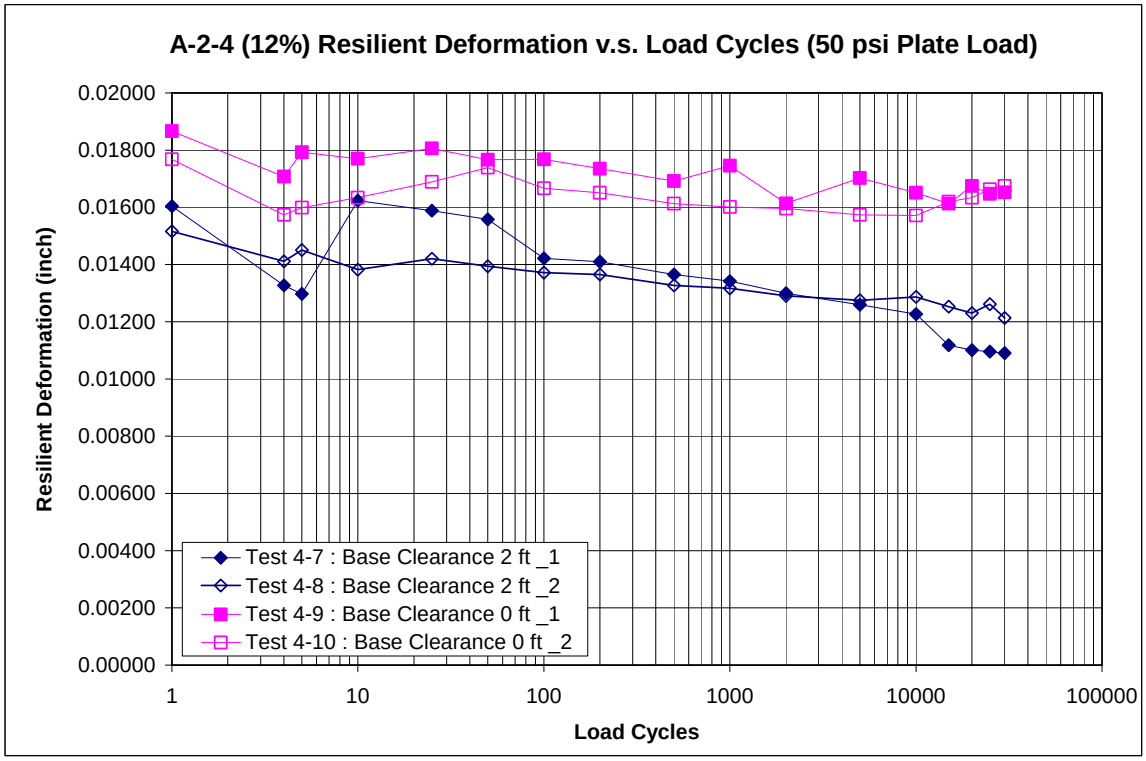


Figure F.40 A-2-4 (12%) Soil, Deformation Summary under 50 psi Plate Load at Different Water Table Level

F.5 A-2-4, 20% Soil

Table F.14 A-2-4, 20% Soil Plate Load Test, 20 psi w/out Limerock

Deformation with W.T. at -24 in., Test 5-1				Deformation with W.T. at -24 in., Test 5-2			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)	Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.1358	0.2536	0.1177	1	0.1568	0.3498	0.1930
4	0.1638	0.2894	0.1256	4	0.2168	0.3945	0.1777
5	0.1743	0.2999	0.1256	5	0.2286	0.38353924	0.154937436
10	0.2058	0.3315	0.1256	10	0.2649	0.4321	0.1672
25	0.2584	0.3879	0.1296	25	0.3262	0.4851	0.1589
50	0.2973	0.4260	0.1287	50	0.3735	0.5262	0.1527
100	0.3407	0.4960	0.1554	100	0.4269	0.5919	0.1650
200	0.3862	0.5319	0.1457	200	0.4842	0.6370	0.1527
500	0.4312	0.5766	0.1453	500	0.5503	0.7376	0.1873
1000	0.4654	0.6107	0.1453	1000	0.5906	0.7726	0.1821
2000	0.5035	0.6462	0.1427	2000	0.6313	0.8107	0.1794
5000	0.5687	0.7140	0.1453	5000	0.6978	0.8724	0.1746
10000	0.6361	0.7779	0.1418	10000	0.7718	0.9420	0.1703
15000	0.6895	0.8313	0.1418	15000	0.8260	0.9941	0.1681
20000	0.7389	0.8698	0.1309	20000	0.8716	1.0326	0.1611
25000	0.7788	0.9092	0.1304	25000	0.9035	1.0672	0.1637
30000	0.7971	0.9276	0.1304	30000	0.9359	1.0978	0.1619

Table F.14 Continued

Deformation with W.T. at 0 in., Test 5-3				Deformation with W.T. at 0 in., Test 5-4			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)	Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.0995	0.2711	0.1716	1	0.0842	0.2597	0.1755
4	0.1332	0.2820	0.1488	4	0.1328	0.2732	0.1405
5	0.1389	0.2995	0.1606	5	0.1380	0.2741	0.1361
10	0.1564	0.3122	0.1558	10	0.1678	0.3070	0.1392
25	0.1853	0.3433	0.1580	25	0.2146	0.3617	0.1471
50	0.2076	0.3665	0.1589	50	0.2531	0.3993	0.1462
100	0.2277	0.3905	0.1628	100	0.2908	0.4483	0.1576
200	0.2492	0.4111	0.1619	200	0.3240	0.4776	0.1536
500	0.2759	0.4387	0.1628	500	0.3625	0.5201	0.1576
1000	0.2960	0.4606	0.1646	1000	0.3923	0.5490	0.1567
2000	0.3179	0.4838	0.1659	2000	0.4256	0.5827	0.1571
5000	0.3586	0.5271	0.1685	5000	0.4825	0.6418	0.1593
10000	0.4063	0.5722	0.1659	10000	0.5429	0.6965	0.1536
15000	0.4470	0.6124	0.1654	15000	0.5884	0.7381	0.1497
20000	0.4803	0.6435	0.1633	20000	0.6260	0.7740	0.1479
25000	0.5061	0.6658	0.1598	25000	0.9035	1.0672	0.1637
30000	0.5310	0.6925	0.1615	30000	0.9359	1.0978	0.1619

Table F.14 Continued

Deformation with W.T. at +12 in., Test 5-5				Deformation with W.T. at +12 in., Test 5-6			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)	Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.1292	0.2741	0.1449	1	0.1975	0.3704	0.1729
4	0.1568	0.2754	0.1186	4	0.2991	0.4365	0.1375
5	0.1524	0.2921	0.1396	5			
10	0.1673	0.3008	0.1335	10	0.3687	0.5135	0.1449
25	0.1848	0.3174	0.1326	25	0.5245	0.6724	0.1479
50	0.2032	0.3402	0.1370	50	0.5897	0.7271	0.1374
100	0.2120	0.3595	0.1475	100	0.6085	0.7687	0.1602
200	0.2255	0.3787	0.1532	200	0.6291	0.7915	0.1624
500	0.2391	0.3945	0.1554	500	0.6518	0.8309	0.1790
1000	0.2457	0.4037	0.1580	1000	0.6742	0.8624	0.1882
2000	0.2641	0.4199	0.1558	2000	0.7127	0.9004	0.1878
5000	0.2969	0.4658	0.1689	5000	0.7678	0.9517	0.1838
10000	0.3420	0.5052	0.1633	10000	0.8304	1.0072	0.1768
15000	0.3757	0.5372	0.1615	15000	0.8790	1.0576	0.1786
20000	0.4094	0.5682	0.1589	20000	0.9201	1.0882	0.1681
25000	0.4343	0.5958	0.1615	25000	0.9512	1.1193	0.1681
30000	0.4544	0.6124	0.1580	30000	0.9884	1.1578	0.1694
40000	0.4969	0.6510	0.1541				
50000	0.5328	0.6895	0.1567				
60000	0.5704	0.7236	0.1532				
70000	0.6011	0.7608	0.1598				
80000	0.6313	0.7897	0.1584				
90000	0.6619	0.8230	0.1611				
100000	0.7070	0.8645	0.1576				

Table F.15 A-2-4, 20% Soil Plate Load Test, 50 psi with Limerock

Deformation with W.T. at +12 in., 50 psi, Test 5-7				Deformation with W.T. at +12 in., Test 5-8			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)	Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.5840	0.9906	0.4066	1	0.5227	0.8580	0.3353
4	0.7468	1.1040	0.3571	4	0.6536	0.9219	0.2683
5	0.7621	1.1381	0.3760	5	0.6624	0.9823	0.3199
10	0.8370	1.2020	0.3650	10	0.7153	1.0107	0.2954
25	0.9748	1.3884	0.4136	25	0.8077	1.1092	0.3016
50	1.0965	1.4825	0.3860	50	0.9018	1.2108	0.3090
100	1.2256	1.6182	0.3926	100	1.0042	1.3088	0.3046
200	1.3919	1.7451	0.3532	200	1.1105	1.4064	0.2959
500	1.5517	1.9075	0.3558	500	1.2449	1.5316	0.2867
1000	1.6734	2.0196	0.3462	1000	1.3333	1.6222	0.2889
2000	1.7714	2.1281	0.3567	2000	1.4200	1.7045	0.2845
5000	1.9198	2.2752	0.3554	5000	1.5596	1.8332	0.2735
10000	2.0559	2.3907	0.3348	10000	1.6765	1.9461	0.2696
15000	2.1539	2.4888	0.3348	15000	1.7649	2.0266	0.2617
20000	2.2353	2.5597	0.3243	20000	1.8310	2.0848	0.2539
25000	2.3023	2.6253	0.3230	25000	1.8791	2.1430	0.2639
30000	2.3614	2.6792	0.3178	30000	1.9229	2.1815	0.2587
40000	2.4651	2.7855	0.3204				
50000	2.5597	2.8809	0.3213				
60000	2.6507	2.9641	0.3134				
70000	2.7203	3.0328	0.3125				
80000	2.7982	3.1098	0.3116				
90000	2.8709	3.1764	0.3055				
100000	2.9216	3.2214	0.2998				

Table F.15 Continued

Deformation with W.T. at +36 in., Test 5-9				Deformation with W.T. at +36 in., Test 5-10			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)	Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.5529	1.0151	0.4622	1	0.5884	1.0624	0.4740
4	0.7617	1.1337	0.3720	4	0.8129	1.2121	0.3992
5	0.7893	1.1630	0.3738	5	0.8462	1.2501	0.4040
10	0.8956	1.2725	0.3768	10	0.9648	1.3714	0.4066
25	1.0895	1.4537	0.3641	25	1.1731	1.5784	0.4053
50	1.2501	1.6353	0.3852	50	1.3556	1.7552	0.3996
100	1.4340	1.8261	0.3922	100	1.5513	1.9224	0.3712
200	1.6248	2.0148	0.3900	200	1.7697	2.1325	0.3628
500	1.8848	2.2673	0.3825	500	2.0695	2.4144	0.3449
1000	2.0900	2.4270	0.3370	1000	2.3028	2.6372	0.3344
2000	2.2791	2.6266	0.3475	2000	2.5409	2.8621	0.3213
5000	2.5885	2.9886	0.4000	5000	2.9033	3.2223	0.3191
10000	2.9326	3.3637	0.4311	10000	3.3059	3.6097	0.3037
15000	3.2078	3.6324	0.4245	15000	3.5773	3.8701	0.2928
20000	3.4451	3.8652	0.4202	20000	3.7891	4.0916	0.3024
25000	3.6683	4.0906	0.4224	25000	3.9821	4.2671	0.2849
30000	3.8932	4.3239	0.4307	30000	4.1485	4.4373	0.2889
40000	4.2543	4.6920	0.4377				
50000	4.6097	5.0384	0.4287				
60000	4.8080	5.2156	0.4076				
70000	5.0574	5.5167	0.4593				
80000	5.3122	5.7595	0.4473				
90000	5.4890	5.9390	0.4499				
100000	5.6702	6.1210	0.4508				

Table F.16 Summary of Deformation for A-2-4 (20%) Soil Plate Load Test

Resilient Deformation (in.) for A-2-4, 20% Soil										
Test No.	5-1	5-2	5-3	5-4	5-5	5-6	5-7	5-8	5-9	5-10
Test Date	8/1/00	8/2/00	9/21/00	9/22/00	11/6/00	11/8/00	12/11/00	12/13/00	3/1/01	3/5/01
Loads (psi)	20	20	20	20	20	20	50	50	50	50
Limerock Layer	No	No	No	No	No	No	Yes	Yes	Yes	Yes
No.of Plate Load Cycles	Water Table (in. above Embankment)									
	-24	-24	0	0	12	12	12	12	36	36
1	0.00464	0.00760	0.00675	0.00691	0.00570	0.01604	0.01601	0.01320	0.01820	0.01866
4	0.00495	0.00700	0.00586	0.00553	0.00467	0.01327	0.01406	0.01056	0.01465	0.01572
5	0.00495	0.00610	0.00632	0.00536	0.00550		0.01480	0.01260	0.01472	0.01590
10	0.00495	0.00658	0.00613	0.00548	0.00526	0.00570	0.01437	0.01163	0.01484	0.01601
25	0.00510	0.00625	0.00622	0.00579	0.00522	0.00582	0.01628	0.01187	0.01434	0.01596
50	0.00507	0.00601	0.00625	0.00576	0.00539	0.00541	0.01520	0.01217	0.01516	0.01573
100	0.00612	0.00650	0.00641	0.00620	0.00581	0.00631	0.01546	0.01199	0.01544	0.01461
200	0.00574	0.00601	0.00638	0.00605	0.00603	0.00639	0.01391	0.01165	0.01535	0.01428
500	0.00572	0.00738	0.00641	0.00620	0.00612	0.00705	0.01401	0.01129	0.01506	0.01358
1000	0.00572	0.00717	0.00648	0.00617	0.00622	0.00741	0.01363	0.01137	0.01327	0.01316
2000	0.00562	0.00706	0.00653	0.00619	0.00613	0.00739	0.01404	0.01120	0.01368	0.01265
5000	0.00572	0.00688	0.00663	0.00627	0.00665	0.00724	0.01399	0.01077	0.01575	0.01256
10000	0.00558	0.00670	0.00653	0.00605	0.00643	0.00696	0.01318	0.01061	0.01697	0.01196
15000	0.00558	0.00662	0.00651	0.00589	0.00636	0.00703	0.01318	0.01030	0.01671	0.01153
20000	0.00515	0.00634	0.00643	0.00582	0.00625	0.00662	0.01277	0.00999	0.01654	0.01191
25000	0.00513	0.00644	0.00629	0.00644	0.00636	0.00662	0.01272	0.01039	0.01663	0.01122
30000	0.00513	0.00638	0.00636	0.00638	0.00622	0.00667	0.01251	0.01018	0.01696	0.01137
Average from 10,000 Cycles	0.00532	0.00650	0.00642	0.00612	0.00632	0.00678	0.01287	0.01030	0.01676	0.01160

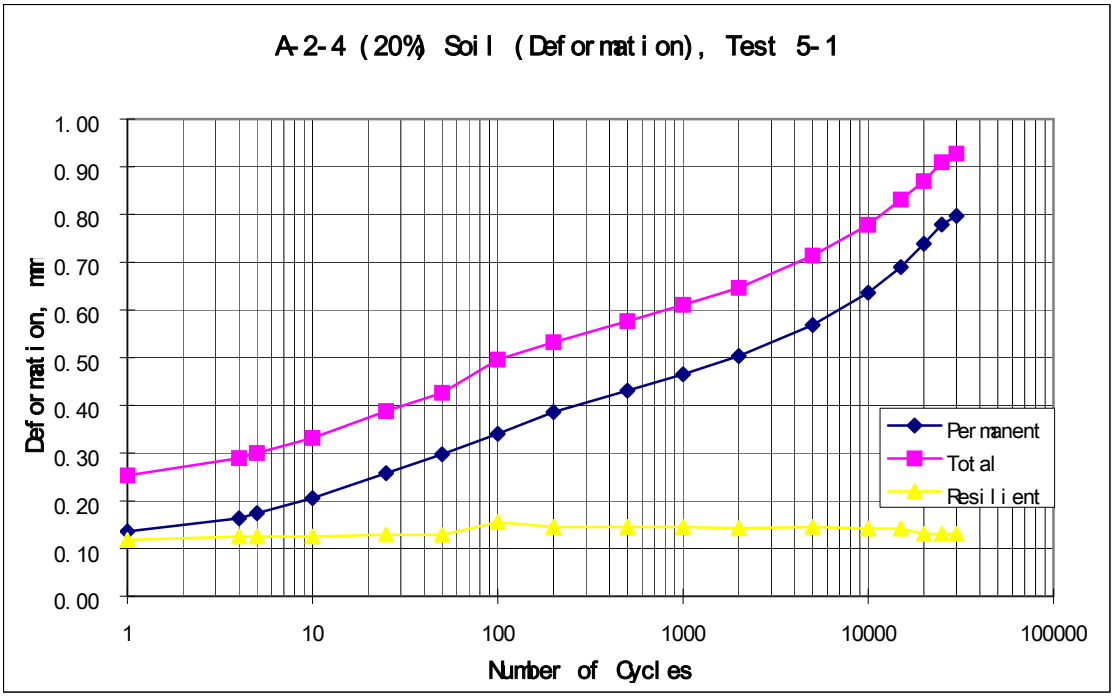


Figure F.41 A-2-4 (20%) Soil, Deformation under 20 psi Plate Load (Water Table at -24 in., no Limerock, Test 5-1)

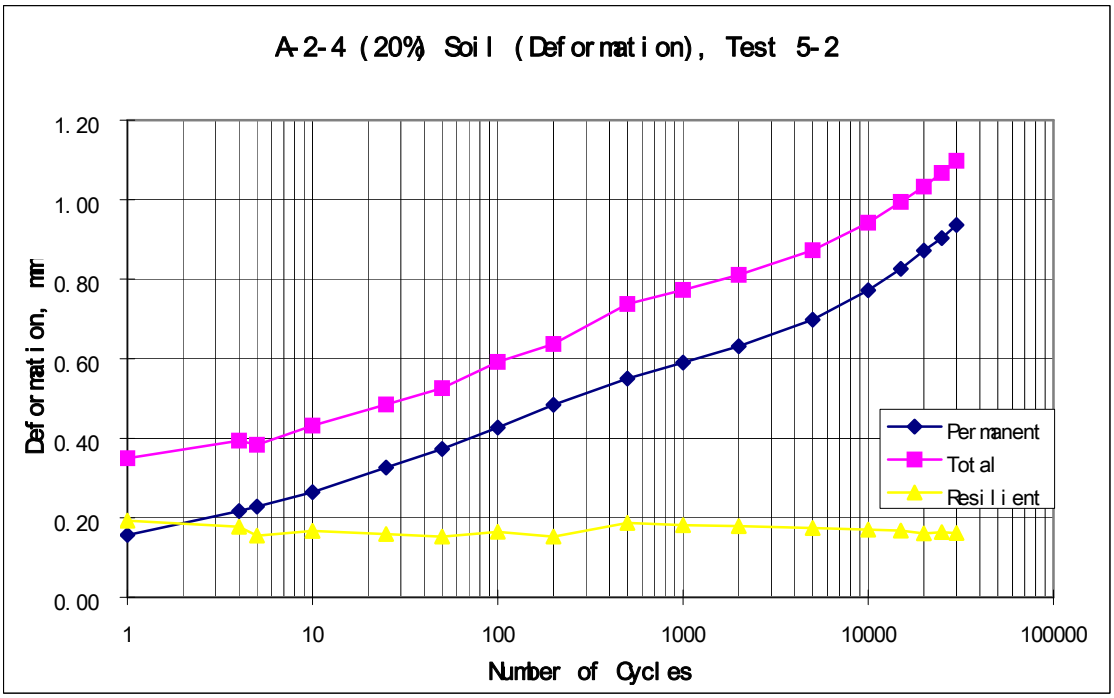


Figure F.42 A-2-4 (20%) Soil, Deformation under 20 psi Plate Load (Water Table at -24 in., no Limerock, Test 5-2)

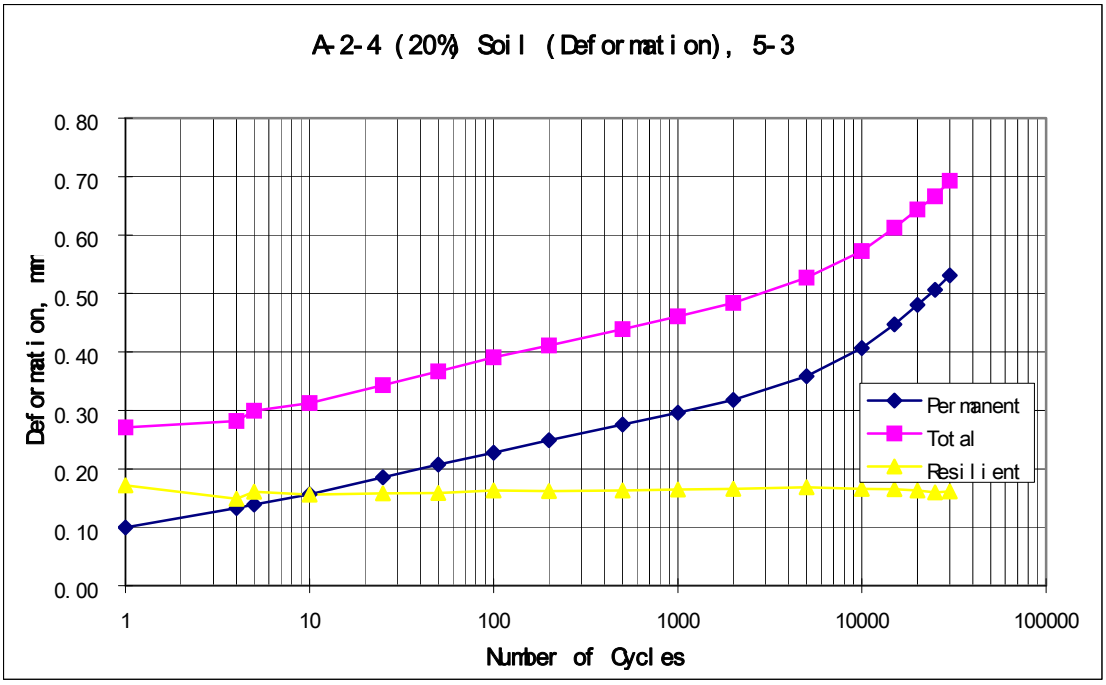


Figure F.43 A-2-4 (20%) Soil, Deformation under 20 psi Plate Load (Water Table at +0 in., no Limerock, Test 5-3)

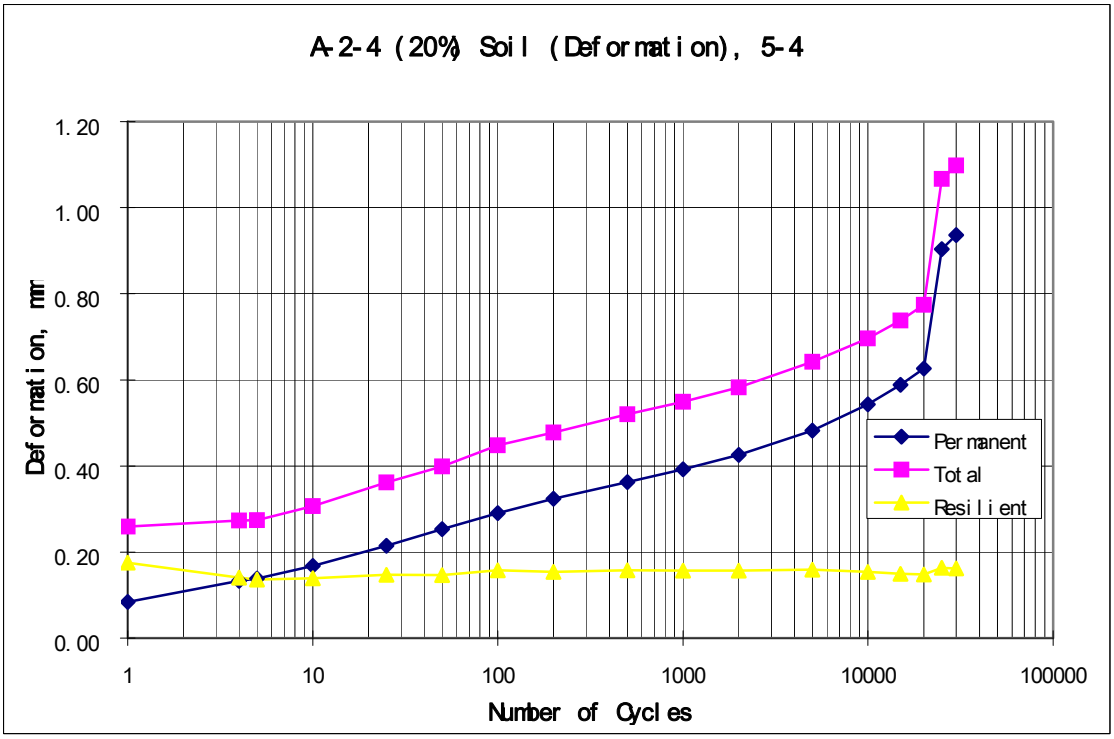


Figure F.44 A-2-4 (20%) Soil, Deformation under 20 psi Plate Load (Water Table at +0 in., no Limerock, Test 5-4)

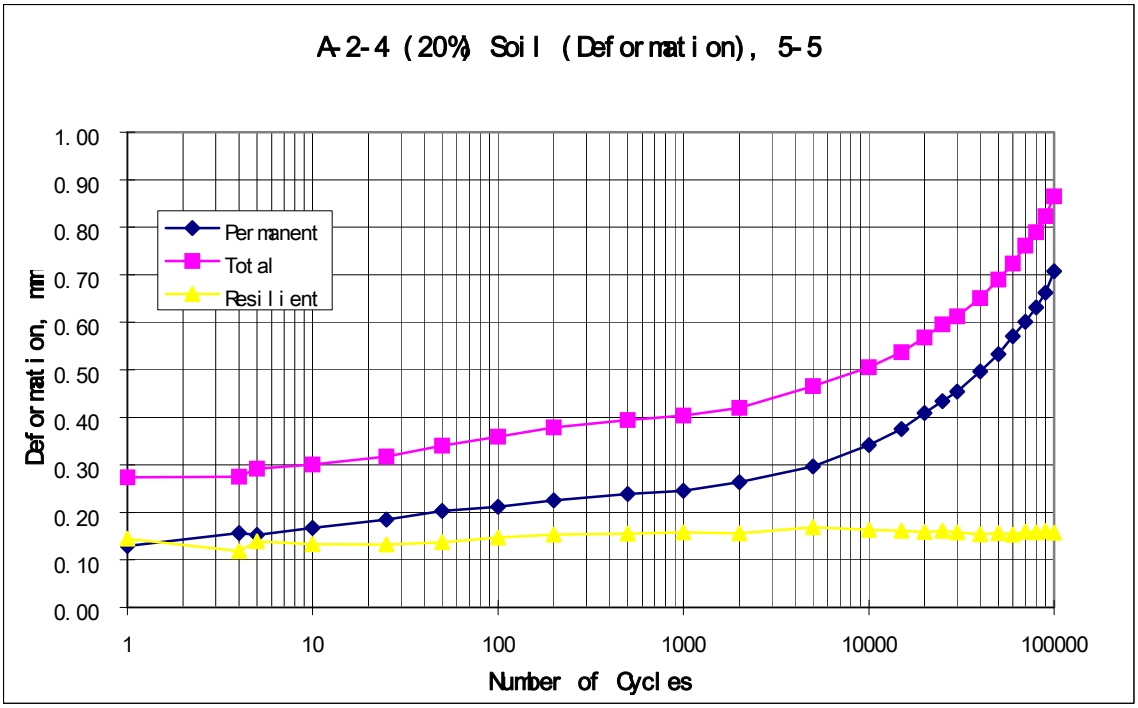


Figure F.45 A-2-4 (20%) Soil, Deformation under 20 psi Plate Load (Water Table at +12.0 in., no Limerock, Test 4-5)

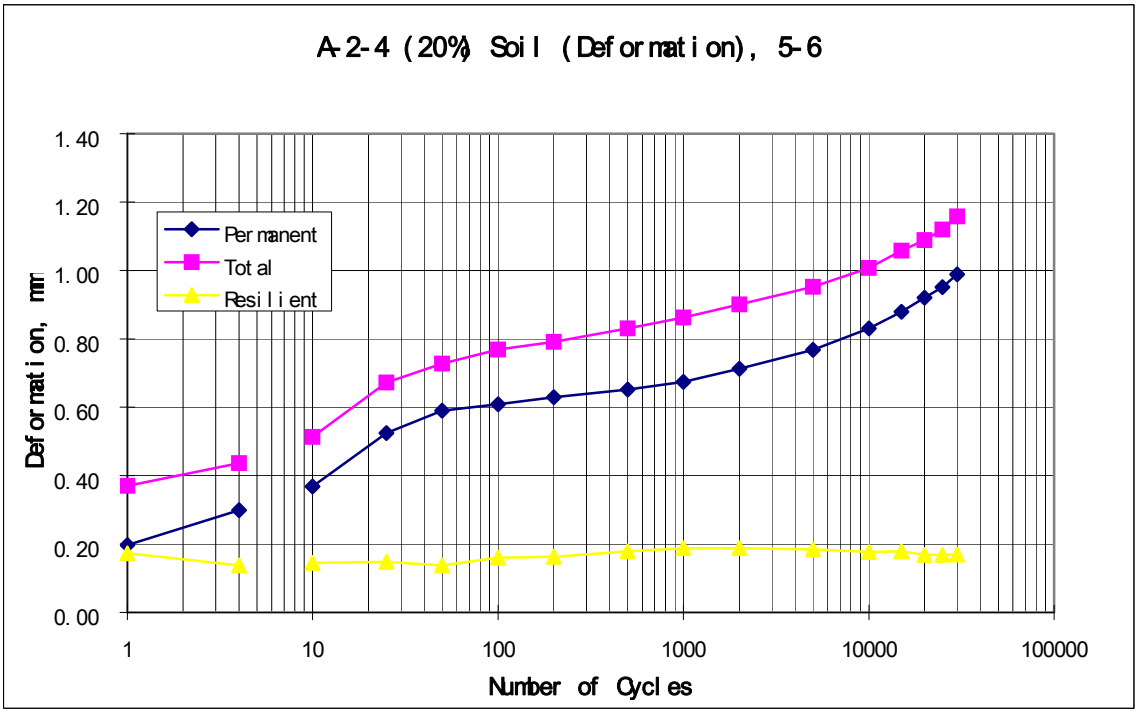


Figure F.46 A-2-4 (20%) Soil, Deformation under 20 psi Plate Load (Water Table at +12.0 in., no Limerock, Test 4-6)

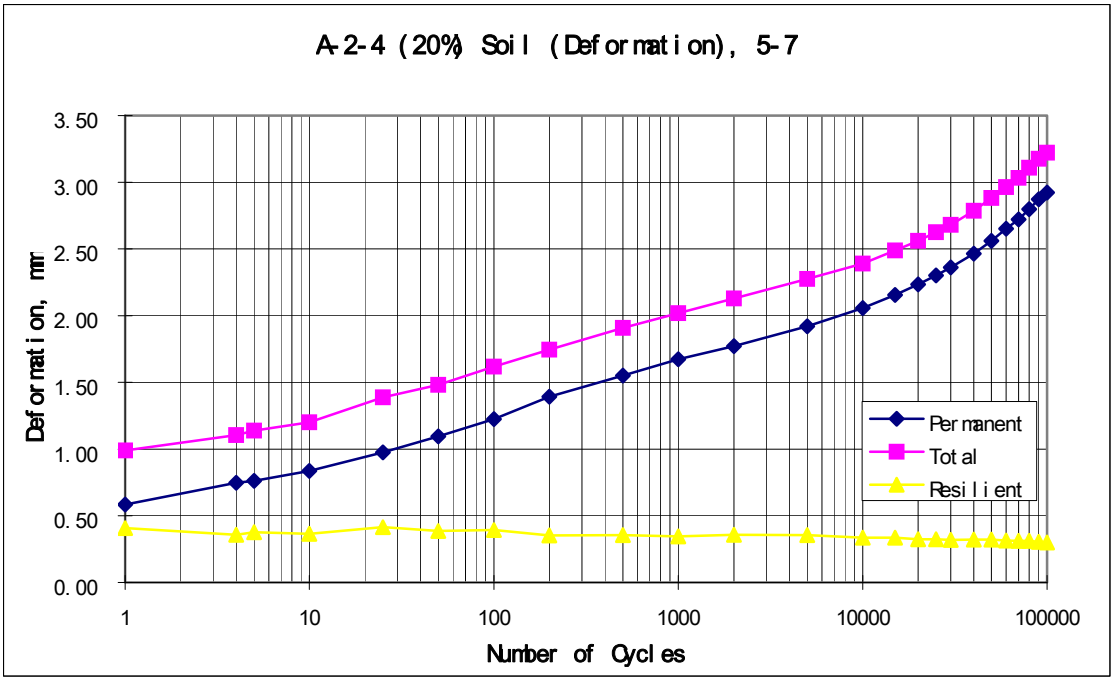


Figure F.47 A-2-4 (20%) Soil, Deformation under 50 psi Plate Load (Water Table at +12.0 in., w/ Limerock, Test 4-7)

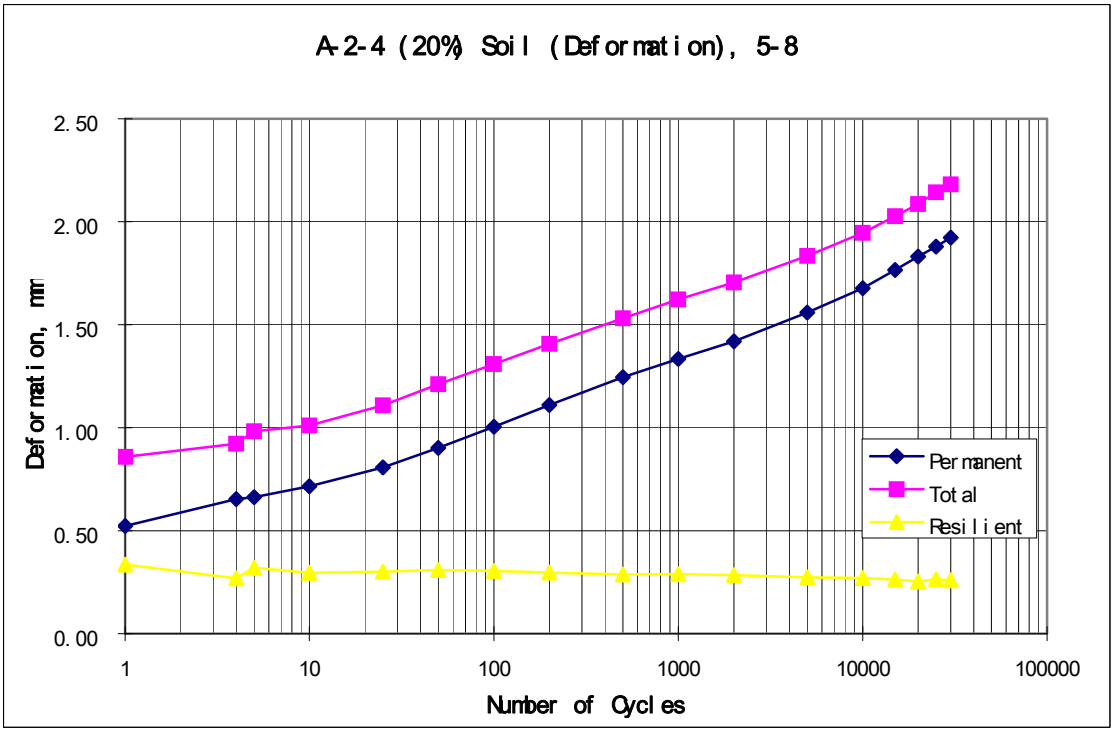


Figure F.48 A-2-4 (20%) Soil, Deformation under 50 psi Plate Load (Water Table at +12.0 in., w/ Limerock, Test 4-8)

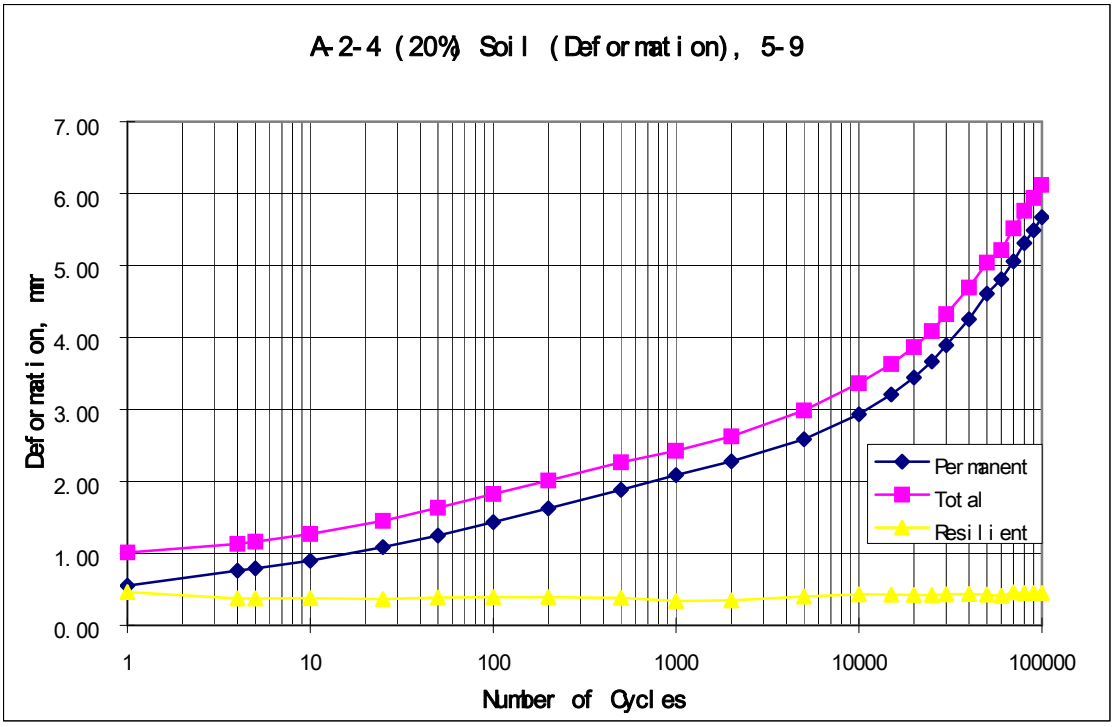


Figure F.49 A-2-4 (20%) Soil, Deformation under 50 psi Plate Load (Water Table at +36.0 in., w/ Limerock, Test 4-9)

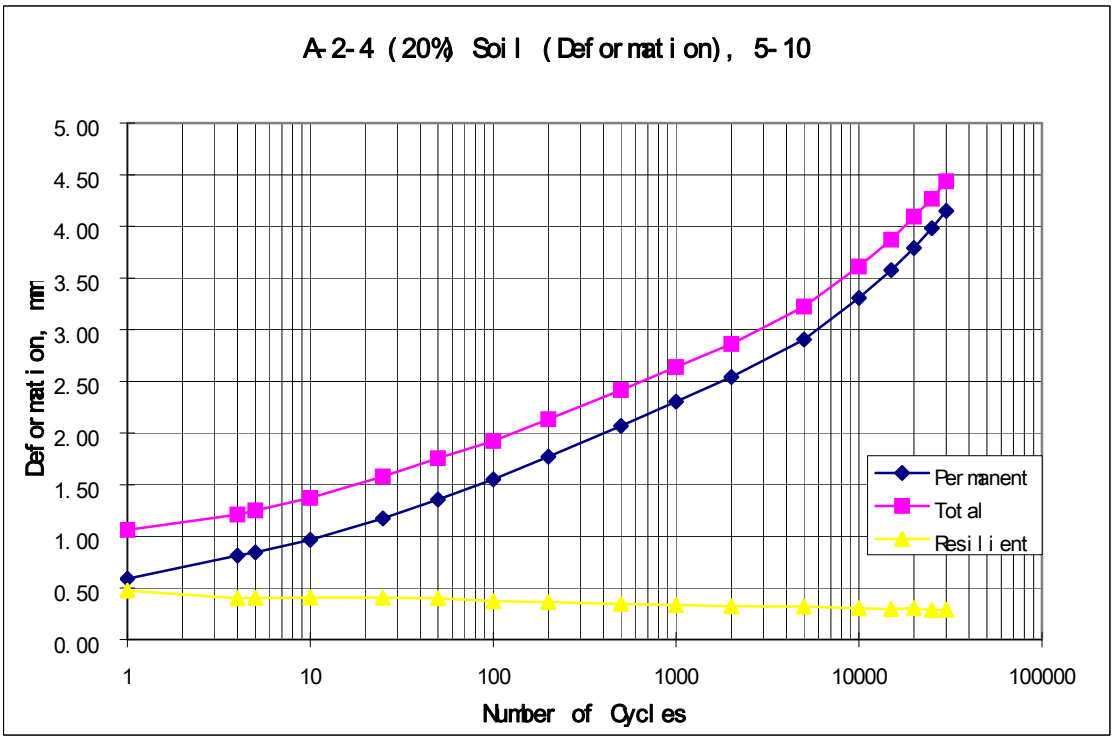


Figure F.50 A-2-4 (20%) Soil, Deformation under 50 psi Plate Load (Water Table at +36.0 in., w/ Limerock, Test 4-10)

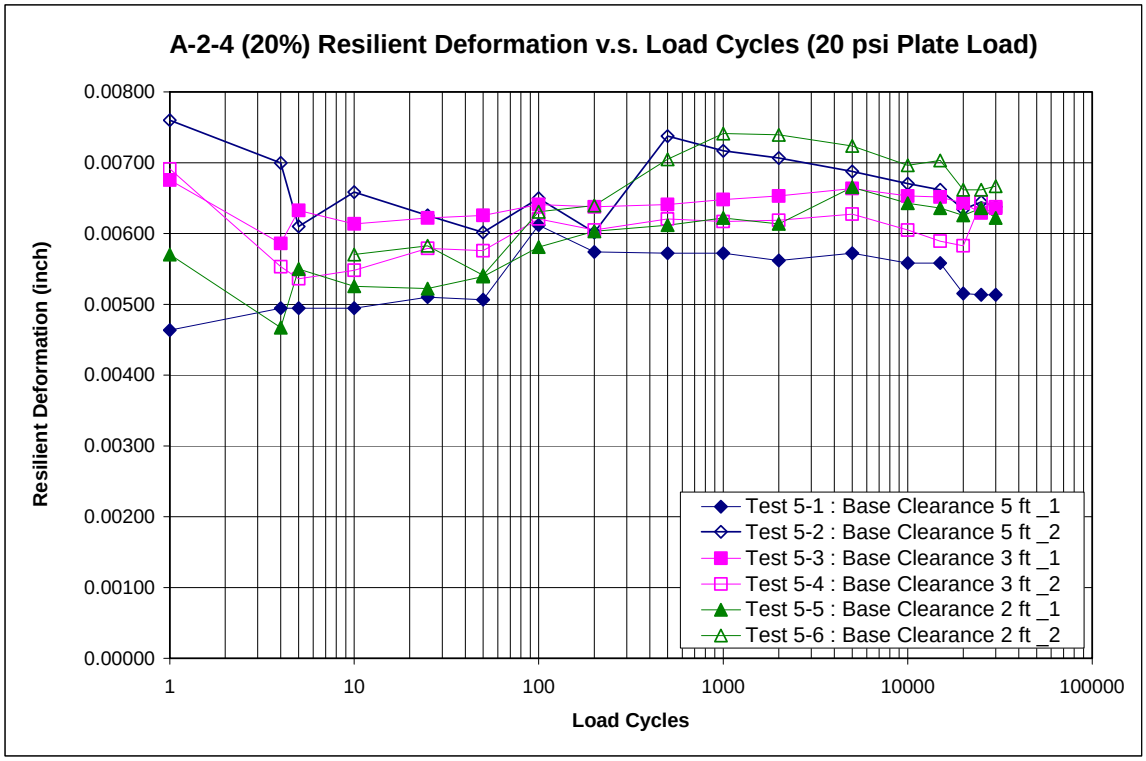


Figure F.51 A-2-4 (20%) Soil, Deformation Summary under 20 psi Plate Load at Different Water Table Level

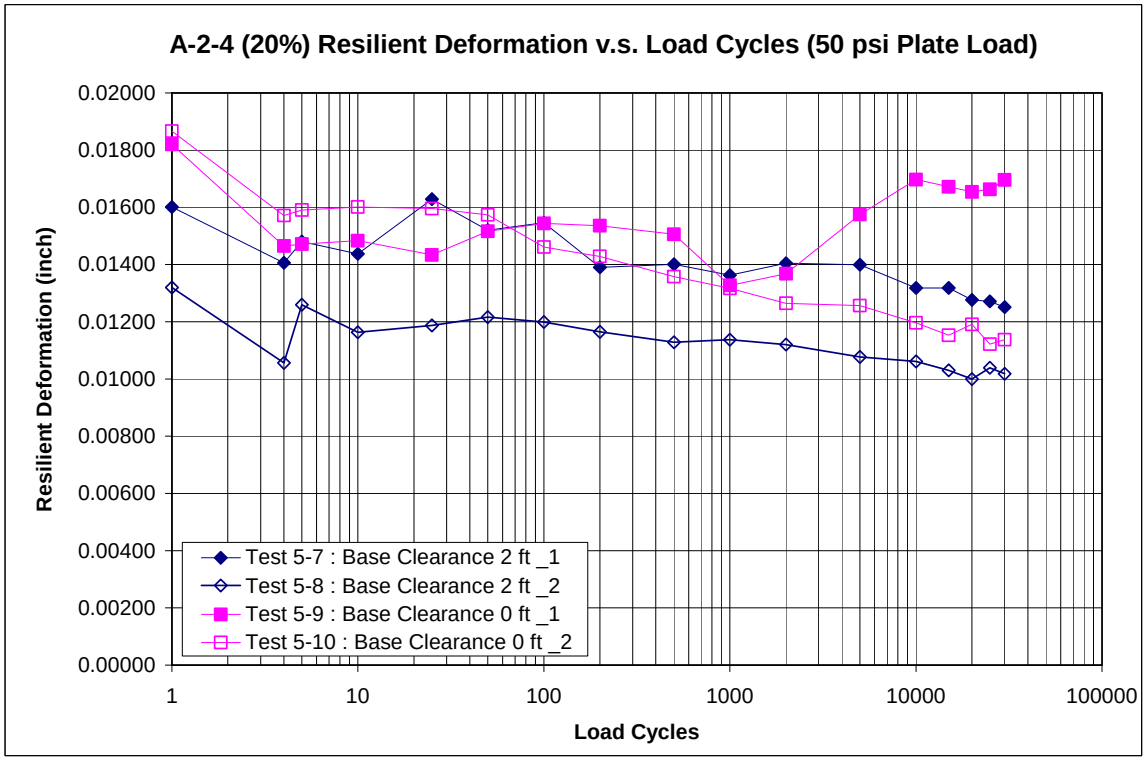


Figure F.52 A-2-4 (20%) Soil, Deformation Summary under 50 psi Plate Load at Different Water Table Level

F.6 A-2-4, 24% Soil

Table F.17 A-2-4, 24% Soil Plate Load Test, 20 psi w/out Limerock

Deformation with W.T. at -24 in., Test 6-1				Deformation with W.T. at -24 in., Test 6-2			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)	Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.2531	0.4776	0.2245	1	0.1209	0.2124	0.0915
50	0.4308	0.6291	0.1983	4	0.0820	0.2261	0.1441
100	0.4737	0.6720	0.1983	5	0.0864	0.2273	0.1409
200	0.5258	0.7241	0.1983	10	0.1008	0.2449	0.1441
500	0.6103	0.8085	0.1983	25	0.1301	0.3056	0.1755
1000	0.6737	0.8720	0.1983	50	0.1564	0.3319	0.1755
2000	0.7092	0.9018	0.1926	100	0.1853	0.3610	0.1757
5000	0.7473	0.9219	0.1746	200	0.2142	0.3888	0.1746
10000	0.7376	0.9057	0.1681	500	0.2452	0.4330	0.1878
15000	0.7560	0.9320	0.1759	1000	0.2627	0.4444	0.1816
20000	0.7700	0.9398	0.1698	2000	0.2732	0.4492	0.1759
25000	0.7805	0.9455	0.1650	5000	0.2811	0.4606	0.1794
30000	0.7950	0.9521	0.1571	10000	0.2947	0.4720	0.1773
				15000	0.3039	0.4785	0.1746
				20000	0.3100	0.4820	0.1720
				25000	0.3214	0.4947	0.1733
				30000	0.3323	0.5061	0.1738

Deformation with W.T. at 0 in., Test 6-3				Deformation with W.T. at 0 in., Test 6-4			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)	Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.0842	0.2597	0.1755	1	0.1437	0.2255	0.0818
4	0.1328	0.2732	0.1405	4	0.1577	0.2067	0.0490
5	0.1380	0.2741	0.1361	5	0.1621	0.2417	0.0797
10	0.1678	0.3070	0.1392	10	0.1730	0.2588	0.0858
25	0.2146	0.3617	0.1471	25	0.2063	0.2934	0.0871
50	0.2531	0.3993	0.1462	50	0.2128	0.3008	0.0880
100	0.2908	0.4483	0.1576	100	0.2334	0.3301	0.0967
200	0.3240	0.4776	0.1536	200	0.2479	0.3490	0.1011
500	0.3625	0.5201	0.1576	500	0.2619	0.3787	0.1169
1000	0.3923	0.5490	0.1567	1000	0.2702	0.4041	0.1339
2000	0.4256	0.5827	0.1571	2000	0.2934	0.4234	0.1300
5000	0.4825	0.6418	0.1593	5000	0.3367	0.4720	0.1352
10000	0.7718	0.9420	0.1703	10000	0.3822	0.5262	0.1440
15000	0.8260	0.9941	0.1681	15000	0.4172	0.5652	0.1479
20000	0.8716	1.0326	0.1611	20000	0.4492	0.5936	0.1444
25000	0.9035	1.0672	0.1637	25000	0.4794	0.6251	0.1457
30000	0.9359	1.0978	0.1619	30000	0.4991	0.6505	0.1514

Table F.17 Continued

Deformation with W.T. at +12 in., Test 6-5				Deformation with W.T. at +12 in., Test 6-6			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)	Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.1870	0.4177	0.2307	1	0.2137	0.4685	0.2547
4	0.2422	0.4339	0.1917	4	0.2715	0.4899	0.2184
5	0.2439	0.4505	0.2066	5	0.2803	0.4982	0.2180
10	0.2706	0.4776	0.2070	10	0.3105	0.5293	0.2188
25	0.3096	0.5052	0.1956	25	0.3621	0.5814	0.2193
50	0.3428	0.5564	0.2136	50	0.4094	0.6330	0.2237
100	0.3870	0.5989	0.2118	100	0.4597	0.6842	0.2245
200	0.4326	0.6418	0.2092	200	0.5087	0.7359	0.2272
500	0.4873	0.6995	0.2123	500	0.5735	0.8028	0.2293
1000	0.5310	0.7477	0.2166	1000	0.6273	0.8571	0.2298
2000	0.5757	0.7845	0.2088	2000	0.6834	0.9131	0.2298
5000	0.6431	0.8540	0.2110	5000	0.7617	0.9906	0.2289
10000	0.7144	0.9201	0.2057	10000	0.8444	1.0716	0.2272
15000	0.7613	0.9670	0.2057	15000	0.9057	1.1307	0.2250
20000	0.8033	1.0064	0.2031	20000	0.9534	1.1766	0.2232
25000	0.8352	1.0440	0.2088	25000	0.9976	1.2182	0.2206
30000	0.8632	1.0720	0.2088	30000	1.0361	1.2589	0.2228
				40000	1.1009	1.3232	0.2223
				50000	1.1587	1.3823	0.2237
				60000	1.2108	1.4366	0.2258
				70000	1.2550	1.4843	0.2293
				80000	1.2930	1.5184	0.2254
				90000	1.3259	1.5500	0.2241
				100000	1.3543	1.5762	0.2219

Table F.18 A-2-4, 24% Soil Plate Load Test, 50 psi with Limerock

Deformation with W.T. at +12 in., Test 6-7				Deformation with W.T. at +12 in., Test 6-8			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)	Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.6829	1.1048	0.4219	1	0.6383	1.0475	0.4092
4	0.8698	1.2125	0.3427	4	0.8173	1.1403	0.3230
5	0.8891	1.2480	0.3589	5	0.8339	1.1574	0.3234
10	0.9714	1.3421	0.3707	10	0.8882	1.2300	0.3418
25	1.1149	1.4992	0.3843	25	0.9906	1.3526	0.3620
50	1.2510	1.6309	0.3799	50	1.0965	1.4655	0.3690
100	1.3955	1.7714	0.3760	100	1.2090	1.5775	0.3685
200	1.5399	1.8970	0.3571	200	1.3268	1.6913	0.3646
500	1.7071	2.0607	0.3536	500	1.4782	1.8323	0.3541
1000	1.8183	2.1592	0.3410	1000	1.5872	1.9417	0.3545
2000	1.9294	2.2647	0.3353	2000	1.7023	2.0467	0.3445
5000	2.0721	2.4209	0.3488	5000	1.8809	2.2292	0.3484
10000	2.1934	2.5365	0.3431	10000	2.0375	2.3890	0.3515
15000	2.2805	2.6161	0.3357	15000	2.1487	2.4919	0.3431
20000	2.3470	2.6801	0.3331	20000	2.2306	2.5794	0.3488
25000	2.3964	2.7199	0.3234	25000	2.2945	2.6394	0.3449
30000	2.4420	2.7728	0.3309	30000	2.3496	2.6897	0.3401
40000	2.5282	2.8669	0.3388				
50000	2.6035	2.9357	0.3322				
60000	2.6800	3.0153	0.3353				
70000	2.7435	3.0726	0.3291				
80000	2.8114	3.1365	0.3252				
90000	2.8700	3.1961	0.3261				
100000	2.9225	3.2473	0.3248				

Deformation with W.T. at +36 in.,Test 6-9				Deformation with W.T. at +36 in., Test 6-10			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)	Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.8203	1.3351	0.5147	1	0.7980	1.3622	0.5642
4	1.0615	1.4834	0.4219	4	1.0615	1.5429	0.4814
5	1.0860	1.5543	0.4683	5	1.0878	1.5889	0.5011
10	1.2151	1.6887	0.4736	10	1.2024	1.6988	0.4963
25	1.4637	1.9469	0.4832	25	1.4397	1.9500	0.5103
50	1.7119	2.2030	0.4911	50	1.6668	2.1885	0.5217
100	2.0957	2.4857	0.3900	100	1.9338	2.4918	0.5580
200	2.3776	2.7965	0.4189	200	2.2336	2.7947	0.5611
500	2.8201	3.2057	0.3856	500	2.6831	3.2411	0.5580
1000	3.1046	3.4718	0.3672	1000	3.0717	3.6127	0.5410
2000	3.3659	3.7257	0.3598	2000	3.4665	4.0233	0.5567
5000	3.7081	4.0872	0.3790	5000	4.1953	4.6067	0.4114
10000	4.0193	4.4172	0.3978	10000	4.4977	4.9214	0.4237
15000	4.2347	4.6281	0.3935	15000	4.7108	5.1420	0.4311
20000	4.4106	4.8181	0.4075	20000	4.8916	5.3323	0.4407
25000	4.5625	4.9884	0.4259	25000	5.0522	5.4991	0.4469
30000	4.6675	5.1065	0.4390	30000	5.1945	5.7031	0.5086
40000	4.8951	5.3459	0.4508				
50000	5.0938	5.5516	0.4578				
60000	5.2794	5.7324	0.4530				
70000	5.4519	5.9053	0.4534				
80000	5.6169	6.0690	0.4521				
90000	5.7941	6.2397	0.4456				
100000	5.9394	6.3775	0.4381				

Table F.19 Summary of Deformation for A-2-4 (24%) Soil Plate Load Test

Resilient Deformation (in.) for A-2-4, 24% Soil										
Test No.	6-1	6-2	6-3	6-4	6-5	6-6	6-7	6-8	6-9	6-10
Test Date	7/27/00	7/28/00	9/25/00	9/26/00	11/9/00	11/14/00	12/18/00	12/20/00	3/6/01	3/8/01
Loads (psi)	20	20	20	20	20	20	50	50	50	50
Limerock Layer	No	No	No	No	No	No	Yes	Yes	Yes	Yes
No.of Plate Load Cycles	Water Table (in. above Embankment)									
	-24	-24	0	0	12	12	12	12	36	36
1	0.00884	0.00360	0.00691	0.00322	0.00908	0.01003	0.01661	0.01611	0.02026	0.02221
4		0.00567	0.00553	0.00193	0.00755	0.00860	0.01349	0.01272	0.01661	0.01895
5		0.00555	0.00536	0.00314	0.00813	0.00858	0.01413	0.01273	0.01844	0.01973
10		0.00567	0.00548	0.00338	0.00815	0.00862	0.01460	0.01346	0.01864	0.01954
25		0.00691	0.00579	0.00343	0.00770	0.00863	0.01513	0.01425	0.01902	0.02009
50	0.00781	0.00691	0.00576	0.00346	0.00841	0.00881	0.01496	0.01453	0.01933	0.02054
100	0.00781	0.00692	0.00620	0.00381	0.00834	0.00884	0.01480	0.01451	0.01535	0.02197
200	0.00781	0.00688	0.00605	0.00398	0.00824	0.00894	0.01406	0.01435	0.01649	0.02209
500	0.00781	0.00739	0.00620	0.00460	0.00836	0.00903	0.01392	0.01394	0.01518	0.02197
1000	0.00781	0.00715	0.00617	0.00527	0.00853	0.00905	0.01342	0.01396	0.01446	0.02130
2000	0.00758	0.00693	0.00619	0.00512	0.00822	0.00905	0.01320	0.01356	0.01416	0.02192
5000	0.00688	0.00706	0.00627	0.00532	0.00831	0.00901	0.01373	0.01372	0.01492	0.01620
10000	0.00662	0.00698	0.00670	0.00567	0.00810	0.00894	0.01351	0.01384	0.01566	0.01668
15000	0.00693	0.00688	0.00662	0.00582	0.00810	0.00886	0.01322	0.01351	0.01549	0.01697
20000	0.00669	0.00677	0.00634	0.00569	0.00800	0.00879	0.01311	0.01373	0.01604	0.01735
25000	0.00650	0.00682	0.00644	0.00574	0.00822	0.00868	0.01273	0.01358	0.01677	0.01759
30000	0.00619	0.00684	0.00638	0.00596	0.00822	0.00877	0.01303	0.01339	0.01728	0.02002
Average from 10,000 Cycles	0.00658	0.00686	0.00650	0.00578	0.00813	0.00881	0.01312	0.01361	0.01625	0.01772

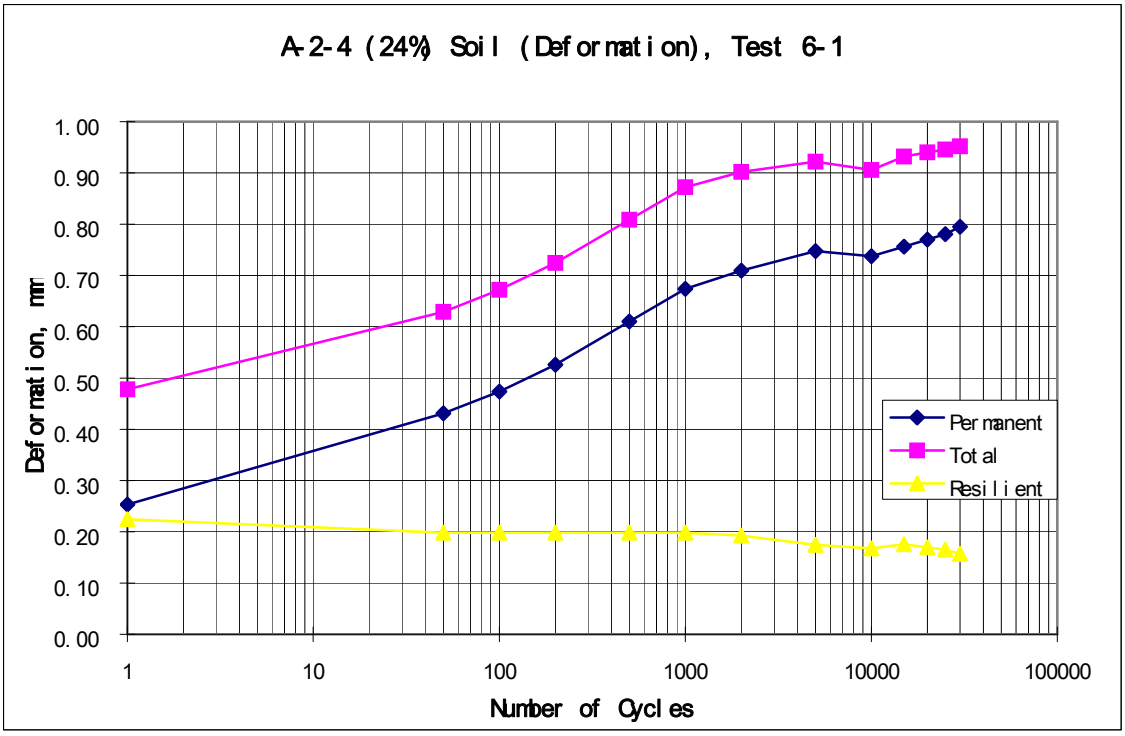


Figure F.53 A-2-4 (24%) Soil, Deformation under 20 psi Plate Load (Water Table at -24 in., no Limerock, Test 6-1)

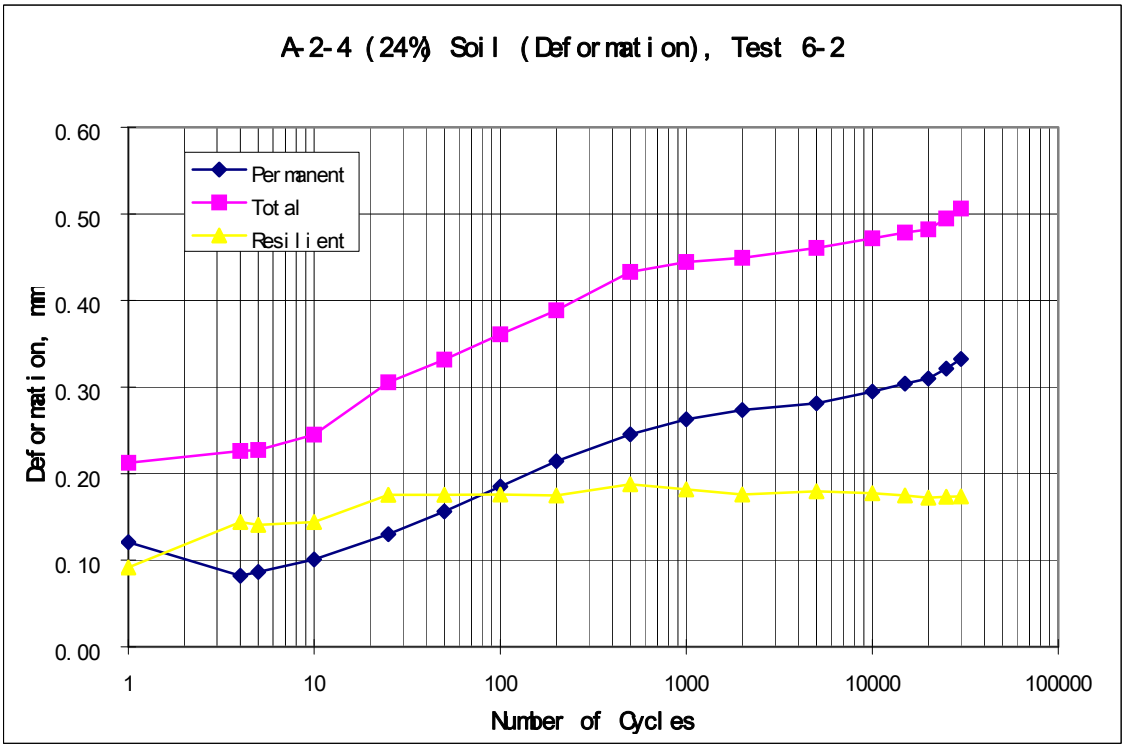


Figure F.54 A-2-4 (24%) Soil, Deformation under 20 psi Plate Load (Water Table at -24 in., no Limerock, Test 6-2)

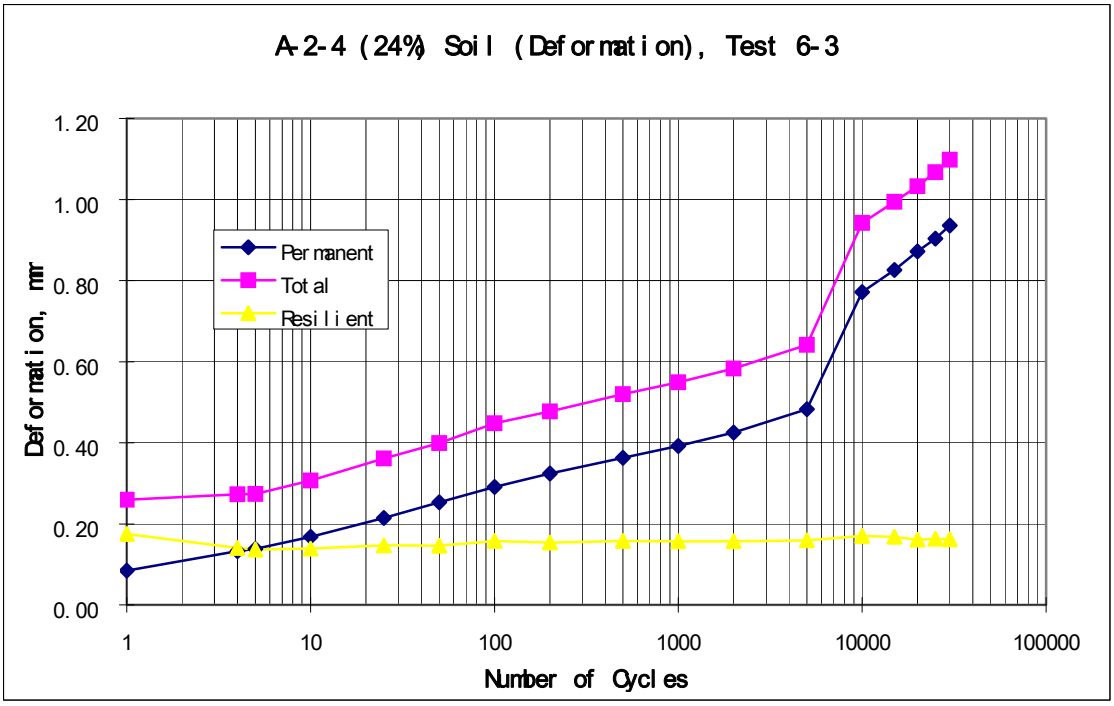


Figure F.55 A-2-4 (24%) Soil, Deformation under 20 psi Plate Load (Water Table at +0.0 in., no Limerock, Test 6-3)

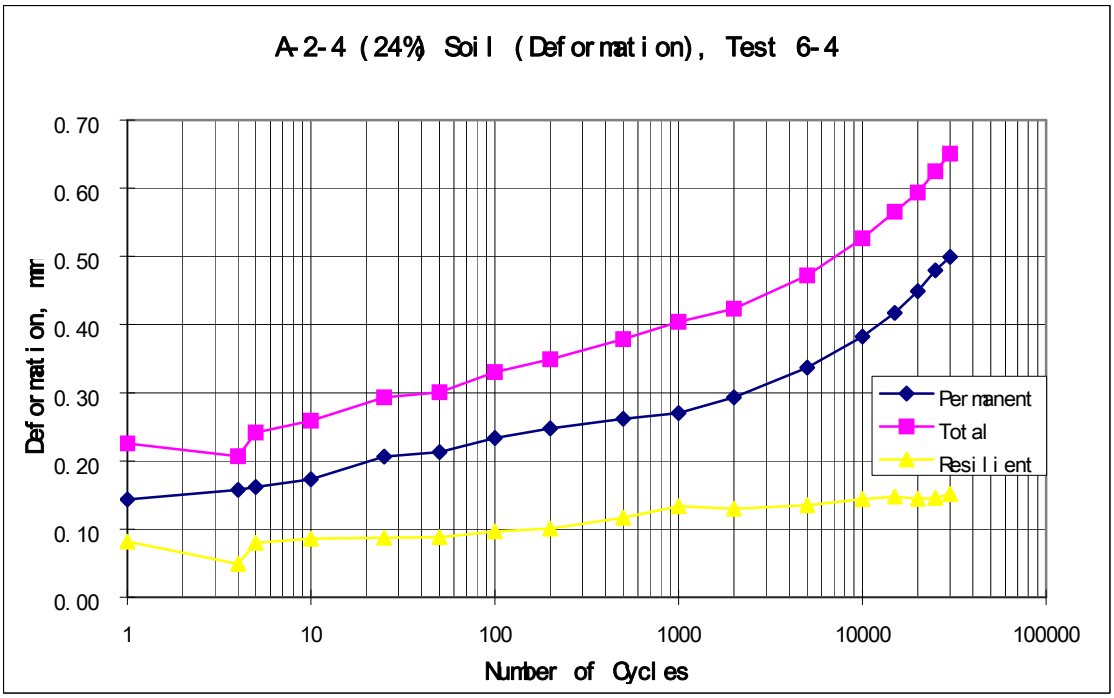


Figure F.56 A-2-4 (24%) Soil, Deformation under 20 psi Plate Load (Water Table at +0.0 in., no Limerock, Test 6-4)

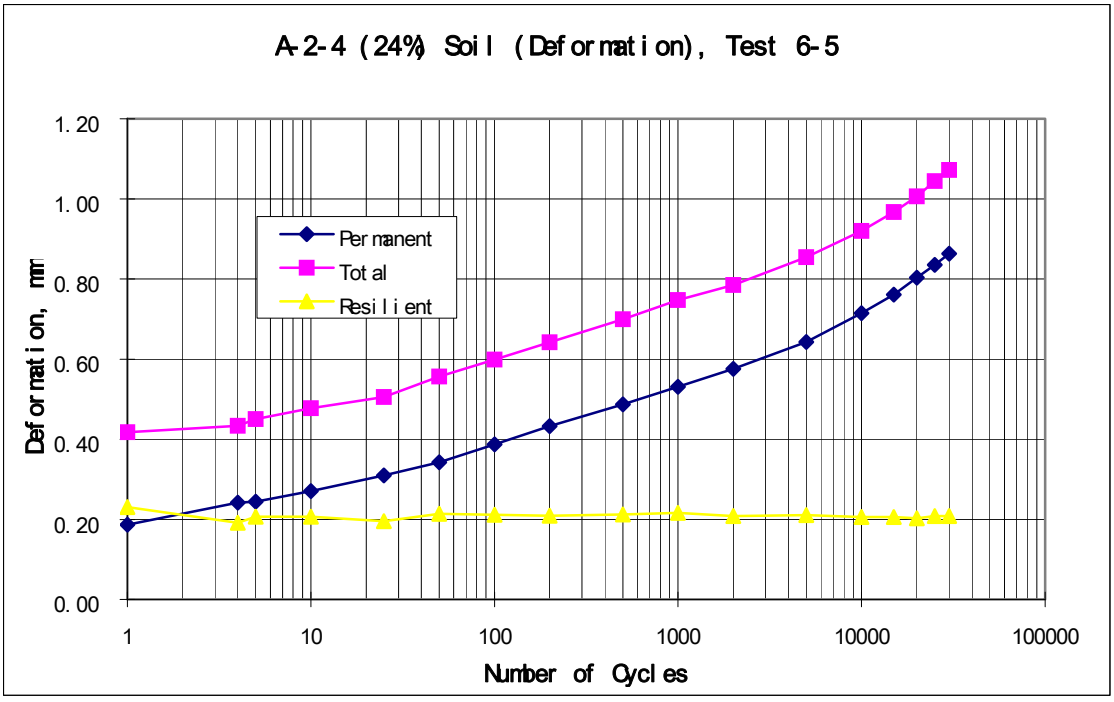


Figure F.57 A-2-4 (24%) Soil, Deformation under 20 psi Plate Load (Water Table at +12.0 in., no Limerock, Test 6-5)

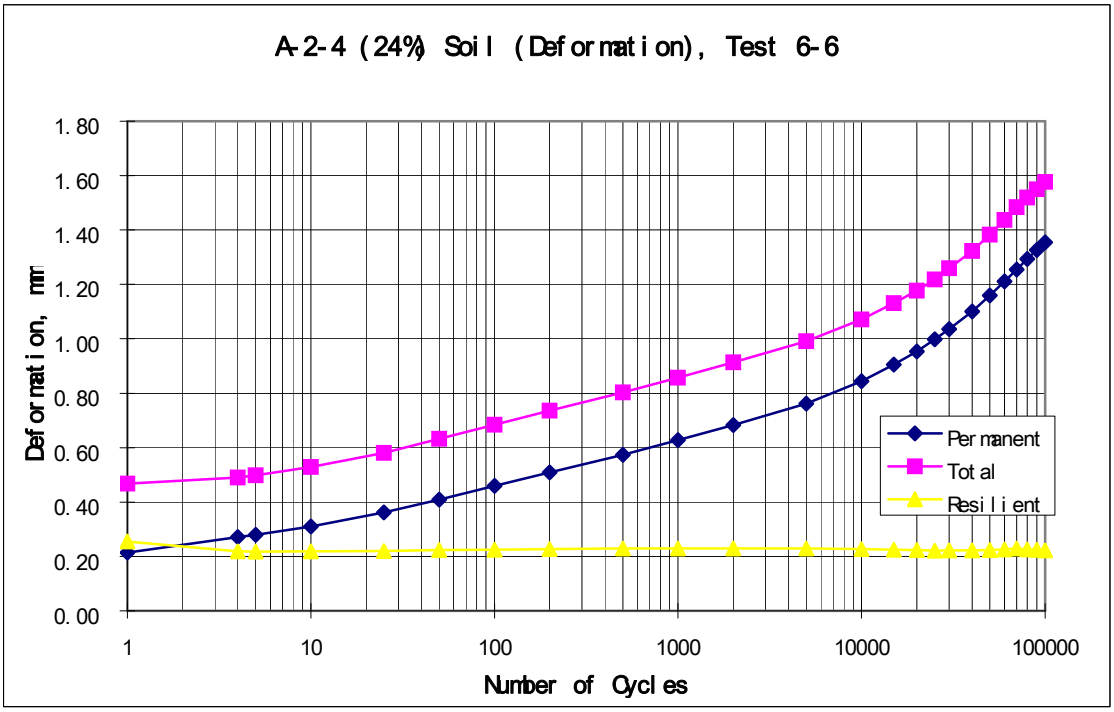


Figure F.58 A-2-4 (24%) Soil, Deformation under 20 psi Plate Load (Water Table at +12.0 in., no Limerock, Test 6-6)

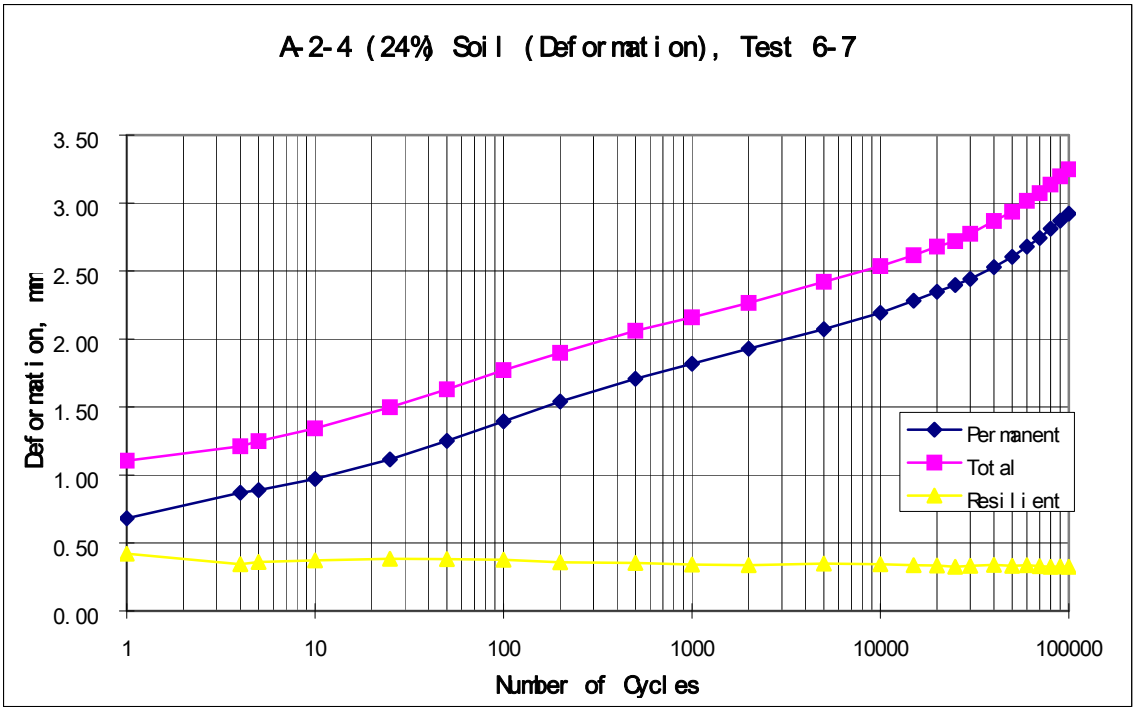


Figure F.59 A-2-4 (24%) Soil, Deformation under 50 psi Plate Load (Water Table at +12.0 in., with Limerock, Test 6-7)

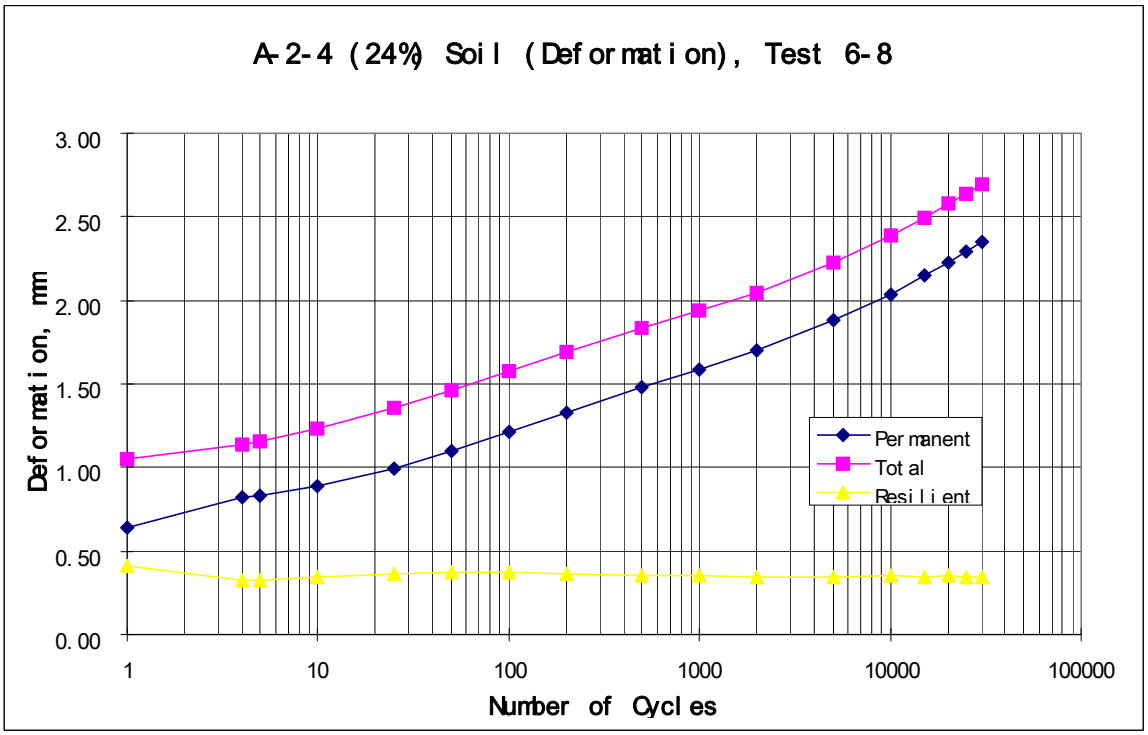


Figure F.60 A-2-4 (24%) Soil, Deformation under 50 psi Plate Load (Water Table at +12.0 in., with Limerock, Test 6-8)

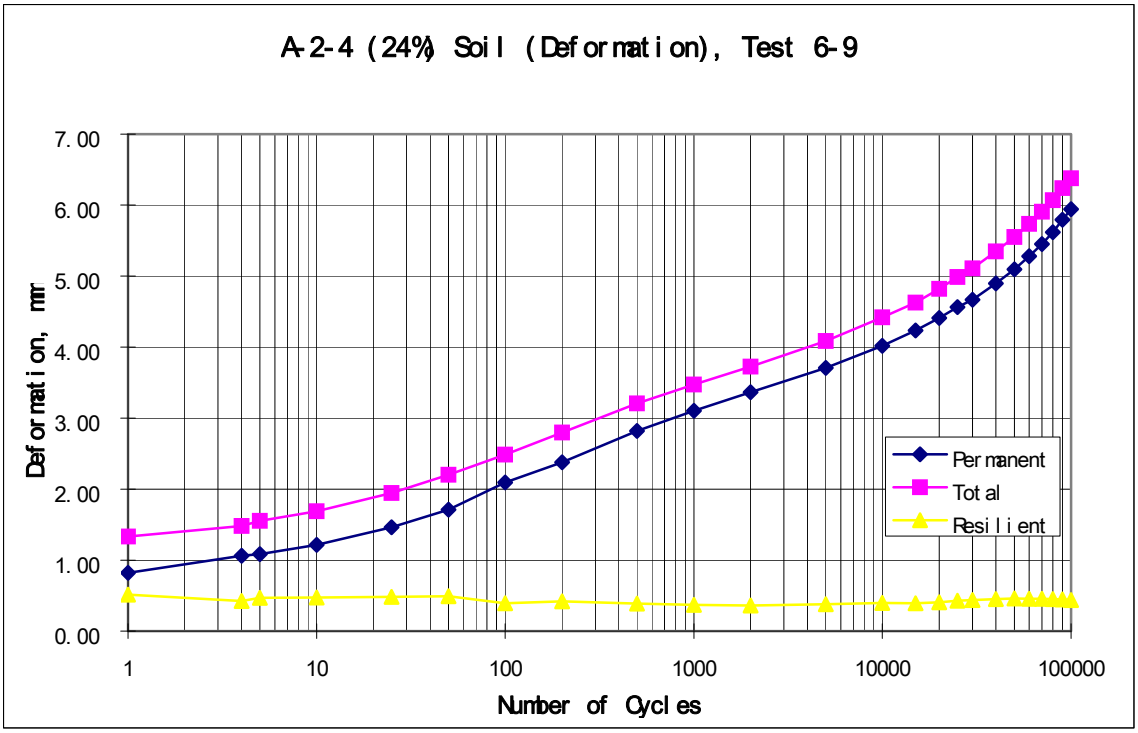


Figure F.61 A-2-4 (24%) Soil, Deformation under 50 psi Plate Load (Water Table at +36.0 in., with Limerock, Test 6-9)

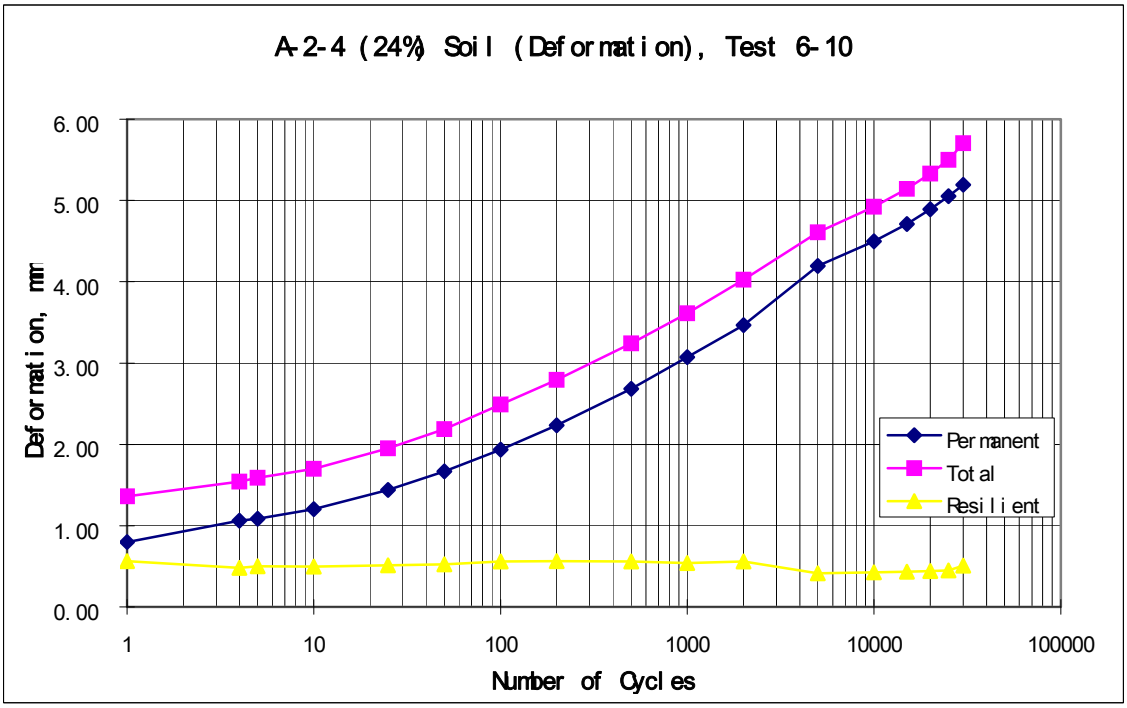


Figure F.62 A-2-4 (24%) Soil, Deformation under 50 psi Plate Load (Water Table at +36.0 in., with Limerock, Test 6-10)

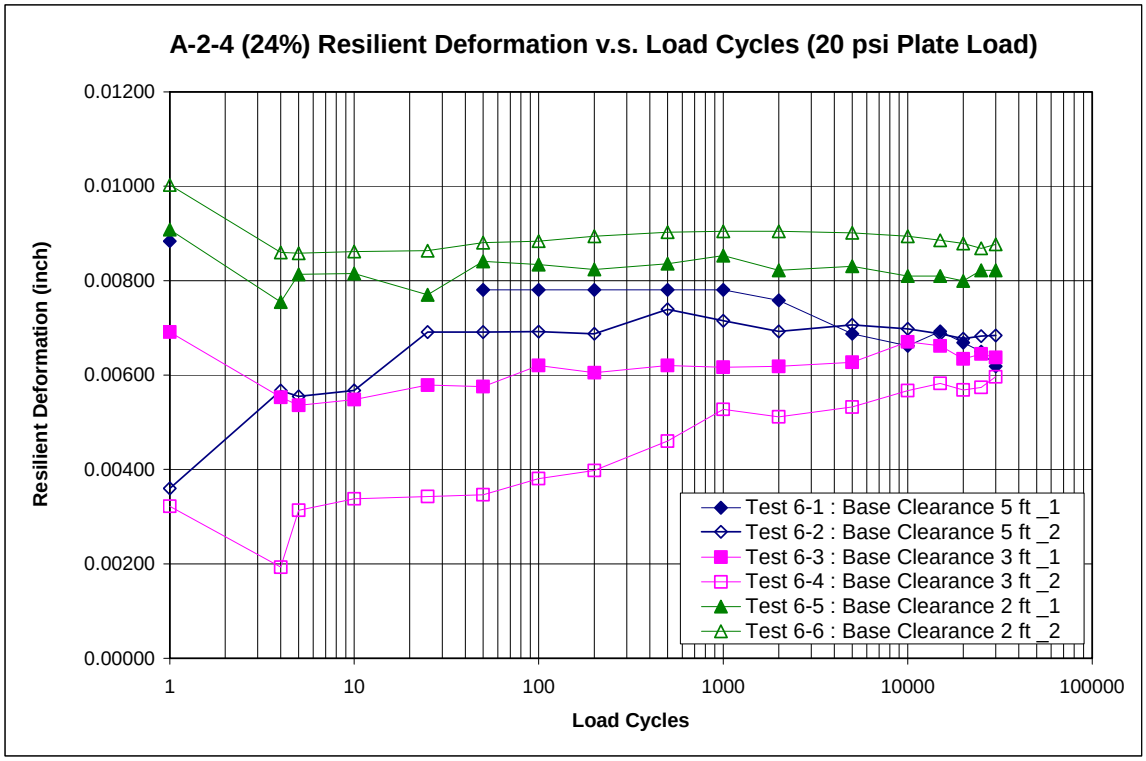


Figure F.63 A-2-4 (24%) Soil, Deformation Summary under 20 psi Plate Load at Different Water Table Level

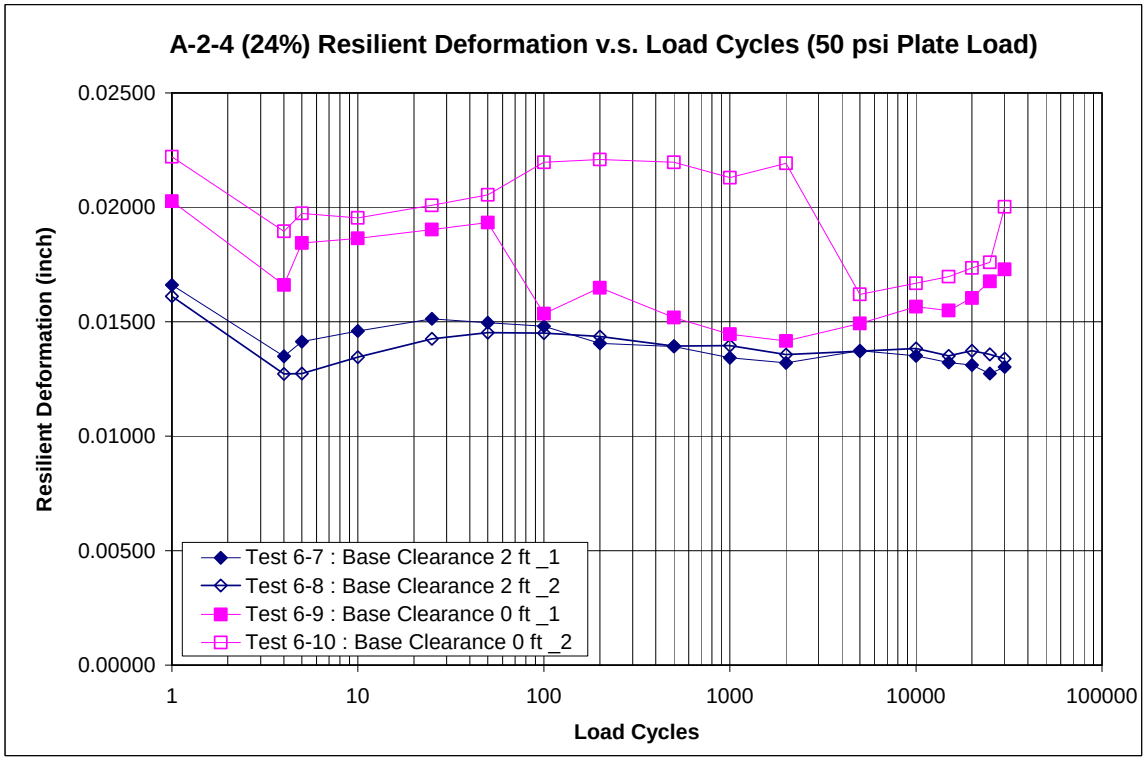


Figure F.64 A-2-4 (24%) Soil, Deformation Summary under 50 psi Plate Load at Different Water Table Level

F.7 A-2-4, 30% Soil

Table F.20 A-2-4, 30% Soil Plate Load Test, 20 psi without Limerock

Deformation with W.T. at -24 in., Test 7-1			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.4617	0.6490	0.1873
4	0.5400	0.6888	0.1488
5	0.5497	0.7024	0.1527
10	0.5812	0.7422	0.1610
25	0.6543	0.8166	0.1624
50	0.7243	0.8879	0.1637
100	0.8057	0.9715	0.1659
200	0.8941	1.0652	0.1711
500	0.9995	1.1680	0.1685
1000	1.0695	1.2376	0.1680
2000	1.1264	1.2875	0.1610
5000	1.1894	1.3457	0.1562
10000	1.2275	1.3737	0.1462
15000	1.2376	1.3820	0.1444
20000	1.2446	1.3802	0.1357
25000	1.2424	1.3781	0.1357
30000	1.2512	1.3846	0.1335

Deformation with W.T. at 0 in., Tes 7-2			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.1553	0.3360	0.1807
4	0.2302	0.3492	0.1190
5	0.2324	0.3619	0.1295
10	0.2407	0.3860	0.1453
25	0.2696	0.4232	0.1536
50	0.2989	0.4608	0.1619
100	0.3383	0.5046	0.1663
200	0.3812	0.5492	0.1680
500	0.4368	0.6031	0.1663
1000	0.4731	0.6420	0.1689
2000	0.5077	0.6722	0.1645
5000	0.5449	0.7033	0.1584
10000	0.5716	0.7269	0.1553
15000	0.5856	0.7339	0.1483
20000	0.5908	0.7400	0.1492
25000	0.5987	0.7422	0.1435
30000	0.5974	0.7400	0.1427

Deformation with W.T. at 0 in., Test 7-3			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.5190	0.6980	0.1790
10	0.6656	0.8512	0.1855
25	0.7225	0.9190	0.1965
50	0.7882	0.9855	0.1974
100	0.8521	1.0529	0.2009
200	0.9212	1.1168	0.1956
500	1.0078	1.2021	0.1943
1000	1.0800	1.2717	0.1917
2000	1.1361	1.3220	0.1860
5000	1.1916	1.3728	0.1812
10000	1.2376	1.4161	0.1785
15000	1.2743	1.4446	0.1702
20000	1.3019	1.4665	0.1645
25000	1.3225	1.4813	0.1589
30000	1.3387	1.4988	0.1602

Table F.20 Continued

Deformation with W.T. at +12 in., Test 7-4			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.1313	0.2897	0.1585
4	0.2250	0.3918	0.1668
5	0.2328	0.4027	0.1699
10	0.2517	0.4276	0.1760
25	0.2753	0.4390	0.1637
50	0.2941	0.4605	0.1663
100	0.3278	0.4727	0.1448
200	0.3593	0.5068	0.1475
500	0.4048	0.5702	0.1654
1000	0.4315	0.5965	0.1650
2000	0.4586	0.6271	0.1685
5000	0.4976	0.6613	0.1637
10000	0.5352	0.6897	0.1545
15000	0.5610	0.7173	0.1562
20000	0.5803	0.7396	0.1593
25000	0.5996	0.7553	0.1558
30000	0.6070	0.7628	0.1558

Deformation with W.T. at +12 in., Test 7-5			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.3418	0.5379	0.1960
4	0.4512	0.5961	0.1448
5	0.4604	0.6114	0.1510
10	0.5028	0.6486	0.1457
25	0.5803	0.7357	0.1553
50	0.6534	0.8289	0.1755
100	0.7396	0.9168	0.1772
200	0.8328	1.0236	0.1908
500	0.9641	1.1483	0.1842
1000	1.0660	1.2354	0.1694
2000	1.1448	1.3308	0.1860
5000	1.2481	1.4279	0.1799
10000	1.3216	1.4945	0.1729
15000	1.3676	1.5229	0.1554
20000	1.3868	1.5452	0.1584
25000	1.4008	1.5601	0.1593
30000	1.4170	1.5763	0.1593

Deformation with W.T. at +12 in., Test 7-6			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.4459	0.7016	0.2556
4	0.5225	0.7177	0.1952
5	0.5243	0.7313	0.2070
10	0.5505	0.7575	0.2070
25	0.6017	0.8166	0.2149
50	0.6508	0.8678	0.2171
100	0.7050	0.9356	0.2306
200	0.7672	0.9991	0.2319
500	0.8381	1.0582	0.2201
1000	0.8936	1.1177	0.2241
2000	0.9483	1.1829	0.2346
5000	1.0245	1.2577	0.2332
10000	1.0954	1.3199	0.2245
15000	1.1383	1.3536	0.2153
20000	1.1715	1.3925	0.2210
25000	1.2039	1.4131	0.2092
30000	1.2188	1.4441	0.2254
40000	1.2105	1.4244	0.2140
50000	1.2236	1.4393	0.2157
60000	1.2468	1.4573	0.2105
70000	1.2603	1.4647	0.2044
80000	1.2809	1.4857	0.2048
90000	1.2932	1.4953	0.2022
100000	1.3172	1.5115	0.1943

Table F.21 A-2-4, 30% Soil Plate Load Test, 50 psi with Limerock

Deformation with W.T. at +12 in., Test 7-7			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.7632	1.2196	0.4564
4	0.9461	1.3582	0.4120
5	0.9553	1.3650	0.4096
10	1.0192	1.4078	0.3886
25	1.1501	1.5684	0.4184
50	1.2752	1.6936	0.4184
100	1.4209	1.8297	0.4087
200	1.5640	1.9706	0.4065
500	1.7776	2.1631	0.3855
1000	1.9067	2.2769	0.3702
2000	2.0187	2.3740	0.3553
5000	2.1517	2.4966	0.3448
10000	2.2616	2.5977	0.3361
15000	2.3272	2.6502	0.3230
20000	2.4012	2.6992	0.2980
25000	2.4419	2.7298	0.2879
30000	2.4659	2.7495	0.2836

Deformation with W.T. at +12 in., Test 7-8			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.4131	0.7291	0.3159
4	0.5274	0.8133	0.2859
5	0.5317	0.8146	0.2829
10	0.5597	0.8416	0.2818
25	0.6241	0.9256	0.3015
50	0.6827	0.9982	0.3155
100	0.7724	1.0722	0.2998
200	0.8499	1.1628	0.3129
500	0.9549	1.2590	0.3041
1000	1.0319	1.3325	0.3006
2000	1.1085	1.4034	0.2949
5000	1.2056	1.4888	0.2831
10000	1.2787	1.5570	0.2783
15000	1.3238	1.5938	0.2700
20000	1.3750	1.6314	0.2564
25000	1.4034	1.6520	0.2486
30000	1.4205	1.6608	0.2402
40000	1.4271	1.6691	0.2420
50000	1.4284	1.6734	0.2451
60000	1.4402	1.6848	0.2446
70000	1.4538	1.6914	0.2376
80000	1.4673	1.7023	0.2350
90000	1.4761	1.7120	0.2359
100000	1.4918	1.7229	0.2311

Deformation with W.T. at +36 in., Test 7-9			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.5107	1.1689	0.6582
4	0.6184	1.1400	0.5216
5	0.6341	1.1606	0.5264
10	0.6761	1.2450	0.5689
25	0.7772	1.3789	0.6017
50	0.8783	1.5120	0.6337
100	1.0100	1.6581	0.6481
200	1.1684	1.8279	0.6595
500	1.4152	2.0874	0.6722
1000	1.6529	2.3347	0.6818
2000	1.9592	2.6729	0.7137
5000	2.5513	3.2781	0.7269
10000	3.1005	3.8356	0.7352
15000	3.5241	4.2745	0.7505
20000	3.9183	4.6951	0.7767
25000	4.3157	5.1086	0.7929
30000	4.6946	5.5239	0.8293
40000	5.4495	6.3103	0.8608
50000	6.0131	6.9146	0.9015
60000	6.6083	7.5351	0.9268
70000	7.1492	8.0524	0.9032
80000	7.4957	8.4098	0.9141
90000	7.7828	8.6792	0.8964
100000	8.1241	9.0326	0.9085

Deformation with W.T. at +36 in., Test 7-10			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.9825	1.6839	0.7015
4	1.2459	1.7964	0.5505
5	1.2708	1.8380	0.5671
10	1.3627	1.9566	0.5938
25	1.5439	2.1570	0.6131
50	1.7198	2.3806	0.6608
100	1.9255	2.5946	0.6691
200	2.1570	2.8340	0.6770
500	2.4909	3.1727	0.6818
1000	2.7530	3.4436	0.6905
2000	3.0366	3.7298	0.6932
5000	3.4773	4.1687	0.6914
10000	3.9066	4.6037	0.6971
15000	4.2168	4.9113	0.6945
20000	4.4746	5.1585	0.6840
25000	4.6619	5.3458	0.6840
30000	4.7993	5.5104	0.7111

Table F.22 Summary of Deformation for A-2-4 (30%) Soil Plate Load Test

Resilient Deformation (in.) for A-2-4, 30% Soil										
Test No.	7-1	7-2	7-3	7-4	7-5	7-6	7-7	7-8	7-9	7-10
Test Date	7/52000	8/14/00	8/15/00	10/5/00	10/6/00	10/19/00	12/13/00	12/14/00	2/11/01	2/14/01
Loads (psi)	20	20	20	20	20	20	50	50	50	50
Limerock Layer	No	No	No	No	No	No	Yes	Yes	Yes	Yes
No.of Plate Load Cycles	Water Table (in. above Embankment)									
	-24	0	0	12	12	12	12	12	36	36
1	0.00737	0.00712	0.00705	0.00624	0.00772	0.01006	0.01797	0.01244	0.02591	0.02762
4	0.00586	0.00469		0.00657	0.00570	0.00768	0.01622	0.01126	0.02054	0.02167
5	0.00601	0.00510		0.00669	0.00594	0.00815	0.01613	0.01114	0.02073	0.02233
10	0.00634	0.00572	0.00730	0.00693	0.00574	0.00815	0.01530	0.01110	0.02240	0.02338
25	0.00639	0.00605	0.00774	0.00645	0.00612	0.00846	0.01647	0.01187	0.02369	0.02414
50	0.00644	0.00637	0.00777	0.00655	0.00691	0.00855	0.01647	0.01242	0.02495	0.02602
100	0.00653	0.00655	0.00791	0.00570	0.00698	0.00908	0.01609	0.01180	0.02552	0.02634
200	0.00674	0.00662	0.00770	0.00581	0.00751	0.00913	0.01601	0.01232	0.02596	0.02665
500	0.00663	0.00655	0.00765	0.00651	0.00725	0.00867	0.01518	0.01197	0.02646	0.02684
1000	0.00662	0.00665	0.00755	0.00650	0.00667	0.00882	0.01458	0.01184	0.02684	0.02719
2000	0.00634	0.00648	0.00732	0.00663	0.00732	0.00923	0.01399	0.01161	0.02810	0.02729
5000	0.00615	0.00624	0.00713	0.00644	0.00708	0.00918	0.01358	0.01115	0.02862	0.02722
10000	0.00575	0.00612	0.00703	0.00608	0.00681	0.00884	0.01323	0.01096	0.02894	0.02745
15000	0.00569	0.00584	0.00670	0.00615	0.00612	0.00848	0.01271	0.01063	0.02955	0.02734
20000	0.00534	0.00587	0.00648	0.00627	0.00624	0.00870	0.01173	0.01010	0.03058	0.02693
25000	0.00534	0.00565	0.00625	0.00613	0.00627	0.00824	0.01134	0.00979	0.03122	0.02693
30000	0.00525	0.00562	0.00631	0.00613	0.00627	0.00887	0.01116	0.00946	0.03265	0.02800
Average from 10,000 Cycles	0.00548	0.00582	0.00655	0.00615	0.00634	0.00862	0.01204	0.01019	0.03059	0.02733

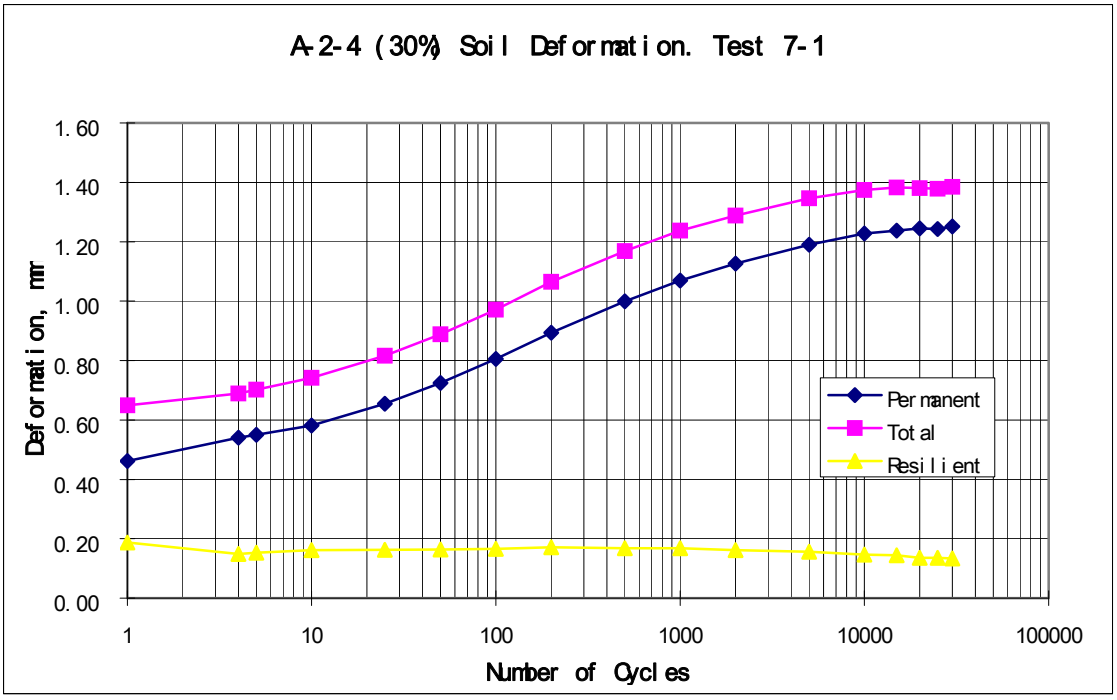


Figure F.65 A-2-4 (30%) Soil, Deformation under 20 psi Plate Load (Water Table at -24 in., no Limerock, Test 7-1)

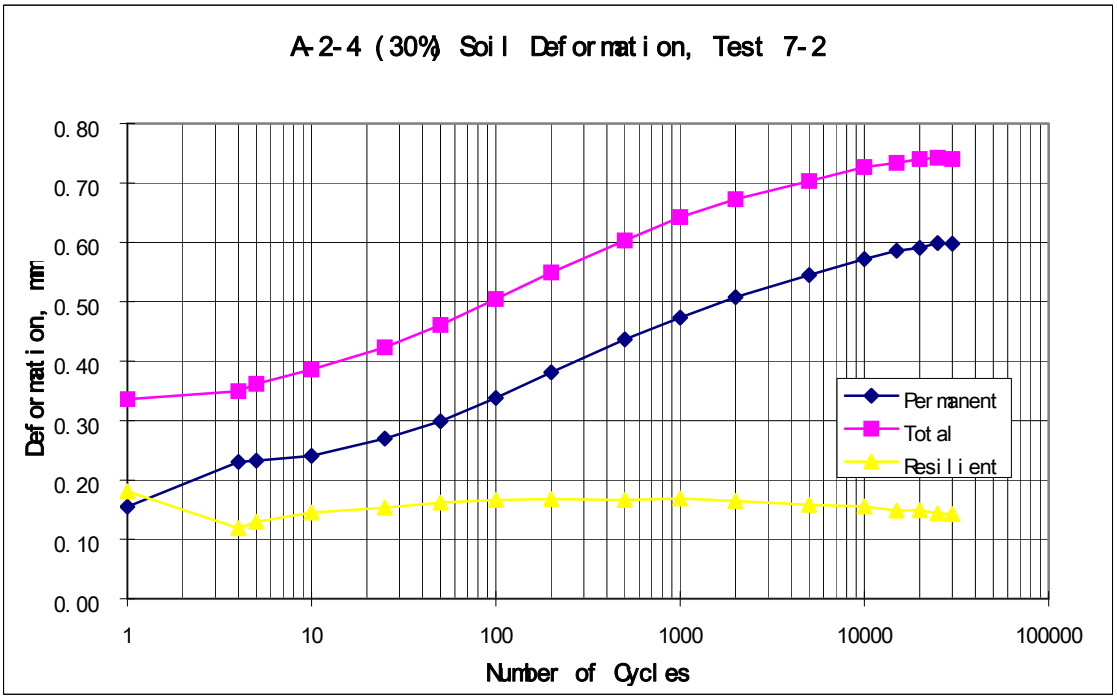


Figure F.66 A-2-4 (30%) Soil, Deformation under 20 psi Plate Load (Water Table at +0 in., no Limerock, Test 7-2)

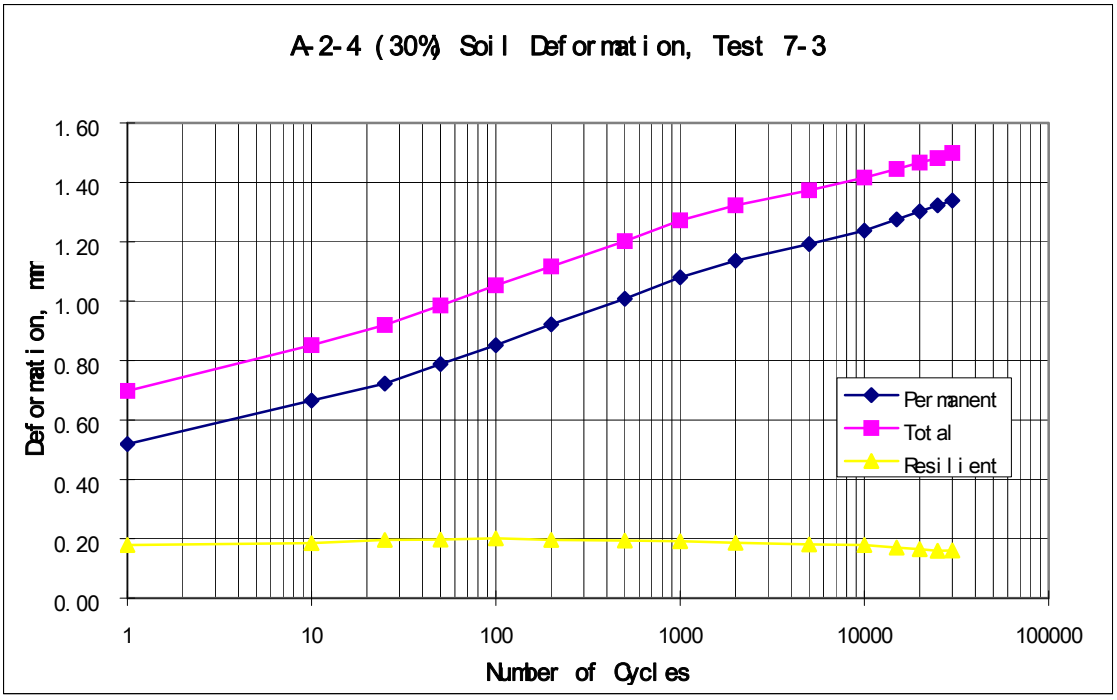


Figure F.67 A-2-4 (30%) Soil, Deformation under 20 psi Plate Load (Water Table at +0 in., no Limerock, Test 7-3)

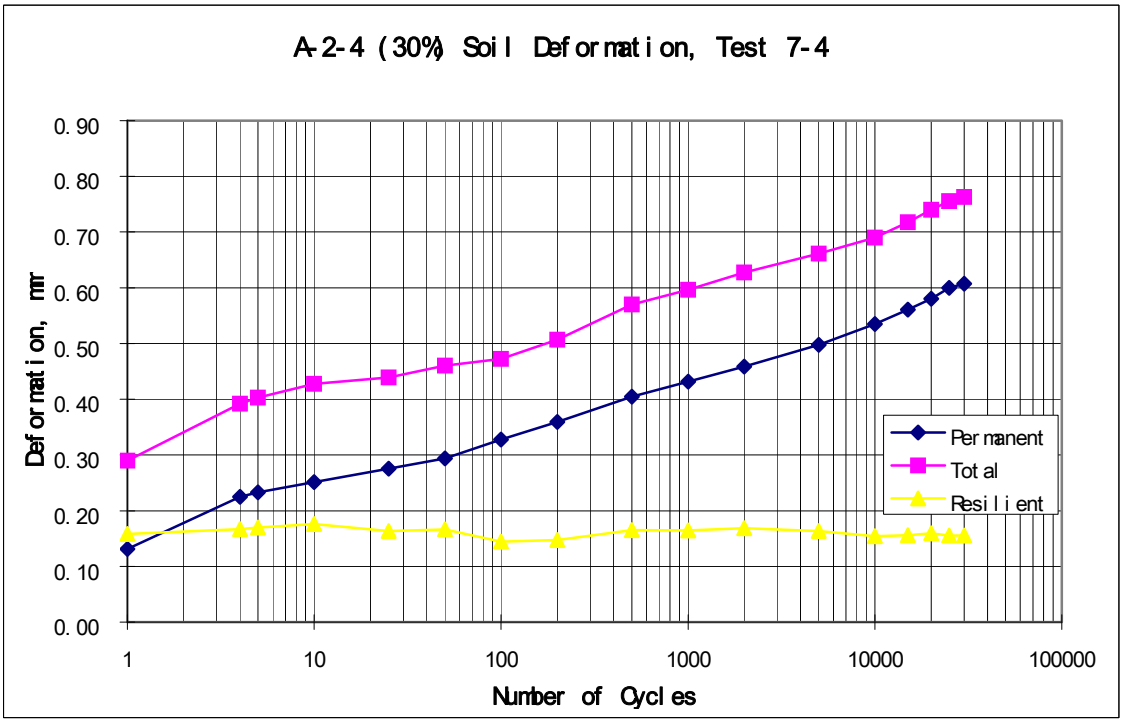


Figure F.68 A-2-4 (30%) Soil, Deformation under 20 psi Plate Load (Water Table at +12.0 in., no Limerock, Test 7-4)

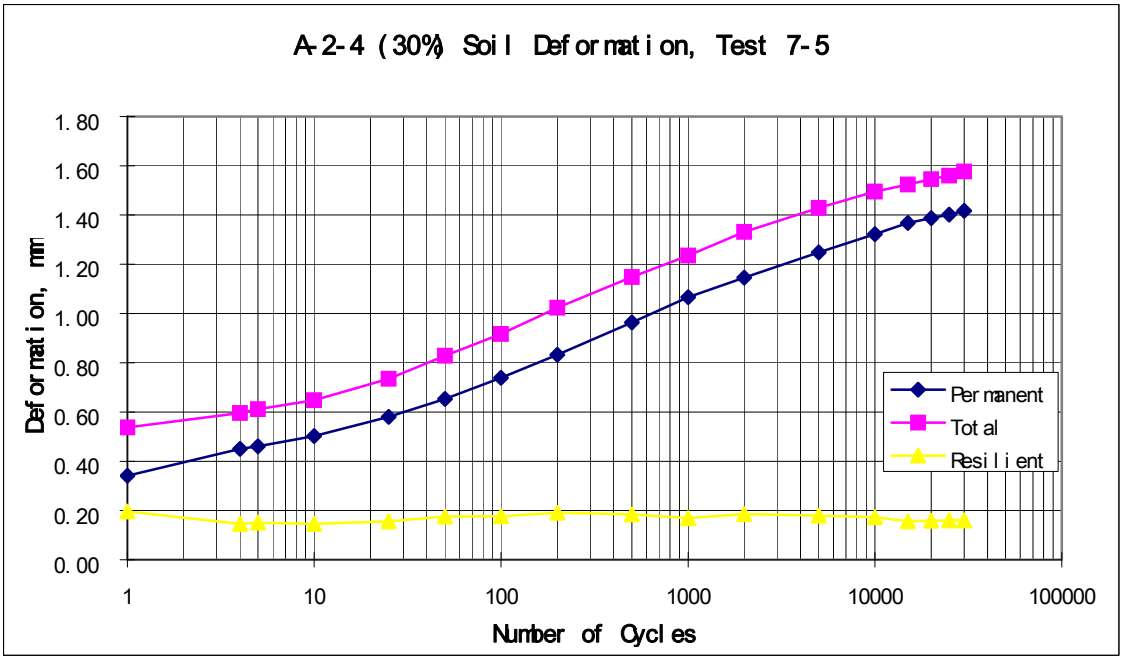


Figure F.69 A-2-4 (30%) Soil, Deformation under 20 psi Plate Load (Water Table at +12.0 in., no Limerock, Test 7-5)

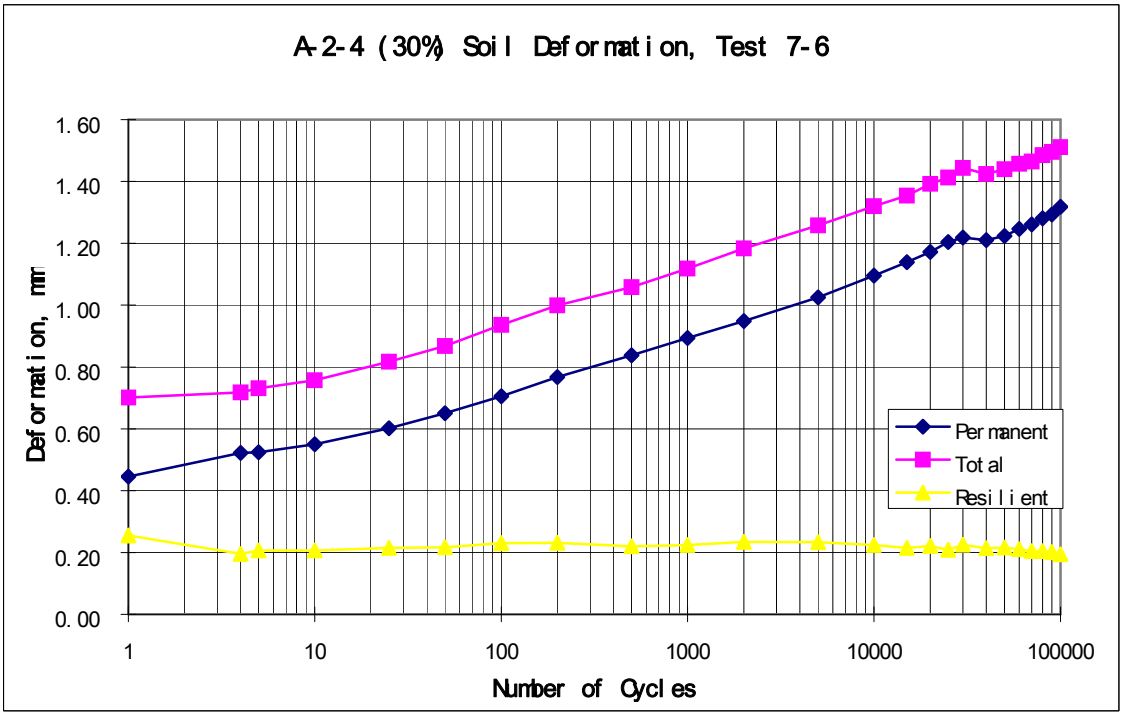


Figure F.70 A-2-4 (30%) Soil, Deformation under 20 psi Plate Load (Water Table at +12.0 in., no Limerock, Test 7-6)

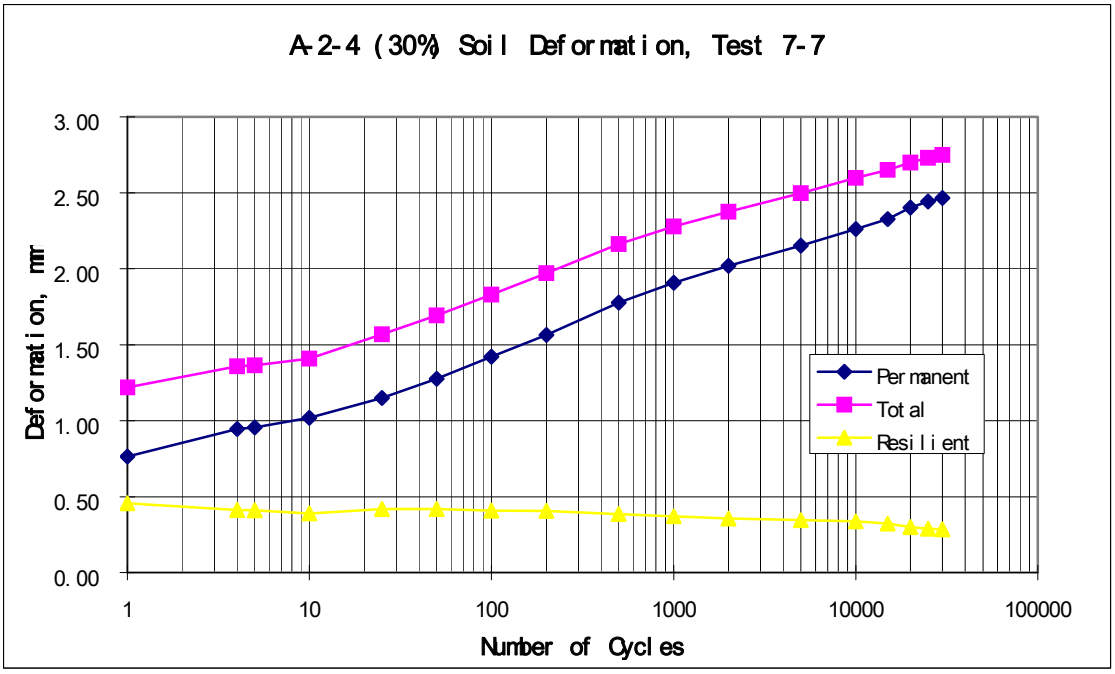


Figure F.71 A-2-4 (30%) Soil, Deformation under 50 psi Plate Load (Water Table at +12.0 in., with Limerock, Test 7-7)

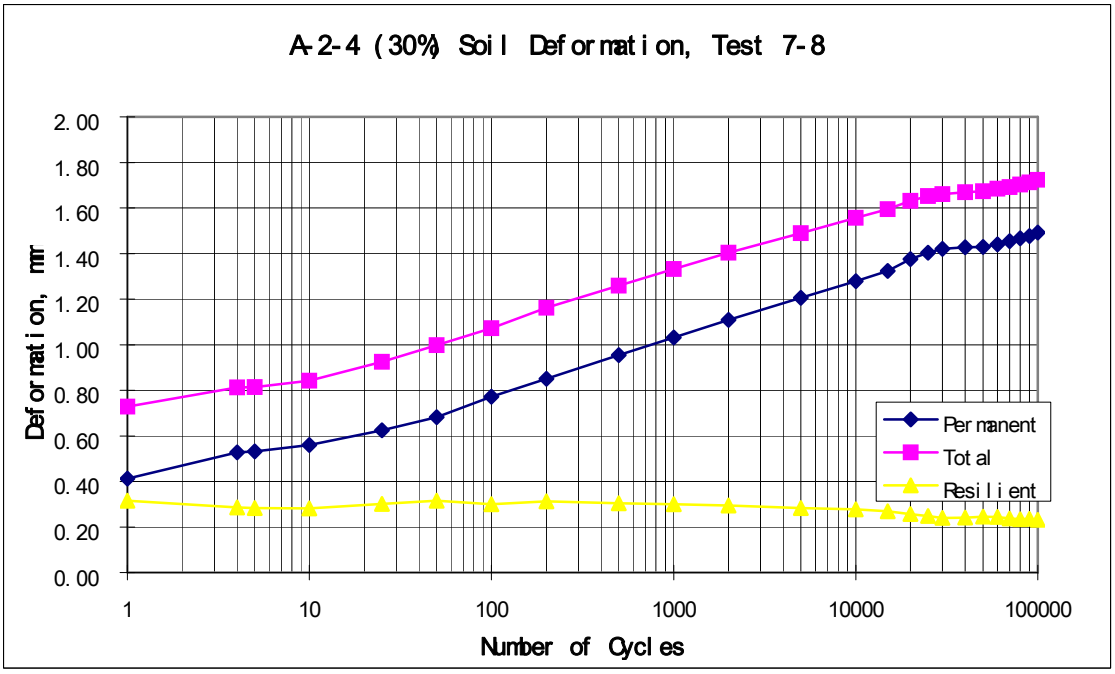


Figure F.72 A-2-4 (30%) Soil, Deformation under 50 psi Plate Load (Water Table at +12.0 in., with Limerock, Test 7-8)

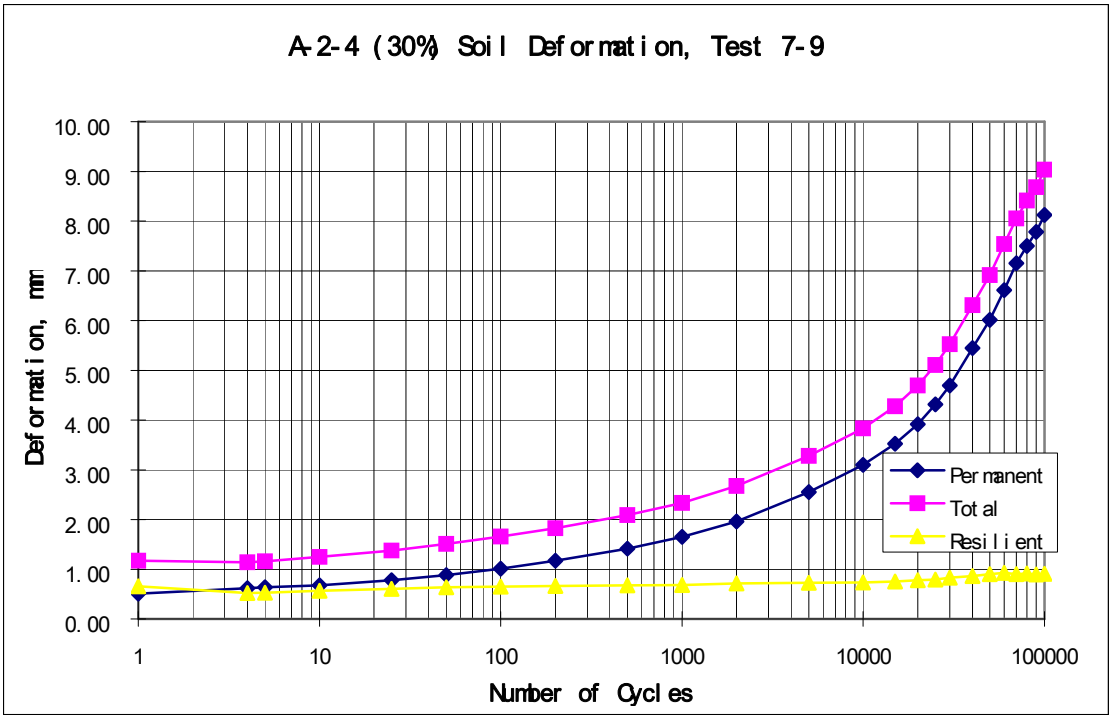


Figure F.73 A-2-4 (30%) Soil, Deformation under 50 psi Plate Load (Water Table at +36.0 in., with Limerock, Test 7-9)

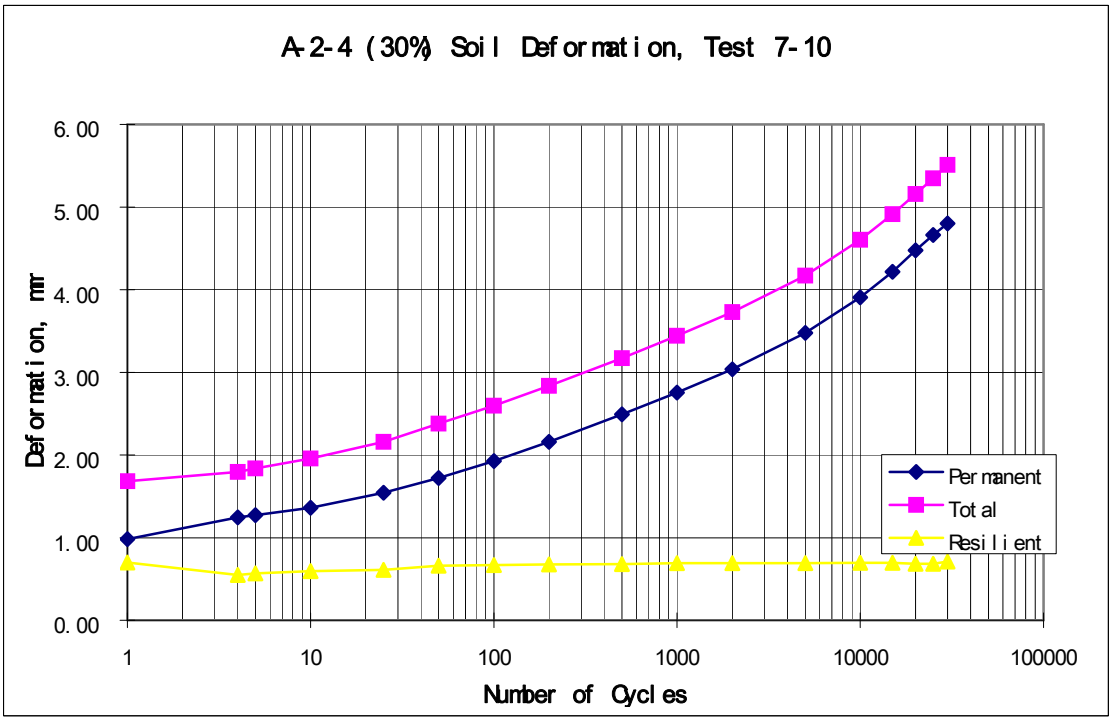


Figure F.74 A-2-4 (30%) Soil, Deformation under 50 psi Plate Load (Water Table at +36.0 in., with Limerock, Test 7-10)

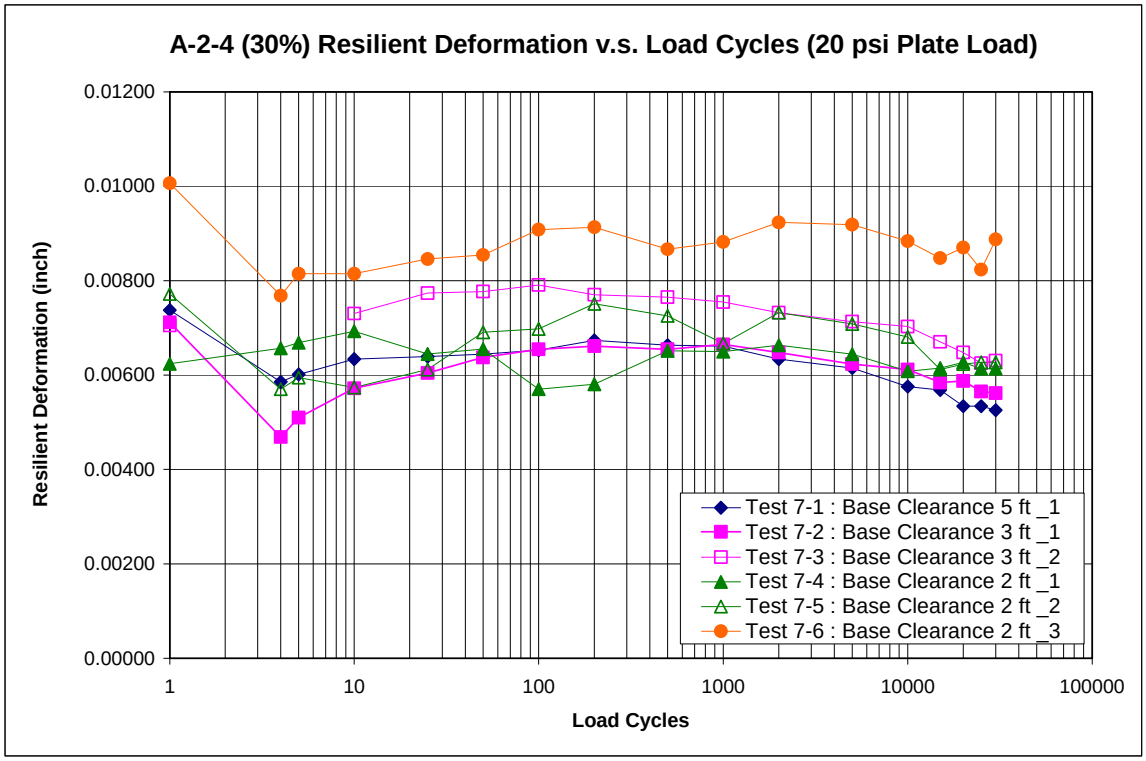


Figure F.75 SR70 A-3 Soil, Deformation Summary under 20 psi Plate Load at Different Water Table Level

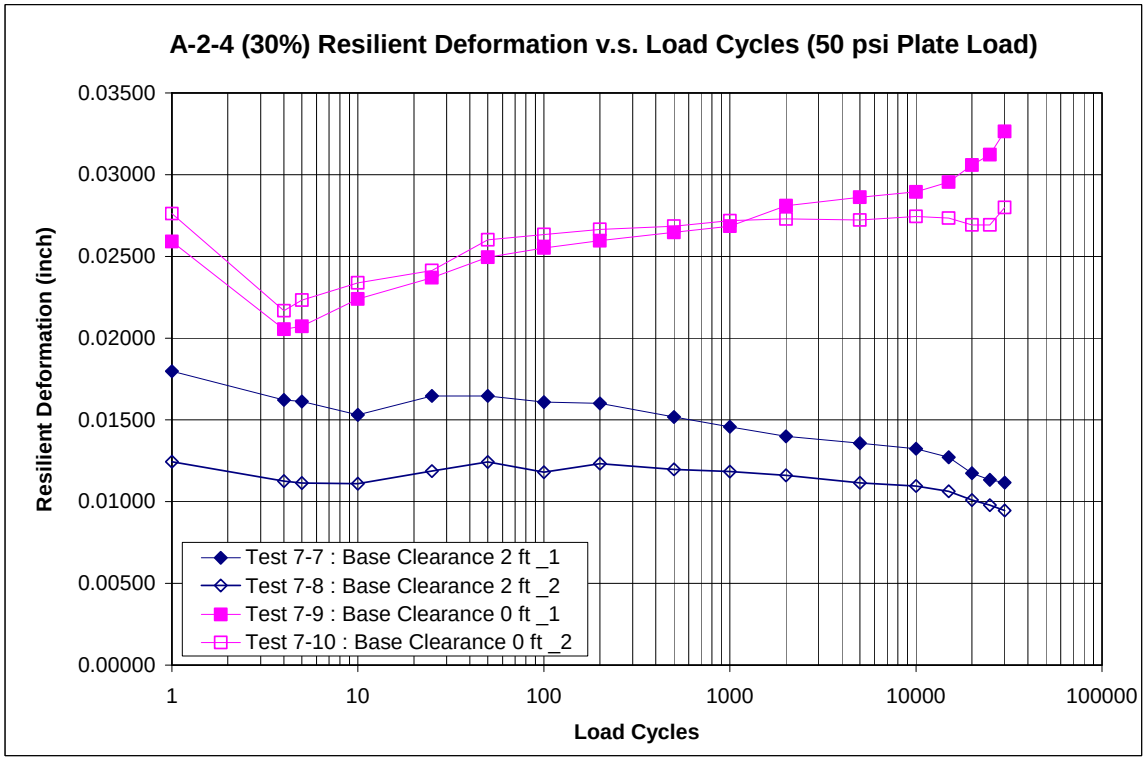


Figure F.76 SR70 A-3 Soil, Deformation Summary under 50 psi Plate Load at Different Water Table Level

F.8 Oolite A-1 Soil

Table F.23 Oolite A-1 Soil Plate Load Test, 50 psi without Limerock

Deformation with W.T. at -24 in.,Test 8-1			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.5589	0.7190	0.1602
4	0.5934	0.7448	0.1514
5	0.5996	0.7711	0.1715
10	0.6284	0.8153	0.1869
25	0.7111	0.9094	0.1982
50	0.8092	0.9759	0.1667
100	1.0175	1.1881	0.1707
200	1.2105	1.3833	0.1729
500	1.2993	1.5273	0.2280
1000	1.4704	1.6861	0.2157
2000	1.6078	1.8012	0.1934
5000	1.7321	1.9251	0.1930
10000	1.7955	1.9854	0.1899
15000	1.8283	2.0086	0.1803
20000	1.8493	2.0174	0.1680
25000	1.8660	2.0314	0.1654
30000	1.8747	2.0301	0.1553

Deformation with W.T. at 0 in., Test 8-2			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.5659	0.7715	0.2057
4	0.6849	0.8875	0.2026
5	0.7011	0.9111	0.2100
10	0.7645	0.9794	0.2149
25	0.9164	1.1487	0.2324
50	1.0800	1.3233	0.2433
100	1.2603	1.4874	0.2271
200	1.5627	1.8227	0.2599
500	1.8861	2.1351	0.2490
1000	2.1010	2.3565	0.2556
2000	2.2336	2.4677	0.2341
5000	2.3675	2.5771	0.2096
10000	2.4467	2.6383	0.1917
15000	2.5145	2.6913	0.1768
20000	2.5576	2.7340	0.1763
25000	2.5677	2.7422	0.1745
30000	2.5764	2.7487	0.1723

Deformation with W.T. at 0 in., Test 8-3			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.4403	0.6919	0.2516
10	0.6013	0.8437	0.2424
25	0.7098	0.9728	0.2630
50	0.8346	1.1006	0.2661
100	0.9903	1.2512	0.2608
200	1.1588	1.4170	0.2582
500	1.3811	1.6327	0.2516
1000	1.5365	1.7776	0.2411
2000	1.6682	1.9041	0.2359
5000	1.8157	2.0371	0.2214
10000	1.9189	2.1285	0.2096
15000	1.9771	2.1771	0.2000
20000	2.0174	2.2148	0.1974
25000	2.0502	2.2428	0.1925
30000	2.0708	2.2625	0.1917

Table F.23 Continued

Deformation with W.T. at +12 in., Test 8-4				Deformation with W.T. at +12 in., Test 8-5			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)	Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.4639	0.4643	0.0004	1	1.0525	1.2214	0.1689
4	0.5484	0.5510	0.0026	4	1.1317	1.2507	0.1190
5	0.5501	0.5530	0.0029	5	1.1382	1.2665	0.1282
10	0.5527	0.5562	0.0035	10	1.1759	1.3238	0.1479
25	0.5729	0.5759	0.0031	25	1.2568	1.4109	0.1540
50	0.5939	0.5965	0.0026	50	1.3505	1.5115	0.1610
100	0.6416	0.6464	0.0048	100	1.4608	1.6201	0.1593
200	0.6118	0.6157	0.0039	200	1.5772	1.7386	0.1615
500	0.7637	0.7698	0.0061	500	1.7277	1.8883	0.1606
1000	0.7925	0.7947	0.0022	1000	1.8222	1.9763	0.1540
2000	0.8205	0.8245	0.0039	2000	1.9023	2.0502	0.1479
5000	0.8262	0.8280	0.0018	5000	1.9960	2.1316	0.1357
10000	0.8722	0.8757	0.0035	10000	2.0673	2.1937	0.1265
15000	0.8748	0.8792	0.0044	15000	2.1159	2.2270	0.1112
20000	0.8774	0.8796	0.0022	20000	2.1453	2.2562	0.1109
25000	0.8941	0.8958	0.0017	25000	2.1754	2.2884	0.1130
30000	0.8949	0.8971	0.0022	30000	2.1959	2.3088	0.1129
Deformation with W.T. at +12 in., Test 8-6				Deformation with W.T. at +12 in., Test 8-7			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)	Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.1711	0.2910	0.1199	1	0.2079	0.3252	0.1173
4	0.1755	0.3033	0.1278	4	0.2105	0.3142	0.1037
5	0.1746	0.3050	0.1304	5	0.2110	0.3208	0.1098
10	0.1860	0.3138	0.1278	10	0.2180	0.3317	0.1138
25	0.1991	0.3321	0.1330	25	0.2298	0.3471	0.1173
50	0.2052	0.3374	0.1322	50	0.2438	0.3615	0.1177
100	0.2184	0.3532	0.1348	100	0.2582	0.3834	0.1252
200	0.2306	0.3672	0.1365	200	0.2749	0.3952	0.1203
500	0.2446	0.3820	0.1374	500	0.3037	0.4293	0.1256
1000	0.2551	0.3952	0.1400	1000	0.3217	0.4477	0.1260
2000	0.2656	0.4065	0.1409	2000	0.3457	0.4687	0.1230
5000	0.2884	0.4293	0.1409	5000	0.3794	0.5068	0.1273
10000	0.3278	0.4652	0.1374	10000	0.4070	0.5396	0.1326
15000	0.3575	0.4871	0.1295	15000	0.4267	0.5567	0.1300
20000	0.3733	0.5019	0.1287	20000	0.4403	0.5742	0.1339
25000	0.3768	0.5046	0.1278	25000	0.4468	0.5842	0.1374
30000	0.3707	0.4984	0.1278	30000	0.4538	0.5891	0.1352
				40000	0.4569	0.5877	0.1308
				50000	0.4600	0.5851	0.1252
				60000	0.4643	0.5834	0.1190
				70000	0.4665	0.5829	0.1164
				80000	0.4652	0.5882	0.1230
				90000	0.4788	0.6000	0.1212
				100000	0.4893	0.6096	0.1203

Table F.24 Oolite A-1 Soil Plate Load Test, 50 psi with Limerock

Deformation with W.T. at +12 in., Test 8-8				Deformation with W.T. at +12 in., Test 8-9			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)	Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.3961	0.6171	0.2210	1	0.2587	0.4166	0.1580
4	0.4954	0.6919	0.1965	4	0.2994	0.4547	0.1553
5	0.4963	0.7155	0.2192	5	0.2985	0.4600	0.1615
10	0.5168	0.7333	0.2164	10	0.3230	0.4819	0.1589
25	0.5379	0.7663	0.2284	25	0.3514	0.5101	0.1587
50	0.5891	0.8057	0.2166	50	0.3829	0.5221	0.1392
100	0.6363	0.8398	0.2035	100	0.4245	0.5663	0.1418
200	0.6761	0.8875	0.2114	200	0.4582	0.5821	0.1238
500	0.7278	0.9260	0.1982	500	0.5274	0.6333	0.1059
1000	0.7637	0.9615	0.1978	1000	0.5549	0.6591	0.1042
2000	0.8070	1.0149	0.2079	2000	0.5685	0.6810	0.1125
5000	0.8662	1.0508	0.1847	5000	0.5759	0.6963	0.1203
10000	0.8902	1.0688	0.1786	10000	0.5786	0.6941	0.1155
15000	0.9057	1.0917	0.1861	15000	0.5720	0.6919	0.1199
20000	0.9178	1.1048	0.1869	20000	0.5650	0.6831	0.1182
25000	0.9250	1.1073	0.1823	25000	0.5584	0.6700	0.1116
30000	0.9319	1.1161	0.1843	30000	0.5540	0.6652	0.1112
40000	0.9372	1.1248	0.1876				
50000	0.9409	1.1265	0.1856				
60000	0.9444	1.1284	0.1841				
70000	0.9503	1.1330	0.1827				
80000	0.9526	1.1360	0.1833				
90000	0.9566	1.1385	0.1818				
100000	0.9588	1.1393	0.1805				

Deformation with W.T. at +36 in., Test 8-10				Deformation with W.T. at +36 in., Test 8-11			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)	Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.6127	0.9619	0.3492	1	0.4928	0.8319	0.3391
4	0.8153	1.2254	0.4101	4	0.6564	0.9715	0.3151
5	0.8315	1.2451	0.4136	5	0.6709	0.9877	0.3168
10	0.9326	1.3290	0.3964	10	0.7523	1.0927	0.3405
25	1.1807	1.5818	0.4011	25	0.9934	1.3719	0.3785
50	1.5142	1.8997	0.3855	50	1.3212	1.6962	0.3750
100	2.0458	2.4357	0.3899	100	1.7487	2.1548	0.4061
200	2.6060	2.9631	0.3571	200	2.2703	2.6817	0.4113
500	3.1127	3.5153	0.4026	500	2.9351	3.3376	0.4026
1000	3.5586	3.9643	0.4057	1000	3.4116	3.7989	0.3873
2000	4.1625	4.4093	0.2468	2000	3.8833	4.2527	0.3693
5000	4.3778	4.6163	0.2385	5000	4.4833	4.8465	0.3632
10000	4.5104	4.7616	0.2512	10000	4.9397	5.3082	0.3685
15000	4.6150	4.8649	0.2499	15000	5.2618	5.6224	0.3606
20000	4.6977	4.9401	0.2424	20000	5.5187	5.8814	0.3628
25000	4.7607	5.0044	0.2437	25000	5.7020	6.0744	0.3724
30000	4.8312	5.0723	0.2411	30000	5.8617	6.2412	0.3794
40000	4.9143	5.1484	0.2341				
50000	4.9839	5.2193	0.2354				
60000	5.0474	5.2841	0.2367				
70000	5.1108	5.3480	0.2372				
80000	5.1931	5.4346	0.2416				
90000	5.3134	5.5572	0.2437				
100000	5.4517	5.6972	0.2455				

Table F.25 Summary of Deformation for Oolite A-1 Soil Plate Load Test

Resilient Deformation (in.) for Oolite A-1 Soil											
Test No.	8-1	8-2	8-3	8-4	8-5	8-6	8-7	8-8	8-9	8-10	8-11
Test Date	7/6/00	8/10/00	8/11/00	10/4/00	10/9/00	10/10/00	10/17/00	12/11/00	12/18/00	2/7/01	2/9/01
Loads (psi)	50	50	50	50	50	50	50	50	50	50	50
Limerock Layer	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes
No.of Plate Load Cycles	Water Table (in. above Embankment)										
	-24	0	0	12	12	12	12	12	12	36	36
1	0.00631	0.00810	0.00991	0.00002	0.00665	0.00472	0.00462	0.00870	0.00622	0.01375	0.01335
4	0.00596	0.00798		0.00010	0.00469	0.00503	0.00408	0.00774	0.00612	0.01615	0.01240
5	0.00675	0.00827		0.00011	0.00505	0.00513	0.00432	0.00863	0.00636	0.01628	0.01247
10	0.00736	0.00846	0.00954	0.00014	0.00582	0.00503	0.00448	0.00852	0.00626	0.01561	0.01340
25	0.00780	0.00915	0.01035	0.00012	0.00606	0.00524	0.00462	0.00899	0.00625	0.01579	0.01490
50	0.00656	0.00958	0.01047	0.00010	0.00634	0.00520	0.00463	0.00853	0.00548	0.01518	0.01476
100	0.00672	0.00894	0.01027	0.00019	0.00627	0.00531	0.00493	0.00801	0.00558	0.01535	0.01599
200	0.00681	0.01023	0.01016	0.00016	0.00636	0.00538	0.00474	0.00832	0.00488	0.01406	0.01619
500	0.00898	0.00980	0.00991	0.00024	0.00632	0.00541	0.00494	0.00780	0.00417	0.01585	0.01585
1000	0.00849	0.01006	0.00949	0.00009	0.00606	0.00551	0.00496	0.00779	0.00410	0.01597	0.01525
2000	0.00762	0.00922	0.00929	0.00016	0.00582	0.00555	0.00484	0.00818	0.00443	0.00972	0.01454
5000	0.00760	0.00825	0.00872	0.00007	0.00534	0.00555	0.00501	0.00727	0.00474	0.00939	0.01430
10000	0.00748	0.00755	0.00825	0.00014	0.00498	0.00541	0.00522	0.00703	0.00455	0.00989	0.01451
15000	0.00710	0.00696	0.00787	0.00017	0.00438	0.00510	0.00512	0.00733	0.00472	0.00984	0.01420
20000	0.00662	0.00694	0.00777	0.00009	0.00436	0.00507	0.00527	0.00736	0.00465	0.00954	0.01428
25000	0.00651	0.00687	0.00758	0.00007	0.00445	0.00503	0.00541	0.00718	0.00439	0.00959	0.01466
30000	0.00612	0.00678	0.00755	0.00009	0.00445	0.00503	0.00532	0.00725	0.00438	0.00949	0.01494
Average from 10,000 Cycles	0.00676	0.00702	0.00780	0.00011	0.00452	0.00513	0.00527	0.00723	0.00454	0.00967	0.01452

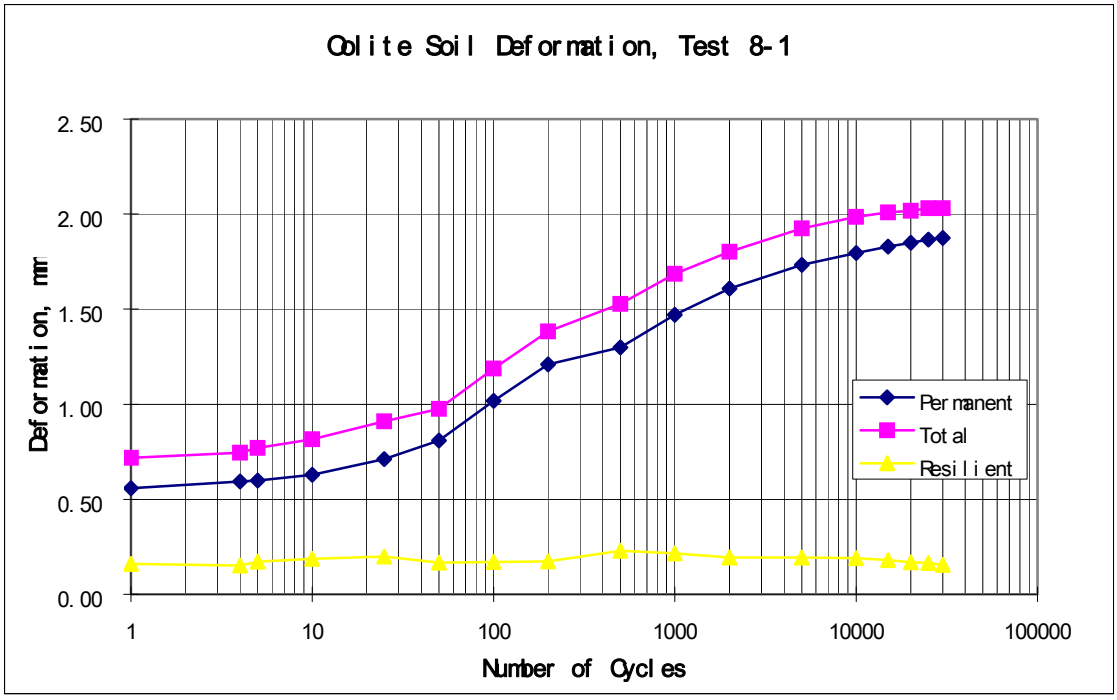


Figure F.77 Oolite Soil, Deformation under 50 psi Plate Load (Water Table at -24 in., w/out Limerock, Test 8-1)

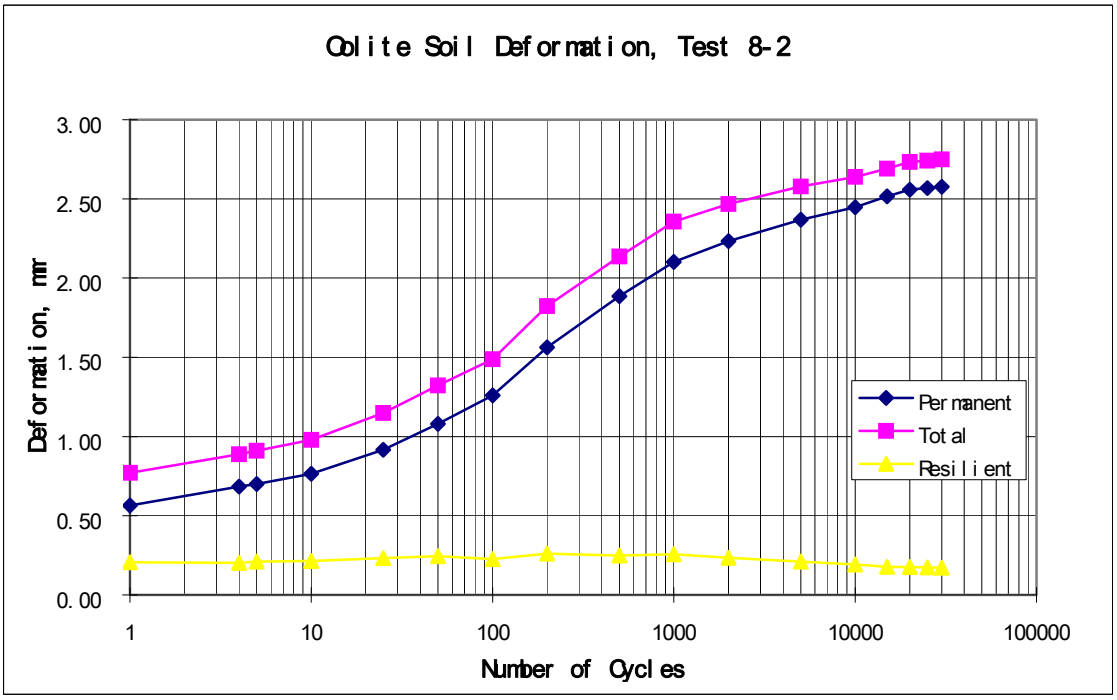


Figure F.78 Oolite Soil, Deformation under 50 psi Plate Load (Water Table at +0 in., w/out Limerock, Test 8-2)

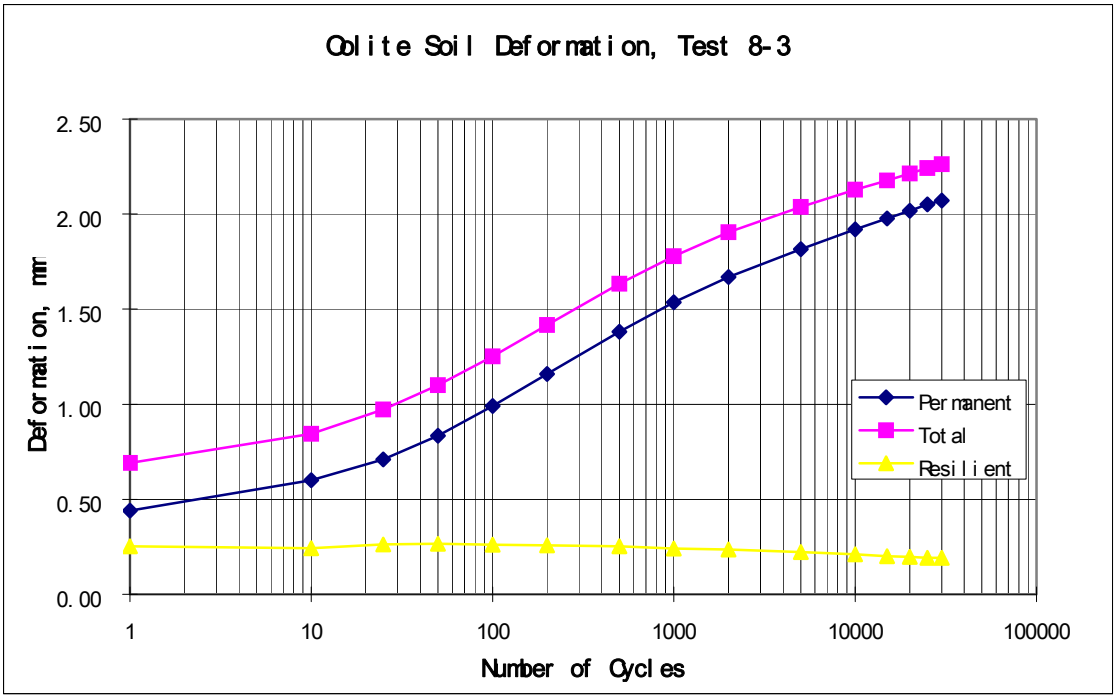


Figure F.79 Oolite Soil, Deformation under 50 psi Plate Load (Water Table at +0 in., w/out Limerock, Test 8-3)

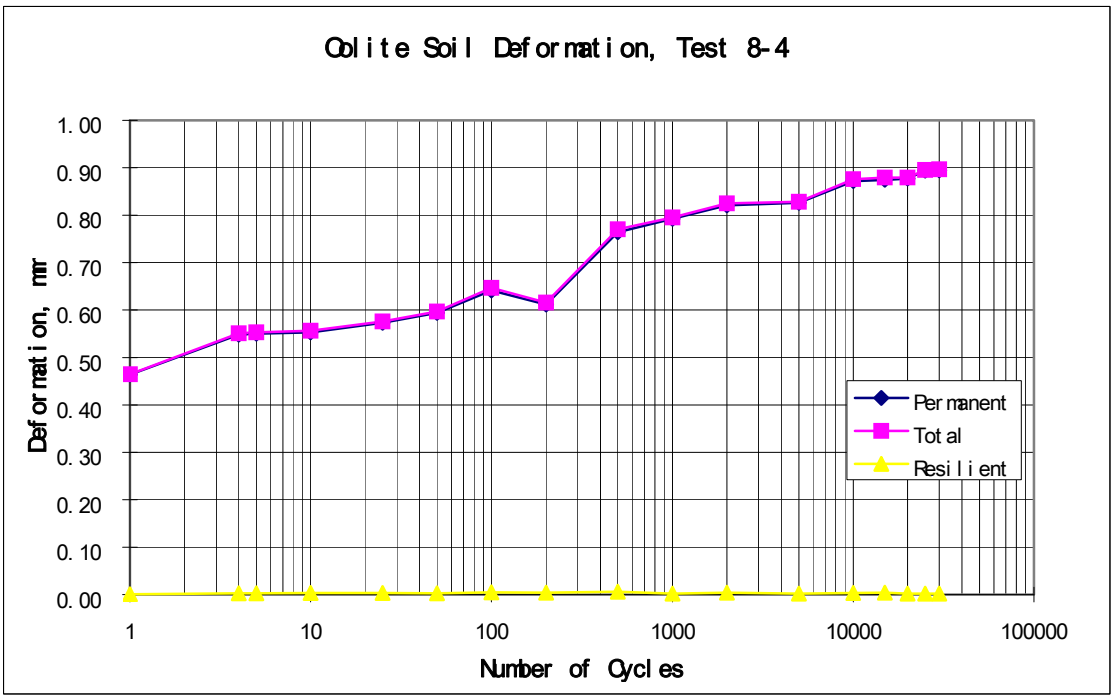


Figure F.80 Oolite Soil, Deformation under 50 psi Plate Load (Water Table at +12.0 in., w/out Limerock, Test 8-4)

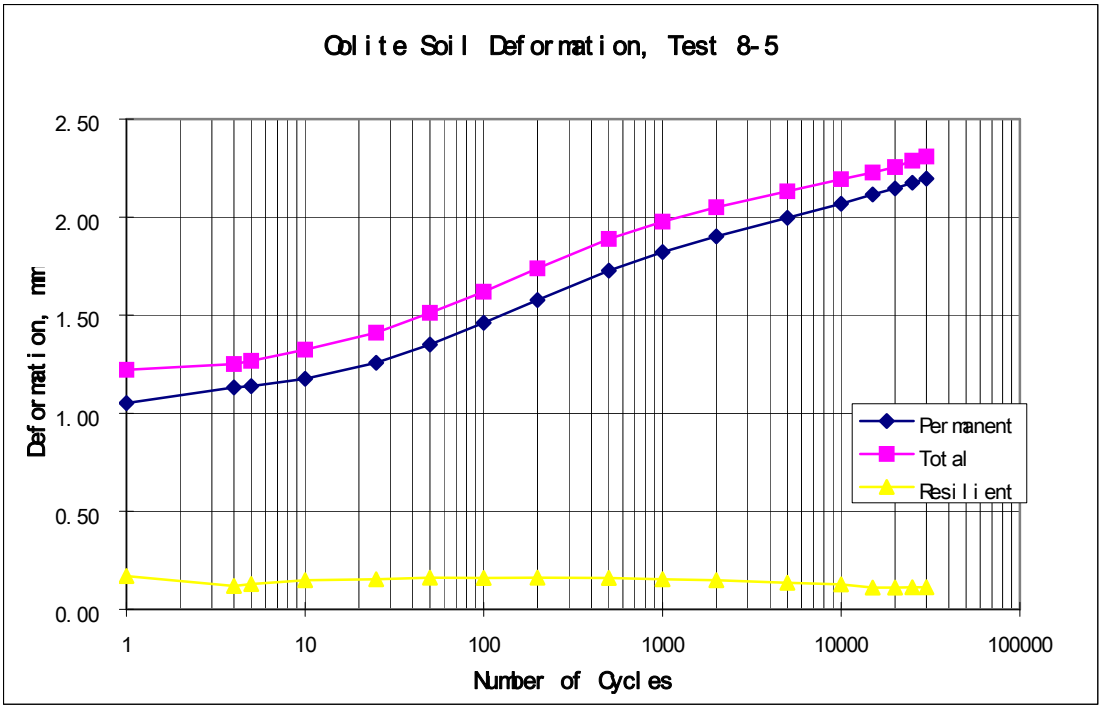


Figure F.81 Oolite Soil, Deformation under 50 psi Plate Load (Water Table at +12.0 in., w/out Limerock, Test 8-5)

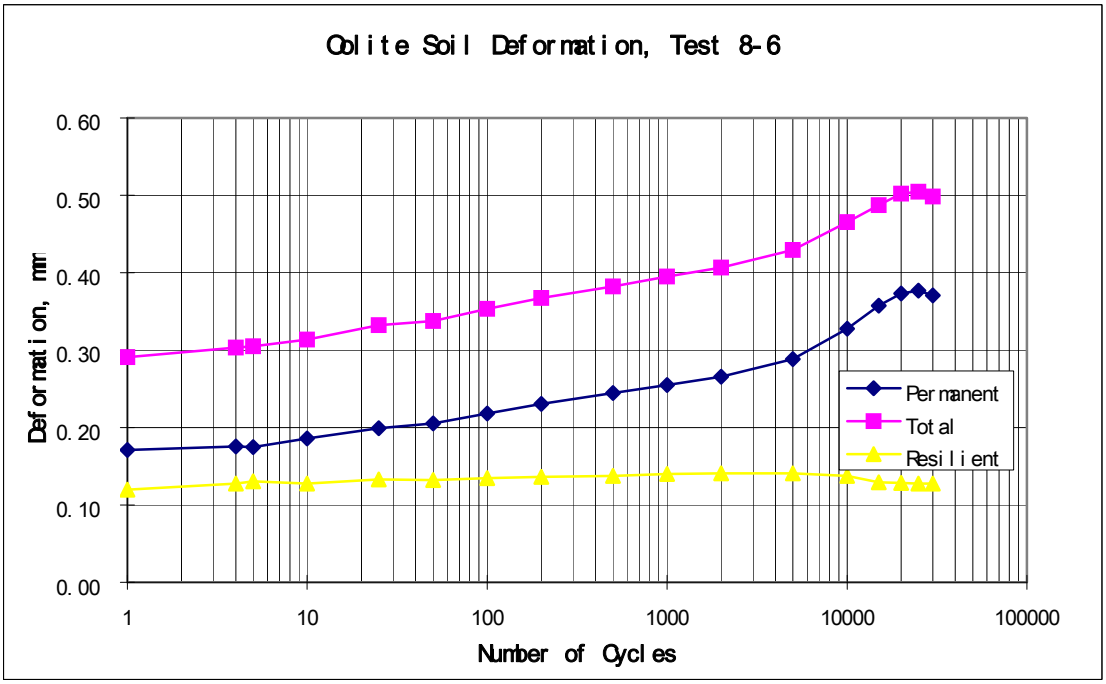


Figure F.82 Oolite Soil, Deformation under 50 psi Plate Load (Water Table at +12.0 in., w/out Limerock, Test 8-6)

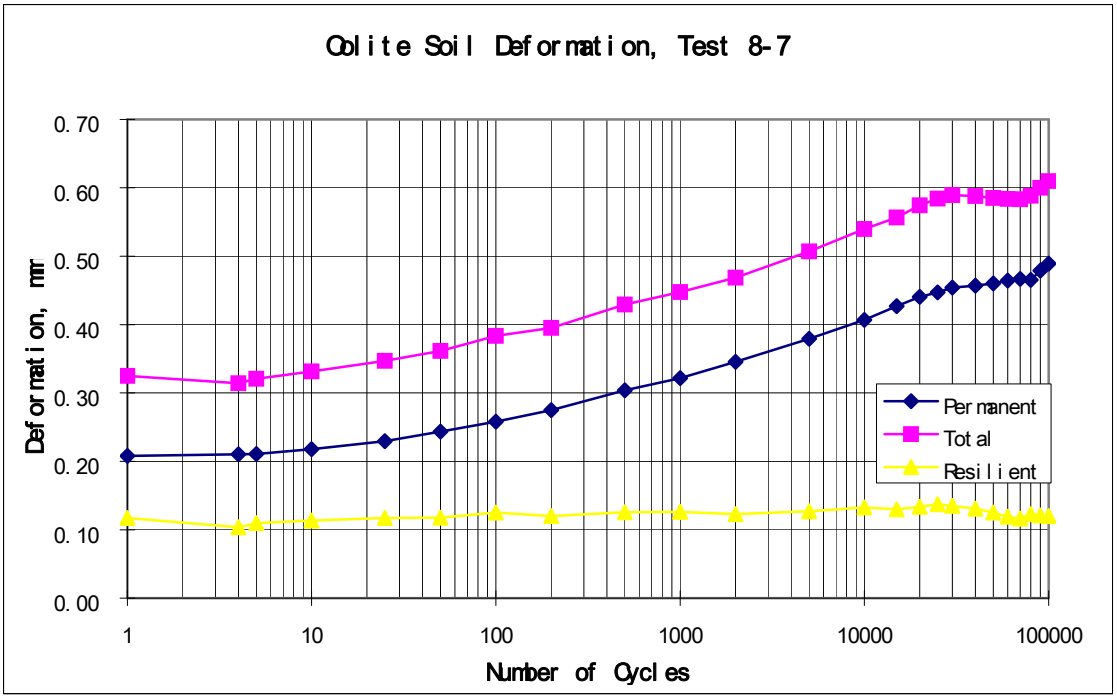


Figure F.83 Oolite Soil, Deformation under 50 psi Plate Load (Water Table at +12.0 in., w/out Limerock, Test 8-7)

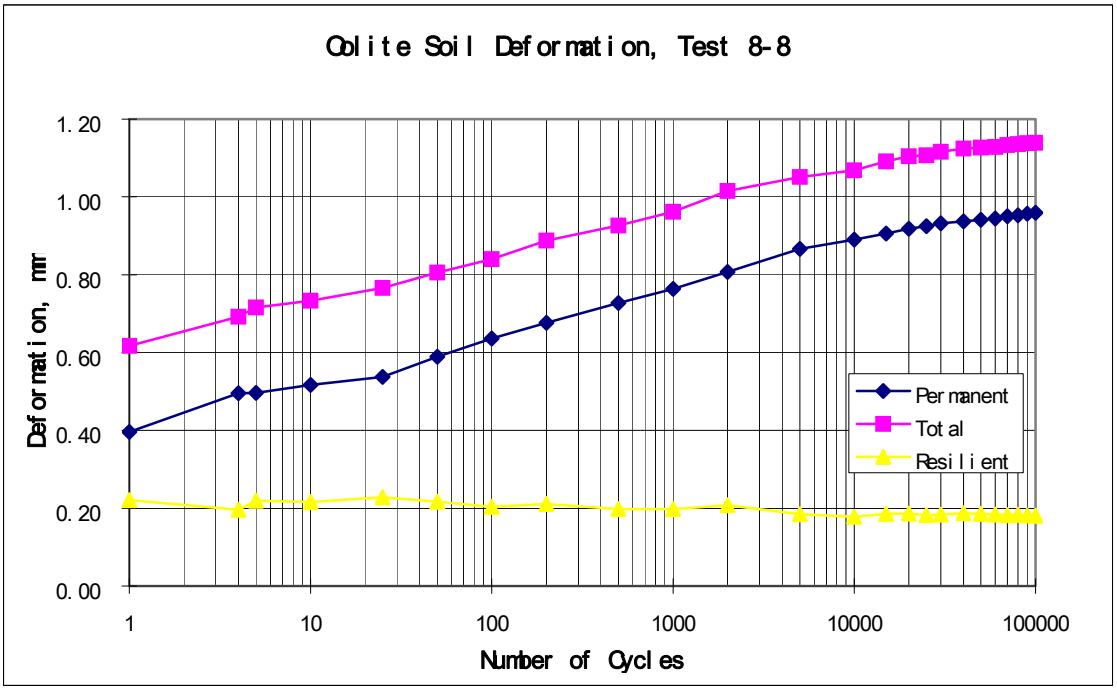


Figure F.84 Oolite Soil, Deformation under 50 psi Plate Load (Water Table at +12.0 in., w/ Limerock, Test 8-8)

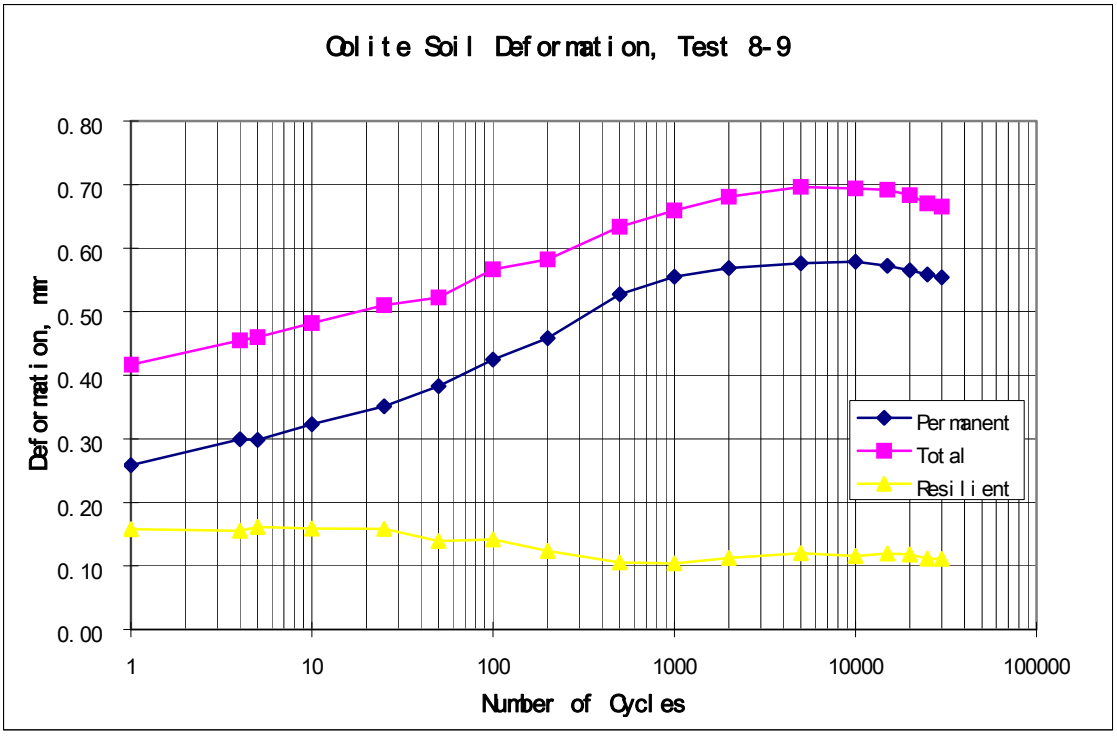


Figure F.85 Oolite Soil, Deformation under 50 psi Plate Load (Water Table at +12.0 in., w/ Limerock, Test 8-9)

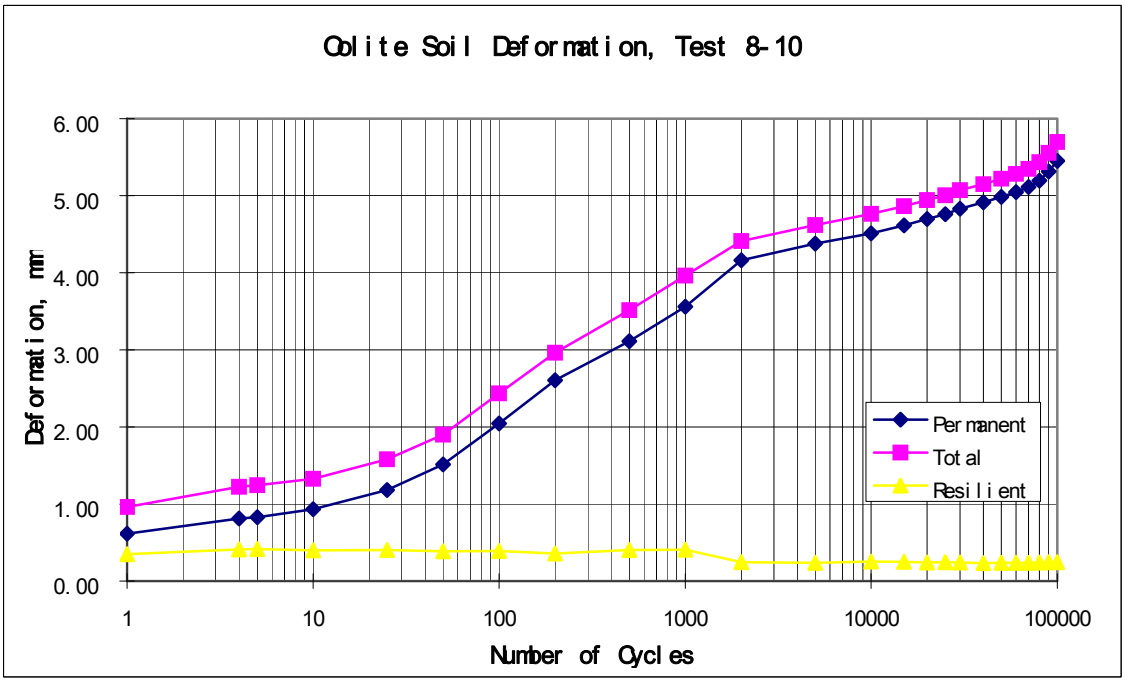


Figure F.86 Oolite Soil, Deformation under 50 psi Plate Load (Water Table at +36.0 in., w/ Limerock, Test 8-10)

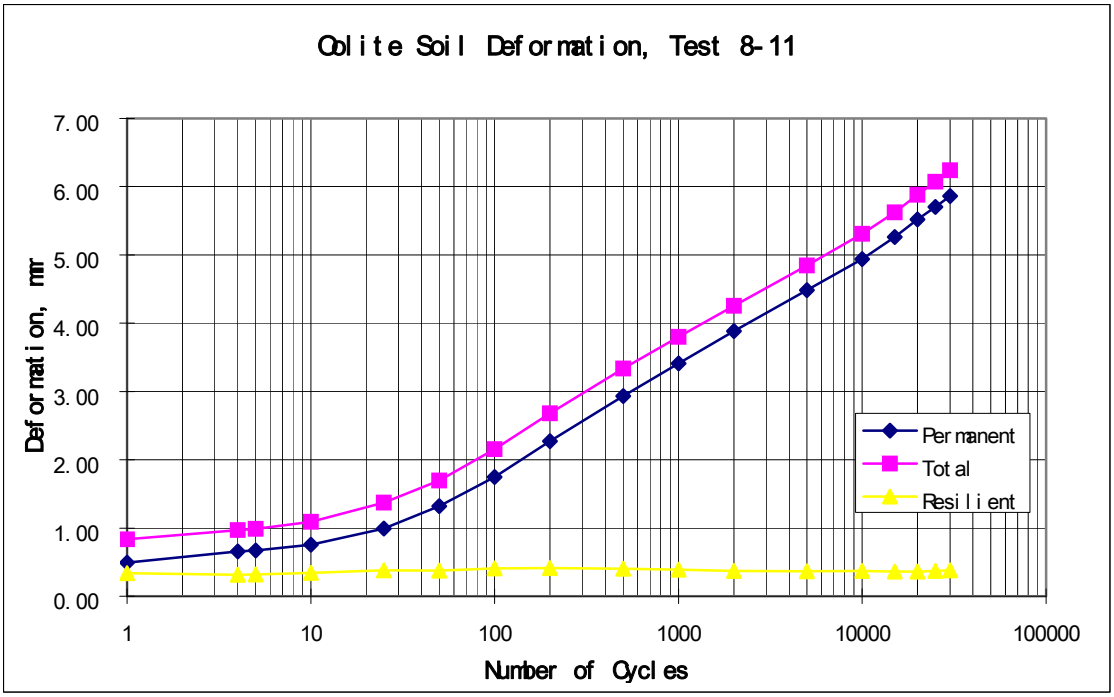


Figure F.87 Oolite Soil, Deformation under 50 psi Plate Load (Water Table at +36.0 in., w/ Limerock, Test 8-11)

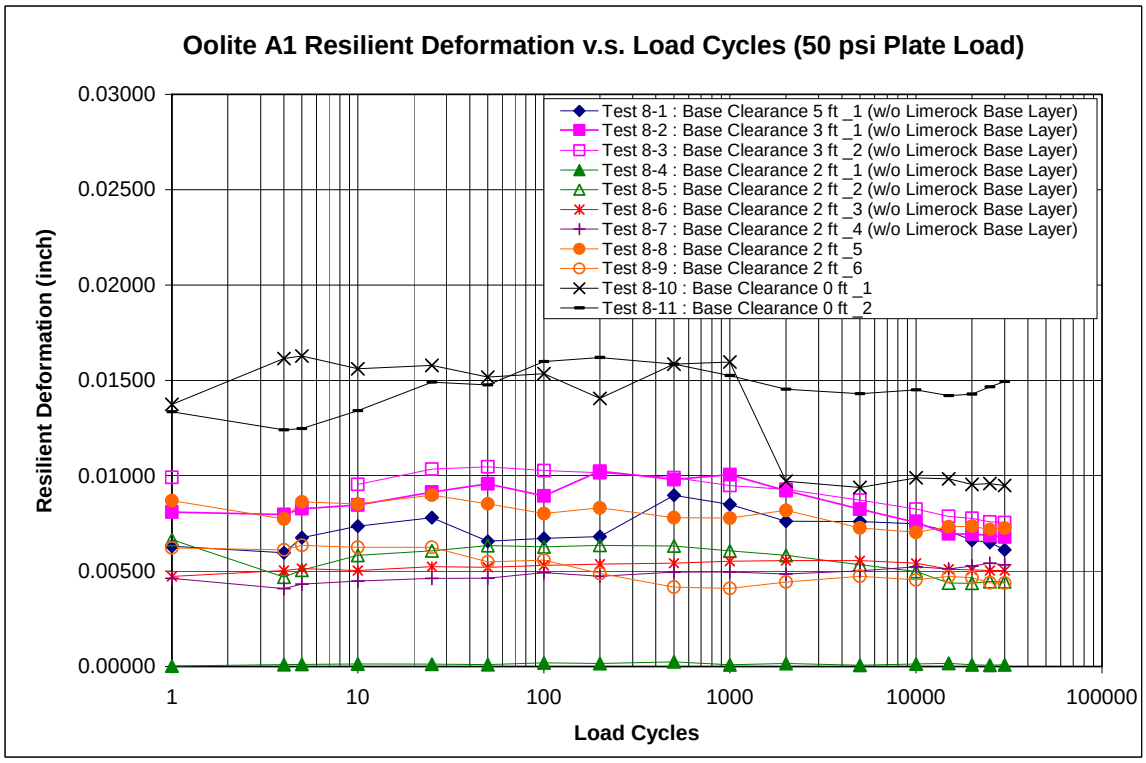


Figure F.88 Oolite A-1 Soil, Deformation Summary under 50 psi Plate Load at Different Water Table Level

F.9 Spring Cemetery A-2-4, 15% Soil

Table F.26 Spring Cemetery A-2-4 Soil Plate Load Test, 20 psi w/o Limerock

Deformation with W.T. at 0 in., Test 9-1				Deformation with W.T. at 0 in., Test 9-2			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)	Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.0275	0.3075	0.2800	1	0.1704	0.4262	0.2557
4				4	0.2486	0.6120	0.3635
5				5	0.2606	0.6591	0.3985
10				10	0.3092	0.6595	0.3504
25				25	0.4118	0.6830	0.2712
50				50	0.5017	0.7746	0.2729
100	0.1837	0.4466	0.2629	100	0.5919	0.8654	0.2735
200	0.2176	0.4784	0.2608	200	0.6864	0.9583	0.2719
500	0.2706	0.5282	0.2576	500	0.8129	1.0837	0.2708
1000	0.3157	0.5717	0.2560	1000	0.9099	1.1800	0.2701
2000	0.3640	0.6193	0.2552	2000	1.0023	1.2727	0.2705
5000	0.4445	0.6995	0.2550	5000	1.1421	1.4105	0.2685
10000	0.5133	0.7681	0.2548	10000	1.2566	1.5226	0.2660
15000	0.5553	0.8103	0.2550	15000	1.3295	1.5940	0.2645
20000	0.5890	0.8424	0.2534	20000	1.3853	1.6478	0.2625
25000	0.6177	0.8689	0.2511	25000	1.4325	1.6934	0.2609
30000	0.6275	0.8706	0.2430	30000	1.4740	1.7346	0.2606

Deformation with W.T. at 0 in., Test 9-3			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.0527	0.2999	0.2472
4	0.1113	0.3660	0.2547
5	0.1242	0.3691	0.2449
10	0.1764	0.3889	0.2125
25	0.2677	0.5355	0.2678
50	0.3496	0.6101	0.2604
100	0.4422	0.6986	0.2564
200	0.5312	0.7872	0.2560
500	0.6455	0.8991	0.2536
1000	0.7282	0.9810	0.2528
2000	0.8099	1.0624	0.2526
5000	0.9195	1.1719	0.2524
10000	1.0197	1.2701	0.2504
15000	1.0850	1.3338	0.2488
20000	1.1356	1.3848	0.2492
25000	1.1792	1.4274	0.2482
30000	1.2138	1.4612	0.2473

Table F.26 Continued

Deformation with W.T. at 12 in., Test 9-4			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.2786	0.5555	0.2769
4	0.3713	0.6546	0.2833
5	0.3879	0.6756	0.2877
10	0.4516	0.7445	0.2929
25	0.5576	0.8465	0.2890
50	0.6488	0.9366	0.2878
100	0.7453	1.0321	0.2868
200	0.8431	1.1274	0.2843
500	0.9690	1.2511	0.2820
1000	1.0643	1.3447	0.2804
2000	1.1569	1.4370	0.2801
5000	1.2922	1.5727	0.2805
10000	1.4009	1.6803	0.2793
15000	1.4727	1.7527	0.2800
20000	1.5267	1.8068	0.2801
25000	1.5726	1.8527	0.2801
30000	1.6144	1.8937	0.2793

Deformation with W.T. at 12 in., Test 9-5			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.0521	0.3116	0.2596
4	0.1035	0.3768	0.2733
5	0.1127	0.3760	0.2633
10	0.1538	0.4375	0.2837
25	0.2333	0.5091	0.2758
50	0.3040	0.5783	0.2743
100	0.3815	0.6544	0.2729
200	0.4653	0.7363	0.2710
500	0.5775	0.8457	0.2682
1000	0.6637	0.9302	0.2665
2000	0.7529	1.0193	0.2664
5000	0.8860	1.1509	0.2649
10000	0.9915	1.2575	0.2660
15000	1.0582	1.3238	0.2655
20000	1.1062	1.3713	0.2652
25000	1.1508	1.4149	0.2642
30000	1.1888	1.4530	0.2642

Deformation with W.T. at 12 in., Test 9-6			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.1795	0.4159	0.2365
4	0.2449	0.4922	0.2473
5	0.2577	0.5118	0.2541
10	0.3071	0.5607	0.2536
25	0.3898	0.6425	0.2527
50	0.4584	0.7114	0.2531
100	0.5286	0.7815	0.2529
200	0.5999	0.8511	0.2512
500	0.6948	0.9456	0.2509
1000	0.7674	1.0173	0.2499
2000	0.8420	1.0939	0.2519
5000	0.9557	1.2096	0.2539
10000	1.0607	1.3158	0.2550
15000	1.1298	1.3859	0.2561
20000	1.1910	1.4468	0.2557
25000	1.2383	1.4940	0.2557
30000	1.2757	1.5319	0.2562

Table F.26 Continued

Deformation with W.T. at 24 in., Test 9-7			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.0522	0.4533	0.4010
4	0.0995	0.4887	0.3892
5	0.1080	0.4981	0.3901
10	0.1409	0.5285	0.3876
25	0.2072	0.5891	0.3819
50	0.2787	0.6558	0.3771
100	0.3677	0.7396	0.3719
200	0.4770	0.8457	0.3686
500	0.6572	1.0224	0.3652
1000	0.8232	1.1884	0.3652
2000	1.0167	1.3815	0.3649
5000	1.3122	1.6774	0.3652
10000	1.5807	1.9478	0.3671
15000	1.7511	2.1199	0.3688
20000	1.8821	2.2529	0.3708
25000	2.0150	2.3846	0.3696
30000	2.1228	2.4920	0.3692

Deformation with W.T. at 24 in., Test 9-8			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.2637	0.5922	0.3285
4	0.3003	0.6279	0.3275
5	0.3049	0.6314	0.3266
10	0.3193	0.6441	0.3248
25	0.3502	0.6751	0.3249
50	0.4013	0.7272	0.3259
100	0.4865	0.8133	0.3268
200	0.6102	0.9383	0.3280
500	0.8314	1.1561	0.3247
1000	1.0417	1.3653	0.3236
2000	1.2809	1.6066	0.3257
5000	1.6670	1.9930	0.3259
10000	2.0167	2.3526	0.3359
15000	2.2639	2.5999	0.3360
20000	2.4551	2.7907	0.3355
25000	2.6235	2.9609	0.3374
30000	2.7701	3.1033	0.3332

Deformation with W.T. at 24 in., Test 9-9			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.5003	0.9206	0.4203
4	0.6996	1.1350	0.4354
5	0.7402	1.1752	0.4349
10	0.9056	1.3381	0.4325
25	1.1799	1.6047	0.4248
50	1.4166	1.8364	0.4198
100	1.6717	2.0827	0.4109
200	1.9446	2.3469	0.4022
500	2.3393	2.7313	0.3920
1000	2.6645	3.0486	0.3840
2000	3.0159	3.3933	0.3774
5000	3.5494	3.9167	0.3672
10000	3.9829	4.3442	0.3613
15000	4.2758	4.6347	0.3589
20000	4.5126	4.8687	0.3561
25000	4.7120	5.0663	0.3542
30000	4.8928	5.2465	0.3538

Table F.27 Spring Cemetery A-2-4 Soil Plate Load Test, 50 psi w/ Limerock

Deformation with W.T. at 0 in., Test 9-10				Deformation with W.T. at 0 in., Test 9-11			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)	Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.2930	0.5710	0.2781	1	0.3380	0.6150	0.2770
4	0.3685	0.6525	0.2839	4	0.4273	0.7152	0.2879
5	0.3761	0.6594	0.2833	5	0.4351	0.7143	0.2792
10	0.4035	0.6863	0.2828	10	0.4609	0.7399	0.2790
25	0.4513	0.7391	0.2877	25	0.5056	0.7891	0.2835
50	0.4941	0.7835	0.2894	50	0.5450	0.8283	0.2833
100	0.5384	0.8291	0.2907	100	0.5876	0.8720	0.2844
200	0.5645	0.8568	0.2923	200	0.6130	0.8966	0.2835
500	0.6350	0.9248	0.2898	500	0.6871	0.9712	0.2842
1000	0.6815	0.9703	0.2888	1000	0.7376	1.0222	0.2846
2000	0.7269	1.0144	0.2875	2000	0.7908	1.0772	0.2863
5000	0.8014	1.0937	0.2922	5000	0.8890	1.1808	0.2918
10000	0.8853	1.1799	0.2946	10000	0.9927	1.2879	0.2952
15000	0.9555	1.2515	0.2960	15000	1.0417	1.3390	0.2973
20000	1.0085	1.3060	0.2975	20000	1.1095	1.4084	0.2988
25000	1.0545	1.3545	0.3000	25000	1.1462	1.4463	0.3001
30000	1.0668	1.3641	0.2974	30000	1.1760	1.4758	0.2998

Deformation with W.T. at 0 in., Test 9-12			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.3803	0.6587	0.2784
4	0.4687	0.7572	0.2885
5	0.4762	0.7569	0.2808
10	0.5032	0.7844	0.2811
25	0.5464	0.8274	0.2811
50	0.5838	0.8633	0.2795
100	0.6219	0.9021	0.2802
200	0.6466	0.9247	0.2781
500	0.7110	0.9856	0.2745
1000	0.7558	1.0291	0.2732
2000	0.8027	1.0781	0.2754
5000	0.8796	1.1586	0.2789
10000	0.9552	1.2388	0.2836
15000	1.0112	1.2971	0.2859
20000	1.0598	1.3477	0.2878
25000	1.1020	1.3909	0.2888
30000	1.1387	1.4274	0.2886

Table F.27 Continued

Deformation with W.T. at 12 in., Test 9-13			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.3761	0.7530	0.3769
4	0.4982	0.8957	0.3975
5	0.5117	0.8947	0.3830
10	0.5512	0.9259	0.3747
25	0.6197	1.0074	0.3877
50	0.6837	1.0618	0.3781
100	0.7521	1.1276	0.3755
200	0.7926	1.1659	0.3733
500	0.8979	1.2646	0.3667
1000	0.9641	1.3289	0.3649
2000	1.0321	1.3960	0.3639
5000	1.1436	1.5091	0.3655
10000	1.2802	1.6475	0.3672
15000	1.3643	1.7310	0.3667
20000	1.4511	1.8233	0.3722
25000	1.5257	1.8937	0.3680
30000	1.5826	1.9495	0.3669

Deformation with W.T. at 12 in., Test 9-14			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.2781	0.6433	0.3652
4	0.3859	0.7555	0.3697
5	0.3956	0.7719	0.3763
10	0.4317	0.8179	0.3862
25	0.5001	0.8922	0.3922
50	0.5573	0.9552	0.3979
100	0.6203	1.0156	0.3952
200	0.6557	1.0499	0.3942
500	0.7523	1.1324	0.3802
1000	0.8136	1.1912	0.3776
2000	0.8741	1.2553	0.3812
5000	0.9177	1.3038	0.3861
10000	0.9598	1.3539	0.3940
15000	1.0255	1.4042	0.3787
20000	1.0855	1.4621	0.3765
25000	1.1433	1.5201	0.3768
30000	1.1988	1.5773	0.3784

Deformation with W.T. at 12 in., Test 9-15			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.3700	0.7276	0.3577
4	0.4764	0.8431	0.3667
5	0.4918	0.8751	0.3833
10	0.5349	0.9116	0.3768
25	0.6060	0.9861	0.3801
50	0.6669	1.0460	0.3791
100	0.7324	1.1085	0.3760
200	0.7692	1.1423	0.3731
500	0.8646	1.2314	0.3668
1000	0.9252	1.2900	0.3649
2000	0.9862	1.3503	0.3640
5000	1.1015	1.4675	0.3660
10000	1.2149	1.5804	0.3655
15000	1.3122	1.6762	0.3640
20000	1.3884	1.7521	0.3637
25000	1.4575	1.8197	0.3622
30000	1.5124	1.8748	0.3623

Table F.27 Continued

Deformation with W.T. at 24 in., Test 9-16			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.3771	0.8293	0.4522
4	0.5214	1.1249	0.6035
5	0.5392	1.1249	0.5857
10	0.5988	1.1620	0.5632
25	0.7092	1.1963	0.4871
50	0.8187	1.3129	0.4942
100	0.9432	1.4391	0.4960
200	1.0203	1.5170	0.4967
500	1.2287	1.7234	0.4948
1000	1.3727	1.8661	0.4934
2000	1.5240	2.0162	0.4922
5000	1.7594	2.2516	0.4922
10000	2.0034	2.4913	0.4879
15000	2.1809	2.6663	0.4854
20000	2.3250	2.8074	0.4824
25000	2.4582	2.9391	0.4810
30000	2.5698	3.0618	0.4920

Deformation with W.T. at 24 in., Test 9-17			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.3919	0.8898	0.4980
4	0.5517	1.0895	0.5377
5	0.5782	1.0888	0.5106
10	0.6559	1.1728	0.5168
25	0.7902	1.3138	0.5237
50	0.9106	1.4367	0.5261
100	1.0445	1.5673	0.5228
200	1.1251	1.6459	0.5208
500	1.3486	1.8628	0.5142
1000	1.5056	2.0150	0.5094
2000	1.6680	2.1754	0.5074
5000	1.9138	2.4164	0.5026
10000	2.1690	2.6681	0.4991
15000	2.3669	2.8638	0.4968
20000	2.5157	3.0112	0.4955
25000	2.6464	3.1408	0.4943
30000	2.7623	3.2562	0.4939

Deformation with W.T. at 24 in., Test 9-18			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.4931	1.0202	0.5272
4	0.6949	1.2378	0.5429
5	0.7310	1.2857	0.5547
10	0.8309	1.4010	0.5702
25	1.0670	1.6762	0.6092
50	1.3047	1.9098	0.6050
100	1.5556	2.1427	0.5872
200	1.6968	2.2753	0.5785
500	2.0954	2.6538	0.5584
1000	2.3665	2.9150	0.5485
2000	2.6452	3.1868	0.5416
5000	3.0823	3.6156	0.5333
10000	3.5339	4.0646	0.5307
15000	3.9126	4.4427	0.5301
20000	4.2327	4.7620	0.5292
25000	4.5346	5.0663	0.5317
30000	4.8195	5.3547	0.5352

Table F.27 Continued

Deformation with W.T. at 36 in., Test 9-19			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.4828	1.1023	0.6195
4	0.6775	1.3059	0.6284
5	0.7043	1.3334	0.6291
10	0.8073	1.4372	0.6299
25	0.9914	1.6262	0.6348
50	1.1651	1.7986	0.6335
100	1.3614	1.9922	0.6308
200	1.4850	2.1136	0.6286
500	1.8386	2.4595	0.6209
1000	2.1100	2.7287	0.6187
2000	2.4118	3.0335	0.6217
5000	2.9576	3.5940	0.6364
10000	3.7069	4.3623	0.6554
15000	4.3039	4.9707	0.6669
20000	4.7836	5.4564	0.6728
25000	5.2200	5.8942	0.6742
30000	5.5799	6.2497	0.6698

Deformation with W.T. at 36 in., Test 9-20			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.4637	1.0063	0.5426
4	0.6408	1.2277	0.5869
5	0.6640	1.2277	0.5636
10	0.7560	1.3286	0.5726
25	0.9197	1.5045	0.5848
50	1.0788	1.6703	0.5914
100	1.2637	1.8592	0.5955
200	1.3796	1.9782	0.5986
500	1.7412	2.3377	0.5964
1000	2.0379	2.6363	0.5984
2000	2.4111	3.0171	0.6059
5000	3.1836	3.8078	0.6243
10000	4.1824	4.8244	0.6420
15000	4.9895	5.6390	0.6496
20000	5.6377	6.2857	0.6481
25000	6.2274	6.8722	0.6449
30000	6.7295	7.3648	0.6353

Deformation with W.T. at 36 in., Test 9-21			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.4625	1.0323	0.5698
4	0.6377	1.2561	0.6184
5	0.6662	1.2548	0.5886
10	0.7644	1.3575	0.5931
25	0.9326	1.5357	0.6030
50	1.0899	1.6983	0.6084
100	1.2712	1.8834	0.6123
200	1.3911	2.0044	0.6133
500	1.7491	2.3689	0.6199
1000	2.0538	2.6854	0.6316
2000	2.5043	3.1654	0.6611
5000	3.7172	4.4429	0.7257
10000	5.3708	6.1118	0.7410
15000	6.4461	7.1524	0.7063
20000	7.1801	7.8643	0.6842
25000	7.7577	8.4325	0.6749
30000	8.2147	8.8971	0.6824

Table F.27 Continued

Deformation with W.T. at 24 in. (Drawdown), Test 9-22			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.4406	0.9201	0.4795
4	0.5948	1.0893	0.4946
5	0.6152	1.1088	0.4936
10	0.6856	1.1854	0.4998
25	0.8031	1.3132	0.5101
50	0.9099	1.4272	0.5173
100	1.0336	1.5555	0.5219
200	1.1106	1.6351	0.5245
500	1.3337	1.8637	0.5300
1000	1.5008	2.0349	0.5341
2000	1.6842	2.2255	0.5413
5000	2.0132	2.5618	0.5486
10000	2.3420	2.8958	0.5538
15000	2.5782	3.1336	0.5554
20000	2.7642	3.3206	0.5564
25000	2.9264	3.4817	0.5553
30000	3.0700	3.6233	0.5533

Deformation with W.T. at 24 in. (Drawdown), Test 9-23			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.4431	0.9242	0.4812
4	0.5927	1.0774	0.4847
5	0.6092	1.0978	0.4887
10	0.6608	1.1630	0.5022
25	0.7481	1.2569	0.5088
50	0.8283	1.3391	0.5108
100	0.9177	1.4317	0.5140
200	0.9743	1.4895	0.5152
500	1.1405	1.6609	0.5204
1000	1.2684	1.7915	0.5231
2000	1.4158	1.9442	0.5283
5000	1.6848	2.2201	0.5353
10000	2.0037	2.5418	0.5381
15000	2.2508	2.7915	0.5406
20000	2.4598	3.0019	0.5421
25000	2.6275	3.1743	0.5468
30000	2.7460	3.2901	0.5441

Deformation with W.T. at 24 in. (Drawdown), Test 9-24			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.4567	0.9020	0.4453
4	0.6121	1.0716	0.4595
5	0.6337	1.0911	0.4574
10	0.7104	1.1775	0.4671
25	0.8375	1.3148	0.4773
50	0.9526	1.4357	0.4832
100	1.0764	1.5645	0.4880
200	1.1531	1.6427	0.4895
500	1.3739	1.8658	0.4919
1000	1.5358	2.0306	0.4948
2000	1.7154	2.2162	0.5008
5000	2.0113	2.5227	0.5114
10000	2.3328	2.8564	0.5236
15000	2.5811	3.1006	0.5195
20000	2.7867	3.3100	0.5233
25000	2.9544	3.4753	0.5209
30000	3.1238	3.6402	0.5164

Table F.27 Continued

Deformation with W.T. at 12 in. (Drawdown), Test 9-25			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.3634	0.7670	0.4036
4	0.4924	0.9184	0.4260
5	0.5094	0.9175	0.4082
10	0.5639	0.9742	0.4103
25	0.6523	1.0649	0.4126
50	0.7302	1.1420	0.4118
100	0.8120	1.2220	0.4099
200	0.8948	1.3021	0.4073
500	1.0004	1.4055	0.4051
1000	1.0873	1.4913	0.4040
2000	1.1937	1.6027	0.4090
5000	1.2935	1.6996	0.4061
10000	1.4530	1.8594	0.4064
15000	1.5708	1.9800	0.4093
20000	1.6600	2.0729	0.4129
25000	1.7444	2.1566	0.4122
30000	1.8138	2.2221	0.4083

Deformation with W.T. at 12 in. (Drawdown), Test 9-26			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.3030	0.6688	0.3658
4	0.4002	0.7748	0.3747
5	0.4129	0.7907	0.3778
10	0.4532	0.8319	0.3787
25	0.5144	0.8957	0.3813
50	0.5656	0.9471	0.3815
100	0.6205	1.0021	0.3816
200	0.6750	1.0564	0.3814
500	0.7499	1.1310	0.3811
1000	0.8097	1.1922	0.3825
2000	0.8761	1.2613	0.3852
5000	0.9825	1.3625	0.3799
10000	1.1072	1.4876	0.3804
15000	1.2232	1.6080	0.3848
20000	1.3169	1.6934	0.3766
25000	1.3682	1.7450	0.3767
30000	1.4252	1.7996	0.3744

Deformation with W.T. at 12 in. (Drawdown), Test 9-27			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.3282	0.7227	0.3945
4	0.4623	0.8796	0.4173
5	0.4783	0.8796	0.4012
10	0.5294	0.9317	0.4022
25	0.6051	1.0095	0.4045
50	0.6680	1.0719	0.4039
100	0.7350	1.1366	0.4016
200	0.8019	1.2022	0.4003
500	0.8914	1.2903	0.3989
1000	0.9593	1.3590	0.3998
2000	1.0348	1.4365	0.4017
5000	1.1615	1.5669	0.4054
10000	1.2953	1.7047	0.4094
15000	1.3935	1.8032	0.4097
20000	1.4731	1.8835	0.4104
25000	1.5557	1.9664	0.4106
30000	1.6245	2.0355	0.4109

Table F.28 Summary of Deformation for Spring Cemetery A-2-4 (15%) Soil Plate Load Test, 20 psi Plate Load

Resilient Deformation (in.) for Spring A-2-4 Soil									
Test No.	9-1	9-2	9-3	9-4	9-5	9-6	9-7	9-8	9-9
Test Date	7/19/2005	7/20/2005	7/21/2005	8/12/2005	8/15/2005	8/16/2005	12/20/2005	12/21/2005	12/22/2005
Loads (psi)	20	20	20	20	20	20	20	20	20
Limerock Layer	No	No	No	No	No	No	No	No	No
No.of Plate Load Cycles	Water Table (in. above Embankment)								
	0	0	0	12	12	12	24	24	24
1	0.01103	0.01007	0.00973	0.01090	0.01022	0.00931	0.01579	0.01293	0.01655
4		0.01431	0.01003	0.01115	0.01076	0.00974	0.01532	0.01290	0.01714
5		0.01569	0.00964	0.01133	0.01037	0.01001	0.01536	0.01286	0.01712
10		0.01379	0.00836	0.01153	0.01117	0.00998	0.01526	0.01279	0.01703
25		0.01068	0.01054	0.01138	0.01086	0.00995	0.01503	0.01279	0.01672
50		0.01074	0.01025	0.01133	0.01080	0.00996	0.01485	0.01283	0.01653
100	0.01035	0.01077	0.01009	0.01129	0.01075	0.00995	0.01464	0.01287	0.01618
200	0.01027	0.01070	0.01008	0.01119	0.01067	0.00989	0.01451	0.01292	0.01584
500	0.01014	0.01066	0.00998	0.01110	0.01056	0.00988	0.01438	0.01278	0.01543
1000	0.01008	0.01063	0.00995	0.01104	0.01049	0.00984	0.01438	0.01274	0.01512
2000	0.01005	0.01065	0.00994	0.01103	0.01049	0.00992	0.01436	0.01282	0.01486
5000	0.01004	0.01057	0.00994	0.01104	0.01043	0.01000	0.01438	0.01283	0.01446
10000	0.01003	0.01047	0.00986	0.01100	0.01047	0.01004	0.01445	0.01322	0.01422
15000	0.01004	0.01041	0.00980	0.01102	0.01045	0.01008	0.01452	0.01323	0.01413
20000	0.00998	0.01034	0.00981	0.01103	0.01044	0.01007	0.01460	0.01321	0.01402
25000	0.00989	0.01027	0.00977	0.01103	0.01040	0.01007	0.01455	0.01328	0.01395
30000	0.00957	0.01026	0.00974	0.01100	0.01040	0.01009	0.01454	0.01312	0.01393
Average from 10,000 Cycles	0.00990	0.01035	0.00979	0.01101	0.01043	0.01007	0.01453	0.01321	0.01405

Table F.29 Summary of Deformation for Spring Cemetery A-2-4 (15%) Soil Plate Load Test, 50 psi Plate Load

Resilient Deformation (in.) for Spring Cemetery A-2-4 Soil																		
Test No.	9-10	9-11	9-12	9-13	9-14	9-15	9-16	9-17	9-18	9-19	9-20	9-21	9-22	9-23	9-24	9-25	9-26	9-27
Test Date	3/15/06	3/16/06	3/17/06	5/23/06	5/24/06	5/25/06	8/4/06	8/7/06	8/9/06	10/24/06	10/25/06	10/26/06	1/12/07	1/16/07	1/17/07	4/5/07	4/6/07	4/9/07
Loads (psi)	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Limerock	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No.of Load Cycles	Water Table (in. above Embankment)																	
	0	0	0	12	12	12	24	24	24	36	36	36	24	24	24	12	12	12
1	0.01095	0.01091	0.01096	0.01484	0.01438	0.01408	0.01780	0.01960	0.02076	0.02439	0.02136	0.02243	0.01888	0.01894	0.01753	0.01589	0.01440	0.01553
4	0.01118	0.01133	0.01136	0.01565	0.01455	0.01444	0.02376	0.02117	0.02138	0.02474	0.02311	0.02435	0.01947	0.01908	0.01809	0.01677	0.01475	0.01643
5	0.01115	0.01099	0.01105	0.01508	0.01481	0.01509	0.02306	0.02010	0.02184	0.02477	0.02219	0.02317	0.01943	0.01924	0.01801	0.01607	0.01488	0.01580
10	0.01113	0.01099	0.01107	0.01475	0.01521	0.01483	0.02217	0.02035	0.02245	0.02480	0.02254	0.02335	0.01968	0.01977	0.01839	0.01615	0.01491	0.01584
25	0.01133	0.01116	0.01107	0.01526	0.01544	0.01496	0.01918	0.02062	0.02398	0.02499	0.02302	0.02374	0.02008	0.02003	0.01879	0.01625	0.01501	0.01592
50	0.01139	0.01115	0.01100	0.01488	0.01566	0.01492	0.01946	0.02071	0.02382	0.02494	0.02328	0.02395	0.02037	0.02011	0.01902	0.01621	0.01502	0.01590
100	0.01144	0.01120	0.01103	0.01478	0.01556	0.01480	0.01953	0.02058	0.02312	0.02484	0.02344	0.02410	0.02055	0.02024	0.01921	0.01614	0.01502	0.01581
200	0.01151	0.01116	0.01095	0.01469	0.01552	0.01469	0.01955	0.02050	0.02278	0.02475	0.02357	0.02415	0.02065	0.02029	0.01927	0.01604	0.01502	0.01576
500	0.01141	0.01119	0.01081	0.01444	0.01497	0.01444	0.01948	0.02025	0.02198	0.02445	0.02348	0.02440	0.02087	0.02049	0.01937	0.01595	0.01500	0.01571
1000	0.01137	0.01121	0.01076	0.01436	0.01487	0.01436	0.01942	0.02006	0.02160	0.02436	0.02356	0.02487	0.02103	0.02059	0.01948	0.01591	0.01506	0.01574
2000	0.01132	0.01127	0.01084	0.01433	0.01501	0.01433	0.01938	0.01997	0.02132	0.02448	0.02386	0.02603	0.02131	0.02080	0.01972	0.01610	0.01517	0.01582
5000	0.01151	0.01149	0.01098	0.01439	0.01520	0.01441	0.01938	0.01979	0.02100	0.02506	0.02458	0.02857	0.02160	0.02108	0.02014	0.01599	0.01496	0.01596
10000	0.01160	0.01162	0.01117	0.01446	0.01551	0.01439	0.01921	0.01965	0.02089	0.02580	0.02528	0.02917	0.02180	0.02119	0.02061	0.01600	0.01498	0.01612
15000	0.01165	0.01170	0.01125	0.01444	0.01491	0.01433	0.01911	0.01956	0.02087	0.02625	0.02557	0.02781	0.02187	0.02128	0.02045	0.01611	0.01515	0.01613
20000	0.01171	0.01176	0.01133	0.01465	0.01482	0.01432	0.01899	0.01951	0.02084	0.02649	0.02551	0.02694	0.02191	0.02134	0.02060	0.01626	0.01483	0.01616
25000	0.01181	0.01181	0.01137	0.01449	0.01483	0.01426	0.01894	0.01946	0.02093	0.02654	0.02539	0.02657	0.02186	0.02153	0.02051	0.01623	0.01483	0.01617
30000	0.01171	0.01180	0.01136	0.01444	0.01490	0.01427	0.01937	0.01945	0.02107	0.02637	0.02501	0.02686	0.02178	0.02142	0.02033	0.01607	0.01474	0.01618
Average from 10,000 Cycles	0.01170	0.01174	0.01130	0.01450	0.01500	0.01431	0.01912	0.01953	0.02092	0.02629	0.02535	0.02747	0.02184	0.02135	0.02050	0.01613	0.01491	0.01615

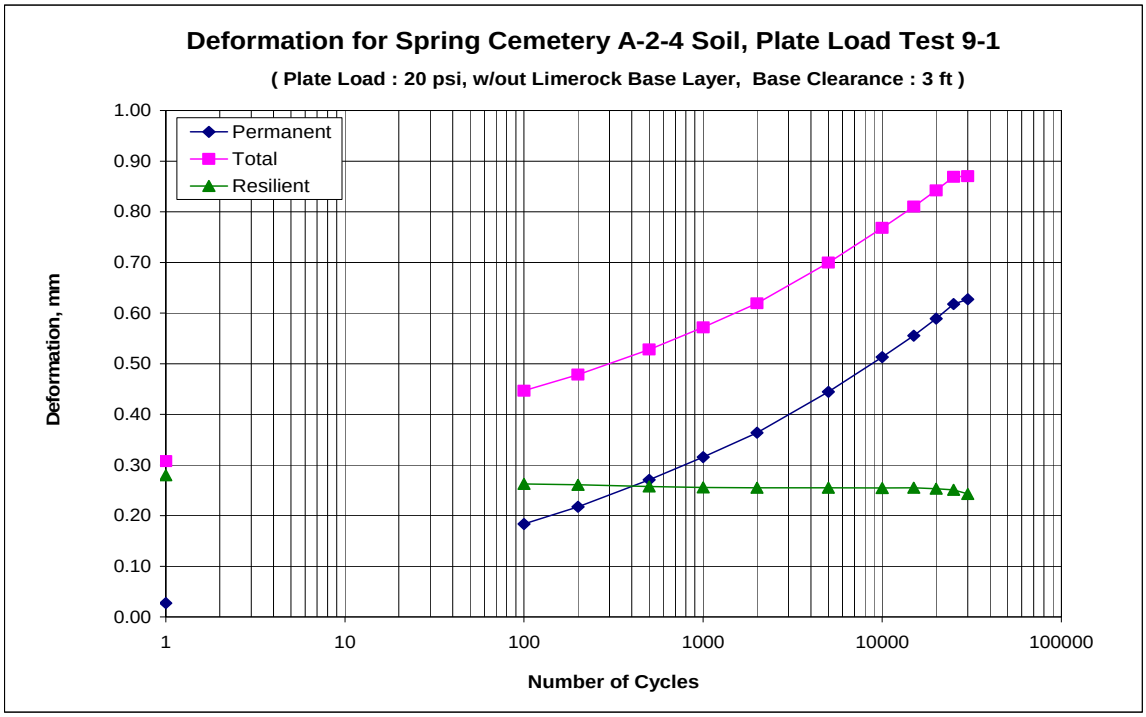


Figure F.89 Spring Cemetery A-2-4 (15%) Soil, Deformation under 20 psi Plate Load (Water Table at 0.0 in., w/out Limerock, Test 9-1)

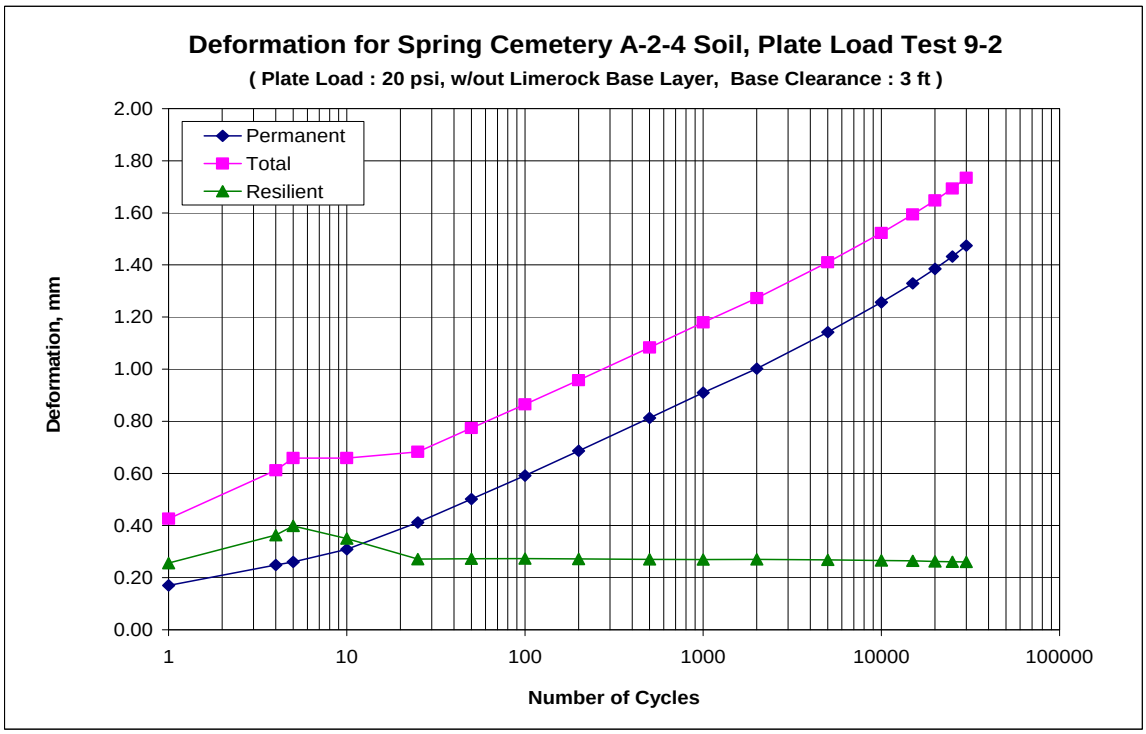


Figure F.90 Spring Cemetery A-2-4 (15%) Soil, Deformation under 20 psi Plate Load (Water Table at 0.0 in., w/out Limerock, Test 9-2)

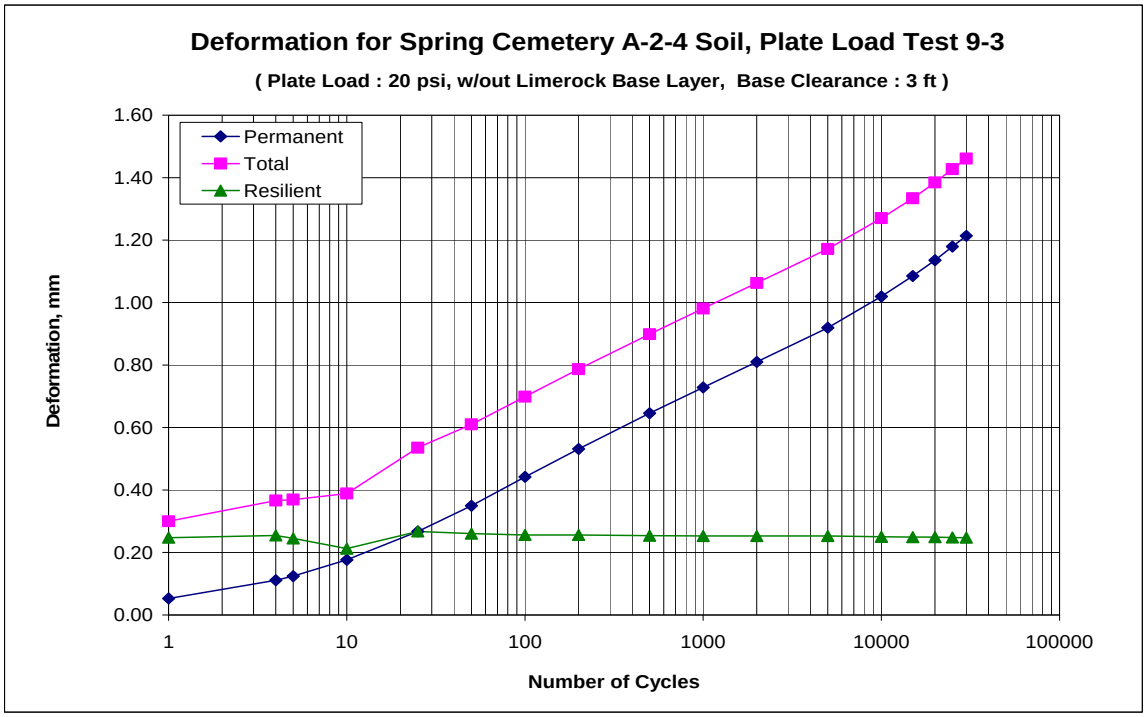


Figure F.91 Spring Cemetery A-2-4 (15%) Soil, Deformation under 20 psi Plate Load (Water Table at 0.0 in., w/out Limerock, Test 9-3)

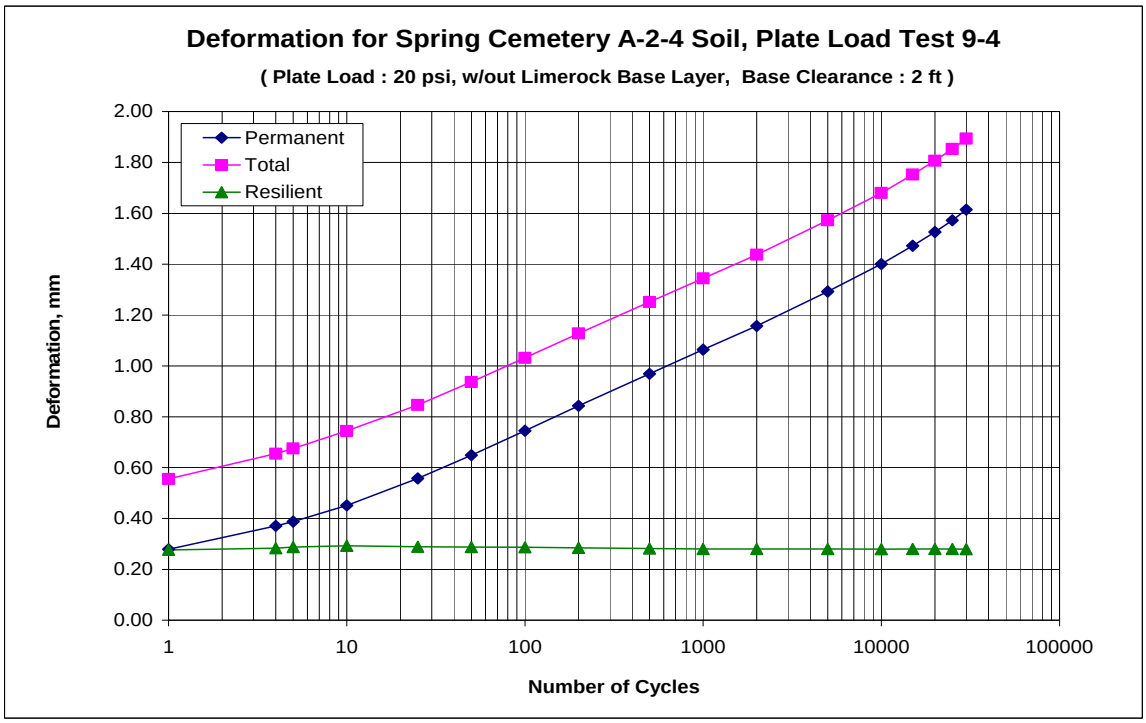


Figure F.92 Spring Cemetery A-2-4 (15%) Soil, Deformation under 20 psi Plate Load (Water Table at 12 in., w/out Limerock, Test 9-4)

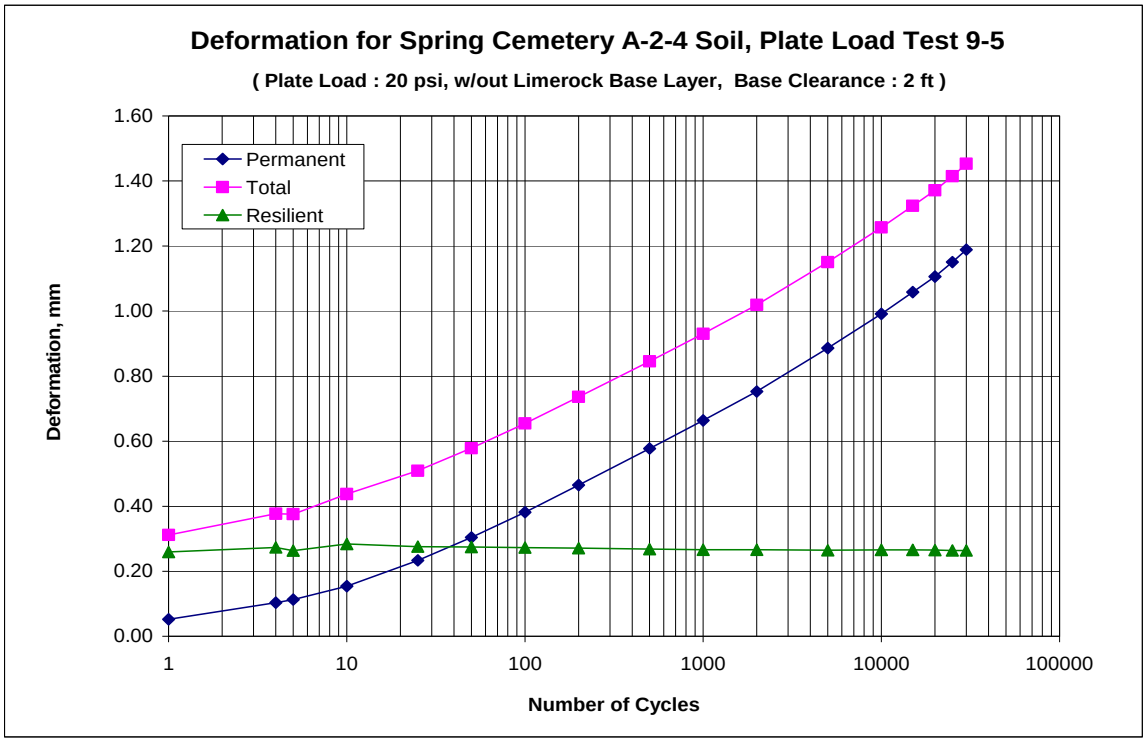


Figure F.93 Spring Cemetery A-2-4 (15%) Soil, Deformation under 20 psi Plate Load (Water Table at 12 in., w/out Limerock, Test 9-5)

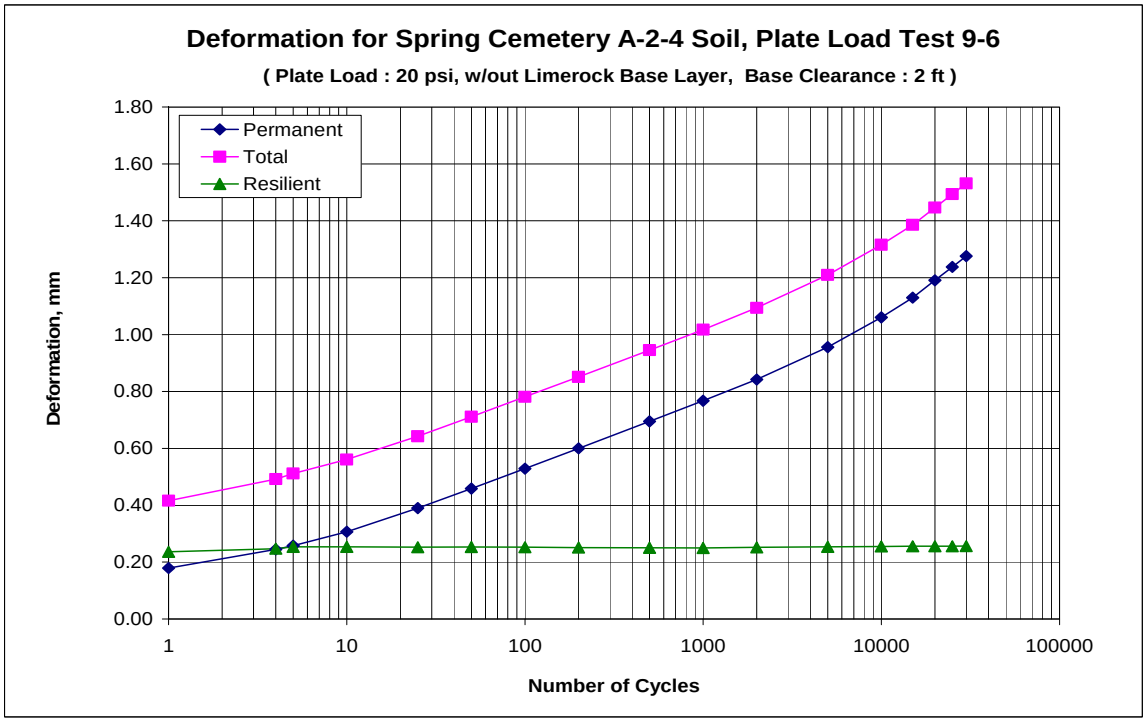


Figure F.94 Spring Cemetery A-2-4 (15%) Soil, Deformation under 20 psi Plate Load (Water Table at 12 in., w/out Limerock, Test 9-6)

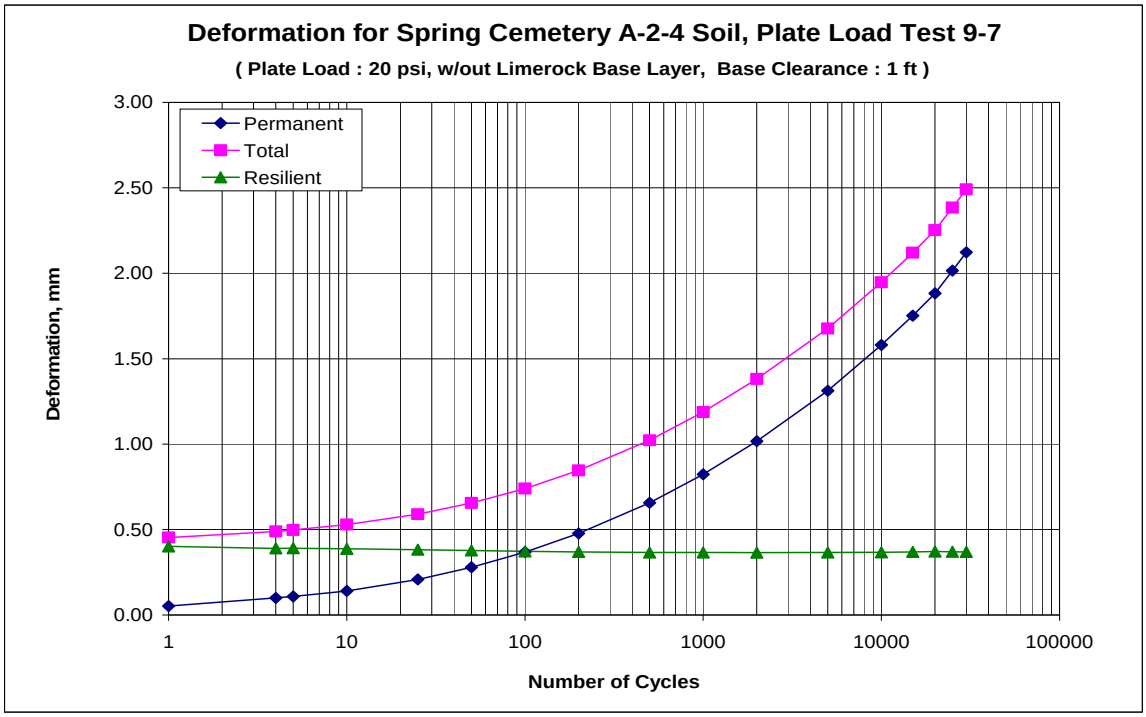


Figure F.95 Spring Cemetery A-2-4 (15%) Soil, Deformation under 20 psi Plate Load (Water Table at 24 in., w/out Limerock, Test 9-7)

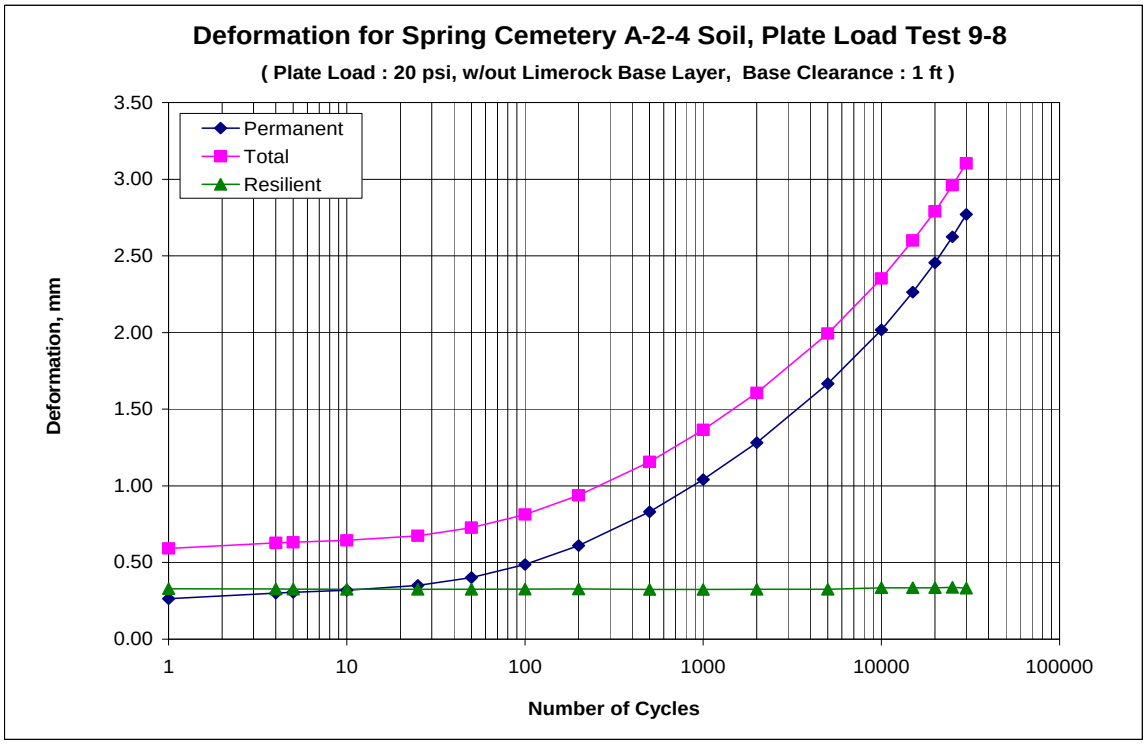


Figure F.96 Spring Cemetery A-2-4 (15%) Soil, Deformation under 20 psi Plate Load (Water Table at 24 in., w/out Limerock, Test 9-8)

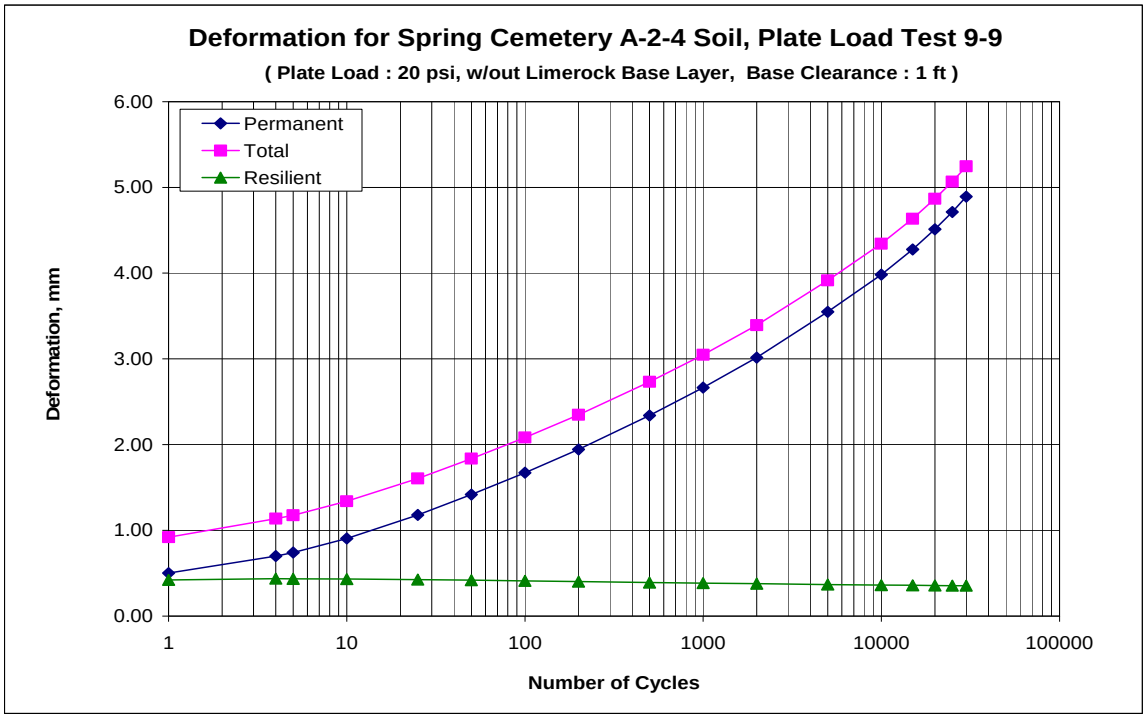


Figure F.97 Spring Cemetery A-2-4 (15%) Soil, Deformation under 20 psi Plate Load (Water Table at 24 in., w/out Limerock, Test 9-9)

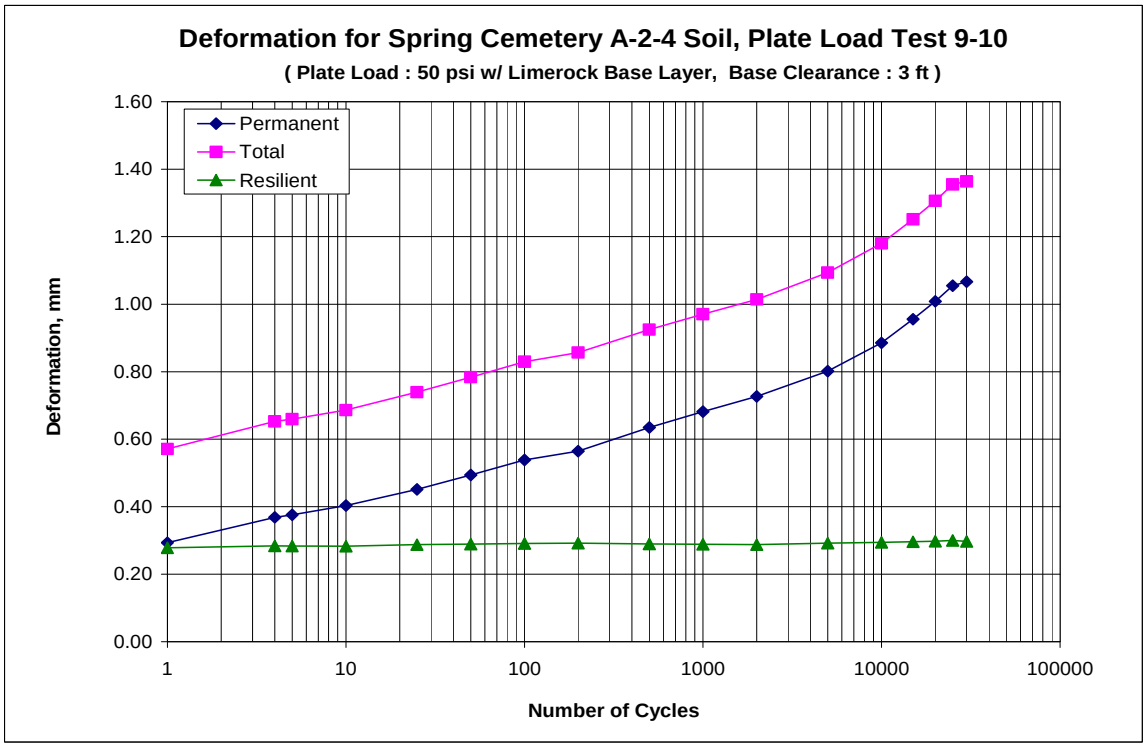


Figure F.98 Spring Cemetery A-2-4 (15%) Soil, Deformation under 50 psi Plate Load (Water Table at 0.0 in., w/ Limerock, Test 9-10)

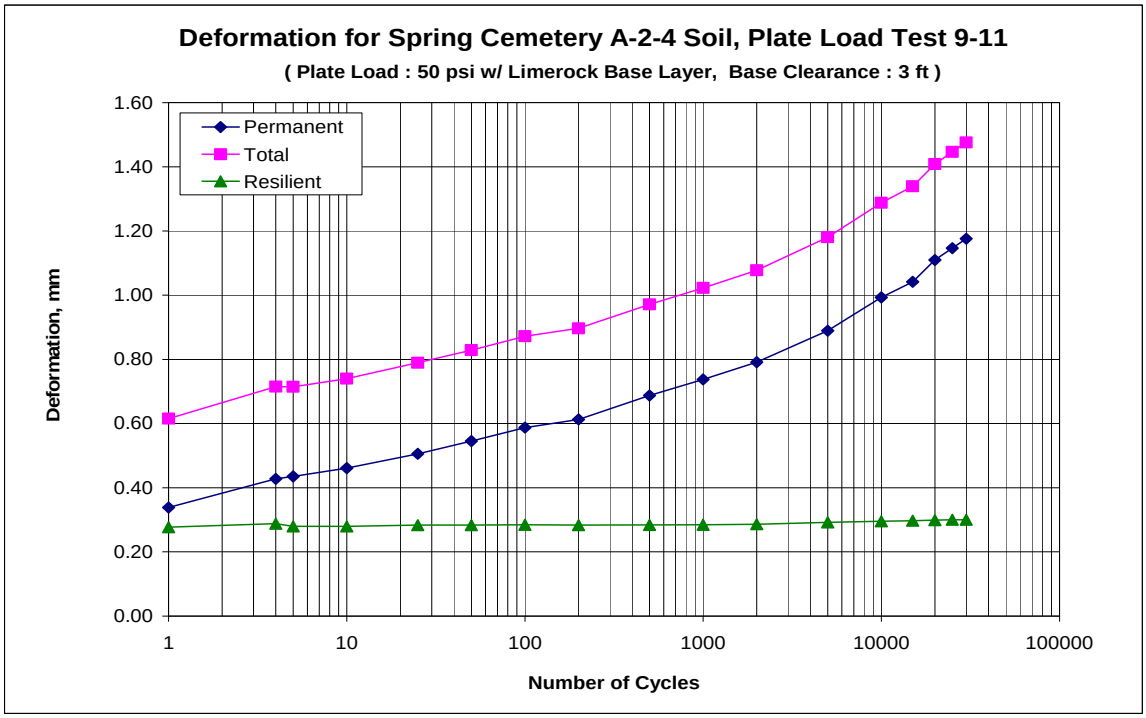


Figure F.99 Spring Cemetery A-2-4 (15%) Soil, Deformation under 50 psi Plate Load (Water Table at 0.0 in., w/ Limerock, Test 9-11)

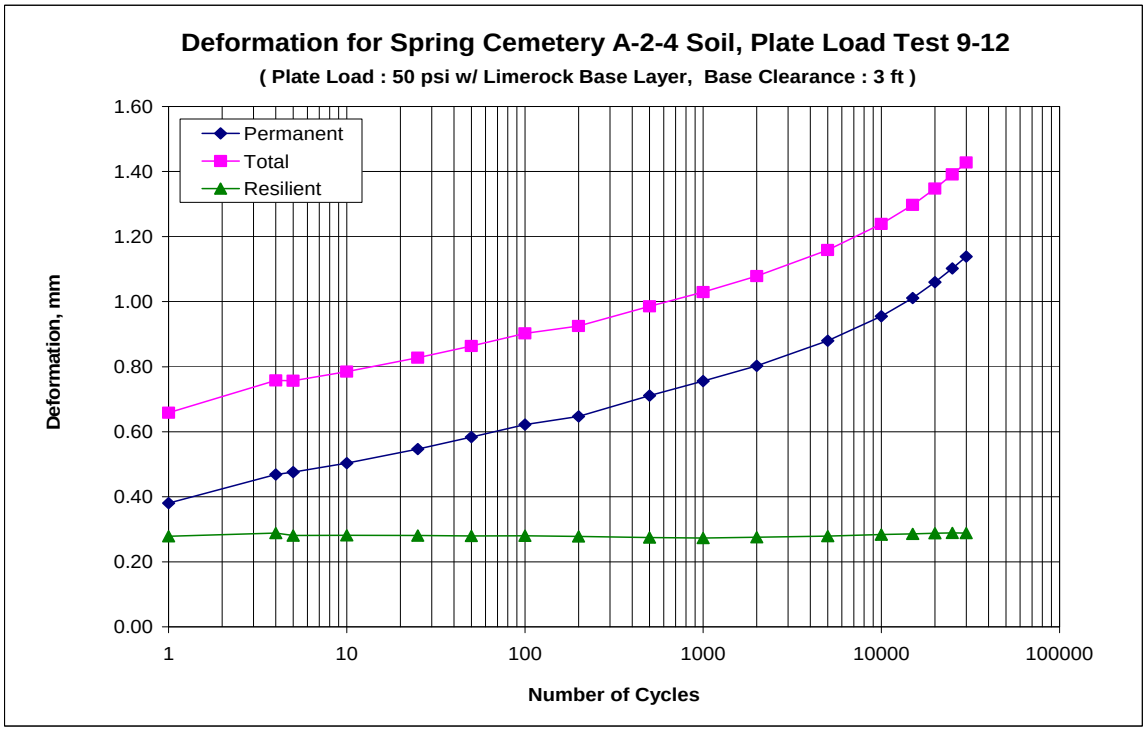


Figure F.100 Spring Cemetery A-2-4 (15%) Soil, Deformation under 50 psi Plate Load (Water Table at 0.0 in., w/ Limerock, Test 9-12)

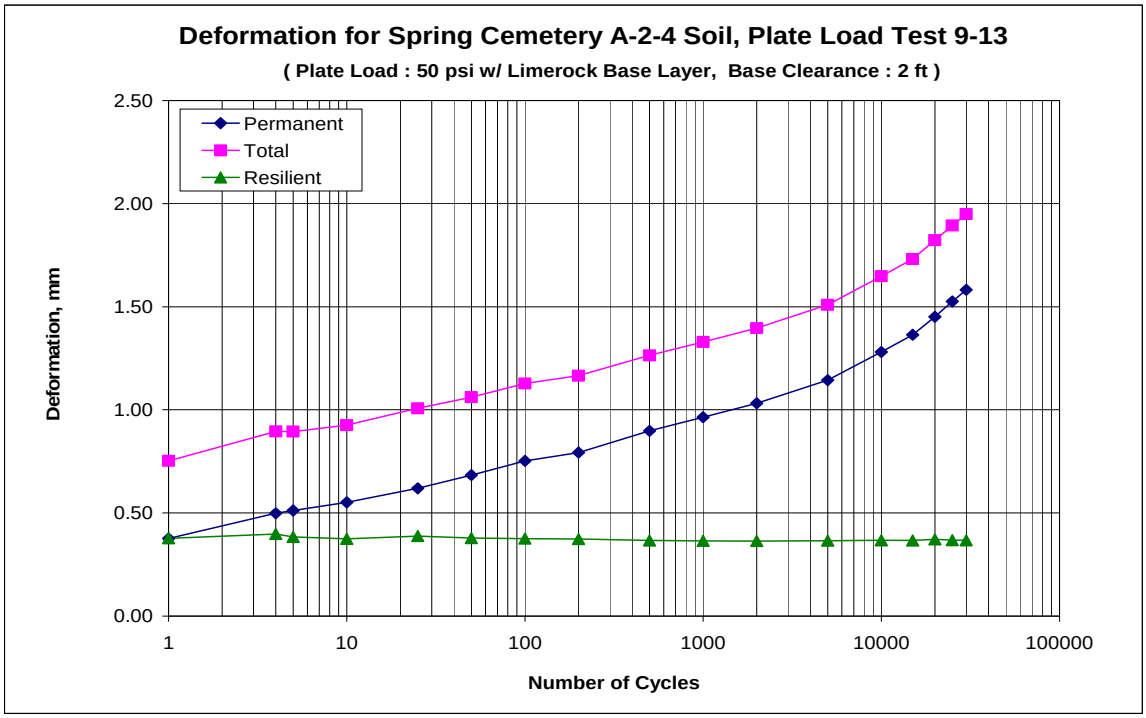


Figure F.101 Spring Cemetery A-2-4 (15%) Soil, Deformation under 50 psi Plate Load (Water Table at 0.0 in., w/ Limerock, Test 9-13)

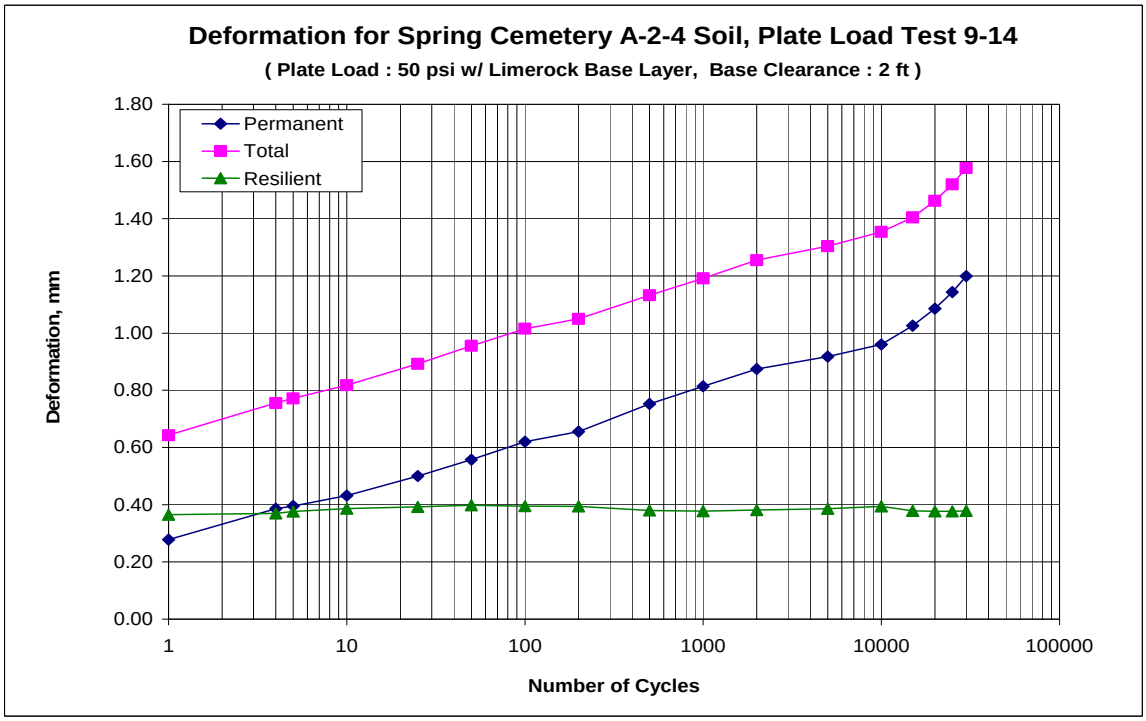


Figure F.102 Spring Cemetery A-2-4 (15%) Soil, Deformation under 50 psi Plate Load (Water Table at 0.0 in., w/ Limerock, Test 9-14)

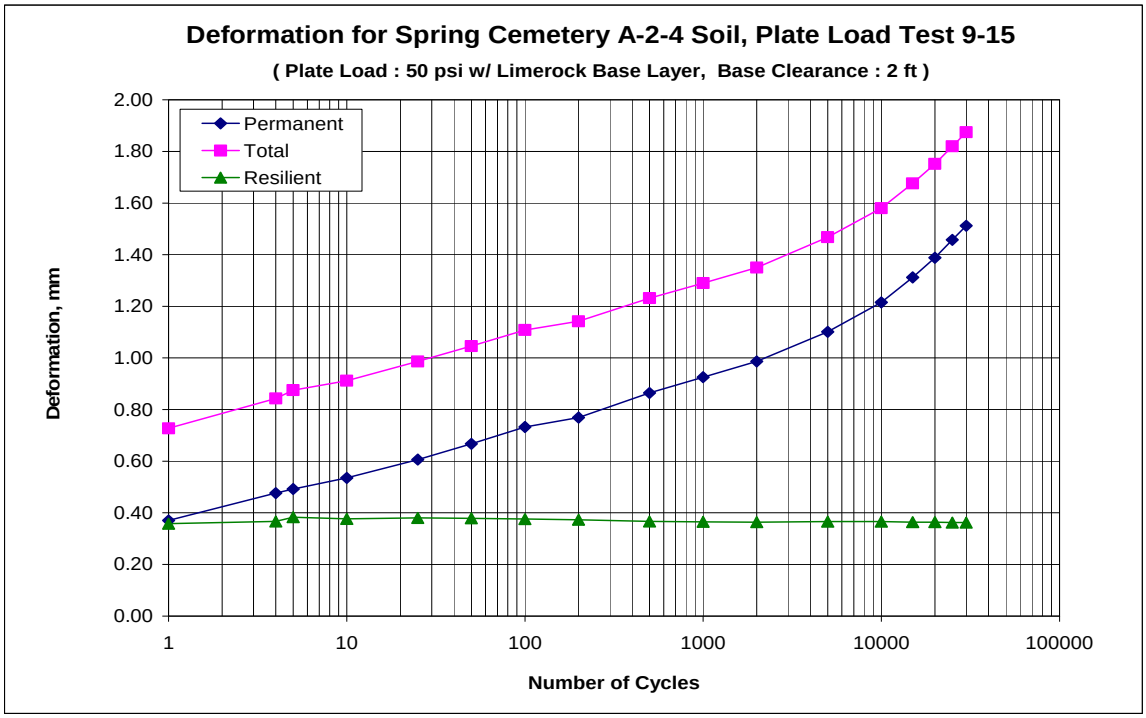


Figure F.103 Spring Cemetery A-2-4 (15%) Soil, Deformation under 50 psi Plate Load (Water Table at 0.0 in., w/ Limerock, Test 9-15)

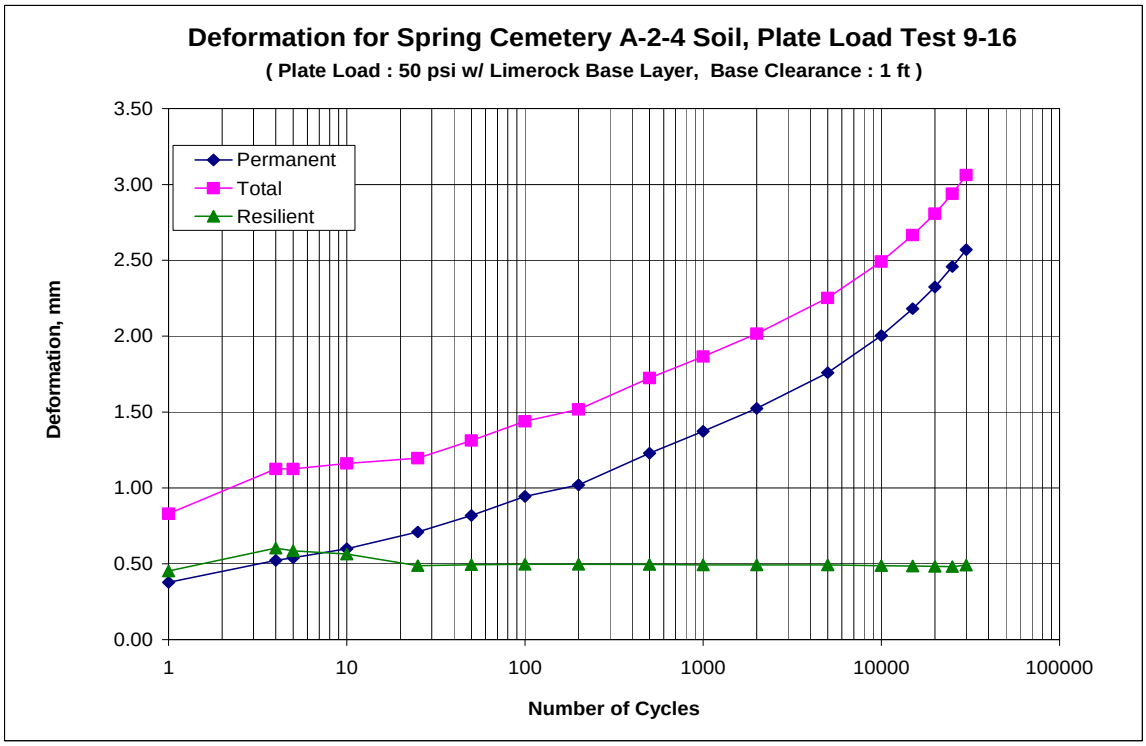


Figure F.104 Spring Cemetery A-2-4 (15%) Soil, Deformation under 50 psi Plate Load (Water Table at 0.0 in., w/ Limerock, Test 9-16)

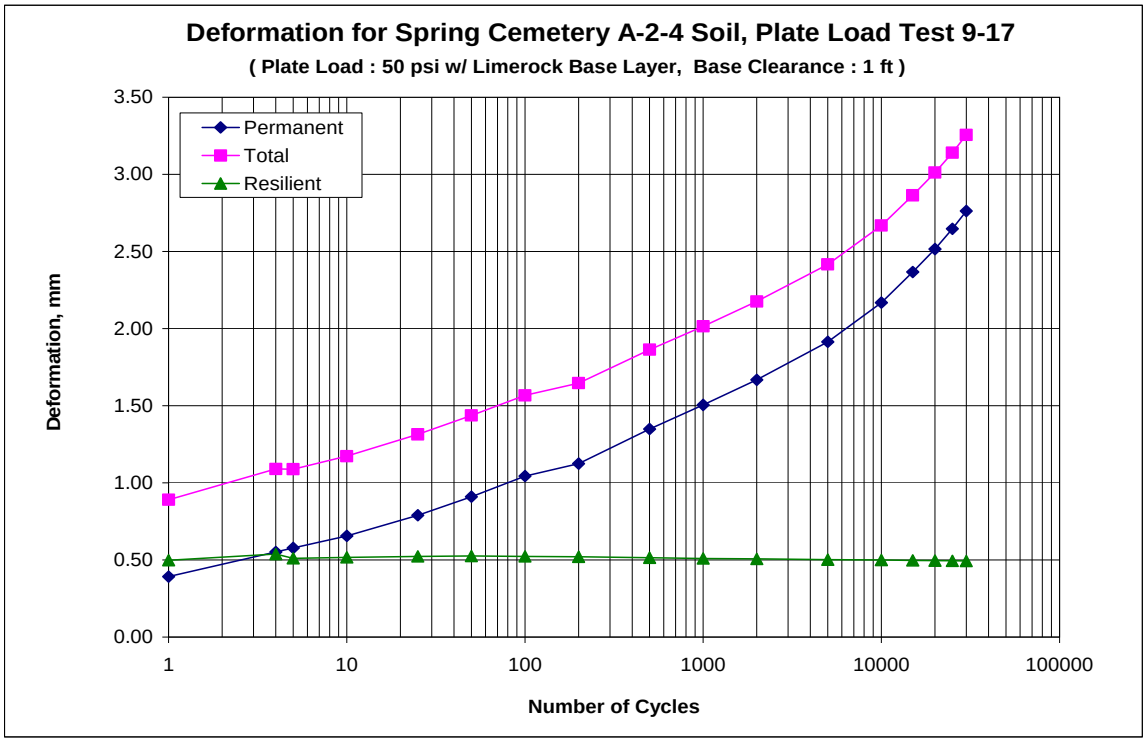


Figure F.105 Spring Cemetery A-2-4 (15%) Soil, Deformation under 50 psi Plate Load (Water Table at 0.0 in., w/ Limerock, Test 9-17)

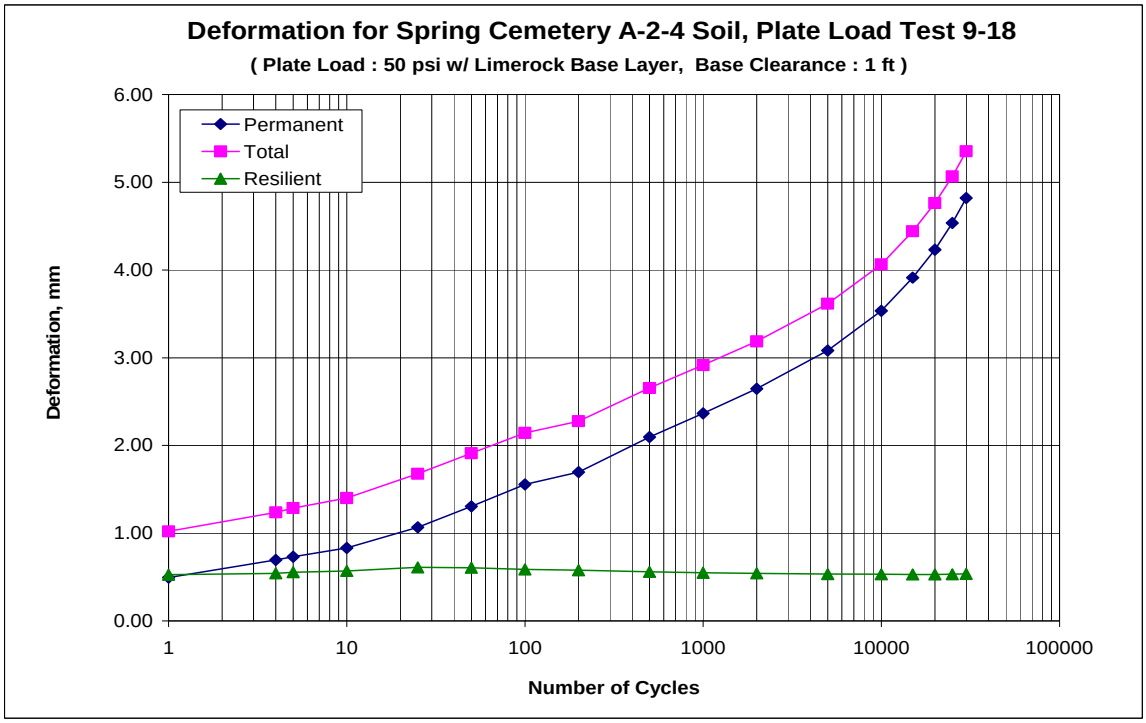


Figure F.106 Spring Cemetery A-2-4 (15%) Soil, Deformation under 50 psi Plate Load (Water Table at 0.0 in., w/ Limerock, Test 9-18)

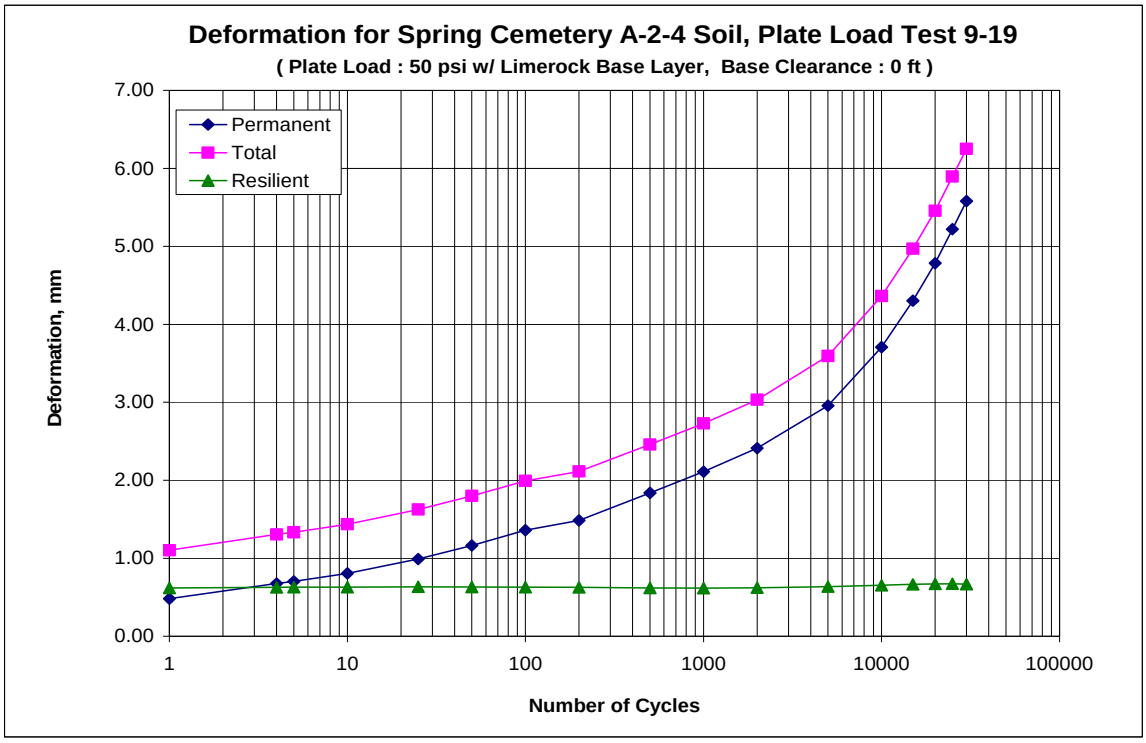


Figure F.107 Spring Cemetery A-2-4 (15%) Soil, Deformation under 50 psi Plate Load (Water Table at 0.0 in., w/ Limerock, Test 9-19)

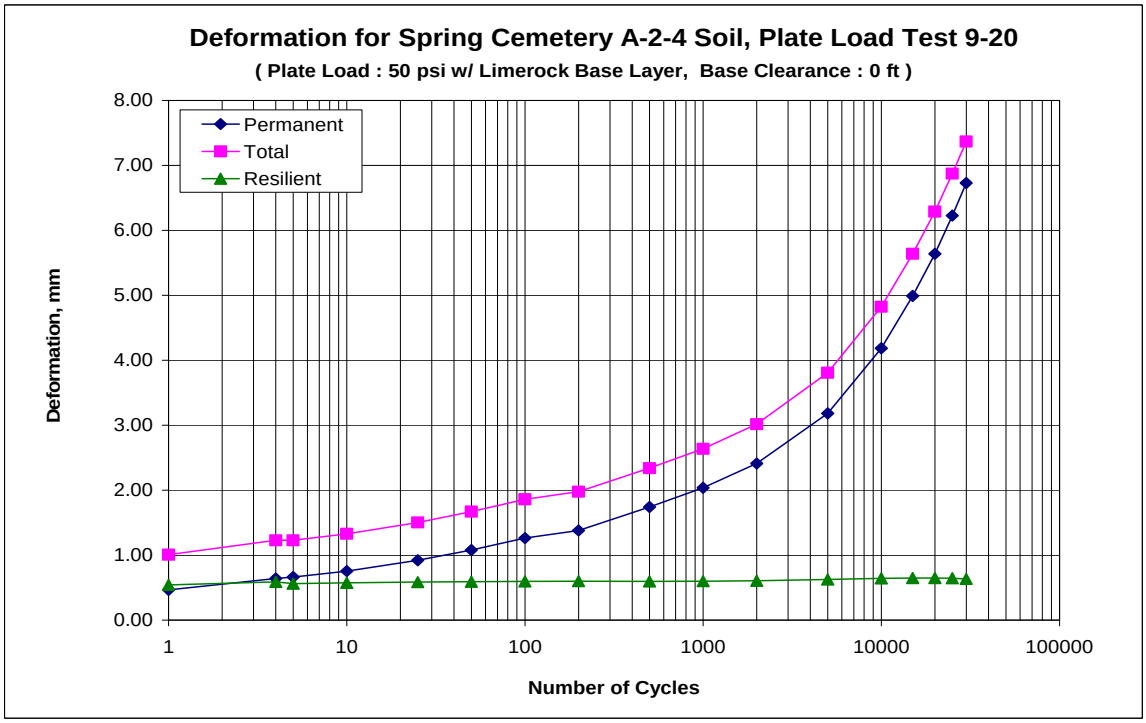


Figure F.108 Spring Cemetery A-2-4 (15%) Soil, Deformation under 50 psi Plate Load (Water Table at 0.0 in., w/ Limerock, Test 9-20)

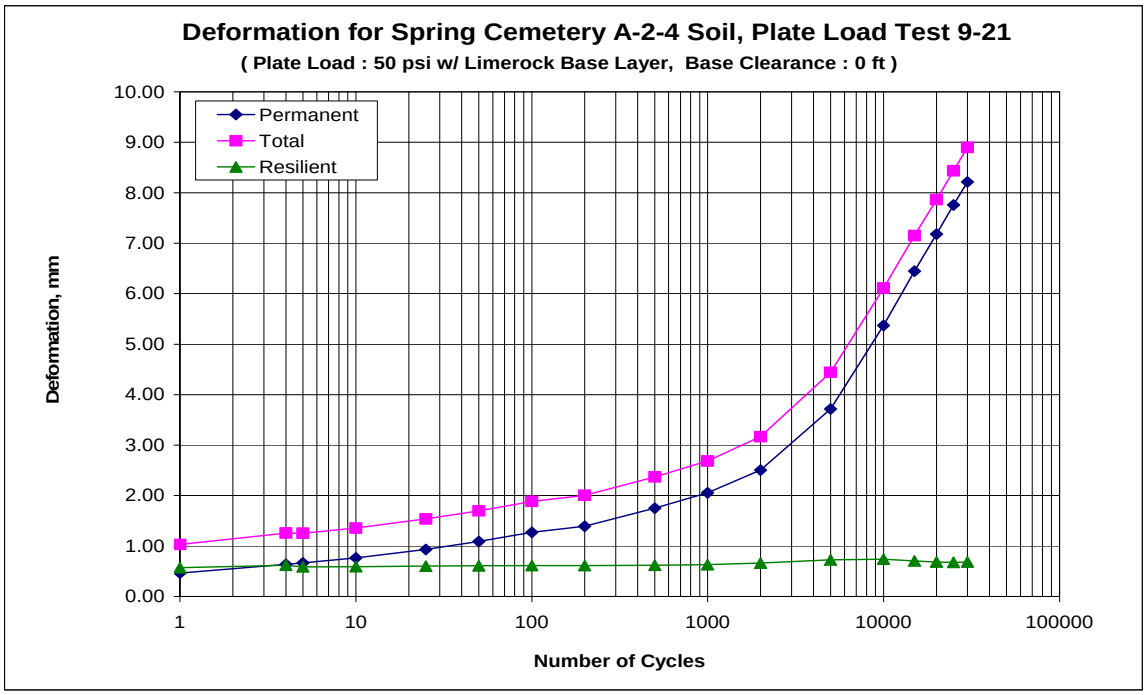


Figure F.109 Spring Cemetery A-2-4 (15%) Soil, Deformation under 50 psi Plate Load (Water Table at 0.0 in., w/ Limerock, Test 9-21)

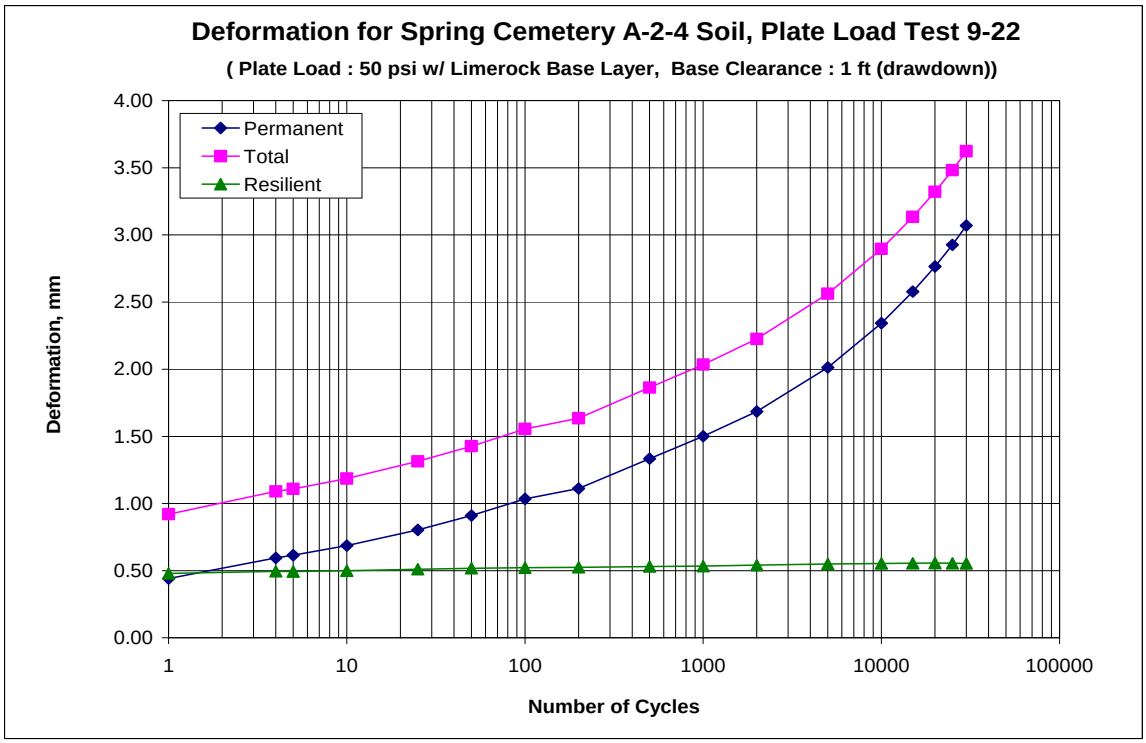


Figure F.110 Spring Cemetery A-2-4 (15%) Soil, Deformation under 50 psi Plate Load (Water Table at 0.0 in., w/ Limerock, Test 9-22)

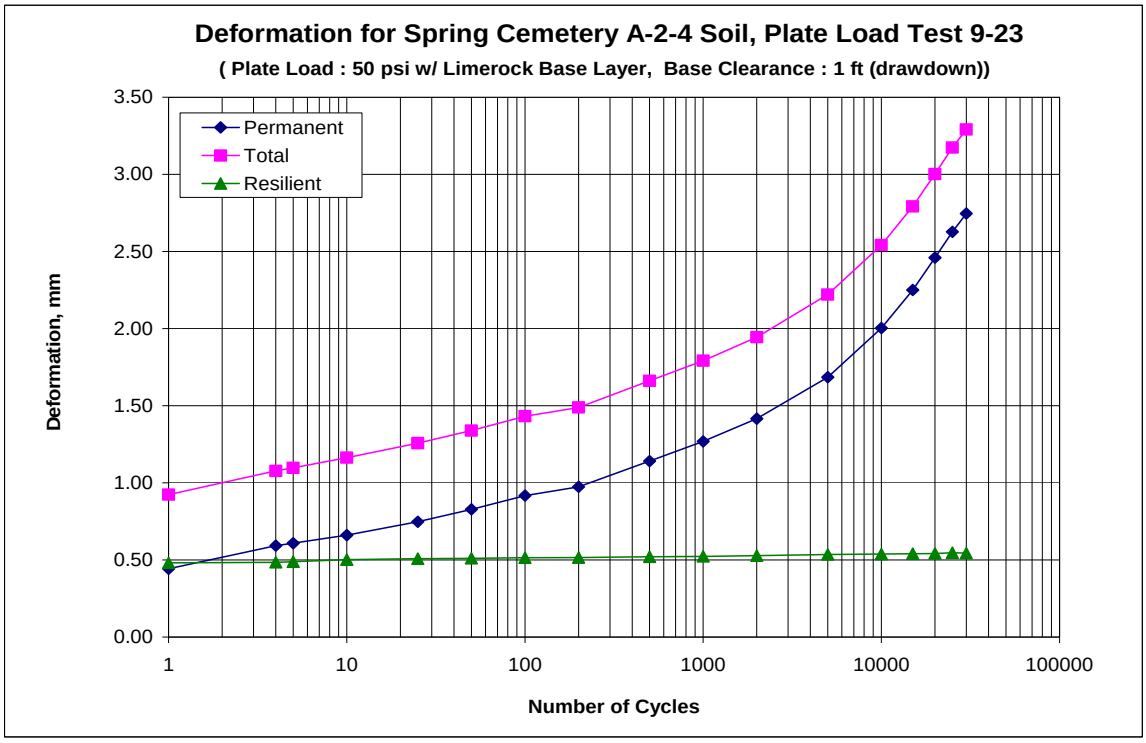


Figure F.111 Spring Cemetery A-2-4 (15%) Soil, Deformation under 50 psi Plate Load (Water Table at 0.0 in., w/ Limerock, Test 9-23)

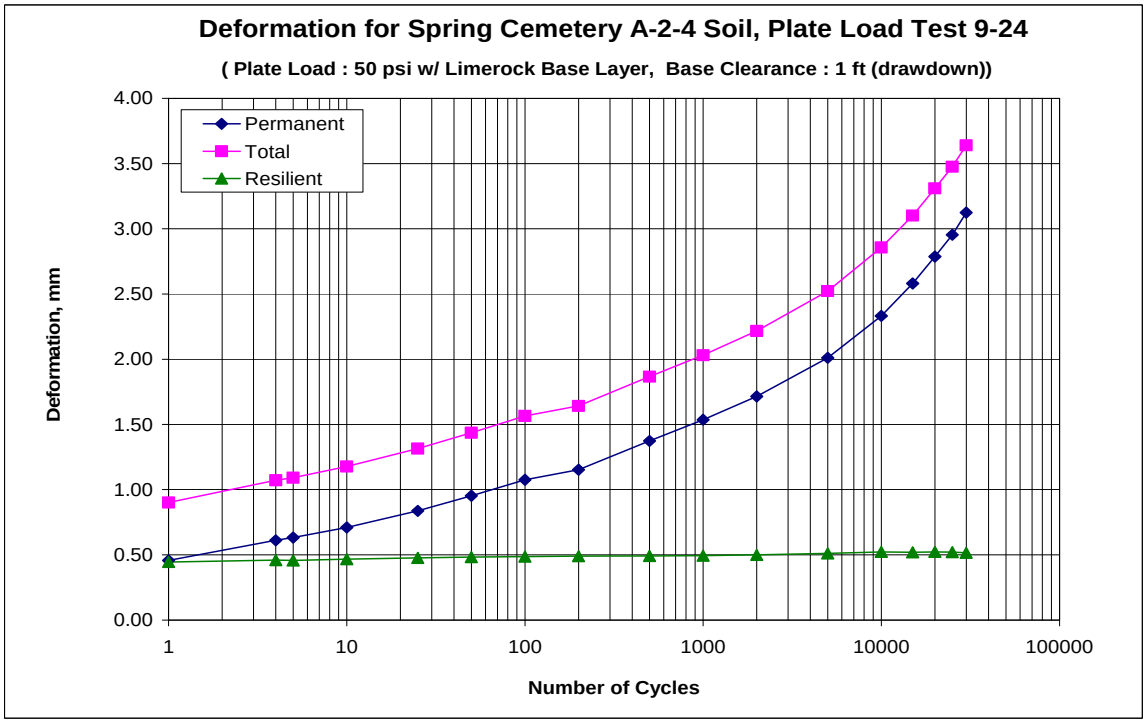


Figure F.112 Spring Cemetery A-2-4 (15%) Soil, Deformation under 50 psi Plate Load (Water Table at 0.0 in., w/ Limerock, Test 9-24)

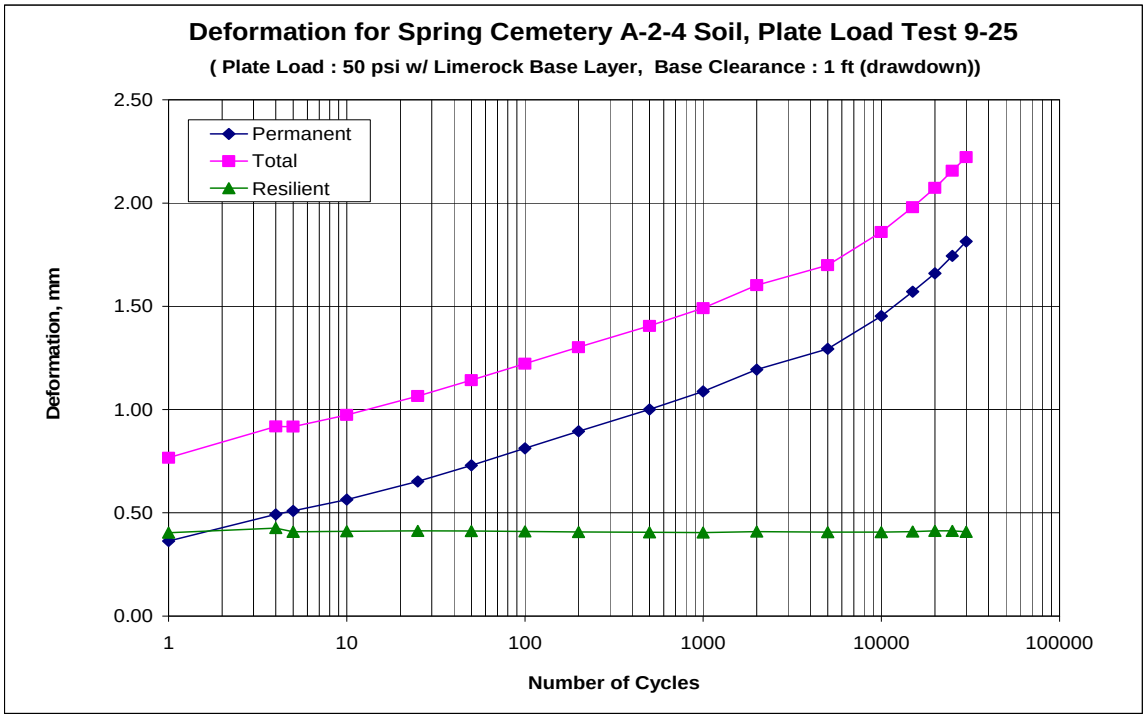


Figure F.113 Spring Cemetery A-2-4 (15%) Soil, Deformation under 50 psi Plate Load (Water Table at 0.0 in., w/ Limerock, Test 9-25)

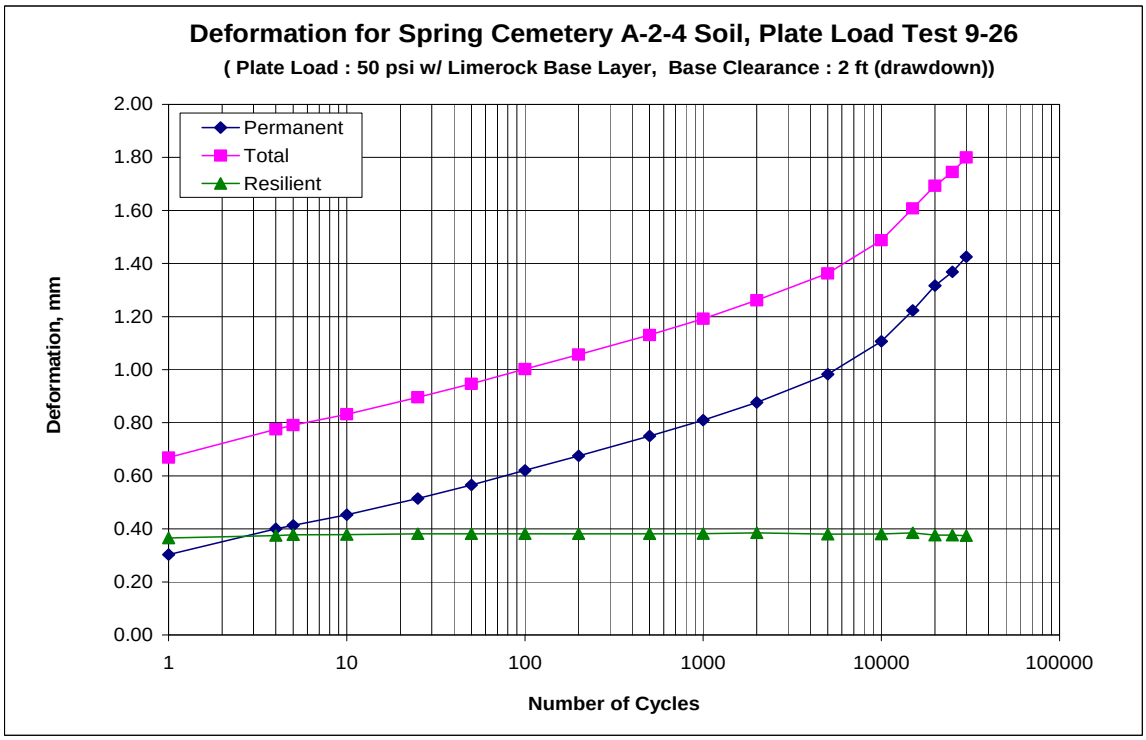


Figure F.114 Spring Cemetery A-2-4 (15%) Soil, Deformation under 50 psi Plate Load (Water Table at 0.0 in., w/ Limerock, Test 9-26)

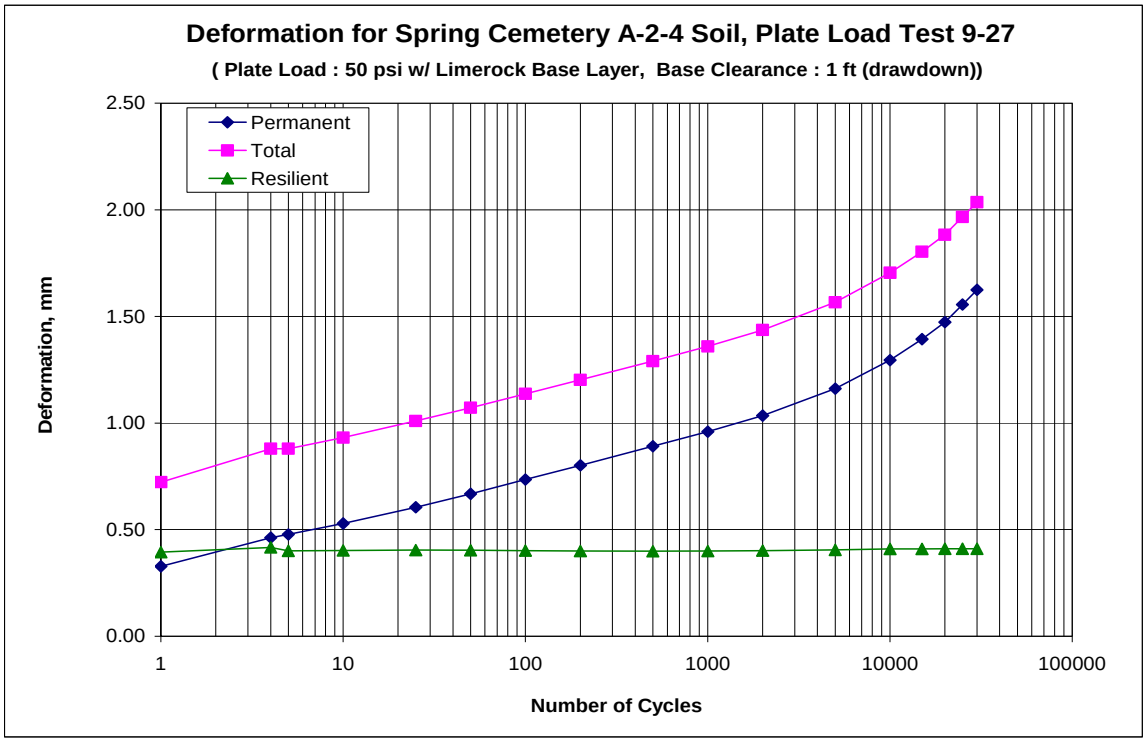


Figure F.115 Spring Cemetery A-2-4 (15%) Soil, Deformation under 50 psi Plate Load (Water Table at 0.0 in., w/ Limerock, Test 9-27)

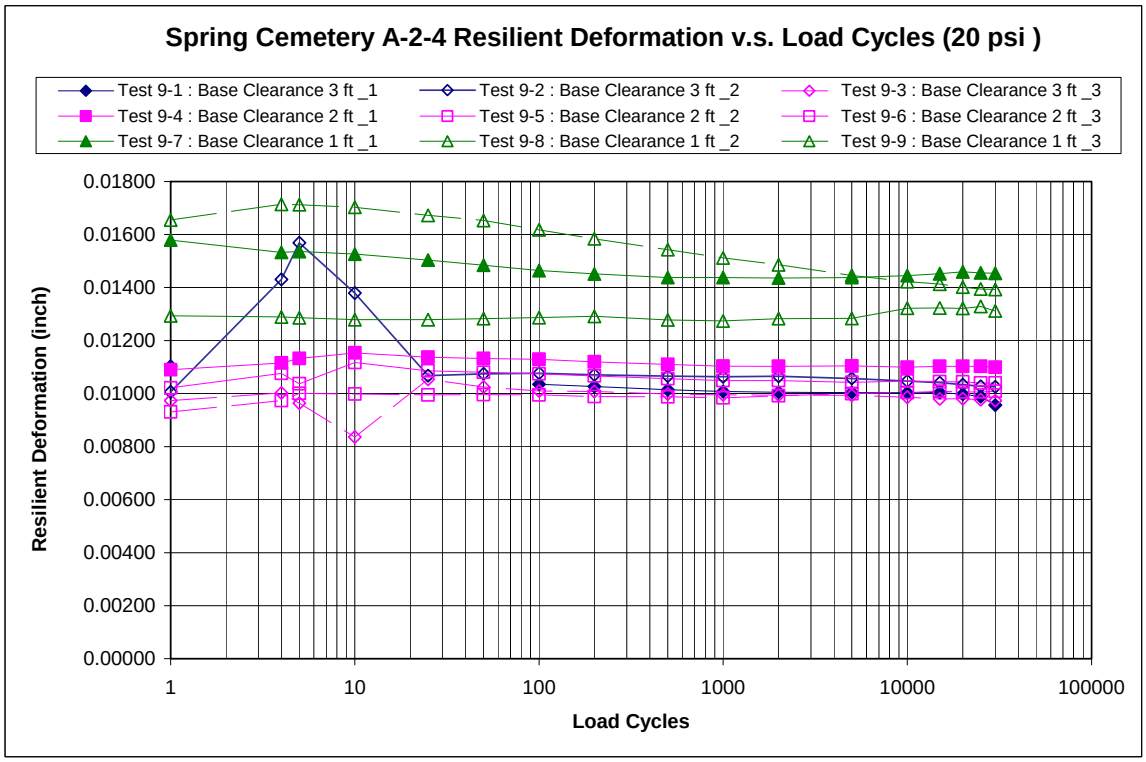


Figure F.116 Spring Cemetery A-2-4 Soil, Deformation Summary under 20 psi Plate Load at Different Water Table Level

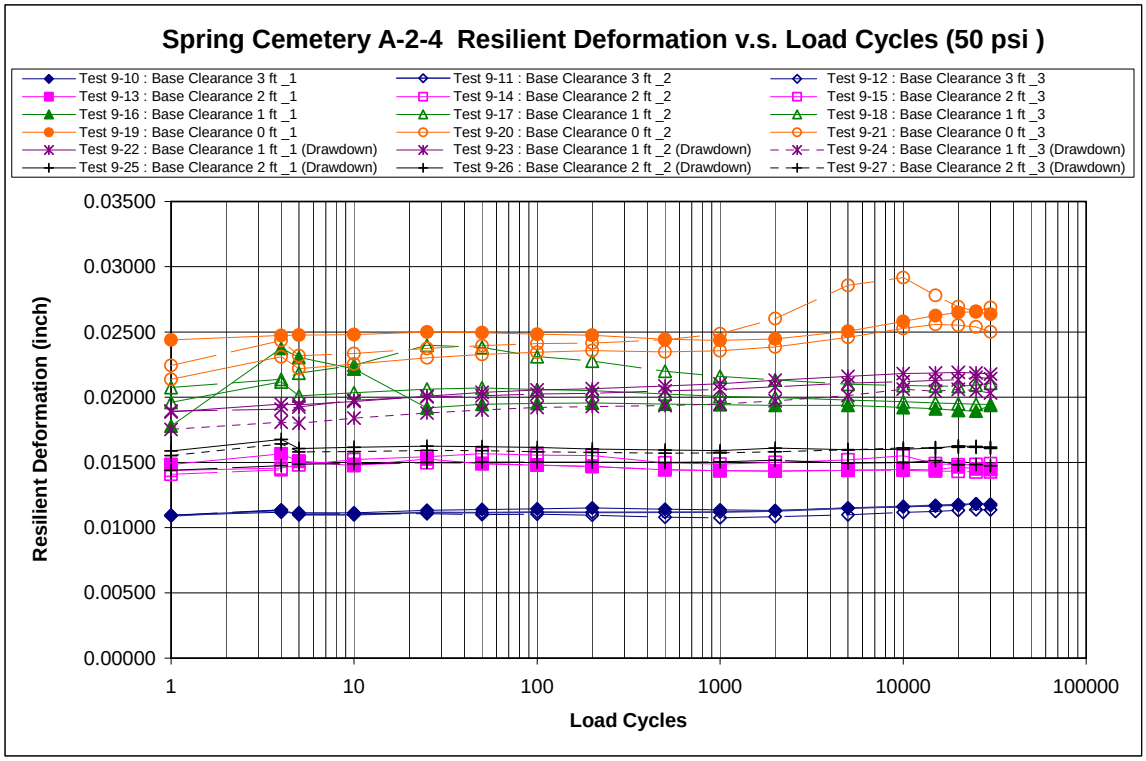


Figure F.117 Spring Cemetery A-2-4 Soil, Deformation Summary under 50 psi Plate Load at Different Water Table Level

F.10 Branch A-2-4, 23% Soil

Table F.30 Branch A-2-4 Soil Plate Load Test, 20 psi w/o Limerock

Deformation with W.T. at 0 in., Test 10-1				Deformation with W.T. at 0 in., Test 10-2			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)	Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.3341	0.4381	0.1040	1	0.0438	0.1180	0.0742
4	0.3409	0.4403	0.0994	4	0.0643	0.1334	0.0691
5	0.3407	0.4425	0.1018	5	0.0644	0.1362	0.0717
10	0.3411	0.4253	0.0842	10	0.0663	0.1390	0.0727
25	0.4044	0.5022	0.0979	25	0.0729	0.1470	0.0741
50	0.4004	0.5018	0.1014	50	0.0784	0.1529	0.0745
100	0.3997	0.5006	0.1009	100	0.0848	0.1589	0.0740
200	0.4001	0.5006	0.1005	200	0.0902	0.1635	0.0733
500	0.4015	0.5029	0.1014	500	0.0971	0.1692	0.0721
1000	0.4041	0.5046	0.1005	1000	0.1018	0.1732	0.0714
2000	0.4083	0.5072	0.0988	2000	0.1094	0.1795	0.0701
5000	0.4151	0.5135	0.0984	5000	0.1260	0.1937	0.0677
10000	0.4102	0.5052	0.0950	10000	0.1618	0.2287	0.0670
15000	0.4124	0.5053	0.0929	15000	0.1620	0.2283	0.0663
20000	0.4128	0.5050	0.0921	20000	0.1712	0.2373	0.0661
25000	0.4121	0.5034	0.0913	25000	0.1731	0.2389	0.0659
30000	0.4091	0.4997	0.0907	30000	0.1460	0.2112	0.0652
Deformation with W.T. at 0 in., Test 10-3				Deformation with W.T. at 0 in., Test 10-4			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)	Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.0165	0.1114	0.0949	1	0.0726	0.1762	0.1036
4	0.0236	0.1188	0.0951	4	0.0891	0.1886	0.0996
5	0.0224	0.1205	0.0982	5	0.0903	0.1934	0.1031
10	0.0240	0.1198	0.0958	10	0.0937	0.1993	0.1056
25	0.0265	0.1218	0.0953	25	0.0998	0.2078	0.1081
50	0.0271	0.1226	0.0955	50	0.1057	0.2145	0.1088
100	0.0284	0.1230	0.0946	100	0.1112	0.2212	0.1100
200	0.0294	0.1233	0.0939	200	0.1163	0.2264	0.1101
500	0.0324	0.1249	0.0925	500	0.1235	0.2325	0.1089
1000	0.0372	0.1287	0.0915	1000	0.1295	0.2379	0.1084
2000	0.0519	0.1430	0.0911	2000	0.1374	0.2444	0.1070
5000	0.0776	0.1669	0.0894	5000	0.1565	0.2623	0.1057
10000	0.1017	0.1899	0.0881	10000	0.2252	0.3263	0.1011
15000	0.1103	0.1993	0.0890	15000	0.2359	0.3354	0.0995
20000	0.1113	0.2002	0.0889	20000	0.2406	0.3396	0.0990
25000	0.1100	0.1988	0.0888	25000	0.2453	0.3433	0.0980
30000	0.1101	0.1980	0.0878	30000	0.2473	0.3454	0.0980

Table F.30 Continued

Deformation with W.T. at 12 in., Test 10-5				Deformation with W.T. at 12 in., Test 10-6			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)	Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.0157	0.1192	0.1034	1	0.0925	0.2445	0.1520
4				4	0.1429	0.2598	0.1169
5	0.0252	0.1213	0.0961	5	0.1442	0.2599	0.1157
10	0.0254	0.1199	0.0945	10	0.1487	0.2596	0.1109
25	0.0266	0.1212	0.0945	25	0.1564	0.2708	0.1145
50	0.0273	0.1217	0.0944	50	0.1630	0.2769	0.1139
100	0.0282	0.1224	0.0942	100	0.1708	0.2850	0.1142
200	0.0286	0.1230	0.0943	200	0.1787	0.2917	0.1130
500	0.0294	0.1242	0.0948	500	0.1881	0.2977	0.1096
1000	0.0305	0.1252	0.0947	1000	0.1945	0.3043	0.1098
2000	0.0319	0.1253	0.0934	2000	0.2019	0.3077	0.1058
5000	0.0367	0.1299	0.0932	5000	0.2198	0.3150	0.0952
10000	0.0490	0.1408	0.0918	10000	0.2375	0.3315	0.0939
15000	0.0534	0.1440	0.0907	15000	0.2478	0.3397	0.0919
20000	0.0584	0.1481	0.0897	20000	0.2539	0.3441	0.0902
25000	0.0616	0.1516	0.0900	25000	0.2583	0.3470	0.0887
30000	0.0628	0.1521	0.0893	30000	0.2605	0.3486	0.0881
Deformation with W.T. at 12 in., Test 10-7				Deformation with W.T. at 12 in., Test 10-8			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)	Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.3819	0.5120	0.1301	1	0.1047	0.1749	0.0702
4	0.3921	0.5171	0.1249	4	0.1245	0.1906	0.0661
5	0.3922	0.5180	0.1258	5	0.1255	0.1930	0.0675
10	0.3927	0.5177	0.1250	10	0.1294	0.1974	0.0680
25	0.3948	0.5189	0.1241	25	0.1363	0.2043	0.0680
50	0.3955	0.5201	0.1246	50	0.1426	0.2109	0.0683
100	0.3967	0.5223	0.1256	100	0.1489	0.2173	0.0684
200	0.3974	0.5227	0.1253	200	0.1553	0.2230	0.0677
500	0.3988	0.5241	0.1253	500	0.1650	0.2306	0.0656
1000	0.4006	0.5257	0.1251	1000	0.1714	0.2362	0.0648
2000	0.4047	0.5262	0.1215	2000	0.1799	0.2436	0.0636
5000	0.4177	0.5357	0.1181	5000	0.1942	0.2563	0.0621
10000	0.4219	0.5424	0.1204	10000	0.2071	0.2703	0.0631
15000	0.4259	0.5460	0.1201	15000	0.2133	0.2770	0.0637
20000	0.4306	0.5503	0.1197	20000	0.2188	0.2832	0.0644
25000	0.4368	0.5563	0.1194	25000	0.2257	0.2888	0.0631
30000	0.4411	0.5591	0.1180	30000	0.2305	0.2930	0.0625

Table F.30 Continued

Deformation with W.T. at 24 in., Test 10-9			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.0545	0.2009	0.1464
4	0.0910	0.2202	0.1292
5	0.0926	0.2234	0.1308
10	0.0991	0.2300	0.1308
25	0.1091	0.2408	0.1317
50	0.1174	0.2501	0.1327
100	0.1252	0.2581	0.1329
200	0.1328	0.2653	0.1325
500	0.1419	0.2743	0.1324
1000	0.1497	0.2799	0.1302
2000	0.1328	0.2599	0.1272
5000	0.1703	0.2950	0.1247
10000	0.1811	0.2987	0.1177
15000	0.1653	0.2809	0.1155
20000	0.1684	0.2842	0.1158
25000	0.1773	0.2928	0.1155
30000	0.1793	0.2956	0.1162

Deformation with W.T. at 24 in., Test 10-10			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.1123	0.2615	0.1492
4	0.1395	0.2757	0.1362
5	0.1418	0.2779	0.1361
10	0.1487	0.2991	0.1504
25	0.1626	0.3046	0.1420
50	0.1765	0.3201	0.1435
100	0.1910	0.3362	0.1452
200	0.2056	0.3514	0.1458
500	0.2249	0.3718	0.1470
1000	0.2429	0.3895	0.1465
2000	0.2637	0.4108	0.1472
5000	0.2901	0.4359	0.1458
10000	0.3122	0.4591	0.1470
15000	0.3243	0.4706	0.1463
20000	0.3339	0.4781	0.1442
25000	0.3436	0.4885	0.1449
30000	0.3539	0.4978	0.1439

Deformation with W.T. at 24 in., Test 10-11			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.2667	0.4860	0.2194
4	0.3173	0.5449	0.2276
5	0.3213	0.5492	0.2279
10	0.3347	0.5529	0.2182
25	0.3603	0.5563	0.1961
50	0.3847	0.5807	0.1961
100	0.4126	0.6069	0.1943
200	0.4320	0.6231	0.1910
500	0.4546	0.6426	0.1879
1000	0.4704	0.6541	0.1837
2000	0.4859	0.6666	0.1807
5000	0.5070	0.6852	0.1781
10000	0.5246	0.7007	0.1761
15000	0.5465	0.7214	0.1748
20000	0.5566	0.7309	0.1743
25000	0.5617	0.7358	0.1741
30000	0.5651	0.7388	0.1737

Table F.31 Branch A-2-4 Soil Plate Load Test, 50 psi w/ Limerock

Deformation with W.T. at 0 in., Test 10-12				Deformation with W.T. at 0 in., Test 10-13			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)	Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.1226	0.2426	0.1200	1	0.1139	0.2157	0.1018
4	0.1499	0.2571	0.1071	4	0.1518	0.2490	0.0972
5	0.1511	0.2601	0.1090	5	0.1523	0.2508	0.0985
10	0.1531	0.2695	0.1164	10	0.1560	0.2539	0.0979
25	0.1610	0.2792	0.1182	25	0.1615	0.2595	0.0980
50	0.1667	0.2853	0.1186	50	0.1695	0.2664	0.0969
100	0.1730	0.2907	0.1177	100	0.1763	0.2721	0.0958
200	0.1760	0.2940	0.1179	200	0.1797	0.2752	0.0955
500	0.1858	0.3028	0.1170	500	0.1882	0.2828	0.0946
1000	0.1931	0.3096	0.1165	1000	0.1953	0.2894	0.0941
2000	0.2042	0.3183	0.1141	2000	0.2008	0.2943	0.0935
5000	0.2248	0.3420	0.1172	5000	0.2141	0.3066	0.0925
10000	0.2461	0.3691	0.1230	10000	0.2505	0.3430	0.0925
15000	0.2621	0.3816	0.1196	15000	0.2773	0.3703	0.0930
20000	0.2663	0.3862	0.1199	20000	0.2839	0.3758	0.0918
25000	0.2692	0.3912	0.1220	25000	0.2730	0.3641	0.0911
30000	0.2713	0.3985	0.1273	30000	0.2912	0.3821	0.0909

Deformation with W.T. at 0 in., Test 10-14			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.0924	0.2275	0.1350
4	0.1220	0.2505	0.1285
5	0.1278	0.2492	0.1213
10	0.1287	0.2532	0.1245
25	0.1397	0.2739	0.1342
50	0.1482	0.2802	0.1320
100	0.1594	0.2990	0.1396
200	0.1720	0.3026	0.1306
500	0.1902	0.3086	0.1183
1000	0.2006	0.3264	0.1258
2000	0.2130	0.3354	0.1224
5000	0.2324	0.3520	0.1196
10000	0.2741	0.3936	0.1195
15000	0.3000	0.4168	0.1168
20000	0.3048	0.4198	0.1150
25000	0.3056	0.4193	0.1137
30000	0.3551	0.4668	0.1117

Table F.31 Continued

Deformation with W.T. at 12 in., Test 10-15				Deformation with W.T. at 12 in., Test 10-16			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)	Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.1354	0.2761	0.1407	1	0.0751	0.1849	0.1098
4	0.2252	0.3675	0.1423	4	0.0960	0.1989	0.1029
5	0.2257	0.3681	0.1424	5	0.0975	0.2039	0.1064
10	0.2270	0.3690	0.1420	10	0.1023	0.2102	0.1079
25	0.2299	0.3711	0.1412	25	0.1135	0.2219	0.1084
50	0.2325	0.3725	0.1399	50	0.1203	0.2280	0.1077
100	0.2354	0.3742	0.1388	100	0.1252	0.2321	0.1068
200	0.2367	0.3748	0.1382	200	0.1279	0.2346	0.1066
500	0.2378	0.3737	0.1359	500	0.1331	0.2392	0.1061
1000	0.2311	0.3652	0.1342	1000	0.1355	0.2407	0.1052
2000	0.2221	0.3545	0.1324	2000	0.1497	0.2542	0.1045
5000	0.2606	0.3907	0.1301	5000	0.1572	0.2611	0.1040
10000	0.2811	0.4105	0.1294	10000	0.1768	0.2792	0.1023
15000	0.2977	0.4266	0.1288	15000	0.1900	0.2914	0.1015
20000	0.3224	0.4497	0.1273	20000	0.1961	0.2977	0.1016
25000	0.3415	0.4679	0.1264	25000	0.2102	0.3157	0.1056
30000	0.3537	0.4804	0.1267	30000	0.2184	0.3232	0.1048

Deformation with W.T. at 12 in., Test 10-17			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.0783	0.2432	0.1649
4	0.1022	0.2613	0.1591
5	0.1037	0.2613	0.1575
10	0.1086	0.2724	0.1637
25	0.1186	0.2859	0.1673
50	0.1267	0.2941	0.1674
100	0.1340	0.3018	0.1678
200	0.1351	0.3029	0.1677
500	0.1462	0.3162	0.1699
1000	0.1533	0.3252	0.1719
2000	0.1613	0.3355	0.1743
5000	0.2066	0.3377	0.1311
10000	0.2178	0.3484	0.1305
15000	0.2310	0.3616	0.1306
20000	0.2416	0.3734	0.1317
25000	0.2448	0.3778	0.1329
30000	0.2495	0.3827	0.1332

Table F.31 Continued

Deformation with W.T. at 24 in., Test 10-18				Deformation with W.T. at 24 in., Test 10-19			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)	Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.0783	0.2432	0.1649	1	0.1328	0.2965	0.1638
4	0.1022	0.2613	0.1591	4	0.1602	0.3173	0.1571
5	0.1037	0.2613	0.1575	5	0.1635	0.3205	0.1570
10	0.1086	0.2724	0.1637	10	0.1708	0.3316	0.1608
25	0.1186	0.2859	0.1673	25	0.1824	0.3449	0.1625
50	0.1267	0.2941	0.1674	50	0.1905	0.3531	0.1626
100	0.1340	0.3018	0.1678	100	0.1978	0.3594	0.1616
200	0.1351	0.3029	0.1677	200	0.2023	0.3635	0.1612
500	0.1462	0.3162	0.1699	500	0.2131	0.3748	0.1618
1000	0.1533	0.3252	0.1719	1000	0.2195	0.3846	0.1651
2000	0.1613	0.3355	0.1743	2000	0.2257	0.3903	0.1646
5000	0.1835	0.3613	0.1778	5000	0.2369	0.4023	0.1654
10000	0.2351	0.4142	0.1791	10000	0.2637	0.4307	0.1670
15000	0.2638	0.4462	0.1824	15000	0.3150	0.4821	0.1670
20000	0.2832	0.4672	0.1839	20000	0.3525	0.5197	0.1672
25000	0.2911	0.4759	0.1849	25000	0.3787	0.5466	0.1679
30000	0.3044	0.4905	0.1862	30000	0.3936	0.5621	0.1686
Deformation with W.T. at 24 in., Test 10-20				Deformation with W.T. at 24 in., Test 10-21			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)	Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.8262	1.1422	0.3160	1	0.1772	0.3509	0.1736
4	0.8785	1.1774	0.2989	4	0.2160	0.3747	0.1587
5	0.8847	1.2042	0.3195	5	0.2187	0.3837	0.1650
10	0.9010	1.2048	0.3038	10	0.2252	0.3939	0.1687
25	0.9267	1.2286	0.3019	25	0.2367	0.4059	0.1692
50	0.9467	1.2470	0.3004	50	0.2465	0.4149	0.1684
100	0.9672	1.2655	0.2983	100	0.2562	0.4233	0.1671
200	0.9781	1.2759	0.2978	200	0.2619	0.4286	0.1667
500	1.0074	1.3052	0.2979	500	0.2772	0.4438	0.1665
1000	1.0271	1.3279	0.3008	1000	0.2883	0.4551	0.1668
2000	1.0474	1.3526	0.3052	2000	0.3005	0.4685	0.1680
5000	1.0840	1.3946	0.3106	5000	0.3230	0.4942	0.1711
10000	1.1304	1.4484	0.3180	10000	0.3463	0.5201	0.1738
15000	1.1736	1.4970	0.3234	15000	0.3640	0.5389	0.1750
20000	1.2098	1.5354	0.3257	20000	0.3821	0.5596	0.1774
25000	1.2109	1.5364	0.3255	25000	0.3843	0.5628	0.1784
30000	1.2133	1.5452	0.3319	30000	0.3919	0.5716	0.1797

Table F.31 Continued

Deformation with W.T. at 36 in., Test 10-22			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.3551	0.8041	0.4490
4	0.4443	0.8424	0.3981
5	0.4565	0.8560	0.3995
10	0.4944	0.8973	0.4029
25	0.5664	0.9735	0.4072
50	0.6347	1.0412	0.4065
100	0.7118	1.1148	0.4029
200	0.7572	1.1600	0.4028
500	0.8844	1.2869	0.4024
1000	0.9700	1.3746	0.4047
2000	1.0521	1.4627	0.4106
5000	1.1593	1.5739	0.4146
10000	1.2323	1.6508	0.4185
15000	1.3114	1.7353	0.4239
20000	1.3686	1.7951	0.4265
25000	1.4288	1.8612	0.4324
30000	1.4477	1.8898	0.4421

Deformation with W.T. at 36 in., Test 10-23			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.4022	0.8807	0.4785
4	0.5371	0.9886	0.4515
5	0.5460	0.9911	0.4450
10	0.5827	1.0331	0.4504
25	0.6550	1.1132	0.4582
50	0.7304	1.1921	0.4617
100	0.8182	1.2858	0.4677
200	0.8742	1.3433	0.4691
500	1.0409	1.5210	0.4801
1000	1.1644	1.6388	0.4744
2000	1.2814	1.7644	0.4831
5000	1.4694	1.9713	0.5020
10000	1.6656	2.1867	0.5211
15000	1.8171	2.3555	0.5383
20000	1.9623	2.5147	0.5524
25000	2.0850	2.6775	0.5925
30000	2.1831	2.7573	0.5742

Deformation with W.T. at 36 in., Test 10-24			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.3210	0.7159	0.3949
4	0.4206	0.8048	0.3843
5	0.4303	0.8048	0.3745
10	0.4637	0.8452	0.3815
25	0.5281	0.9160	0.3880
50	0.5897	0.9786	0.3889
100	0.6558	1.0476	0.3918
200	0.6973	1.0859	0.3886
500	0.7961	1.1874	0.3913
1000	0.8578	1.2516	0.3938
2000	0.9163	1.3176	0.4014
5000	1.0161	1.4244	0.4083
10000	1.1373	1.5548	0.4174
15000	1.2252	1.6464	0.4212
20000	1.2765	1.6967	0.4201
25000	1.3244	1.7525	0.4281
30000	1.3685	1.7998	0.4313

Table F.31 Continued

Deformation with W.T. at 24 in. (Drawdown), Test 10-25			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.3246	0.6918	0.3673
4	0.4212	0.7621	0.3409
5	0.4290	0.7683	0.3394
10	0.4593	0.7979	0.3386
25	0.5097	0.8506	0.3409
50	0.5565	0.8954	0.3389
100	0.6057	0.9433	0.3377
200	0.6327	0.9697	0.3370
500	0.7051	1.0423	0.3372
1000	0.7512	1.0939	0.3427
2000	0.7989	1.1415	0.3427
5000	0.8783	1.2308	0.3525
10000	0.9649	1.3250	0.3601
15000	1.0118	1.3781	0.3663
20000	1.0504	1.4174	0.3670
25000	1.0929	1.4609	0.3680
30000	1.1232	1.4927	0.3695

Deformation with W.T. at 24 in. (Drawdown), Test 10-26			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.3702	0.7837	0.4135
4	0.4794	0.8625	0.3831
5	0.4865	0.8717	0.3852
10	0.5139	0.8970	0.3831
25	0.5685	0.9507	0.3822
50	0.6172	0.9983	0.3811
100	0.6696	1.0506	0.3810
200	0.7005	1.0804	0.3799
500	0.7829	1.1645	0.3815
1000	0.8364	1.2206	0.3842
2000	0.8877	1.2785	0.3908
5000	0.9641	1.3624	0.3983
10000	1.0427	1.4477	0.4051
15000	1.0961	1.5052	0.4091
20000	1.1371	1.5500	0.4129
25000	1.1740	1.5891	0.4152
30000	1.1944	1.6107	0.4163

Deformation with W.T. at 24 in. (Drawdown), Test 10-27			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.3383	0.7071	0.3688
4	0.4440	0.7815	0.3375
5	0.4529	0.7931	0.3402
10	0.4845	0.8280	0.3435
25	0.5379	0.8848	0.3470
50	0.5905	0.9362	0.3457
100	0.6452	0.9928	0.3475
200	0.6781	1.0270	0.3490
500	0.7681	1.1165	0.3484
1000	0.8289	1.1797	0.3508
2000	0.8979	1.2495	0.3516
5000	0.9817	1.3381	0.3565
10000	1.0694	1.4288	0.3595
15000	1.1144	1.4724	0.3580
20000	1.1610	1.5195	0.3585
25000	1.2024	1.5691	0.3667
30000	1.2349	1.5979	0.3630

Table F.31 Continued

Deformation with W.T. at 12 in. (Drawdown), Test 10-28			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.1969	0.3653	0.1684
4	0.2357	0.3902	0.1545
5	0.2359	0.3872	0.1513
10	0.2450	0.4058	0.1607
25	0.2588	0.4201	0.1613
50	0.2683	0.4302	0.1619
100	0.2780	0.4398	0.1618
200	0.2871	0.4501	0.1630
500	0.3004	0.4648	0.1644
1000	0.3113	0.4785	0.1673
2000	0.3254	0.4957	0.1702
5000	0.3532	0.5278	0.1745
10000	0.3867	0.5715	0.1848
15000	0.4125	0.6014	0.1890
20000	0.4423	0.6282	0.1859
25000	0.4495	0.6372	0.1877
30000	0.4474	0.6310	0.1836

Deformation with W.T. at 12 in. (Drawdown), Test 10-29			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.2207	0.4103	0.1896
4	0.2626	0.4355	0.1729
5	0.2652	0.4396	0.1743
10	0.2703	0.4465	0.1761
25	0.2815	0.4586	0.1771
50	0.2905	0.4705	0.1800
100	0.3006	0.4816	0.1811
200	0.3106	0.4942	0.1835
500	0.3252	0.5127	0.1875
1000	0.3392	0.5302	0.1910
2000	0.3565	0.5509	0.1944
5000	0.3993	0.6028	0.2034
10000	0.4223	0.6295	0.2072
15000	0.4694	0.6782	0.2089
20000	0.4811	0.6921	0.2110
25000	0.4961	0.7064	0.2103
30000	0.5555	0.7664	0.2108

Deformation with W.T. at 12 in. (Drawdown), Test 10-30			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.1600	0.3176	0.1577
4	0.2000	0.3346	0.1346
5	0.2023	0.3339	0.1316
10	0.2115	0.3616	0.1501
25	0.2203	0.3723	0.1520
50	0.2284	0.3809	0.1526
100	0.2376	0.3900	0.1524
200	0.2471	0.3993	0.1522
500	0.2618	0.4140	0.1522
1000	0.2787	0.4281	0.1495
2000	0.3065	0.4542	0.1478
5000	0.3108	0.4569	0.1462
10000	0.3397	0.4845	0.1448
15000	0.3558	0.4987	0.1428
20000	0.3840	0.5274	0.1434
25000	0.4049	0.5486	0.1437
30000	0.4217	0.5641	0.1423

Table F.32 Summary of Deformation for Branch A-2-4 (23%) Soil, 20 psi Plate Load

Resilient Deformation (in.) for Branch A-2-4 Soil											
Test No.	10-1	10-2	10-3	10-4	10-5	10-6	10-7	10-8	10-9	10-10	10-11
Test Date	7/28/2005	7/29/2005	8/1/2005	8/3/2005	9/13/2005	9/14/2005	9/15/2005	9/29/2005	12/6/2005	12/7/2005	12/8/2005
Loads (psi)	20	20	20	20	20	20	20	20	20	21	22
Limerock Layer	No	No	No	No	No	No	No	No	No	No	No
No.of Plate Load Cycles	Water Table (in. above Embankment)										
	0	0	0	0	12	12	12	12	24	24	24
1	0.00409	0.00292	0.00374	0.00408	0.00407	0.00599	0.00512	0.00276	0.00577	0.00588	0.00864
4	0.00391	0.00272	0.00375	0.00392		0.00460	0.00492	0.00260	0.00509	0.00536	0.00896
5	0.00401	0.00282	0.00387	0.00406	0.00378	0.00456	0.00495	0.00266	0.00515	0.00536	0.00897
10	0.00332	0.00286	0.00377	0.00416	0.00372	0.00436	0.00492	0.00268	0.00515	0.00592	0.00859
25	0.00385	0.00292	0.00375	0.00425	0.00372	0.00451	0.00488	0.00268	0.00519	0.00559	0.00772
50	0.00399	0.00293	0.00376	0.00428	0.00372	0.00448	0.00491	0.00269	0.00523	0.00565	0.00772
100	0.00397	0.00292	0.00372	0.00433	0.00371	0.00450	0.00495	0.00269	0.00523	0.00572	0.00765
200	0.00396	0.00289	0.00370	0.00434	0.00371	0.00445	0.00493	0.00267	0.00522	0.00574	0.00752
500	0.00399	0.00284	0.00364	0.00429	0.00373	0.00432	0.00493	0.00258	0.00521	0.00579	0.00740
1000	0.00396	0.00281	0.00360	0.00427	0.00373	0.00432	0.00493	0.00255	0.00513	0.00577	0.00723
2000	0.00389	0.00276	0.00359	0.00421	0.00368	0.00417	0.00478	0.00251	0.00501	0.00579	0.00711
5000	0.00387	0.00267	0.00352	0.00416	0.00367	0.00375	0.00465	0.00244	0.00491	0.00574	0.00701
10000	0.00374	0.00264	0.00347	0.00398	0.00361	0.00370	0.00474	0.00249	0.00463	0.00579	0.00693
15000	0.00366	0.00261	0.00350	0.00392	0.00357	0.00362	0.00473	0.00251	0.00455	0.00576	0.00688
20000	0.00363	0.00260	0.00350	0.00390	0.00353	0.00355	0.00471	0.00253	0.00456	0.00568	0.00686
25000	0.00359	0.00259	0.00350	0.00386	0.00354	0.00349	0.00470	0.00249	0.00455	0.00571	0.00685
30000	0.00357	0.00257	0.00346	0.00386	0.00352	0.00347	0.00464	0.00246	0.00458	0.00566	0.00684
Average from 10,000 Cycles	0.00364	0.00260	0.00349	0.00390	0.00356	0.00357	0.00471	0.00250	0.00457	0.00572	0.00687

Table F.33 Summary of Deformation for Branch A-2-4 (23%) Soil, 50 psi Plate Load with Limerock Base Layer

Resilient Deformation (in.) for Branch A-2-4 Soil																			
Test No.	10-12	10-13	10-14	10-15	10-16	10-17	10-18	10-19	10-20	10-21	10-22	10-23	10-24	10-25	10-26	10-27	10-28	10-29	10-30
Test Date	3/6/06	3/7/06	3/8/06	5/15/06	5/16/06	5/17/06	7/27/06	7/28/06	7/29/06	8/15/06	10/16/06	10/17/06	10/18/06	1/3/07	1/4/07	1/8/07	3/20/07	3/21/07	3/30/07
Loads(psi)	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Limerock	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No.of Load Cycles	Water Table (in. above Embankment)																		
	0	0	0	12	12	12	24	24	24	24	36	36	36	24	24	24	12	12	12
1	0.00472	0.00401	0.00532	0.00554	0.00432	0.00649	0.00649	0.00645	0.01244	0.00684	0.01768	0.01884	0.01555	0.01446	0.01628	0.01452	0.00663	0.00746	0.00621
4	0.00422	0.00383	0.00506	0.00560	0.00405	0.00626	0.00626	0.00618	0.01177	0.00625	0.01568	0.01778	0.01513	0.01342	0.01508	0.01329	0.00608	0.00681	0.00530
5	0.00429	0.00388	0.00478	0.00561	0.00419	0.00620	0.00620	0.00618	0.01258	0.00650	0.01573	0.01752	0.01474	0.01336	0.01517	0.01339	0.00596	0.00686	0.00518
10	0.00458	0.00386	0.00490	0.00559	0.00425	0.00645	0.00645	0.00633	0.01196	0.00664	0.01586	0.01773	0.01502	0.01333	0.01508	0.01352	0.00633	0.00694	0.00591
25	0.00465	0.00386	0.00528	0.00556	0.00427	0.00659	0.00659	0.00640	0.01189	0.00666	0.01603	0.01804	0.01527	0.01342	0.01505	0.01366	0.00635	0.00697	0.00598
50	0.00467	0.00382	0.00520	0.00551	0.00424	0.00659	0.00659	0.00640	0.01183	0.00663	0.01600	0.01818	0.01531	0.01334	0.01501	0.01361	0.00638	0.00709	0.00601
100	0.00464	0.00377	0.00550	0.00546	0.00421	0.00661	0.00661	0.00636	0.01174	0.00658	0.01586	0.01841	0.01543	0.01329	0.01500	0.01368	0.00637	0.00713	0.00600
200	0.00464	0.00376	0.00514	0.00544	0.00420	0.00660	0.00660	0.00635	0.01172	0.00656	0.01586	0.01847	0.01530	0.01327	0.01496	0.01374	0.00642	0.00723	0.00599
500	0.00461	0.00373	0.00466	0.00535	0.00418	0.00669	0.00669	0.00637	0.01173	0.00656	0.01584	0.01890	0.01540	0.01328	0.01502	0.01372	0.00647	0.00738	0.00599
1000	0.00459	0.00370	0.00495	0.00528	0.00414	0.00677	0.00677	0.00650	0.01184	0.00657	0.01593	0.01868	0.01550	0.01349	0.01513	0.01381	0.00659	0.00752	0.00588
2000	0.00449	0.00368	0.00482	0.00521	0.00412	0.00686	0.00686	0.00648	0.01202	0.00661	0.01616	0.01902	0.01580	0.01349	0.01539	0.01384	0.00670	0.00766	0.00582
5000	0.00461	0.00364	0.00471	0.00512	0.00409	0.00516	0.00700	0.00651	0.01223	0.00674	0.01632	0.01976	0.01608	0.01388	0.01568	0.01403	0.00687	0.00801	0.00575
10000	0.00484	0.00364	0.00471	0.00509	0.00403	0.00514	0.00705	0.00657	0.01252	0.00684	0.01648	0.02052	0.01643	0.01418	0.01595	0.01415	0.00728	0.00816	0.00570
15000	0.00471	0.00366	0.00460	0.00507	0.00400	0.00514	0.00718	0.00658	0.01273	0.00689	0.01669	0.02119	0.01658	0.01442	0.01611	0.01410	0.00744	0.00822	0.00562
20000	0.00472	0.00362	0.00453	0.00501	0.00400	0.00519	0.00724	0.00658	0.01282	0.00699	0.01679	0.02175	0.01654	0.01445	0.01626	0.01411	0.00732	0.00831	0.00565
25000	0.00480	0.00359	0.00448	0.00498	0.00416	0.00523	0.00728	0.00661	0.01282	0.00703	0.01702	0.02333	0.01686	0.01449	0.01634	0.01444	0.00739	0.00828	0.00566
30000	0.00501	0.00358	0.00440	0.00499	0.00413	0.00524	0.00733	0.00664	0.01307	0.00708	0.01741	0.02261	0.01698	0.01455	0.01639	0.01429	0.00723	0.00830	0.00560
Average from 10,000 Cycles	0.00482	0.00362	0.00454	0.00503	0.00406	0.00519	0.00722	0.00660	0.01279	0.00696	0.01688	0.02188	0.01668	0.01442	0.01621	0.01422	0.00733	0.00825	0.00565

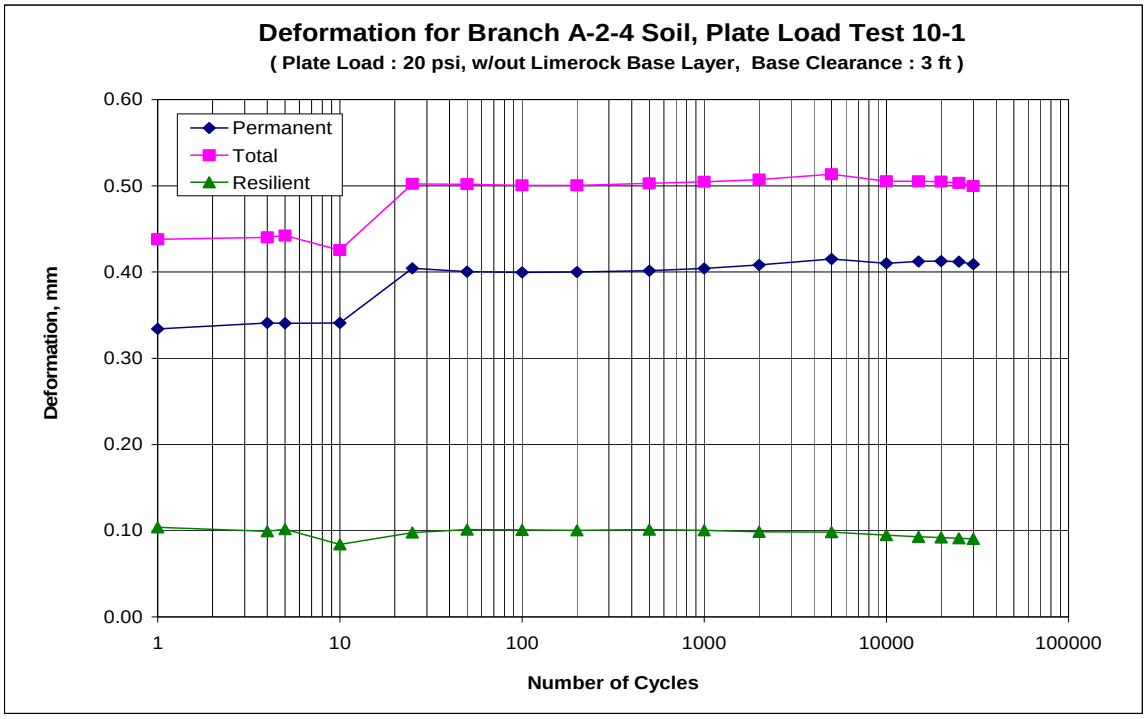


Figure F.118 Branch A-2-4 (23%) Soil, Deformation under 20 psi Plate Load (Water Table at 0.0 in., w/out Limerock, Test 10-1)

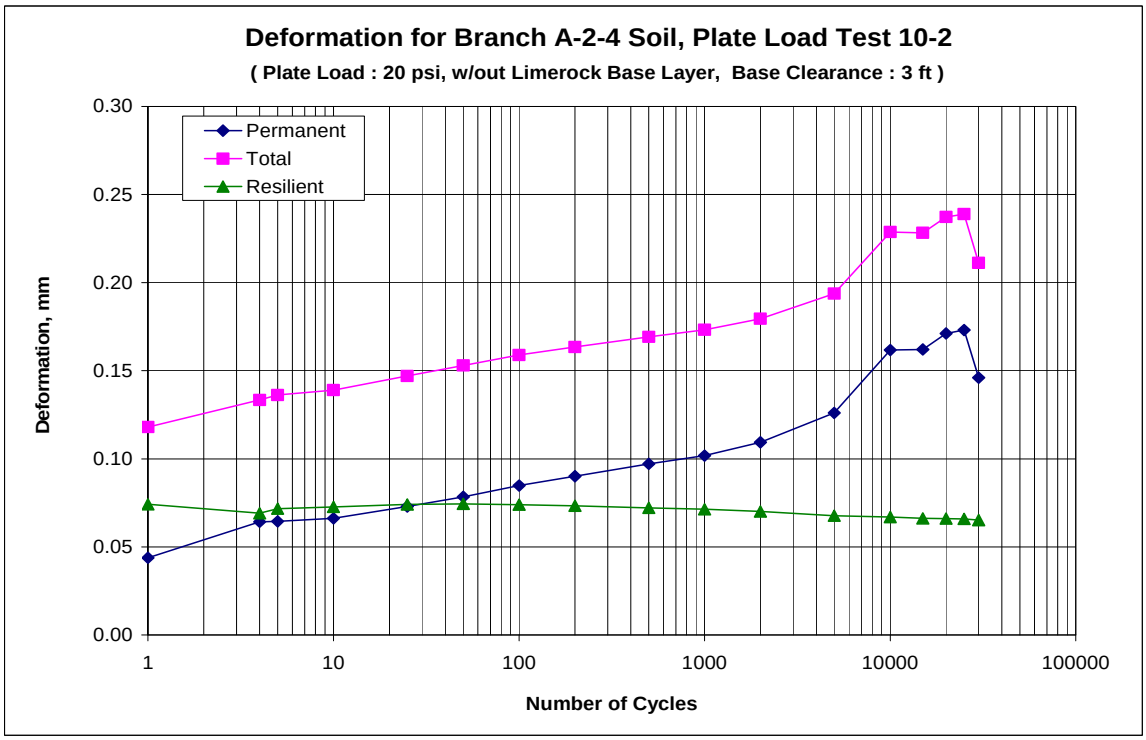


Figure F.119 Branch A-2-4 (23%) Soil, Deformation under 20 psi Plate Load (Water Table at 0.0 in., w/out Limerock, Test 10-2)

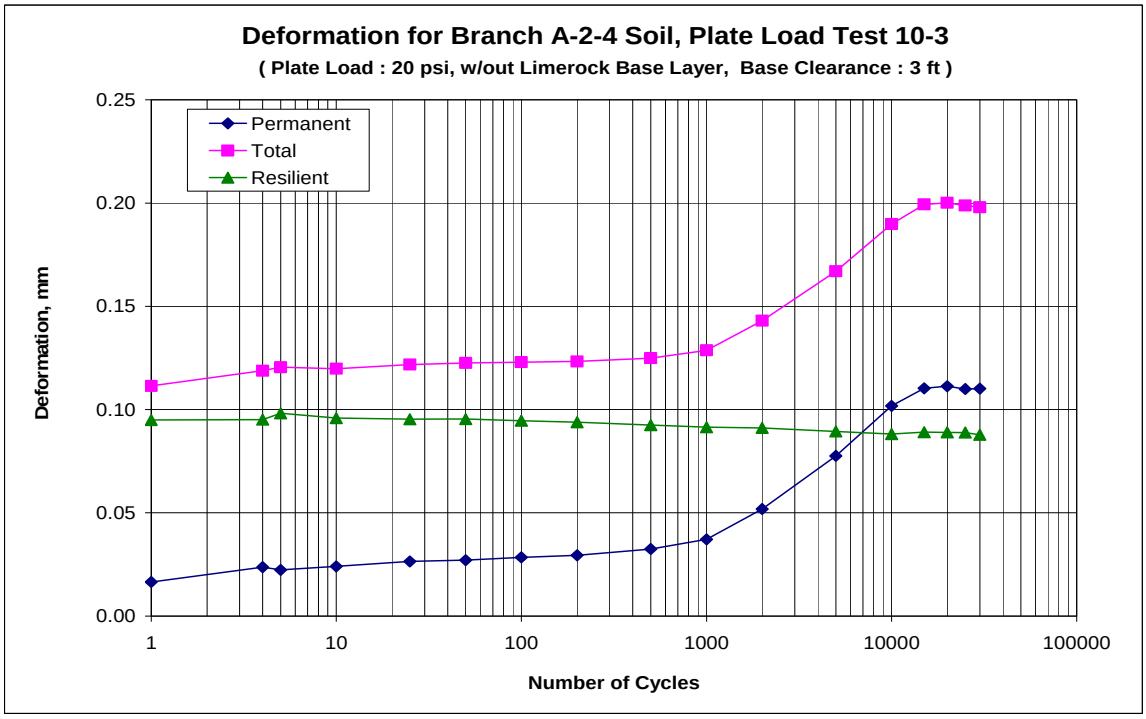


Figure F.120 Branch A-2-4 (23%) Soil, Deformation under 20 psi Plate Load (Water Table at 0.0 in., w/out Limerock, Test 10-3)

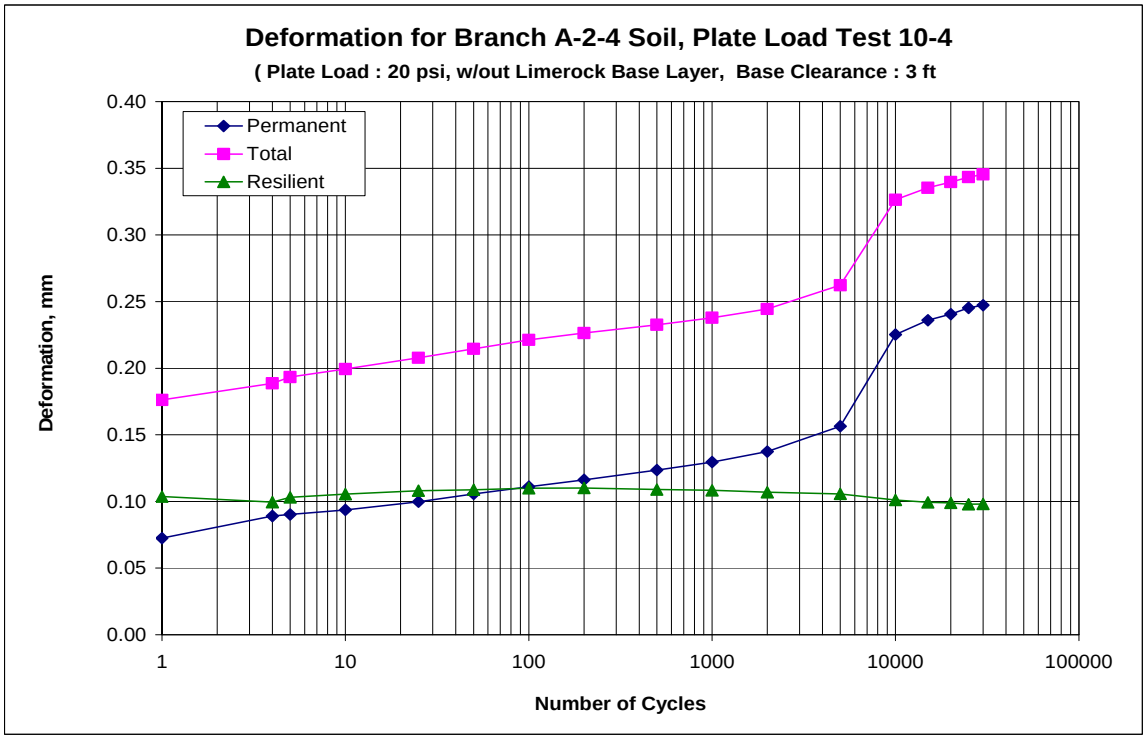


Figure F.121 Branch A-2-4 (23%) Soil, Deformation under 20 psi Plate Load (Water Table at 0.0 in., w/out Limerock, Test 10-4)

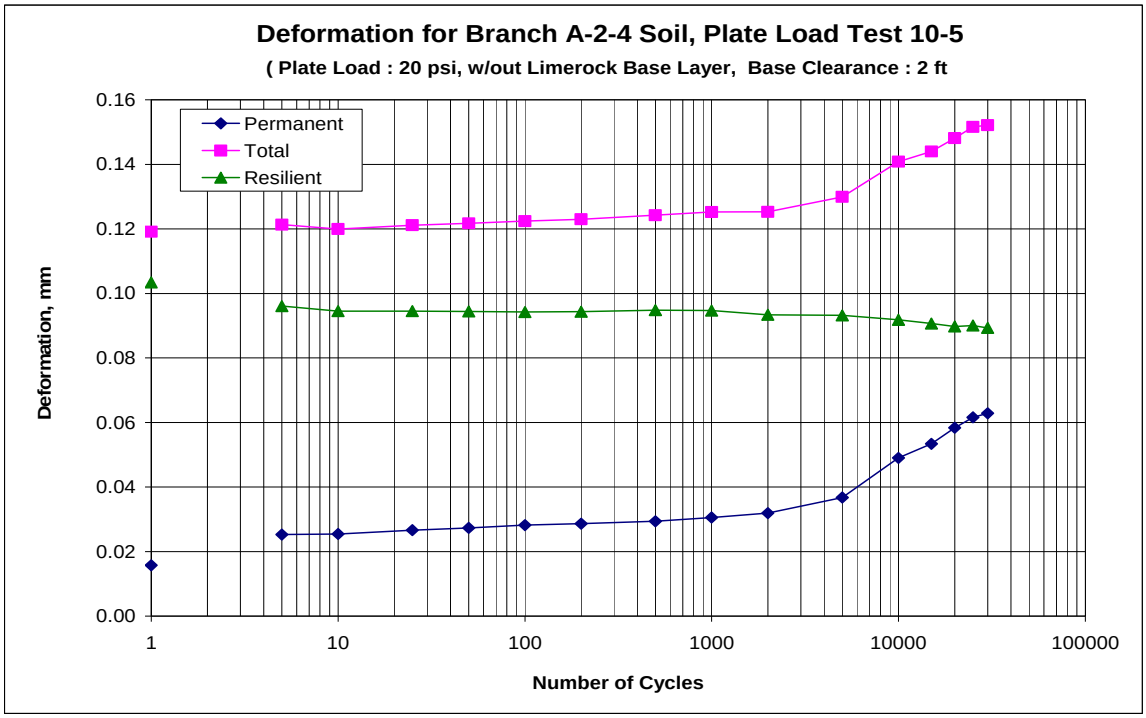


Figure F.122 Branch A-2-4 (23%) Soil, Deformation under 20 psi Plate Load (Water Table at 12 in., w/out Limerock, Test 10-5)

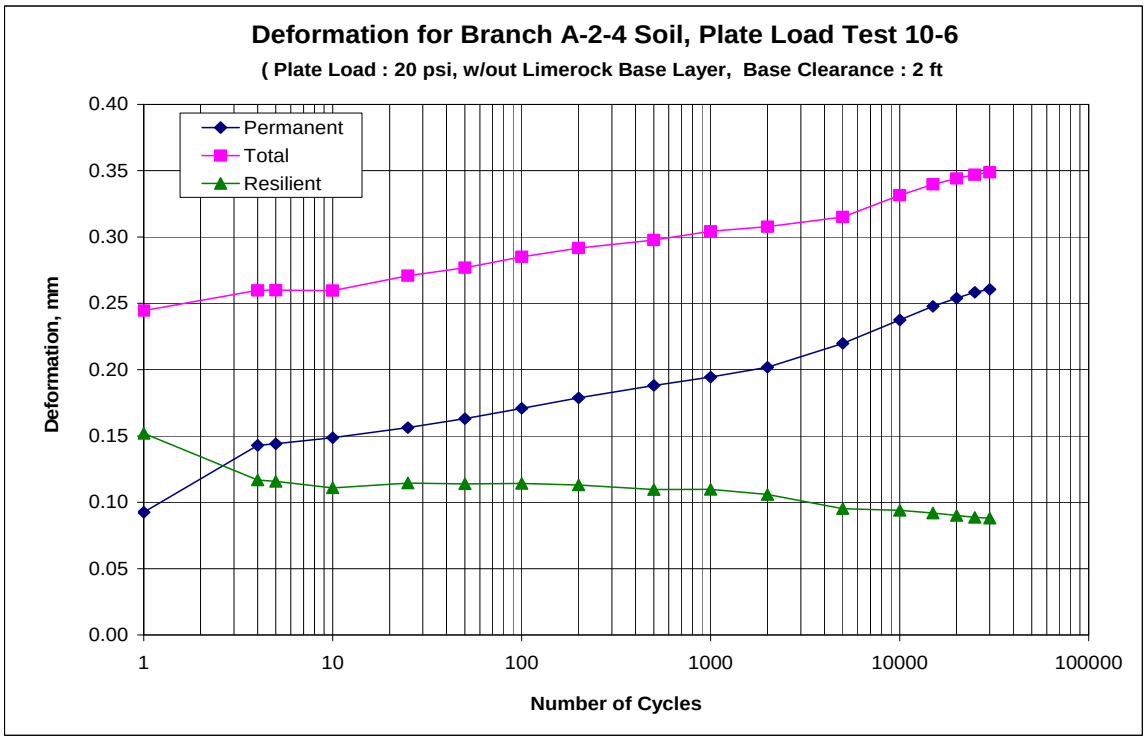


Figure F.123 Branch A-2-4 (23%) Soil, Deformation under 20 psi Plate Load (Water Table at 12 in., w/out Limerock, Test 10-6)

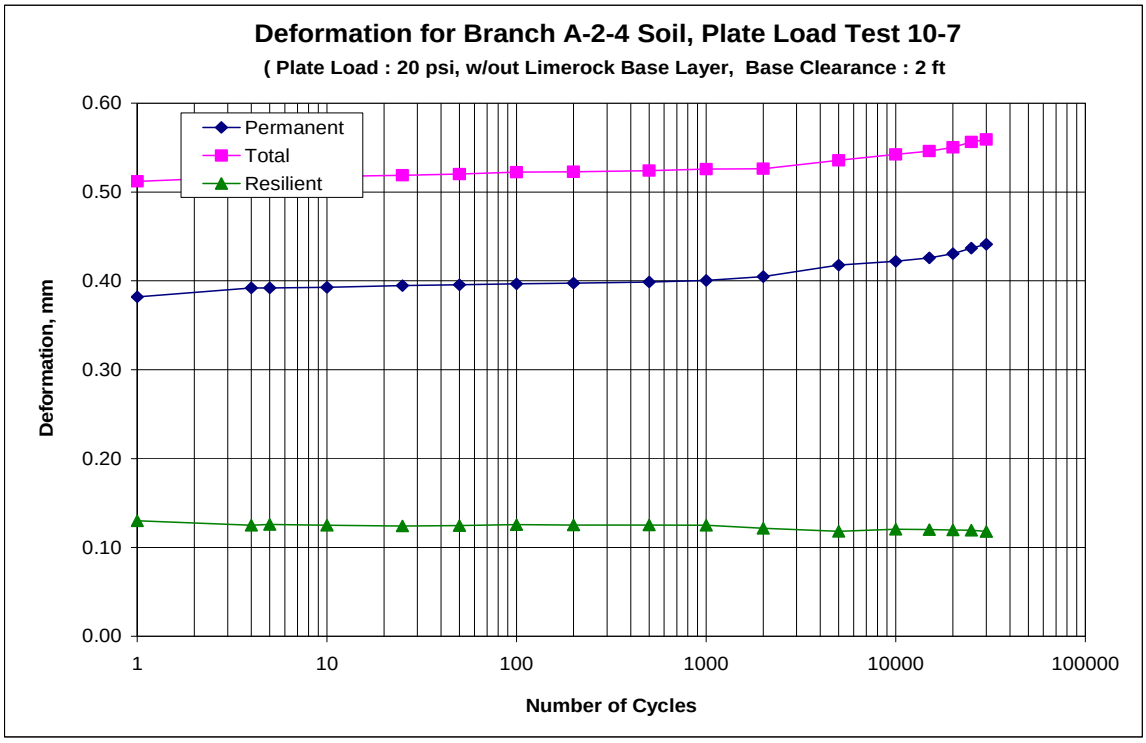


Figure F.124 Branch A-2-4 (23%) Soil, Deformation under 20 psi Plate Load (Water Table at 12 in., w/out Limerock, Test 10-7)

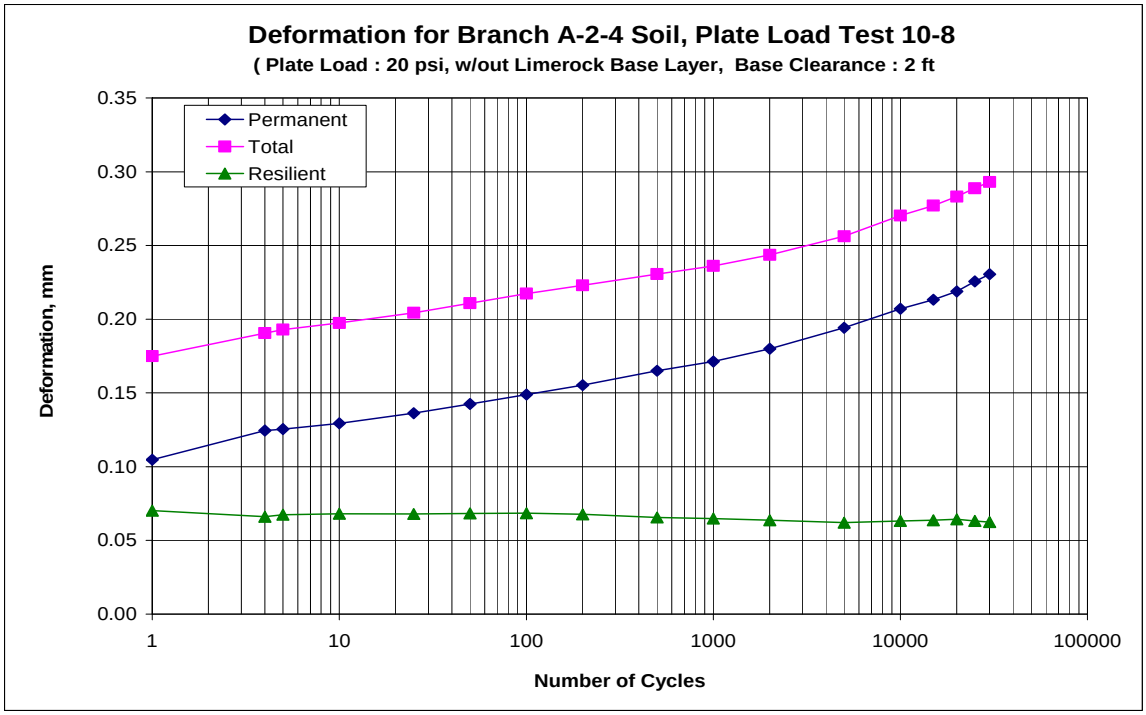


Figure F.125 Branch A-2-4 (23%) Soil, Deformation under 20 psi Plate Load (Water Table at 12 in., w/out Limerock, Test 10-8)

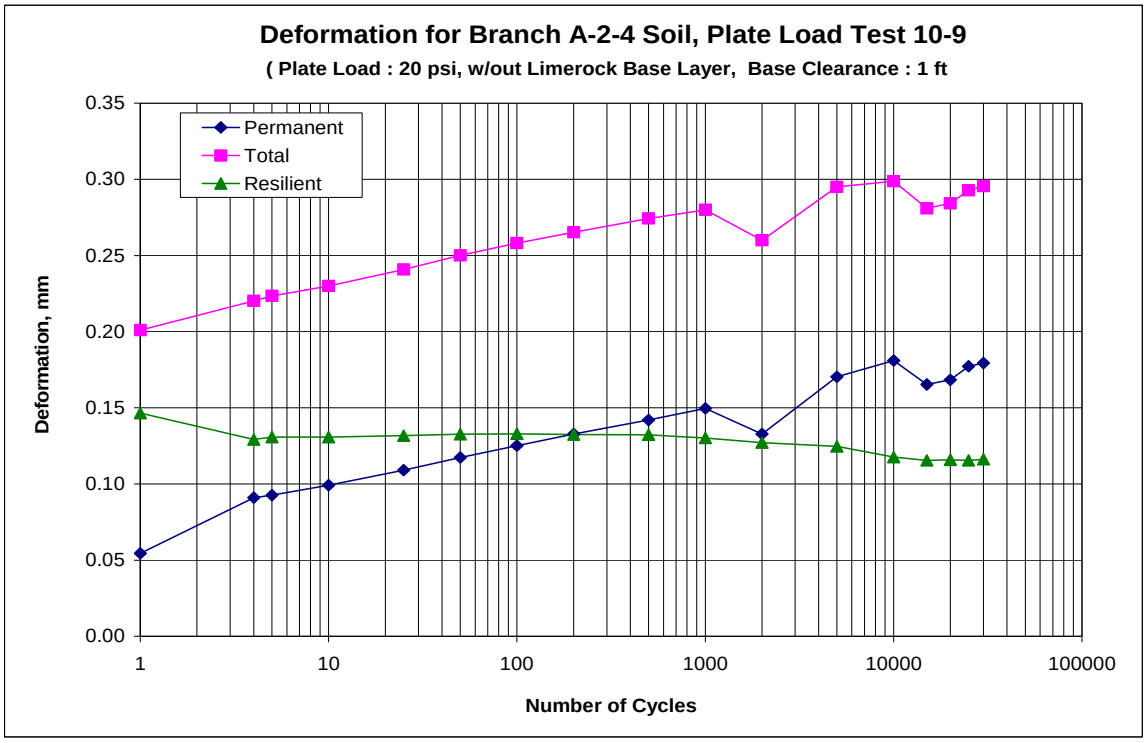


Figure F.126 Branch A-2-4 (23%) Soil, Deformation under 20 psi Plate Load (Water Table at 24 in., w/out Limerock, Test 10-9)

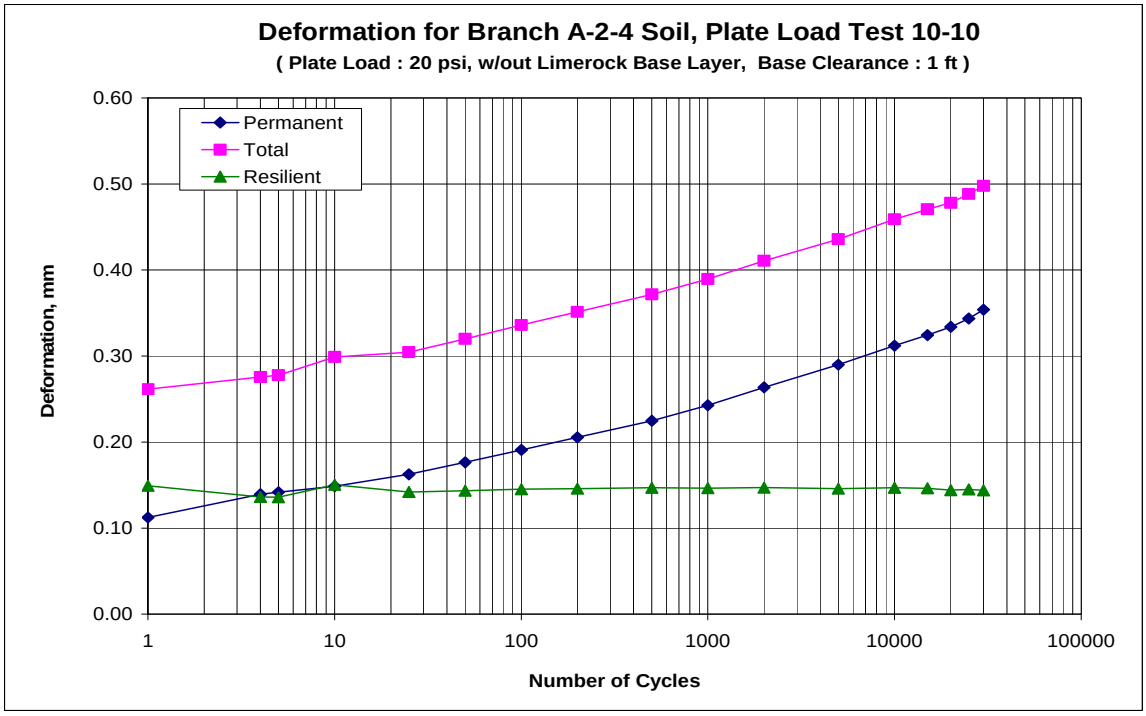


Figure F.127 Branch A-2-4 (23%) Soil, Deformation under 20 psi Plate Load (Water Table at 24 in., w/out Limerock, Test 10-10)

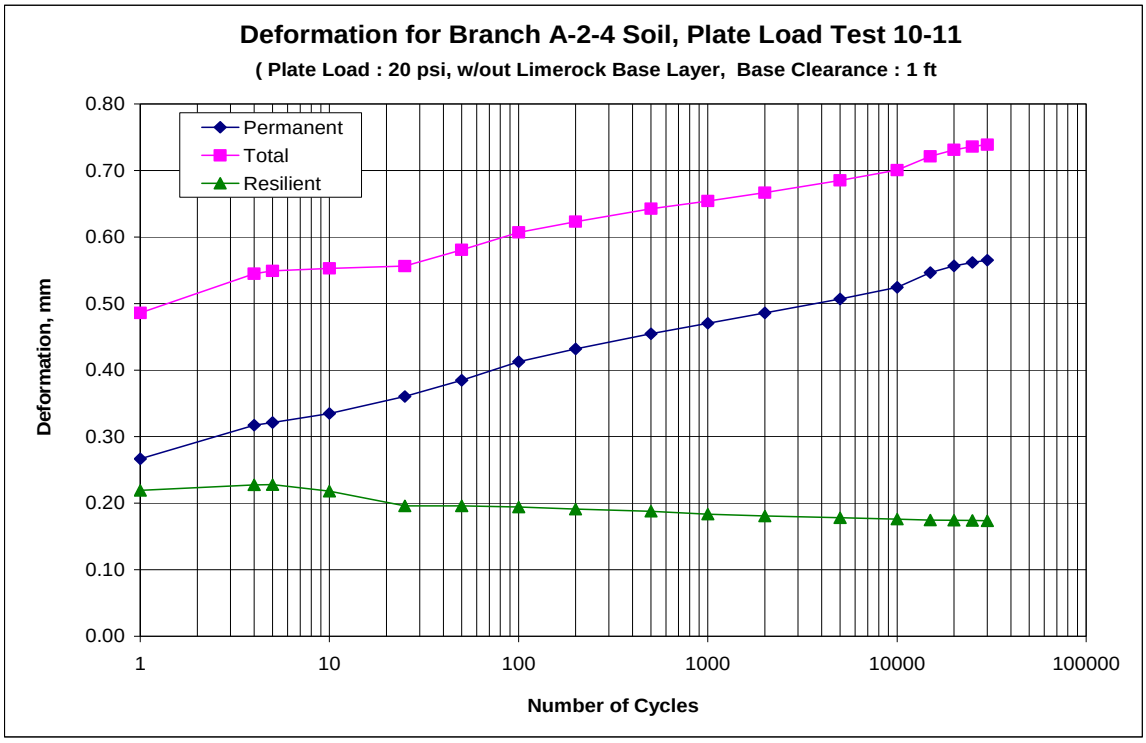


Figure F.128 Branch A-2-4 (23%) Soil, Deformation under 20 psi Plate Load (Water Table at 24 in., w/out Limerock, Test 10-11)

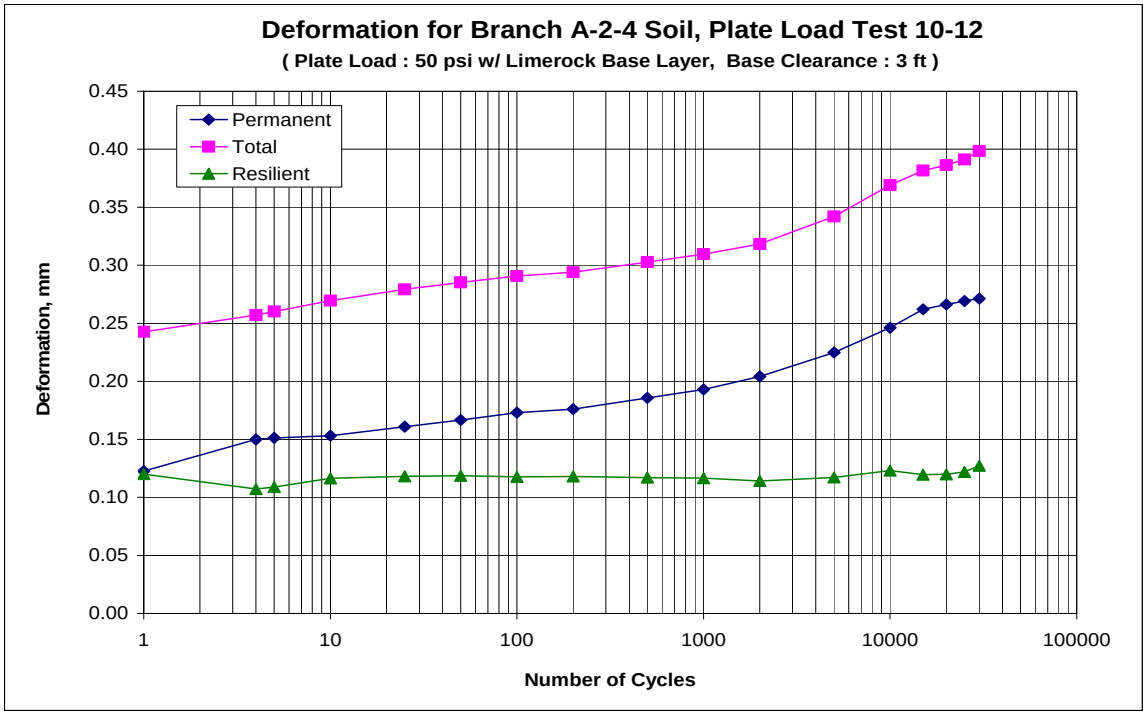


Figure F.129 Branch A-2-4 (23%) Soil, Deformation under 50 psi Plate Load (Water Table at 0.0 in., w/ Limerock, Test 10-12)

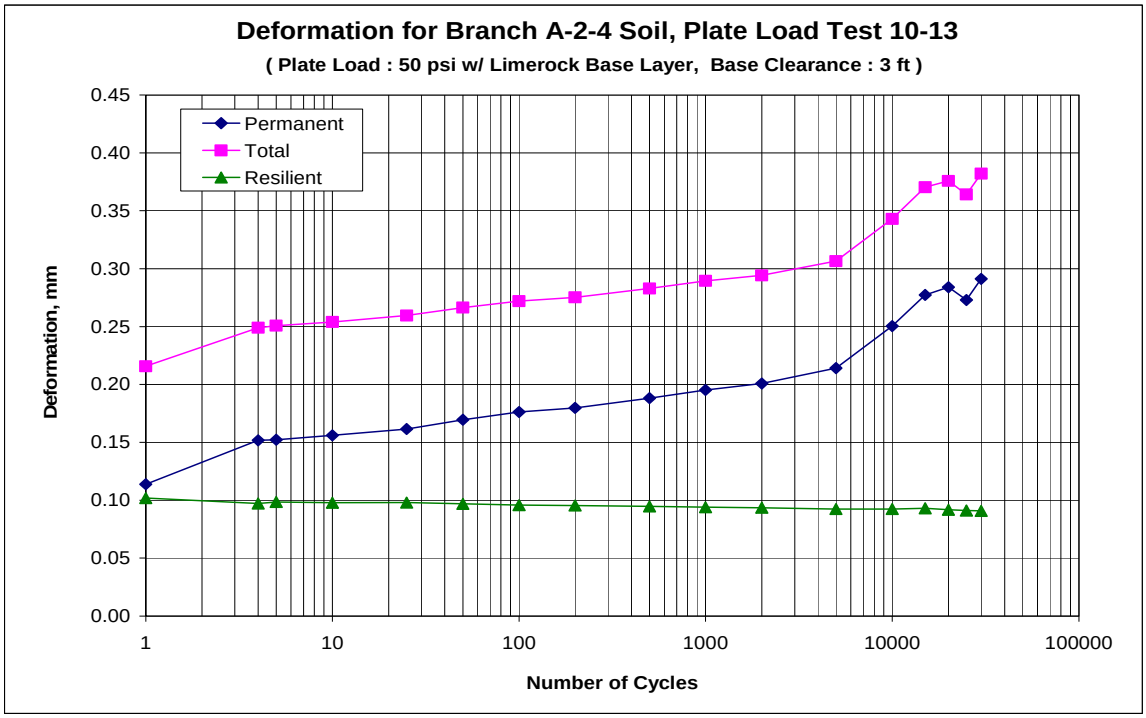


Figure F.130 Branch A-2-4 (23%) Soil, Deformation under 50 psi Plate Load (Water Table at 0.0 in., w/out Limerock, Test 10-13)

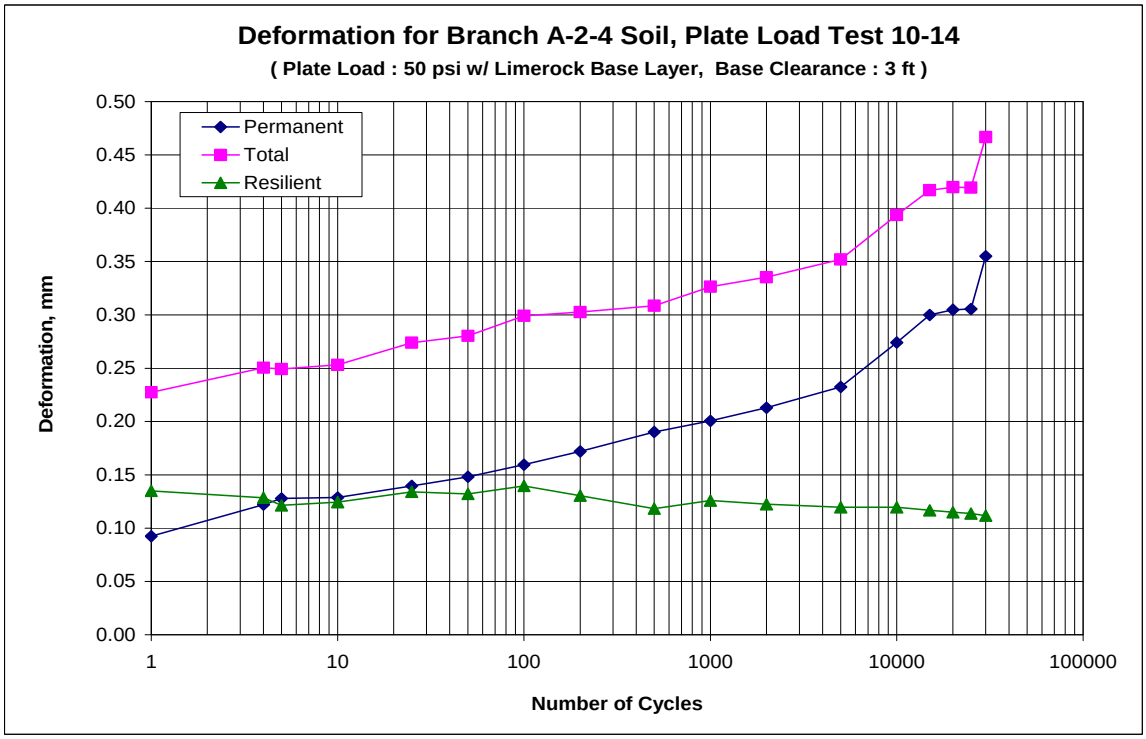


Figure F.131 Branch A-2-4 (23%) Soil, Deformation under 50 psi Plate Load (Water Table at 0.0 in., w/ Limerock, Test 10-14)

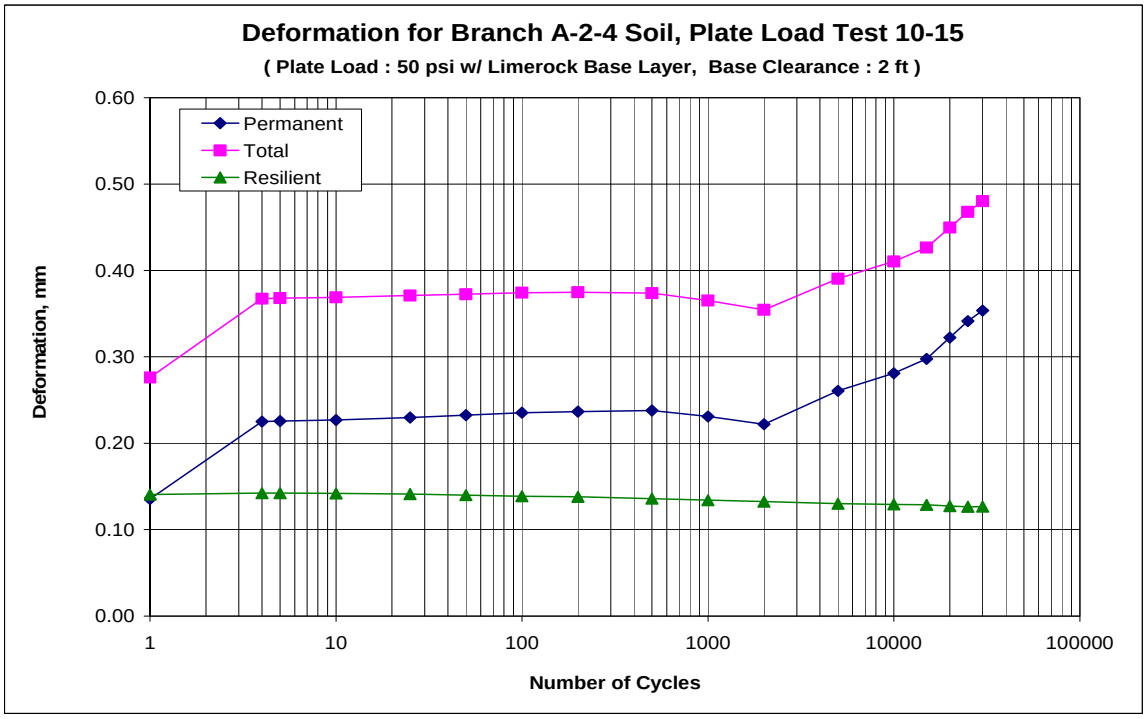


Figure F.132 Branch A-2-4 (23%) Soil, Deformation under 50 psi Plate Load (Water Table at 12 in., w/out Limerock, Test 10-15)

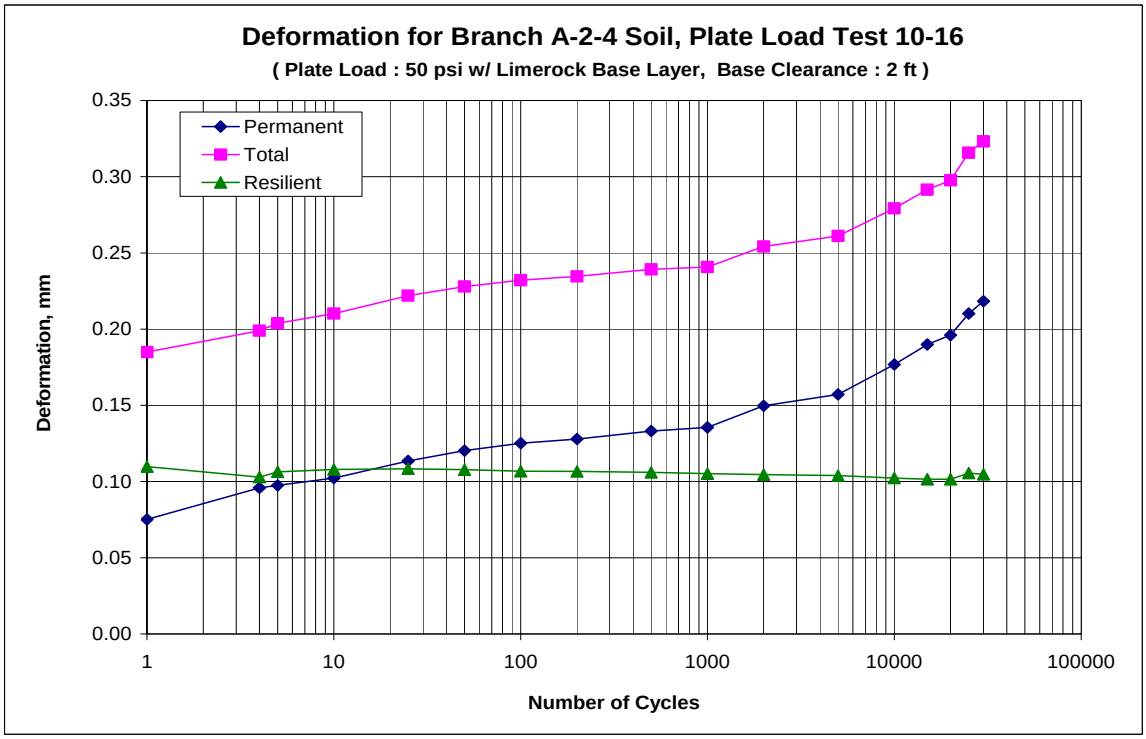


Figure F.133 Branch A-2-4 (23%) Soil, Deformation under 50 psi Plate Load (Water Table at 12 in., w/ Limerock, Test 10-16)

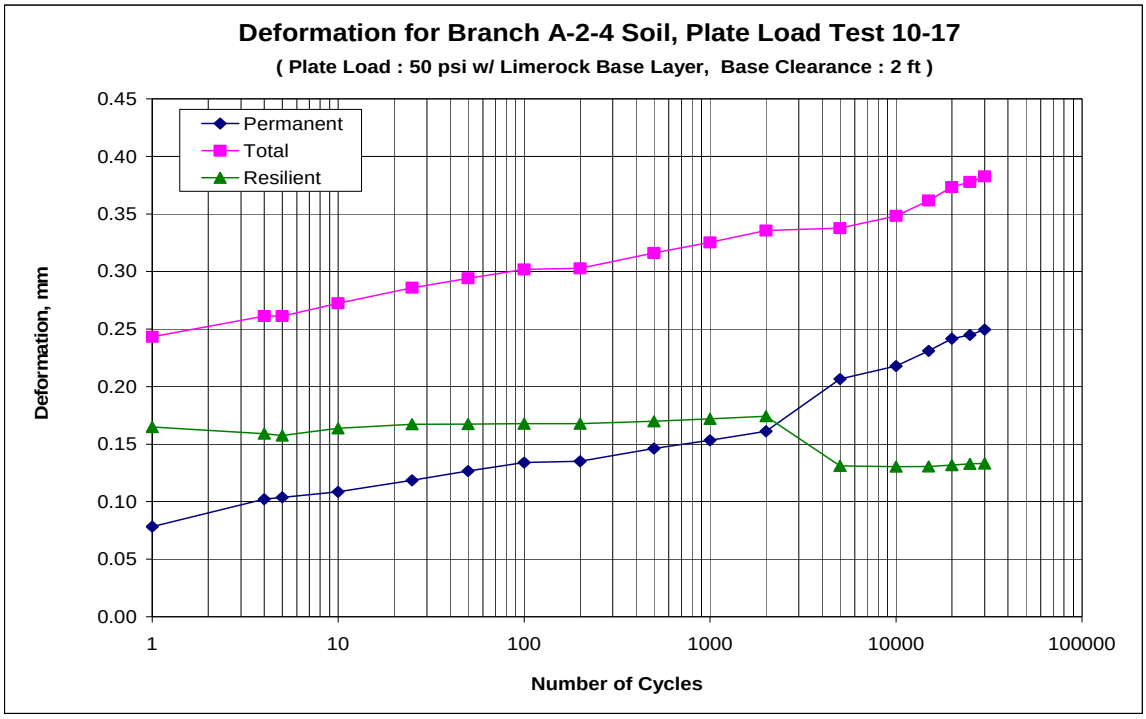


Figure F.134 Branch A-2-4 (23%) Soil, Deformation under 50 psi Plate Load (Water Table at 12 in., w/out Limerock, Test 10-17)

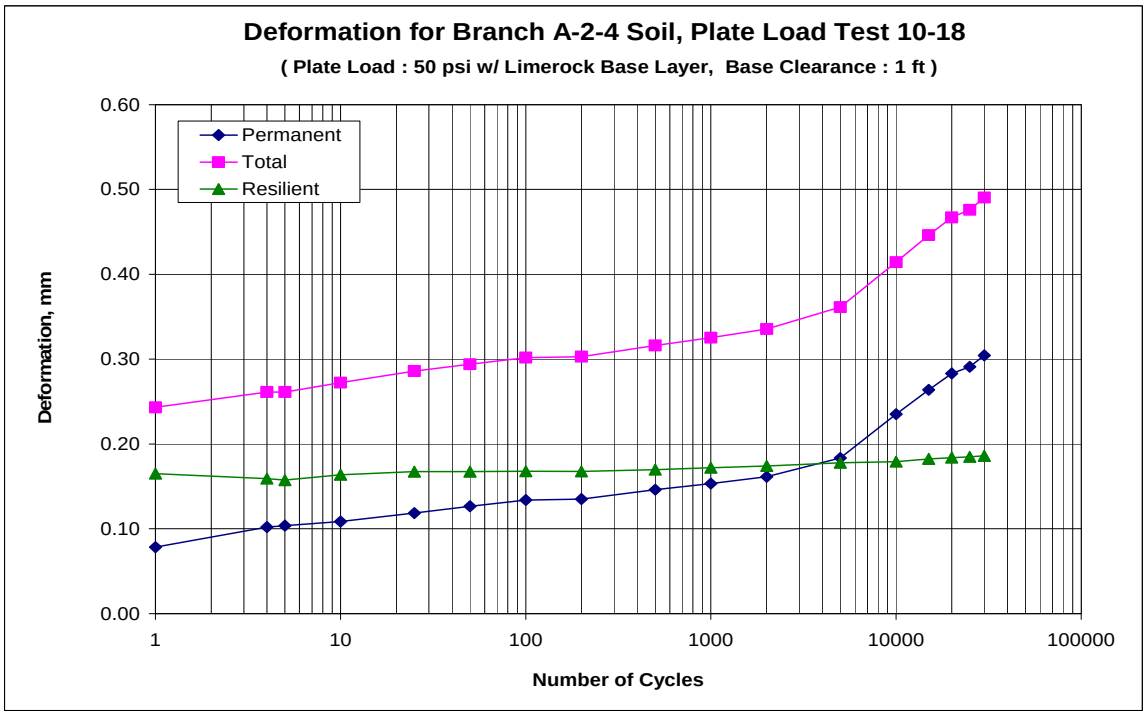


Figure F.135 Branch A-2-4 (23%) Soil, Deformation under 50 psi Plate Load (Water Table at 24 in., w/ Limerock, Test 10-18)

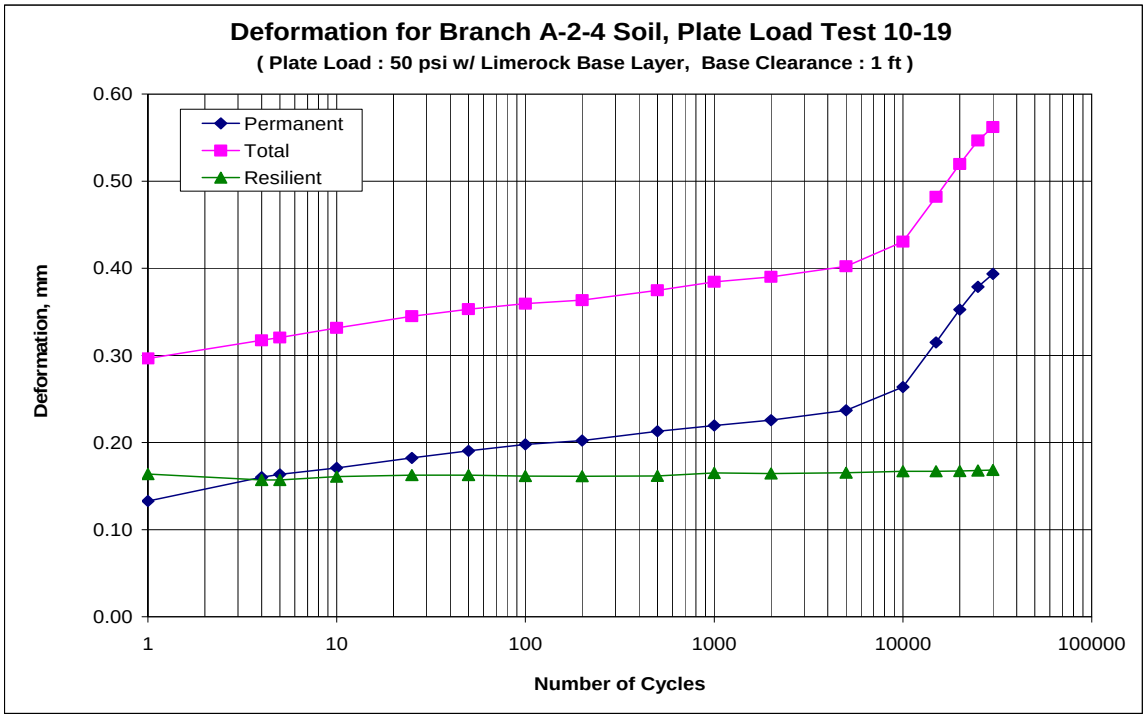


Figure F.136 Branch A-2-4 (23%) Soil, Deformation under 50 psi Plate Load (Water Table at 24 in., w/out Limerock, Test 10-19)

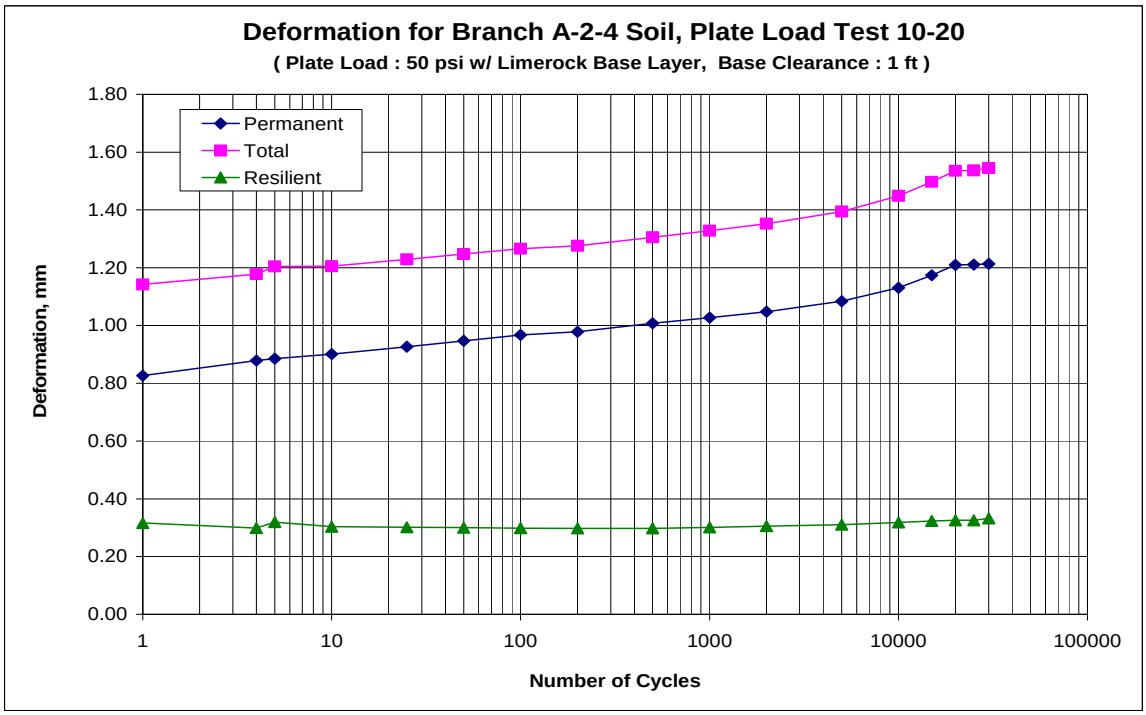


Figure F.137 Branch A-2-4 (23%) Soil, Deformation under 50 psi Plate Load (Water Table at 24 in., w/ Limerock, Test 10-20)

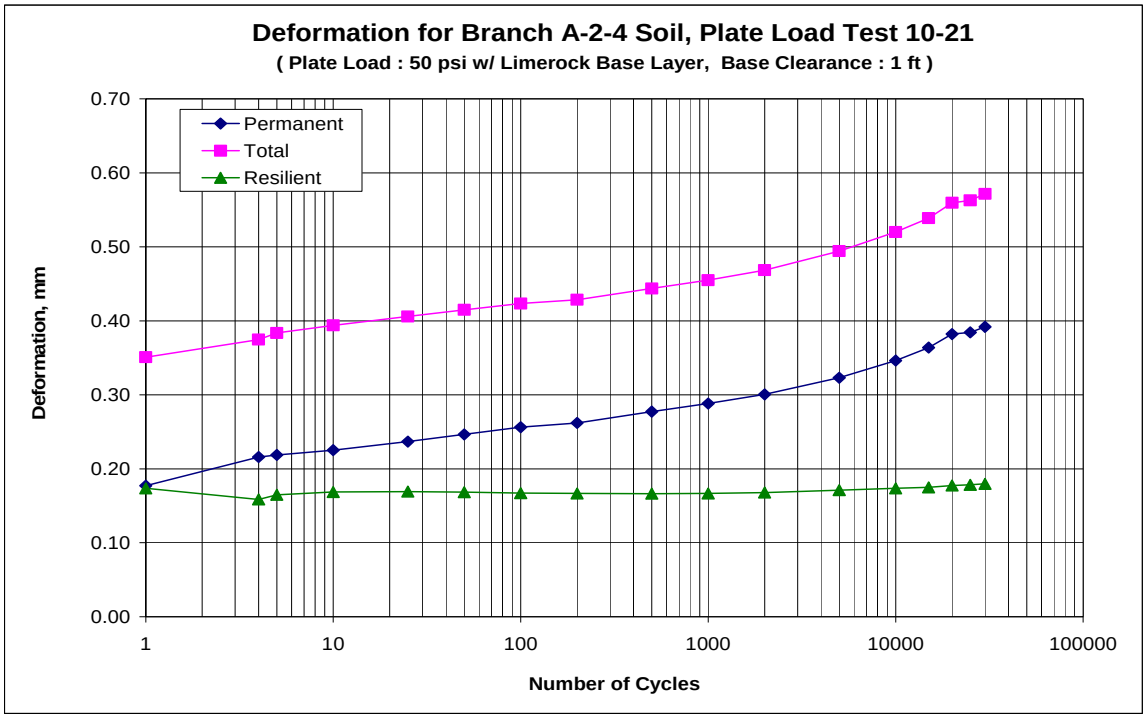


Figure F.138 Branch A-2-4 (23%) Soil, Deformation under 50 psi Plate Load (Water Table at 24 in., w/out Limerock, Test 10-21)

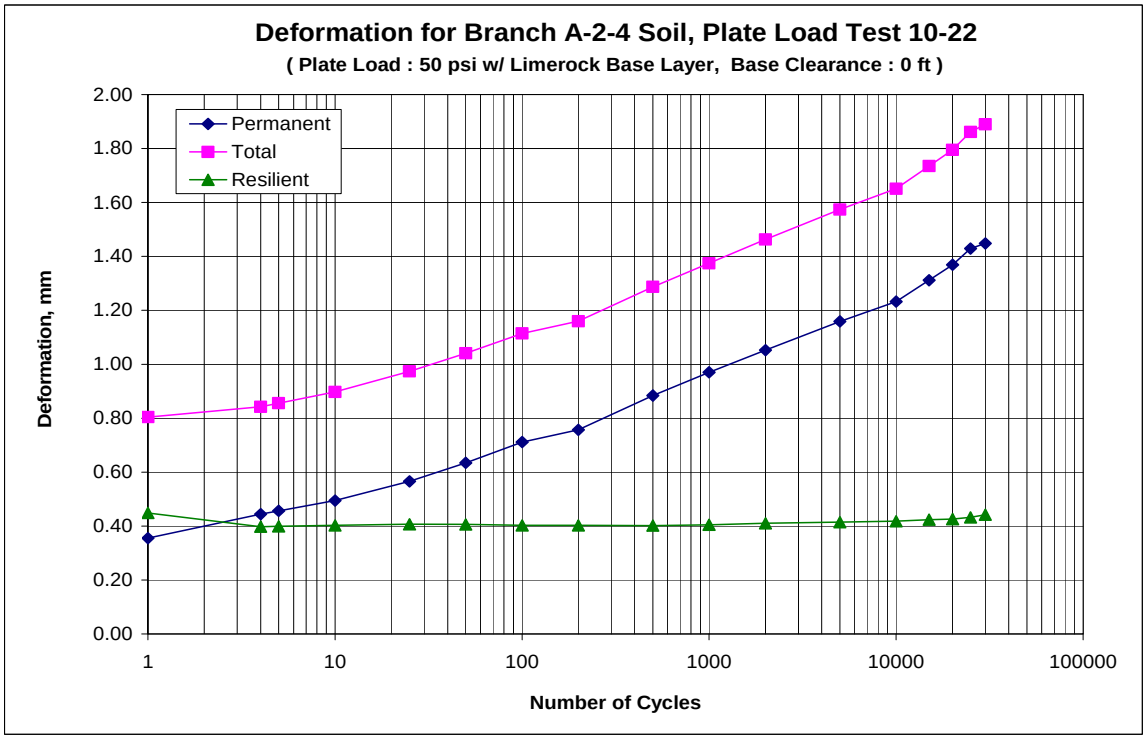


Figure F.139 Branch A-2-4 (23%) Soil, Deformation under 50 psi Plate Load (Water Table at 36 in., w/ Limerock, Test 10-22)

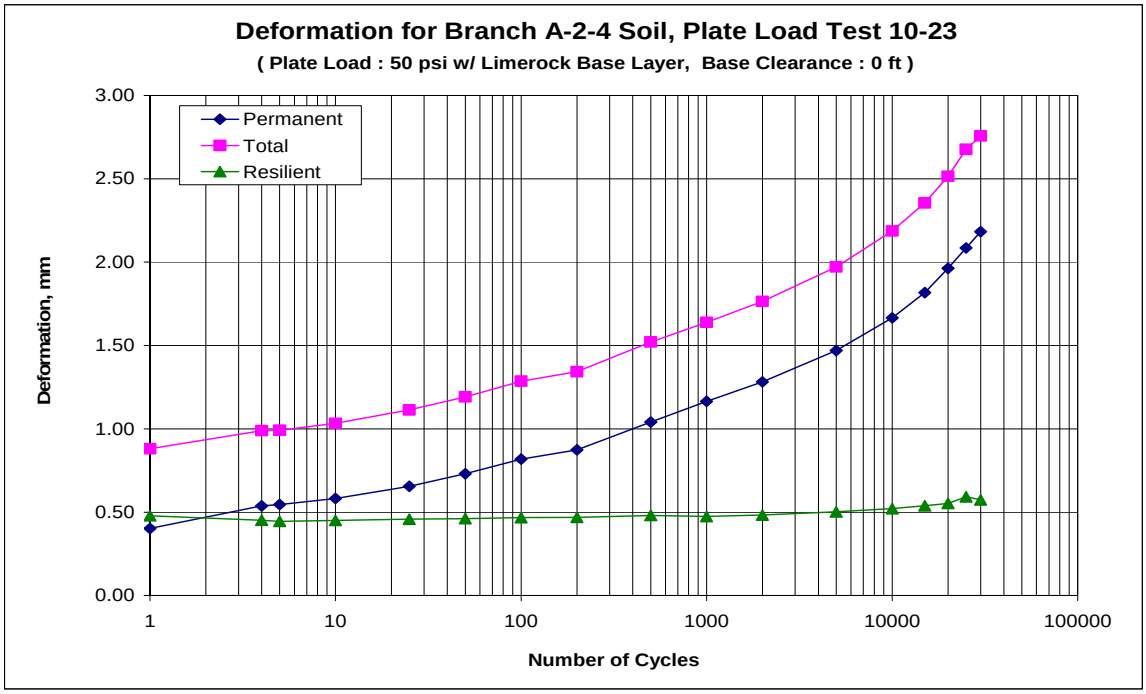


Figure F.140 Branch A-2-4 (23%) Soil, Deformation under 50 psi Plate Load (Water Table at 36 in., w/out Limerock, Test 10-23)

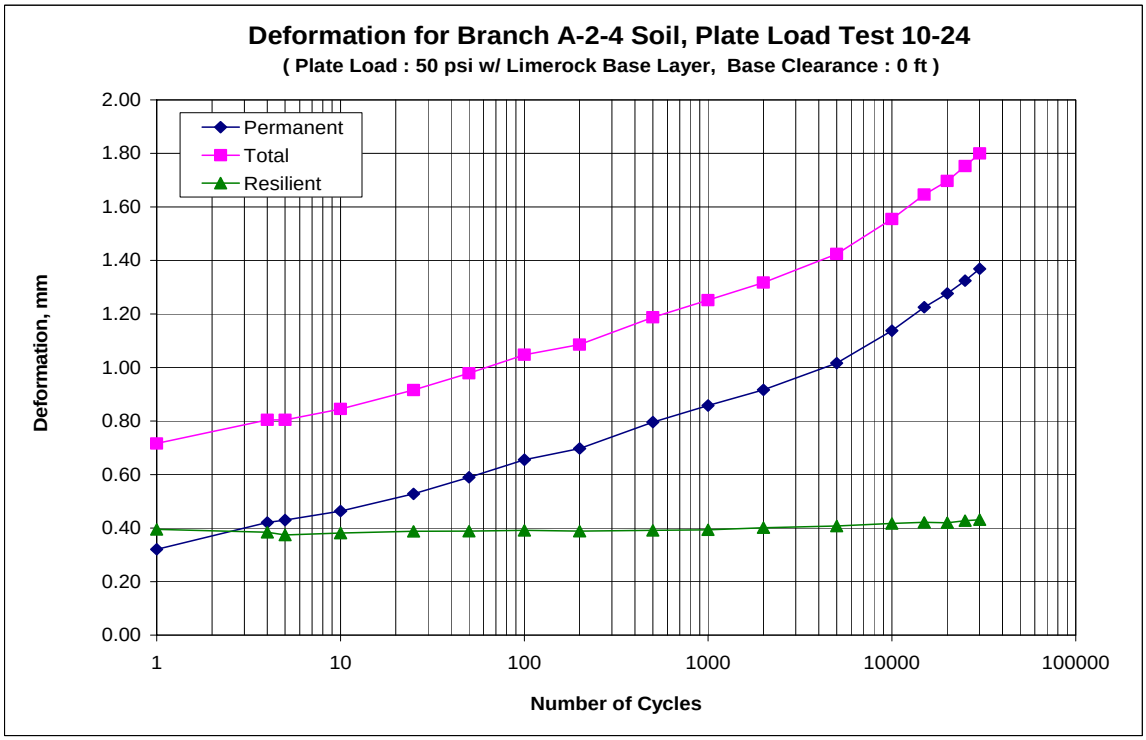


Figure F.141 Branch A-2-4 (23%) Soil, Deformation under 50 psi Plate Load (Water Table at 36 in, w/ Limerock, Test 10-24)

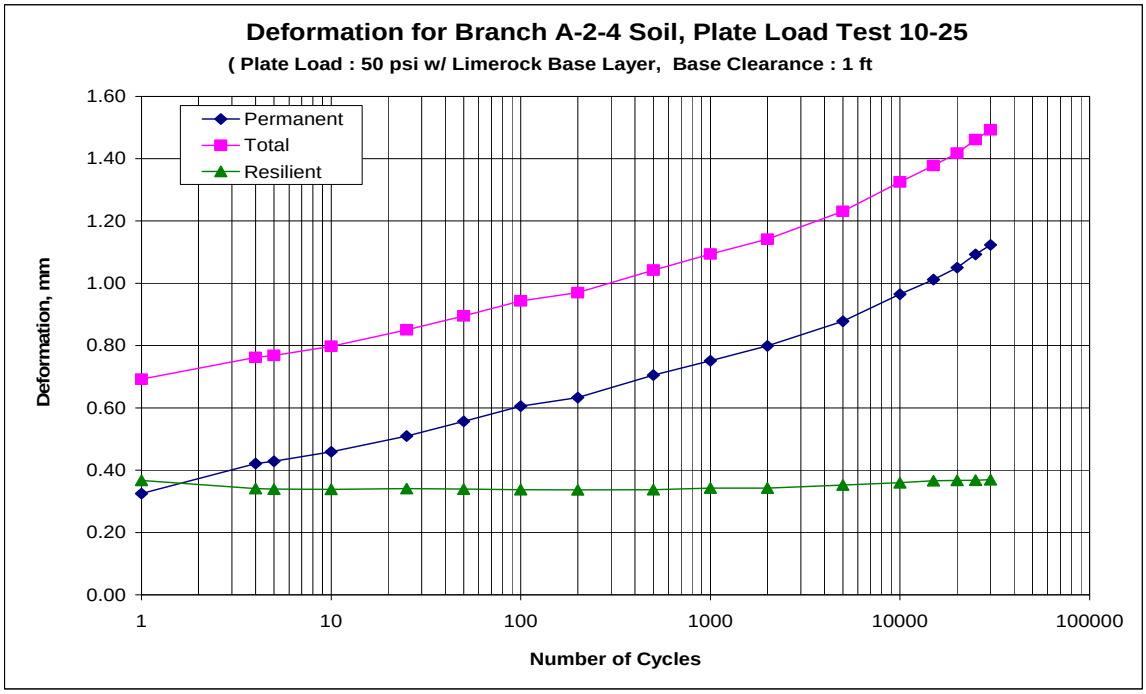


Figure F.142 Branch A-2-4 (23%) Soil, Deformation under 50 psi Plate Load (Water Table at 24 in. (Drawdown), w/out Limerock, Test 10-25)

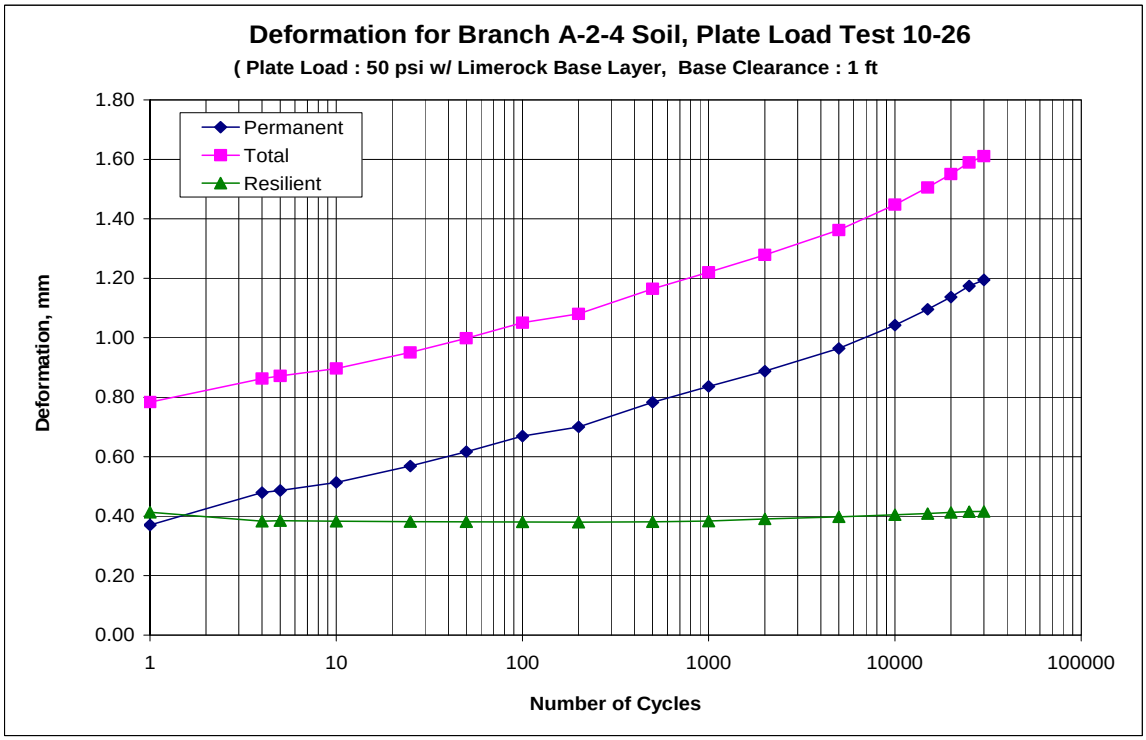


Figure F.143 Branch A-2-4 (23%) Soil, Deformation under 50 psi Plate Load (Water Table at 24 in. Drawdown), w/ Limerock, Test 10-26)

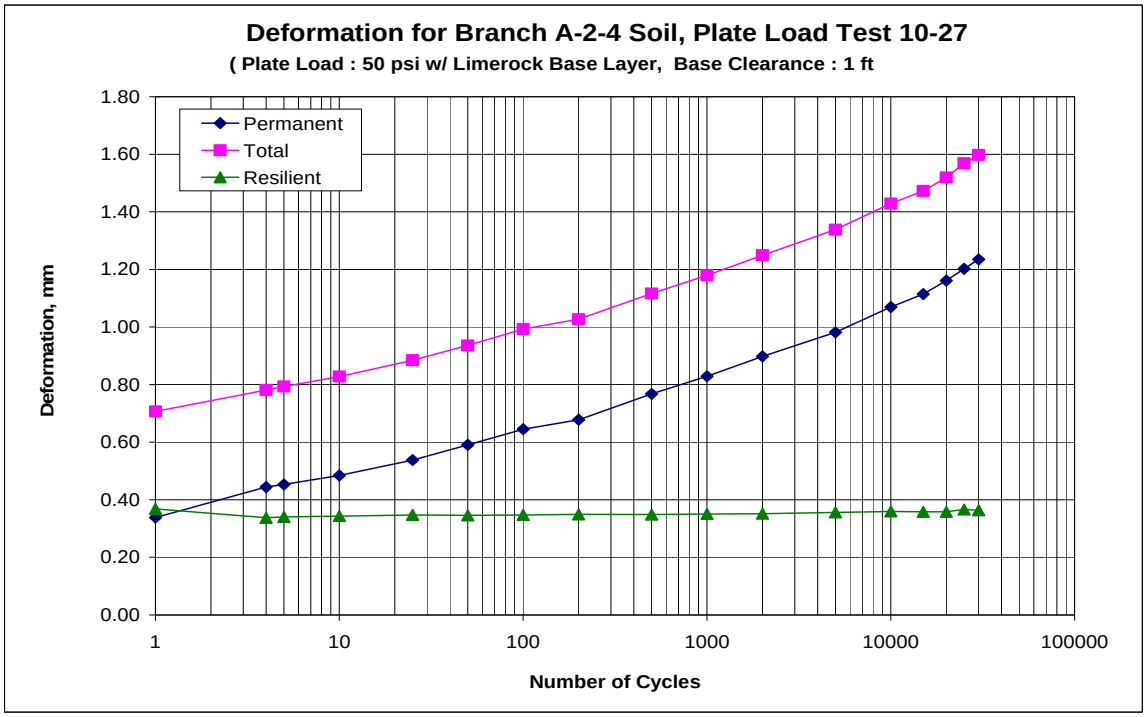


Figure F.144 Branch A-2-4 (23%) Soil, Deformation under 50 psi Plate Load (Water Table at 24 in. (Drawdown), w/out Limerock, Test 10-27)

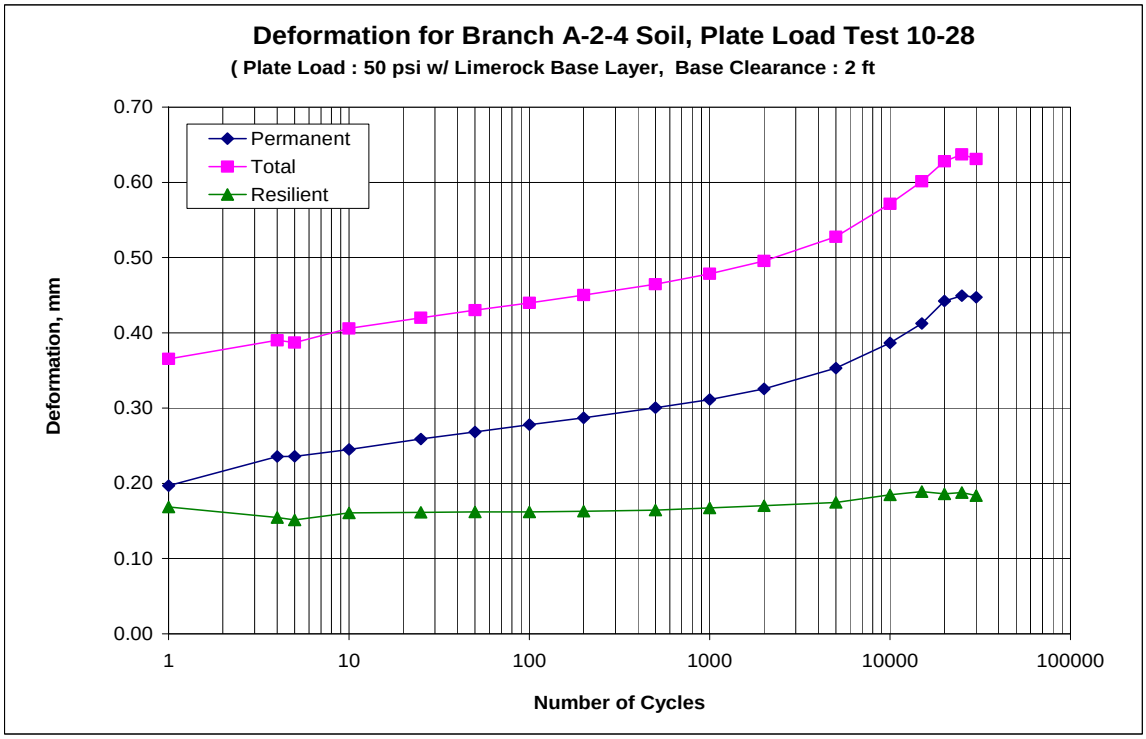


Figure F.145 Branch A-2-4 (23%) Soil, Deformation under 50 psi Plate Load (Water Table at 12 in. (Drawdown), w/ Limerock, Test 10-28)

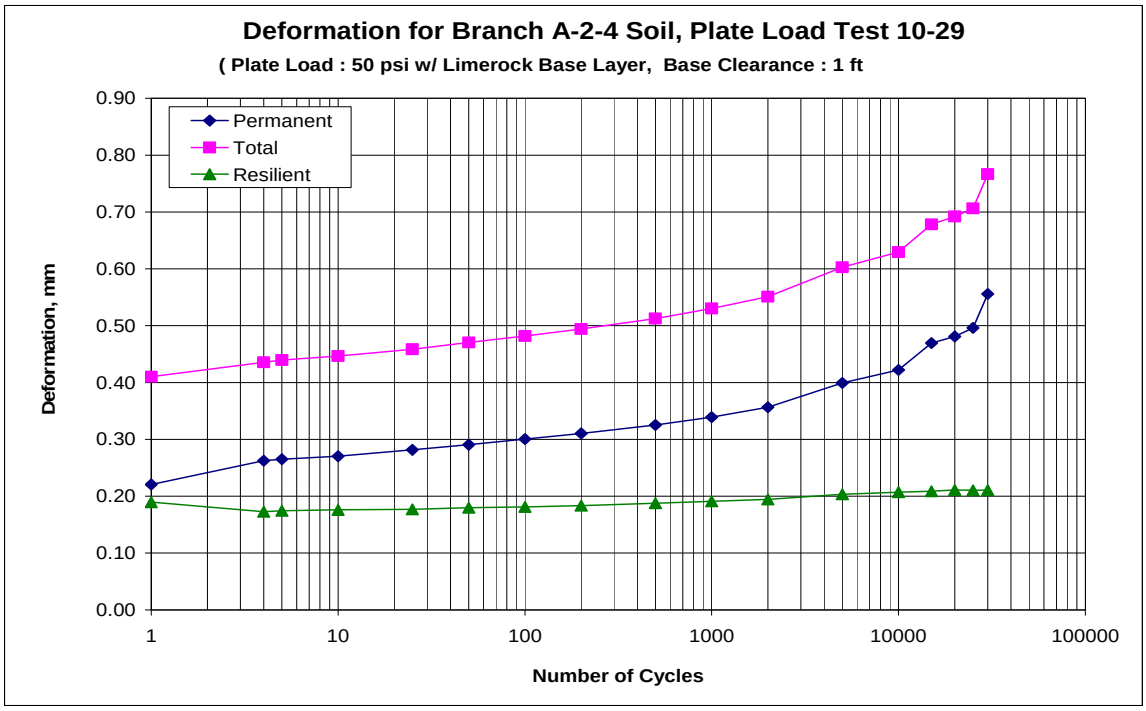


Figure F.146 Branch A-2-4 (23%) Soil, Deformation under 50 psi Plate Load (Water Table at 24 in. (Drawdown), w/out Limerock, Test 10-27)

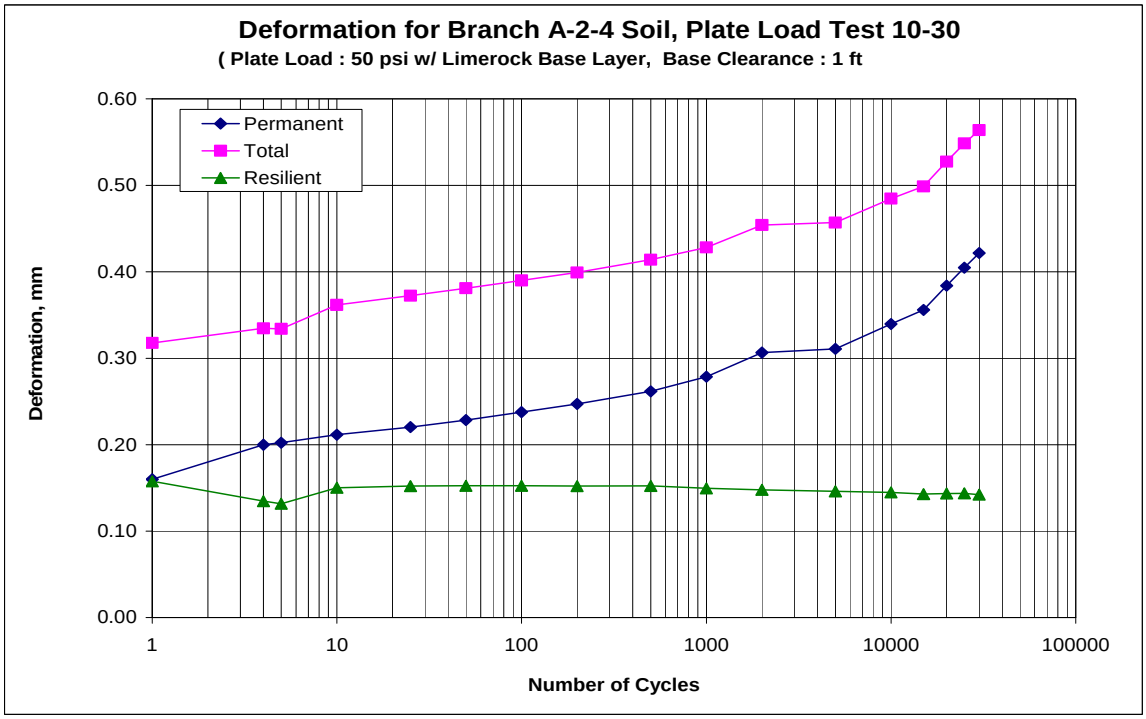


Figure F.147 Branch A-2-4 (23%) Soil, Deformation under 50 psi Plate Load (Water Table at 12 in. (Drawdown), w/ Limerock, Test 10-28)

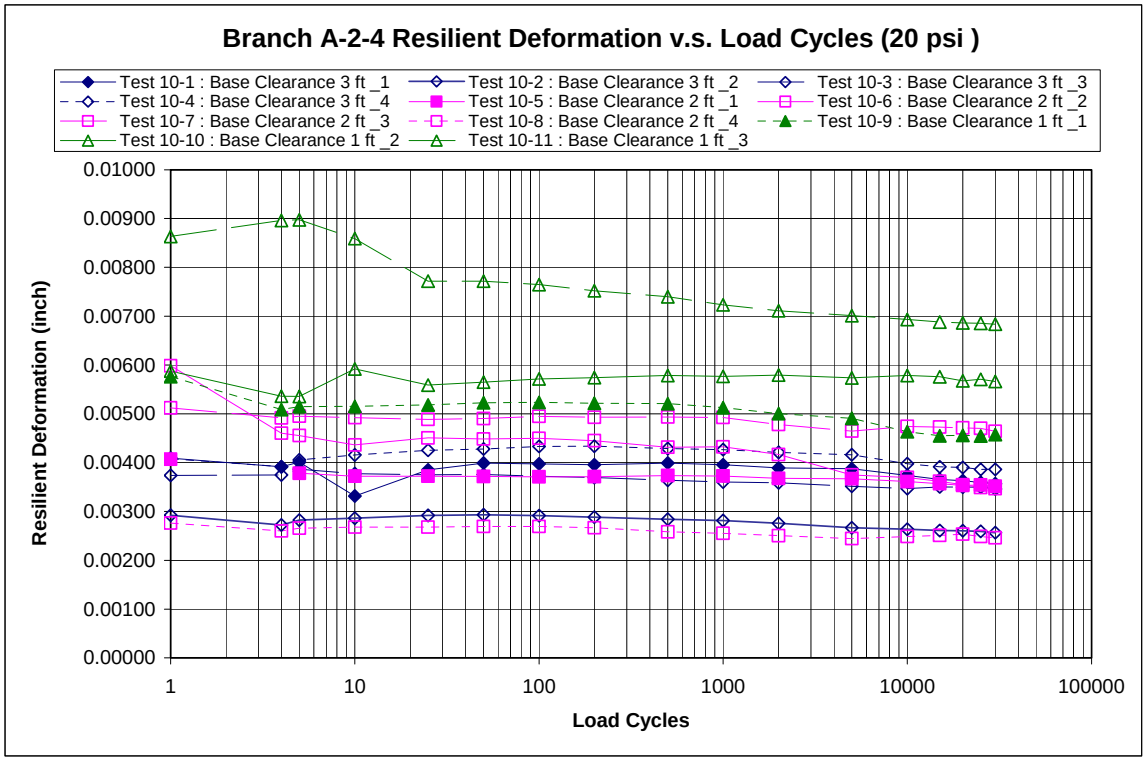


Figure F.148 Branch A-2-4 Soil, Deformation Summary under 20 psi Plate Load at Different Water Table Level

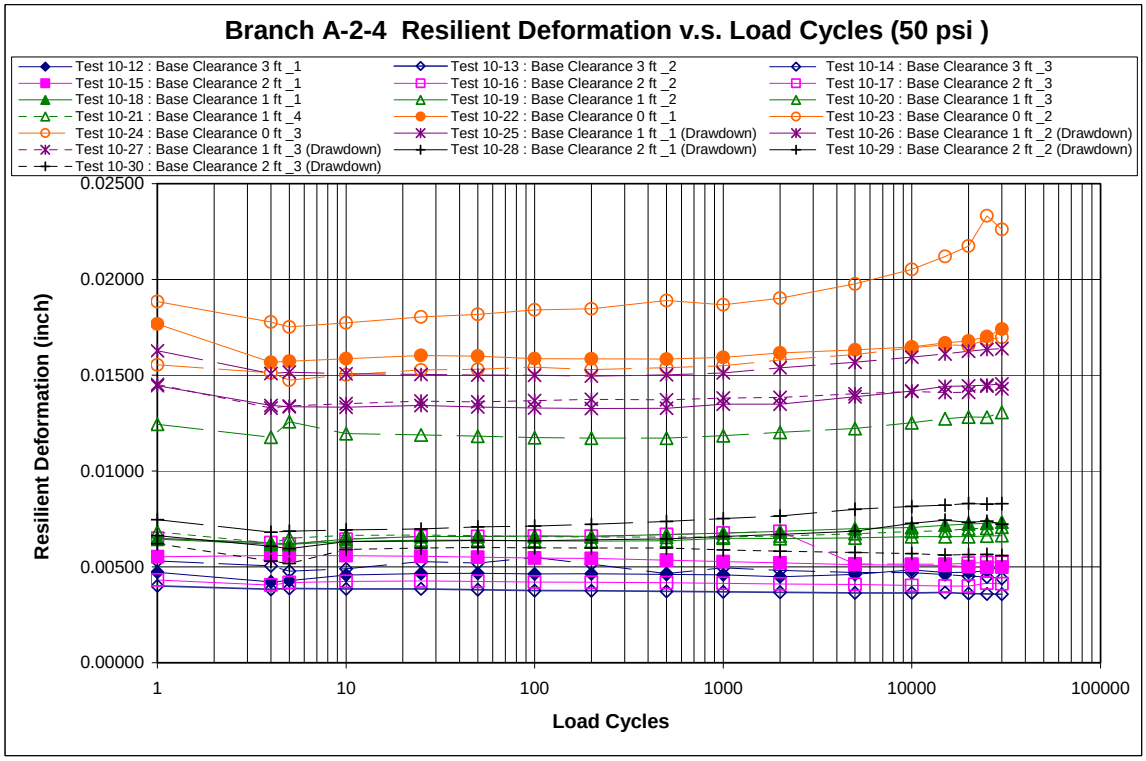


Figure F.149 Branch A-2-4 Soil, Deformation Summary under 50 psi Plate Load at Different Water Table Level

F.11 Iron Bridge A-2-6, 31% Soil

Table F.34 Iron Bridge A-2-6 Soil Plate Load Test, 20 psi w/o Limerock

Deformation with W.T. at 0 in., Test 11-1				Deformation with W.T. at 0 in., Test 11-2			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)	Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.1625	0.5023	0.3398	1	0.1220	0.3208	0.1988
4	0.2104	0.5437	0.3332	4	0.1482	0.3422	0.1940
5	0.2139	0.5631	0.3492	5	0.1517	0.3512	0.1995
10	0.2324	0.5885	0.3562	10	0.1639	0.3672	0.2034
25	0.2552	0.6017	0.3465	25	0.1797	0.3887	0.2089
50	0.2706	0.6194	0.3488	50	0.1901	0.3989	0.2088
100	0.2841	0.6366	0.3525	100	0.1963	0.4046	0.2083
200	0.2958	0.6498	0.3540	200	0.2044	0.4135	0.2090
500	0.3111	0.6629	0.3518	500	0.2168	0.4224	0.2056
1000	0.3242	0.6734	0.3493	1000	0.2285	0.4319	0.2034
2000	0.3403	0.6868	0.3465	2000	0.2459	0.4461	0.2002
5000	0.3548	0.7006	0.3458	5000	0.2685	0.4627	0.1943
10000	0.3504	0.7051	0.3547	10000	0.2818	0.4709	0.1891
15000	0.3492	0.7260	0.3768	15000	0.2837	0.4711	0.1874
20000	0.3900	0.7537	0.3637	20000	0.2856	0.4720	0.1863
25000	0.3925	0.7451	0.3526	25000	0.2863	0.4715	0.1853
30000				30000	0.2874	0.4733	0.1858
Deformation with W.T. at 0 in., Test 11-3				Deformation with W.T. at 0 in., Test 11-4			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)	Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.0374	0.1771	0.1397	1	0.0364	0.2373	0.2009
4	0.0526	0.1934	0.1408	4	0.0494	0.2371	0.1877
5	0.0539	0.1987	0.1448	5	0.0515	0.2442	0.1927
10	0.0596	0.2056	0.1460	10	0.0548	0.2475	0.1927
25	0.0682	0.2154	0.1472	25	0.0597	0.2521	0.1925
50	0.0754	0.2232	0.1478	50	0.0642	0.2547	0.1905
100	0.0828	0.2298	0.1470	100	0.0669	0.2580	0.1911
200	0.0893	0.2354	0.1461	200	0.0687	0.2612	0.1925
500	0.0963	0.2422	0.1460	500	0.0702	0.2633	0.1931
1000	0.1057	0.2508	0.1451	1000	0.0704	0.2641	0.1938
2000	0.1195	0.2620	0.1424	2000	0.0724	0.2661	0.1937
5000	0.1354	0.2742	0.1388	5000	0.0846	0.2741	0.1894
10000	0.1525	0.2874	0.1349	10000	0.0882	0.2789	0.1907
15000	0.1618	0.2938	0.1320	15000	0.0962	0.2859	0.1897
20000	0.1662	0.2955	0.1294	20000	0.1011	0.2898	0.1887
25000	0.1699	0.2973	0.1274	25000	0.1026	0.2895	0.1869
30000	0.1719	0.2986	0.1268	30000	0.0934	0.2795	0.1861

Table F.34 Continued

Deformation with W.T. at 12 in., Test 11-5			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.1754	0.3555	0.1801
4	0.2193	0.3850	0.1657
5	0.2229	0.3910	0.1681
10	0.2330	0.4040	0.1710
25	0.2507	0.4231	0.1724
50	0.2637	0.4367	0.1729
100	0.2764	0.4491	0.1727
200	0.2874	0.4601	0.1726
500	0.3008	0.4710	0.1702
1000	0.3108	0.4796	0.1688
2000	0.3221	0.4908	0.1687
5000	0.3420	0.5077	0.1657
10000	0.3604	0.5219	0.1615
15000	0.3738	0.5327	0.1589
20000	0.3804	0.5367	0.1563
25000	0.3904	0.5414	0.1510
30000	0.3983	0.5467	0.1484

Deformation with W.T. at 12 in., Test 11-6			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.0425	0.2840	0.2415
4	0.0700	0.2699	0.1999
5	0.0711	0.2727	0.2016
10	0.0737	0.2732	0.1995
25	0.0763	0.2735	0.1972
50	0.0782	0.2735	0.1954
100	0.0794	0.2727	0.1933
200	0.0799	0.2718	0.1919
500	0.0804	0.2703	0.1898
1000	0.0810	0.2699	0.1889
2000	0.0824	0.2693	0.1869
5000	0.0912	0.2739	0.1826
10000	0.1048	0.2827	0.1779
15000	0.1191	0.2939	0.1748
20000	0.1281	0.2995	0.1713
25000	0.1233	0.2931	0.1698
30000	0.1227	0.2918	0.1692

Deformation with W.T. at 12 in., Test 11-7			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.1527	0.3158	0.1630
4	0.1894	0.3346	0.1451
5	0.1915	0.3409	0.1494
10	0.1991	0.3502	0.1511
25	0.2116	0.3634	0.1518
50	0.2222	0.3735	0.1513
100	0.2319	0.3820	0.1502
200	0.2404	0.3893	0.1489
500	0.2515	0.3979	0.1464
1000	0.2606	0.4041	0.1435
2000	0.2714	0.4122	0.1408
5000	0.2956	0.4304	0.1348
10000	0.3254	0.4578	0.1324
15000	0.3550	0.4843	0.1293
20000	0.3767	0.5037	0.1270
25000	0.3900	0.5152	0.1252
30000	0.3966	0.5164	0.1199

Table F.34 Continued

Deformation with W.T. at 24 in., Test 11-8			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.2354	0.4926	0.2573
4	0.3011	0.5177	0.2167
5	0.3035	0.5296	0.2261
10	0.3213	0.5479	0.2266
25	0.3492	0.5755	0.2263
50	0.3752	0.6006	0.2255
100	0.3999	0.6224	0.2224
200	0.4218	0.6427	0.2209
500	0.4449	0.6630	0.2181
1000	0.4603	0.6765	0.2162
2000	0.4752	0.6886	0.2134
5000	0.4973	0.7075	0.2102
10000	0.5151	0.7225	0.2074
15000	0.5219	0.7274	0.2056
20000	0.5421	0.7471	0.2050
25000	0.5595	0.7627	0.2032
30000	0.5475	0.7504	0.2030

Deformation with W.T. at 24 in., Test 11-9			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.1259	0.4935	0.3677
4	0.1897	0.4814	0.2917
5	0.1919	0.4877	0.2958
10	0.1968	0.4949	0.2981
25	0.2072	0.5007	0.2935
50	0.2171	0.5085	0.2914
100	0.2272	0.5151	0.2879
200	0.2374	0.5221	0.2847
500	0.2490	0.5334	0.2844
1000	0.2584	0.5409	0.2826
2000	0.2686	0.5494	0.2808
5000	0.2841	0.5652	0.2811
10000	0.2980	0.5760	0.2780
15000	0.3063	0.5822	0.2759
20000	0.3129	0.5897	0.2768
25000	0.3246	0.6009	0.2763
30000	0.3126	0.5861	0.2736

Deformation with W.T. at 24 in., Test 11-10			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.3119	0.6071	0.2952
4	0.3890	0.6532	0.2642
5	0.3937	0.6652	0.2715
10	0.4139	0.6883	0.2744
25	0.4717	0.7531	0.2815
50	0.5061	0.7861	0.2801
100	0.5374	0.8164	0.2790
200	0.5654	0.8415	0.2761
500	0.6021	0.8745	0.2724
1000	0.6279	0.8979	0.2699
2000	0.6554	0.9239	0.2685
5000	0.6907	0.9567	0.2660
10000	0.6554	0.9225	0.2672
15000	0.6729	0.9377	0.2648
20000	0.6690	0.9318	0.2628
25000	0.6593	0.9245	0.2652
30000	0.6670	0.9324	0.2654

Table F.35 Iron Bridge A-2-6 Soil Plate Load Test, 50 psi w/ Limerock

Deformation with W.T. at 0 in., Test 11-11				Deformation with W.T. at 0 in., Test 11-12			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)	Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.2507	0.4136	0.1629	1	0.1652	0.2943	0.1291
4	0.2969	0.4426	0.1457	4	0.1977	0.3172	0.1195
5	0.2995	0.4447	0.1452	5	0.1989	0.3216	0.1226
10	0.3094	0.4578	0.1484	10	0.2047	0.3278	0.1231
25	0.3255	0.4757	0.1501	25	0.2157	0.3393	0.1236
50	0.3402	0.4891	0.1490	50	0.2254	0.3481	0.1228
100	0.3538	0.5010	0.1473	100	0.2353	0.3562	0.1209
200	0.3614	0.5078	0.1464	200	0.2408	0.3608	0.1201
500	0.3830	0.5260	0.1430	500	0.2566	0.3751	0.1185
1000	0.4010	0.5419	0.1409	1000	0.2700	0.3869	0.1169
2000	0.4190	0.5579	0.1389	2000	0.2857	0.4019	0.1162
5000	0.4912	0.6283	0.1371	5000	0.3152	0.4298	0.1146
10000	0.5391	0.6745	0.1354	10000	0.3344	0.4474	0.1130
15000	0.5537	0.6874	0.1338	15000	0.3572	0.4680	0.1108
20000	0.5636	0.6955	0.1319	20000	0.3640	0.4736	0.1096
25000	0.5749	0.7037	0.1288	25000	0.3726	0.4820	0.1094
30000	0.5848	0.7109	0.1261	30000	0.3733	0.4844	0.1112

Deformation with W.T. at 0 in., Test 11-13			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.1770	0.3210	0.1440
4	0.2139	0.3462	0.1322
5	0.2162	0.3496	0.1335
10	0.2227	0.3559	0.1333
25	0.2321	0.3730	0.1409
50	0.2393	0.3805	0.1413
100	0.2479	0.3880	0.1401
200	0.2527	0.3924	0.1398
500	0.2635	0.4010	0.1375
1000	0.2671	0.4036	0.1365
2000	0.2815	0.4167	0.1352
5000	0.3173	0.4496	0.1324
10000	0.3488	0.4836	0.1348
15000	0.3721	0.5009	0.1288
20000	0.4017	0.5298	0.1281
25000	0.3963	0.5229	0.1266
30000	0.3990	0.5231	0.1241

Table F.35 Continued

Deformation with W.T. at 12 in., Test 11-14			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.1100	0.2517	0.1416
4	0.1418	0.2762	0.1345
5	0.1436	0.2762	0.1326
10	0.1490	0.2826	0.1336
25	0.1595	0.2939	0.1343
50	0.1679	0.3018	0.1339
100	0.1757	0.3099	0.1342
200	0.1803	0.3147	0.1345
500	0.1938	0.3279	0.1342
1000	0.2058	0.3392	0.1334
2000	0.2133	0.3457	0.1325
5000	0.2345	0.3644	0.1299
10000	0.2514	0.3784	0.1270
15000	0.2730	0.3984	0.1254
20000	0.2833	0.4073	0.1241
25000	0.2891	0.4124	0.1233
30000	0.2979	0.4202	0.1223

Deformation with W.T. at 12 in., Test 11-15			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.1774	0.3225	0.1451
4	0.2205	0.3564	0.1359
5	0.2221	0.3648	0.1427
10	0.2283	0.3732	0.1450
25	0.2394	0.3847	0.1453
50	0.2494	0.3946	0.1452
100	0.2609	0.4036	0.1427
200	0.2659	0.4085	0.1426
500	0.2833	0.4229	0.1396
1000	0.2896	0.4287	0.1391
2000	0.2847	0.4221	0.1373
5000	0.3250	0.4597	0.1347
10000	0.3333	0.4667	0.1334
15000	0.3592	0.4910	0.1319
20000	0.3807	0.5116	0.1309
25000	0.3970	0.5275	0.1306
30000	0.4072	0.5377	0.1305

Deformation with W.T. at 12 in., Test 11-16			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.1505	0.3055	0.1550
4	0.1751	0.3245	0.1494
5	0.1768	0.3269	0.1501
10	0.1836	0.3351	0.1515
25	0.1979	0.3491	0.1512
50	0.2090	0.3600	0.1510
100	0.2196	0.3708	0.1513
200	0.2259	0.3774	0.1515
500	0.2435	0.3947	0.1512
1000	0.2562	0.4074	0.1511
2000	0.2710	0.4210	0.1500
5000	0.3232	0.4718	0.1486
10000	0.3500	0.4977	0.1478
15000	0.3783	0.5269	0.1485
20000	0.4036	0.5512	0.1477
25000	0.4291	0.5770	0.1479
30000	0.4350	0.5822	0.1472

Table F.35 Continued

Deformation with W.T. at 24 in., Test 11-17			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.1724	0.3845	0.2121
4	0.2211	0.4210	0.1998
5	0.2259	0.4272	0.2013
10	0.2377	0.4421	0.2044
25	0.2614	0.4665	0.2051
50	0.2818	0.4867	0.2048
100	0.3035	0.5061	0.2026
200	0.3152	0.5171	0.2019
500	0.3470	0.5467	0.1997
1000	0.3686	0.5678	0.1993
2000	0.3915	0.5896	0.1981
5000	0.4267	0.6236	0.1969
10000	0.4675	0.6637	0.1962
15000	0.5040	0.6996	0.1956
20000	0.5244	0.7200	0.1956
25000	0.5367	0.7328	0.1961
30000	0.5470	0.7431	0.1961

Deformation with W.T. at 24 in., Test 11-18			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.2416	0.4554	0.2138
4	0.2882	0.4848	0.1966
5	0.3074	0.5108	0.2034
10	0.3060	0.5065	0.2005
25	0.3313	0.5386	0.2073
50	0.3579	0.5626	0.2047
100	0.3838	0.5876	0.2039
200	0.3847	0.5886	0.2039
500	0.4249	0.6243	0.1994
1000	0.4479	0.6501	0.2023
2000	0.4761	0.6784	0.2023
5000	0.5110	0.7163	0.2054
10000	0.5699	0.7750	0.2052
15000	0.6000	0.8062	0.2062
20000	0.6264	0.8290	0.2025
25000	0.6495	0.8604	0.2109
30000	0.6635	0.8724	0.2090

Deformation with W.T. at 24 in., Test 11-19			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.1913	0.4435	0.2523
4	0.2548	0.5028	0.2480
5	0.2592	0.5028	0.2436
10	0.2751	0.5226	0.2475
25	0.3033	0.5557	0.2525
50	0.3312	0.5831	0.2519
100	0.3609	0.6127	0.2518
200	0.3784	0.6297	0.2514
500	0.4234	0.6742	0.2508
1000	0.4528	0.7043	0.2515
2000	0.4830	0.7366	0.2536
5000	0.5288	0.7844	0.2557
10000	0.5928	0.8477	0.2549
15000	0.6384	0.8950	0.2566
20000	0.6763	0.9325	0.2562
25000	0.7040	0.9590	0.2550
30000	0.7226	0.9777	0.2551

Table F.35 Continued

Deformation with W.T. at 36 in., Test 11-20				Deformation with W.T. at 36 in., Test 11-21			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)	Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.2966	0.6924	0.3958	1	0.3525	0.7931	0.4406
4	0.3589	0.7438	0.3848	4	0.4673	0.9039	0.4366
5	0.3650	0.7419	0.3770	5	0.4782	0.9191	0.4409
10	0.3890	0.7794	0.3904	10	0.5262	0.9856	0.4594
25	0.4462	0.8579	0.4117	25	0.6333	1.1173	0.4840
50	0.5128	0.9373	0.4245	50	0.7495	1.2481	0.4986
100	0.5981	1.0381	0.4399	100	0.8891	1.3989	0.5097
200	0.6545	1.1023	0.4478	200	0.9766	1.4936	0.5170
500	0.8261	1.2983	0.4722	500	1.2330	1.7686	0.5356
1000	0.9632	1.4572	0.4940	1000	1.4312	1.9870	0.5558
2000	1.1401	1.6672	0.5271	2000	1.6793	2.2657	0.5865
5000	1.5329	2.1283	0.5954	5000	2.2034	2.9239	0.7205
10000	2.1296	2.7882	0.6586	10000	2.9450	3.6676	0.7226
15000	2.6131	3.3089	0.6958	15000	3.5782	4.3355	0.7572
20000	3.0115	3.7200	0.7084	20000	4.0890	4.8614	0.7724
25000	3.3506	4.0752	0.7245	25000	4.4685	5.2544	0.7859
30000	3.6274	4.3606	0.7332	30000	4.7758	5.5703	0.7945

Deformation with W.T. at 36 in., Test 11-22			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.2951	0.6850	0.3900
4	0.3891	0.7772	0.3882
5	0.3954	0.7772	0.3818
10	0.4224	0.8189	0.3964
25	0.4855	0.8999	0.4144
50	0.5559	0.9824	0.4265
100	0.6441	1.0809	0.4369
200	0.7001	1.1423	0.4422
500	0.8604	1.3164	0.4560
1000	0.9686	1.4356	0.4669
2000	1.0796	1.5561	0.4765
5000	1.2400	1.7315	0.4915
10000	1.4296	1.9366	0.5070
15000	1.5424	2.0587	0.5164
20000	1.6466	2.1719	0.5254
25000	1.7245	2.2573	0.5327
30000	1.8049	2.3455	0.5406

Table F.35 Continued

Deformation with W.T. at 24 in. (Drawdown), Test 11-23			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.2626	0.5483	0.2857
4	0.3197	0.5983	0.2786
5	0.3253	0.5991	0.2738
10	0.3424	0.6237	0.2813
25	0.3727	0.6601	0.2874
50	0.4040	0.6906	0.2866
100	0.4378	0.7264	0.2886
200	0.4589	0.7495	0.2906
500	0.5166	0.8119	0.2952
1000	0.5576	0.8546	0.2970
2000	0.5997	0.8993	0.2996
5000	0.6584	0.9619	0.3035
10000	0.7207	1.0256	0.3049
15000	0.7618	1.0665	0.3048
20000	0.7995	1.1041	0.3047
25000	0.8284	1.1325	0.3041
30000	0.8432	1.1504	0.3072

Deformation with W.T. at 24 in. (Drawdown), Test 11-24			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.3532	0.6970	0.3438
4	0.4434	0.7767	0.3333
5	0.4477	0.7767	0.3290
10	0.4727	0.8166	0.3439
25	0.5199	0.8770	0.3571
50	0.5676	0.9302	0.3626
100	0.6251	0.9913	0.3663
200	0.6601	1.0281	0.3680
500	0.7572	1.1238	0.3665
1000	0.8188	1.1928	0.3740
2000	0.8870	1.2612	0.3742
5000	0.9774	1.3500	0.3726
10000	1.0773	1.4430	0.3656
15000	1.1552	1.5143	0.3591
20000	1.2089	1.5713	0.3624
25000	1.2569	1.6165	0.3596
30000	1.2906	1.6497	0.3592

Deformation with W.T. at 24 in. (Drawdown), Test 11-25			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.2938	0.5964	0.3027
4	0.3555	0.6459	0.2904
5	0.3595	0.6478	0.2883
10	0.3749	0.6656	0.2907
25	0.4101	0.7068	0.2967
50	0.4458	0.7458	0.3000
100	0.4891	0.7920	0.3029
200	0.5164	0.8213	0.3049
500	0.5789	0.8919	0.3130
1000	0.6395	0.9527	0.3132
2000	0.6999	1.0230	0.3232
5000	0.7890	1.1208	0.3318
10000	0.8577	1.1893	0.3315
15000	0.9217	1.2539	0.3322
20000	0.9704	1.2989	0.3285
25000	1.0023	1.3304	0.3281
30000	1.0347	1.3625	0.3278

Table F.35 Continued

Deformation with W.T. at 12 in. (Drawdown), Test 11-26			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.0396	0.2536	0.2139
4	0.0873	0.2739	0.1866
5	0.0873	0.2764	0.1891
10	0.0923	0.2778	0.1856
25	0.0942	0.2800	0.1858
50	0.0974	0.2830	0.1857
100	0.0990	0.2848	0.1858
200	0.1006	0.2860	0.1854
500	0.1035	0.2893	0.1859
1000	0.1075	0.2934	0.1859
2000	0.1138	0.2992	0.1854
5000	0.1525	0.3404	0.1879
10000	0.1820	0.3694	0.1874
15000	0.2301	0.4160	0.1859
20000	0.2701	0.4550	0.1849
25000	0.2840	0.4679	0.1840
30000	0.2953	0.4783	0.1830

Deformation with W.T. at 12 in. (Drawdown), Test 11-27			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.2286	0.4340	0.2054
4	0.2841	0.4725	0.1884
5	0.2870	0.4801	0.1931
10	0.3011	0.5002	0.1991
25	0.3195	0.5205	0.2009
50	0.3357	0.5368	0.2011
100	0.3517	0.5535	0.2018
200	0.3684	0.5705	0.2021
500	0.3901	0.5926	0.2025
1000	0.4112	0.6160	0.2048
2000	0.4265	0.6334	0.2069
5000	0.4718	0.6786	0.2068
10000	0.5045	0.7112	0.2067
15000	0.5403	0.7456	0.2053
20000	0.5705	0.7762	0.2056
25000	0.6007	0.8053	0.2046
30000	0.6217	0.8300	0.2083

Deformation with W.T. at 12 in. (Drawdown), Test 11-28			
Load Cycles	Permanent (mm)	Total (mm)	Resilient (mm)
1	0.1151	0.3221	0.2070
4	0.1549	0.3389	0.1840
5	0.1575	0.3507	0.1932
10	0.1665	0.3611	0.1946
25	0.1825	0.3788	0.1963
50	0.1968	0.3921	0.1952
100	0.2110	0.4060	0.1950
200	0.2258	0.4200	0.1942
500	0.2442	0.4373	0.1931
1000	0.2592	0.4517	0.1925
2000	0.2758	0.4678	0.1920
5000	0.3086	0.4991	0.1905
10000	0.3607	0.5487	0.1880
15000	0.3971	0.5846	0.1875
20000	0.4225	0.6082	0.1857
25000	0.4437	0.6285	0.1849
30000	0.4586	0.6425	0.1838

Table F.36 Summary of Deformation for Iron Bridge A-2-6 (31%) Soil, 20 psi Plate Load w/o Limerock Base Layer

Resilient Deformation (in.) for Iron Bridge A-2-6 Soil										
Test No.	11-1	11-2	11-3	11-4	11-5	11-6	11-7	11-9	11-10	11-11
Test Date	7/26/2005	7/25/2005	7/27/2005	8/4/2005	9/16/2005	9/22/2005	9/23/2005	12/9/2005	12/13/2005	12/14/2005
Loads (psi)	20	20	20	20	20	20	20	20	21	22
Limerock Layer	No	No	No	No	No	No	No	No	No	No
No.of Plate Load Cycles	Water Table (in. above Embankment)									
	0	0	0	0	12	12	12	24	24	24
1	0.01338	0.00783	0.00550	0.00791	0.00709	0.00951	0.00642	0.01013	0.01447	0.01162
4	0.01312	0.00764	0.00554	0.00739	0.00652	0.00787	0.00571	0.00853	0.01148	0.01040
5	0.01375	0.00785	0.00570	0.00759	0.00662	0.00794	0.00588	0.00890	0.01165	0.01069
10	0.01402	0.00801	0.00575	0.00759	0.00673	0.00786	0.00595	0.00892	0.01174	0.01080
25	0.01364	0.00823	0.00579	0.00758	0.00679	0.00776	0.00598	0.00891	0.01156	0.01108
50	0.01373	0.00822	0.00582	0.00750	0.00681	0.00769	0.00596	0.00888	0.01147	0.01103
100	0.01388	0.00820	0.00579	0.00752	0.00680	0.00761	0.00591	0.00876	0.01134	0.01098
200	0.01394	0.00823	0.00575	0.00758	0.00680	0.00755	0.00586	0.00870	0.01121	0.01087
500	0.01385	0.00809	0.00575	0.00760	0.00670	0.00747	0.00576	0.00859	0.01120	0.01072
1000	0.01375	0.00801	0.00571	0.00763	0.00665	0.00744	0.00565	0.00851	0.01113	0.01063
2000	0.01364	0.00788	0.00561	0.00763	0.00664	0.00736	0.00554	0.00840	0.01106	0.01057
5000	0.01361	0.00765	0.00547	0.00746	0.00652	0.00719	0.00531	0.00828	0.01107	0.01047
10000	0.01396	0.00744	0.00531	0.00751	0.00636	0.00701	0.00521	0.00816	0.01094	0.01052
15000	0.01484	0.00738	0.00520	0.00747	0.00626	0.00688	0.00509	0.00809	0.01086	0.01042
20000	0.01432	0.00734	0.00509	0.00743	0.00615	0.00674	0.00500	0.00807	0.01090	0.01035
25000	0.01388	0.00729	0.00502	0.00736	0.00595	0.00669	0.00493	0.00800	0.01088	0.01044
30000		0.00732	0.00499	0.00733	0.00584	0.00666	0.00472	0.00799	0.01077	0.01045
Average from 10,000 Cycles	0.01425	0.00735	0.00512	0.00742	0.00611	0.00680	0.00499	0.00806	0.01087	0.01044

Table F.37 Summary of Deformation for Iron Bridge A-2-6 (31%) Soil, 50 psi Plate Load w/ Limerock Base Layer

Resilient Deformation (in.) for Iron Bridge A-2-6 Soil																		
Test No.	11-11	11-12	11-13	11-14	11-15	11-16	11-17	11-18	11-19	11-20	11-21	11-22	11-23	11-24	11-25	11-26	11-27	11-28
Test Date	3/9/06	3/10/06	3/13/06	5/18/06	5/19/06	5/22/06	8/1/06	8/2/06	8/3/06	10/19/06	10/20/06	10/23/06	1/9/07	1/10/07	1/11/07	4/2/07	4/3/07	4/4/07
Loads (psi)	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Limerock	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No.of Load Cycles	Water Table (in. above Embankment)																	
	0	0	0	12	12	12	24	24	24	36	36	36	24	24	24	12	12	12
1	0.00641	0.00508	0.00567	0.00558	0.00571	0.00610	0.00835	0.00842	0.00993	0.01558	0.01735	0.01535	0.01125	0.01354	0.01192	0.00842	0.00809	0.00815
4	0.00574	0.00470	0.00521	0.00529	0.00535	0.00588	0.00787	0.00774	0.00976	0.01515	0.01719	0.01528	0.01097	0.01312	0.01143	0.00735	0.00742	0.00724
5	0.00572	0.00483	0.00525	0.00522	0.00562	0.00591	0.00793	0.00801	0.00959	0.01484	0.01736	0.01503	0.01078	0.01295	0.01135	0.00745	0.00760	0.00761
10	0.00584	0.00485	0.00525	0.00526	0.00571	0.00596	0.00805	0.00789	0.00975	0.01537	0.01809	0.01561	0.01108	0.01354	0.01144	0.00731	0.00784	0.00766
25	0.00591	0.00487	0.00555	0.00529	0.00572	0.00595	0.00808	0.00816	0.00994	0.01621	0.01906	0.01632	0.01131	0.01406	0.01168	0.00732	0.00791	0.00773
50	0.00586	0.00483	0.00556	0.00527	0.00572	0.00595	0.00806	0.00806	0.00992	0.01671	0.01963	0.01679	0.01128	0.01428	0.01181	0.00731	0.00792	0.00769
100	0.00580	0.00476	0.00551	0.00528	0.00562	0.00596	0.00798	0.00803	0.00991	0.01732	0.02007	0.01720	0.01136	0.01442	0.01193	0.00732	0.00795	0.00768
200	0.00576	0.00473	0.00550	0.00529	0.00561	0.00596	0.00795	0.00803	0.00990	0.01763	0.02036	0.01741	0.01144	0.01449	0.01201	0.00730	0.00796	0.00765
500	0.00563	0.00466	0.00541	0.00528	0.00550	0.00595	0.00786	0.00785	0.00987	0.01859	0.02109	0.01795	0.01162	0.01443	0.01232	0.00732	0.00797	0.00760
1000	0.00555	0.00460	0.00537	0.00525	0.00548	0.00595	0.00785	0.00796	0.00990	0.01945	0.02188	0.01838	0.01169	0.01473	0.01233	0.00732	0.00806	0.00758
2000	0.00547	0.00457	0.00532	0.00521	0.00541	0.00590	0.00780	0.00796	0.00998	0.02075	0.02309	0.01876	0.01180	0.01473	0.01272	0.00730	0.00815	0.00756
5000	0.00540	0.00451	0.00521	0.00512	0.00530	0.00585	0.00775	0.00809	0.01007	0.02344	0.02836	0.01935	0.01195	0.01467	0.01306	0.00740	0.00814	0.00750
10000	0.00533	0.00445	0.00531	0.00500	0.00525	0.00582	0.00772	0.00808	0.01004	0.02593	0.02845	0.01996	0.01200	0.01439	0.01305	0.00738	0.00814	0.00740
15000	0.00527	0.00436	0.00507	0.00494	0.00519	0.00585	0.00770	0.00812	0.01010	0.02739	0.02981	0.02033	0.01200	0.01414	0.01308	0.00732	0.00808	0.00738
20000	0.00519	0.00431	0.00504	0.00488	0.00515	0.00581	0.00770	0.00797	0.01009	0.02789	0.03041	0.02068	0.01200	0.01427	0.01293	0.00728	0.00810	0.00731
25000	0.00507	0.00431	0.00498	0.00485	0.00514	0.00582	0.00772	0.00830	0.01004	0.02852	0.03094	0.02097	0.01197	0.01416	0.01292	0.00724	0.00805	0.00728
30000	0.00497	0.00438	0.00489	0.00481	0.00514	0.00579	0.00772	0.00823	0.01004	0.02887	0.03128	0.02128	0.01209	0.01414	0.01290	0.00720	0.00820	0.00724
Average from 10,000 Cycles	0.00517	0.00436	0.00506	0.00490	0.00517	0.00582	0.00771	0.00814	0.01006	0.02772	0.03018	0.02065	0.01201	0.01422	0.01298	0.00728	0.00811	0.00732

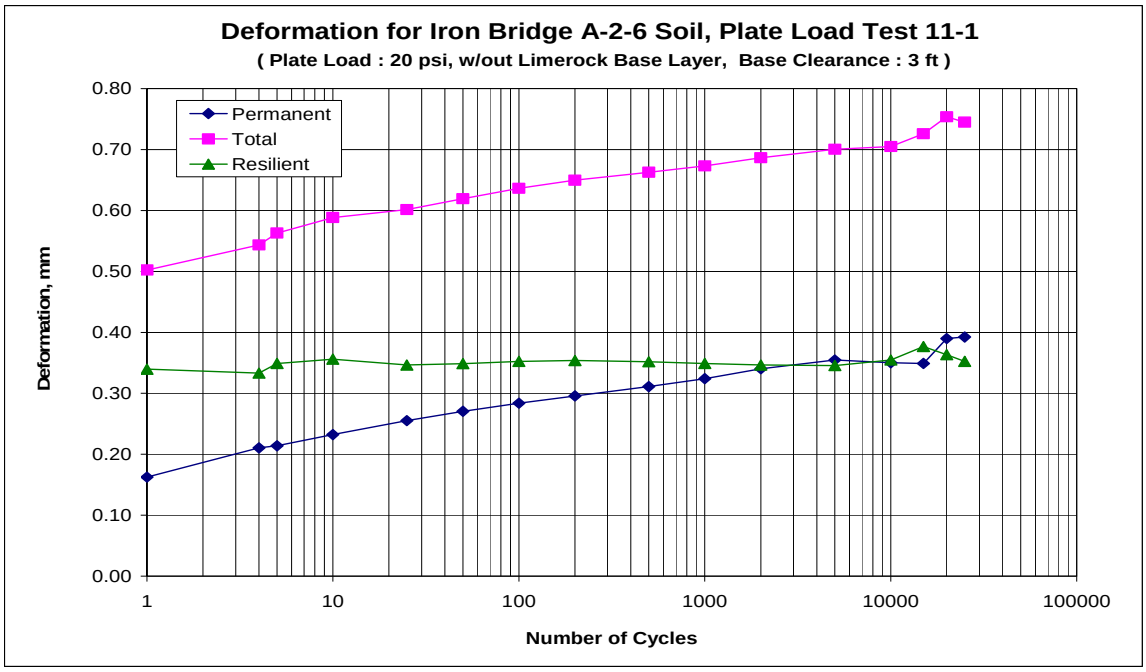


Figure F.150 Iron Bridge A-2-6 (31%) Soil, Deformation under 20 psi Plate Load (Water Table at 0.0 in., w/out Limerock, Test 11-1)

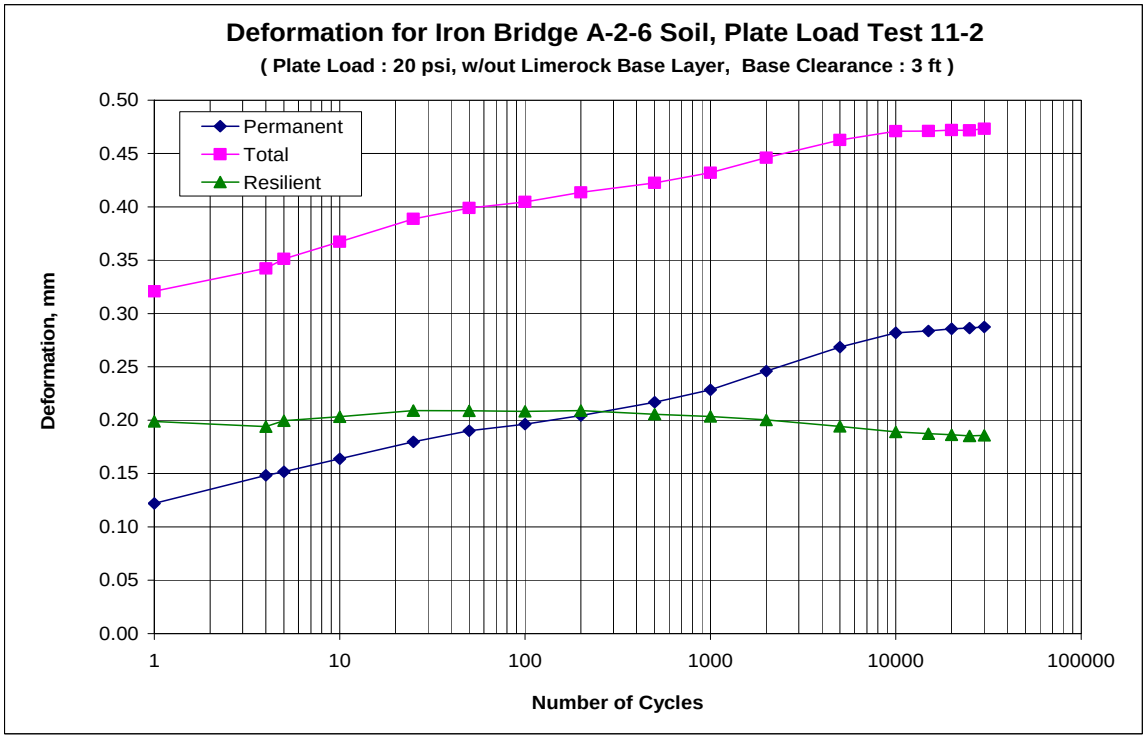


Figure F.151 Iron Bridge A-2-6 (31%) Soil, Deformation under 20 psi Plate Load (Water Table at 0.0 in., w/out Limerock, Test 11-2)

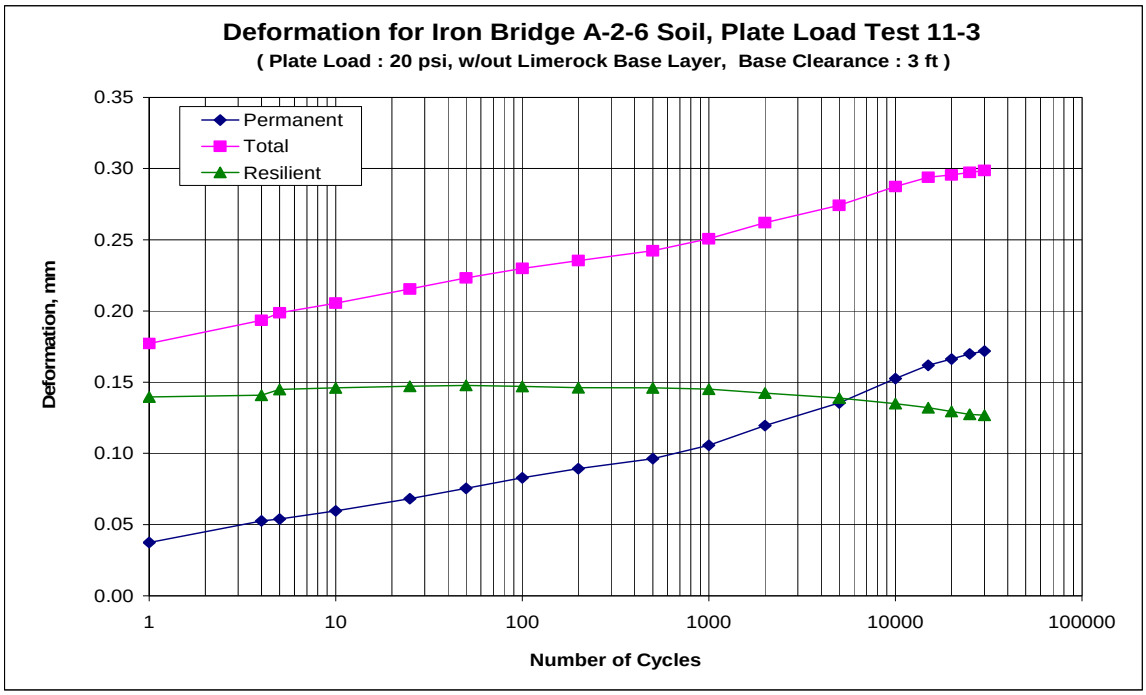


Figure F.152 Iron Bridge A-2-6 (31%) Soil, Deformation under 20 psi Plate Load (Water Table at 0.0 in., w/out Limerock, Test 11-3)

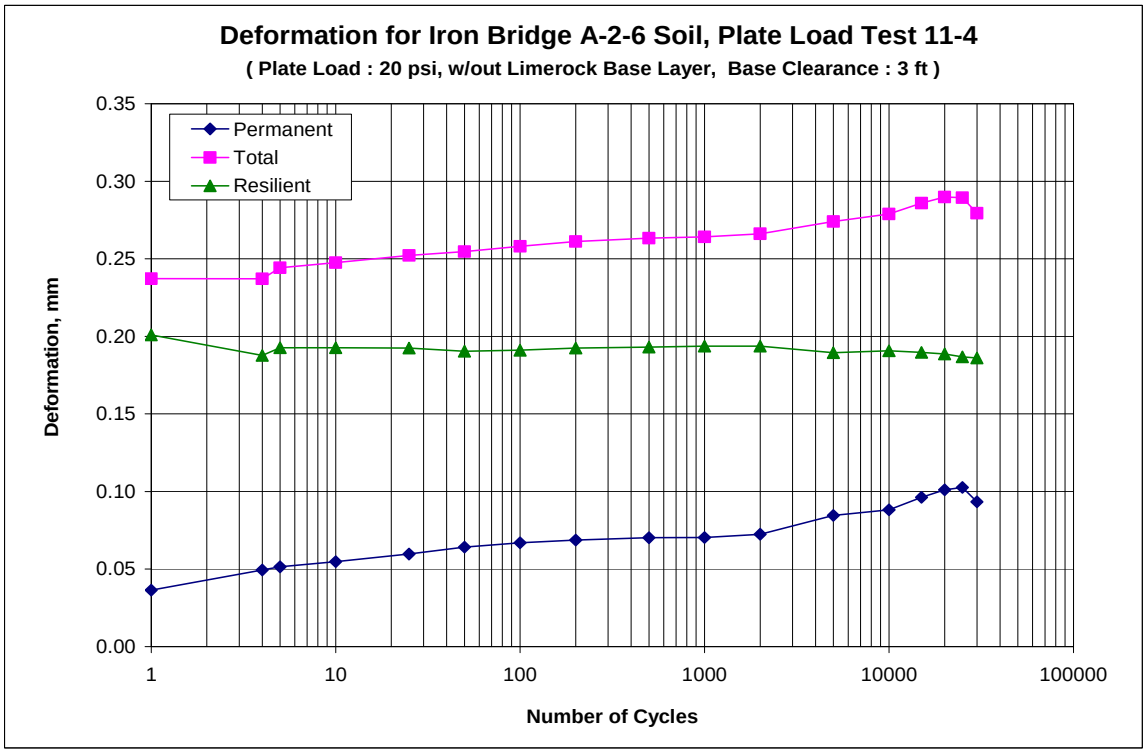


Figure F.153 Iron Bridge A-2-6 (31%) Soil, Deformation under 20 psi Plate Load (Water Table at 0.0 in., w/out Limerock, Test 11-4)

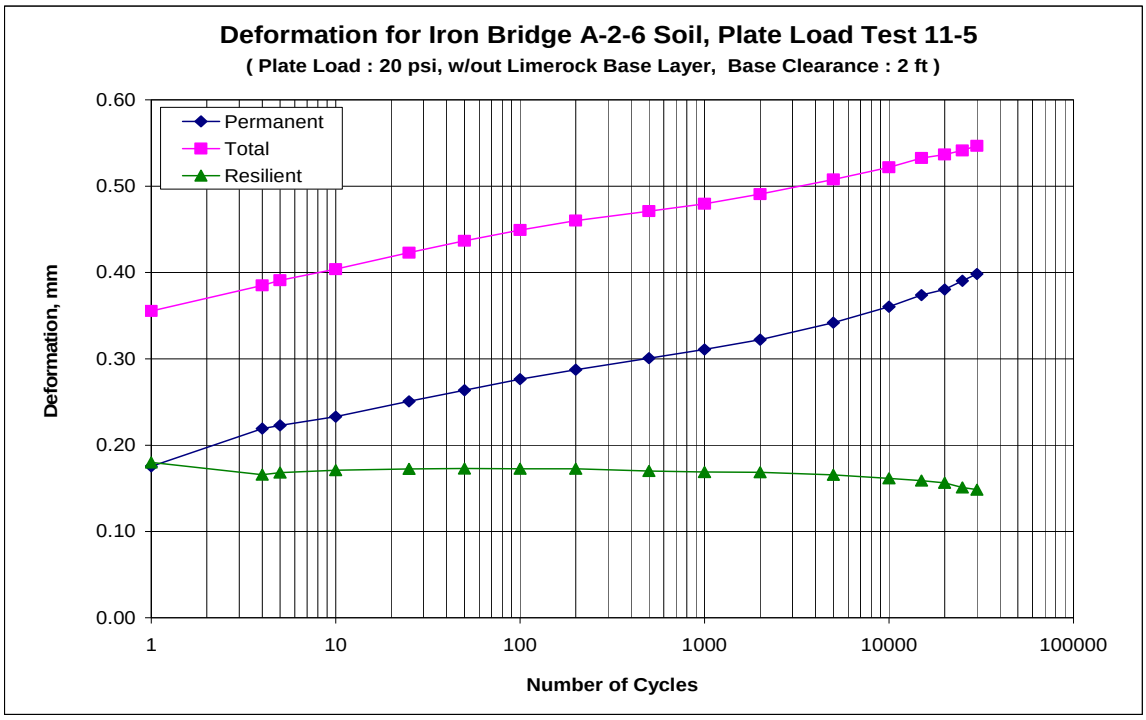


Figure F.154 Iron Bridge A-2-6 (31%) Soil, Deformation under 20 psi Plate Load (Water Table at 12 in., w/out Limerock, Test 11-5)

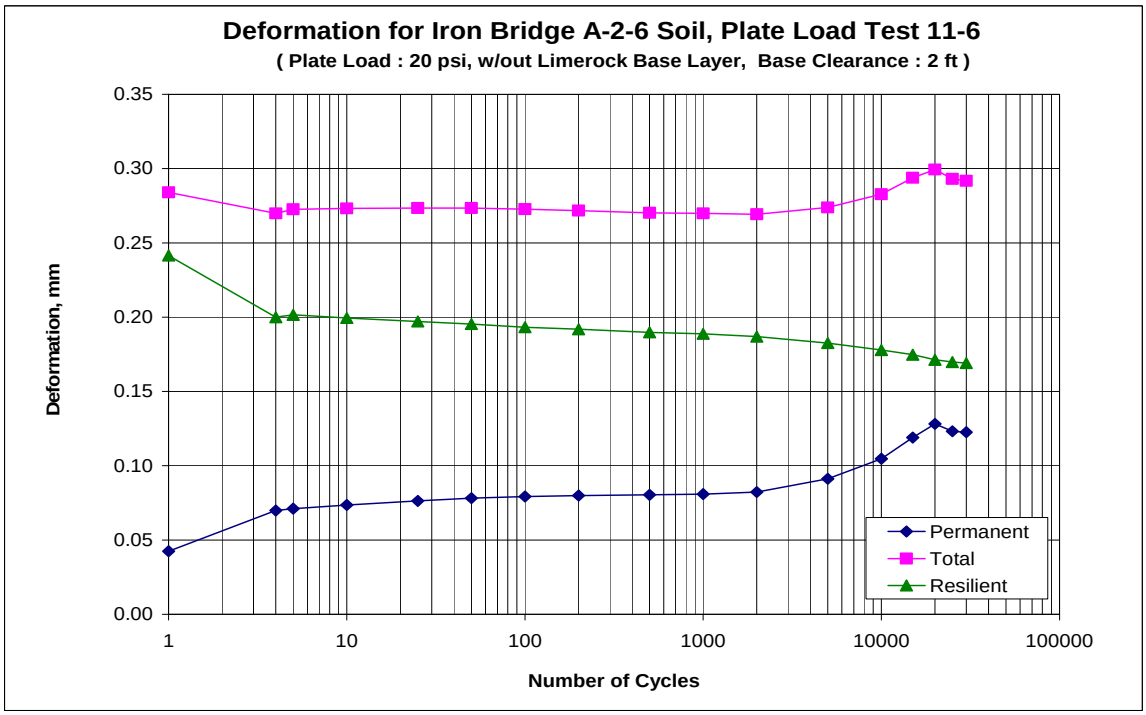


Figure F.155 Iron Bridge A-2-6 (31%) Soil, Deformation under 20 psi Plate Load (Water Table at 12 in., w/out Limerock, Test 11-6)

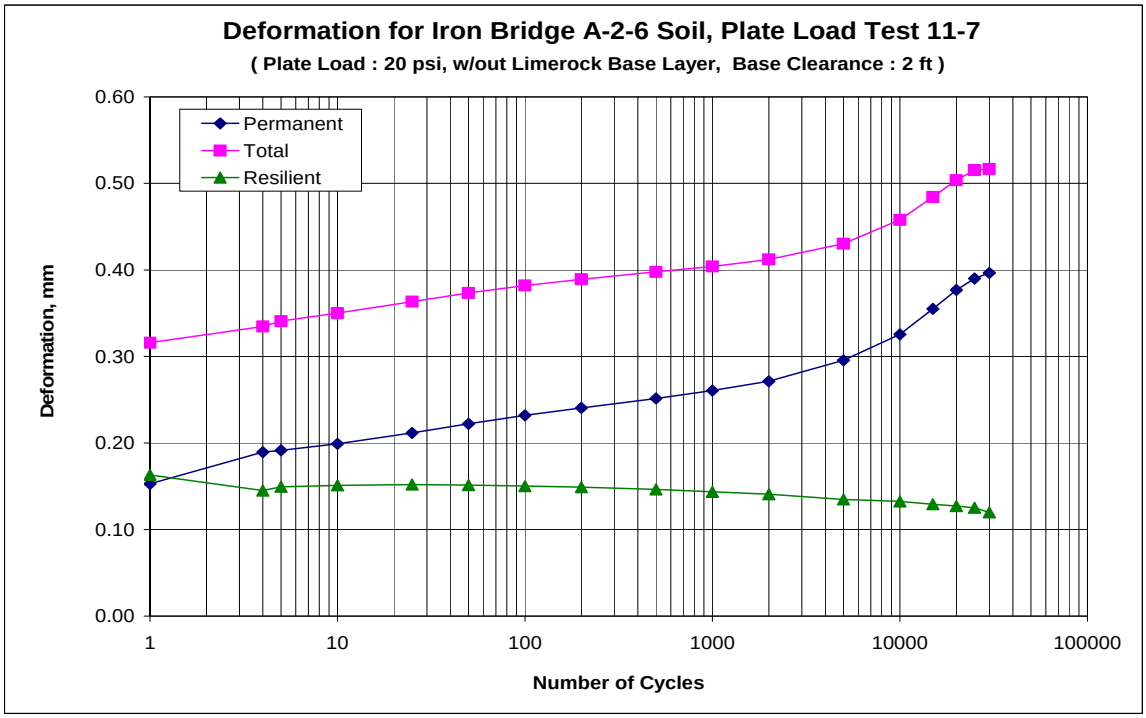


Figure F.156 Iron Bridge A-2-6 (31%) Soil, Deformation under 20 psi Plate Load (Water Table at 12 in., w/out Limerock, Test 11-7)

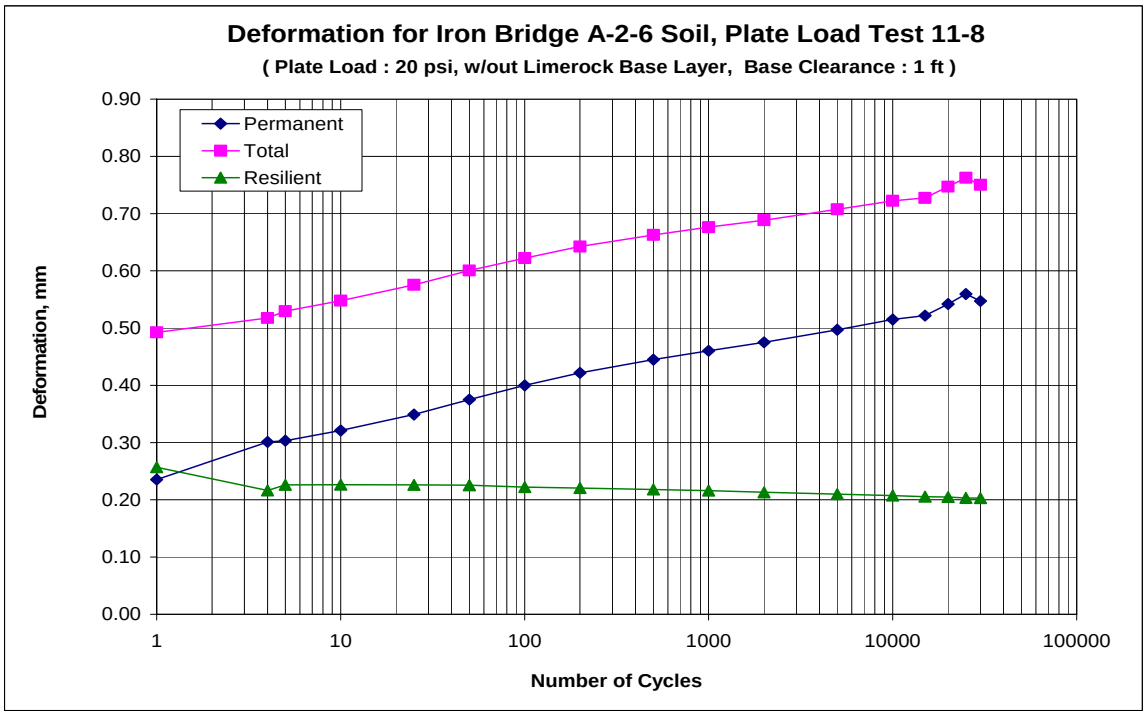


Figure F.157 Iron Bridge A-2-6 (31%) Soil, Deformation under 20 psi Plate Load (Water Table at 24 in., w/out Limerock, Test 11-8)

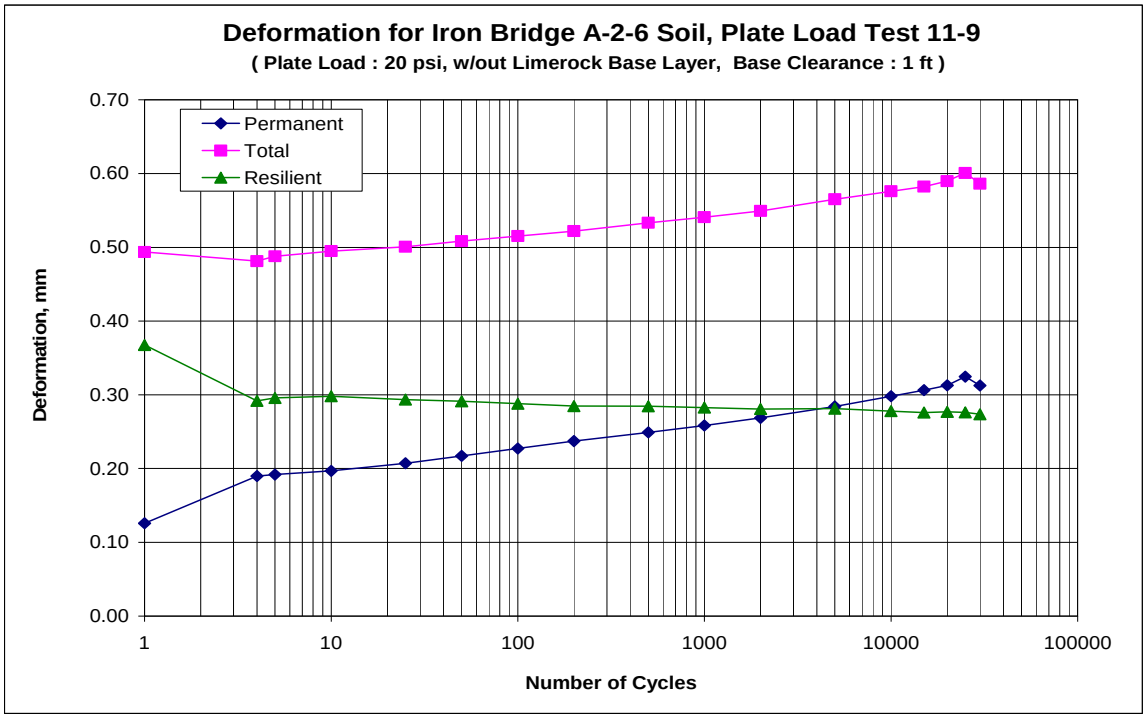


Figure F.158 Iron Bridge A-2-6 (31%) Soil, Deformation under 20 psi Plate Load (Water Table at 24 in., w/out Limerock, Test 11-9)

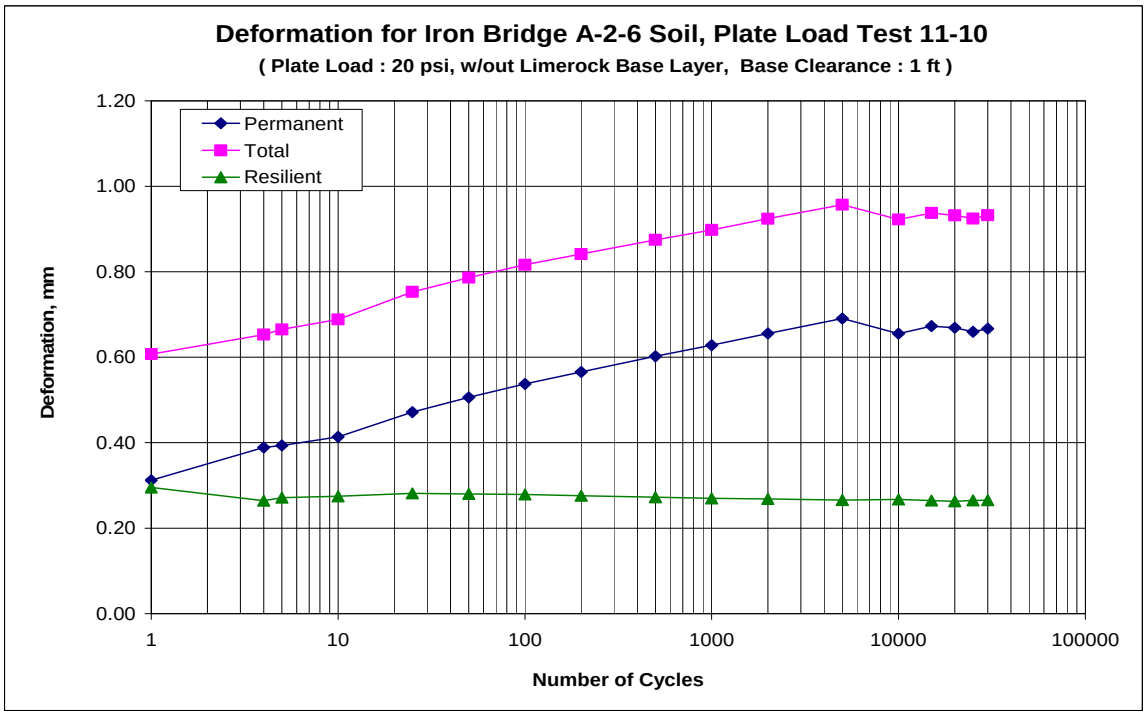


Figure F.159 Iron Bridge A-2-6 (31%) Soil, Deformation under 20 psi Plate Load (Water Table at 24 in., w/out Limerock, Test 11-10)

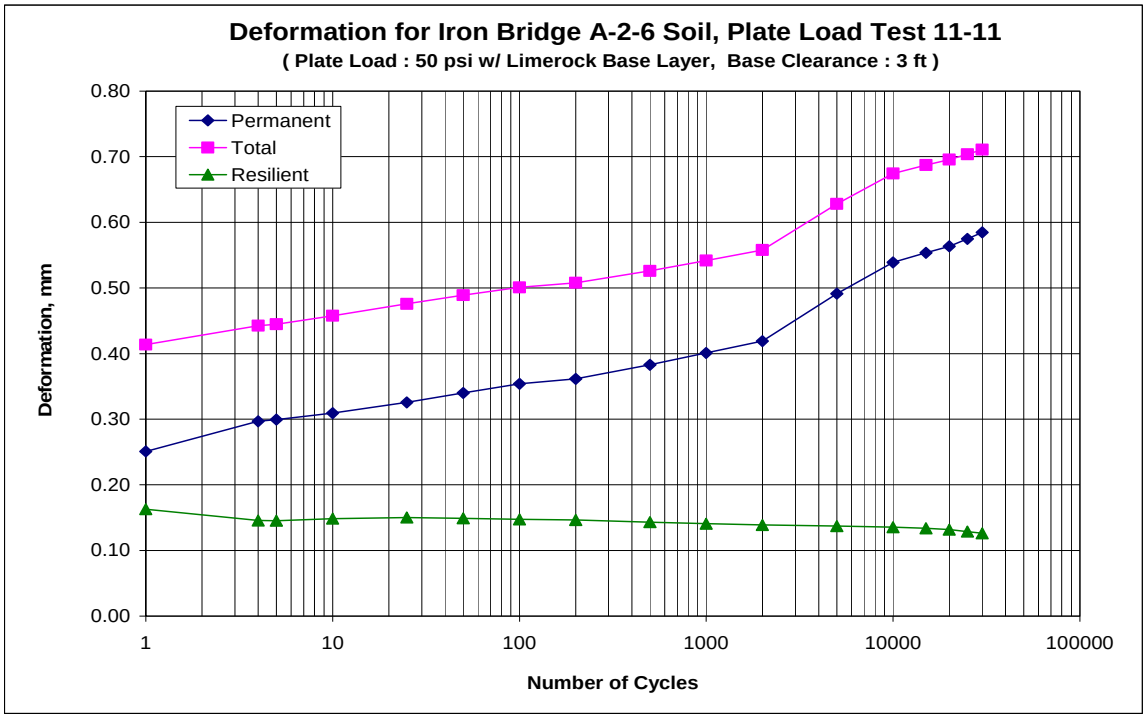


Figure F.160 Iron Bridge A-2-6 (31%) Soil, Deformation under 50 psi Plate Load (Water Table at 0.0 in., w/ Limerock, Test 11-11)

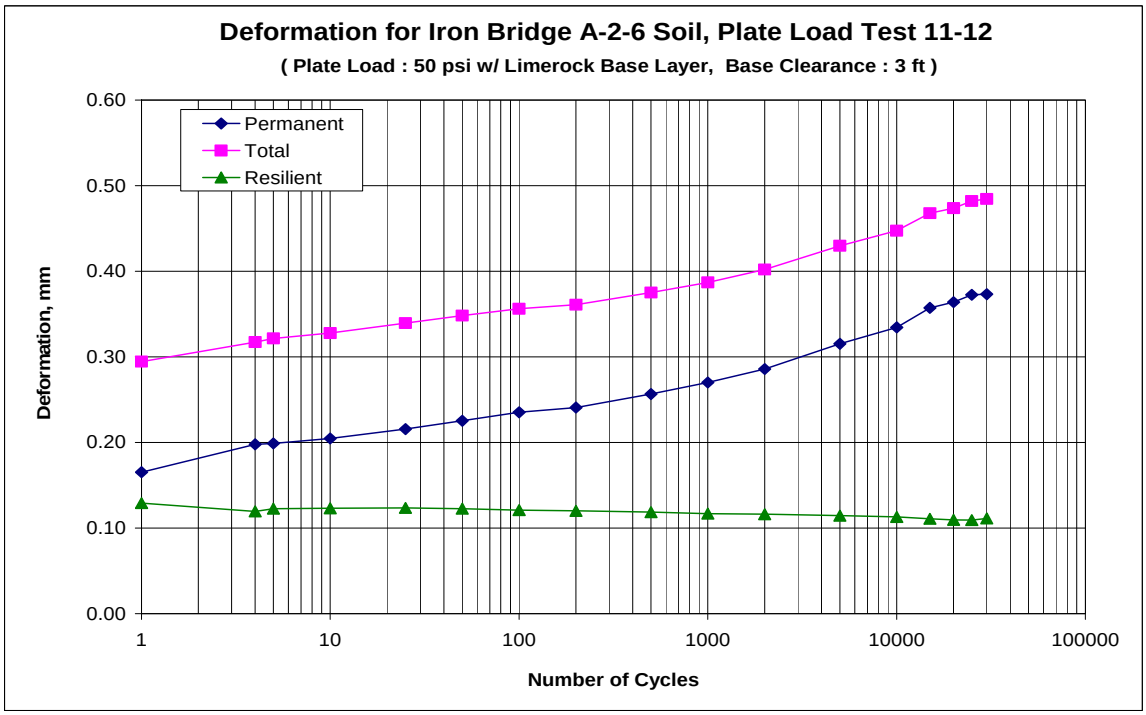


Figure F.161 Iron Bridge A-2-6 (31%) Soil, Deformation under 50 psi Plate Load (Water Table at 0.0 in., w/ Limerock, Test 11-12)

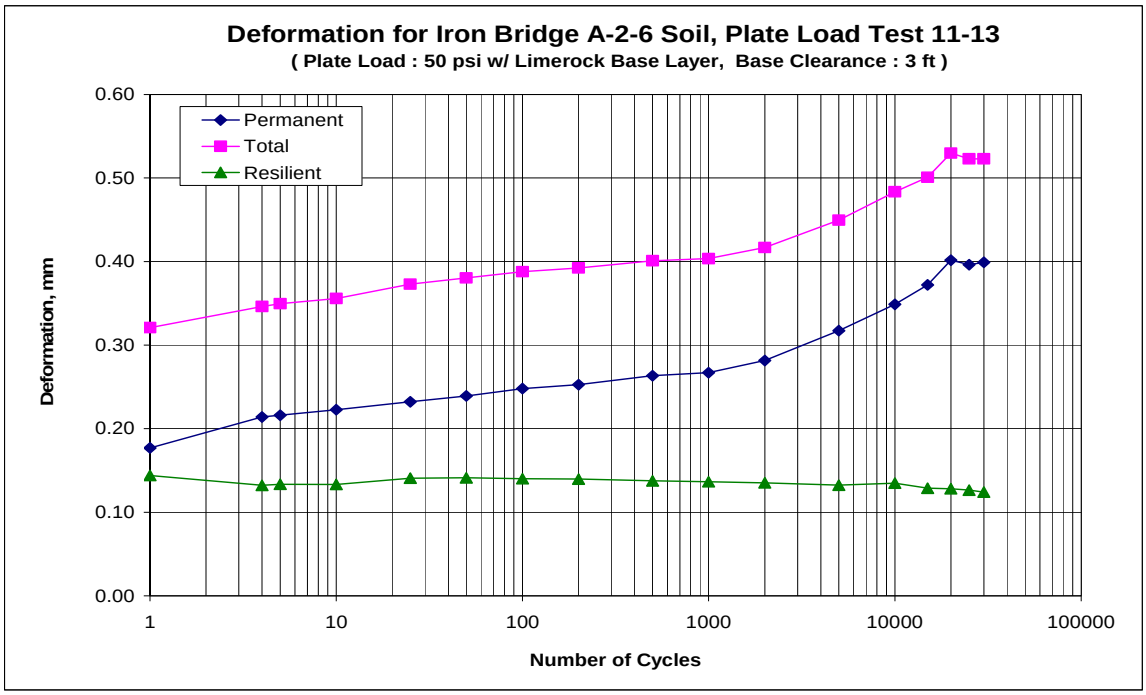


Figure F.162 Iron Bridge A-2-6 (31%) Soil, Deformation under 50 psi Plate Load (Water Table at 0.0 in., w/ Limerock, Test 11-13)

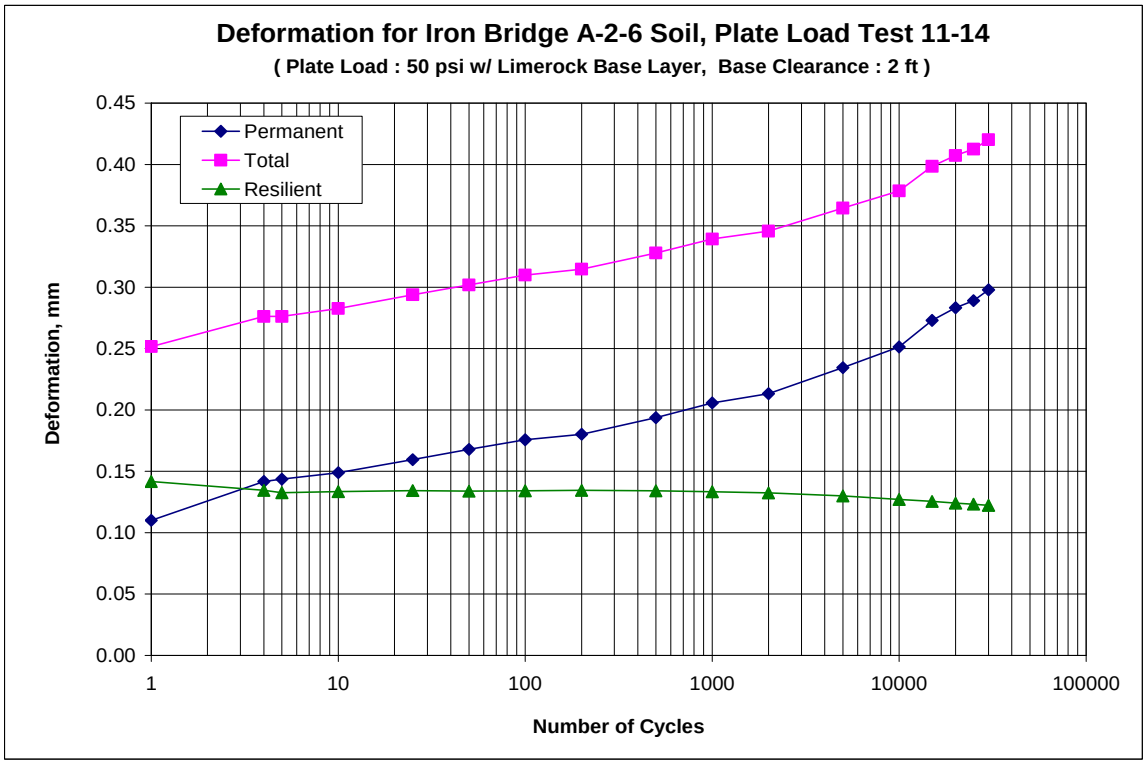


Figure F.163 Iron Bridge A-2-6 (31%) Soil, Deformation under 50 psi Plate Load (Water Table at 12 in., w/ Limerock, Test 11-14)

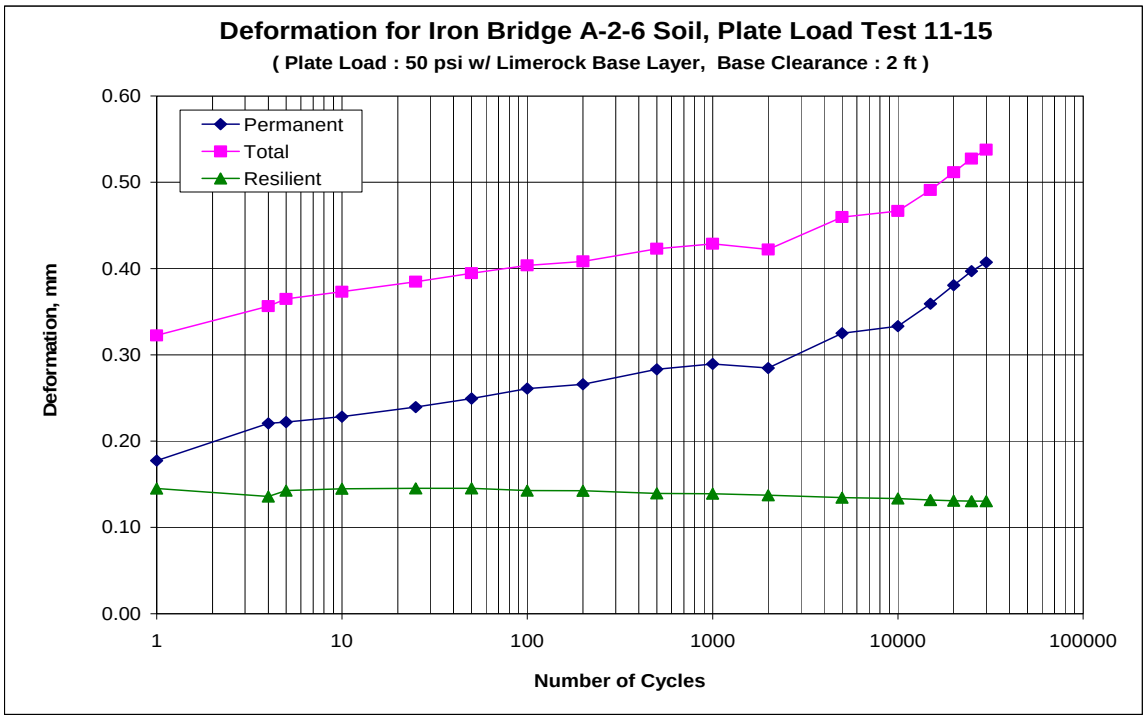


Figure F.164 Iron Bridge A-2-6 (31%) Soil, Deformation under 50 psi Plate Load (Water Table at 12 in., w/ Limerock, Test 11-15)

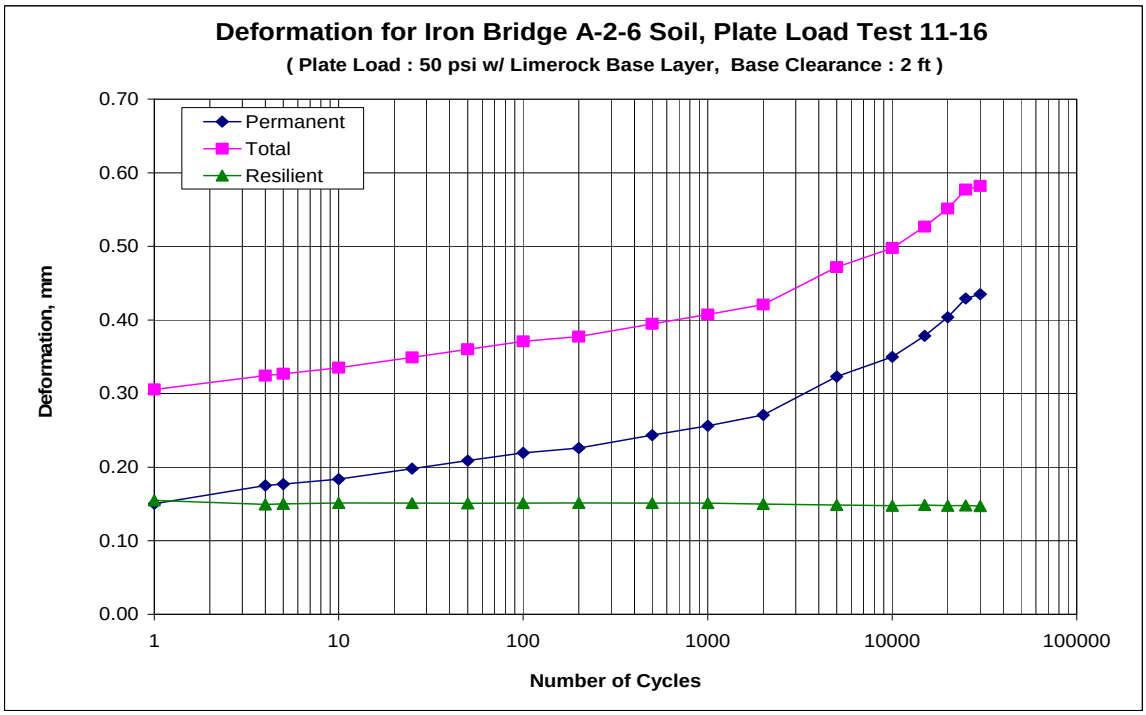


Figure F.165 Iron Bridge A-2-6 (31%) Soil, Deformation under 50 psi Plate Load (Water Table at 12 in., w/ Limerock, Test 11-16)

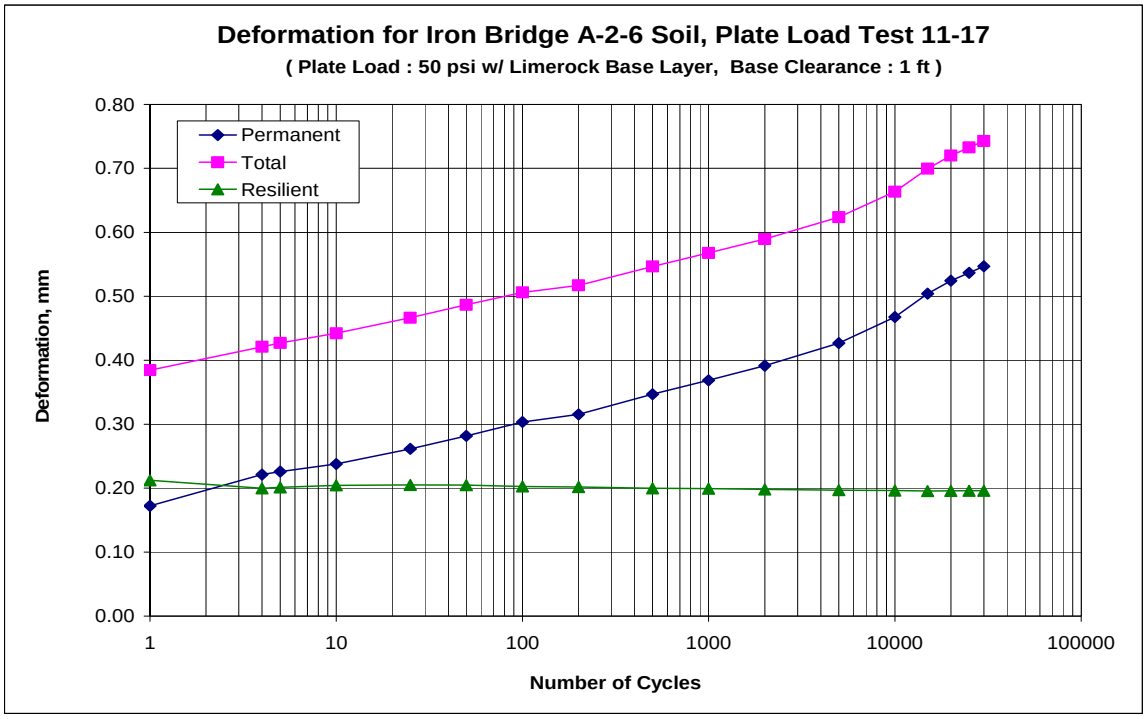


Figure F.166 Iron Bridge A-2-6 (31%) Soil, Deformation under 50 psi Plate Load (Water Table at 24 in., w/ Limerock, Test 11-17)

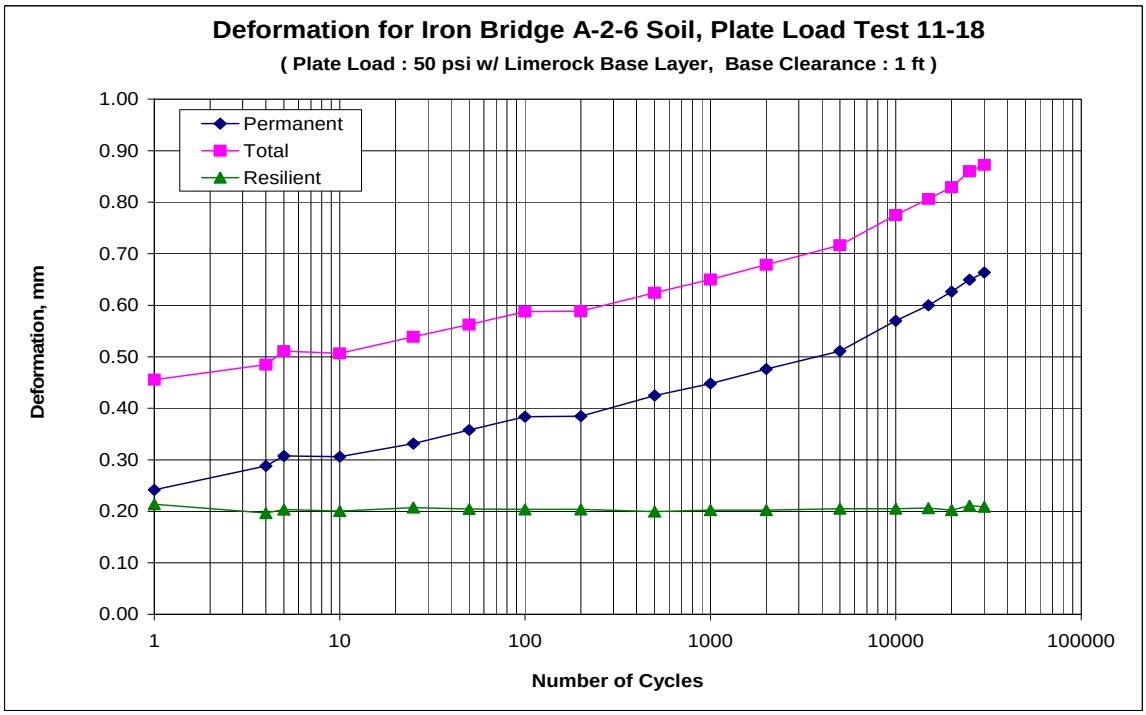


Figure F.167 Iron Bridge A-2-6 (31%) Soil, Deformation under 50 psi Plate Load (Water Table at 24 in., w/ Limerock, Test 11-18)

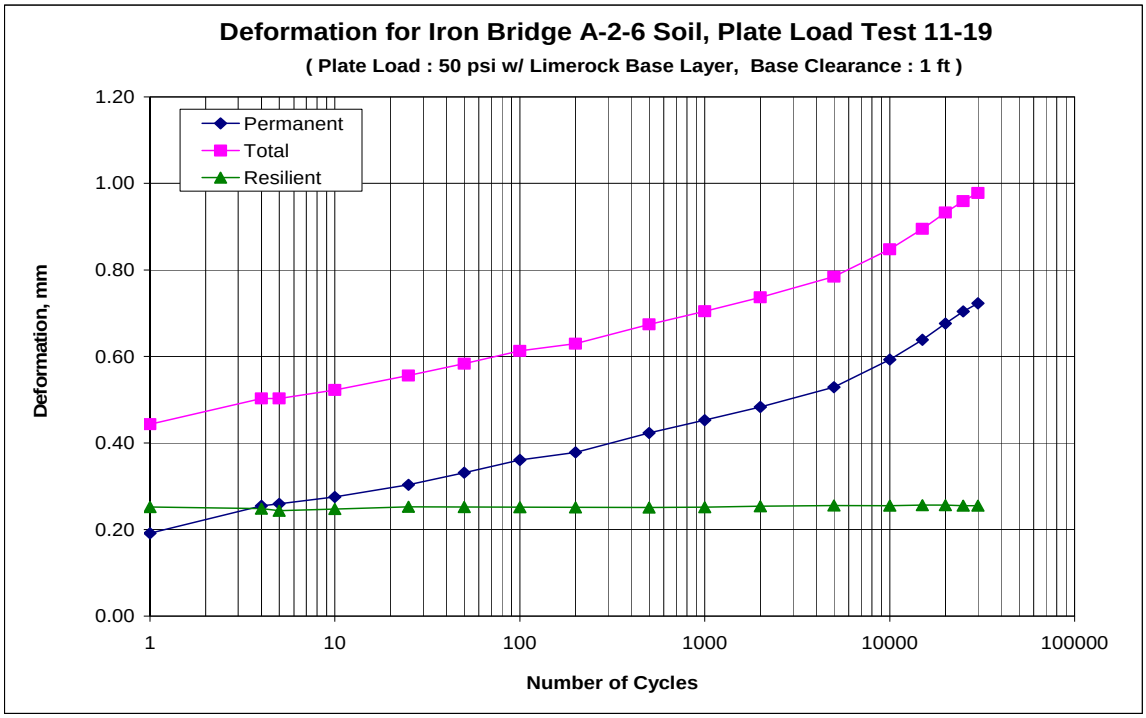


Figure F.168 Iron Bridge A-2-6 (31%) Soil, Deformation under 50 psi Plate Load (Water Table at 24 in., w/ Limerock, Test 11-19)

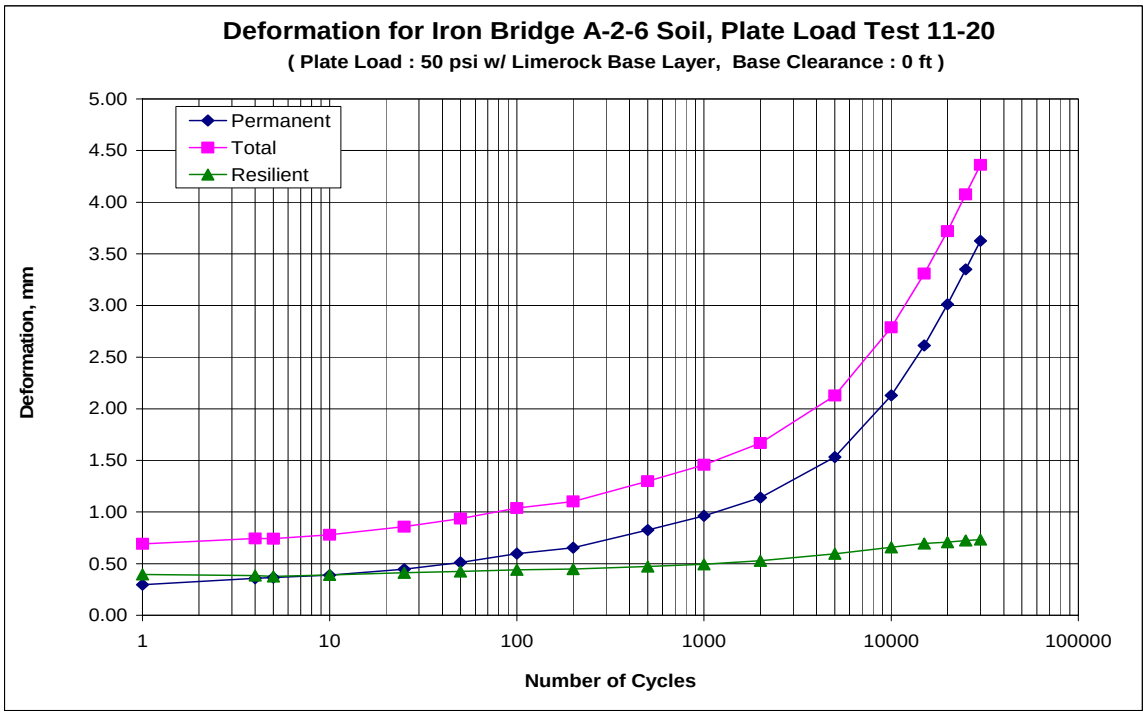


Figure F.169 Iron Bridge A-2-6 (31%) Soil, Deformation under 50 psi Plate Load (Water Table at 36 in., w/ Limerock, Test 11-20)

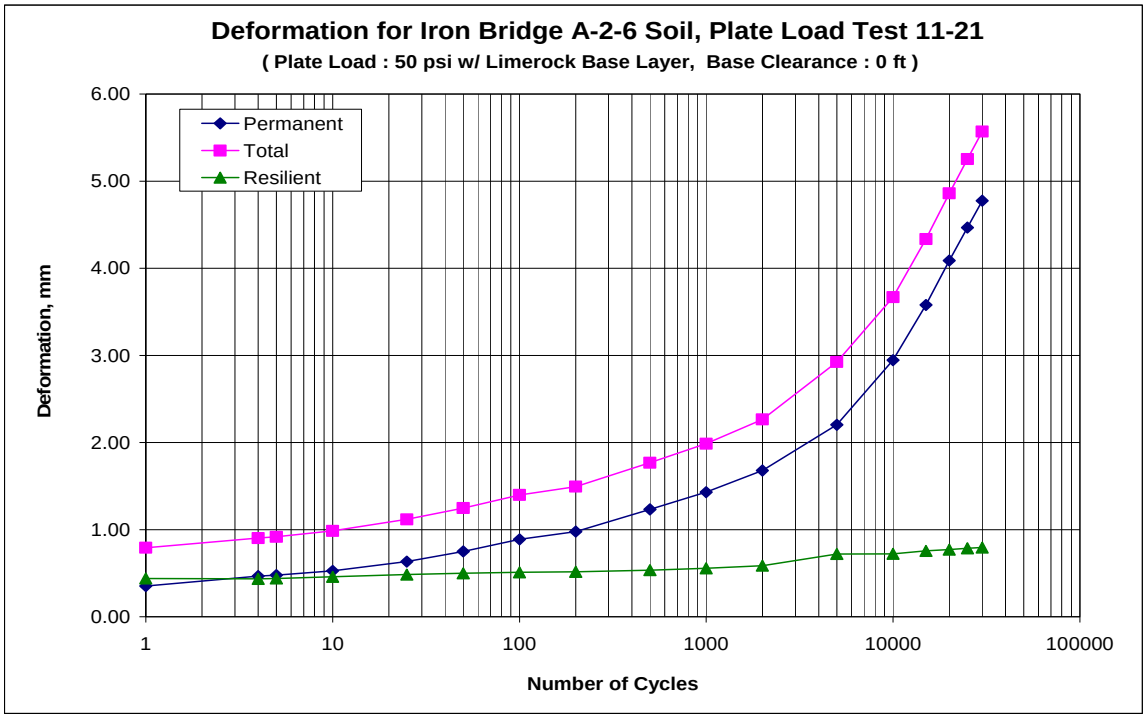


Figure F.170 Iron Bridge A-2-6 (31%) Soil, Deformation under 50 psi Plate Load (Water Table at 36 in., w/ Limerock, Test 11-21)

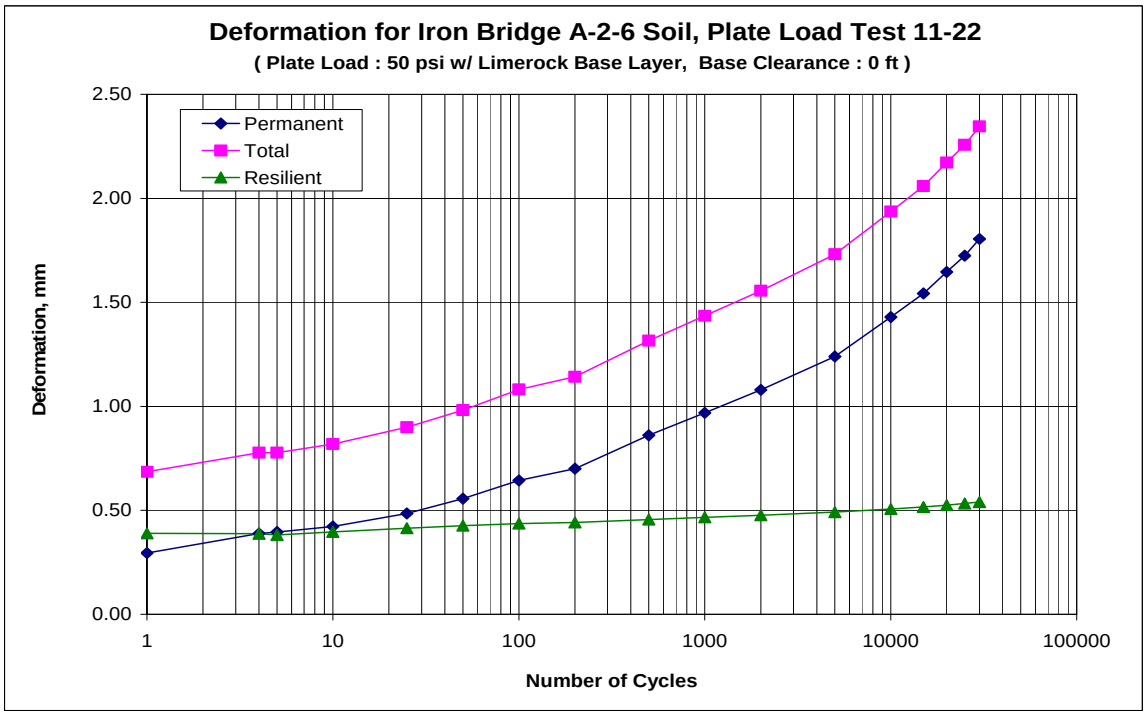


Figure F.171 Iron Bridge A-2-6 (31%) Soil, Deformation under 50 psi Plate Load (Water Table at 36 in., w/ Limerock, Test 11-22)

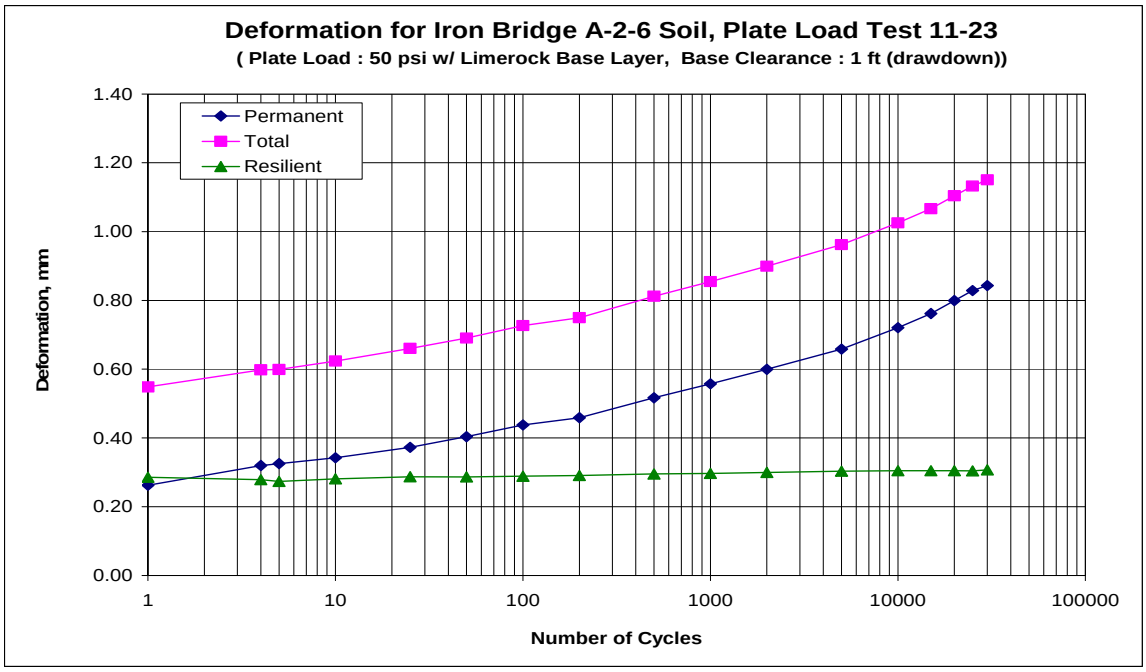


Figure F.172 Iron Bridge A-2-6 (31%) Soil, Deformation under 50 psi Plate Load (Water Table at 24 in. (Drawdown), w/ Limerock, Test 11-23)

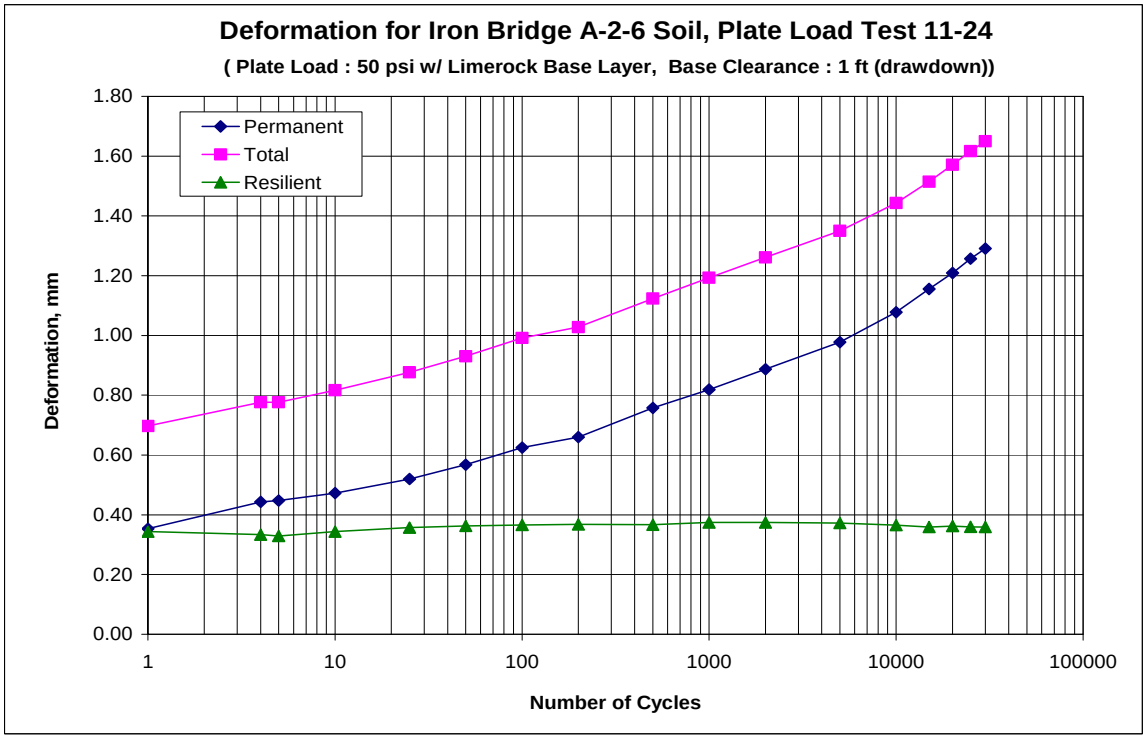


Figure F.173 Iron Bridge A-2-6 (31%) Soil, Deformation under 50 psi Plate Load (Water Table at 24 in. (Drawdown), w/ Limerock, Test 11-24)

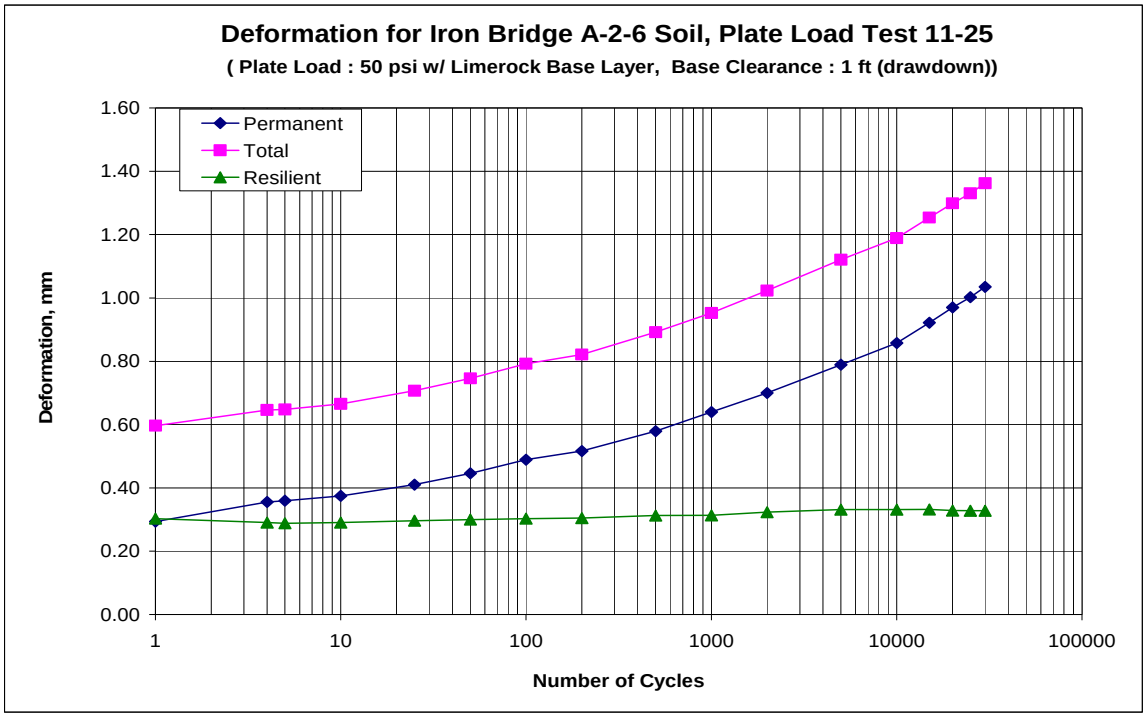


Figure F.174 Iron Bridge A-2-6 (31%) Soil, Deformation under 50 psi Plate Load (Water Table at 24 in. (Drawdown), w/ Limerock, Test 11-25)

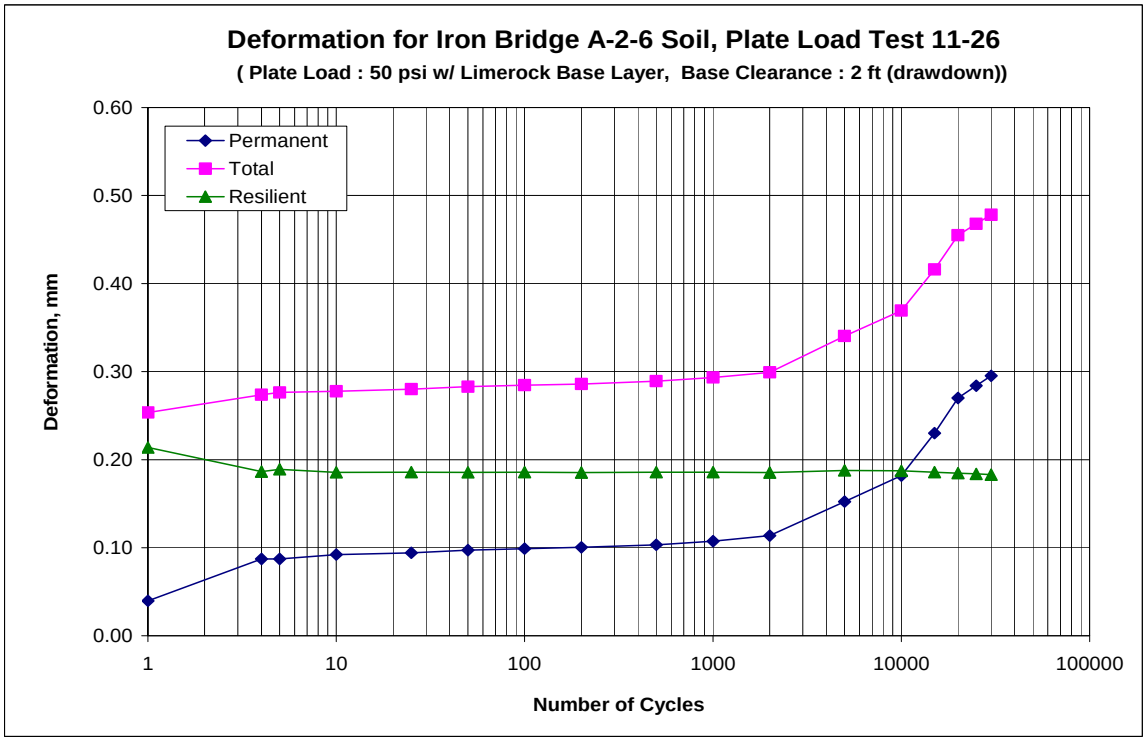


Figure F.175 Iron Bridge A-2-6 (31%) Soil, Deformation under 50 psi Plate Load (Water Table at 12 in. (Drawdown), w/ Limerock, Test 11-26)

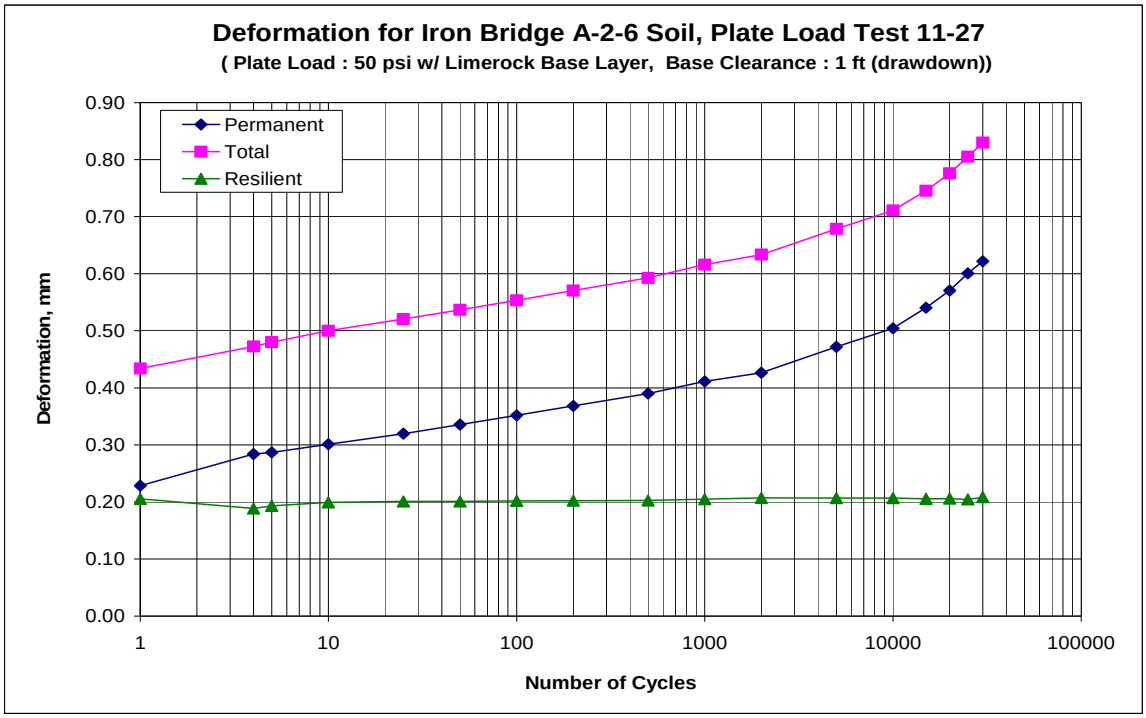


Figure F.176 Iron Bridge A-2-6 (31%) Soil, Deformation under 50 psi Plate Load (Water Table at 12 in. (Drawdown), w/ Limerock, Test 11-27)

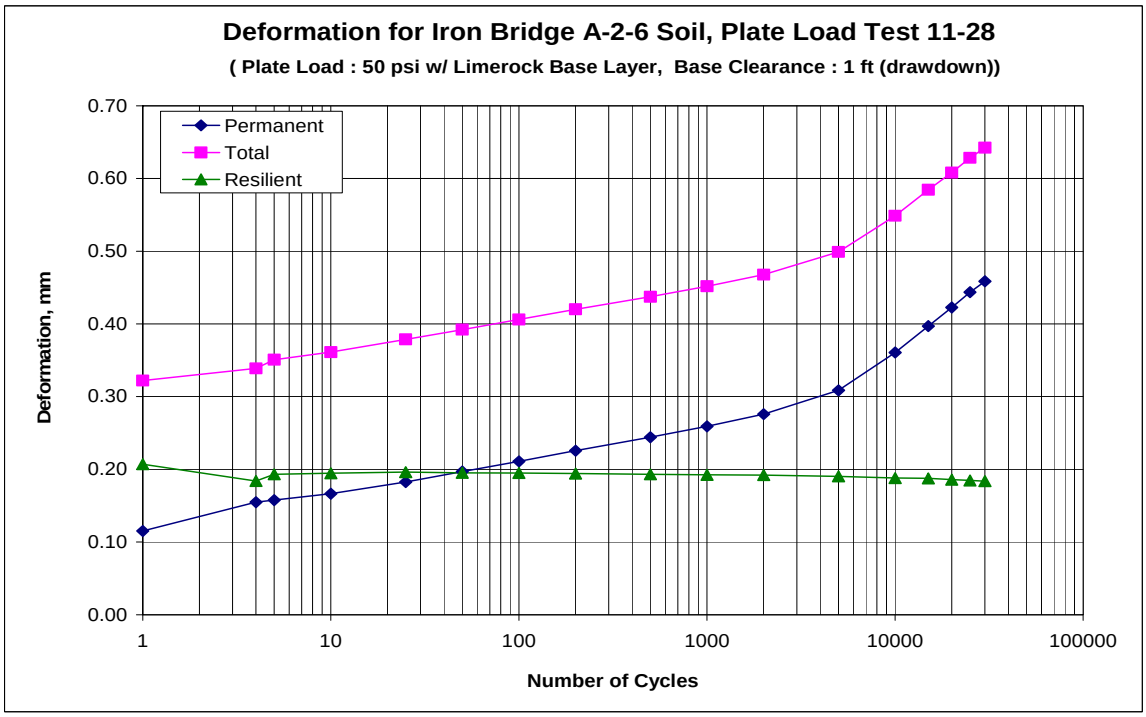


Figure F.177 Iron Bridge A-2-6 (31%) Soil, Deformation under 50 psi Plate Load (Water Table at 12 in. (Drawdown), w/ Limerock, Test 11-28)

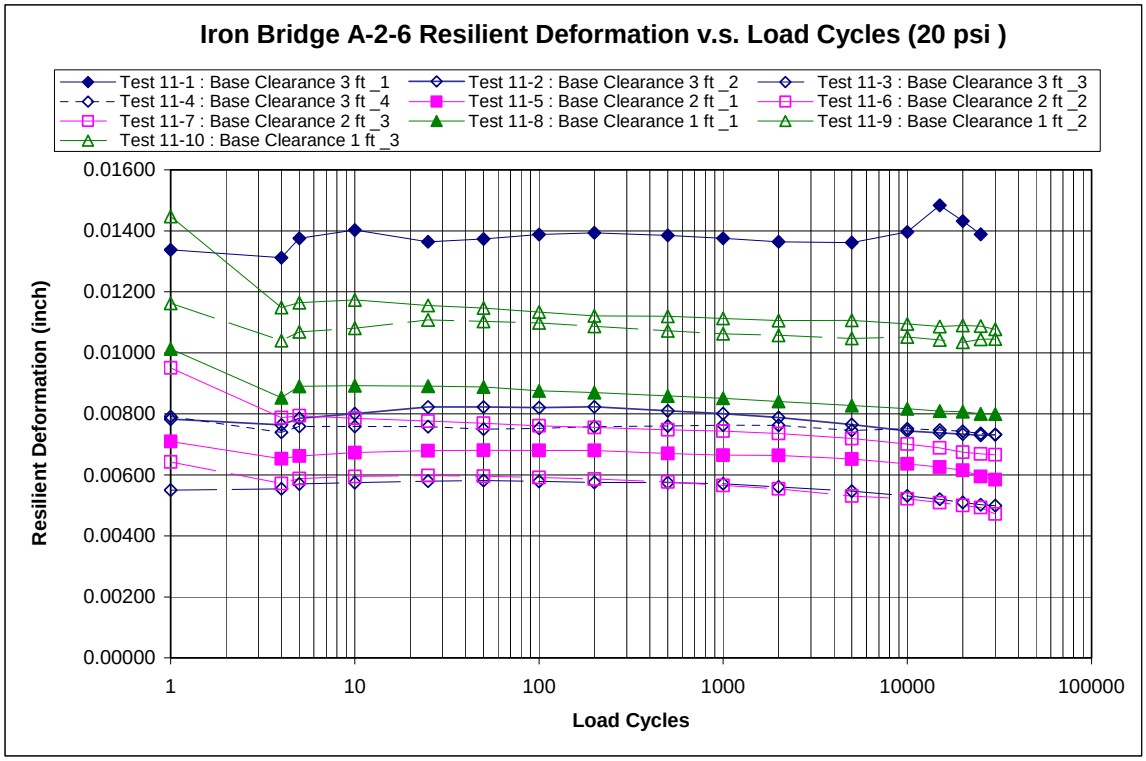


Figure F.178 Iron Bridge A-2-6 Soil, Deformation Summary under 20 psi Plate Load at Different Water Table Level

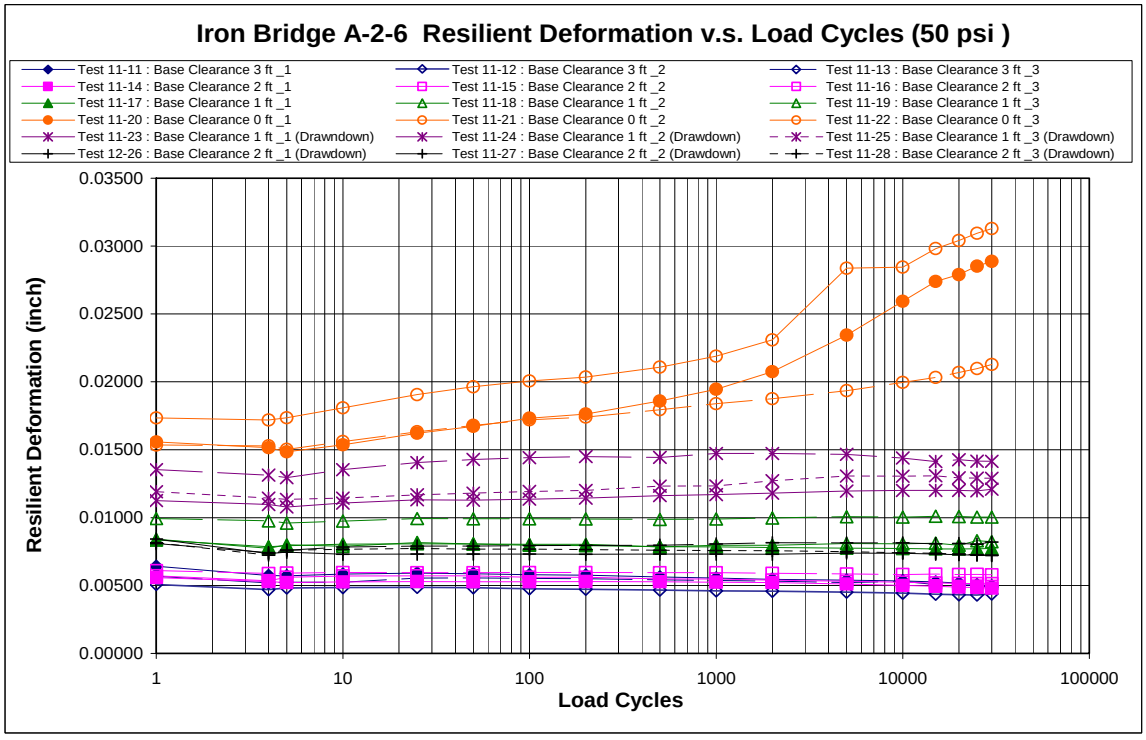


Figure F.179 Iron Bridge A-2-6 Soil, Deformation Summary under 50 psi Plate Load at Different Water Table Level

APPENDIX G

LAYERED SYSTEM THEORY

G.1 Layered System

Flexible pavements are layered systems with better materials on top and cannot be represented by a homogeneous mass, so the use of Burmister's layered theory is more appropriate. Burmister (1943) *(7)* first developed solutions for a two-layer system and then extended them to a three-layer system. The theory of stresses and displacements in a two-layer system was developed in accordance with the methods of the mathematical theory of elasticity and is presented in order to reveal some of the fundamental relations existing between the physical factors, which control the load-settlement relations, and in order to provide a practical method of analysis for the design of pavement. The theory reveals the controlling influence of two important ratios on the load-settlement characteristics of the "two-layer system", namely: (1) the ratio r/h_1 of the radius bearing area to the thickness of the reinforcing or pavement layer; and (2) the ratio E_2/E_1 of the modulus of the subgrade to that of the pavement. For practical design purposes, the theoretical results have been evaluated

numerically and expressed in Basic Influence Curves, giving values of the settlement coefficient F_w in terms of these basic ratios. The settlement coefficient is applied as a simple multiplying or correction factor to the familiar Boussinesq Equation for surface settlement at the center of a circular flexible bearing area. The layer system theory was adopted to calculate subgrade layer in test-pit.

G.1.1 Two-layer System Theory Assumptions and Conditions

Boussinesq solved the problem of stresses and displacements in a uniform deposit for concentrated load applied at the surface. The scientific approach for the present problem of the stresses and displacements is a more general case of a "two-layer system" by the methods of the mathematical theory of elasticity, which is believed to be correct. The general solution of the "two-layer" problem required that the necessary assumptions of the theory of elasticity be made, and that certain essential boundary and continuity conditions be satisfied, but did not require any radical simplifying assumptions beforehand as to the nature of the distribution of stresses on the subgrade or of their relation to displacements(Burmister, 1943)(Huang, 1993).

The "two-layer system", illustrated in Figure N.1, consists of a surface or pavement layer 1 of a certain thickness h_1, which rests continuously upon and reinforces a weaker subgrade layer 2. A surface load is applied, uniformly distributed over a flexible bearing area of radius r. The application of the theory of elasticity to the solution of the problem required the following assumptions and conditions:

The necessary assumptions of the theory of elasticity were made that the soils of each of the two layers are homogeneous, isotropic, elastic materials, for which Hooke's law is valid. While these assumptions are only imperfectly satisfied in natural soil deposits, the evaluation of full-scale load tests should yield average strength properties of the soils, which are fairly representative within the range of permissible settlements.

The surface reinforcing layer 1 is assumed to be weightless and to be infinite in extent in the horizontal direction, but of finite thickness h_1. The subgrade layer 2 is assumed to be infinite in extent both horizontally and vertically downward.

The solution of the problem must satisfy certain necessary boundary conditions, namely, that the surface of layer 1 must be free of normal and shearing stresses outside

the limits of the loaded area, and that at infinite depth the stresses and displacements in the subgrade layer 2 must be equal to zero.

Most important of all, the solution for the "two-layer" problem must satisfy certain essential continuity conditions of stress for layer 1 and layer 2. It is assumed that the two layers are continuously in contact and act together as an elastic medium of composite nature. Furthermore, it is assumed that the subgrade provides initially a continuous uniform support for the pavement layer, which is really the primary condition to be achieved in good construction practice. Continuity requires that the normal and shearing stresses and the vertical and horizontal displacements must be equal in the two layers at the interface. Only in the horizontal radial stress σ_r will there be a discontinuity across the interface. This follows from the fact that, since the horizontal displacements u_1 and u_2 must be equal, the radial stress σ_{r1} and σ_{r2} either side of the interface will be different and must be determined by the modulii E_1 and E_2, respectively.

In order to obtain a practical solution of the problem and to reduce the complications, it was necessary to assume that Poisson's ratio was 0.35 in both layers. The value of

0.35 was used, because it was considered to be somewhat more representative of the actual conditions in Florida pavement conditions(Burmister, 1943)(Huang, 1993).

G.1.2 Mathematical Theory of Elasticity

The following are equations of elasticity for the three-dimensional problem of axial symmetry.

(a) Equations of Equilibrium.

$$\frac{\partial \sigma_r}{\partial r} + \frac{\partial \tau_{rz}}{\partial z} + \frac{\sigma_r - \sigma_\theta}{r} = 0 \qquad \text{(G-1a)}$$

$$\frac{\partial \tau_{rz}}{\partial r} + \frac{\partial \sigma_z}{\partial z} + \frac{\tau_{rz}}{r} = 0 \qquad \text{(G-1b)}$$

(b) Equations of Compatibility.

$$\nabla^4 = 0 \qquad \text{(G-2a)}$$

$$\nabla^2 = \left[\frac{\partial^2}{\partial r^2} + \frac{1}{r}\frac{\partial}{\partial_r} + \frac{\partial^2}{\partial z^2} \right] \qquad \text{(G-2b)}$$

(c) Equations of Elasticity.

Stress

$$\sigma_z = \frac{\partial}{\partial z}\left[(2-\mu)\nabla^2\phi - \frac{\partial^2\phi}{\partial z^2} \right] \qquad \text{(G-3a)}$$

$$\sigma_r = \frac{\partial}{\partial z}\left[\mu\nabla^2\phi - \frac{\partial^2\phi}{\partial r^2} \right] \qquad \text{(G-3b)}$$

$$\sigma_\theta = \frac{\partial}{\partial z}\left[\mu\nabla^2\phi - \frac{1}{r}\frac{\partial\phi}{\partial r} \right] \qquad \text{(G-3c)}$$

$$\tau_{rz} = \frac{\partial}{\partial r}\left[(1-\mu)\nabla^2\phi - \frac{\partial^2\phi}{\partial z^2} \right] \qquad \text{(G-3d)}$$

Displacement

$$W = \frac{1+\mu}{E}\left[(1-2\mu)\nabla^2\phi + \frac{\partial^2\phi}{\partial r^2} + \frac{1}{r}\frac{\partial\phi}{\partial r}\right] \quad \text{(G-4a)}$$

$$u = -\frac{1+\mu}{E}\left[\frac{\partial^2\phi}{\partial r^2}\right] \quad \text{(G-4b)}$$

After equation solving, there are two simple equations for calculating vertical surface deflections.

(a) Flexible bearing area

$$W = \frac{2(1-\mu^2)}{E_2} prF_2 \quad \text{(G-5)}$$

(b) Rigid bearing area

$$W = \frac{\pi(1-\mu^2)}{E_2} prF_2 \quad \text{(G-6)}$$

W -- Resilient deflection of surface

μ -- Poisson ratio

p -- Uniform pressure on the top layer

r -- Radius of uniform circular pressure on the top

F_2 -- Deflection factor decided by E_1/E_2

E_1 -- Resilient modulus for first layer

E_2 -- Resilient modulus for second layer

In test-pit, we use Poisson ratio μ as 0.35, and the rigid circular plate was adopted, so the Equation (G-6) would be applied and simplified into following equation.

$$W = \frac{1.38}{E_2} prF_2 \quad \text{(G-7)}$$

According to Equation (G-7), F_2 can be solved for the test-pit data. From the chart of F_2, the resilient modulus

for the upper layer can be obtained. This is a method to calculate the upper layer resilient modulus if knowing the lower layer modulus or lower layers equivalent modulus. By hand calculate will cost inaccuracy for the chart reading of F_2. So ELSYM5 and KENLAYER programs were adopted to finish this calculation(Burmister, 1943)(Huang, 1993).

G.1.3 Three-layer System

When there is a limerock layer on the top, the profile of test-pit can be divided into three different layers. From the top to bottom, they are limerock layer (layer 1), subgrade layer (layer 2) and embankment layer (layer 3). Because the three-layer system is very complex and cannot be calculated by hand, ELSYM5 and KENLAYER programs were adopted to calculate the subgrade layer modulus. The embankment layer modulus was assumed as 11207 psi (77 Mpa) in soaked condition.

G.2 KENLAYER Program Theoretical Development

G.2.1 Elastic Multilayer System

Figure 6.2 shows an n-layer system in cylindrical coordinates, the *n*th layer being of infinite thickness. The

modulus of elasticity and the Poisson ratio of the *i*th layer are E_1 and μ_1, respectively (Huang, 1993).

For axisymmetric problems in elasticity, a convenient method is to assume a stress function that satisfies the governing differential equation and the boundary and continuity conditions. After the stress function is found, the stresses and displacements can be determined (Timoshenko and Goodier, 1951).

The governing differential equation to be satisfied is a fourth-order differential equation. The stress function for each layer has four constants of integration in Eq.(G-2), A_i, B_i, C_i and D_i, where the subscript i is the layer number. Because the stress function must vanish at an infinite depth, the constants A_n and C_n should be equal to zero, i.e., the bottom most layer has only two constants. For a n-layer system, the total number of constants or unknowns is 4n-2, which must be evaluated by two boundary conditions and 4(n-1) continuity conditions. The two boundary conditions are that the vertical stress under the circular loaded area is equal to q and that the surface is free of shear stress. The four conditions at each of the n-1 interfaces are the continuity of vertical stress, vertical displacement, shear stress, and radial displacement. If the interface is

frictionless, the continuity of shear stress and radial displacement replaced by the vanish of shear stress both above and below the interface. The equations to be used in KENLAYER for computing the stresses and displacements in a multilayer system under a circular loaded area are presented later Huang, 1993).

G.2.2 Nonlinear Layers

It is well known that granular materials and subgrade soils are nonlinear with an elastic modulus varying with the level of stresses. The elastic modulus to be used with the layered systems is the resilient modulus obtained from repeated unconfined or triaxial compression tests. The resilient modulus of granular materials increases with the increase in stress intensity, while that of fine-grained soils decreases with the increase in stress intensity. If the relationship between the resilient modulus and the state of stresses is given, a method of successive approximations can be used. The nonlinear material properties, which have been incorporated in KENLAYER, are described below (Huang, 1993).

G.2.3 Granular Materials

The resilient modulus of granular materials increases with the increase in the first stress invariant. However, KENLAYER employs a more popular relationship which is described below.

A simple relationship between resilient modulus and the first stress invariant can be expressed as

$$E = K_1\theta^{K_2} \qquad \text{(G-8)}$$

in which K_1 and K_2 are experimentally derived constants and θ is the stress invariant, which can be either the sum of three normal stresses, $\sigma_x, \sigma_y,$ and σ_z, or the sum of three principal stresses, σ_1, σ_2, and σ_3:

$$\theta = \sigma_1 + \sigma_2 + \sigma_3 = \sigma_x + \sigma_y + \sigma_z \qquad \text{(G-9)}$$

Including the weight of a layered system gives

$$\theta = \sigma_x + \sigma_y + \sigma_z + \gamma z(1 + 2K_0) \qquad \text{(G-10)}$$

in which γ is the average unit weight, z is the distance below surface at which the modulus is to be determined, and K_0 is the coefficient of earth pressure at rest. The reason σ_1, σ_2, and σ_3 are not used in Equation (G-10) is that they may not be in the same direction as the geostatic stresses. In contrast to other computer programs, KENLAYER uses the soil mechanics sign convention for stresses and strains.

Therefore, θ is positive when in compression and negative when in tension.

It should be noted that the use of layered system for nonlinear analysis is an approximate approach. It is desirable to have more exact solutions so that the results of KENLAYER can be compared. Theoretically, the finite element method should provide the best solutions for such nonlinear problems. Unfortunately, the finite element computer programs currently available have serious defects and cannot be used to check the accuracy of a solution (Huang, 1993).

G.2.4 Fine-Grained Soils

The resilient modulus of fine-grained soils decreases with the increase in deviator stress σ_d . In laboratory triaxial tests, $\sigma_2 = \sigma_3$, so the deviator stress is defined as

$$\sigma_d = \sigma_1 - \sigma_3 \qquad \text{(G-11)}$$

In a layered system, σ_2 may not be equal to σ_3, so the average of σ_2 and σ_3 is considered as σ_3 . Including the weight of layered system yields

$$\sigma_d = \sigma_1 - 0.5(\sigma_2 + \sigma_3) + \gamma z(1 - K_0) \qquad \text{(G-12)}$$

Equation (G-12) is not theoretically correct because the principal loading stresses may not be in the same

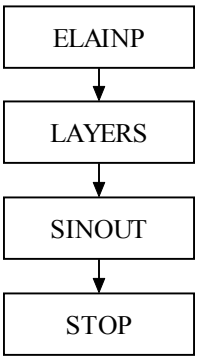
direction as the geostatic stresses. Since the loading stresses in the subgrade are usually small and do not have significant effect on the computed modulus, KENLAYER uses the three normal stresses, $\sigma_1, \sigma_2,$ and σ_3 in Equation (G-12). If the point selected for computing the modulus is on the axis of symmetry for a single tire or on the plane of symmetry between two dual tires, the three normal stresses and the three principal stresses are identical(Huang, 1993).

G.3 KENLAYER Program Subroutines

KENLAYER consists of one main program and 18 subroutines. All variables are transferred from the main program to the subroutines through arguments and no common statements are used. Therefore, the program can be easily modified if needed (Huang, 1993).

The main program is relatively short because its main purpose is to call the various subroutines and conduct a damage analysis, if desired. The subroutines can be divided into six groups: data input, layered system, superposition and principal stresses, nonlinear analysis, viscoelastic analysis, and output.

For linear elastic systems, the flowchart of KENLAYER program is simple as following:



ELAINP reads and writes input data for an elastic layered system under single or multiple wheels. For multiple wheels, the distance and direction cosines from each specified point to each of the wheels are also computed for later use. If a layer is nonlinear, the elastic modulus is the assumed elastic modulus to be used for the first iteration. If a layer is viscoelastic, the elastic modulus may be assigned 0 or any value.

LAYERS computes the vertical displacement, four components of stress, and four components of strains at different radial and vertical distances under a single wheel.

SINOUT prints the vertical displacement, vertical stress, radial stress, tangential stress, shear stress, vertical strain, radial strain, tangential strain, and shear strain under a single-wheel load and determines the most critical strains for damage analysis. The stresses and strains are positives when in compression and negative in tension.

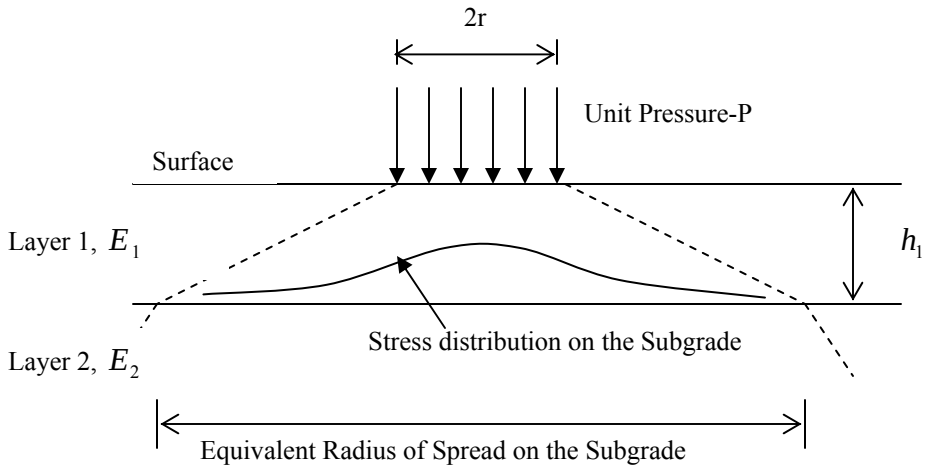


Figure G.1 Two-layer System

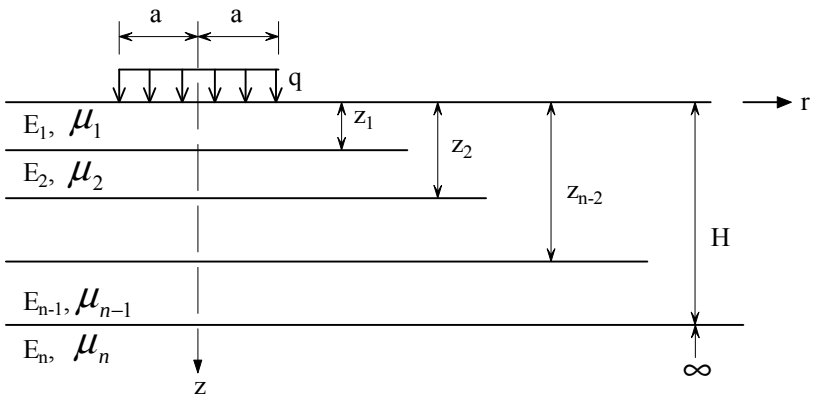


Figure G.2 An n-layer System in Cylindrical Coordinates