Final Report
VOLUME I OF II

PB99-140139

PILE FRICTION FREEZE: A FIELD AND LABORATORY STUDY

WPI No. 0510632
State Job No. 99700-7584-119
Contract No. B-7967
UF No. 49104504433-12

Submitted to:
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Florida Department of Transportation
605 Suwannee Street, MS 30
Tallahassee, FL 32399-0450

April 1999

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16. Abstract

The objectives of this research were to measure the increase in pile friction with time for various soil conditions in the laboratory and field. Accordingly, five fully instrumented piles were driven into a variety of soils at four different FDOT bridge sites. The five eighteen-inch square piles were instrumented with strain gauges, lateral total stress cells, and pore pressure sensors along their length, and at their tips were cast Osterberg load cells. This study was the first application of an Osterberg load cell on a prestressed concrete pile to generate ultimate skin friction. In the laboratory, a device was developed to drive a model pile in the centrifuge in flight at 50 gs and then perform a static pull out (tension) test. Also, in the field SPT Torque, piezo CPT, and DMT stage testing was performed to estimate the pile freeze with time.

The centrifuge stage tests showed no increase in pile friction with time.

The field load tests to monitor freeze were performed on the day of driving and then by stage testing and at 3 to 5 times thereafter, with a final test at 77 to 1,727 days. All pile and pile segments showed a general increase in friction with the log of time. All soils, from sands to clays, showed about the same freeze as measured by a normalized shear and time factor, denoted 'A'. Furthermore, 'A' was found approximately the same at all depths to the maximum of 24 m tested. 'A' was also found approximately the same whether measured by redrives the first few days after driving, or by static tests during or after the dissipation of the driving pore pressures. The freeze appeared effective stress dependent during dissipation, but independent afterwards. The SPT-T showed the most promise as a practical precursor test for freeze in cohesive soils, followed by the CPT and DMT. None of these tests showed promise in sands.

17. Key Words	18. Distribution Statement
Pile Foundations, Skin Friction, Freeze, Insitu tests, Centrifuge, Osterberg Testing, Setup, Side Shear, SPT, DMT, CPT, Aging, Effective Stress, Pore Pressure	No restrictions. This document is available to the public through the National Technical Information Service, Springfield, VA, 22161

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SI* (MODERN METRIC) CONVERSION FACTORS

APPROXIMATE CONVERSIONS TO SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
	LENGTH			
in	inches	25.4	millimeters	mm
ft	feet	0.305	meters	m
yd	yards	0.914	meters	m
mi	miles	1.61	kilometers	km
	AREA			
in^2	square inches	645.2	square millimeters	mm^2
ft^2	square feet	0.093	square meters	m^2
yd^2	square yards	0.836	square meters	m^2
ac	acres	0.405	hectares	ha
mi^2	square miles	2.59	square kilometers	km^2
	VOLUME			
fl oz	fluid ounces	29.57	milliliters	ml
gal	gallons	3.785	liters	l
ft^3	cubic feet	0.028	cubic meters	m^3
yd^3	cubic yards	0.765	cubic meters	m^3
NOTE: Volumes greater than 1000 l shall be shown in m^3.				
	MASS			
oz	ounces	28.35	grams	g
lb	pounds	0.454	kilograms	kg
T	short tons (2000 lb)	0.907	megagrams	Mg
	TEMPERATURE (exact)			
°F	Fahrenheit temperature	5(F-32)/9 or (F-32)/1.8	Celcius temperature	°C
	ILLUMINATION			
fc	foot-candles	10.76	lux	l
fl	foot-Lamberts	3.426	candela/m^2	cd/m^2
	FORCE and PRESSURE or STRESS			
lbf	poundforce	4.45	newtons	N
psi	poundforce per square inch	6.89	kilopascals	kPa

APPROXIMATE CONVERSIONS FROM SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
	LENGTH			
mm	millimeters	0.039	inches	in
m	meters	3.28	feet	ft
m	meters	1.09	yards	yd
km	kilometers	0.621	miles	mi
	AREA			
mm^2	square millimeters	0.0016	square inches	in^2
m^2	square meters	10.764	square feet	ft^2
m^2	square meters	1.195	square yards	yd^2
ha	hectares	2.47	acres	ac
km^2	square kilometers	0.386	square miles	mi^2
	VOLUME			
ml	milliliters	0.034	fluid ounces	fl oz
l	liters	0.264	gallons	gal
m^3	cubic meters	35.71	cubic feet	ft^3
m^3	cubic meters	1.307	cubic yards	yd^3
	MASS			
g	grams	0.035	ounces	oz
kg	kilograms	2.202	pounds	lb
Mg	megagrams	1.103	short tons (2000 lb)	T
	TEMPERATURE (exact)			
°C	Celcius temperature	1.8C + 32	Fahrenheit temperature	°F
	ILLUMINATION			
lx	lux	0.0929	foot-candles	fc
cd/m^2	candela/m^2	0.2919	foot-Lamberts	fl
	FORCE and PRESSURE or STRESS			
N	newtons	0.225	poundforce	lbf
kPa	kilopascals	0.145	poundforce per square inch	psi

* SI is the symbol for the International System of Units. Appropriate rounding should be made to comply with Section 4 of ASTM E380.

(Revised August 1992)

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LIST OF SYMBOLS AND ABBREVIATIONS

δ'	=	angle of the drained friction shear strength component at the pile-soil interface
λ	=	bias factor, average ratio of measured variable to the predicted variable
σ_h'	=	horizontal effective stress against pile, = total stress cell measurement minus pore pressure measurement
τ	=	unit side shear
A	=	setup factor, = $[(f_{sf} - f_{si}) / f_{si}] / \log (T_f / T_i) = [(Q - Q0)/ Q0] / \log (T / T0)$
AUC	=	Aucilla River test site
B	=	modified setup factor, = $[f_{sf} - f_{si}] / \log (T_f / T_i)$
BKM	=	Buckman Bridge test site
c_a'	=	pile-soil adhesion
c_h	=	coefficient of radial consolidation
CL	=	centerline
CPT	=	electric static cone penetration test
CPTU	=	electric static cone penetration test with pore pressure measurement
CR10	=	Campbell Scientific datalogger
CTN	=	maximum pile tension force during driving (PDA measurement)
cv	=	coefficient of variation = standard deviation / mean
d	=	SPT sampler diameter
DMT	=	Marchetti Dilatometer test
DMT-P	=	Marchetti Dilatometer test with A-dissipation and thrust measurement
E_c	=	concrete modulus
EMX	=	maximum energy entering pile during driving (PDA measurement)
f_c'	=	unconfined compressive strength of concrete
FCS	=	field computer system for Hogentogler CPT
f_i	=	vibrating wire gage frequency during load step
FMX	=	maximum pile compression force during driving (PDA measurement)
f_o	=	vibrating wire gage frequency at zero load condition
F_s	=	side shear force along a pile segment
f_s	=	average unit side shear stress along a pile segment, or along the CPT friction sleeve
GWT	=	ground water table
J_c	=	Case soil damping factor
I	=	SPT sampler penetration
OCR	=	overconsolidation ratio
PDA	=	pile driving analyzer
Q	=	pile capacity at time T
Q0	=	pile capacity at initial time T0
RMX	=	static pile capacity (PDA measurement)
r_p	=	pile radius
r^2	=	square of correlation coefficient

$S_{t\ vane}$	=	sensitivity using vane shear strength
SBZ	=	Seabreeze Bridge test site
SPT	=	Standard Penetration Test sampling
SPT-T	=	torque test for side shear after Standard Penetration Test sampling
t, T	=	time elapsed since end of driving
T_h	=	time factor for radial consolidation
t_i	=	thermistor temperature during load step
t_o	=	thermistor temperature at zero load condition
T0	=	initial time elapsed since end of driving
VLE	=	Vilano Bridge East site
VLW	=	Vilano Bridge West site

Subscripts: i = initial, f = final, d = during pore pressure dissipation

CHAPTER 1
INTRODUCTION

1.1 Introduction

Engineers and construction personnel have long known that driven piles often exhibit "freeze" or "setup" after driving, synonymous terms which describe an increase in capacity with time. The results of previous researchers indicate that much of this setup is due to exclusively to an increase in side shear. Unfortunately, this increased capacity is poorly understood and often ignored during the design and installation of a pile foundation. By including the pile setup in the foundation capacity, the engineer could reduce the number, length, or size of the piles, and hence, the cost of the foundation. Since the cost of a deep foundation ranges from about 5% for some buildings to about 30% for some bridges, a reduction in its cost might translate into a significant savings to the overall project.

The research described herein investigates the pore pressure and aging phenomena associated with side shear freeze/setup. Commencing in 1994, five full-scale piles were instrumented and driven at active bridge construction sites owned by the Florida Department of Transportation (FDOT). Multiple static tests using stage testing were then performed over time to determine the change in magnitude and distribution of the ultimate side shear. These pile tests were complemented by Standard Penetration Tests, Piezocone, and Marchetti Dilatometer Tests at two of the test sites to evaluate their potential as pile freeze predictors. Finally, centrifuge tests were performed in the laboratory to determine if they could duplicate freeze effects

This final report combines the field and laboratory work to produce appropriate design recommendations for the practical use of freeze effects. The multi-year research project described herein was conducted by the Civil Engineering Department at the University of Florida. The National Science Foundation provided about 75% of the project funding. The FDOT and the Federal Highway Administration (FHWA) provided the remainder. Schmertmann & Crapps, Inc. (S&C) of Gainesville, FL also provided assistance, primarily with the field portion of the project and the preparation of this report.

1.2 Objectives

The main objective of this research was to make recommendations concerning the practical utilization of side shear freeze for the design of driven displacement piles. To accomplish this goal a number of lesser objectives were identified:

Osterberg Cell: Evaluate the usefulness of the Osterberg cell for the long-term measurement of changes in driven pile side shear capacity on full-scale test piles.

Pore Pressure and Effective Stress: Measure the pore pressure and horizontal effective stress against the test piles during side shear freeze.

Insitu Tests: Investigate the ability of various insitu tests to measure and predict the side shear freeze observed at the test pile sites.

Centrifuge: Investigate whether centrifuge modeling can be used to measure side shear freeze and, if so, determine if the freeze effect can be accelerated.

1.3 Scope of Work

The overall project was divided into five major tasks, as follows:

Driving Five Instrumented Piles at FDOT Construction Sites: The instrumentation included: Osterberg cells at the pile bottom to permit multiple side shear tests; multiple levels of vibrating wire strain gages; telltales to measure total strain; and multiple levels of pore pressure transducers and total pressure cells on the face of the FDOT 457 mm (18 in) square, prestressed concrete piles. The piles were dynamically tested to estimate static capacity using a Pile Driving Analyzer during initial driving and short-term set checks. Final restrikes (after the completion static testing) were considered as an option, but were eliminated due to high mobilization costs.

Monitoring Pile Freeze Behavior: Periodic static tests for the side shear capacity were performed using an incremental expansion of the Osterberg cells (stage testing). The side shear distribution during each test was obtained from the strain gages. The first static test followed immediately after pile installation, and three to five additional tests were completed at later times.

Develop Insitu Freeze Predictor Test(s): Soundings using the Piezocone (CPTU), Marchetti Dilatometer (DMT) and Standard Penetration Tests with Torque (SPT-T) were performed adjacent to the test piles. The SPT sampler, DMT blade and CPTU tip were left in place at various depths to monitor shear-freeze effects. The SPT-T freeze was monitored by torsion and the DMT and CPTU by strain gage load cells. Total and pore pressure dissipation tests were also performed using the DMT and CPTU, respectively.

Centrifuge Modeling: Centrifuge model tests in dry sands were performed at the UF on model piles which were driven and tested in-flight. Additional tests in saturated

sands and clays were anticipated, but were not performed due to unpromising results in the dry sand.

Prepare a Report: This final report summarizes the research work and its results.

CHAPTER 2
LITERATURE REVIEW

Freeze/setup effects on driven piles have been observed and investigated by a number of researchers, but until the last decade the tools available for this research have been limited with correspondingly limited results.

2.1 Setup, Relaxation and Side Shear

Many researchers have documented significant increases in pile capacity with time. Bartolomey and Yushkov (1985) reported 70-80% side shear increases over 6 to 45 days after driving both single displacement piles and groups of 4 and 9 into clay. Lukas and Bushell (1989) report a 25% increase in side shear during the interval 10 to 32 days after driving into very stiff Chicago clays, and a 50% increase from 10 to 82 days in soft Chicago clays, when using steel pipe and H-piles. Kehoe (1989) observed for two north Florida FDOT projects in mixed cohesive soils, using square, prestressed concrete piles, that compression capacities increased an average of 58% and 200% in only 11 days after driving. Approximately half of this increase occurring in the first 100 minutes. Schmertmann (1991) noted three other examples: Karlsrud and Haugen (1985) reporting a 30% increase from 6 to 30 days in a Norwegian overconsolidated clay, Fellenius et al. (1989) showing a 50% increase from 1 to 20 days in sandy clay and silty sand, and Tavenas and Audy (1972) presenting a 70% increase in two to three weeks in a high-permeability sand.

In a few cases, negative setup or "relaxation" has been observed, primarily due negative pore pressures created during pile penetration. Chow et al. (1998) identify three stratigraphic profiles creating this condition:

1. Soils which dilate during penetration: sands with high relative density, highly overconsolidated inorganic silts - Parsons (1966) and Yang (1970), and highly overconsolidated clays - Bond and Jardine (1991)

2. Weak sedimentary and metamorphic rock: shales - Thompson and Thompson (1985), Samson and Authier (1986), and Hussein et al. (1993), phyllites - Seidel and Anderson (1992), and mudstones - George et al. (1976).

3. Sands which exhibit dilational behavior because of densification during the installation of closely spaced pile groups (including sands confined when driving inside of cofferdam enclosures) - Davie and Bell (1991), and York et al. (1994).

Research also indicates, mostly as an incidental conclusion, that setup occurs primarily with respect to side shear. Some confusion exists in this area because early researchers often referred to the total pile capacity as pile "bearing" capacity, which actually included both end bearing and side shear. Analysis of dynamic tests reported by Samson and Authier (1986), Skov and Denver (1988), Preim et al. (1989), Kehoe (1989), and Shioi et al. (1992) confirm that little change with time is observed for end bearing. Static tests presented by Airhart et al. (1967) and Axelsson (1998a) also confirm this observation.

2.2 Log-linear Prediction of Setup

The prediction of pile setup has generally been approached through observation of the overall trend. Many researchers have demonstrated a strong relationship between changes in pile capacity (mostly due to side shear) and the logarithm of time, indicating that the rate of change in capacity decreases with time. Zai and Hu (1986) document this trend for nine piles driven in the soft clays of Shanghai and Tianjin. The data plotted in Figure 2.1, from Svinkin et al. (1994), includes total dynamic (CAPWAP)

capacities with static confirmation tests on different size concrete piles from two sites: 7 piles (914-1327 mm diameter) at a clay site and 5 piles (457-915 mm diameter) at silty sand site. Note that the soil at both sites was mostly saturated. Svinkin et al. (1994) also include tests out to 16 days from an unsaturated sand which show a linear increase with an arithmetic rather than log time.

Skov and Denver (1988) present four case histories illustrating setup. Based on three of these (piles in sand, clay and chalk) they then proposed a unitless log-linear Setup Factor "A", equal to the rate of increase of the setup ratio (Q/Q0) per log cycle change of the elapsed time ratio (T/T0):

$$Q/Q0 - 1 = A \log_{10} (T/T0)$$

where:
- Q = Pile capacity at time T
- Q0 = Pile capacity at initial time T0
- T = Time elapsed since end of driving
- T0 = Initial time elapsed since end of driving, a reference time before which there is no predictable Q0 increase as a function of elapsed time
- A = Setup Factor (log-linear)

The data presented by Skov and Denver are also mostly dynamic tests with static confirmation and have A values ranging from 0.2 to 5.0. As shown in Figure 2.2, the Setup Factors (based on T0 = 1 day) for the tests in Svinkin et al. (1994) fall in a range of 0.25-1.20.

Chow, et al. (1996) compiled and presented the data shown in Figure 2.3 illustrating the overall trend of the Setup Factor A from the results of twelve different researchers (including some data from this research). Chow, et al. (1998) provided similar data with inclusion of two additional sites. The pile capacity data summarized in these two papers are mostly from concrete piles driven into sands, and include both static and dynamic testing. Axelsson (1998b) presented dynamic test results in the same format for three 235 mm concrete piles and twenty-one 32 mm diameter steel

rods driven into a glacial sand. Figure 2.4 from Axelsson shows the log-linear setup. As a possible predictor test, Rausche et al. (1996) performed the uplift shear tests shown in Figure 2.5 on a 51 mm diameter soil sampler driven 457 mm during Standard Penetration Tests. These results were obtained in silty clays at Florida sites, two of which (Aucilla and Vilano West) are included in this research. From Figures 2.2-2.5 an approximate lower bound of A = 0.20 seems reasonable.

Two considerations complicate the use of the Skov and Denver equation. First, Q is the total pile capacity and includes, to an unknown extent, the pile end bearing which may not change significantly with time. Inclusion of the end bearing reduces the apparent Setup Factor by increasing Q0. Second, upon close inspection it can be seen that the Setup Factor A is the change in pile capacity per log cycle of elapsed time divided by Q0. Since the choice of T0 affects both Q0 and the ratio Q/Q0, it also has an important effect on A. While potentially quite significant, these factors do not appear to have a major effect on the examples in the literature, but they probably do contribute to the scatter of the data. As discussed further in Section 5.3.3, standardizing the Skov and Denver equation to an initial time of 1 day and for side shear only (i.e excluding bearing capacity) would be worthwhile improvements.

2.3 Causes of Setup

Based on the observed log-linear relationship between pile capacity and elapsed time, Soderberg (1962) and Vesic (1977) theorized that setup behavior was the result of radial consolidation due to the dissipation of excess pore pressure caused by pile installation. They present pile capacity data for clays which plot similar to a strain vs. log time oedometer consolidation curve, with a linear trend against the logarithm of time except for short and long setup times. Both authors (and many since)

applied Terzaghi's one dimensional (radial) consolidation theory to describe this behavior:

$$T_h = 4\, c_h\, t / r_p^2$$

where T_h = Time Factor
c_h = coefficient of radial consolidation
t = elapsed time since end of driving
r_p = pile radius

Paikowsky et al. (1996) use the above radial consolidation equation to illustrate that the consolidation setup should vary as the square of pile radius, with quicker setup for smaller diameter piles. To determine the Setup Factor as a true function of the soil, they recommend using a squared ratio of radii to adjust observed setup times to a standardized pile size. While the analyses presented in Paikowsky et al. (1996) are not conclusive, the suggestion of time-shifting the setup curve to a standardized pile size appears to reduce some of the variation in Setup Factors and probably warrants additional research.

Camp et al. (1993) provide evidence of consolidation related setup effects for 457 mm concrete piles driven through a variable composition surface layer into the saturated Cooper River marl formation. The dynamic and static measurements of side shear plotted in Figure 2.6 show that the initial side shear in the marl decreased significantly when the permeability of the surface layer decreased. Camp et al. (1993) concluded that the excess pore pressures induced in the marl during driving were greater when confined by a surface clay layer, and resulted in the lower initial capacity. Although the rate of setup per log time in the marl was not affected by the presence of clay in the surface layer, additional setup time was needed to reach the required capacity. Note that the lower initial side shear also yields a higher value of A for the same pile size and soil type.

Many researchers have monitored pore pressures around or on the installed pile and found capacity to increase as pore pressures dissipate and, presumably, effective stresses increase. The simple Mohr-Coulomb equation provides a method of describing this increase in side shear:

$$\tau = c'_a + \sigma_h' \times \tan \delta'$$

where τ = unit side shear
c'_a = pile-soil adhesion
σ_h' = effective horizontal stress
δ' = angle of the drained frictional shear strength component at the pile-soil interface

A number of authors have demonstrated that at least a portion of the observed setup results from increases in the effective horizontal stress measured during consolidation, a complicated and elusive measurement: Karlsrud and Haugen (1985), Lutenegger and Miller (1993), Azzouz and Morrison (1988), Marchetti et al. (1986), and Bond and Jardine (1991). These examples show that the horizontal effective stresses near the pile are initially low and increase to some constant level with setup time, primarily as a result of decreases in the excess pore pressure. Marchetti et al. (1986) present evidence that the size and shape of the penetrating object does not have a major effect on the final value of the horizontal effective stress, which they predict using Dilatometer A-reading dissipation tests.

Effective stress changes are not, however, apparently limited to the consolidation of cohesive soils. Ng et al. (1988) measured changes in the effective horizontal stresses against a concrete pile driven into a San Francisco sand, both before and after the dissipation of excess pore pressures. Chow et al. (1998) observed an 85% increase in capacity after excess pore pressures should have dissipated around steel pipe piles in Dunkirk sands. Based on the San Francisco measurements,

they hypothesized that a portion of this capacity gain was due to a similar increase in the effective (and total) horizontal stresses against their piles. This increase was explained to result from the relaxation of high tangential soil stresses in the sand pushed away from the pile during installation, which were initially maintained by arching. Reduction of the arching effect through creep could have then allowed the horizontal (radial) effective stresses to increase.

Unfortunately, Chow et al. (1998) do not include stress measurements to confirm their hypothesis. However, Axelsson (1998a) reports an increase in the total stresses measured against a concrete pile in sand which diminishing with time up to 72 days after installation, long after measured excess pore pressures had dissipated. This sort of creep seems reasonable, but requires further investigation.

Schmertmann (1991), and many of the other examples cited herein, document freeze/setup which occurs both during and after excess pore pressures are thought to have dissipated, and the effective horizontal stresses have presumably stabilized. The setup after, and possibly a portion during, the effective stress change is believed due to an "aging" effect which results from soil structure changes in the immediate vicinity of the pile. This aging effect is attributed to drained creep under constant effective stress, or secondary compression, which results in an increase in the soil's frictional strength component. Schmertmann (1976) and Schmertmann (1981) provide extensive details from laboratory tests which document increases in the frictional component of a variety of soils at constant effective stress.

Consistent with setup due to aging, Axelsson (1998a) shows a steady, log-linear increase with time (to at least 141 days) of the peak effective horizontal stress measured against a concrete pile in sand during static testing, while the effective stress measured between tests was approximately constant. This behavior probably indicates

greater dilation at failure due to an aging-increased frictional strength.

Chow et al. (1998) present direct soil-steel interface shear tests from the lab which also document, out to 63 days, the aging of a sand at constant stress. Although there was little change in density during this period, both shear stiffness and dilation angle increased with age. Triaxial tests on sand by Daramola (1980) confirm the same aging effect on stiffness, but with very modest increases in strength. For most of the examples cited herein, aging setup is also believed to have continued beyond the time of the final test measurement.

In summation , at present it appears that setup may be caused by the three main factors, possibly at work simultaneously:

1. horizontal effective stress increase due to radial consolidation, probably short term.
2. horizontal effective (and total) stress increase due to the creep relaxation of tangential (arching) stresses in sand displaced during pile installation, probably short to medium term.
3. a secondary compression, soil-structure change, aging effect resulting in a frictional strength component increase, possibly beginning short term and extending log term.

2.4 Effects of Stage Testing

One complication to the design use of pile setup is the possible effect of stage testing on the pile capacity. Since stage testing was used during this research effort, its potential effect on the results reported herein is of particular interest. Although examples in the literature of such effects are almost nonexistent, Karlsrud and Haugen (1985) address this topic directly. They have suggested that a portion of the setup observed during staged tests on the same pile in clay may have been caused by a preshearing effect, a result of the repeated testing rather than actual setup. The clay at

their Haga test site near Oslo, Norway is both sensitive ($S_{t\ vane} \approx 4.5$) and overconsolidated (OCR = 3-17). Also possibly a significant factor, the 153 mm diameter steel piles used during their test program, were not installed by driving, but rather by jacking at a very slow rate (average 1.4-1.9 mm/sec).

Takesue et al. (1998) showed that, for cohesive soils with OCR = 1-3, very slow penetration (0.2-5 mm/sec) of an electric cone reduced the magnitude of the pore pressure measured just behind the tip, and increased the sleeve friction (36 mm diameter). Bond and Jardine (1991) showed that mobilization of the undrained shear strength in the highly overconsolidated London clay (OCR = 20-50) was approximately the same for driven 102 mm diameter steel piles when compared with fast jacking at a rate of about 7.5 mm/sec. However, when the jacking rate decreased to 1.5 mm/sec, the shear capacity was reduced by about 55% for tests out to 500 days.

Consequently, it may be deduced that the setup behavior of piles installed by slow penetration differs from the relatively brutal penetration of driven piles. Although, the horizontal effective stresses measured during penetration at the Haga site approach zero, the volume and extent of remolding during slow penetration may have been significantly decreased. Repeated tests might then provide additional remolding to a progressively larger volume of soil, apparently increasing the setup above that measured during initial tests, but approaching the behavior of a driven pile.

Figure 2.6 shows the side shear stage test results from the Haga test piles on a log time plot, along with the linear arithmetic trend of 0.5 kN/day proposed by Karlsrud and Haugen (1985) for initial test measurements out to 36 days. In light of the near zero effective stresses measured after penetration, the log-linear extrapolation backward to a capacity of about 6 kN is more reasonable than the 56 kN predicted from

the arithmetic trend. The proposed arithmetic trend is also contrary to the log-linear (i.e. decreasing) trend reported almost universally by other researchers.

Figure 2.6 also includes similar stage test data presented by Konrad and Roy (1987) for a closed-end, 220 mm diameter, steel pipe pile jacked into a sensitive Canadian clay ($S_{t\ vane}$ = 14-22, OCR = 2-3) at a rate of 0.17 mm/sec. A second pile tested only once provides a single comparison, but this test occurs too long after the final stage test to make a definitive conclusion about a preshearing effect. Their tests also show a decreasing rate of capacity increase, as mentioned above. The tests from these clays are also plotted in Figure 2.7 to determine values for the Setup Factor A. The Haga clay has an abnormally high A = 10.8, especially compared to A = 3.8 for the Canadian clay (up through about 40 days).

Karlsrud and Haugen (1985) also performed shear tests on both undisturbed samples and remolded, reconsolidated samples of the Haga clay. These tests showed the reconsolidated samples to have a greater shear strength than the undisturbed samples at the same confining stress, possibly a result of the expected increase in the ratio of shear strength to confining stress for the remolded soil ("destructuring"). Also of interest, the shear strength of the undisturbed clay did not increase during repeated tests after one day of additional consolidation, but did increase for the remolded samples. In agreement with Karlsrud and Hagen's tests on the undisturbed Haga clay, Kenney and Watson (1961) also concluded that stage testing did not affect drained strength parameters during consolidated, undrained triaxial tests on cohesive soils. The reason for the increase in strength of the remolded clay is unclear.

Further evidence against a stage testing effect comes from the many setup tests described in the research literature. It seems logical that if such an effect was prevalent, at least some researchers would have noticed it during the often extensive

test programs already reported. For example, the tests reported by Fellenius et al. (1989) include 13 piles, tested at different times, with a variable number of tests, but which all fit the same general setup trend. The tests reported by Svinkin et al. (1994), previously shown in Figures 2.1 and 2.2, include from two to five tests on different size piles in both clay and silty sands with no obvious preshearing effect. The dynamic tests performed by Axelsson (1998b) in sand, shown in Figure 2.4 as PA, PB and PC, also indicate a general setup trend with no preshearing effect. Pile PC in this series of tests was tested only once twice and had the greatest final capacity, while piles PA and PB were tested five and six times respectively.

Despite the above arguments against stage testing effects on setup, it seems advisable to explore this possibility further, through specific research. Each stage test should induce additional remolding and destructuring, the effect of which may be important for some soils and not for others. The rate and type of penetration may also be important. Even a simple statistical summary prepared from restrikes at varied times during production pile driving would help evaluate the importance of stage testing.

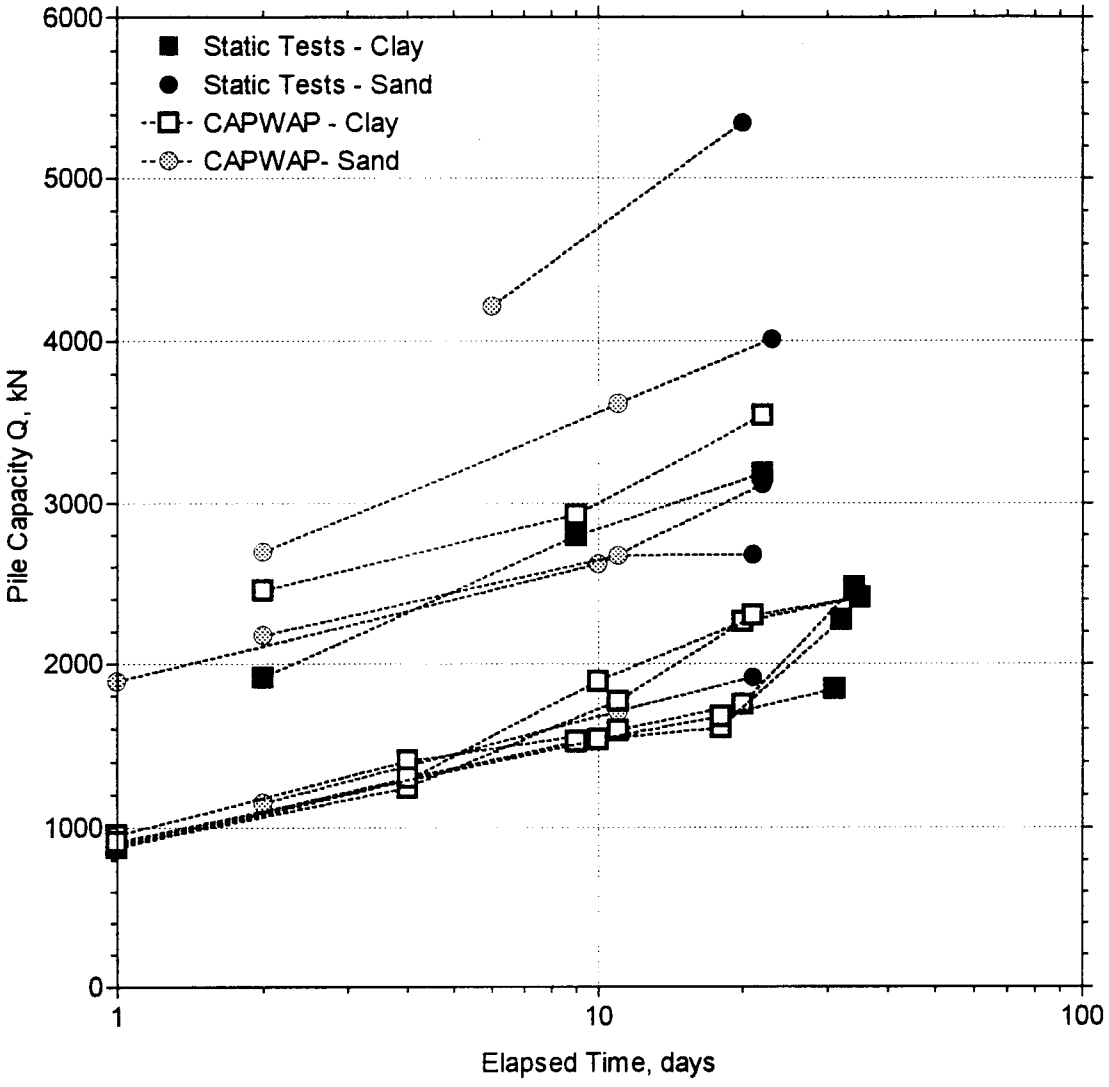

Figure 2.1 Pile Capacity Data from Svinkin et al. (1994)

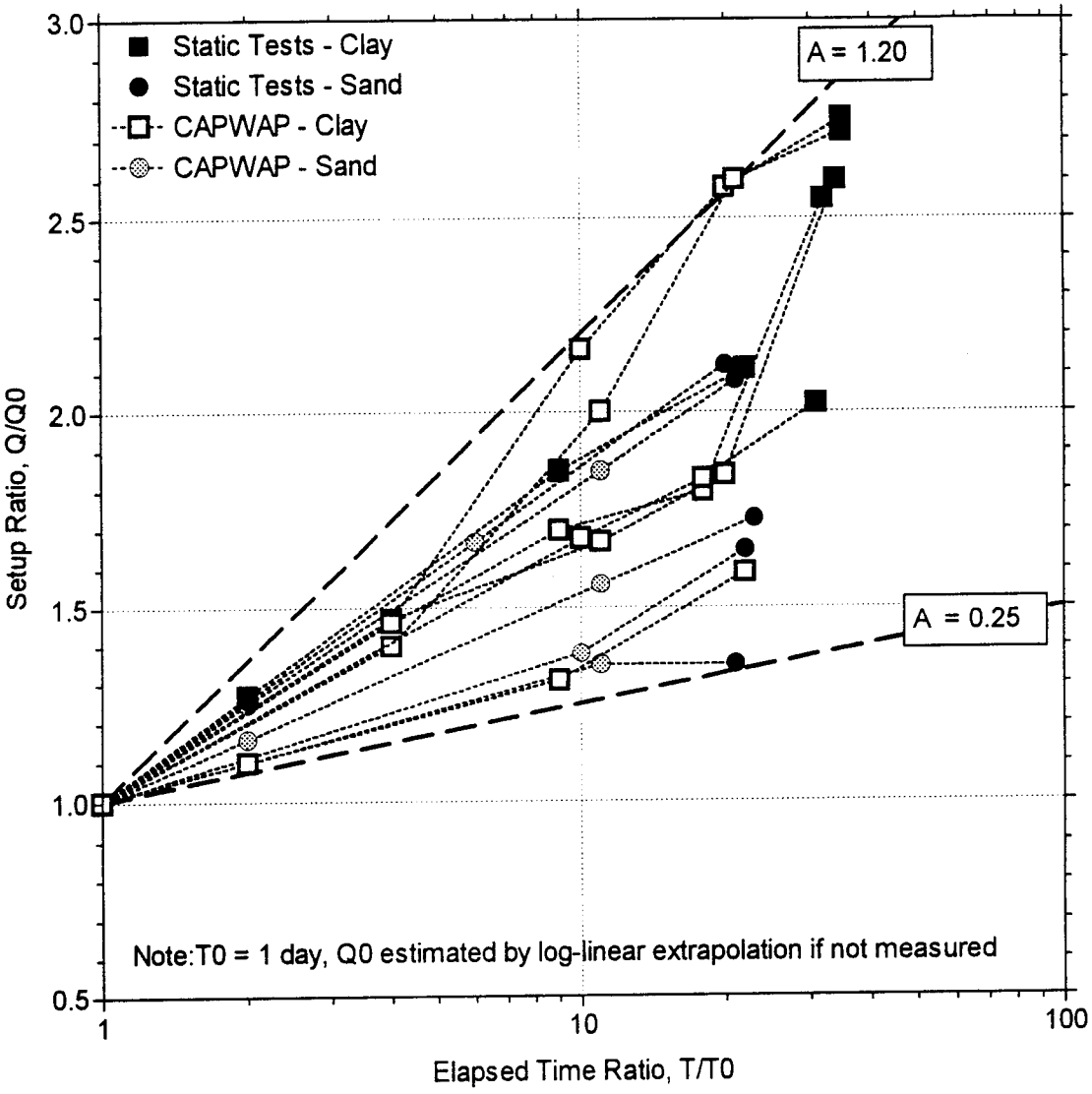

Figure 2.2 Setup Ratio of Pile Tests from Svinkin et al. (1994)

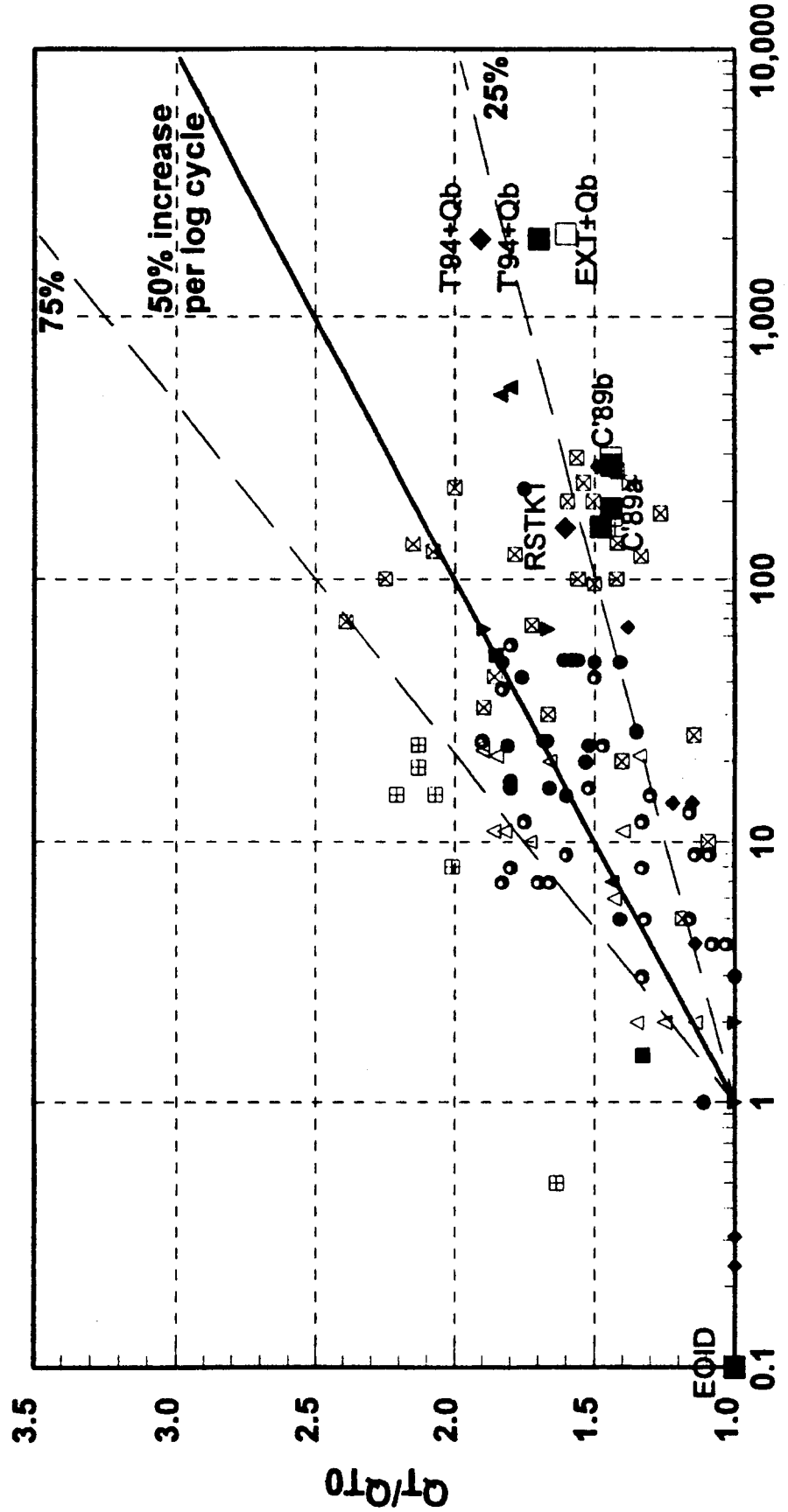

Figure 2.3 Setup Ratio for Piles presented by Chow et al. (1996)

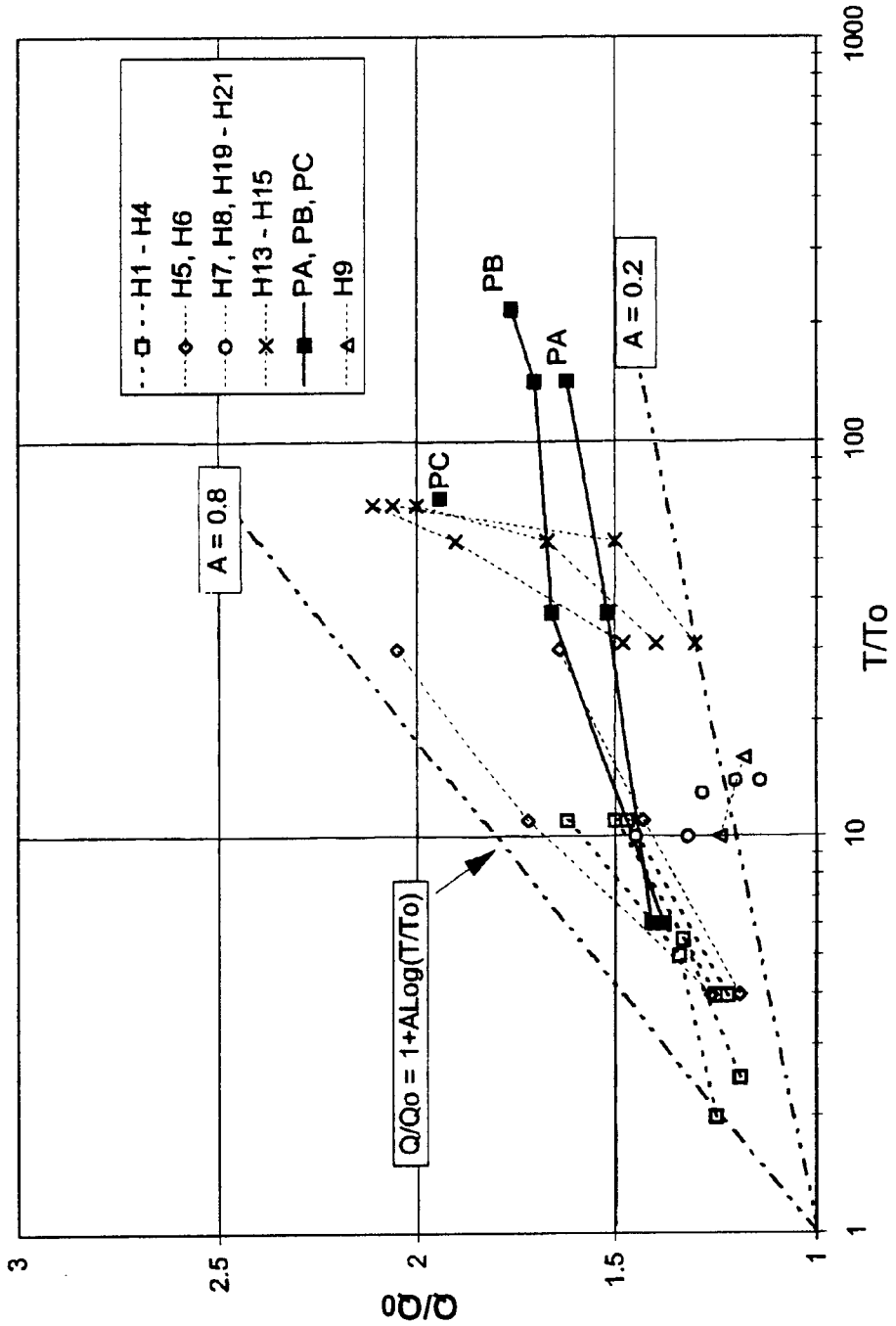

Figure 2.4 Setup Ratio for Concrete Piles and Steel Rods Presented by Axelsson (1998b)

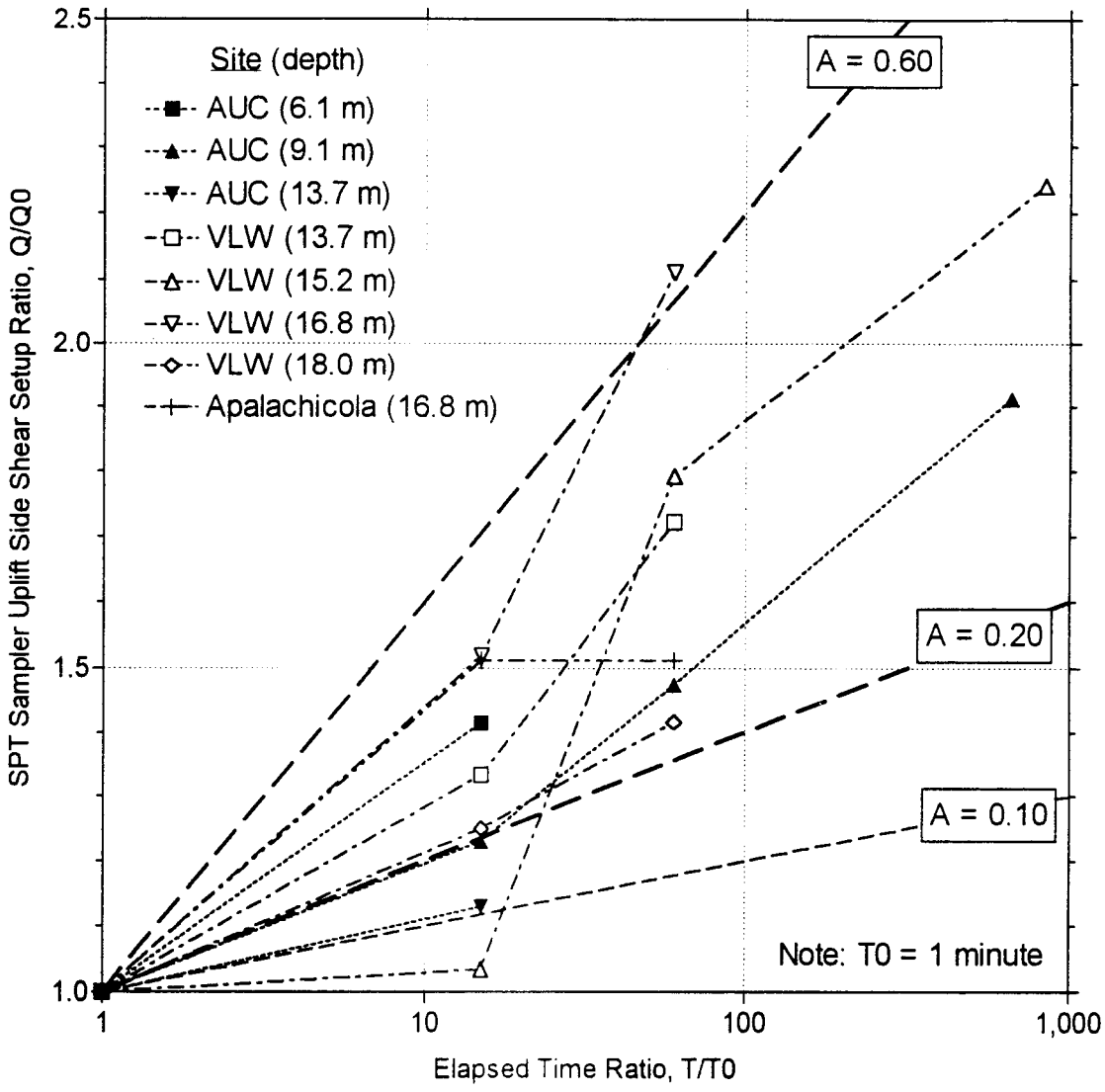

Figure 2.5 Setup of Uplift Shear on SPT Sampler from Rausche et al. (1996)

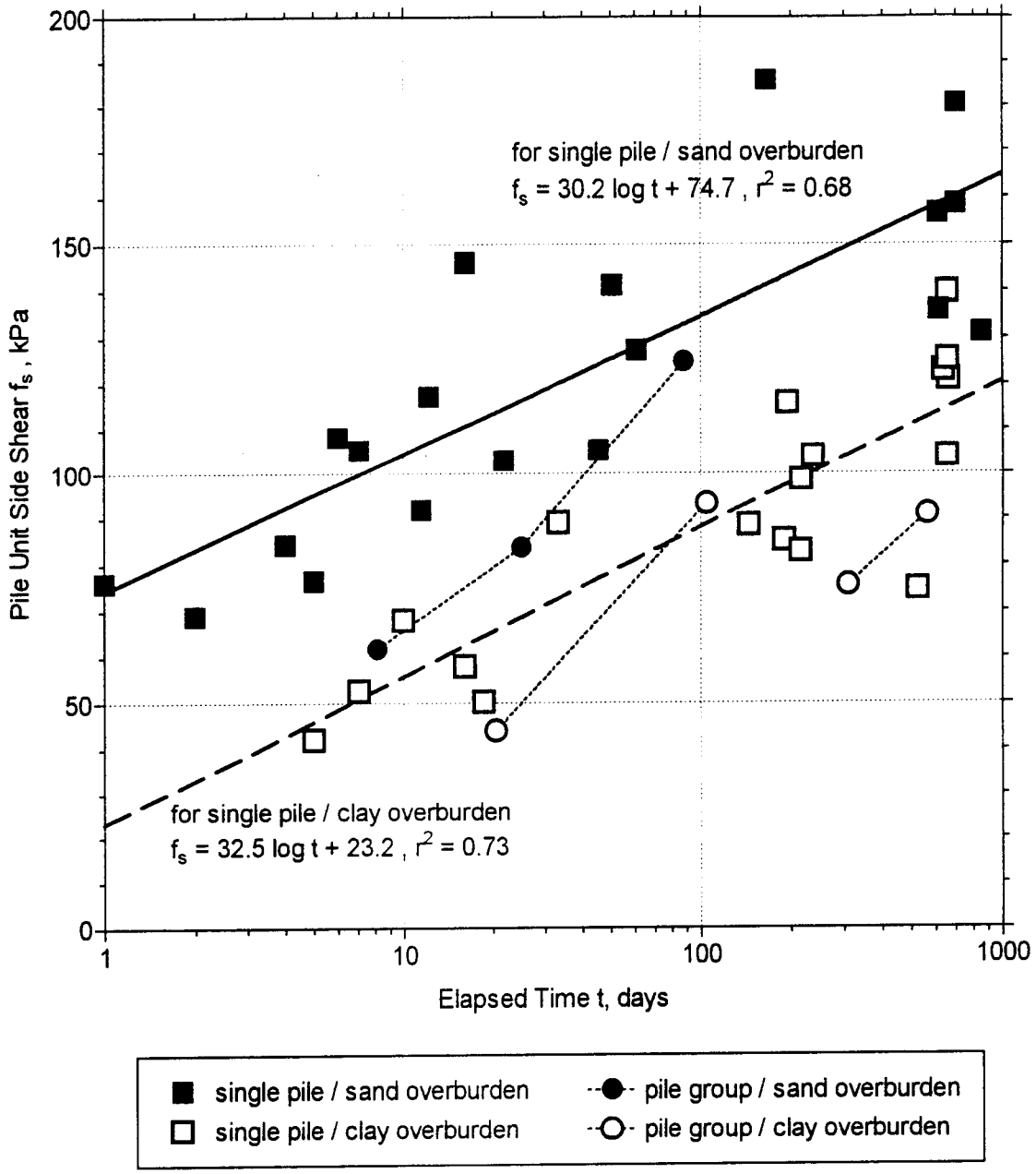

Figure 2.6 Setup Data for Cooper River Marl from Camp et al. (1993)

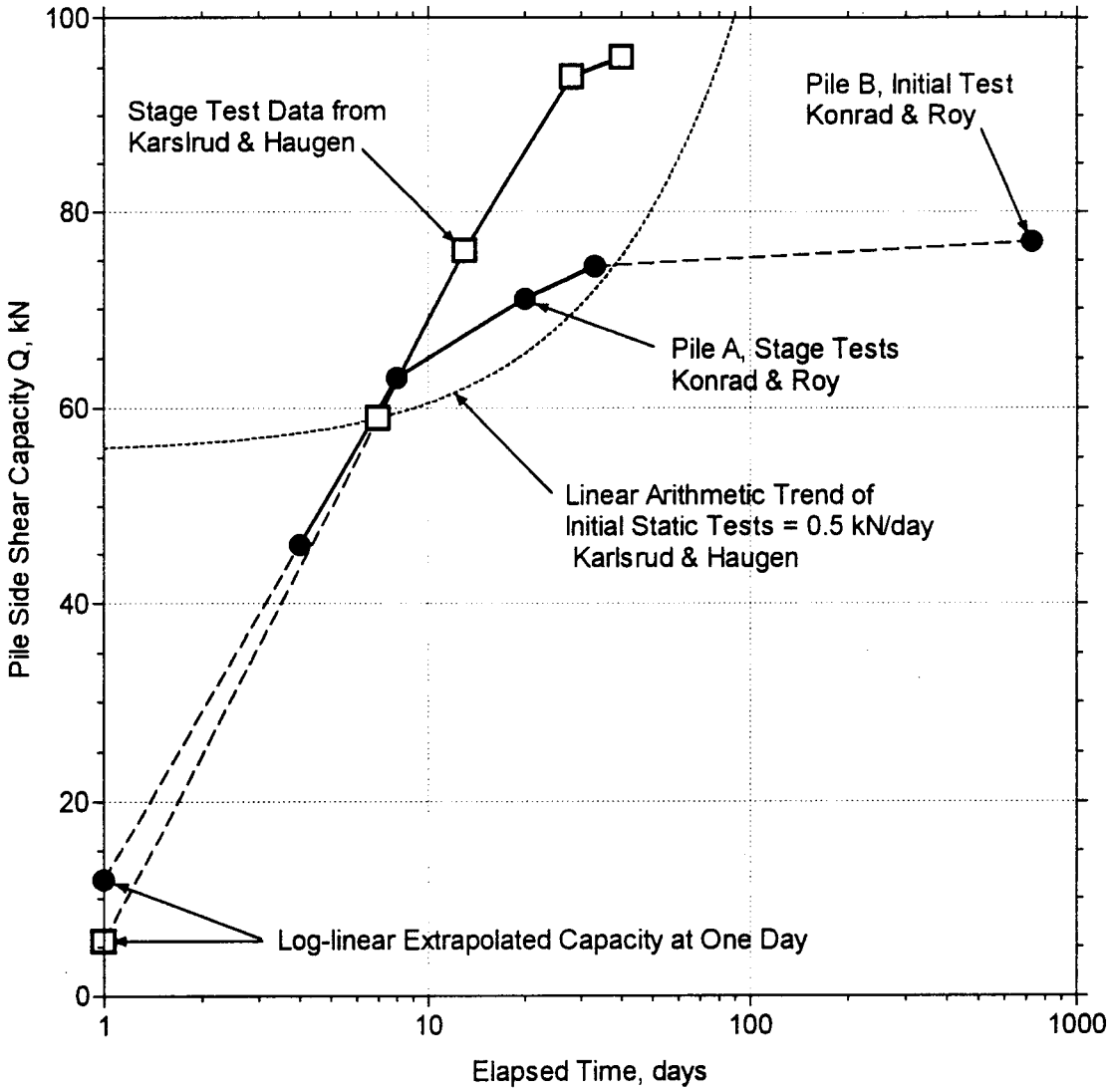

Figure 2.7 Setup Trend of Stage Test Data from Karlsrud and Haugen (1985) and Konrad and Roy (1987)

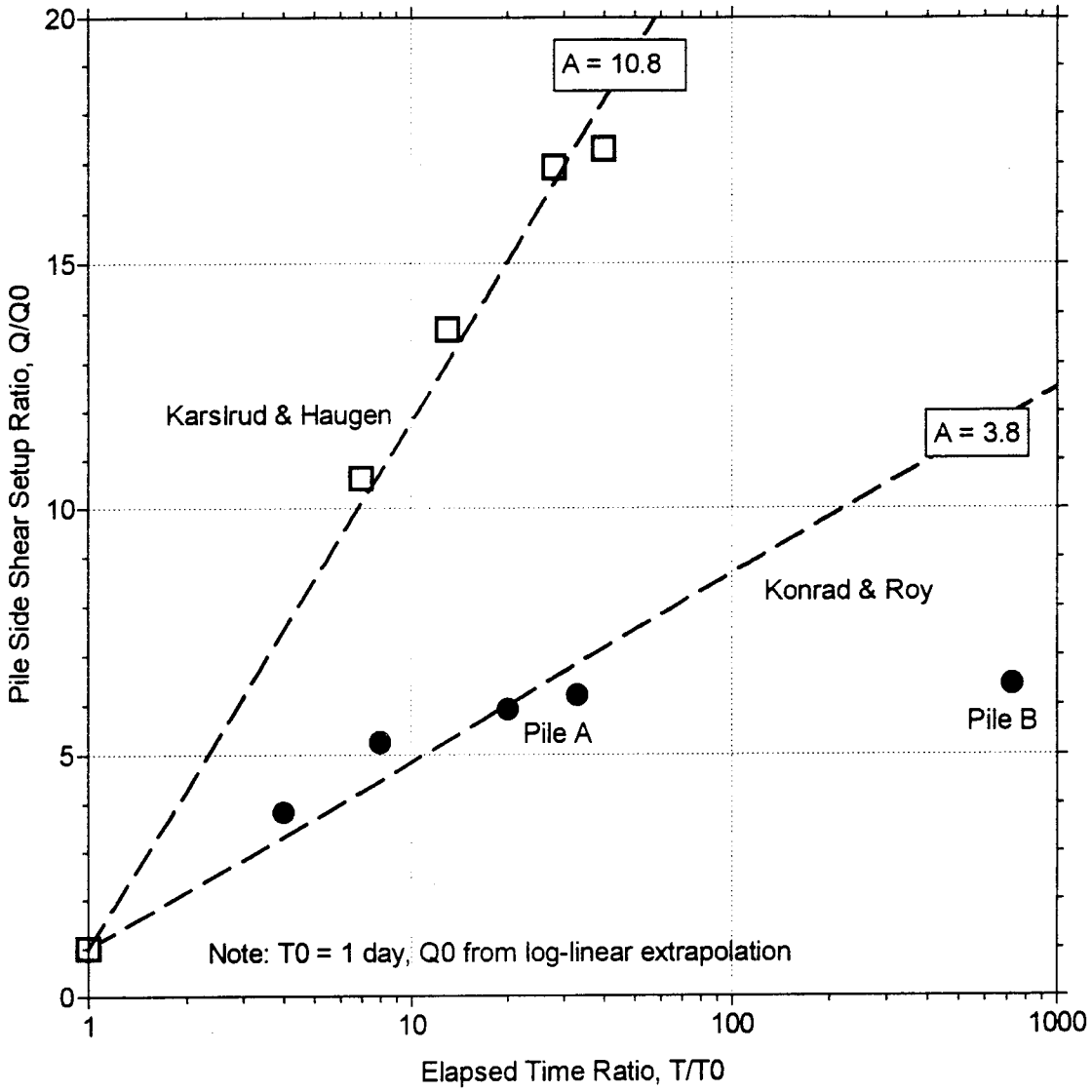

Figure 2.8 Setup Ratio for Stage Test Data from Karlsrud and Haugen (1985) and Konrad and Roy (1987)

CHAPTER 3
PILE INSTALLATION AND DYNAMIC TESTS

3.1 Test Pile Program

The test pile program included five prestressed concrete piles which were tested both statically and dynamically. The test piles were solid with a square cross-section and 457 mm on a side. The dynamic testing was conducted during driving using the Pile Driving Analyzer manufactured by Pile Dynamics, Inc. The goals of the dynamic testing were to install the piles without damage and to gather information necessary to estimate their static capacity at the end of driving. Set checks performed during driving also helped to assess short term freeze effects. Static testing continued over a period of years to determine the increase of side shear capacity.

To reduce the testing cost and clearly separate the side shear from end bearing, a method developed by Dr. Jorj Osterberg was chosen for the static tests. This test method used a single action jack, the Osterberg cell (O-cell), which was cast into the pile bottom. When pressurized, the O-cell expanded, pushing the pile upward to mobilize the side shear while using the end bearing for reaction. The upward capacity of the O-cell was limited by the available end bearing and the maximum stroke of the O-cell. The static tests were performed using the Quick Test Method. Two tests on steel pipe piles and numerous tests on drilled shafts have previously been conducted using the O-cell. This project, however, was the first application of an O-cell in a precast concrete pile.

The static tests were performed at time intervals which provided a geometric progression in the elapsed time following driving. Tests were scheduled at 1, 4, 16, 64 and 256 days after completion of driving. Actual test times varied according to the practical circumstances. A total of 25 tests have now been conducted on the 5 test piles. In late 1998, the final tests were performed on two of the piles at over 1000 days elapsed time. The available pile driving records, dynamic test results and static test results for these piles are included in this report.

3.2 Test Pile Soils

The test pile sites for this project were carefully chosen from the available FDOT projects to obtain results in a variety of soil types. The test piles were positioned on FDOT right of way, near the edge of the construction work area so as not to impede contractor operations. All of the sites chosen were located in coastal or major fluvial basins to ensure full saturation of the soils investigated. The FDOT plans at each site provided Standard Penetration Test (SPT) borings which were used for preliminary site selection. UF personnel then performed exploratory Cone Penetrometer (CPT) soundings near the proposed location of each test pile. These soundings were used to assess the soil type, layering, potential side shear, and available end bearing reaction. The pile lengths and instrument locations were designed using the CPT soundings. Logs of the SPT borings and CPT soundings in the vicinity of the installed test piles are included in Appendix A.

3.3 Casting, Size, and Location

All of the test piles used for this project were cast at Gate Concrete Products in Jacksonville, FL. An 457 mm pile width was chosen because of its common use for

bridge construction by the FDOT. Gate and UF personnel worked together to install the instrumentation and O-cell in the pile bed prior to casting. So that Gate could cast standard production piles in the same bed with the test piles, the O-cell was designed to fit within the standard prestress pattern and the strands were pulled through holes drilled in the top and bottom plates of the cell. Each pile contained strain gages, total pressure cells, piezometers, telltale conduits, steel pipe for the O-cell and an O-cell. The instrument cables were bundled to exit the pile face approximately 0.6 m below the pile top. Additional reinforcement was included at the pile tip to strengthen the area near the O-cell. Otherwise a standard FDOT design was used for the test piles.

The concrete mix design for the test piles was in common use by Gate. It contained Type 1 Portland cement, limerock coarse aggregate, and quartz sand fine aggregate. To obtain good concrete flow around the O-cell and the installed instrumentation, the maximum coarse aggregate size was limited to 19 mm diameter and a super plasticizer was used in the concrete mix. Air content was limited to 4% and a 150 mm slump was targeted. Gate workers used a penetration vibrator to consolidate the wet concrete but maintained a safe distance from the instrumentation to avoid damage. The test piles were stripped from the beds within two days, typically with a compressive strength of 34.5 MPa. Compression tests by Gate indicated a 14 day concrete strength of 58.6 MPa. Shop drawings and photographs of the test pile are included in Appendix B along with details of the construction and instrumentation.

At each research site the test pile was driven at a location dedicated to the research and away from other structures. For easy access, all of the test piles were driven on land. Table 3.1 summarizes the important details by location for each test pile, including the predominant soil type(s).

Five piles were successfully driven and tested during this research project, all in Florida. The first one was installed at the Buckman Bridge (BKM) in Jacksonville. The second was driven at the Aucilla River Bridge (AUC) near Lamont. Two more were then driven at the Vilano Beach Bridge (VLE and VLW) in St. Augustine. The fifth pile, driven at the Seabreeze Bridge (SBZ) in Daytona Beach, was the only one included in the project plans.

3.4 Driving Equipment and Procedures

The equipment used to drive each of the installed test piles varied by site and was already in use by the Contractor for other piles. When using swinging leads, the Contractor was required to provide an above ground template to hold the pile in position and alignment during driving. Prior to driving each hammer was analyzed using the wave equation to verify drivability and determine the appropriate pile cushion thickness. The installation specifications allowed the Contractor to excavate up to 1.5 m of soil to stand the pile securely during installation. Jetting was not allowed except for the Vilano Beach West pile described below.

After the test pile was delivered to each site, UF personnel measured the pile length and wave speed, and then installed bolt anchors near the pile top for attachment of the dynamic instrumentation. The pile was also marked along its length in 0.30 m intervals with 25.4 mm intervals added in the expected final penetration range. This preparatory work was scheduled to avoid delay to the contractor, generally the day before driving.

The Buckman and Vilano Beach piles were "stuck" in a steel template and used swinging leads with the hammer. The Aucilla River pile was driven without a template using fixed leads. After the hammer and pile were in position, UF personnel attached

the dynamic instruments near the pile top. S&C personnel assisted with the dynamic instrumentation which is discussed in Section 3.5 below. The piles were initially driven at reduced energy until the penetration resistance increased to a level that the allowable tension would not be exceeded at a higher energy. Driving was essentially continuous until the target tip elevation was reached. Brief stops were required at each piezometer level to remove the saturation seal on the piezometers just prior to penetration. Set checks were then performed at 15 minutes and 1 hour after the end of initial driving. These set checks were included to investigate short-term freeze effects and confirm the pile capacity.

Immediately following the completion of driving, the installed test piles were prepared for static testing. The initial static test was performed as soon as possible, typically within 8 hours of driving. Since the static test equipment could not be easily removed from the test pile, no redrives were performed after the initial static test. Table 3.1 summarizes the test piles, including their location, predominant soil type(s), length, important dates and elevations, and the wave speed measured using the Pile Driving Analyzer. Appendix C presents driving records and photographs for the test piles. A more detailed description of the pile hammers and installation procedures at each test site follows below.

3.4.1 Buckman Bridge (BKM)

The Contractor at the Buckman Bridge was Traylor Brothers Inc. (TBI). The test pile was driven with a variable energy Delmag D46-32 diesel hammer near the south abutment of the northbound bridge. This hammer had a ram weight of 45 kN and a maximum rated energy of 146 kN-m. Four fuel settings were available on the D46-32 for variable energy driving. To prevent pile damage during driving only the lowest two

settings were used. Conbest micarta, 51 mm thick, and a 38 mm thickness of aluminum plates, were used together as the capblock. The pile cushion was 248 mm thick, constructed of new 19 mm plywood. TBI provided a small surface template supported on two HP14x89 steel piles (1.3 m and 1.5 m center-center spacing from the test pile). The support pile tips were vibrated to elevation -0.37 m and -0.61 m. Driving was interrupted to remove the support piles when the test pile had penetrated to a tip elevation of -1.40 m.

3.4.2 Aucilla River Bridge (AUC)

The Contractor at the Aucilla River Bridge was W.R. Fairchild Construction Company, Ltd. The test pile was driven with a Fairchild 32 air hammer near the west abutment of the eastbound bridge. This hammer had a ram weight of 47 kN and a maximum rated energy of 44 kN-m. Two fixed strokes, 0.46 m and 0.91 m, were available on this hammer for variable energy driving. The pile was driven for the first 7.6 m using the 0.46 m stroke before switching to the full 0.91 m stroke. Blue polymer, 127 mm thick, was used in the capblock. The pile cushion was 150 mm thick, constructed of new 19 mm plywood. Fairchild used this hammer with fixed leads and drove the pile from the existing bridge deck, about 3.8 m above the ground surface.

3.4.3 Vilano Beach Bridge East (VLE)

The Contractor at the Vilano Beach Bridge was Traylor Brothers Inc. (TBI). This test pile was driven with a variable energy Delmag D46-23 diesel hammer on the north side of the east abutment. The D46-23 had a ram weight of 45 kN and a maximum rated energy of 142 kN-m. Four fuel settings were available on this hammer for variable energy driving and all four were used to drive this test pile. Conbest micarta

51 mm thick and a 38 mm thickness of aluminum plates were used for the capblock. The pile cushion was 248 mm thick, constructed of new 19 mm plywood. TBI used swinging leads for this hammer and provided a large surface template supported on two 457 mm steel pipe piles driven approximately 5.5 m from the test pile. The support pile tips were vibrated to approximately elevation -2.1 m. The support piles and template were removed at the end of driving.

3.4.4 Vilano Beach Bridge West (VLW)

A second test pile was driven at the Vilano Bridge north of the west abutment. TBI used the same Delmag D46-23 diesel hammer described above with a surface template held in place by dead weight. The pile cushion was 304 mm thick, constructed of new 19 mm plywood. The soil zone of interest for this pile was a soft clay found along the bottom half of the pile and the anticipated end bearing was relatively low (712 kN). To limit the side shear in the loose sand above the clay layer, the pile location was prejetted to a depth of approximately 7.3 m below ground. Soil resistance proved to be very weak and only single drops of the ram were required to "drive" the pile. (The pile penetrated the clay layer under its own weight.)

3.4.5 Seabreeze Bridge (SBZ)

The Contractor at the Seabreeze Bridge was GLF Construction Corporation. The test pile was driven on the causeway south of Pier 8W in the westbound bridge. The hammer used was a variable energy Delmag D62-22 diesel with a ram weight of 65 kN and a maximum rated energy of 224 kN-m. This hammer would not operate on the lowest fuel setting (#1) and all of the driving was done at the next highest setting (#2) with acceptable stress levels. The hammer cushion was constructed of 51 mm

blue polymer and 13 mm aluminum. The pile cushion was 286 mm thick, constructed of 19 mm plywood. GLF placed and cleaned out 4.6 m of 762 mm diameter steel casing with cross pieces at the top to use as a pile template. The template proved unstable during driving and the leads were "stabbed" to stabilize the pile alignment during driving. The casing was then chained to the leads and the cross pieces were removed. At the end of driving the casing was removed and the hole was backfilled. The soil in the zone penetrated by the casing was a loose sand containing muck and rubble.

3.5 Dynamic Instrumentation and Analyses

The dynamic instrumentation used for each test pile is shown schematically in Figure 3.1. It consisted of a pair of accelerometers and a pair of strain gages, one of each bolted on two opposing faces of the pile to detect nonuniform driving stresses (bending). A shielded cable carried the electronic signals from these instruments which were monitored using a GCX Pile Driving Analyzer (PDA) manufactured by Pile Dynamics, Inc (PDI). The dynamic instruments and PDA were provided on loan from FDOT District 1 and returned to the Tallahassee FDOT office after the pile installation.

The PDA monitored and conditioned the signals from the instruments to obtain the average force and velocity in the pile from the strain gages and accelerometers respectively. For each hammer blow, the PDA displayed time traces of the force and velocity on an oscilloscope. It also calculated various parameters (which were printed on a paper tape) including: the maximum tension and compression forces in the pile, the transmitted energy, the maximum velocity, a pile damage indicator and the blow rate. In addition, the PDA analyzed each blow and provided an estimate of the overall

static capacity. A permanent record of the force and velocity traces was recorded on a 7-channel FM tape recorder for additional office analysis.

The PDA was routinely used to obtain, analyze and record all of the hammer blows, from start to finish of the driving. PDI temporarily upgraded the FDOT Analyzer to a GCX model to include memory storage and also provided a calibration for the dynamic instruments. Unfortunately the need for calibration was not appreciated until after completion of the field work. Appendix D includes the new and original calibrations and the correction ratio used during analysis of the dynamic measurements.

The recorded force and velocity waves from selected hammer blows were analyzed using the CAPWAP computer program from Goble, Rausche, Likins and Associates, Inc. (GRL). CAPWAP models the pile as a series of segments with soil resistance activated by displacement. With user input for the pile properties, the static soil resistance, the soil quake and the soil damping, CAPWAP then analyzes one of the measured waves, either force or velocity, and calculates the other. The calculated wave is compared for accuracy with the measured wave and assigned a quantitative match quality (weighted heavily on the early portion of the wave). CAPWAP is highly interactive and the engineer employs a trial and error input procedure to obtain the "best" wave match. This match should utilize a reasonable combination of the pile model, the soil variables, the blow count and the engineer's knowledge of the site. Therefore the final solution is not unique and depends on the engineer's judgement as well as CAPWAP's calculations. The best match quality is not necessarily the best overall solution.

Dynamic data from the PDA measurements were stored in digital form on computer diskette for these analyses. CAPWAP analyses were performed for blows at

the end of initial driving, the beginning of the 15 minute set check and the beginning of the 1 hour set check. The results of these analyses were presented in Majboor(1996) and are included in Appendix D for easy reference. Corrections for the final instrument calibrations are included in the CAPWAP analyses.

3.6 Driving Records

Records of the pile driving are included in Appendix C. The average blow count, measured stroke and PDA results for each penetration increment are summarized by tip elevation. These records also provide information about the pile, hammer, cushions, and date and time of drive for each test pile. The tabulated PDA results include the measured blow rate (used to estimate stroke), the maximum measured compression force, the maximum calculated tension force, the calculated energy entering the pile and an estimate of the static pile capacity (side shear plus bearing). Note that no changes were made to the PDA field data to include the final instrument calibrations. The process of retrieving the analog dynamic data from the FM storage tape is subject to voltage amplification error, both in recording and replaying the tape. This error combined with differences in digitizing the analog waves would mask the relatively small changes in calibration.

The PDA offered a choice of several simplified calculations for the total soil resistance (static plus dynamic) activated by each hammer blow during driving. The measured velocity along with an input value of the Case damping constant, J_c, allows the PDA to estimate the dynamic soil force and then determine the static capacity. The PDA operator could vary the damping constant during driving, but choice of the "proper" damping value was highly subjective. For a more consistent comparison of the static soil capacity over each driving record as well as between test piles, the damping

was held constant at J_c = 0.4 for all of the test piles. In Florida soils, S&C has obtained reasonable estimates of static pile capacity from the PDA value of RMX at this damping. Average RMX values for each depth increment are presented in the Appendix C driving records with the other PDA results. The RMX values are primarily useful as a profiling tool, and the CAPWAP analysis probably yields a more reliable estimate of static pile capacity.

Table 3.1 Test Pile Summary

Test Site	Pile Location	Primary Soil Type	Pile Length m	Cast Date mm/dd/yy	End of Driving mm/dd/yy hh:mm	Tip Elevation EOD msl,m	Ground Surface Elevation msl,m	Measured Wave Speed m/sec	Calc. Dynamic Modulus MPa	Telltale Gage Length m
Buckman Bridge I-295 Jacksonville, FL	Sta 362+90 160 ft Lt CL	Dense Fine Sand	10.05	03/14/94	03/26/94 1:45	-4.83	4.33	3,901	36,580	8.85
Aucilla River Bridge U.S.19 (S.R.20) Aucilla, FL	Sta 494+47 93 ft Rt BL	Soft to Med. Stiff Silty Clay & Fn. Sand	21.33	03/14/94	03/30/94 11:43	-2.97	16.22	4,019	38,820	18.89
Vilano Bridge East AIA Vilano Beach, FL	Sta 183+47 96 ft Rt CL	Dense Fine Sand	11.88	03/22/94	04/14/94 1:04	-9.59	1.09	3,908	36,710	10.37
Vilano Bridge West AIA Vilano Beach, FL	STA 142+60 70 FT LT CL	Soft to Med. Stiff Silty Clay	19.96	03/22/94	08/24/94 2:52	-17.01	1.39	4,165	41,680	18.10
Seabreeze Bridge S.R.430 EB Daytona Beach, FL	Sta 447+08 60 ft Rt BL	Med. to Fn. Sand & Silty Clay	26.84	12/07/95	01/26/96 3:36	-23.20	1.92	4,026	38,950	24.82

Notes: All Piles are 457 mm Square Prestressed Concrete. EOD = End of Driving.
Dynamic Modulus = (Concrete Density)*(Wave Speed^2), Concrete Density = 2403 kg/m^3

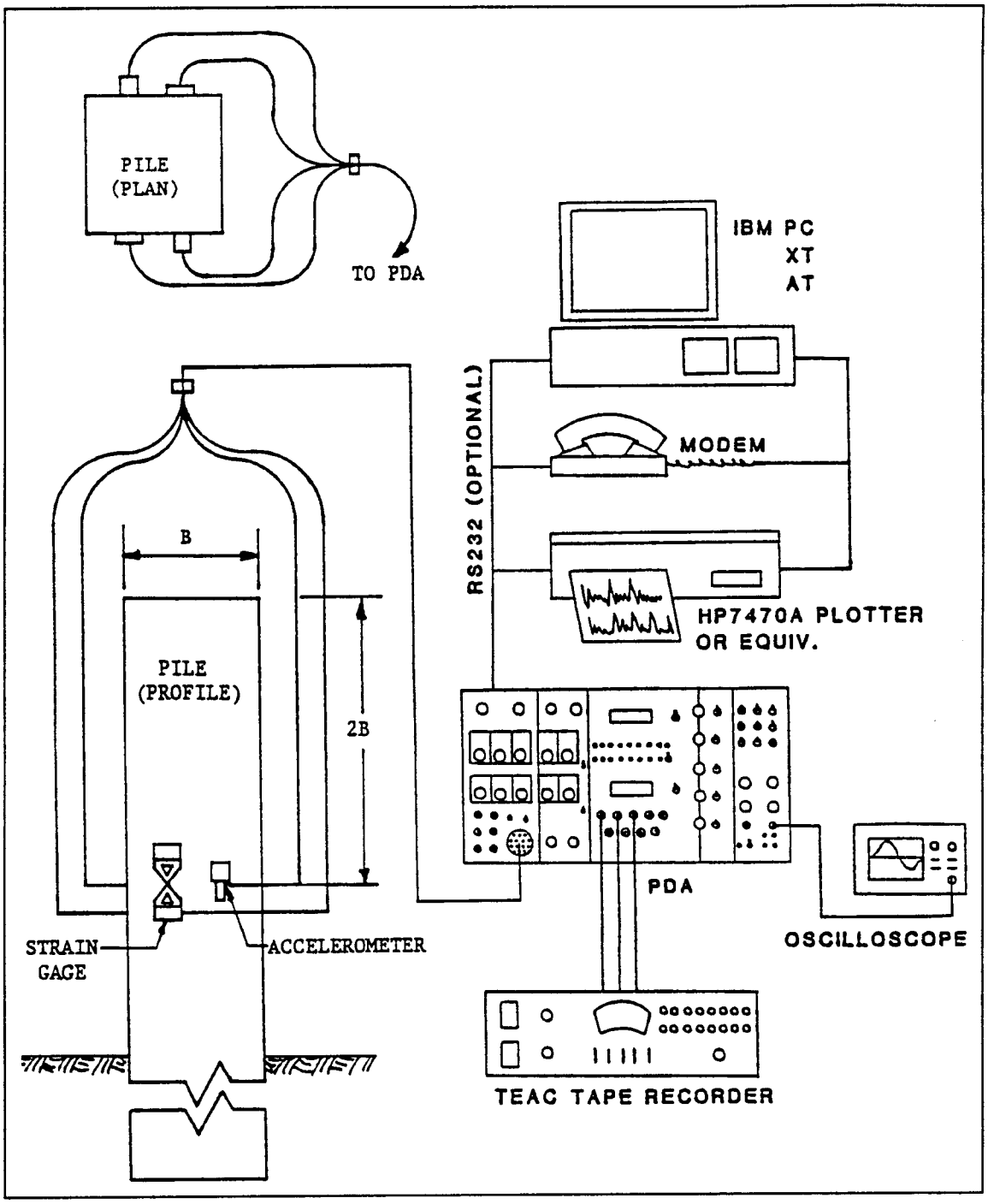

Figure 3.1 Schematic of PDA Dynamic Instrumentation

CHAPTER 4
PILE STATIC TEST EQUIPMENT AND PROCEDURES

4.1 General

Static tests were successfully performed using the Osterberg cell at five sites. The test results are presented in Appendix F of this report.

UF supplied the load test equipment for this project including telltale rods, O-cells, a hydraulic pump, dial gages, scales, supporting members, and a survey level. UF personnel, including student volunteers, assisted with the setup and performance of the tests. S&C personnel assisted with the installation of the O-cell and telltales and participated in many of the static tests. A general schematic of the load test setup and the O-cell is presented in Figure 4.1. Details of the test instrumentation and procedures are provided below.

4.2 Load Application

The static tests in this research were performed using an Osterberg cell (O-cell) cast into the pile tip. The O-cell, named for its inventor Dr. Jorj Osterberg, was a single-action jack which loaded the pile in compression from the bottom using the bearing capacity of the soil for reaction. In other applications, including drilled shafts, the O-cell has often replaced conventional top load testing for reasons of economy, site access restrictions, or the need for high capacity testing. The O-cells used during this research were manufactured by American Equipment and Fabricating Corporation in Rhode Island and purchased through Loadtest, Inc., in Gainesville, Florida. Although

theoretically possible, the O-cell is generally not retrieved following the test and is usually abandoned.

To date the O-cell has primarily been used to test drilled shafts. Cells of different size, capacity, and stroke have often been tailored for specific applications. Prior to the UF research the O-cell had twice been placed on the bottom of steel pipe piles, demonstrating its potential for testing driven piles. This research project was the first use of the O-cell on a driven concrete pile. Photographs and plans for these test piles are included in Appendix B.

As illustrated in Figure 4.1, the O-cell used for this project was essentially an inverted piston-type jack which expanded axially. A steel plate welded to the piston applied load to the soil beneath the pile tip and provided reaction to load the pile upwards in side shear. A second steel plate and four steel reinforcement rods helped transmit the upward load from the O-cell into the pile. A central steel pipe (38 mm XXS) extended from the cell up to the top of the pile. The body of the cell had an outside diameter of 279 mm and the steel plates were of the same dimension as the pile (457 x 457 mm). The cell piston had a 150 mm maximum stroke and a 229 mm diameter. With a pressure rating to 69 MPa, the maximum available O-cell load was 2.9 MN. The body of the piston was filled with cement grout to lighten the cell weight (1.3 kN) and reduce construction costs. To keep the cell closed during shipment, handling, and weak driving, the bottom plates were tack-welded together. However, most of this weld material was ground away before driving so as not to affect the initial static test.

The Osterberg cells were closed and empty when driven in order to prevent hydraulic shock damage to the seals. When the piles were cast the central pipe was temporarily capped and a styrofoam block cast into the pile top provides for quick

access to the pipe. Upon completion of driving, the styrofoam was removed, and a tee was welded to the pipe. The O-cell and pipe were then filled with a 4:1 solution of water and water-miscible oil. A quick-connect was installed on the tee for connection to a hydraulic pump. The expansion of the O-cell was generally small during the static tests, 13 to 25 mm, and a hand-operated pump provided sufficient control. Hydraulic fluid was used in the hand pump to prevent damage to the pump seals.

The side shear capacity of both test piles at Vilano Beach increased significantly after installation and, although for different reasons, eventually exceeded the available bearing. Consequently, a complete series of tests to failure in side shear could not be conducted without additional top loading.

A design oversight caused the problem with the Vilano East pile. The available bearing decreased with each test, probably because the soil (a fine sand) entered the cavity created between the plates of the O-cell as it opened, and thus loosened the bearing stratum. Following the fourth Osterberg test (which failed in bearing), the Vilano East pile had a maximum usable bearing of about 445 to 890 kN. Based on a linear-log time projection of the side shear measured during the first three tests, an additional 890 to 1330 kN will be needed for a side shear failure after 2 years. Though it is feasible to apply this load as uplift at the pile top, a substantial load frame will be required. A crane may be used to apply the load as described below. For economic reasons, no additional tests were performed on this pile.

The O-cell used on the Vilano West pile was sealed before driving to prevent the Vilano East problem. Both the gap between the plates and the holes through the bottom plate (for the prestress strands) were covered with 3 mm thick steel sheeting. Although the design change prevented a loss of bearing, the increase in side shear capacity exceeded expectations and eventually surpassed the available bearing. A

linear-log time extrapolation of the side shear capacity from the first three tests indicated that the estimated long term side shear was only about 222 kN greater than the available bearing. In order to continue the research UF designed and built a supplemental uplift load system for the Vilano West pile.

For economic reasons, a crane was chosen to provide the uplift required to continue testing the Vilano West pile. The crane pulled on a load frame which was attached to the pile using anchor bolts. The crane operator applied the load through dead lift, but had difficulty maintaining a constant load with good precision. To measure the applied load and maintain precision, an electronic load cell and an 890 kN center hole jack were inserted between the crane hook and the load frame. The uplift load was initially applied by the crane operator and then adjusted as necessary with the jack, using the load cell as a reference. The test procedure applied the initial load increments with the crane, and then maintained a constant crane load while the O-cell was pressurized to a failure in side shear (as in the previous tests). One test was successfully conducted using this supplemental load system. It was discovered during this test that wires to the top four strain gages were cut during installation of the load frame anchor bolts. The loss of these gages complicates the shear analyses because the pile load at these locations could not be averaged to eliminate bending effects.

4.3 Load Measurement

Each O-cell was provided with a full-range calibration of pressure versus load for expansions of 25 mm, 76 m and 127 mm The calibration data was used to develop a best fit equation correlating the cell pressure and its expansion with the applied load. The data and correlation equations are presented in Appendix E.

The pressure applied to the O-cell was measured in two ways during the static tests, with a 69 MPa pressure gage and with a vibrating wire piezometer. A 150 mm Helicoid gage, on loan from the FDOT Office of Research and Materials in Gainesville, was used for all tests performed through the end of 1995. Appendix E includes a calibration for this gage. Beginning with the Seabreeze tests in 1996 the pressure gage was changed to a 100 mm TK-Simplex model. Although this gage had not been recently calibrated, a careful comparison of it with the piezometer measurements indicated that it was acceptably accurate.

The minimum increment on both pressure gages was 690 kPa, which was too coarse to accurately set and maintain a target pressure during the static tests. The vibrating wire piezometer, Geokon model 4500H, provided a much finer resolution (about 20 kPa) and better accuracy. Along with a Geokon readout, model GK-401, it was used to control the applied load. The GK-401 provided piezometer readings in units of frequency squared (readout position B) which were then reduced to pressure. Geokon provided a linear calibration for this piezometer of 19.987 kPa/digit. It was recalibrated with the pressure gage and a very flat power curve was found to better fit the calibration measurements. Both piezometer calibrations are included in Appendix E.

Several readings were recorded during each load interval and then averaged to obtain the applied pressure. There was generally good agreement between the calibrated pressure indicated by the Helicoid gage and the piezometer. The piezometer was judged more accurate (and precise) than the gage and, therefore, the piezometer measurements were used to calculate the applied load.

A full bridge strain load cell was used to measure the supplemental uplift load for the Vilano Beach West pile. This load cell was calibrated at the UF Structures Lab prior to the load test. Appendix E also includes this calibration.

4.4 Pile Top Movement

Two methods were used to monitor the pile top movement during the static load tests. Measurements were obtained using both a wireline and a survey level. Upward movement was taken as positive. These two measurements agreed well for all of the tests.

The primary and most sensitive measurement was obtained from the wireline. To measure the pile movement a mirror-backed engineer's scale with 0.5 mm increments was glued directly to the pile with "Super Glue". The scale was read using a wireline reference. The wireline, 0.25 mm diameter stainless steel, was strung between two 102 mm x 102 mm posts located 3 m from the pile center. The wireline was firmly attached on one end, and the other end passed over a pulley and was tied to deadweight to maintain a constant tension. Wireline readings were usually estimated to the nearest 0.13 mm.

As an independent check of the wireline, a survey level was positioned on a tripod about 9 m from the test pile. To measure the pile movement an engineer's scale with 0.50 mm increments was glued near the top of the pile. Another scale was glued to a convenient standard as a backsight. The survey level was then used to measure the vertical movement of test pile. Readings were estimated to 0.25 mm.

4.5 Pile Bottom Movement

The movement of both the top and bottom plates of the O-cell was found by using telltale rods. The difference between the pile top movement and the movement of the O-cell top (the pile compression) was measured using two unstrained rods made from 8 mm diameter stainless steel. They were placed inside 19 mm diameter PVC pipes cast into the pile at opposite corners. The rods were flush coupled in 3 m lengths with a rounded point on the bottom rod. The end of each pipe was capped with a steel plate at the top of O-cell, approximately 0.3 m from the pile bottom. The telltale pipes were closed to prevent contamination during the transport and driving of the pile, and the rods were oiled during installation (after driving) to minimize friction inside the pipe.

UF provided a dial gage with 0.0025 mm divisions and 5 mm travel for each of the pile compression telltales. The gages were supported from a friction collar clamped to the top of the pile. The gage stem, aligned above and on the axis of the telltale rod, rested on the smooth glass surface of a reference clip clamped to the top of the rod. During the load test these gages directly measured the compression of all but the bottom foot of the pile, with compression taken as positive. The cell top movement (positive upwards) was calculated by adding the pile compression to the pile top movement.

Movement of the O-cell bottom plate was found by using a central 13 mm diameter steel O-cell telltale rod nested inside the hydraulic pressure pipe leading to the cell. The telltale rod was inserted through the top of the hydraulic pipe after the pile was driven, and then threaded into the cell's bottom plate. It was flush-coupled in 3 m lengths, finishing with a polished stainless steel section to exit the pipe tee at the pile top through an o-ring seal.

A steel clip with a glass bearing surface for the dial gage was clamped to the top of the O-cell telltale approximately 50 mm above the pipe tee. The dial gage was supported from the above friction collar and rested on the smooth glass surface of a telltale clip. The gage had a travel of 50 mm with 0.025 mm increments and was usually read to the nearest 0.0025 mm. Test personnel carefully plumbed the gage and friction collar during their installation to insure accurate axial measurements. The cell bottom movement was calculated by subtracting the downward movement of the telltale from the pile top movement. Movement of the bottom plate was taken as negative downward.

The length of the O-cell telltale inside the O-cell pipe was subjected to hydraulic pressure during the test, which caused it to lengthen due to the Poisson strain effect. Movements recorded for the O-cell telltale were corrected for this Poisson effect as described in Appendix E.

4.6 Pile Compression Measurement

The overall pile compression during the static tests was measured using the telltales described in Section 4.5. To determine the axial distribution of strain and interpret the load in the pile, five to seven levels of strain gages were cast into each test pile. Based on other successful applications, vibrating wire strain gages (Geokon model VCE-4200) were chosen for this project. These gages were installed in pairs at locations along the pile to correspond with the layering of the adjacent soils. They were oriented parallel to the pile axis and centered on opposing pile faces between adjacent prestress wires. A template and nylon cable ties were used to maintain their axial alignment with the fully tensioned prestress wires. The gages were checked before,

during and after installation to verify their functionality. Figures 4.2 - 4.6 show the strain gage elevations and reference numbers.

Although not new to the geotechnical field, the vibrating wire strain gage is described here for completeness. Each strain gage contained a thin, tightly stretched wire which was used to measure the strain. It was mounted inside of a rubber-sheathed steel tube (8 mm dia, 150 mm long) which was closed at each end and anchored into the concrete by a steel disk (19 mm dia). To measure the strain the wire was magnetically "plucked" by an electrical pulse which was applied to a coil mounted around the center of the tube. The wire then vibrated at a resonant frequency, similar to the string of a musical instrument. Each vibration of the wire induced an electrical pulse in the coil and a readout device counted the pulses to determine the vibration frequency. As the wire was stretched or relaxed, the resonant frequency varied with the induced strain.

The Geokon gages were manufactured to very close tolerances, and Geokon provides a general strain versus frequency calibration adequate to calculate the strain. A technician may use the Geokon GK-401 readout device to read either the frequency squared or, on a setting with calibration included, the actual strain. To speed the measurements and eliminate recording error, a datalogger was used during the static tests to measure and store the squared frequency readings. The Geokon strain gages also included a resistance thermistor to allow the user to measure and compensate for strains induced by temperature changes. These readings were obtained with the datalogger as well. However, the typical temperature changes measured during the load tests were insignificant, and corrections were minor.

The datalogger used during the static tests was a model CR10 from Campbell Scientific, Inc. For verification, redundant readings were also taken before and after

each load test using the GK-401 and a digital voltmeter. The strain induced during each load was then calculated from the gage readings as follows:

$$\text{strain} \times 10^6 \ (= \mu\epsilon) = 3304 \ (f_o^2 - f_i^2) + 1.3 \ (t_o - t_i)$$

where:
- f_o = gage frequency at zero load condition, kHz
- f_i = gage frequency during load step, kHz
- t_o = thermistor temperature at zero load condition, °C
- t_i = thermistor temperature during load step, °C

Except for the initial test, the zero load condition was taken at the start of the test with the O-cell vented to atmospheric pressure. The initial test began in all cases with residual stresses (and strains) in the pile due to the driving. The zero condition for the initial test was therefore taken at the end of the test with the O-cell vented to atmospheric pressure. Multiplying the strain readings (compression positive) by the pile modulus and cross-sectional area provided the pile load. The measured strains were also integrated over the pile length and compared with the telltale measurements for overall verification. Appendix F includes the detailed analyses of the strain readings and plots of the strain and interpreted pile load.

The Geokon vibrating wire gages have a reputation for being stable, reliable and rugged (McRae and Simmonds, 1991). Since the strain measurements depended on frequency, they are not affected by resistance changes such as longer cables, moisture and voltage leaks. Radio and electrical interference were minimized by grounding the shielded cable. Although the driving stresses and long term creep effects may cause a zero shift, in general, this will not affect the relative accuracy of the gages during the short term load tests. The cables leading to four of the strain gages installed in the Vilano West pile were accidentally cut during installation of the supplemental load frame and they no longer function. Otherwise, all of the strain gages used in this project have functioned satisfactorily.

4.7 Pore Pressure Measurement

The decay of pore pressures generated in the soil during the installation of a pile is thought to have an effect on the pile capacity. For this reason, three to five levels of piezometers were installed along one face of each test pile. Figures 4.2-4.6 show the piezometer elevations and their reference numbers for the test piles.

Because of their record of long term stability, vibrating wire piezometers (Geokon model 4500S) were chosen for this measurement. They were located at the center of the anticipated soil layers and oriented so that the pore stone was parallel to the pile surface (facing outward). For this research, a 50 micron sintered stainless steel pore stone approximately 3 mm thick and 16 mm diameter was selected. A pressure range of 1 MPa was chosen to allow for the potentially high transient pore pressures induced during pile installation. These piezometers have an accuracy of ±0.5% of full scale, or about 5 kPa.

The operational principle of the vibrating wire piezometer is similar to that of the strain gages described in Section 4.6. For pore pressure measurement the vibrating wire was attached to a thin steel membrane behind the pore stone and which flexed with the surrounding water pressure. The Geokon piezometer also includes a resistance thermistor to allow the user to measure and compensate for changes in the wire tension caused by temperature shifts. Although the relative effects of temperature are small, the temperature was routinely measured and considered. A calibration of wire frequency against pressure and ambient temperature was provided by Geokon with each piezometer. Initial readings taken at delivery compared well with these calibrations.

The piezometers were saturated and sealed prior to installation on the piles. The pore stones were first boiled in a solution of 50% glycerin and 50% distilled water and then installed on the piezometer while immersed in a bath of the same solution. The saturated piezometers were then deaerated by vacuum, sealed with a latex membrane (finger cot) and dipped in a quick-drying liquid plastic for protection of the membrane. The piezometers were checked before, during and after installation to verify their functionality. A template was used to maintain the alignment of each piezometer during concrete placement. The seal was removed from each pore stone when the pile was driven, just before the piezometer entered the soil.

Piezometer and thermistor readings were taken with the GK-401 readout and a digital voltmeter prior to saturation, just after driving, before and after each load test, and as often as needed to plot the pressure decay. Readings during the static tests were obtained using the datalogger. Appendix G includes a tabulation of the GK-401 piezometer data supplemented by datalogger measurements where appropriate. The initial readings measured before saturation were used as a baseline for calculation of the pore pressure. Appendix G also presents plots of the pore pressure decay following pile installation. The plotted measurements include only results obtained prior to any load tests performed that day. One of the piezometers (#25442) installed in the Vilano West pile operated sporadically (both before and after driving) and may have been damaged during construction of the pile. So far, all of the other piezometers used in this project have functioned satisfactorily.

4.8 Total Stress Measurement

In order to estimate and track the effective stresses adjacent to the pile after driving, measurements of both the total stress and pore pressure were required. The

total stress cells chosen for this project were very similar to blade used with the Marchetti Dilatometer soil test. These cells, referred to as "DMT Cells", were developed by Dr. Silvano Marchetti and were 96 mm in diameter with a 60 mm diameter membrane. They were made of stainless steel with a stainless steel membrane and were essentially a circular cutout from the Dilatometer blade. The measurement principle was similar to that used for the Dilatometer blade except only the initial pressure "A-reading" was measured, the pressure required to equalize the total soil stress against the membrane. Also, unlike the actual DMT blades, the A-reading taken by the DMT cells occurs at zero deflection and requires no correction for initial membrane movement.

The DMT Cells were cast into the pile immediately adjacent to each piezometer at the same elevation. They were oriented parallel to the pile surface (membrane facing outward) and located laterally 150 mm center-center from the piezometer. For protection of the membrane, the cells were covered with vinyl tape. Just prior to driving the protective tape was removed and the cells were calibrated to determine the value of "ΔA", which was added to the A-reading to correct for the membrane stiffness. The ground wire and pressure tubing for each cell was bundled with the electrical cables from the piezometers and strain gages. Figures 4.2-4.6 show the DMT Cell and piezometer elevations and their reference numbers for the test piles.

DMT Cell readings were taken just after driving, before and after each load test, and as often as needed to plot the total stress changes. No readings were taken during the static tests. The cells were pressurized using Nitrogen gas. The pressure was controlled and measured using a single gage Dilatometer control unit. This control unit had a 150 mm test gage with a range of 0/+1600 kPa (5 kPa minimum increment).

A clip-in 100 mm gage, range -100/+150 kPa was also used for better accuracy when taking smaller readings.

The DMT readings, corrected for the membrane stiffness (delta A) and any gage zero shifts, were assumed to represent the total stress in the soil immediately adjacent to the pile. Appendix H presents tabulations and plots of the total stress measured following pile installation at each of the four test sites. The plots include only measurements that were obtained prior to any load tests performed that day.

The DMT Cells performed satisfactorily during the first year with a few exceptions. DMT Cell 18 on the Vilano West pile was not functional. It was contaminated with water during storage of the pile and could not be repaired prior to driving. The other installed DMT Cells (19) worked satisfactorily up through the 64 day tests. Unfortunately, four additional DMT Cells (cells 3 and 4 at Aucilla, cells 9 and 16 at Vilano East) failed due to intrusion of water over the long term application. Leakage is believed to have occurred around the flat membrane gasket which was not designed as a long term seal. Eventually, with the possible exception of the Buckman test pile, all of the DMT cells failed due to leakage. However, it was found that measurements could be taken, even with the cell flooded, by using a voltmeter to sense the change in electric impedance at the A-reading position.

4.9 Test Procedures

The modified quick test was used during the testing of the piles on this project so far. The piles were loaded and unloaded in approximately equal steps. Load intervals were typically of 5 minute duration and unload intervals were 4 minutes long. During the loading phase of the test, the operator usually required about 0.5-1 minute to apply the load increment and the load was then maintained for 4-4.5 minutes. All of

the test instrumentation, including the strain gages and piezometers, were read at elapsed times of 0.5, 1, 2, and 4 minutes during the load phase. The datalogger was keyed to begin reading at each elapsed time and, depending on the number of gages, it required 15-30 seconds to complete the readings. If possible, the maximum test load was maintained for an additional 4-minute interval. The O-cells used for this research had a maximum stroke of 150 mm and each test was limited to about 19 mm of cell expansion.

During the unload phase, the loads were maintained for only 3 minutes resulting in 4 minute unload intervals. The instruments were read only at the end of the unload intervals. Upon removal of all load, the instrumentation was monitored for an additional interval to insure that rebound movements were small. The initial load intervals were set at approximately 5% of the estimated maximum load. Typically, five to ten unload intervals were used. The test results and load-deflection curves are included in Appendix F.

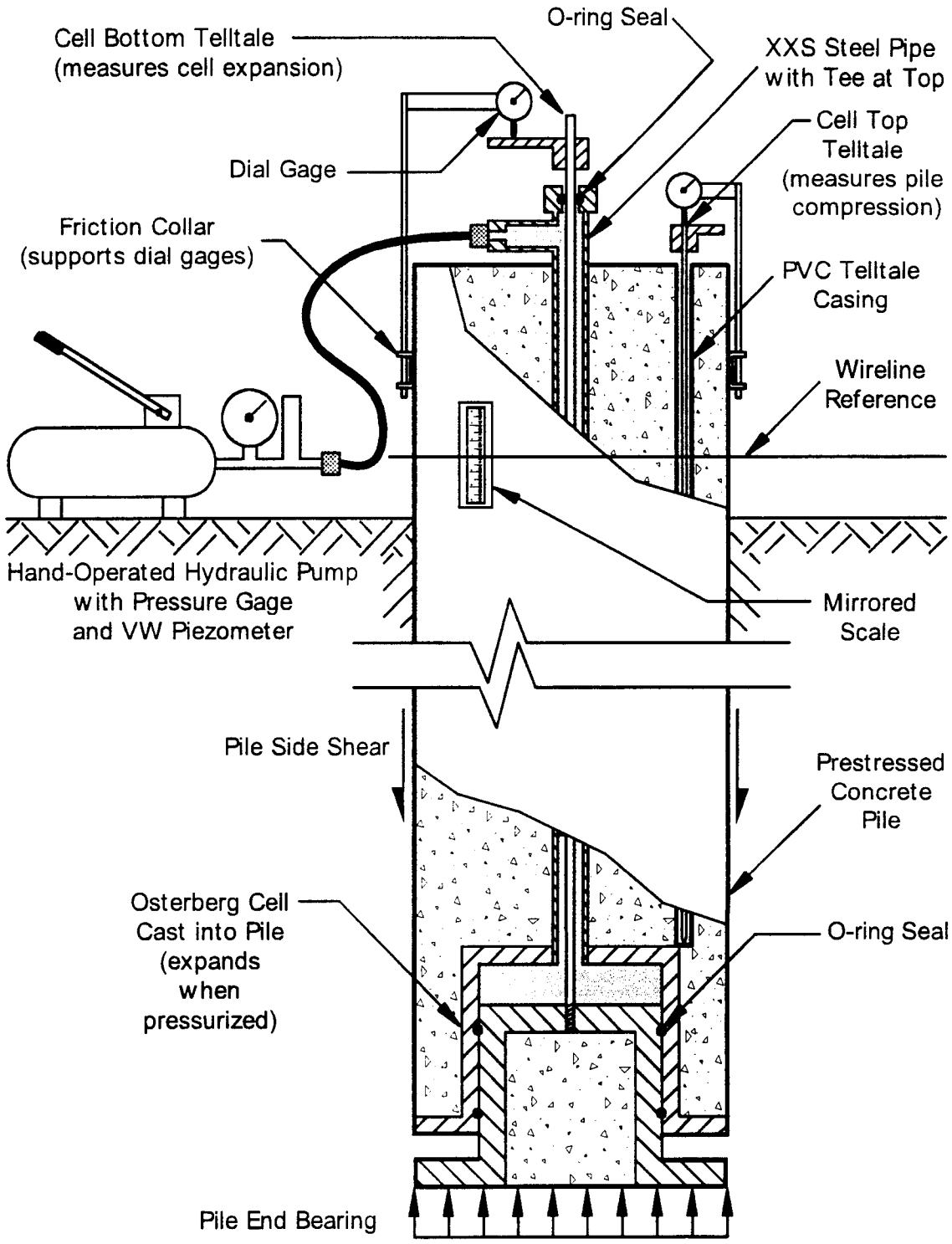

Figure 4.1 The Osterberg Cell and Instrumentation Used for Static Pile Tests

Buckman Bridge Test Pile
I-295, Jacksonville, FL
457 mm sq. PSC pile, 10.05 m long
Sta. 362+90, 160' Lt. C.L.
Cast 3/14/94
Driven 3/26/94

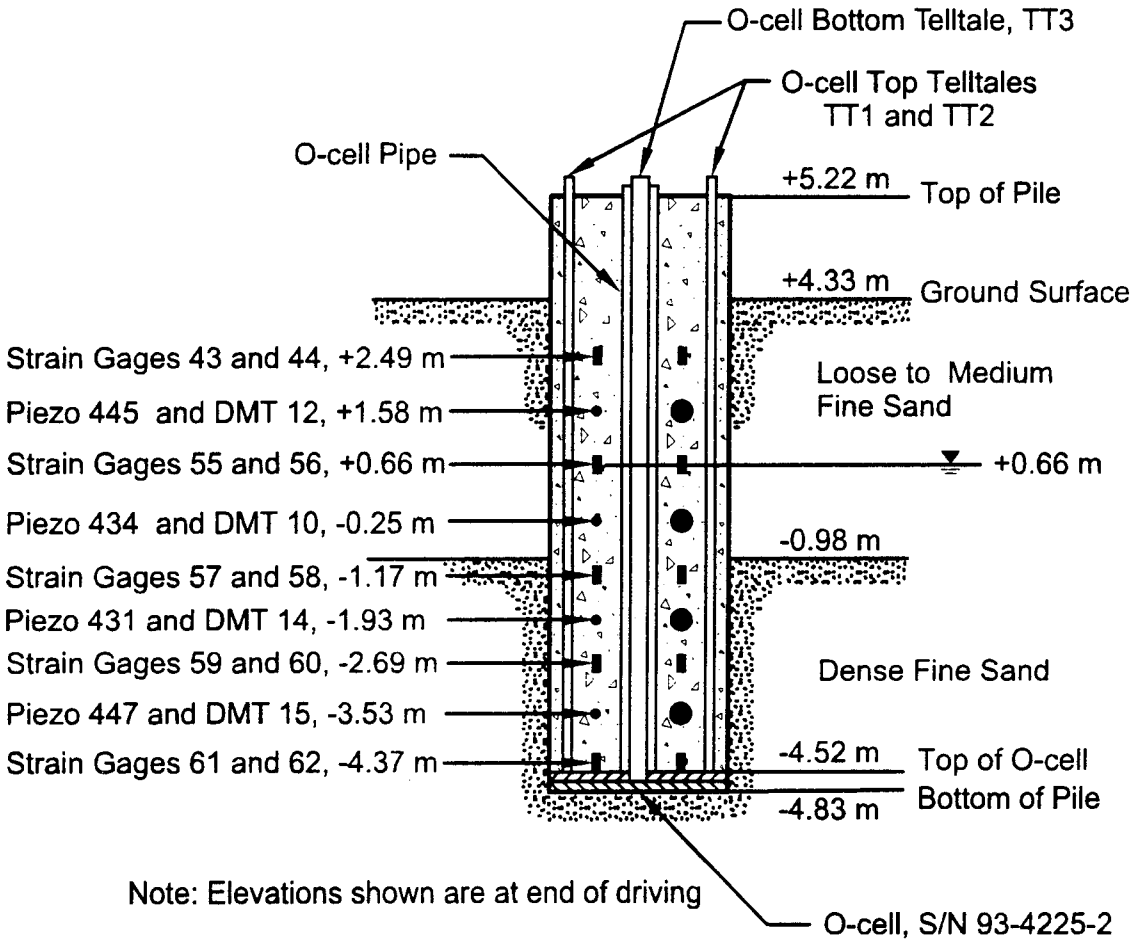

Figure 4.2 Profile Section of Pile at Buckman Bridge

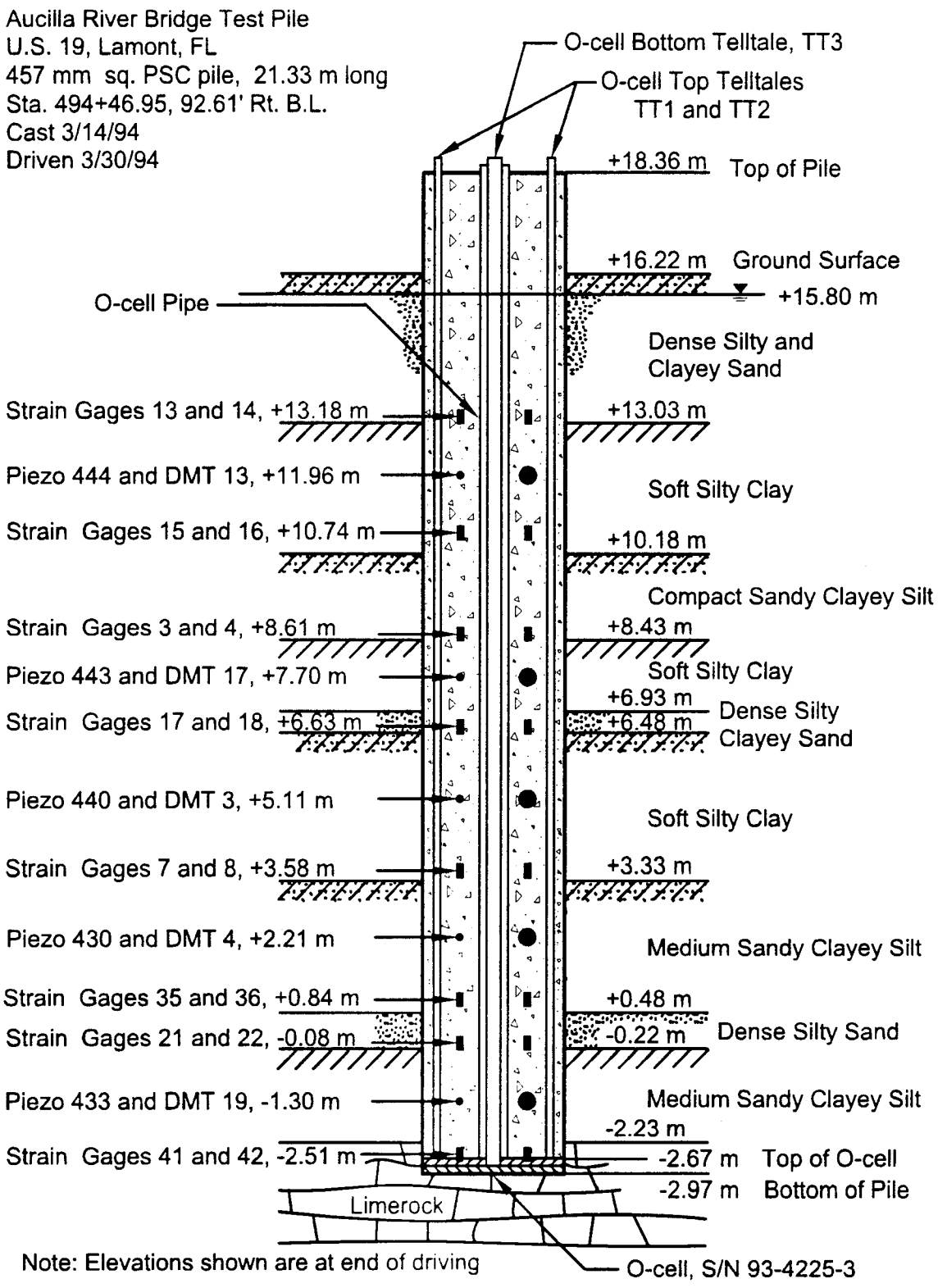

Figure 4.3 Profile Section of Pile at Aucilla River Bridge

Vilano Beach Bridge East Test Pile
A1A, St. Augustine, FL
457 mm s q. PSC pile, 11.88 m long
Sta. 183+46.84, 96.04' Rt. C.L.
Cast 3/22/94
Driven 4/14/94

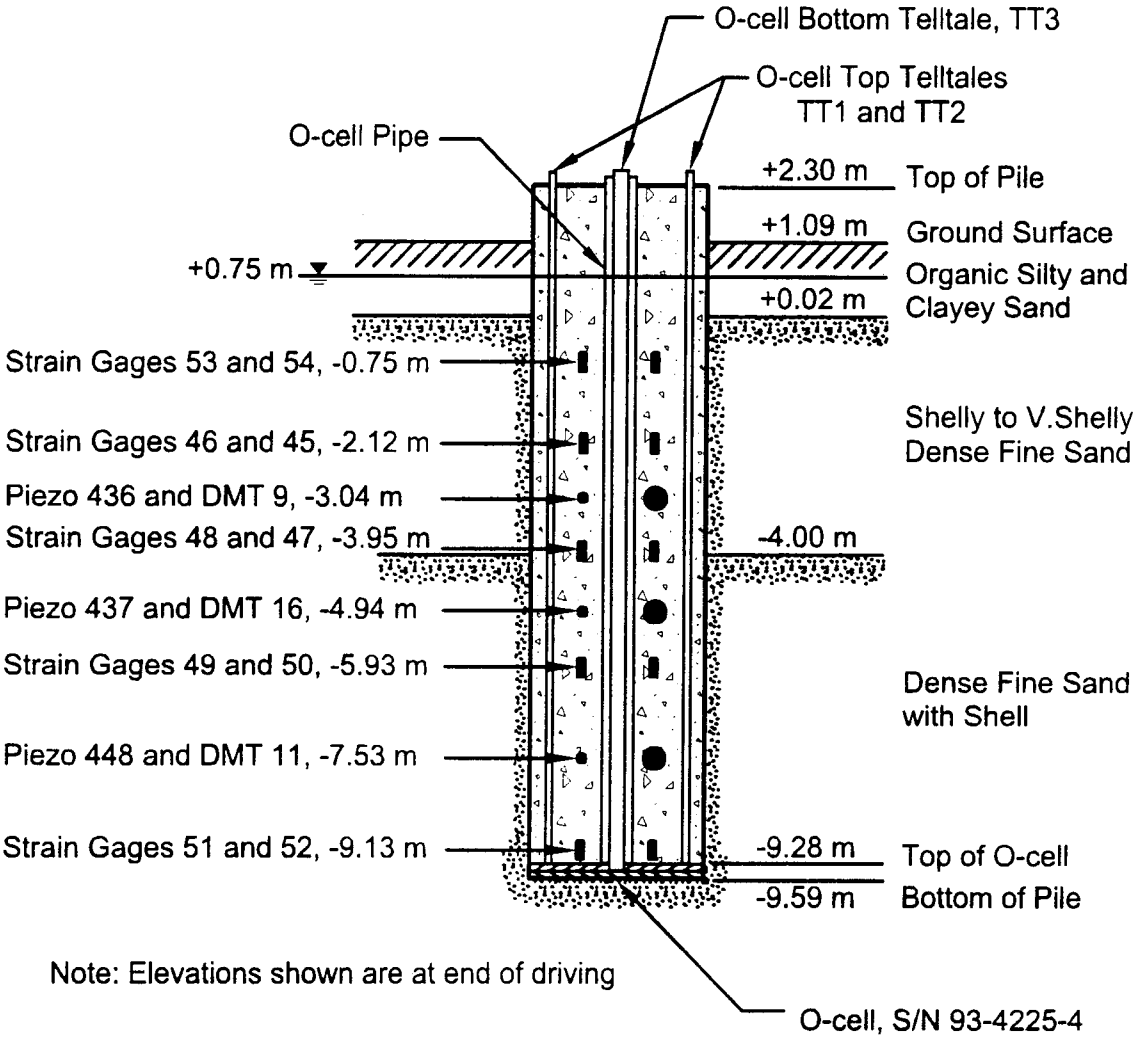

Figure 4.4 Profile Section of Pile at Vilano Beach Bridge East

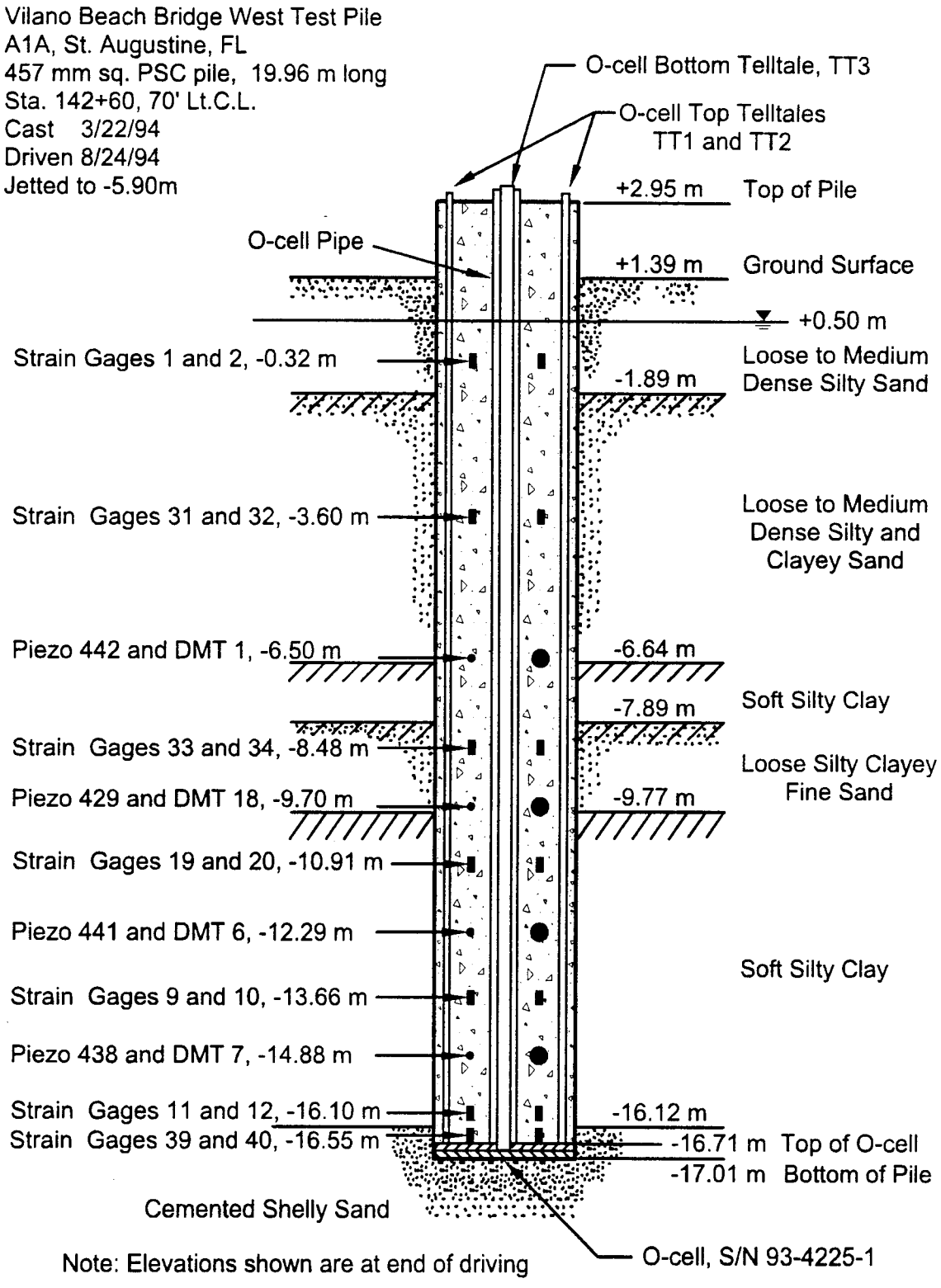

Figure 4.5 Profile Section of Pile at Vilano Beach Bridge West

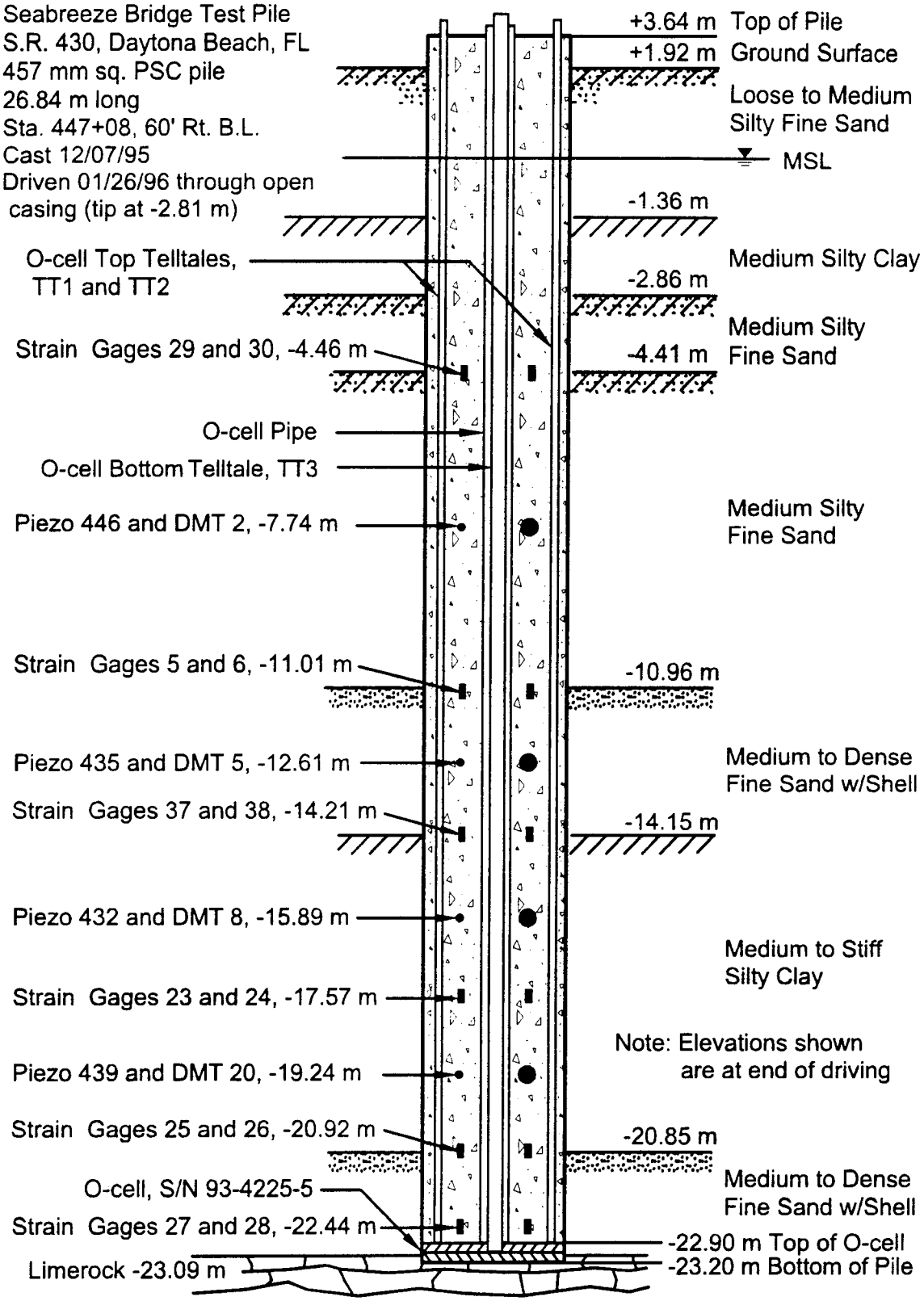

Figure 4.6 Profile Section of Pile at Seabreeze Bridge

CHAPTER 5
PILE TEST RESULTS

5.1 Dynamic Tests

5.1.1 General

During a dynamic pile test, the pile hammer is used to input a dynamic force into the pile. The force pulse varies with time at a point and travels as a wave through the pile at a speed characteristic of the pile material. The material wave speed is different from the velocity at which a particle in the pile moves. UF personnel measured the wave speed for each pile prior to driving and these values were included in Table 3.1. The measured wave speed and estimated density of the pile can be used to calculate dynamic modulus values for the pile which were also included in Table 3.1.

During pile driving the PDA is used to obtain continuous measurements of the force in the pile and the acceleration of the pile during each hammer blow. By integrating the measured acceleration with time, the particle velocity of the pile can be calculated at any time during the blow. These measurements can be used to evaluate parameters needed to determine the static pile capacity and establish production driving criteria. The following parameters are commonly required:

Dynamic Force in the Pile: During driving, the pile penetrates the soil as a result of the dynamic compressive force imparted by the hammer blow. At the pile tip this compressive force reflects back up the pile as either tension or compression, either of which may damage the pile. Increased driving force heightens the risk of damage. The

PDA provides estimates of both compression and tension during driving. The pile cushion thickness and hammer stroke were adjusted as necessary to keep the maximum compression and tension within allowable stress limits. Average pile compression force measurements (FMX) are included with the pile records in Appendix C. The pile records also indicate the maximum measured tension force (CTN) during each penetration increment.

Energy Entering the Pile: Pile hammers are generally rated based on theoretical kinetic energy of the ram at impact assuming no losses. Only a portion of this ram energy enters the pile and is available to drive it. See Appendix C for energy measurements (EMX).

Soil Damping: The hammer must overcome the dynamic resistance of the soil which may be larger than the static resistance. The soil damping factors provide a method to estimate the dynamic resistance. Often the damping factors for side resistance and point resistance are estimated empirically based on the soil type. However, CAPWAP provides a method to evaluate the soil damping from the measured force and velocity. Soil damping values resulting from the CAPWAP analyses are presented in Appendix D.

Soil Quake: Dynamic models normally use an elastic-plastic spring for the soil load-deformation model. The soil quake is the elastic movement required to initiate plastic deformation. Soil quake values for side shear and end bearing resistance are usually estimated empirically based on soil type. CAPWAP provides a method to evaluate the soil quake from PDA dynamic measurements. Soil quake values resulting from the CAPWAP analyses are presented in Appendix D.

Static Resistance Estimates: Dynamic measurements can be used to predict static capacity at the time of driving. Appendix C includes PDA estimates of the total

static capacity (RMX) from a simplified calculation method using a damping value of J_c = 0.4. Appendix C also includes plots of the RMX value and the hammer blow count vs. tip elevation. Additional static resistance estimates, including bearing and side shear are presented with the CAPWAP analyses in Appendix D.

5.1.2 CAPWAP Results

Several hundred hammer blows may be required to drive a pile. While driving each test pile an attempt was made to measure and record as many of these blows as possible. The results were recorded on tape for further processing and analysis. Each CAPWAP analysis is performed for a single blow and may require several hours of engineering and computation time to complete. It is, therefore, impractical to analyze all of the available records. For this project CAPWAPs were performed on blows before and after the final set checks, to determine short-term freeze effects.

The CAPWAP analyses provide estimates of the total, side shear, and end bearing capacity. The side shear estimates are included in Table 5.1 for comparison with the static test results. Additional details are provided in Appendix D. While CAPWAP estimates of the total static capacity are generally accurate to within ±10-15%, dividing the total between side shear and end bearing is often very subjective. Therefore, the side shear estimates based on CAPWAP are of secondary importance in comparison to the static tests.

5.2 Pore Pressures and Soil Stresses

Measurement of the pore pressures, and the total and effective soil stresses adjacent to the piles are included in Appendices G and H respectively. In general, the pore pressures dissipated to ambient levels very quickly. At Vilano East and Buckman

this occurred prior to the first load test. At Aucilla River the dissipation required about 15 days, or just prior to the third load test. The clay layer at Vilano West had the longest dissipation, in the range of 50-100 days. The total stresses measured by the Dilatometer follow the same general trend observed for the pore pressures, but show a tendency to increase again after the initial dissipation.

The reason for inclusion of the pore pressure and total stress measurements in the research was to determine the horizontal effective stresses which have a direct bearing on the side shear capacity of the pile. Included with the total stress measurements in Appendix H are tabulations and plots of the effective stresses obtained by subtracting the measured pore pressures from the measured total stresses. These plots show that the effective stresses trend to increase with time. In the sand layers these increases tend to be moderate, as expected from the almost immediate dissipation of excess pore pressures. For comparison with the pile segment side shear, the horizontal stress measured just prior to each load test is included in Tables 5.5, 5.7, 5.9, 5.11 and 5.13.

5.3 Static Tests

5.3.1 General

UF and S&C personnel have now performed a total of 25 static tests on the installed piles. At least three tests (1, 4 and 16 days elapsed time) on each pile provided the desired failure in side shear (upward). Further tests at approximately 64 and 256 days have failed the Aucilla River, Buckman and Seabreeze piles in side shear. In addition, tests reached a side shear failure on the Aucilla pile at 1727 days and on the Seabreeze pile at 1058 days. A successful test was also conducted at 157 days on the Vilano West pile using a supplemental top load. A test at 77 days on the

Vilano East pile mobilized only about half of the side shear capacity and no additional tests have been performed at that site to date.

The calibrated piezometer was chosen as the most reliable estimate of pressure for determining the O-cell loads. Two separate measuring systems for pile top deflection were used, wireline and survey level, of which the wireline was considered the primary measurement. Measurements were also recorded for the telltales. The pile compression indicated by the telltales will be compared with the strain gage measurements in a future report.

5.3.2 Static Test Results

Appendix E contains detailed data from the static tests and plots of the various pile movements versus the applied O-cell load. In general the pile top movements from the wireline and survey level were nearly identical. There is no standard method for choosing a failure load when testing side shear alone. Unlike tests on piles including both bearing and side shear, most of these tests failed abruptly at a small pile top movement, typically 5-10 mm. The tests were usually continued until reaching a movement of 10-20 mm. During some tests a small additional load was applied briefly but not maintained. For consistency in comparing the tests, we chose the failure load as the maximum load sustained for a full 4 minute interval without excessive movement. Table 5.2 summarizes the test dates, maximum sustained O-cell load, side shear, movements and other pertinent data from the load tests. The side shear mobilized during each test was calculated by subtracting the buoyant pile weight from the O-cell failure load.

5.3.3 Time Effects on Side Shear

As indicated in Chapter 2, most of the increase in pile capacity with time (setup) results from an increase in side shear, and this increase tends to vary linearly with the logarithm of the time elapsed after driving. For the purpose of discussion, the hypothetical example data in Figure 5.1 illustrate this log-linear increase for a pile with an initial side shear capacity of half the total capacity. The unitless Setup Factor A recommended by Skov and Denver (1988) is useful for describing this trend. However, the use of the total versus side shear capacity and the choice of the initial time T0 (and hence the initial capacity Q0) both have an important effect on the resulting Setup Factor. Figure 5.2 shows the example data from Figure 5.1 plotted for two different assumed T0 values of 0.1 and 1.0 days. As shown in Figure 5.2, the Setup Factor for this example data varies from 0.20 to 0.50 for these assumptions, a variation which could be eliminated. When possible, some of this variation could be reduced by using only side shear to calculate the Setup Factor.

Reducing the Setup Factor variation due to T0, however, is not so simple. Skov and Denver (1988) recommended that the initial time be chosen as the lower limit for a predictable increase in capacity. Unfortunately this lower limit is difficult to determine. Typical of many piles, the CAPWAP results in Table 5.1 demonstrate significant changes in capacity after 15 minutes. The authors' previous experiences indicate that the lower limit may actually be only 1-5 minutes for prestressed concrete piles. In addition, a number of factors besides soil type may affect this lower limit, including the pile's size, length, type, material, and roughness, as well as the hammer type, and the driving procedures. A simpler, less theoretical approach would be to assign and standardize an arbitrary value for T0. The analyses herein use a value of

T0 = 1 day. This choice is mathematically simple and, for consistent units, has the advantage that (T/T0) = T.

The total side shear mobilized at failure during each static test in this research is presented in Table 5.2. The effect of time on the total side shear is shown in Figure 5.3 by a graph of the measured side shear versus the time elapsed after driving (logarithmic scale). As expected, Figure 5.3 indicates a significant increase in the total side shear, i.e. setup/freeze, at the Aucilla River, Vilano Beach, and Seabreeze test piles. The Buckman pile has significantly less side shear capacity than estimated and the measured freeze is less obvious in this figure.

As expected, the side shear increase in Figure 5.2 varies almost linearly with the log of elapsed time at all five test sites. Figure 5.3 shows the setup ratio (Q/Q0) of the total side shear for each test pile using T0 = 1 day. Although the amount of increase varies at each site, the Setup Factor trends are strikingly similar for the five test sites, varying between about 0.1 and 0.4..

5.3.4 Comparison of Time Effects on Static and Dynamic Tests

The CAPWAP results presented in Table 5.1 clearly show in Figure 5.5 that the dynamic tests also measured an increase in capacity with time, similar to static test observations but on a time scale of minutes instead of days. Various authors have claimed, with reasonable cause, that CAPWAP estimates of pile capacity are typically within ±10% of the actual static capacity at the time of driving. CAPWAP does not however, provide a unique and definitive distribution of the pile capacity between side shear and end bearing. This problem arises from the assumed linear soil models and the number of dynamic variables which are required for the final CAPWAP solution, and which may be easily combined to obtain a different split between side shear and

end bearing. It is also in part due to the nearly simultaneous dynamic response of the side shear and end bearing near the pile tip.

If we assume that end bearing in Table 5.1 does not vary significantly with time, then we may subtract this value to find the side shear, possibly with better reliability than that estimated by the individual CAPWAP. The assumed end bearing in Table 5.1 was then manipulated so that the slope of the net side shear values aligned with the slope of the corresponding static tests on a log time plot. The results of this manipulation are shown in Figure 5.6 and the agreement with the static tests is very reasonable. The slope of the net CAPWAP side shear, and hence the Setup Factor, in Figure 5.6 is not affected by this manipulation, only its magnitude.

To further illustrate the value of dynamic set checks for determining the Setup Factor, data is also presented from the pile test program at the Seabreeze Bridge. Eighteen 610 mm prestressed concrete test piles were driven during the construction of the Seabreeze Bridge, including set checks with wait times varying between 15 minutes and 3.7 days. In a report of the test program to the FDOT, S&C tabulated PDA RMX estimates for these test piles which are presented in Table 5.3. Through comparison with CAPWAPs, wave equation analyses, and scrutiny of the driving records, S&C found that these test piles had, on average, approximately 51% end bearing.

In Table 5.3 the end bearing for each test pile is calculated, and assuming that it did not increase significantly during the subsequent set checks, the resulting side shear, Q, was calculated for each set check. These values were then interpolated, or extrapolated, to determine the side shear capacity, Q0, at an initial time T0 = 1 day, and then calculate the resulting setup ratio, Q/Q0. These setup ratios are plotted in Figure 5.7 versus the log of elapsed time, T (= T/T0 since T0 = 1 day). This data was

then analyzed by regression to obtain a best fit Setup Factor A=0.21 for the 610 mm piles (r^2 = 0.76).

The best fit regression for the 610 mm piles is shown in Figure 5.7. The side shear static test results from the 457 mm pile in this research program are also included in Figure 5.7 and fit the regression line remarkably well. The total side shear capacities for the last two tests on the 457 mm pile do not show as great a setup because of the capacity lost in the bottom sand segment near the O-cell, and so do not fit as well as the other points. The setup agreement between these two pile sizes, determined by completely different methods, again illustrates that dynamic tests may accurately be substituted for static tests to determine and/or confirm the Setup Factor.

5.3.5 Pile Load Distribution from Strain Measurements

The strain measurements were used to determine the distribution of the applied O-cell load along the length of the pile. Analyses of the strain measurements for all 25 load tests are included in Appendix F. After calculating the strain for each gage during each time and load increment, we summarized the average strain from the 4 minute load at each gage level for additional analysis. Appendix F includes plots showing the strain measured for each gage during each load increment. It also includes plots showing the strain distribution by elevation during selected load increments for each static test. These plots were used to verify the consistency of the measurements. In a few instances, a gage did not read correctly during a load increment, and the measurement was adjusted based on readings before and after the questionable reading.

The average strains were also integrated over the pile length by the trapezoidal rule to estimate the total pile compression during each 4 minute load increment.

Appendix F includes plots of this estimate and the average compression from the telltale measurements. These values generally agreed within 5-10%. Since both involve some error this agreement is acceptable, and possibly better than usually found in piling load tests.

The pile load values during each load increment were obtained by multiplying the average 4 minute strain by the estimated modulus of elasticity and the plan cross-sectional area (0.208 m^2). The pile modulus varied at each strain gage location according to the plan cross-sectional area of the two main constituent materials, steel and concrete. The pile constituents were essentially constant for all but the lowest level of strain gages near the O-cell, which included additional steel reinforcement. The pile and concrete areas were adjusted for the area lost to the telltale casings and O-cell pipe.

The prestress steel modulus was assumed to be 190 MPa. The concrete modulus was the chief unknown and was observed to vary with the concrete age. The ACI modulus formula ($E_c = 4733 \sqrt{f'_c}$, f'_c and E_c in MPa) was not used because it provided unreasonably high values, probably because of the concrete's very high compressive strength ($f'_c \approx 62$ MPa). To estimate the concrete modulus, we first found the pile modulus value at the strain gage level just above the O-cell by back analysis of the applied load versus strain data. This analysis was based on the incremental modulus determined from the increment of strain induced by the increment of applied load. At loads near the side shear failure of this segment, the incremental modulus approached the pile modulus.

These incremental pile modulus values were summarized and averaged near the failure load for each static test. Piles cast from the same concrete batch were then grouped together and the average modulus values from each static test were plotted

against the concrete age. A hyperbolic curve was then fit by regression to this data and used to find the pile modulus for each load test, and then the concrete modulus. These analyses are included in Appendix F.

Appendix F includes pile load curves versus elevation for five to six load increments during each load test. Tables 5.4, 5.6, 5.8, 5.10 and 5.12 summarize by test site the pile loads at the failure load for each test and Figures 5.8, 5.13, 5.18, 5.23 and 5.28 present this data graphically. These curves show a general increase in load with time for all layers at every site with one exception. The deep sand layer around the O-cell on the Seabreeze pile showed a dramatic trend to negative setup following the second load test for unknown reasons. This layer is small and may be affected by the opening of the load cell.

5.3.6 Pile Unit Side Shear

After finding the pile load at each gage level, we determined the net load resisted over each pile segment, subtracted the buoyant weight of the segment, and calculated the average unit side shear over the segment. Next the average strain and average compression of each segment were calculated. The displacement at each gage level was then calculated by successively subtracting the average compression of each segment from the movement at the cell top. Finally, graphs were prepared and included in Appendix F which show the unit side shear versus displacement (t-z curves) for each pile segment.

From the t-z curves, Tables 5.5, 5.7, 5.9, 5.11 and 5.13 summarize by test site the maximum unit side shear and the corresponding displacement measured for each segment during each load test. These maximum side shear values were then plotted in

an elevation profile for each test site in Figures 5.9, 5.14, 5.19, 5.24 and 5.29 and versus the log of elapsed time in Figures 5.10, 5.15, 5.20, 5.25 and 5.30.

Tables 5.5, 5.7, 5.9, 5.11 and 5.13 also include the Setup Factor for each load test (Q/Q0) and the available horizontal effective stress measurements just before each test. The initial time, T0, chosen for the reference value of Q0 is again 1 day. Figures 5.11, 5.16, 5.21, 5.26 and 5.31 show the setup values plotted versus log time, similar to the method proposed by Skov and Denver (1988). Average setup factors for each pile segment are presented in Table 8.8. Figures 5.12, 5.17, 5.22, 5.27 and 5.32 show the unit side shear plotted versus the horizontal effective stress, grouped by test site. Although these last figures show considerable scatter, it must be remembered that both the effective stress and unit side shear combine many sensitive measurements and are subject to significant error, so the scatter is not unexpected. The trends of the last figures indicate reasonable data, and also show a number of segments which have side shear increases without effective stress increases. The unit side shear and effective stresses will be discussed in greater detail in the analyses of Chapter 8.

Table 5.1 Summary of CAPWAP Pile Capacity Estimates

Test Site	Elapsed Time		Type of Blow	Blow Count Blows /0.3m	Pile Tip Elevation msl, m	CAPWAP Side Shear kN	CAPWAP End Bearing kN	CAPWAP Total Capacity kN	Assumed End Bearing kN	Net Side Shear kN
	minutes	days								
Buckman	1	0.0007	EOD	17	-4.62	876	961	1837	1925	-88
	20	0.0139	BOR	16	-4.69	873	1164	2037	1925	112
	65	0.0451	BOR	24	-4.74	882	1058	1939	1925	14
Aucilla	1	0.0007	EOD	24	-2.37	683	705	1388	1350	38
	15	0.0104	BOR	32	-2.41	870	700	1570	1350	220
	60	0.0417	BOR	48	-2.51	1045	778	1824	1350	474
Vilano East	1	0.0007	EOD	72	-9.53	1274	1399	2673	1900	773
	18	0.0125	BOR	77	-9.54	1450	1454	2905	1900	1005
	69	0.0479	BOR	115	-9.57	1401	1290	2691	1900	791
Vilano West	1	0.0007	EOD	12	-16.90	286	259	545	575	-30
	17	0.0118	BOR	12	-16.92	465	356	821	575	246
	65	0.0451	BOR	19	-17.00	495	422	916	575	341
Seabreeze	1	0.0007	EOD	14	-22.63	703	766	1470	1200	270
	19	0.0132	BOR	38	-22.76	1379	925	2304	1200	1104
	61	0.0424	BOR	48	-22.84	1775	587	2362	1200	1162

Notes: EOD = End of Driving (assume Elapsed Time = 1 minute), BOR = Beginning of Redrive

Table 5.2 Summary of Static Test Results at Maximum Sustained O-cell Load

Test Site	Start of Test		Elapsed Time	Max. Sustained O-Cell Load		Buoyant Pile	Side Shear	Q/Q0	Pile Top	O-Cell Top	O-Cell Bottom	Cum. O-Cell
	Date	Time	from EOD	Load	Load	Weight	Q		Mvmt.	Mvmt.	Mvmt.	Expansion
	mm/dd/yy	hh:mm	days	No.	kN	kN	kN		mm	mm	mm	mm
Buckman	03/26/94	7:46	0.25	2L5	173	40	133	1.00	0.25	0.28	-0.25	18.85
	03/29/94	4:56	3.13	L10	173	40	133	1.00	4.32	4.34	-0.13	34.42
Q0=133 kN	04/11/94	11:32	15.91	L14	191	40	151	1.14	7.87	7.95	-0.76	40.49
T0=1 day	05/31/94	1:08	65.97	L14	222	40	181	1.36	3.81	3.91	-2.36	50.39
	12/19/94	12:42	267.96	L17	235	40	195	1.47	5.59	5.74	-2.77	62.74
Aucilla	03/31/94	11:11	0.98	L23	1039	67	972	1.00	16.51	17.17	-3.07	17.27
	04/02/94	11:06	2.97	L23	1263	67	1197	1.22	3.43	4.47	-4.45	38.35
Q0=977 kN	04/15/94	2:01	16.10	L17	1494	67	1427	1.46	11.18	12.45	-4.75	55.70
T0=1 day	06/03/94	2:10	65.10	2L19	1595	67	1528	1.56	7.24	8.64	-4.52	65.84
	12/20/94	12:49	265.05	L20	1779	67	1712	1.75	9.91	11.56	-4.57	76.53
	12/21/98	1:32	1727.08	L22	2049	67	1982	2.03	11.81	13.54	-5.51	89.38
Vilano	04/14/94	8:43	0.32	L36	1223	38	1185	0.94	4.32	4.45	-2.29	15.01
East	04/18/94	11:29	3.93	L22	1382	38	1344	1.07	3.05	3.35	-9.93	27.76
Q0=1257 kN	04/30/94	11:00	15.91	L18	1475	38	1437	1.14	2.41	2.79	-26.75	54.56
T0=1 day	06/30/94	12:45	76.99	L10	940	38	E.B. Failure		0.76	1.07	-49.89	92.56
Vilano	08/24/94	9:11	0.26	L14	469	62	407	0.87	6.35	6.45	-1.57	20.80
West	08/27/94	11:07	2.84	L17	581	62	519	1.10	8.38	8.66	-3.61	39.24
Q0=469 kN	09/12/94	2:29	18.98	L21	697	62	635	1.35	3.63	3.63	-19.69	71.02
T0=1 day	01/28/95	3:01	157.01	2L13	845	62	783	1.67	6.48	6.38	-2.92	86.56
Seabreeze	01/27/96	12:00	0.35	L18	1554	84	1471	0.88	8.89	9.36	-1.69	13.56
	01/30/96	4:21	4.03	L17	2000	84	1916	1.15	5.97	7.06	-4.64	21.39
Q0=1662 kN	02/13/96	2:11	17.94	L13	2221	84	2138	1.29	8.13	9.57	-5.33	32.26
T0=1 day	04/05/96	2:06	69.94	L16	2291	84	2207	1.33	4.19	5.76	-5.27	37.01
	11/14/96	1:13	292.90	L17	2448	84	2365	1.42	4.70	6.55	-6.99	54.33
	12/19/98	1:15	1057.90	L19	2446	84	2362	1.42	13.97	16.00	-9.04	72.11

Notes: Movements from end of 4 minute load interval: (+)up,(-)down. Q0 at T0 = 1day interpolated vs. log time.
EOD = End of Driving. Cum.O-Cell Expansion is cumulative measured cell expansion at end of each test

Table 5.3 Setup from Restrikes of 610 mm Concrete Test Piles at Seabreeze Bridge

Pier or Bent	Test Pile No.	Tip Elevation m,msl	PDA RMX J=0.4 kN	Estimated Side Shear Q kN	Side Shear Q0 at T0=1day kN	Elapsed Time days	Elapsed Time minutes	Setup Ratio Q/Q0 T0=1day
Pier 2E	14	EOD	4418	2165	2866	0.0007	1	0.755
		-30.71	4804	2550		0.0153	22	0.890
		-30.79	5195	2942		2.7382	3943	1.027
Pier 3E	12	EOD	3991	1956	3623	0.0007	1	0.540
		-30.46	4484	2448		0.0146	21	0.676
		-30.49	5925	3889		2.6063	3753	1.073
Pier 5E	13	EOD	3446	1688	2745	0.0007	1	0.615
		-22.97	3932	2175		0.0111	16	0.792
		-23.00	4448	2691		0.6528	940	0.980
Pier 6E	13	EOD	2657	1302	4151	0.0007	1	0.314
		-23.41	3042	1687		0.0118	17	0.407
		-23.44	5391	4036		0.8132	1171	0.972
Pier 8E	13	EOD	1868	915	2778	0.0007	1	0.330
		-24.72	1886	933		0.0118	17	0.336
		-24.76	3541	2588		0.6326	911	0.932
Pier 9E	13	EOD	1785	875	1632	0.0007	1	0.536
		-25.82	2064	1153		0.0132	19	0.707
		-25.88	2687	1776		3.6632	5275	1.088
Pier 10E	9	EOD	1868	915	4076	0.0007	1	0.225
		-26.49	2242	1289		0.0118	17	0.316
		-26.58	4964	4011		0.9014	1298	0.984
Bent 11E	4	EOD	2064	1011	3482	0.0007	1	0.290
		-29.42	2295	1243		0.0174	25	0.357
		-29.59	4288	3235		0.6403	922	0.929
Pier 2W	12	EOD	2295	1125	4092	0.0007	1	0.275
		-30.08	2615	1445		0.0104	15	0.353
		-30.57	5836	4665		2.6889	3872	1.140
Pier 3W	9	EOD	2663	1305	4844	0.0007	1	0.269
		-27.82	3398	2040		0.0118	17	0.421
		-28.13	5907	4549		0.6264	902	0.939
Pier 4W	29	EOD	4329	2121	3562	0.0007	1	0.596
		-28.74	4911	2703		0.0146	21	0.759
		-28.78	5711	3503		0.7500	1080	0.984
Pier 5W	13	EOD	1993	976	3504	0.0007	1	0.279
		-24.68	2366	1350		0.0118	17	0.385
		-24.75	5000	3983		2.6840	3865	1.137
Pier 6W	13	EOD	2271	1113	4035	0.0007	1	0.276
		-27.82	2918	1759		0.0132	19	0.436
		-27.87	5160	4001		0.9382	1351	0.992
Pier 7W	13	EOD	2082	1020	3897	0.0007	1	0.262
		-28.25	2722	1661		0.0104	15	0.426
		-28.31	4733	3671		0.6306	908	0.942
Pier 8W	12	EOD	2704	1325	2832	0.0007	1	0.468
		-29.58	3416	2037		0.0139	20	0.719
		-29.62	4395	3015		2.6799	3859	1.065
Pier 9W	6	EOD	1352	663	4219	0.0007	1	0.157
		-29.93	1904	1214		0.0146	21	0.288
		-29.96	5338	4648		1.8285	2633	1.102
Pier 10W	12	EOD	2153	1055	2083	0.0007	1	0.506
		-27.63	2473	1375		0.0125	18	0.660
		-27.69	3131	2033		0.7347	1058	0.976
Bent 11W	3	EOD	1904	933	2899	0.0007	1	0.322
		-29.02	2544	1573		0.0104	15	0.543
		-29.07	4146	3175		2.5882	3727	1.095

Notes: EOD Side Shear = 49% RMX (average from CAPWAPs). RMX change assumed due to Side Shear onl
Q0 at T0 = 1day found by log-linear interpolation. Elapsed Time at EOD assumed = 1 minute.

Table 5.4 Pile Load at Failure: Buckman

Elevation ft	LT1-2L5 tons	LT2-L10 tons	LT3-L14 tons	LT4-L14 tons	LT5-L17 tons
14.22	0.0	0.0	0.0	0.0	0.0
8.17	2.5	1.0	3.3	3.8	5.4
2.17	4.5	1.5	6.5	10.2	13.0
-3.83	4.9	2.1	7.6	11.5	15.5
-8.83	5.2	2.5	7.8	13.1	17.1
-14.33	7.0	4.9	12.1	18.9	21.6
-15.71	19.5	19.4	21.5	24.9	26.4

Figure 5.5 Maximum Side Shear by Pile Segment: Buckman

Segment CL Elevation MSL (& Length)	Load Test No.	Elapsed Time Since EOD days	Load No.	Average Unit Side Shear Q,kPa	Q/Q0 (T0=1day)	Average Segment Movement mm	Effective Stress kPa
	1	0.25	2L6ii	5.6	0.91	14.69	
+3.41 m	2	3.13	L11	1.1	0.19	17.52	
(L=1.84 m)	3	15.91	L14A	7.3	1.19	9.78	
Q0=6.1 kPa	4	65.97	L14A	8.8	1.43	8.76	
	5	267.96	L17	12.6	2.05	5.59	
	1	0.25	2L6i	4.5	0.85	10.13	
+1.58 m	2	3.13	L11	0.2	0.03	17.52	
(L=1.83 m)	3	15.91	L13	7.0	1.30	1.02	
Q0=5.3 kPa	4	65.97	L13	16.2	3.03	1.28	
	5	267.96	L17A	21.2	3.97	13.98	
	1	0.25	2L6B	0.1	0.09	18.78	4.9
-0.25 m	2	3.13	L11C	0.4	0.37	18.54	2.8
(L=1.83 m)	3	15.91	L14	1.3	1.30	7.90	1.1
Q0=1.0 kPa	4	65.97	L14A	3.7	3.76	8.79	0.3
	5	267.96	L14	5.5	5.55	1.30	2.6
	1	0.25	2L3	0.7	0.49	0.00	8.3
-1.93 m	2	3.13	L10	-0.0	-0.03	4.32	9.3
(L=1.52 m)	3	15.91	L11	0.1	0.09	0.54	11.3
Q0=1.3 kPa	4	65.97	L14	3.4	2.53	3.87	14.1
	5	267.96	L13	4.8	3.57	1.08	15.8
	1	0.25	2L6i	3.7	0.80	10.17	11.0
-3.53 m	2	3.13	L10	5.4	1.17	4.33	8.6
(L=1.68 m)	3	15.91	L13	11.4	2.45	1.08	6.0
R0=4.6 kPa	4	65.97	L14	15.3	3.29	3.90	7.2
	5	267.96	L17	11.3	2.43	5.71	8.9

Notes: Unit Side Shear has been reduced by segment weight.
Q0 found by log-linear interpolation. LT2 values low due to reload effects.
Unit Side Shear is maximum measured during each load test.

Table 5.6 Pile Load at Failure: Aucilla

Elevation meters	LT1-L23 kN	LT2-L23 kN	LT3-L17 kN	LT4-2L19 kN	LT5-L20 kN	LT6-L22 kN
16.22	0	0	0	0	0	0
13.18	57	29	44	60	77	49
10.74	163	117	181	206	303	262
8.61	231	203	287	324	446	409
6.63	255	248	337	401	520	495
3.58	439	522	604	703	823	834
0.84	510	649	828	979	1119	1228
-0.08	538	703	906	1070	1210	1358
-2.51	903	1168	1423	1536	1705	1972
-2.93	1039	1264	1493	1595	1779	2048

Table 5.7 Maximum Side Shear by Pile Segment: Aucilla

Segment CL Elevation MSL (& Length)	Load Test No.	Elapsed Time Since EOD days	Load No.	Average Unit Side Shear Q,kPa	Q/Q0 (T0=1day)	Average Segment Movement mm	Effective Stress kPa
	1	0.98	L23	8.6	1.00	16.15	
+14.70 m	2	2.97	L24B	6.4	0.75	17.25	
(L=3.04 m)	3	16.10	L17	6.3	0.73	11.01	
Q0=8.6 kPa	4	65.10	2L19A	9.5	1.10	9.73	
	5	265.05	L20	12.3	1.42	9.71	
	6	1727.08	L19	8.7	1.01	2.48	
	1	0.98	L23	22.2	1.00	16.18	51.6
+11.96 m	2	2.97	L24A	21.9	0.98	17.33	55.0
(L=2.44 m)	3	16.10	L17	29.2	1.31	11.04	65.9
Q0=22.2 kPa	4	65.10	2L19A	32.3	1.45	9.76	96.0
	5	265.05	L20	49.2	2.21	9.75	124.7
	6	1727.08	L22	46.3	2.08	11.65	163.8
	1	0.98	L21	17.9	1.00	1.73	
+9.68 m	2	2.97	L21	20.8	1.16	1.49	
(L=2.13 m)	3	16.10	L16	27.3	1.52	3.36	
Q0=17.9 kPa	4	65.10	2L17	30.3	1.69	1.94	
	5	265.05	L19	36.7	2.04	4.26	
	6	1727.08	L19	38.2	2.13	2.60	
	1	0.98	L20	9.9	1.00	1.40	13.6
+7.62 m	2	2.97	L20	11.5	1.16	1.16	12.7
(L=1.98 m)	3	16.10	L15	14.0	1.41	1.40	13.3
Q0=9.9 kPa	4	65.10	2L18	20.9	2.10	3.97	22.3
	5	265.05	L18	19.9	2.00	1.71	20.5
	6	1727.08	L20	24.0	2.41	5.12	
	1	0.98	L22	34.2	1.00	4.83	114.4
+5.11 m	2	2.97	L23	47.7	1.40	16.28	164.7
(L=3.05 m)	3	16.10	L16	47.4	1.39	3.63	154.4
Q0=34.2 kPa	4	65.10	2L17	53.3	1.56	2.23	158.5
	5	265.05	L19	53.4	1.56	4.63	
	6	1727.08	L19	60.2	1.76	2.94	
	1	0.98	L22	12.7	1.00	5.03	78.6
+2.21 m	2	2.97	L24A	24.5	1.93	17.83	77.8
(L=2.74 m)	3	16.10	L17	43.0	3.39	11.65	99.6
Q0=12.7 kPa	4	65.10	2L18	53.9	4.25	4.47	96.3
	5	265.05	L20	57.4	4.52	10.60	125.0
	6	1727.08	L22	77.0	6.06	12.47	118.9
	1	0.98	L22	21.3	1.00	5.18	
+0.38 m	2	2.97	L23	30.5	1.43	16.72	
(L=0.91)	3	16.10	L17	45.2	2.12	11.88	
Q0=21.3 kPa	4	65.10	2L19	53.0	2.49	8.04	
	5	265.05	L19	52.9	2.48	5.29	
	6	1727.08	L20	81.2	3.81	6.03	
	1	0.98	L22	84.2	1.00	5.36	125.5
-1.30 m	2	2.97	L24A	103.6	1.23	18.25	130.7
(L=2.44 m)	3	16.10	L17	114.3	1.36	12.18	126.1
Q0=84.2 kPa	4	65.10	2L19	102.9	1.22	8.36	120.2
	5	265.05	L20	109.5	1.30	11.24	126.5
	6	1727.08	L22	136.0	1.61	13.19	142.6

Notes: Unit Side Shear is maximum measured during each load test and has been reduced by segment weight. Q0 taken from LT1.

Table 5.8 Pile Load at Failure: Vilano East

Elevation meters	LT1-L36 kN	LT2-L22 kN	LT3-L18 kN	LT4-L10 kN
1.09	0	0	0	0
-0.75	4	1	12	14
-2.12	25	12	45	61
-3.95	61	40	96	122
-5.93	178	208	279	286
-9.13	887	1097	1363	942
-9.55	1223	1383	1475	940

Table 5.9 Maximum Side Shear by Pile Segment: Vilano East

Segment CL Elevation MSL (& Length)	Load Test No.	Elapsed Time Since EOD days	Load No.	Average Unit Side Shear Q,kPa	Q/Q0 (T0=1day)	Average Segment Movement mm	Effective Stress kPa
	1	0.32	L0	0.9	0.71	0.00	
+0.17 m	2	3.93	L10	-0.8	-0.59	0.41	
(L=1.84 m)	3	15.91	L19	2.2	1.70	3.83	
Q0=1.3 kPa	4	76.99	L10 *	2.6	2.02	0.65	
	1	0.32	L37A	8.6	0.88	13.63	
-1.44 m	2	3.93	L23	3.3	0.34	11.72	
(L=1.37 m)	3	15.91	L19A	12.7	1.30	9.54	
Q0=9.8 kPa	4	76.99	L10 *	17.3	1.77	0.65	
	1	0.32	L37A	9.7	0.86	13.64	10.0
-3.04 m	2	3.93	L23	8.2	0.73	11.73	29.2
(L=1.83 m)	3	15.91	L19A	15.2	1.34	9.56	33.3
Q0=11.3 kPa	4	76.99	L10 *	16.7	1.47	0.68	40.7
	1	0.32	L35	31.7	0.84	3.34	52.3
-4.94 m	2	3.93	L22	44.7	1.19	2.97	30.6
(L=1.98 m)	3	15.91	L17	55.8	1.48	1.84	55.6
Q0=37.6 kPa	4	76.99	L10 *	43.7	1.16	0.74	63.8
	1	0.32	L37	124.6	0.91	5.39	69.6
-7.53 m	2	3.93	L22	150.3	1.10	3.16	336.8
(L=3.20 m)	3	15.91	L18	183.7	1.35	2.57	334.4
Q0=136.3 kPa	4	76.99	L10 *	110.5	0.81	0.91	287.3

Notes: Unit Side Shear has been reduced by segment weight.
Unit Side Shear is maximum measured during each load test.
Q0 found by log-linear interpolation.
* LT4 Failed in Bearing (not in Shear)

Table 5.10 Pile Load at Failure: Vilano West

Elevation meters	LT1-L14 kN	LT2-L17 kN	LT3-L21 kN	LT4-2L13 kN	LT4-2L13* kN
1.39	0	0	0	-238	0
-0.32	1	1	1	-164	74
-3.60	17	22	31	-188	51
-8.48	48	89	106	-88	150
-10.92	109	210	228	10	248
-13.66	173	294	328	150	389
-16.10	242	376	495	417	655
-16.55	332	474	607	520	759
-16.71	469	581	698	607	845

Notes: * Adjusted to Equivalent O-cell Load
Top 4 Strain Levels Unreliable for LT4
(-0.32, -3.60, -8.48 & -10.92)

Table 5.11 Maximum Side Shear by Pile Segment: Vilano West

Segment CL Elevation MSL (& Length)	Load Test No.	Elapsed Time Since EOD days	Load No.	Average Unit Side Shear Q,kPa	Q/Q0 (T0=1day)	Average Segment Movement mm	Effective Stress kPa
	1	0.26	L15B	-0.7		20.75	
+0.54 m	2	2.84	L7	-0.8		0.48	
(L=1.72 m)	3	18.98	L15	-1.1		1.35	
Q0=-0.8 kPa	4	157.01	2L13A *	23.3		13.79	
	1	0.26	L4	3.1	1.25	0.00	
-1.96 m	2	2.84	L17	2.0	0.81	8.34	
(L=3.28 m)	3	18.98	L22	3.7	1.52	6.05	
Q0=2.4 kPa	4	157.01	2L0 *	-1.6	-0.64	0.00	
	1	0.26	L15	3.3	0.66	12.62	30.7
-6.04 m	2	2.84	L17A	6.3	1.26	15.86	39.9
(L=4.88 m)	3	18.98	L22	8.2	1.65	6.08	37.4
Q0=5.0 kPa	4	157.01	2L13 *	9.6	1.92	6.27	46.9
	1	0.26	L15A	17.6	0.80	18.25	
-9.70 m	2	2.84	L17	25.5	1.16	8.41	
(L=2.44 m)	3	18.98	L22	26.3	1.19	6.13	
Q0=22.0 kPa	4	157.01	2L12 *	20.6	0.93	2.42	
	1	0.26	L13	11.3	0.80	4.55	67.7
-12.29 m	2	2.84	L16	16.3	1.15	4.02	53.2
(L=2.74 m)	3	18.98	L21	18.4	1.30	3.41	60.3
Q0=14.1 kPa	4	157.01	2L12 *	27.4	1.94	2.42	45.9
	1	0.26	L15	14.8	0.88	12.77	84.2
-14.88 m	2	2.84	L15	18.4	1.09	3.09	105.4
(L=2.44 m)	3	18.98	L21	35.9	2.13	3.53	137.7
Q0=16.9 kPa	4	157.01	2L13	58.2	3.45	6.29	112.5
	1	0.26	L15A	105.5	0.95	18.41	
-16.33 m	2	2.84	L17	115.0	1.04	8.65	
(L=0.46 m)	3	18.98	L21	132.9	1.20	3.61	
Q0=110.9 kPa	4	157.01	2L13	122.5	1.10	6.35	

Notes: Unit Side Shear has been reduced by segment weight.
Unit Side Shear is maximum measured during each load test.
Q0 found by log-linear interpolation.
Jetting at Installation Affects Shear above Elevation -5.9 m.
* Top 5 Shear Estimates Unreliable for LT4

Table 5.12 Pile Load at Failure: Seabreeze

Elevation meters	LT1-L18 kN	LT2-L17 kN	LT3-L13 kN	LT4-L16 kN	LT5-L17 kN	LT6-L19 kN
1.92	0	0	0	0	0	0
-4.46	38	33	62	70	140	162
-11.01	198	256	346	382	528	624
-14.21	296	313	444	500	635	777
-17.57	482	496	776	955	1137	1310
-20.92	757	1026	1314	1550	1814	2022
-22.44	1230	1781	2004	2106	2340	2319
-22.90	1554	2000	2221	2291	2448	2446

Table 5.13 Maximum Side Shear by Pile Segment: Seabreeze

Segment CL Elevation MSL (& Length)	Load Test No.	Elapsed Time Since EOD days	Load No.	Average Unit Side Shear Q,kPa	Q/Q0 (T0=1day)	Average Segment Movement mm	Effective Stress kPa
	1	0.35	L19	1.8	1.13	13.90	
-1.27 m *	2	4.03	L15	1.3	0.83	1.97	
(L=6.38 m)	3	17.94	L13	3.7	2.35	7.90	
Q0=1.6 kPa	4	69.94	L16A	4.5	2.83	4.61	
	5	292.90	L18	11.1	6.98	14.37	
	6	1057.90	L19	12.3	7.76	13.70	
	1	0.35	L19	12.5	0.86	13.97	29.5
-7.74 m	2	4.03	L17A	17.3	1.19	7.38	25.4
(L=6.55 m)	3	17.94	L13	22.2	1.52	8.01	21.9
Q0=14.6 kPa	4	69.94	L16	24.4	1.68	4.07	26.3
	5	292.90	L18	32.6	2.24	14.55	35.2
	6	1057.90	L19	37.0	2.54	13.90	47.7
	1	0.35	L18	15.3	1.15	8.49	46.4
-12.61 m	2	4.03	L12	10.8	0.81	0.92	47.2
(L=3.20 m)	3	17.94	L13	15.1	1.13	8.19	41.9
Q0=13.4 kPa	4	69.94	L16	18.5	1.39	4.27	49.2
	5	292.90	L18	19.7	1.48	14.82	
	6	1057.90	L19	24.6	1.84	14.20	
	1	0.35	L19	29.1	1.00	14.25	81.2
-15.89 m	2	4.03	L16	29.5	1.01	4.00	164.6
(L=3.35 m)	3	17.94	L13	52.5	1.79	8.43	173.0
Q0=29.3 kPa	4	69.94	L16	72.7	2.48	4.53	154.5
	5	292.90	L17	80.2	2.74	5.19	149.8
	6	1057.90	L18	86.2	2.94	3.87	160.0
	1	0.35	L17	44.2	0.71	3.66	132.9
-19.24 m	2	4.03	L16	86.0	1.38	4.29	226.6
(L=3.35 m)	3	17.94	L12	90.9	1.46	3.86	227.4
Q0=62.2 kPa	4	69.94	L16	95.5	1.54	4.98	227.5
	5	292.90	L17	108.9	1.75	5.70	227.8
	6	1057.90	L19	114.5	1.84	15.12	232.4
	1	0.35	L19	170.4	0.80	14.77	
-21.68 m	2	4.03	L17	269.1	1.26	6.79	
(L=1.52 m)	3	17.94	L13	246.2	1.16	9.26	
Q0=212.8 kPa	4	69.94	L16	198.1	0.93	5.44	
	5	292.90	L17	187.1	0.88	6.21	
	6	1057.90	L18	111.5	0.52	4.98	

Notes: Unit Side Shear has been reduced by segment weight.
Q0 found by log-linear interpolation.
* Disturbed during installation by casing to -2.81m.
Unit Side Shear is maximum measured during each load test.

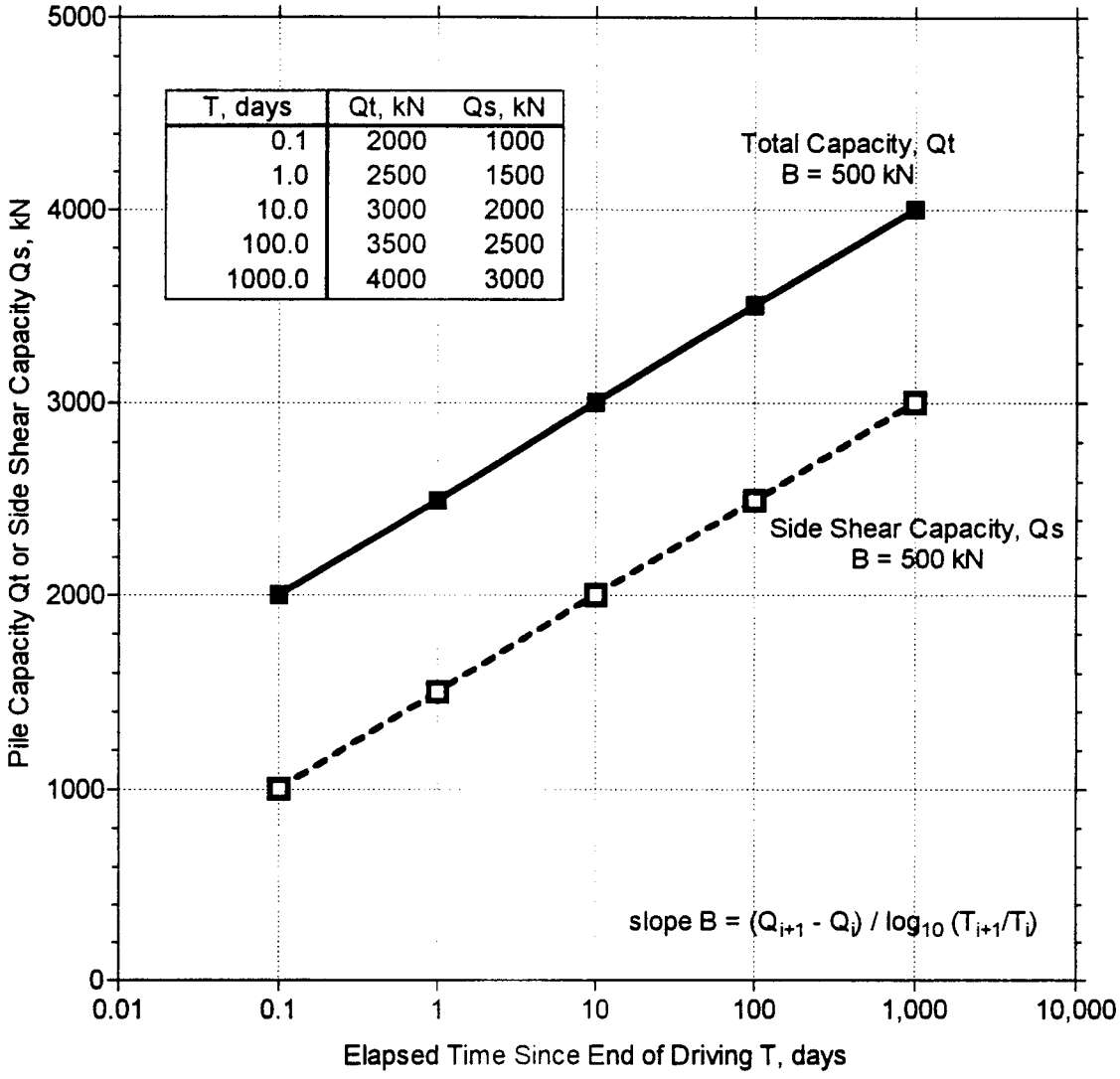

Figure 5.1 Setup Example: Effect of Total Capacity vs. Side Shear Only

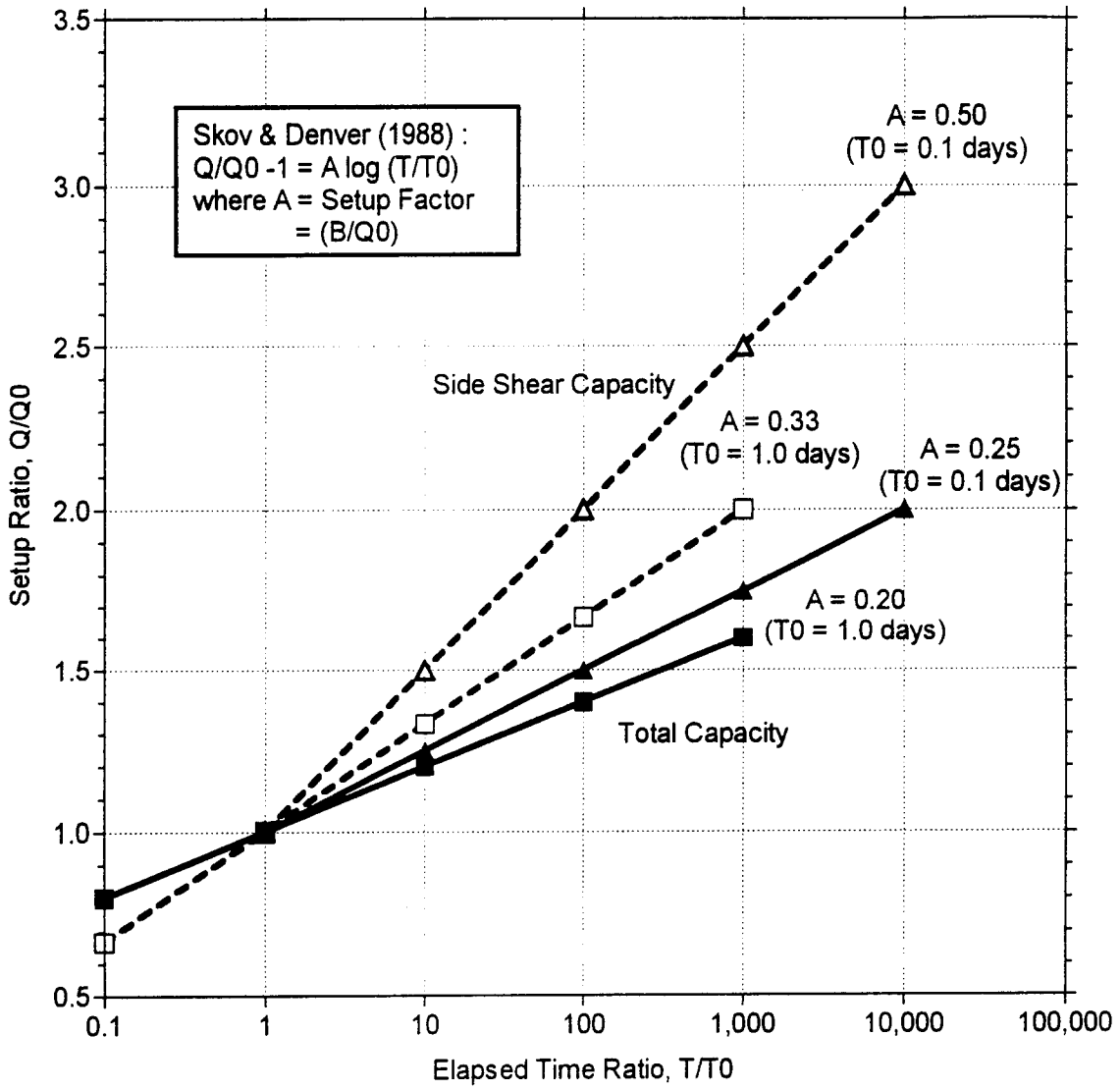

Figure 5.2 Setup Ratio Example: Effects of T0 and Total Capacity vs. Side Shear Only

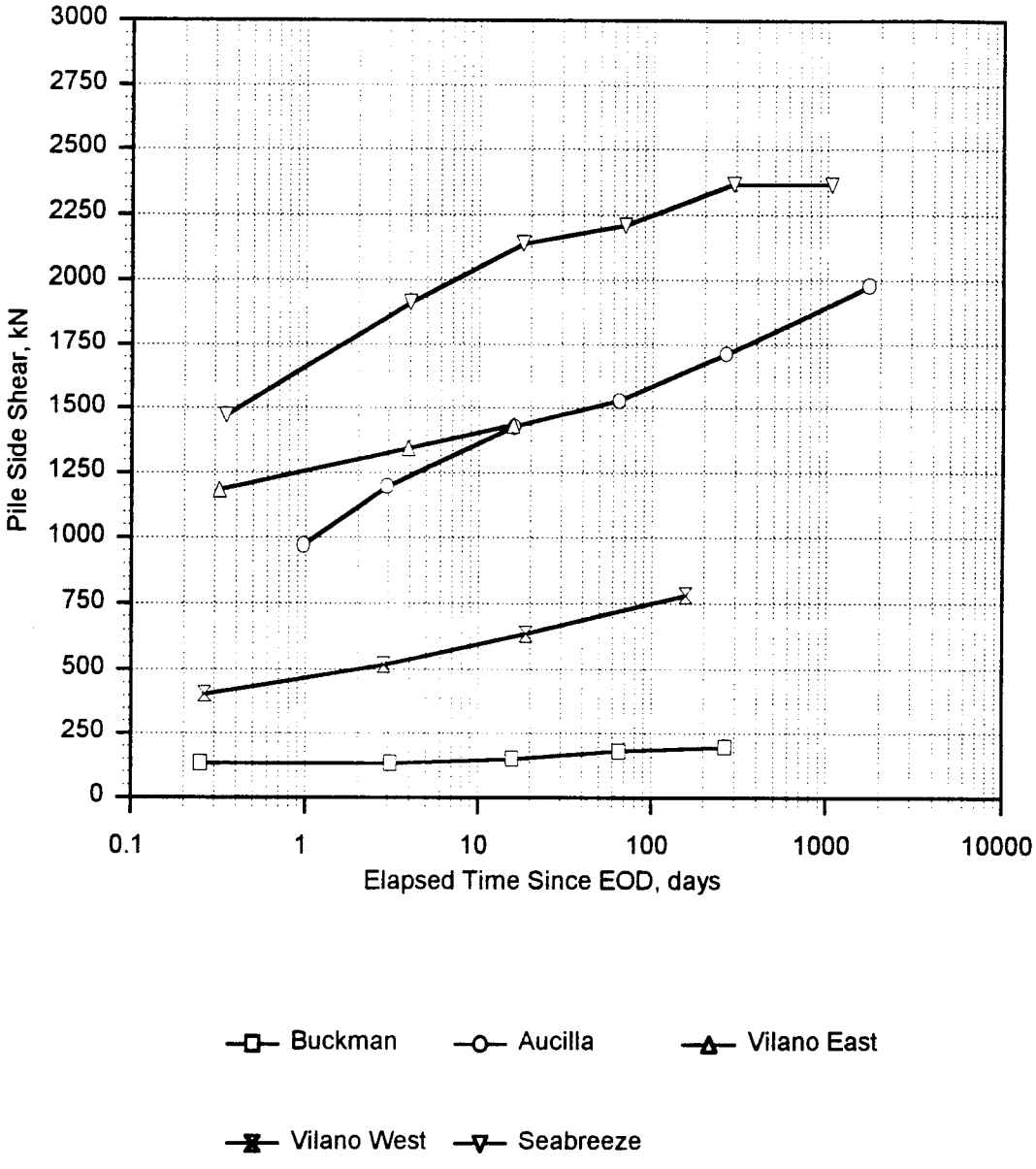

Figure 5.3 Summary of Pile Side Shear

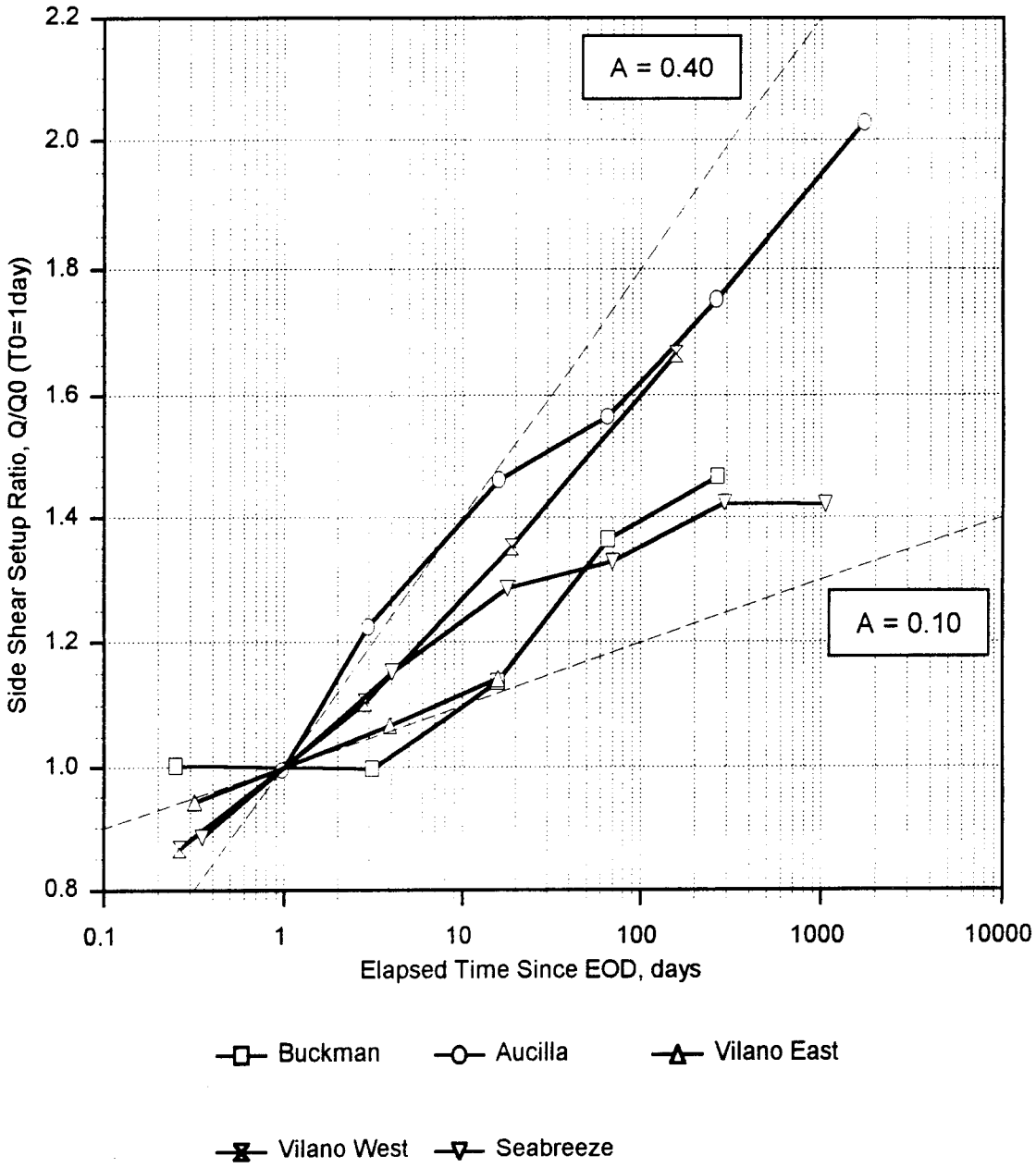

Figure 5.4 Pile Side Shear Setup Ratio

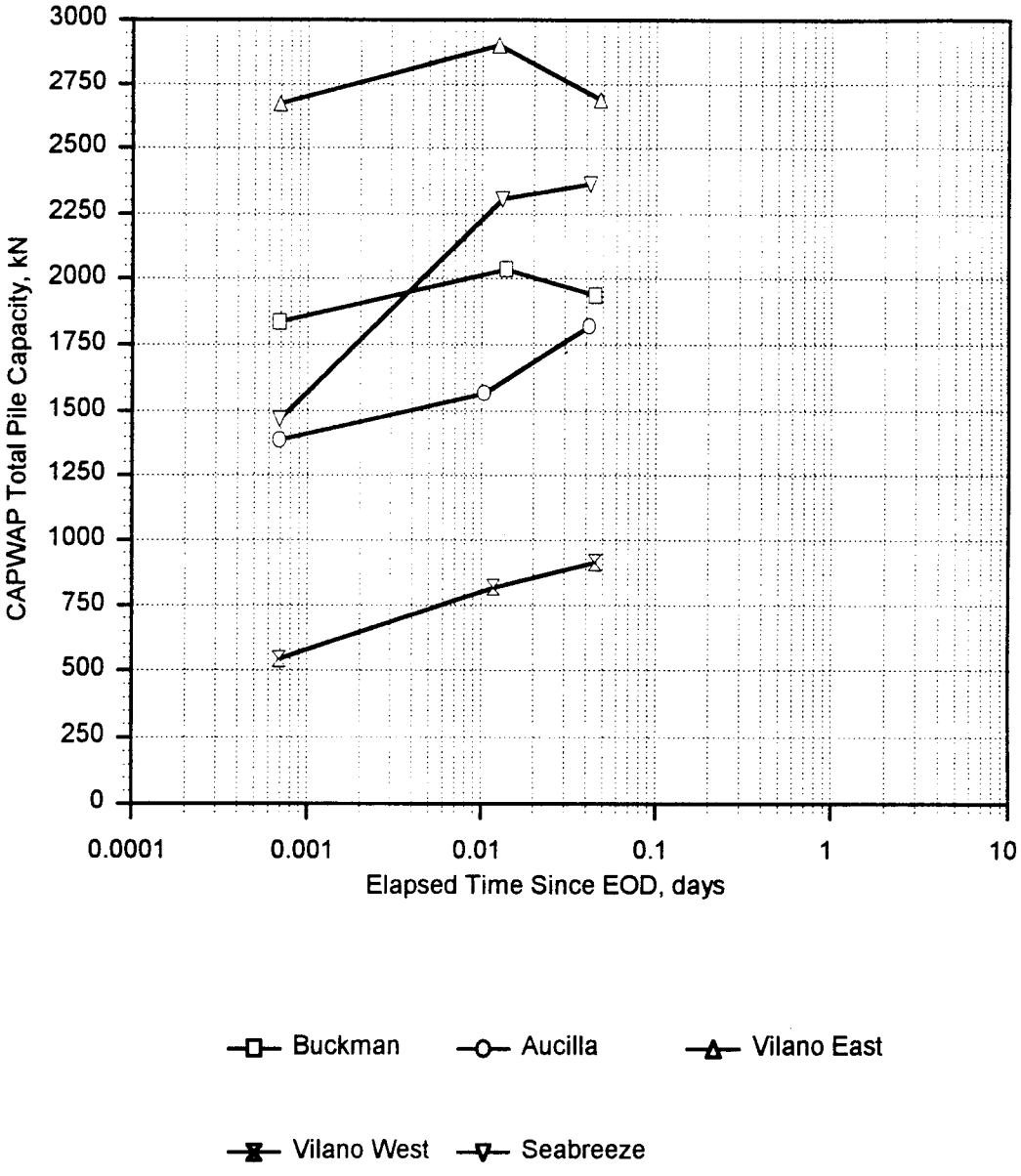

Figure 5.5 CAPWAP Pile Capacity

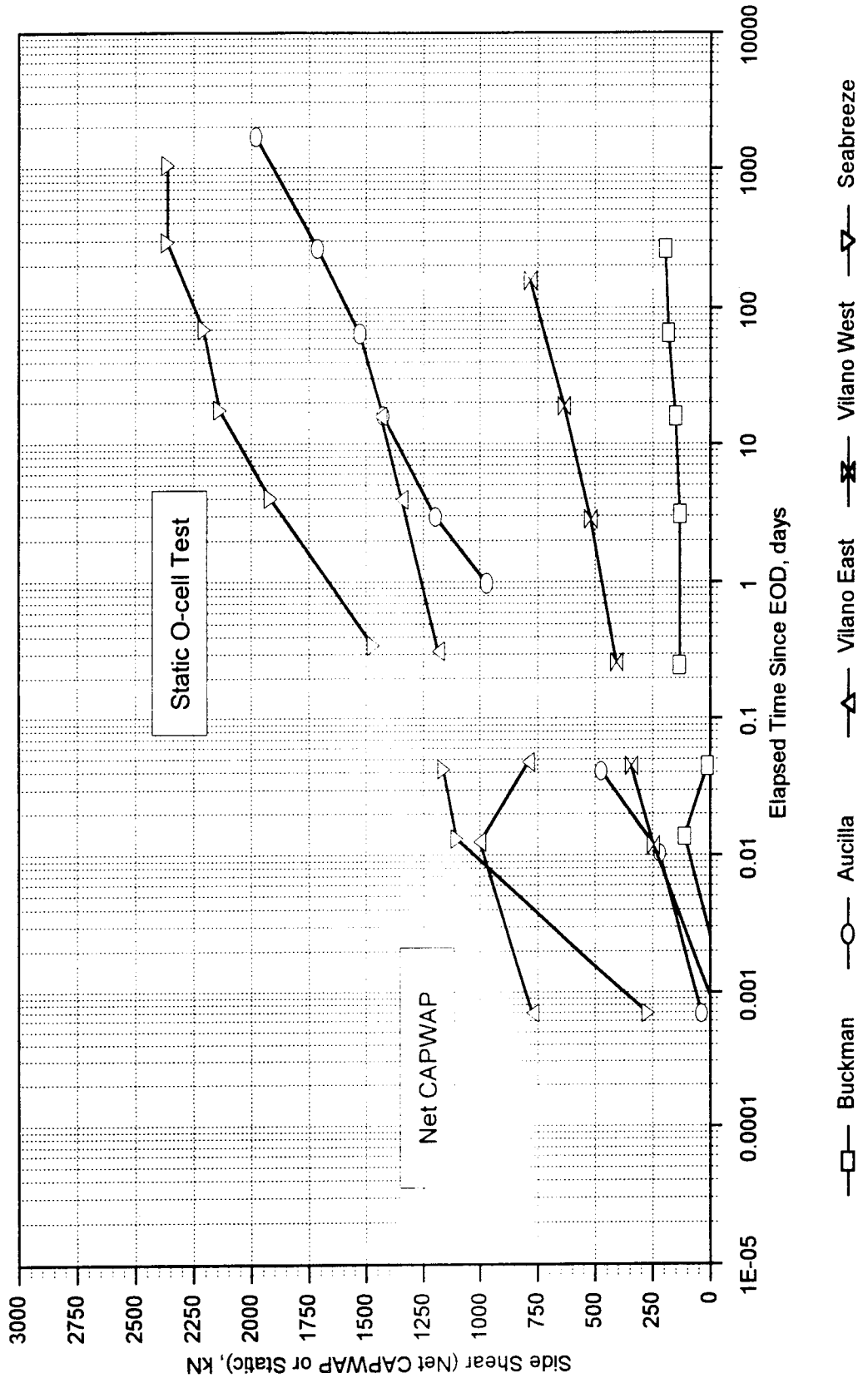

Figure 5.6 CAPWAP and Static Side Shear

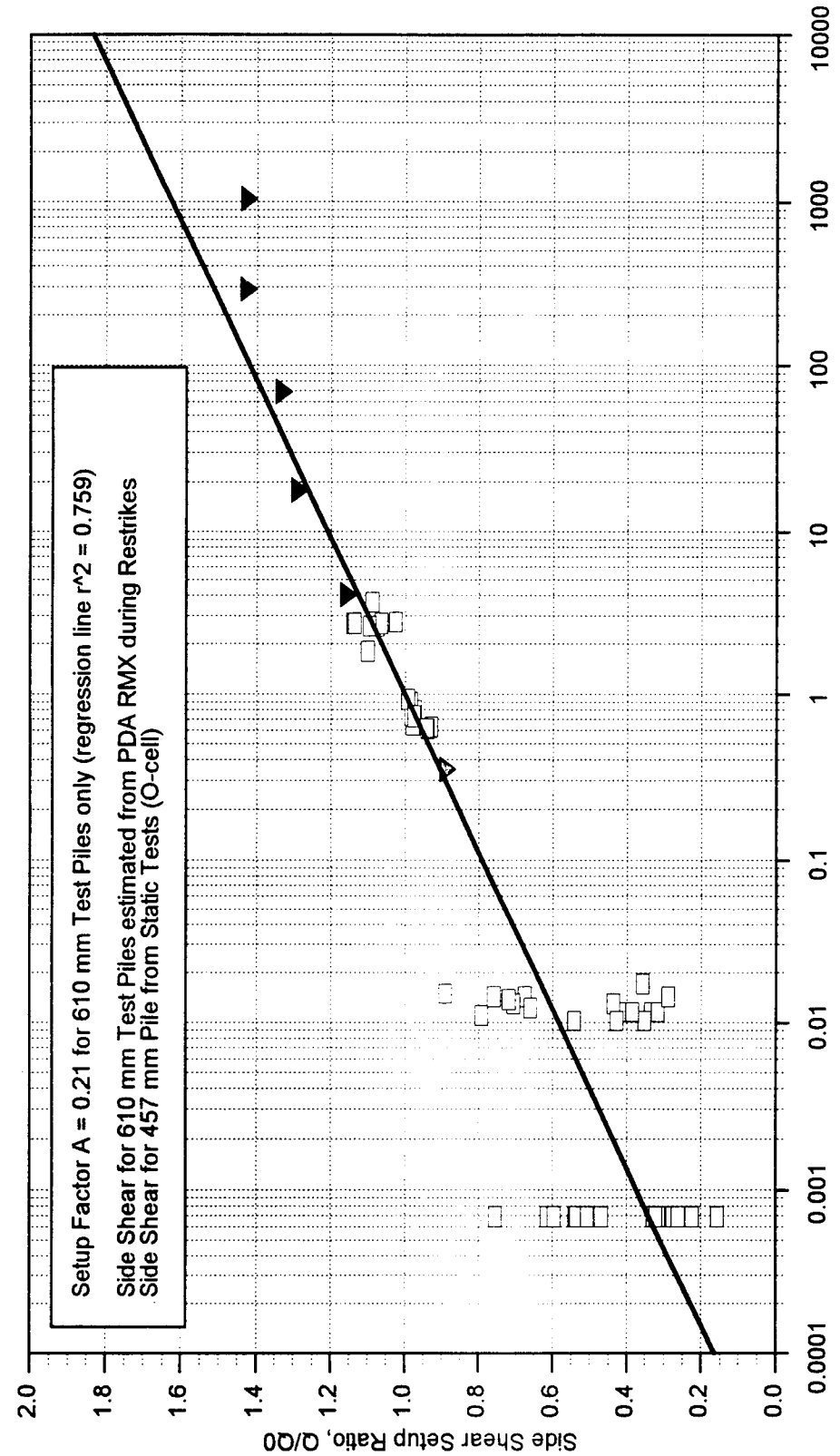

Figure 5.7 Side Shear Setup Ratio for Seabreeze Piles

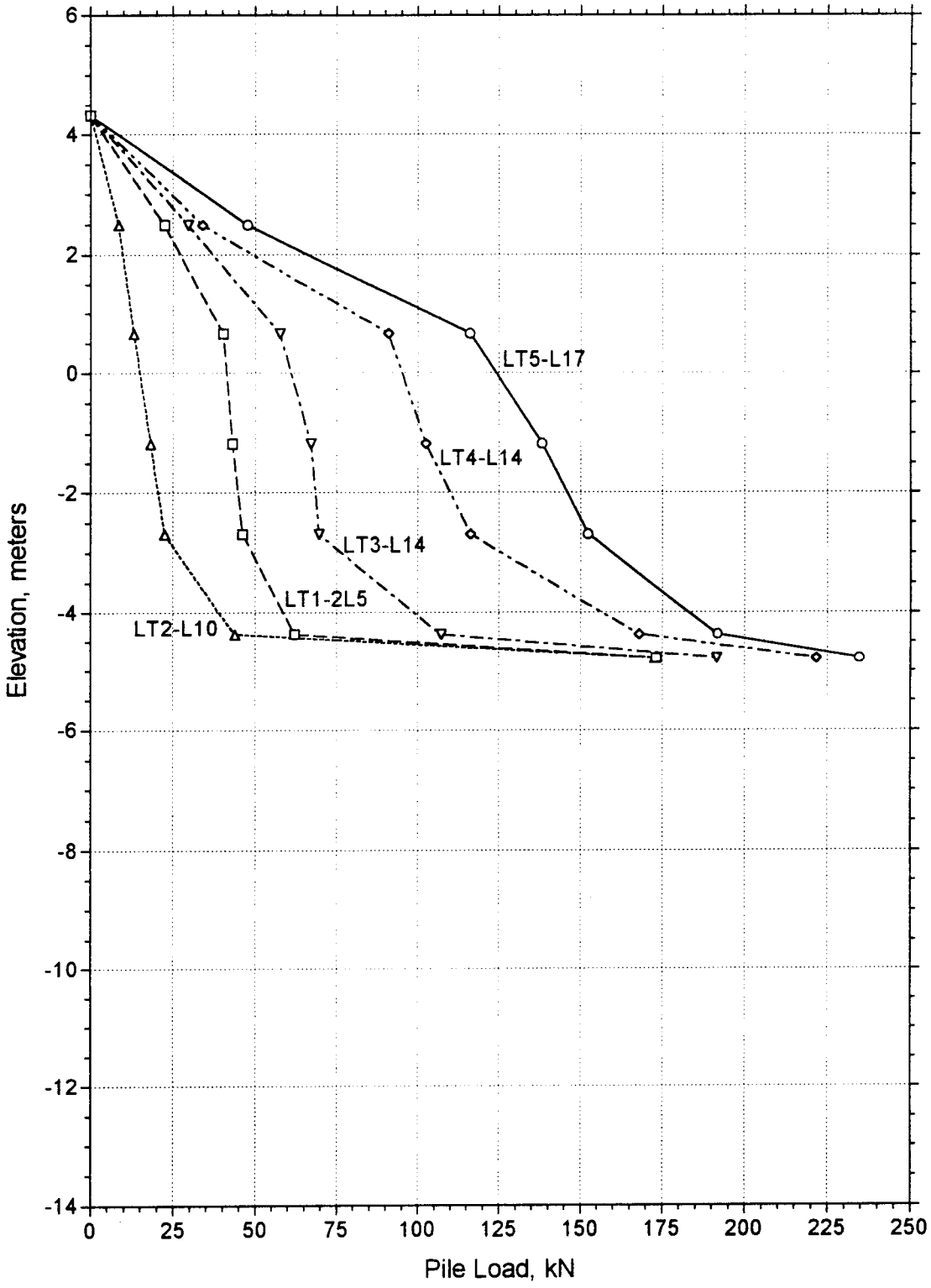

Figure 5.8 Load at Failure: Buckman

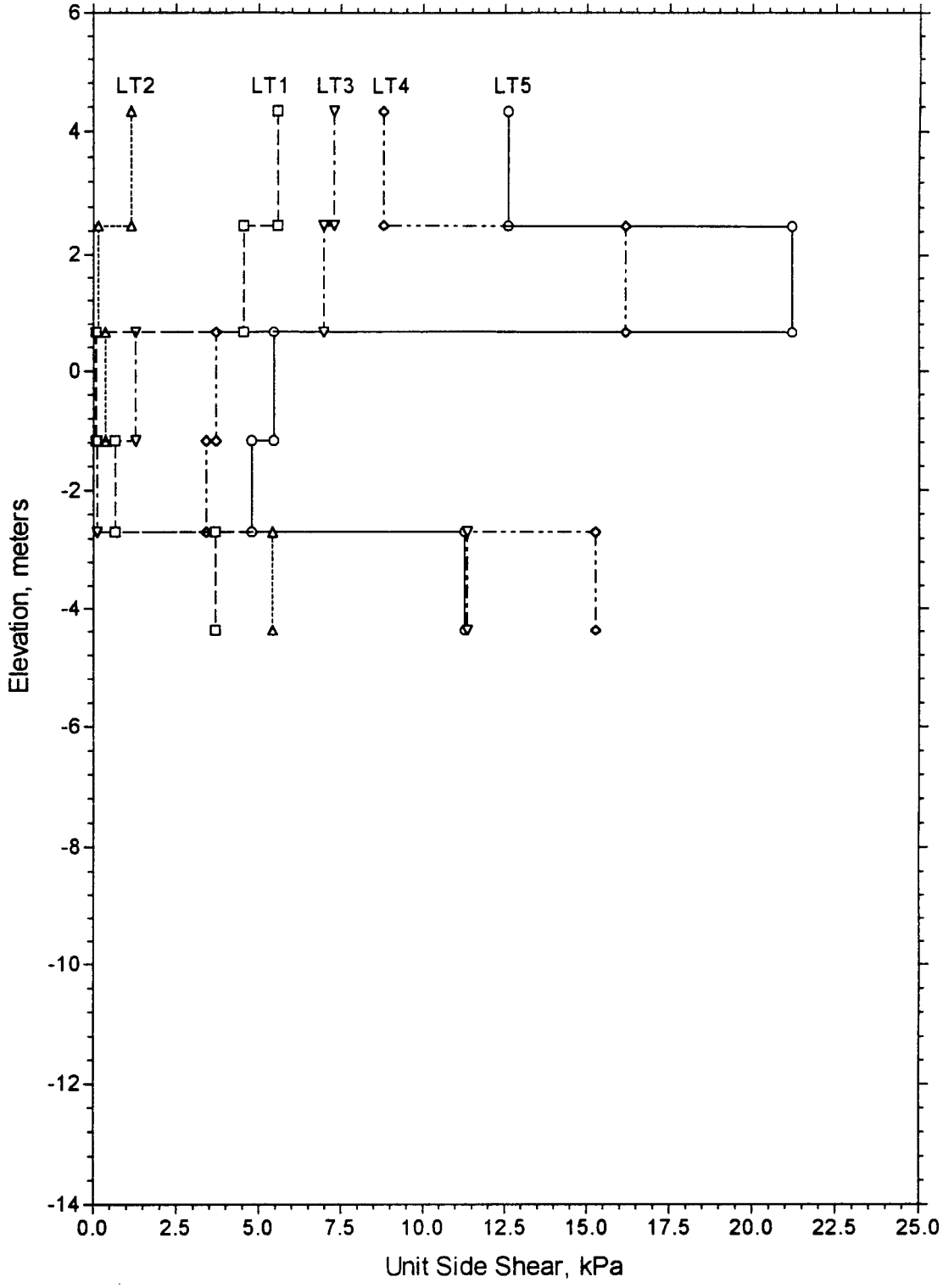

Figure 5.9 Maximum Side Shear: Buckman

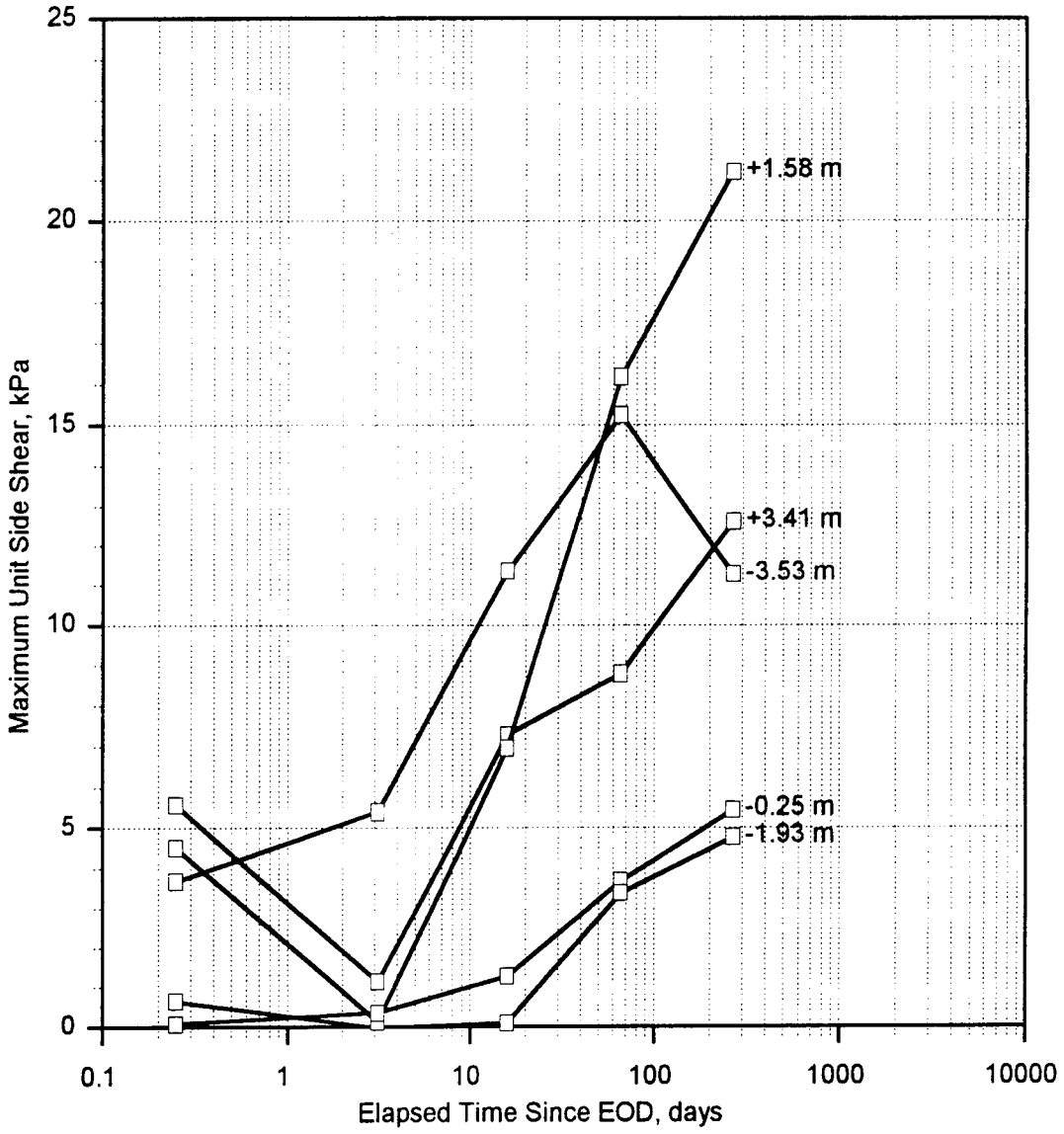

Figure 5.10 Maximum Side Shear by Pile Segment: Buckman

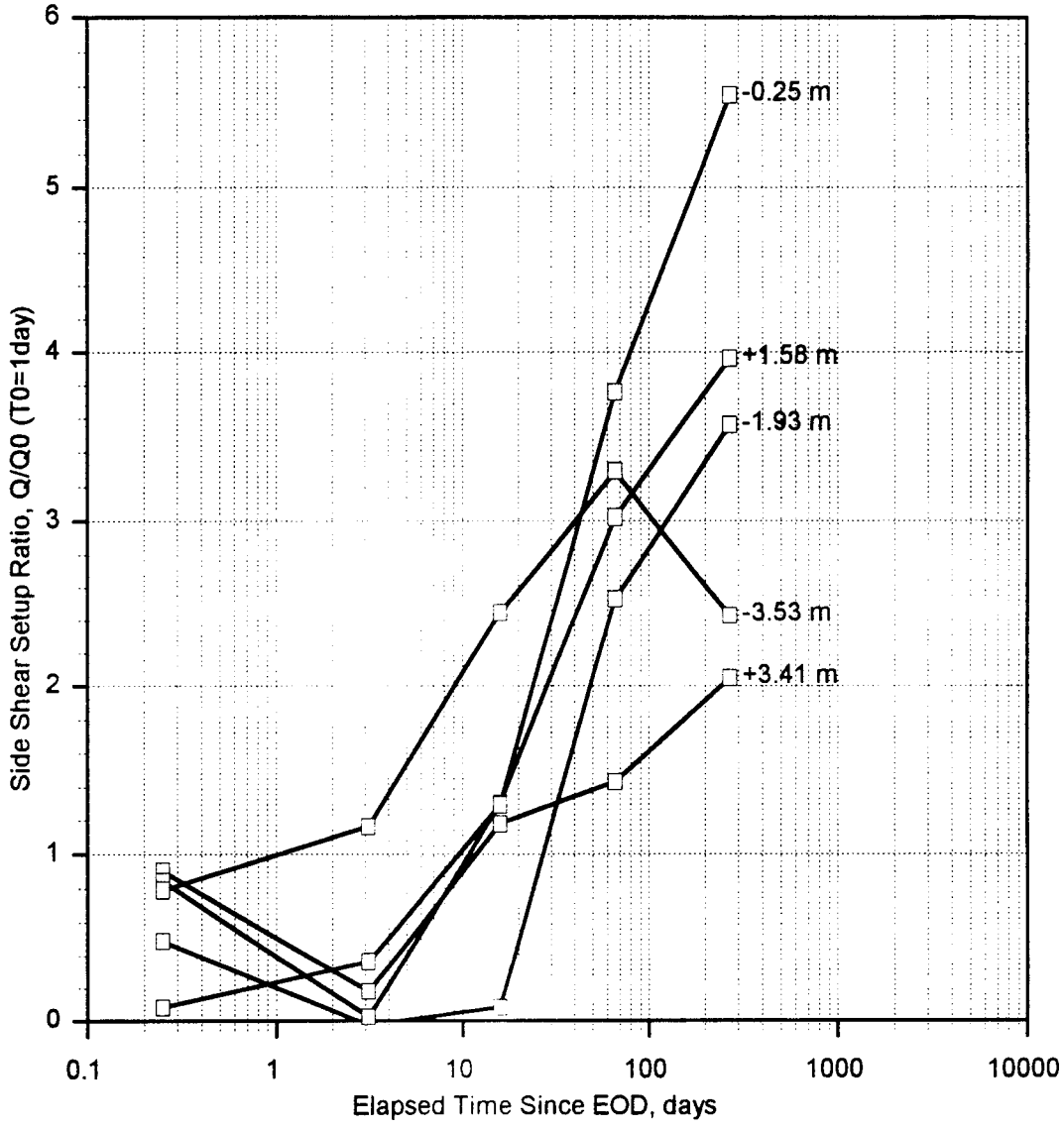

Figure 5.11 Side Shear Setup Ratio by Pile Segment: Buckman

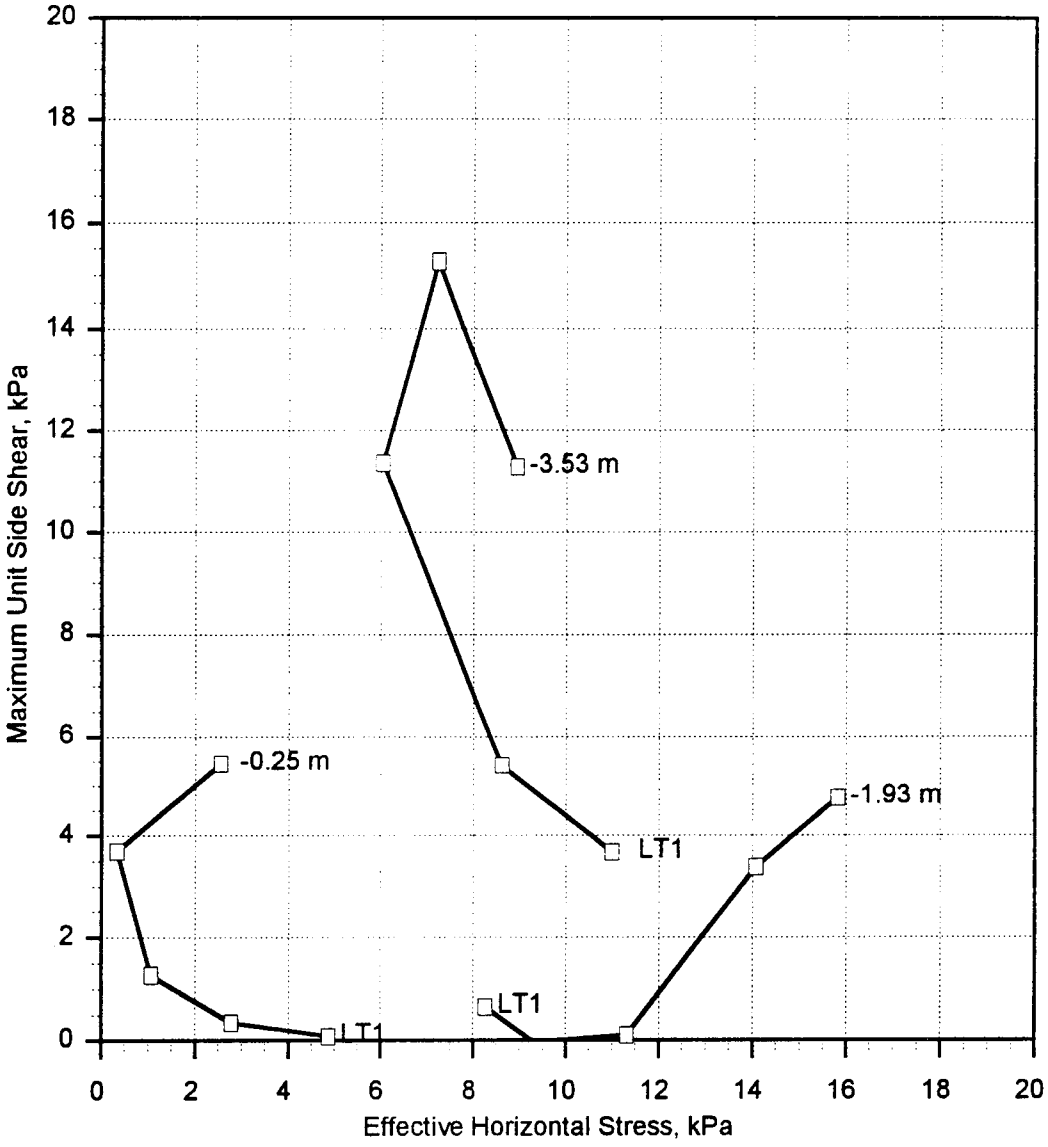

Figure 5.12 Stress Induced Side Shear by Pile Segment: Buckman

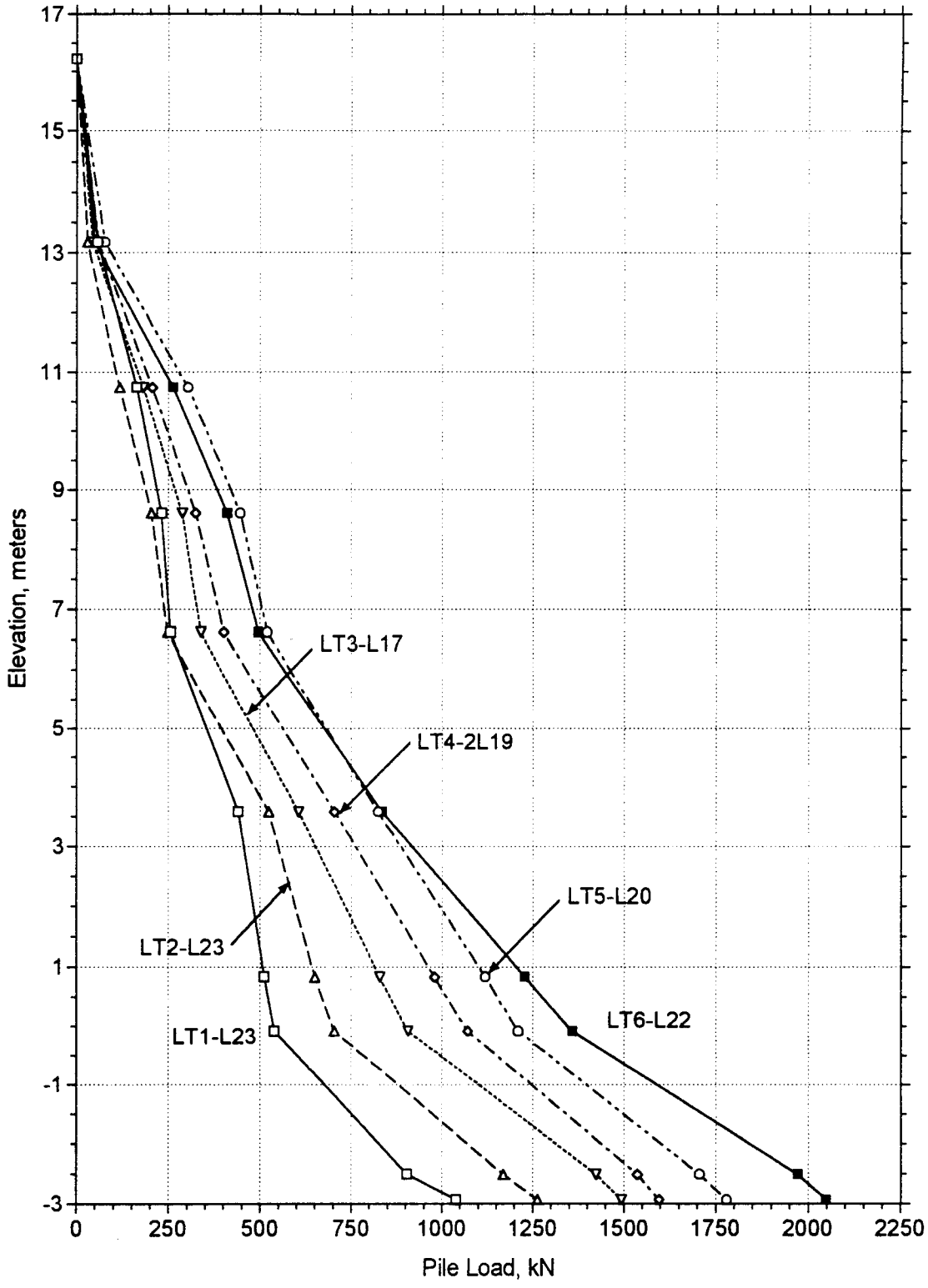

Figure 5.13 Load at Failure: Aucilla

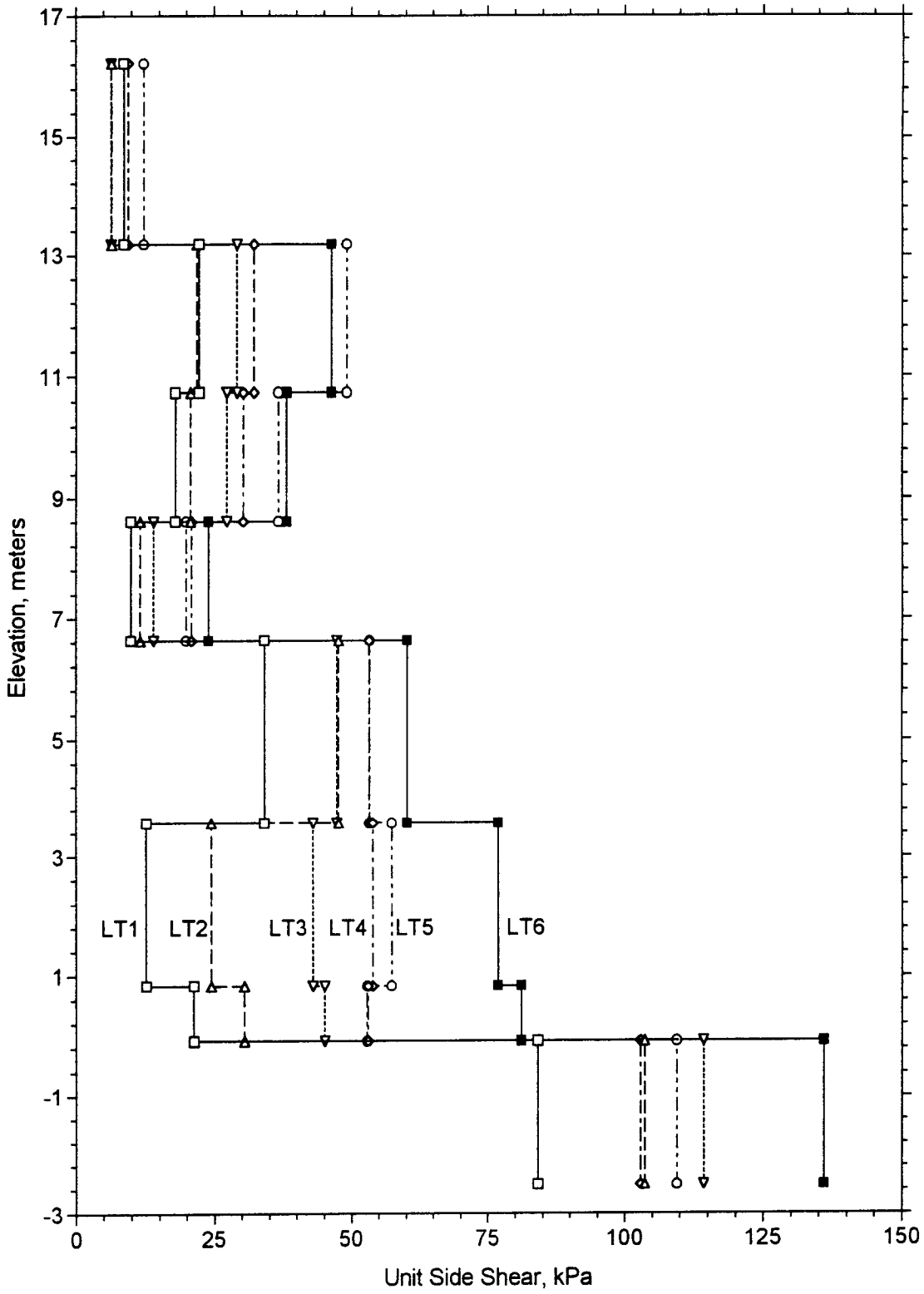

Figure 5.14 Maximum Side Shear: Aucilla

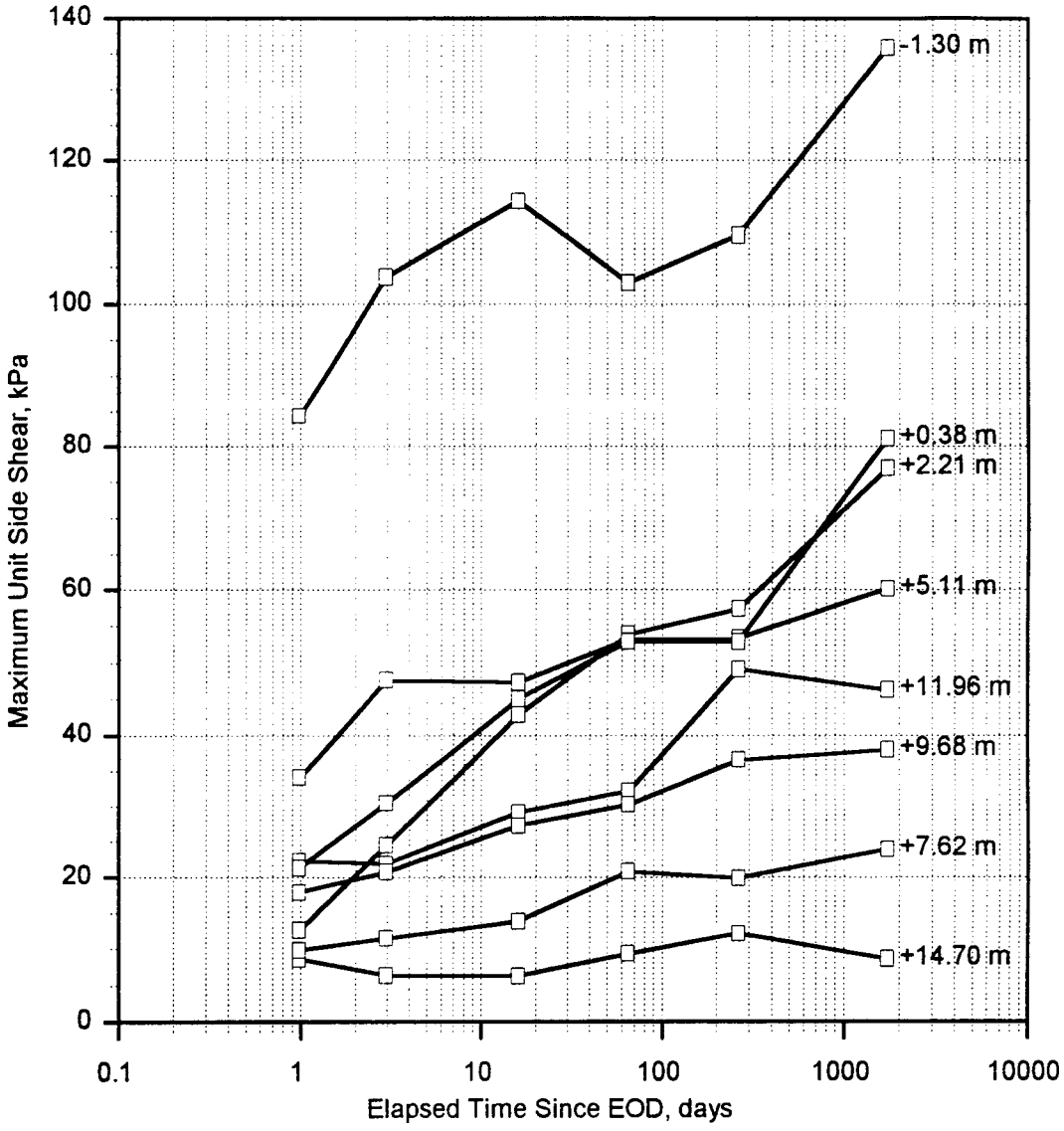

Figure 5.15 Maximum Side Shear by Pile Segment: Aucilla

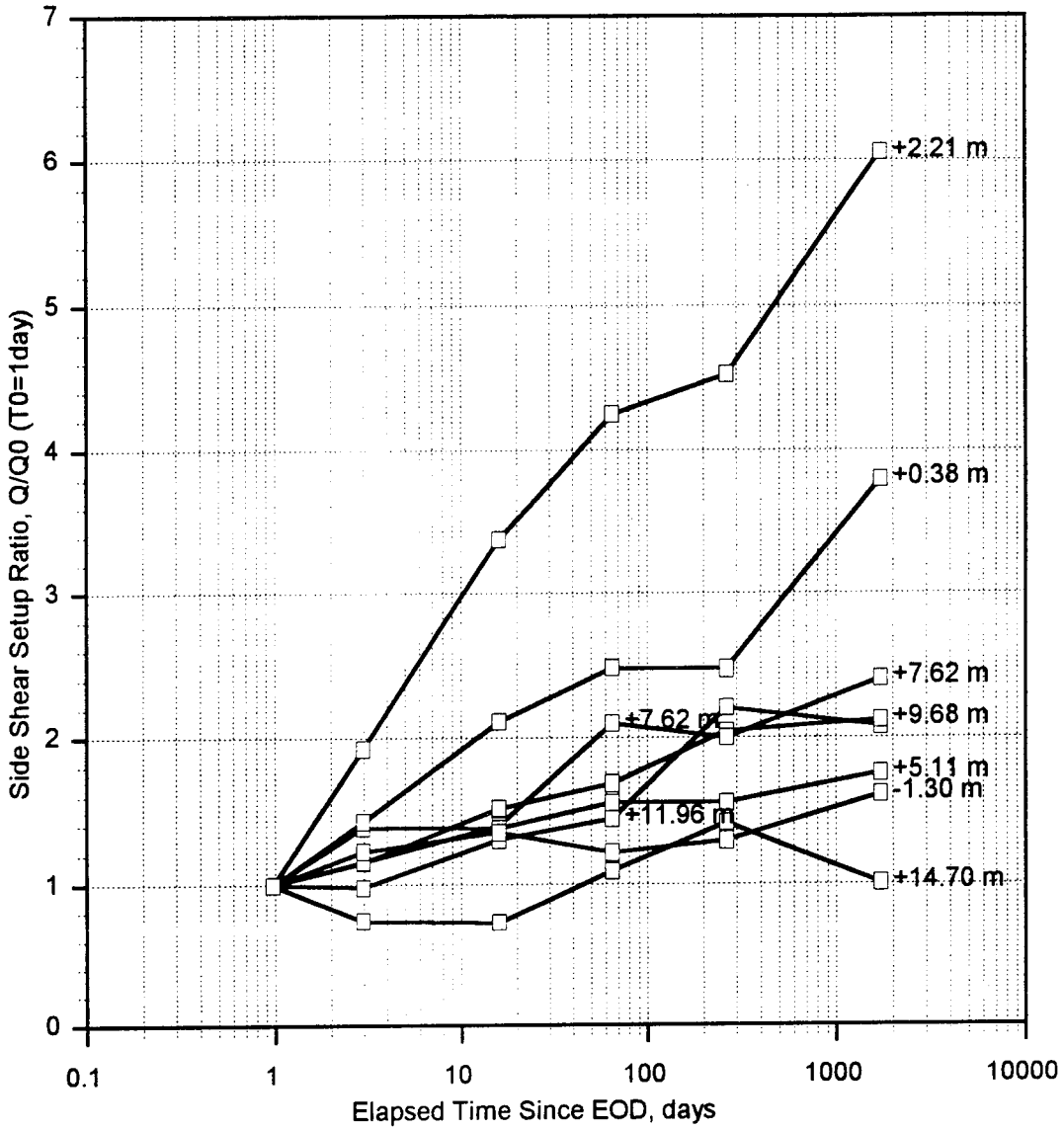

Figure 5.16 Side Shear Setup Ratio by Pile Segment: Aucilla

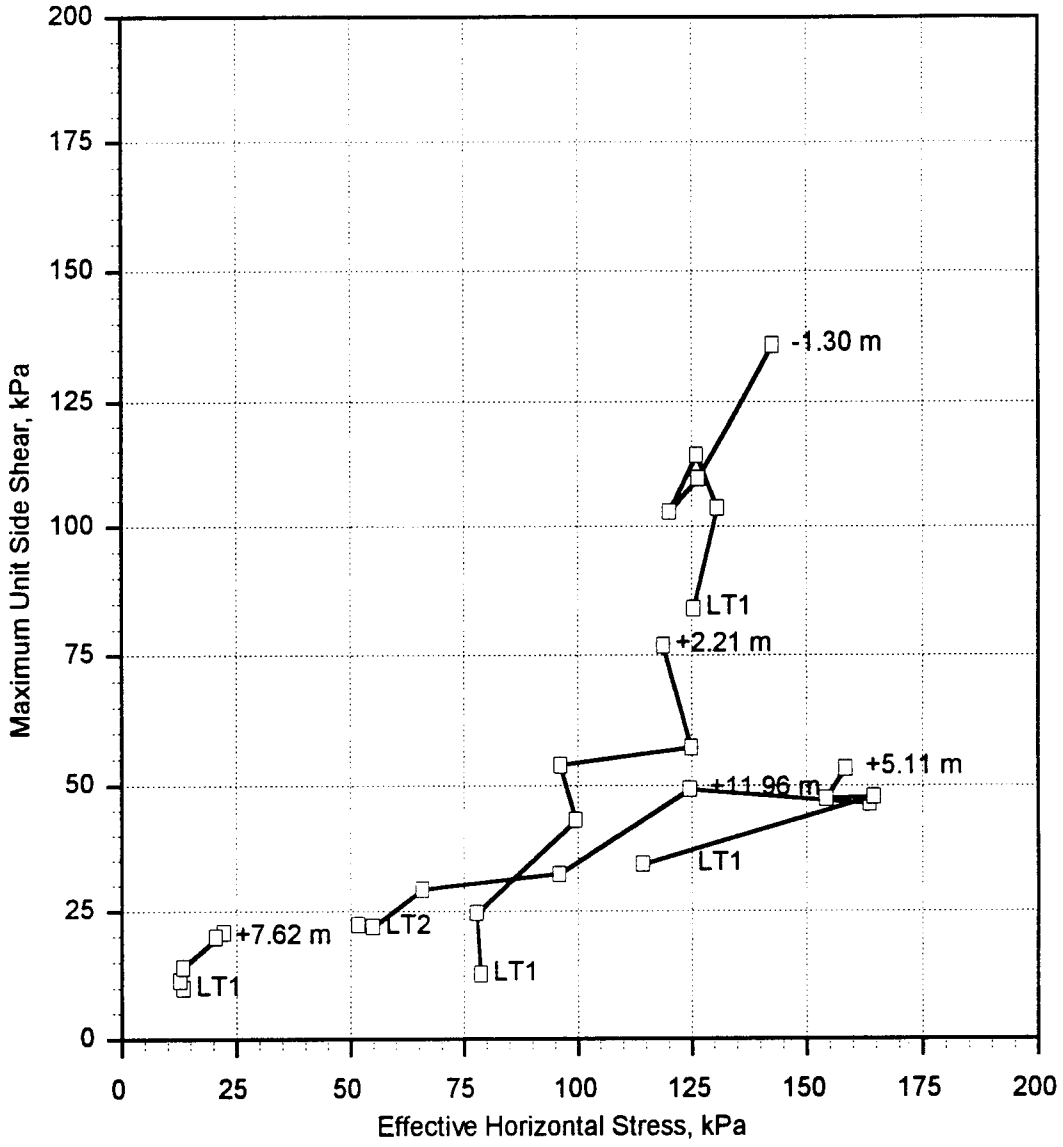

Figure 5.17 Stress Induced Side Shear by Pile Segment: Aucilla

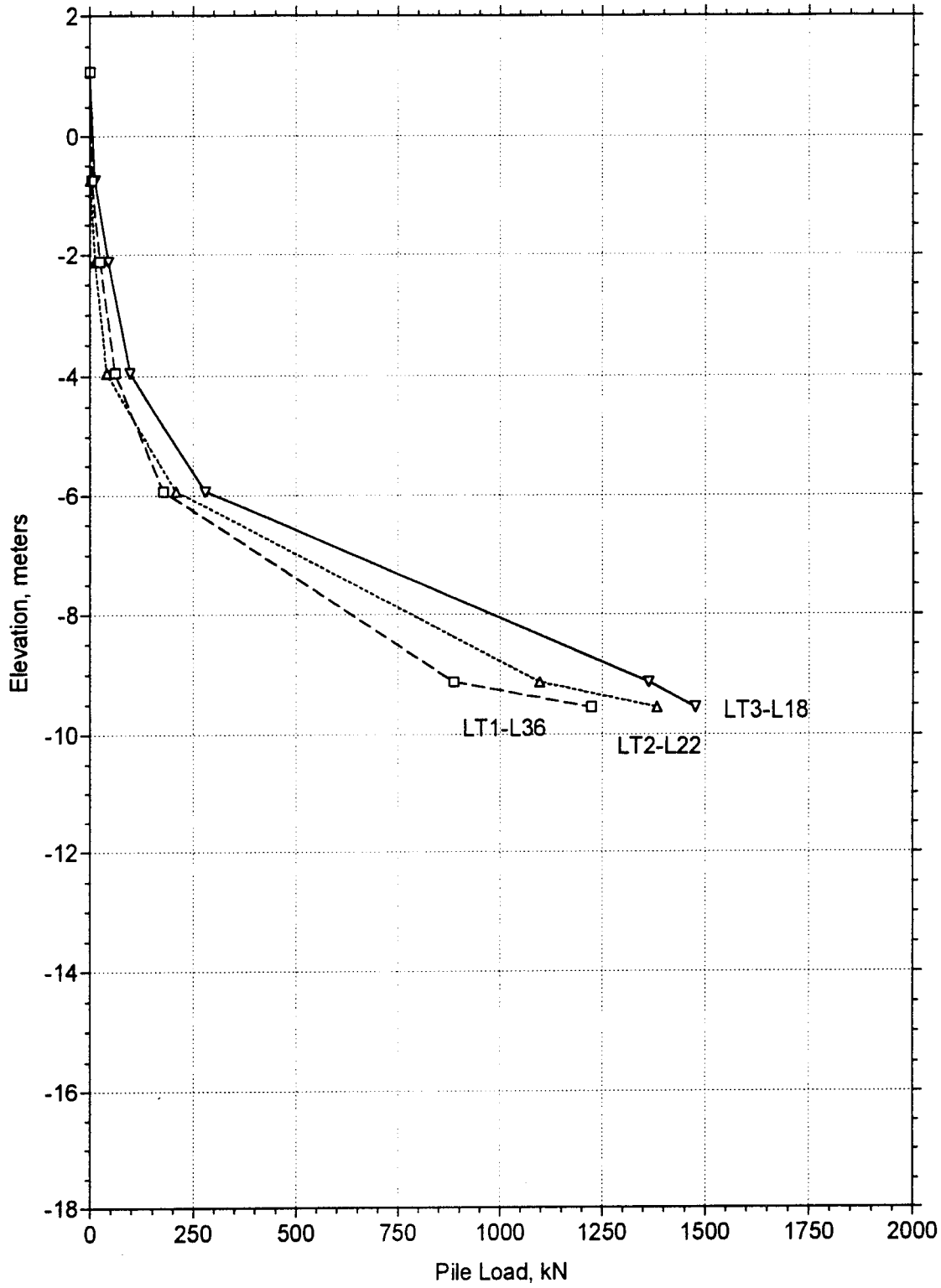

Figure 5.18 Load at Failure: Vilano East

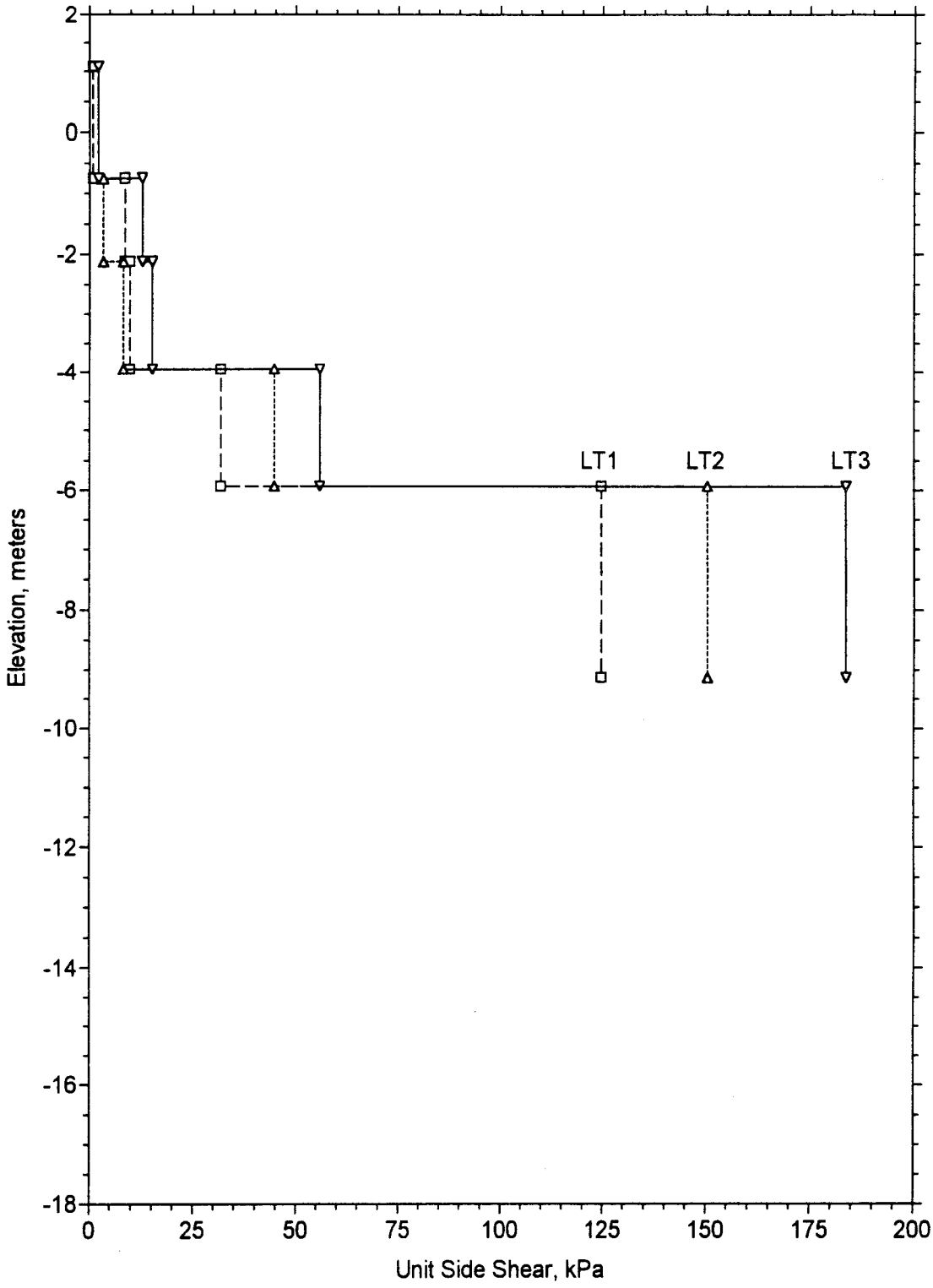

Figure 5.19 Maximum Side Shear: Vilano East

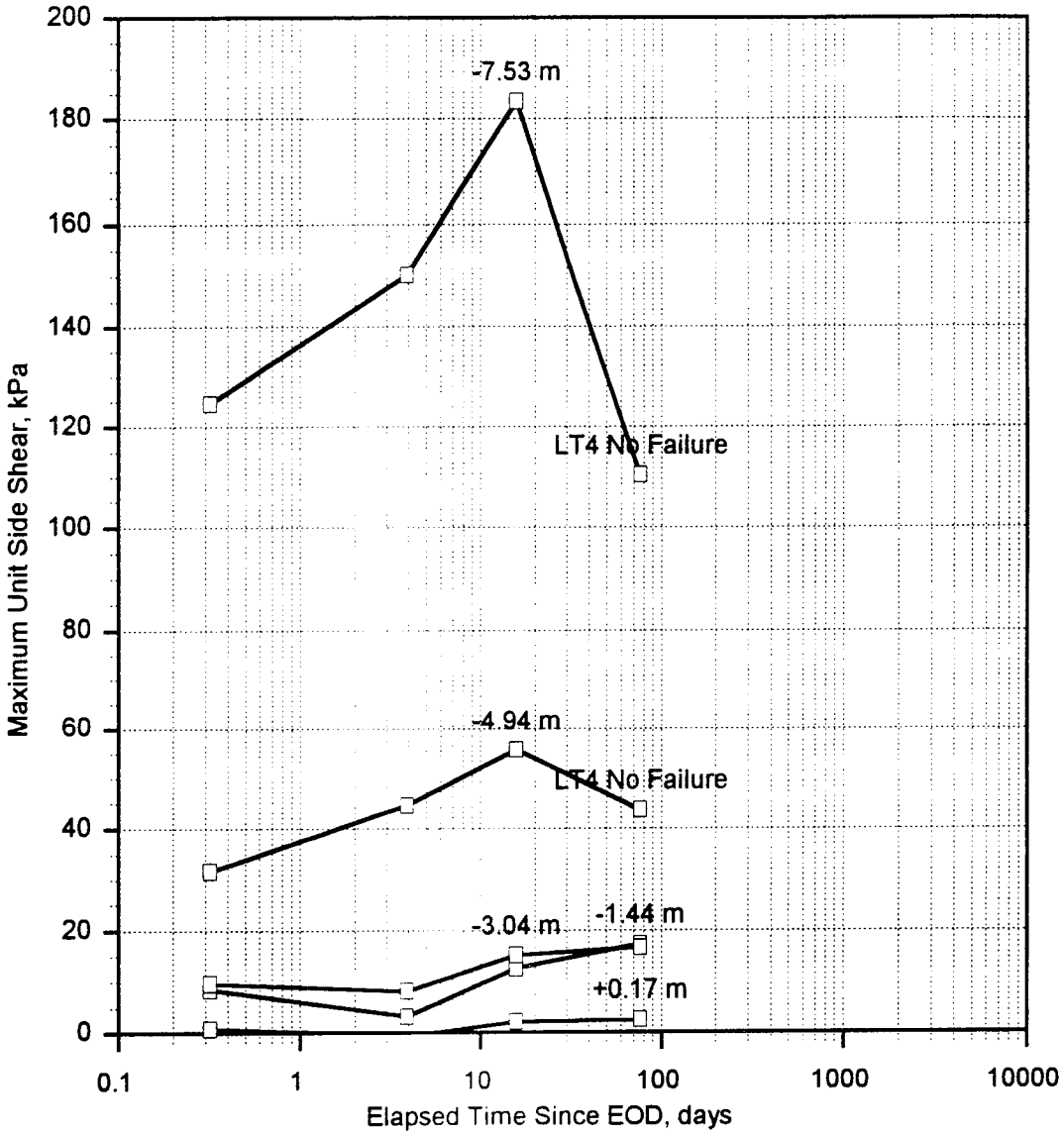

Figure 5.20 Maximum Side Shear by Pile Segment: Vilano East

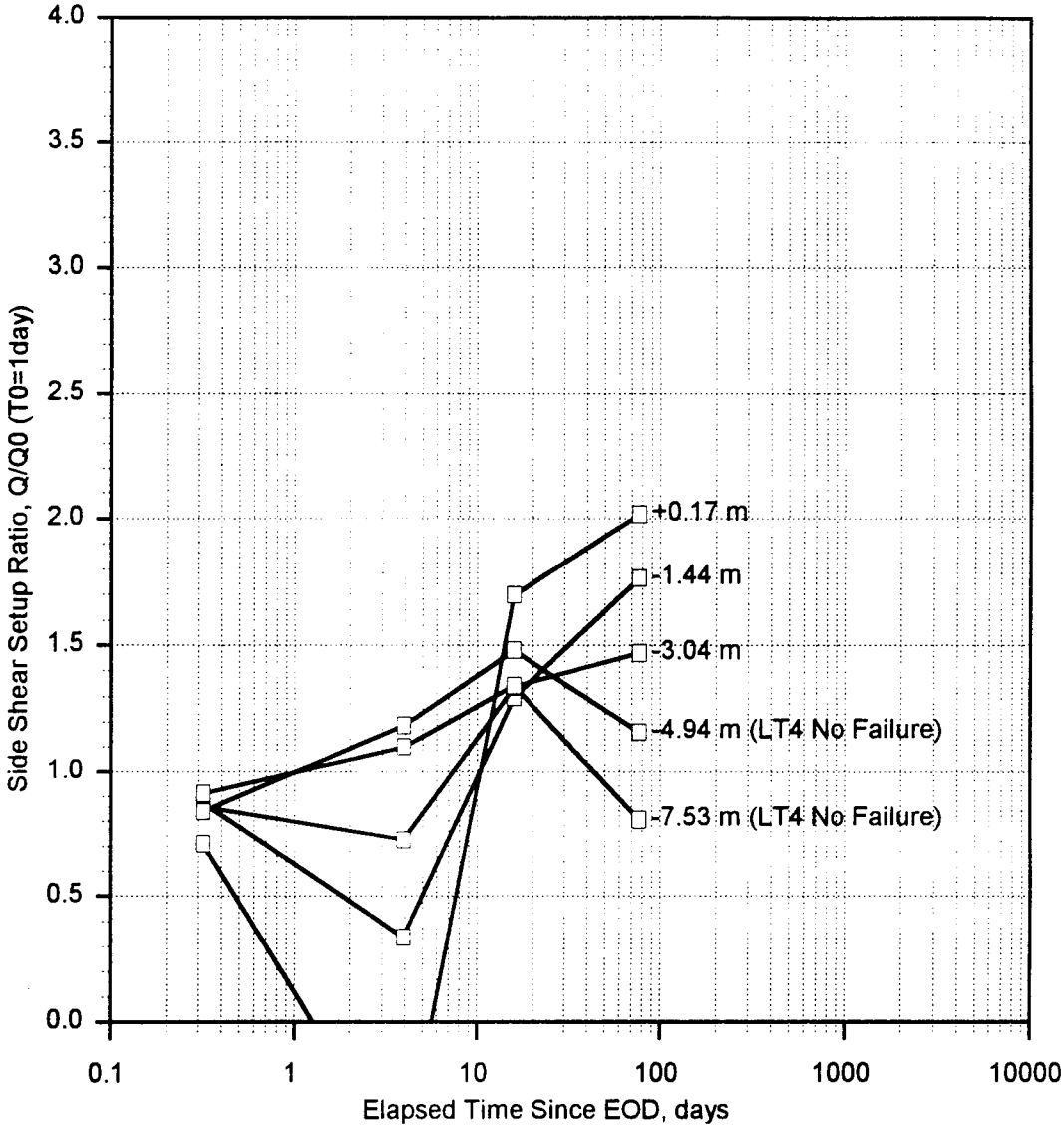

Figure 5.21 Side Shear Setup Ratio by Pile Segment: Vilano East

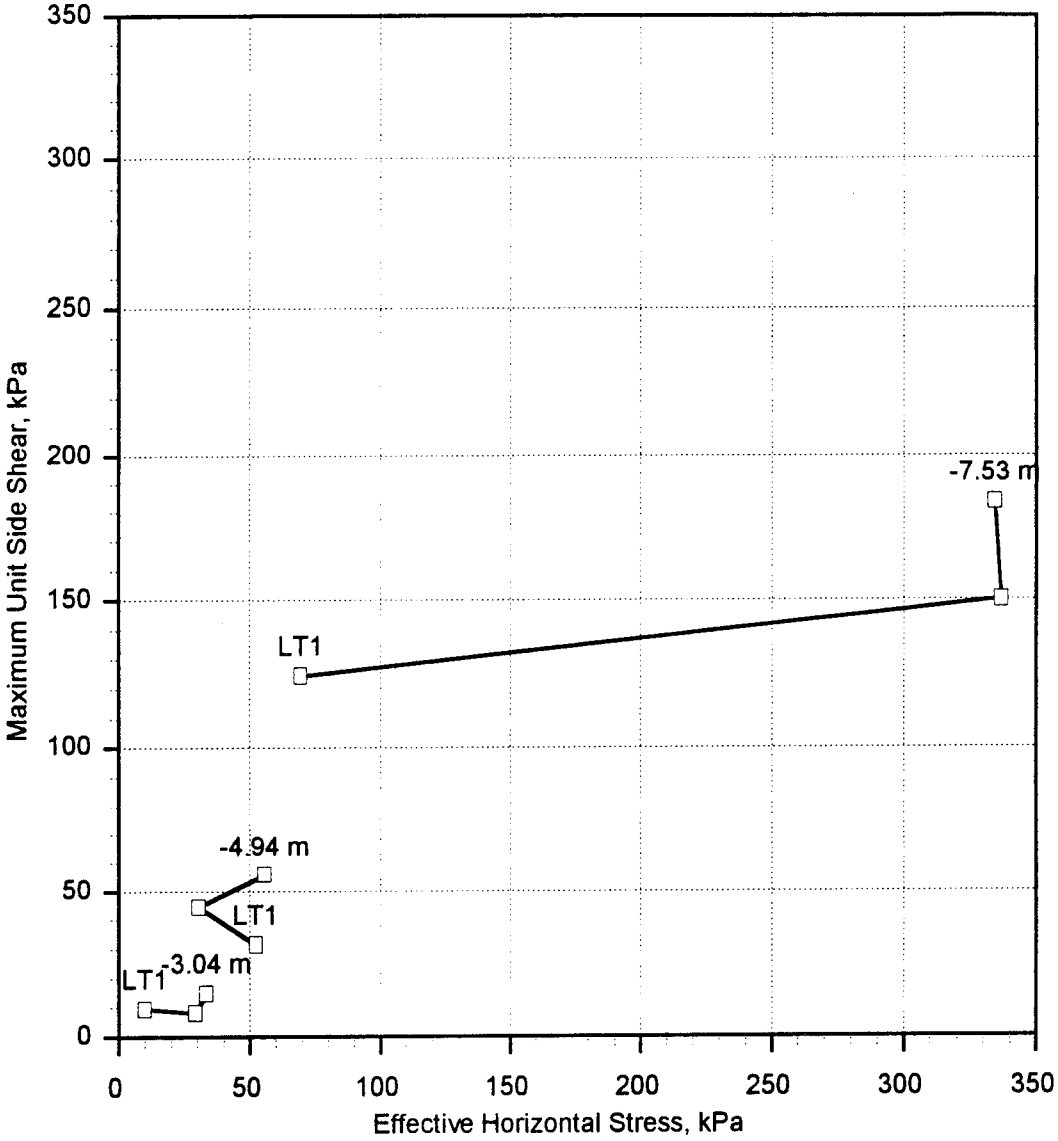

Figure 5.22 Stress Induced Side Shear by Pile Segment: Vilano East

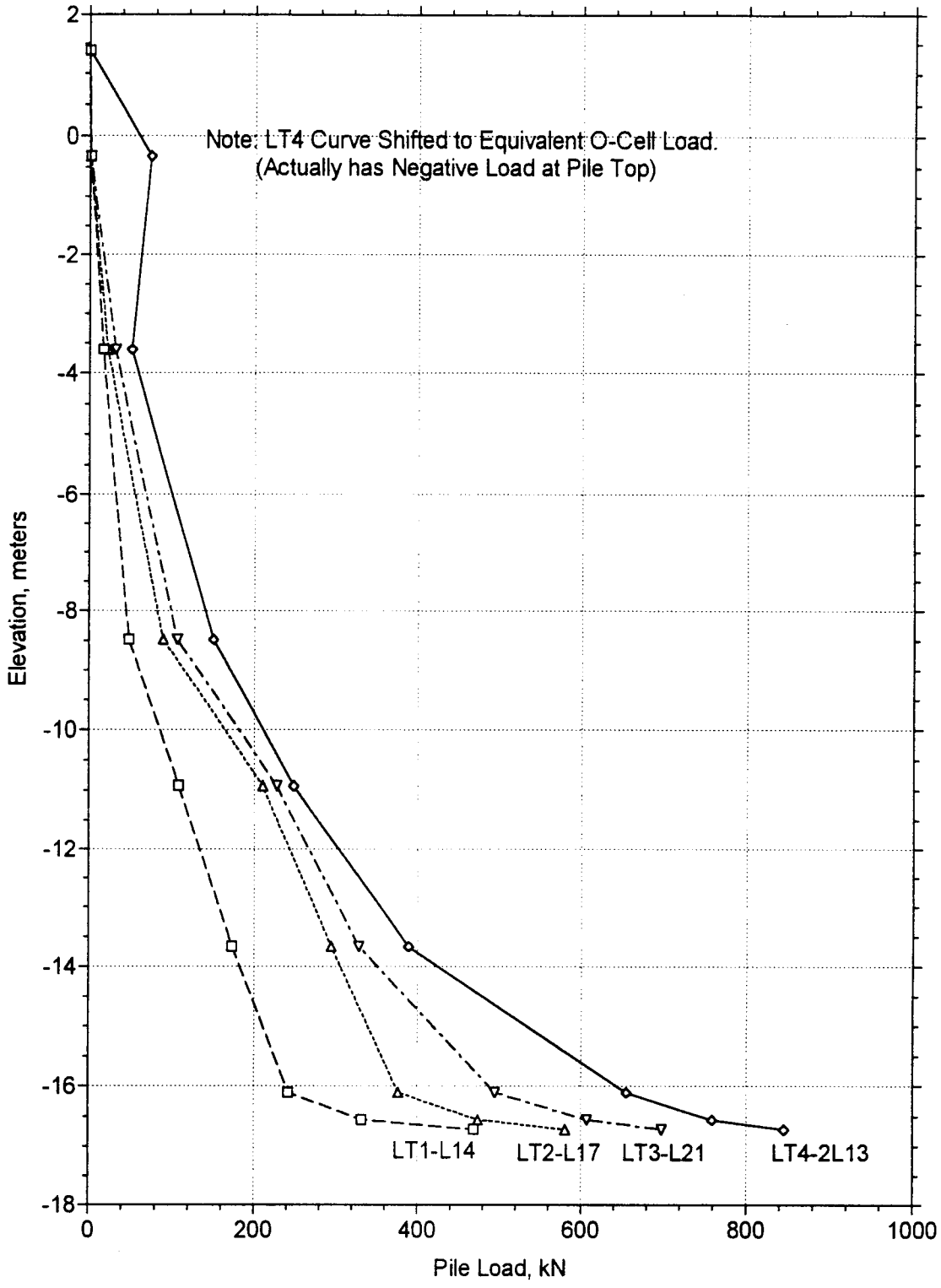

Figure 5.22 Load at Failure: Vilano West

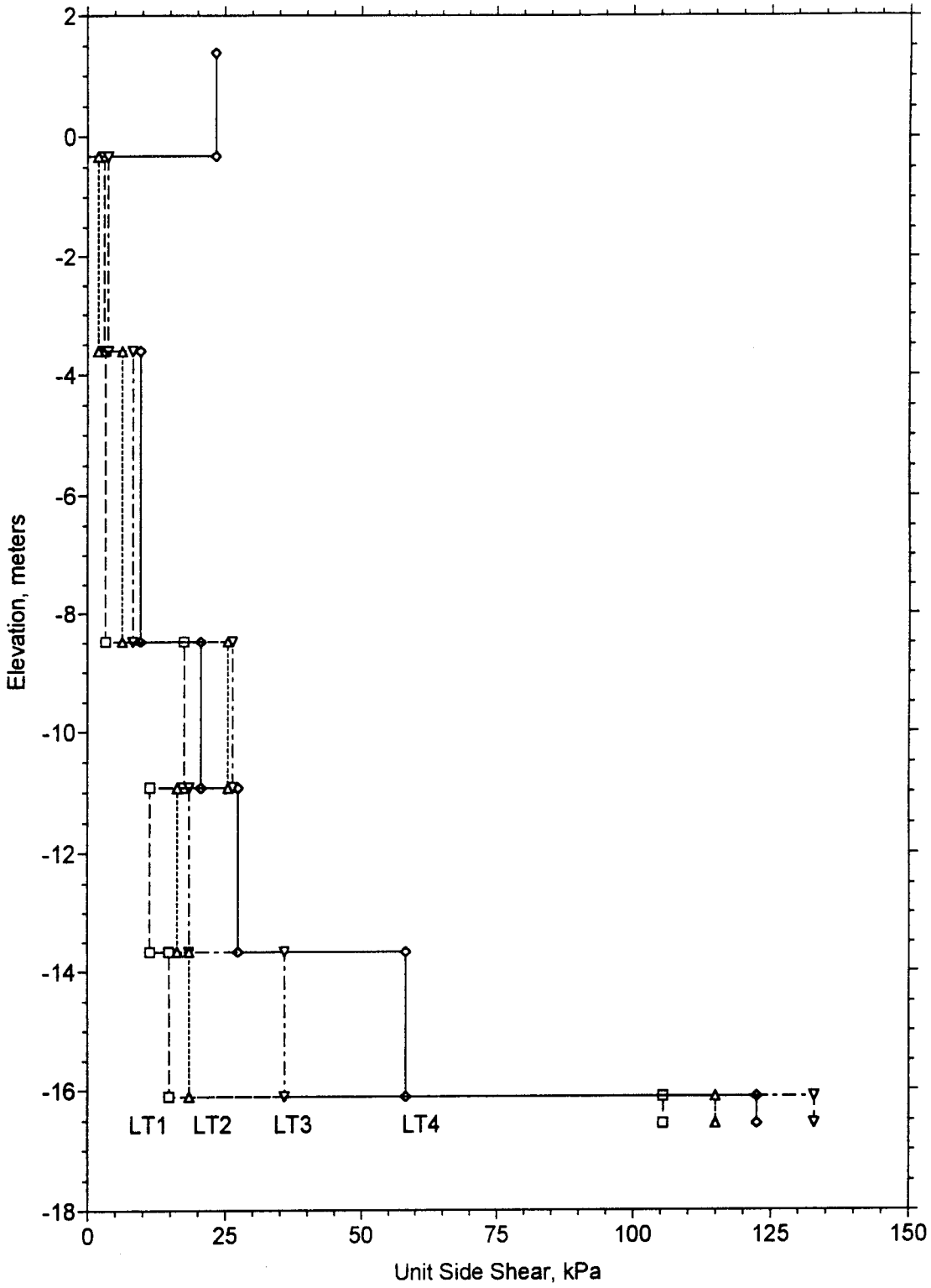

Figure 5.24 Maximum Side Shear: Vilano West

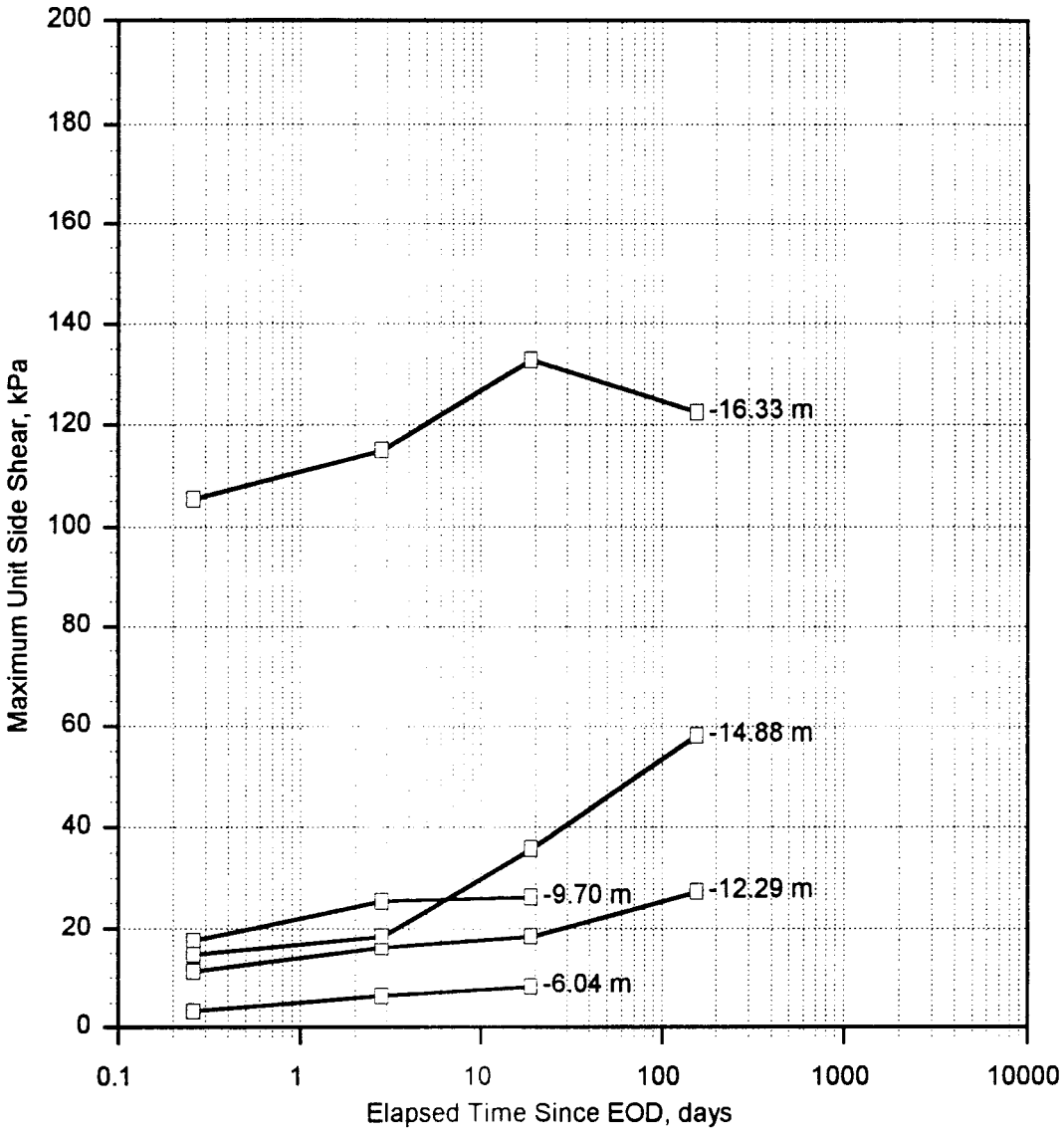

Figure 5.25 Maximum Side Shear by Pile Segment: Vilano West

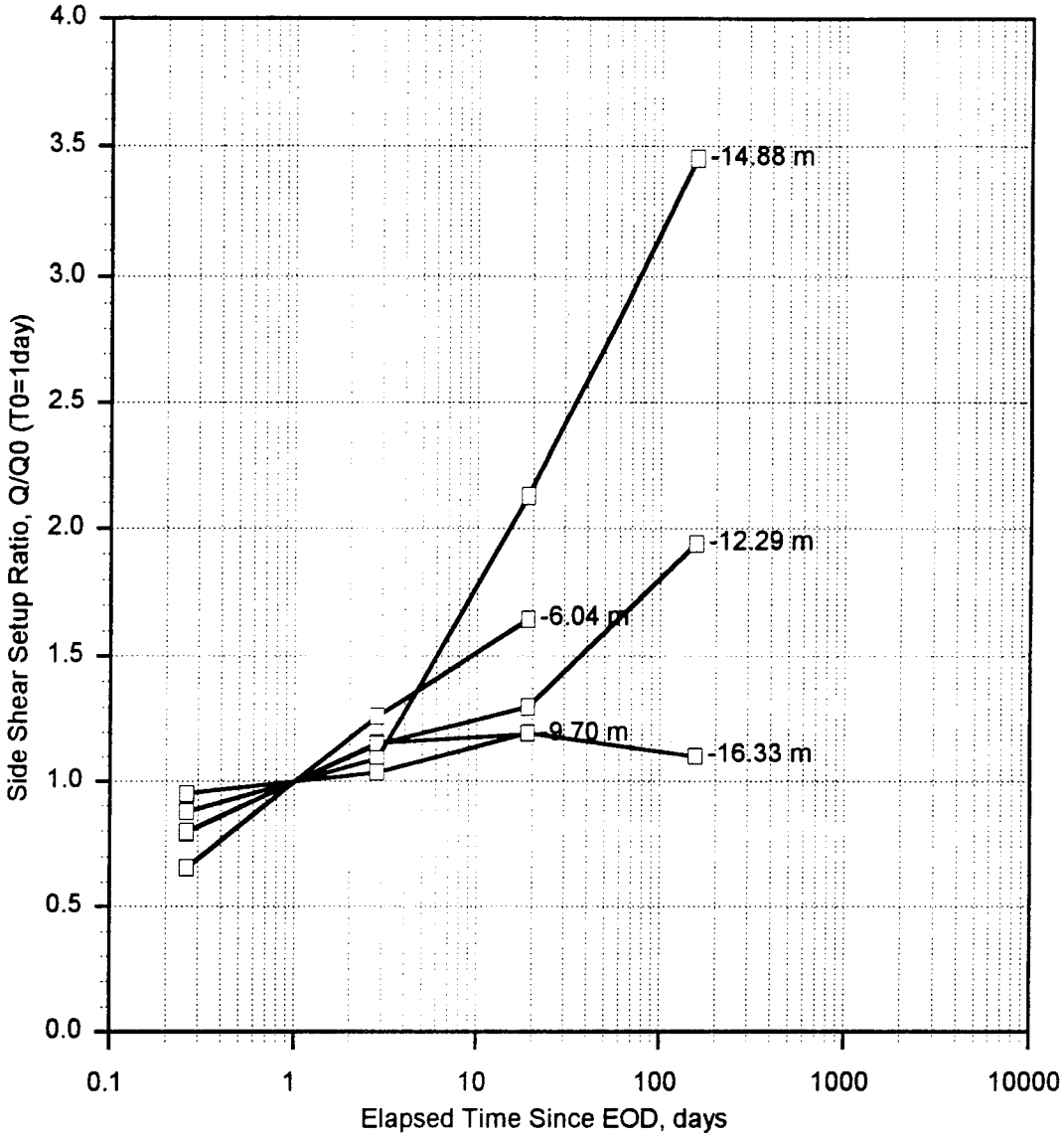

Figure 5.26 Side Shear Setup Ratio by Pile Segment: Vilano West

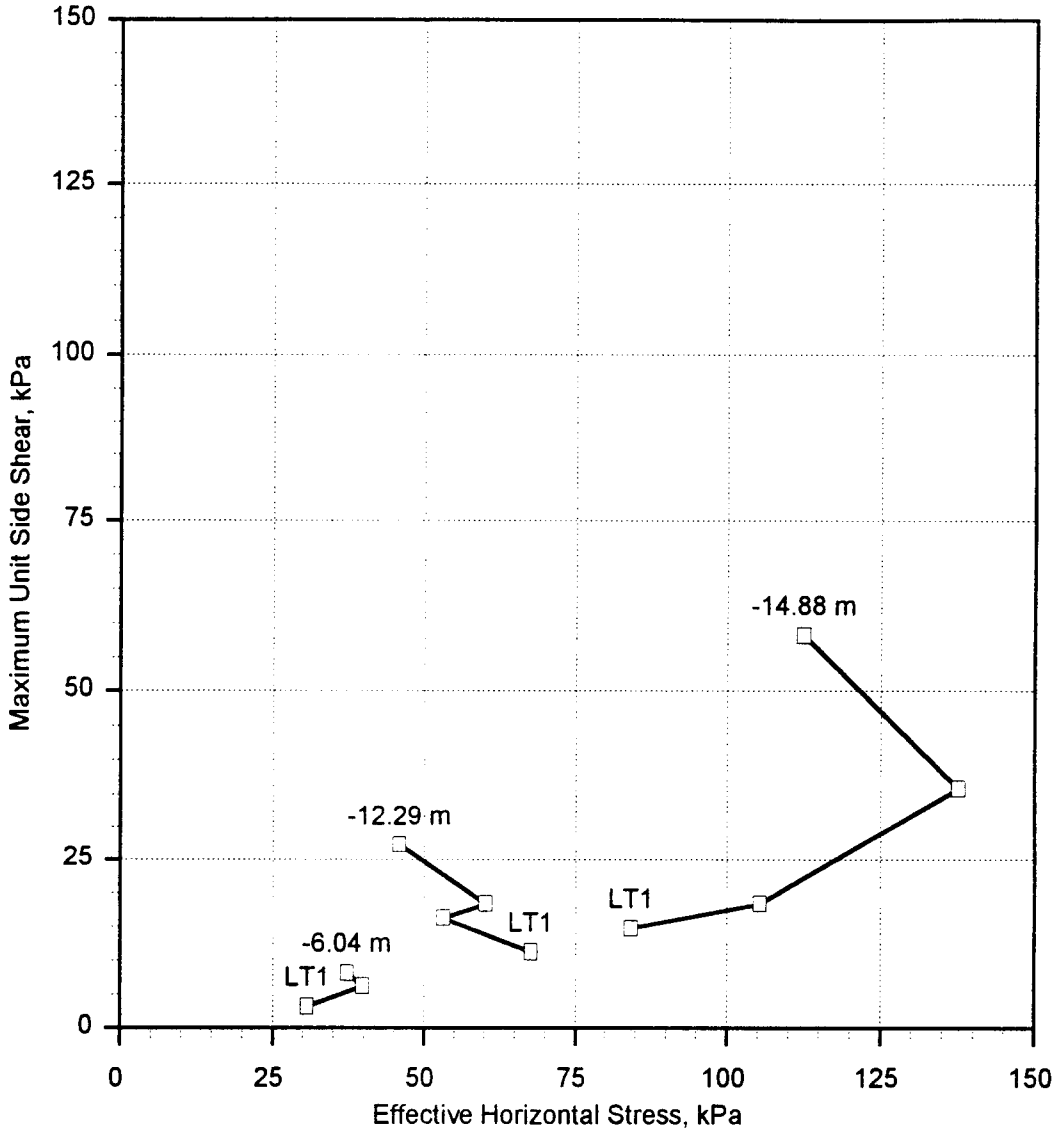

Figure 5.27 Stress Induced Side Shear by Pile Segment: Vilano West

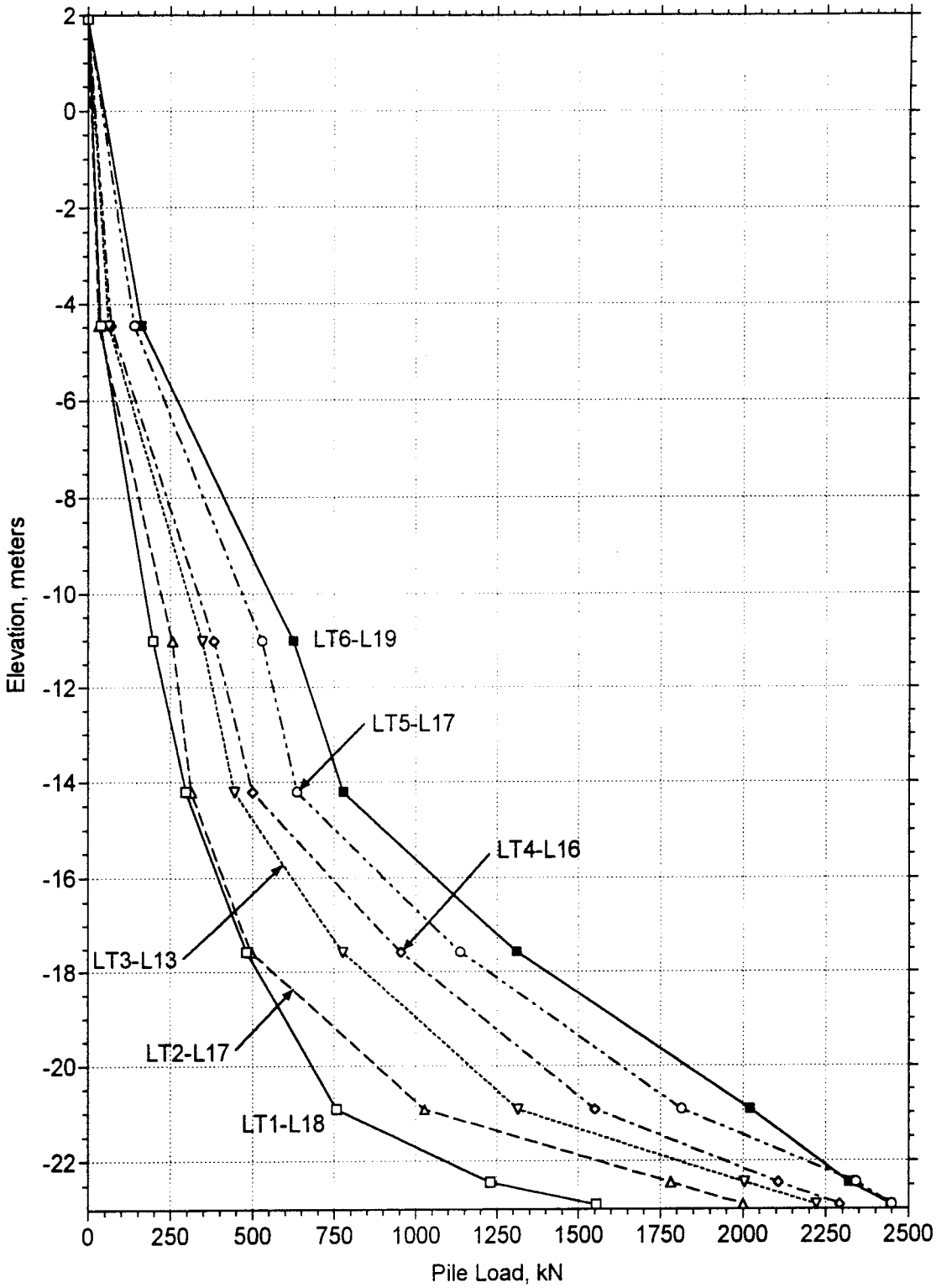

Figure 5.28 Load at Failure: Seabreeze

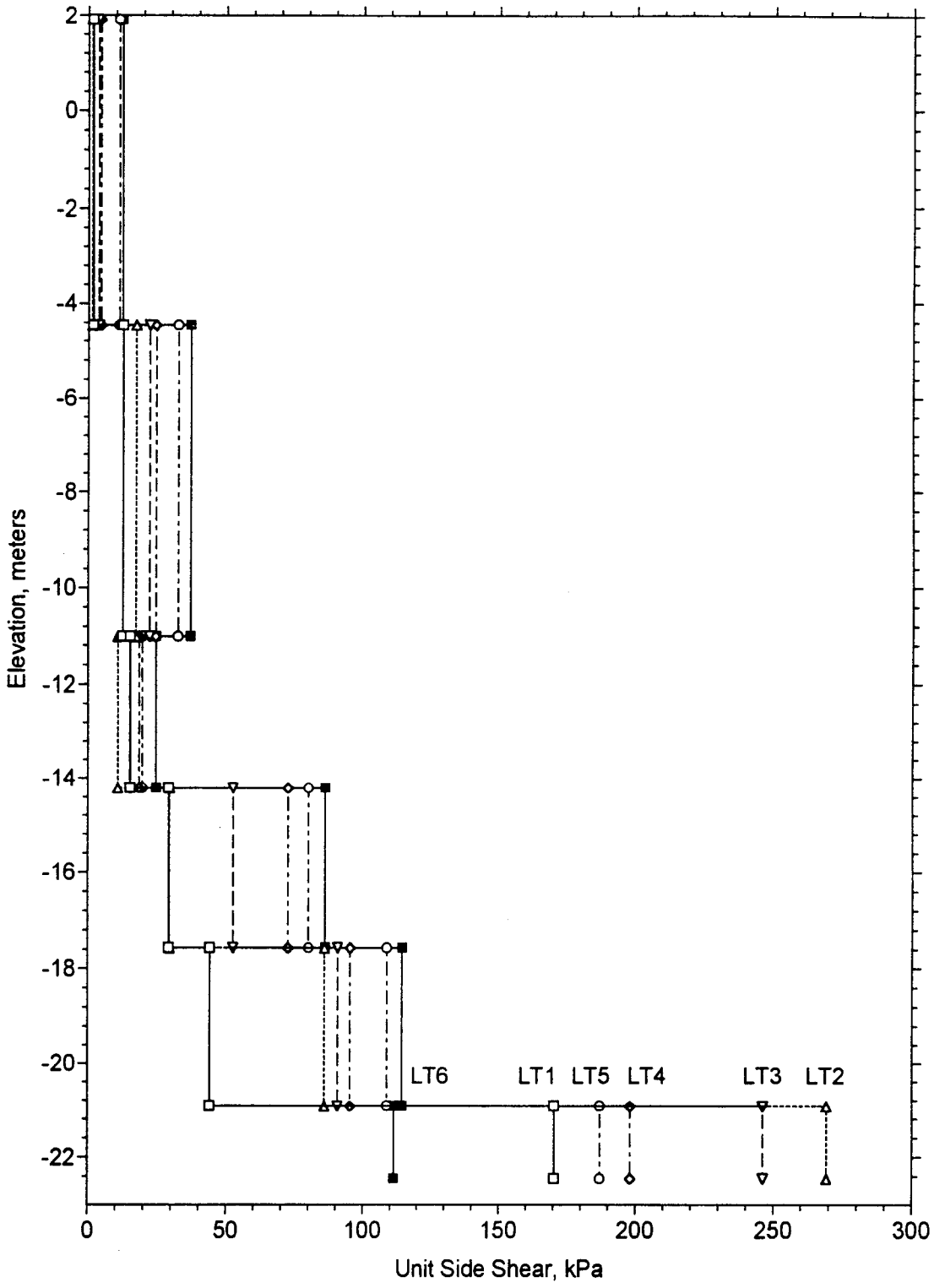

Figure 5.29 Maximum Side Shear: Seabreeze

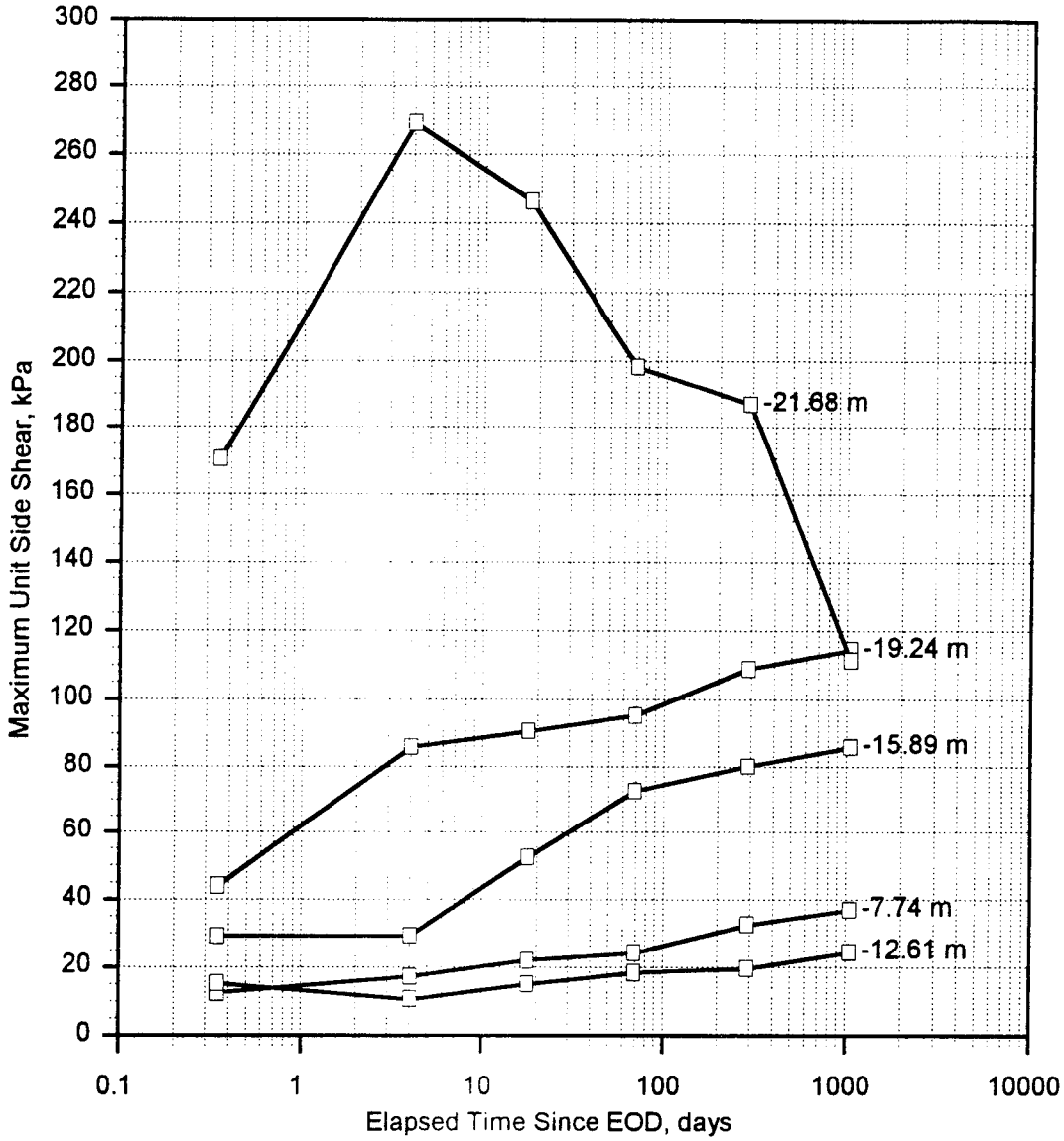

Figure 5.30 Maximum Side Shear by Pile Segment: Seabreeze

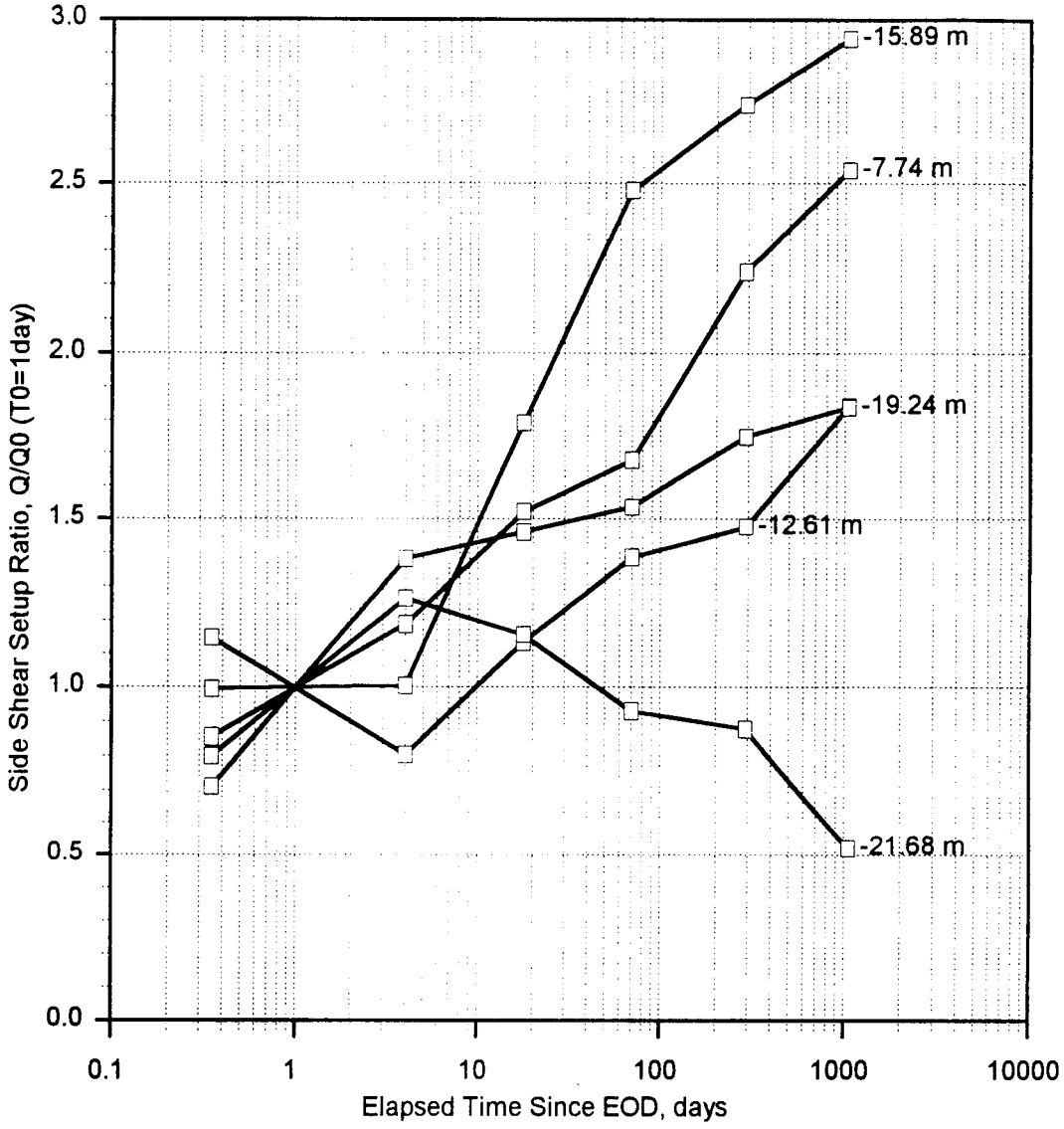

Figure 5.31 Side Shear Setup Ratio by Pile Segment: Seabreeze

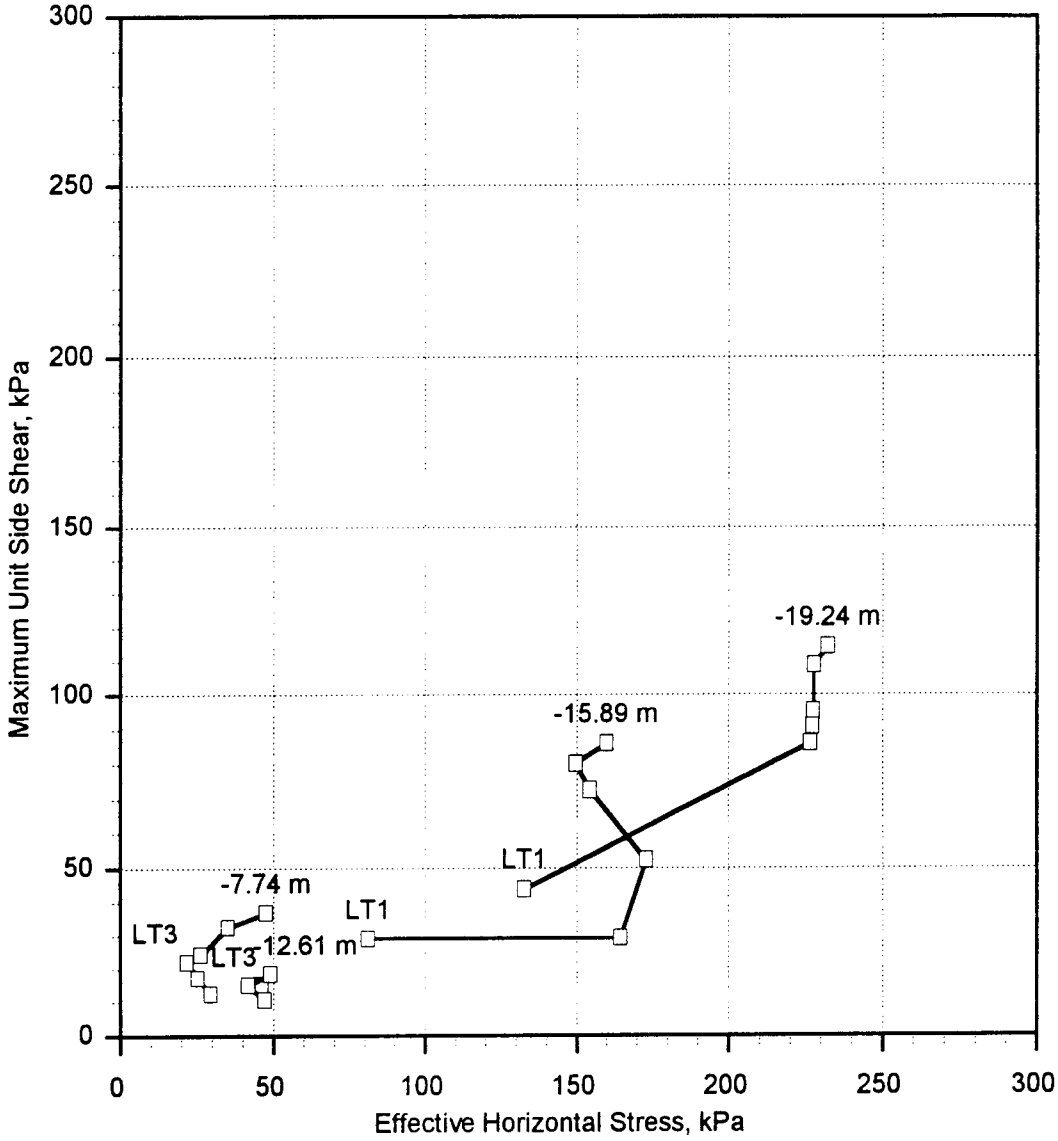

Figure 5.32 Stress Induced Side Shear by Pile Segment:Seabreeze

CHAPTER 6
PRECURSOR INSITU SOIL TESTS FOR SETUP PREDICTION

Many insitu tests use pushed or driven tools to measure soil properties. The soil resistance generated from the penetration of these tools is generally characterized by a combination of bearing and side shear. In order to reflect side shear setup, an insitu test must have a significant side shear component with the capability of separating the side shear from the end bearing. With some modifications, three common insitu tests satisfy these requirements: the Standard Penetration test, the Cone Penetrometer, and the Marchetti Dilatometer. The use of these tests and the required modifications are discussed below.

6.1 Standard Penetration Test

Schmertmann (1979) provided a method to determine the equivalent static force on the SPT sampler during driving by using the ratios of the incremental 0.15 m blowcounts. In part, this method was based on typical friction ratios (%friction/bearing) measured for different soil types. The "X-ratio" method allows the user to estimate the sampler end bearing and side shear. Another method, used and pioneered by DeCourt (1989), actually measures the side shear torsionally, after the standard 0.45 m penetration, by turning the sampler rods at the surface (similar to the vane shear test). Lutenegger (1998) has also performed these tests with good repeatability. Preliminary tests by GRL at the Vilano Beach sites indicated that the Standard Penetration Test with Torque measurement (SPT-T) may provide a useful measure of side shear freeze.

The SPT-T also has the advantage of dynamic penetration and is, in essence, a model pile.

SPT-T tests were performed at the Vilano Beach research sites adjacent to the test piles. To minimize parasitic rod friction during the SPT-T tests, the borings were advanced using both casing and bentonite drill mud. This potential drawback to the SPT-T should be carefully considered for long term stage testing.

Two borings were completed at each Vilano Beach site with SPT-T's at 1.5 m depth increments. At depths adjacent to the test pile piezometers, the boring was stopped and the SPT sampler was left in place for various periods of time. Multiple SPT-T tests were performed during these stops to observe any increase in torsional shear with time (setup). For each test, the rods were turned slowly by hand through a 180 degree rotation with continuous readings of torque.

The torsion developed for each SPT-T was measured using a 610 m length of AW rod instrumented with two full, 350 ohm, strain gage bridges. This load cell was purchased by the UF from GRL, Inc. The imbalance in the bridge was measured prior to each test and the readings were adjusted accordingly. The CR10 datalogger was again used to digitize the load cell response with a 10V excitation. Data was digitized at a rate of 20 samples per second. The torque measurements from the two bridges were similar and were averaged for analysis. The results of these tests are included in Appendix K.

6.2 Cone Penetrometer

In recent years, the electric cone penetrometer (CPT) has almost completely replaced the older mechanical cone. ASTM Standard D 3441 describes the CPT in details. The electric cone clearly separates the bearing and friction components and

measures the side shear very accurately. Although the CPT is not a dynamic test, the standard 20 mm/sec rate of penetration is high enough to create significant excess pore pressure. In addition, the size and shape of cone tip also create important remolding and disturbance effects. The CPT models a driven displacement pile in all but the penetration rate. Tests by Michi and Matsumoto (1995) show that the CPT has the potential to predict the side shear setup for piles.

The addition of pore pressure measurement to CPT also helps to evaluate soil permeability and potential pore pressure effects on the test results. Since excess pore pressures are suspected to be a major factor in pile freeze, the measurement of pore pressure during the cone penetrometer test is a definite benefit. Cones which include pore pressure measurements are commonly referred to as piezocones. The Cone Penetrometer Test with Pore Pressure Measurement is known as the CPTU.

The University of Florida owns a CPT truck made by Hogentogler and Co. in Columbia, MD. Hogentogler has been a leader in developing the CPT equipment to insure accurate and repeatable measurements. Their cones use temperature compensated, full-bridge, strain elements with power regulation and signal conditioning located within the cone itself. These attributes stabilize the output and dramatically increase the signal-to-noise ratio. The Hogentogler system at the UF measures and records tip bearing, sleeve friction, pore pressure, inclination and temperature at 50 mm penetration increments. Although pore pressure measurement at the leading edge of the cone may be highly desirable, the porous stone is subjected to high stresses at this location. The Hogentogler cones measure pore pressure just behind the tip which is generally the most common location.

A new 89 kN Hogentogler cone was used for the setup soundings on this project. To enhance the available data, the cone channels (bearing, friction, pore

pressure and temperature) were monitored by an auxiliary datalogger (Campbell Scientific CR10) as well as the standard Field Computer System (FCS). Data was digitized by the CR10 at approximately 20 samples per channel per second during the setup testing. The digitized data was transferred to a computer file for analysis in a spreadsheet program. This rate of sampling is approximately fifty times the normal rate of 1 sample per every 50 mm at 20 mm/sec penetration.

The following field procedures were followed to investigate the CPTU's application to the measurement of side shear freeze:

1. Pore pressure was measured using a standard HDPE porous element supplied by Hogentogler. The element was saturated and de-aired in a solution of 50% glycerin and 50% distilled water. The element was assembled on the tip in a bath, consisting of the same fluid and then sealed using a latex membrane. The membrane was thin and tore easily upon penetration of tip.

2. The cone tip was cleaned thoroughly before every sounding to insure good friction measurements.

3. The baseline offsets were measured and recorded by the FCS and the CR10 before and after every sounding.

4. The sounding proceeded as normal, stopping 200 mm above the desired depth (typically adjacent to pore pressure elements on the test pile). Data was digitized by the CR10 every 50 mm until the stop (same as the FCS). During the subsequent 200 mm push to the test depth, the CR10 digitized data semi-continuously at a rate of 20 samples/sec to determine the bearing, sleeve friction and pore pressure just before the stop.

5. Upon reaching the test depth the rods were unloaded and a stopwatch was used to monitor the time elapsed since the stop. At various times after the stop the cone was advanced approximately 10 mm at an uncontrolled rate of about 5-10 mm/sec. Only the CR10 recorded data during this penetration.

6. Typically only three 10 mm penetrations were performed at each test depth. The maximum wait time for the setup tests was 16 hrs, but typically only 4 hrs.

7. The FCS recorded pore pressure dissipation every 5 seconds during the setup tests.

8. Each sounding contained at least 4 tests and generally took two to three days to complete.

9. Cone calibrations before and after each sounding varied slightly, but no more than observed during previous CPT soundings. The sleeve friction was corrected for these changes.

Since the area of the CPT friction sleeve is about 0.015 m^2, or approximately 21% of the outside surface area on the SPT sampler (driven the standard 0.45 m increment), it is believed that the CPT provides more of a point side shear estimate than the SPT-T. Also, the CPT is not subject to the disturbance effects at the bottom of a borehole like the SPT-T, but it is subject to electronic drift, especially baseline drift due to changes in temperature. To minimize the thermal shock, the cone tip was kept cool prior to initiating each sounding. To maintain the necessary baseline and depth information, this specialized testing also required round the clock operation of the field computer system using a small generator and battery backup (of course the Hogentogler program could be rewritten to accommodate this difficulty).

Two CPTU "setup" soundings were performed at both of the Vilano Beach sites (a total of four soundings). The data from these soundings is provided in Appendix I.

6.3 Dilatometer

The Marchetti Dilatometer measures membrane stress during expansion in the horizontal direction. Initially this test was intended to develop parameters for the study of laterally loaded steel piles. It seems logical that this test should provide data which might be useful for estimating side shear setup. The dissipation with time of the A-reading measures the change of the total horizontal stress against the blade following penetration to the test depth. In addition, if the penetration thrust is measured, it is possible to estimate the end bearing and side shear of the blade.

Measurement of the Dilatometer penetration thrust has typically been made using a load cell at the ground surface. Any rod friction is included in this type of

measurement but this friction is usually less than 10% of the total thrust and has little effect on the calculation of end bearing and friction angle. During the freeze testing, the DMT blade is stopped for a period of time at various depths. Consolidation of soil around the rods during these stops would increase the parasitic rod friction, potentially to unacceptable levels. To eliminate this uncertainty, a load cell was developed at GPE, Inc. for this project to measure the thrust just above the blade. Though fairly crude in comparison to the Hogentogler cones, the DMT load cell uses 8 strain gages to accommodate any bi-axial forces. The 750 ohm full bridge and 10V excitation also increases the signal to reduce noise effects. Some problems were encountered with leaky connectors but this problem did not affect the setup results.

Two "setup" soundings were performed at each of the Vilano Beach sites using the following procedures:

1. Dilatometer tests were performed as normal (A-B-C) every 200 mm down to 100 mm above the dissipation test depth. Thrust measurements were digitized at the rate of 20 samples/sec during penetration which was regulated at 20 mm/sec.

2. The DMT blade was then advanced 100 mm, and a stopwatch was started at the end of the push. The membrane was expanded only enough to get the A-reading, and then deflated. This A-reading-only test was then continued at various increments of time until the A-reading approximately stabilized (dissipated), typically 2 hours but with some exceeding 24 hours.

3. The thrust measured immediately above the dissipation test depth was compared with that measured when penetration began again after the dissipation.

4. A freeze sounding required 2-3 days. Membrane calibrations before and after each sounding were generally very stable.

Results from the four DMT soundings at Vilano Beach are presented in Appendix J.

6.4 Field Tests at Vilano Beach Sites

Two SPT-T, two CPT-f_s and two DMT-P soundings were performed near the Vilano Beach test piles (VLE and VLW). All three of the insitu tests exhibited qualitative setup effects. In general, the "setup" response of these tests appears to be driven by dissipation of the excess pore pressures created during penetration of the testing tool. That is, in sandy soils the increase seen in side shear ceased after dissipation of the pore pressure (typically minutes). In the less permeable cohesive soils, the increase in side shear continued as the pore pressures dissipated over a much longer period (typically 24-36 hours). Discussion of the results from each test follows below. Additional analyses are included in Chapter 8. Table 6.1 lists the plan locations and relative distances from the test pile for each of the insitu soundings.

6.4.1 SPT-T Results

The data and preliminary analyses for the SPT-T borings at VLE and VLW are provided in Appendix K. Assuming the shear on the end area of the sampler to be similar to that on the side, the average side shear at failure may be calculated using the following:

$$\text{Average Side Shear} = \frac{\text{Applied Torque}}{(\pi/2)(ld^2+d^3/6)}$$

where: l = sampler penetration (usually 457 mm)
d = sampler outside diameter (51 mm)

Some of the SPT-T tests at VLW were inadvertently overdriven by rod weight penetration into the soft clay at depth. The penetration in these instances was estimated by the sample length. Sample penetration and side shear are included in the Appendix K tables.

The initial torque measurements for these tests were taken at 4 min. after the completion of driving. This delay allowed time to remove the SPT hammer, connect the load cell and initiate the datalogger measurement sequence. The side shear on the sampler during penetration could not be measured using this method. Similar to the CPT results discussed in Section 6.4.2, the SPT-T side shear decreased with stage testing in sands and increased in cohesive soils.

Figures 6.1 and 6.2 show the SPT-T side shear from each test superimposed in the previous depth profile of maximum average pile side shear at VLE and VLW respectively. Because the length of the sampler is significantly shorter than the pile segment lengths some scatter is expected. Both plots include the maximum SPT-T test, and if the side shear increased during stage testing, the initial SPT-T test. For all of the VLE SPT-T tests the initial side shear was also the maximum side shear.

To identify any trend in the data plotted in Figures 6.1 and 6.2 the SPT-T initial side shear was plotted versus maximum side shear from the corresponding pile segment in Figure 6.3. A similar plot for the maximum SPT-T side shear was prepared for Figure 6.4. Straight lines fit through these data had relatively poor correlation coefficients: $r^2 = 0.57$ for Figure 6.3 and $r^2 = 0.65$ for Figure 6.4. The SPT-T side shear is discussed further in Chapter 8.

6.4.2 CPT-f_s Results

The detailed CPT results in Appendix I follow the same trends indicated for the SPT-T. This is expected since these two tests are often correlated (Schmertmann, 1979) and both tests have a small diameter, smooth steel side area. The CPT sleeve friction increased significantly during the initial wait period but then tended to decrease during stage testing in sands and increase in cohesive soils. The pore pressure

dissipation curves included in Appendix I generally indicate close to 100% dissipation by the end of each stage test. Figures 6.5 and 6.6 show the initial sleeve friction (during penetration) and maximum stage test sleeve friction superimposed on the depth profiles of the maximum pile side shear for VLE and VLW respectively.

To investigate any possible trend, we plotted the initial (during penetration) and maximum CPT side shear versus the pile side shear in Figures 6.7 and 6.8. The correlation coefficients for the best fit lines in these two plots are similar to the SPT-T plots: $r^2 = 0.61$ for the initial CPT shear and $r^2 = 0.53$ maximum CPT shear.

Next we plotted the CPT friction ratio from each stage test depth (during penetration) versus the Setup Factor A tabulated for the pile segments in Table 8.8. This data shown in Figure 6.9 has virtually no correlation. ($r^2 = 0.04$). The ratio of maximum to initial CPT side shear is also plotted versus the Setup Factor A in Figure 6.10 with similarly poor results ($r^2 = 0.36$). The CPT stage testing is analyzed in additional detail to determine its Setup Factor in Chapter 8.

6.4.3 DMT-P Results

The DMT produces a number of soil property estimates, most of which are not directly useful for investigating side shear setup. Appendix J contains detailed analyses of the DMT soundings at VLE and VLW.

Tables J.1 and J.2 summarize the A-dissipation and thrust data obtained to investigate setup. The ratio of the thrust after the A-dissipation to the initial thrust (during penetration) was generally less than one in sand, indicating negative setup similar to the SPT-T and CPT.

Included in Appendix J are depth profiles showing the corrected

A-readings, A', at 0% and 100% dissipation compared with the corrected A-readings, P0, from the regular DMT tests. The field A-dissipation values were corrected for membrane displacement (0.05 mm at the A-reading) by using a generalized A'/P0 ratio based on the material index, I_D, from the sounding data. The initial A' values compare well with the P0 profiles and all of the 100% dissipation A' values are significantly lower. These 100% dissipation values measure the horizontal effective stress against the DMT blade after dissipation, and greatly exceed the insitu horizontal effective stress.

As will be discussed in Chapter 8, the pile stresses do correlate with the insitu horizontal effective stress profile. However, no correlation with DMT A-dissipation was evident. The DMT stage testing and A-dissipation did not generally produce results useful for setup analysis.

Table 6.1 Precursor Insitu Soil Test Locations at Vilano Beach

Boring (or Sounding)	Station feet	Offset feet	Distance from Test Pile	
			feet	meters
VLE Test Pile	183+46.84	96.04 RT CL	—	—
FRZ011 (SPT-T)	183+56.55	101.94 RT CL	11.36	3.46
FRZ012 (SPT-T)	183+43.68	85.91 RT CL	10.62	3.24
FRZ001 (CPT)	183+50.25	89.68 RT CL	7.22	2.20
FRZ002 (CPT) FRZ003 (CPT)	183+43.75	102.02 RT CL	6.73	2.05
FRZ004 (DMT)	183+50.79	100.92 RT CL	6.28	1.91
FRZ005 (DMT)	183+42.08	90.09 RT CL	7.62	2.32
VLW Test Pile	142+73.86	71.22 LT CL	—	—
FRZ013 (SPT-T)	142+69.49	59.49 LT CL	12.51	3.81
FRZ014 (SPT-T)	142+81.67	79.74 LT CL	11.55	3.52
FRZ008 (CPT)	142+67.08	68.91 LT CL	7.17	2.19
FRZ009 (CPT) FRZ010 (CPT)	142+81.29	73.85 LT CL	7.88	2.40
FRZ006 (DMT)	142+80.82	71.22 LT CL	6.96	2.12
FRZ007 (DMT)	142+67.29	72.16 LT CL	6.63	2.02

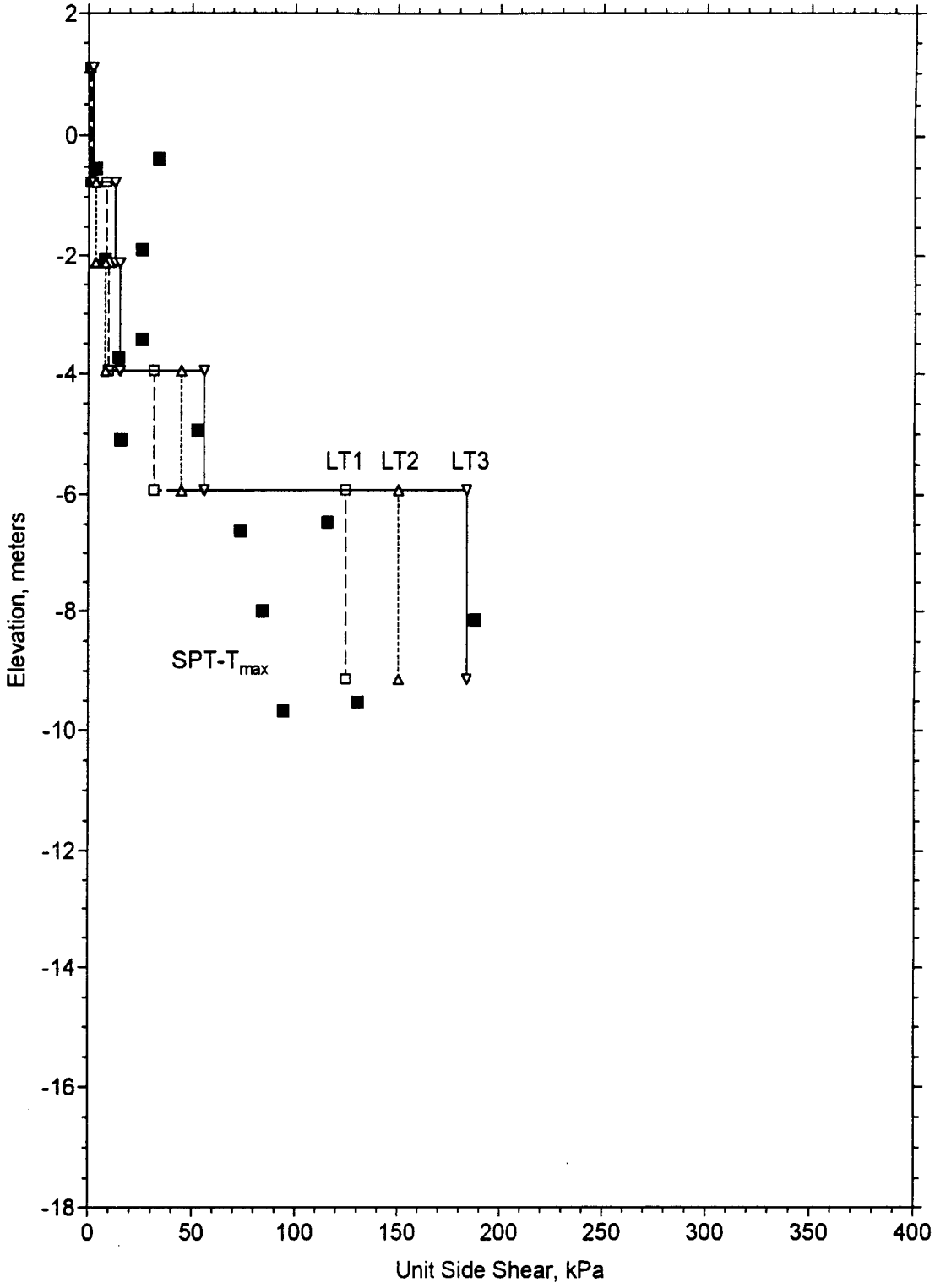

Figure 6.1 Maximum Side Shear, Pile vs. SPT-T: Vilano East

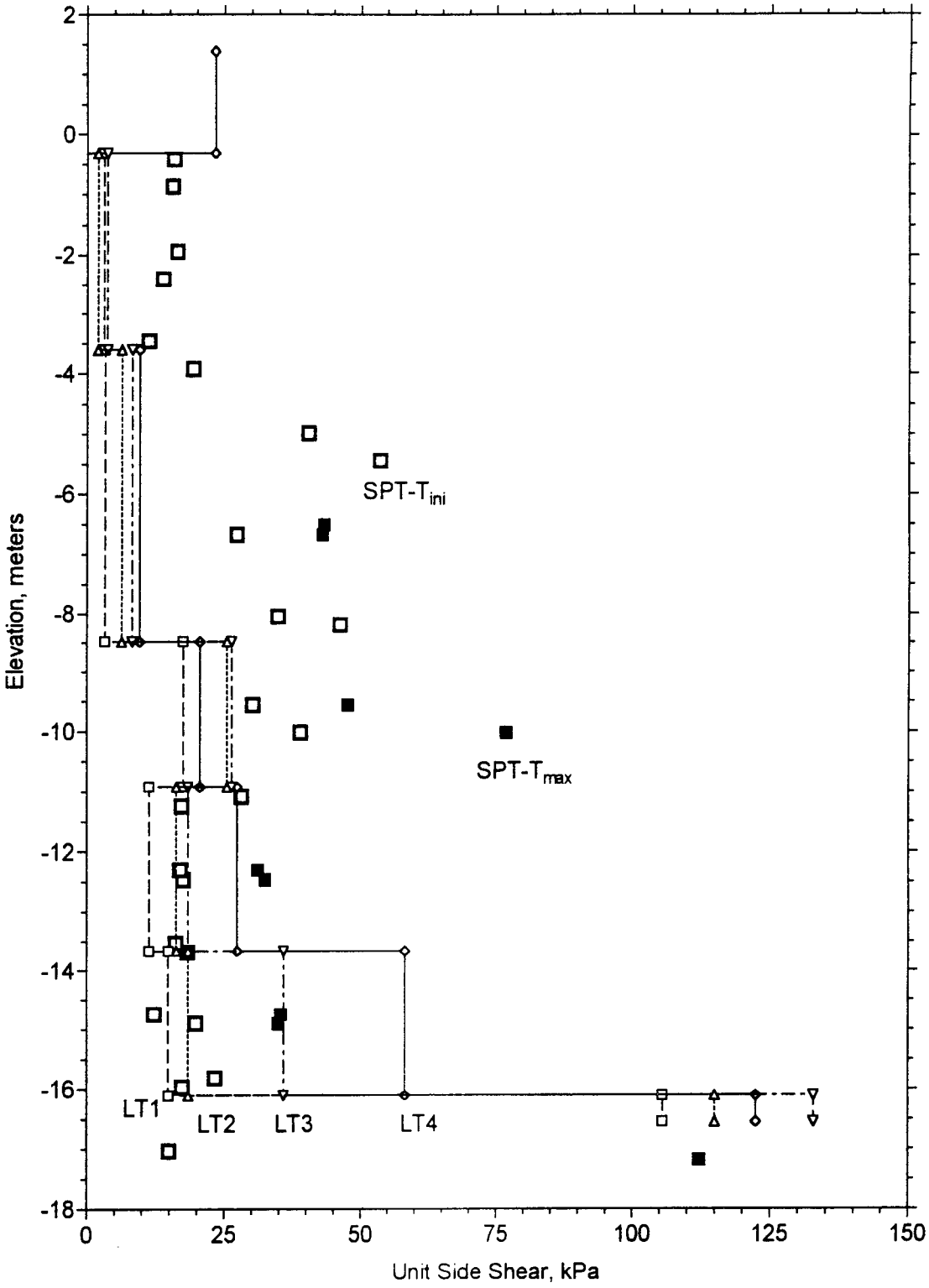

Figure 6.2 Maximum Side Shear, Pile vs, SPT-T: Vilano West

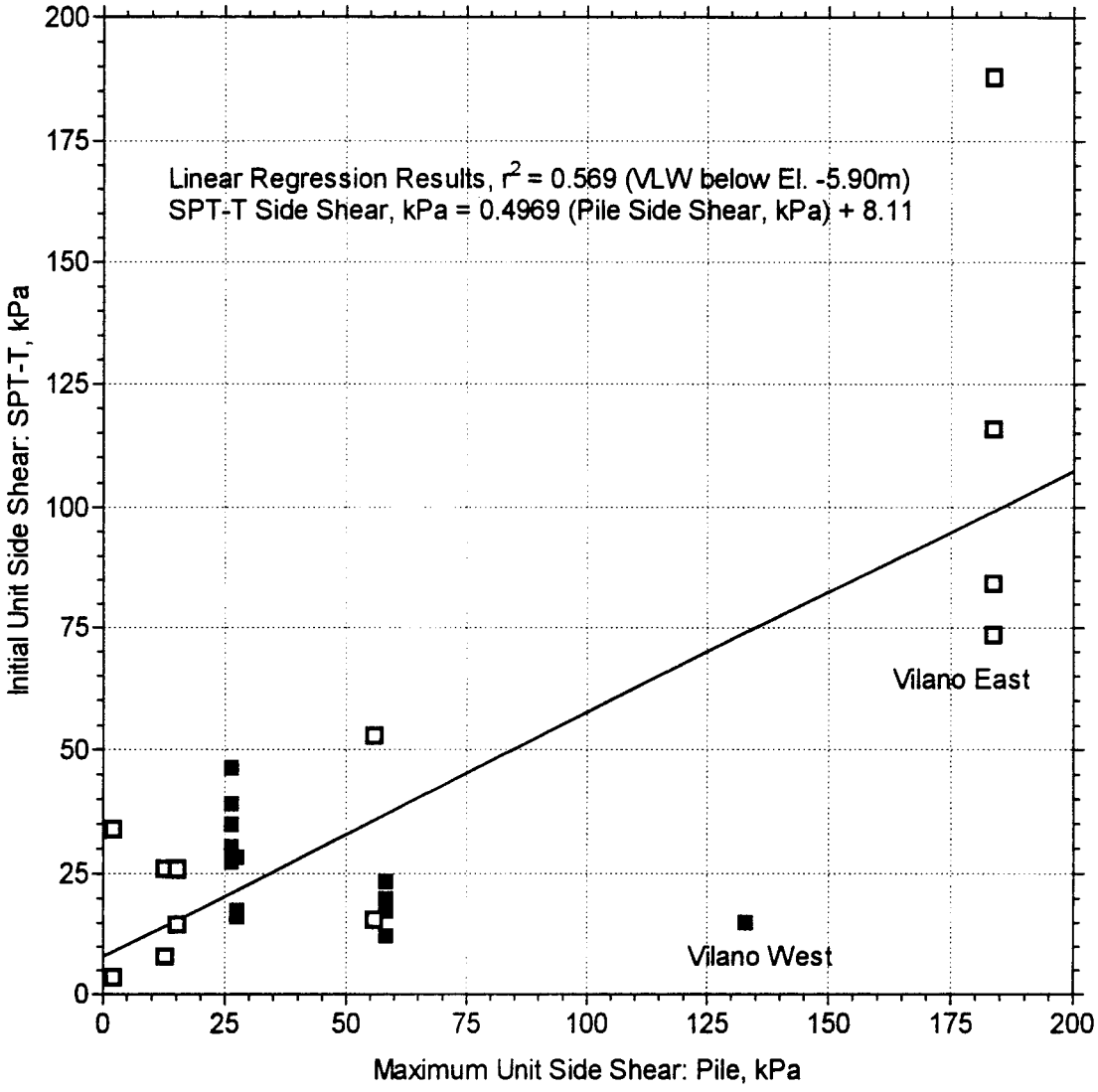

Figure 6.3 Correlation of Pile to Initial SPT-T Side Shear

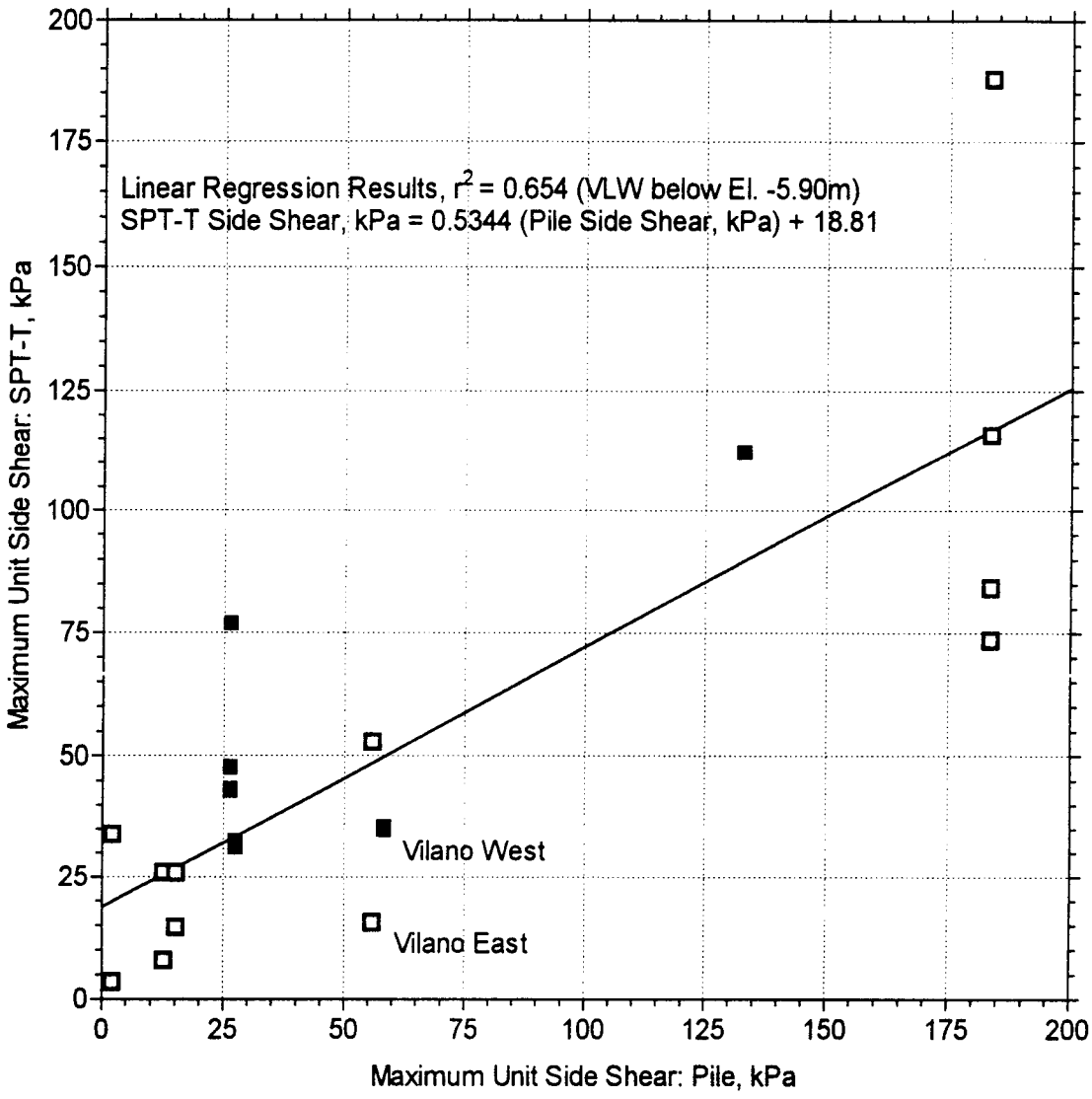

Figure 6.4 Correlation of Pile to Maximum SPT-T Side Shear

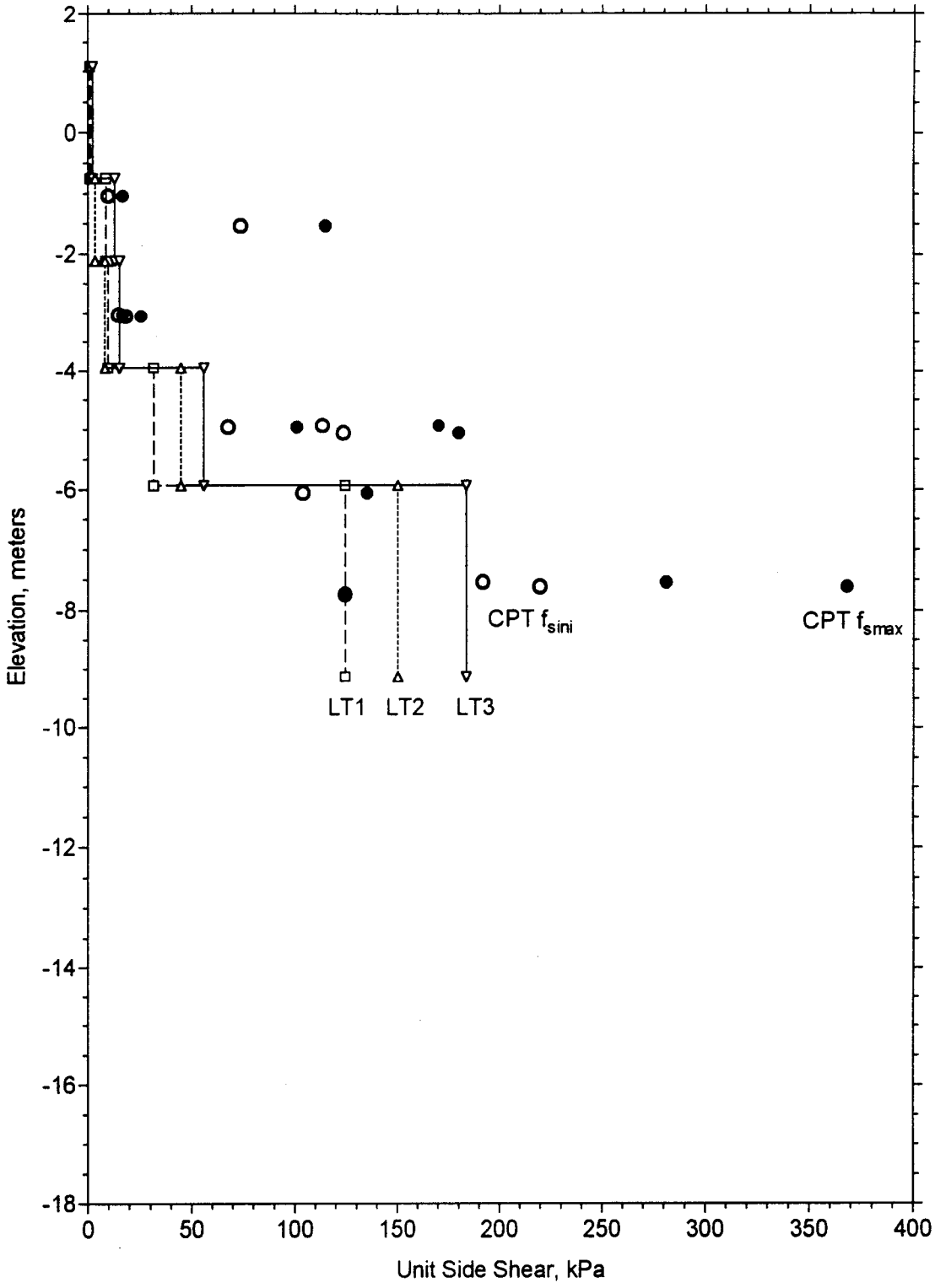

Figure 6.5 Maximum Side Shear, Pile vs. CPT, Vilano East

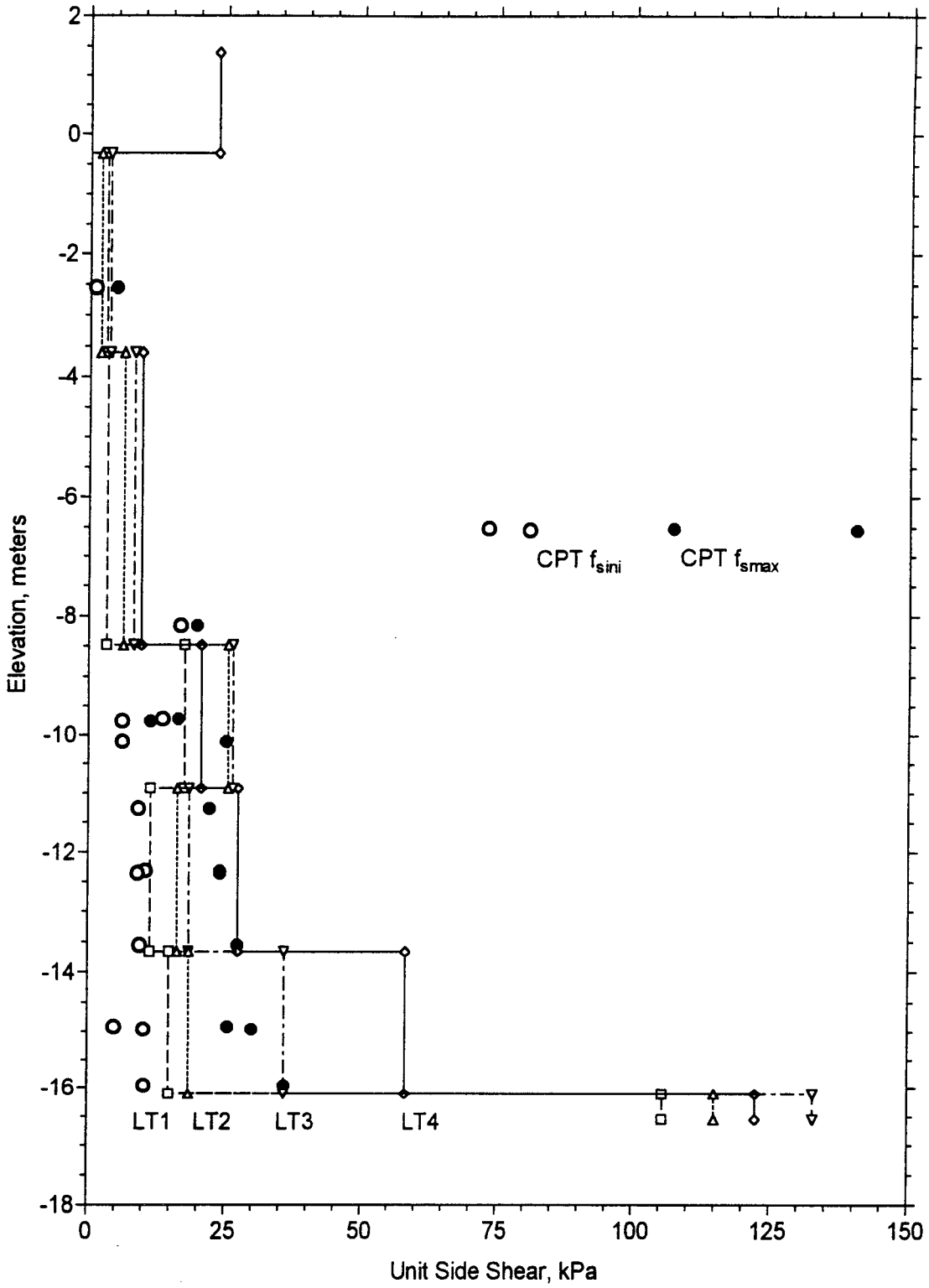

Figure 6.6 Maximum Side Shear, Pile vs. CPT: Vilano West

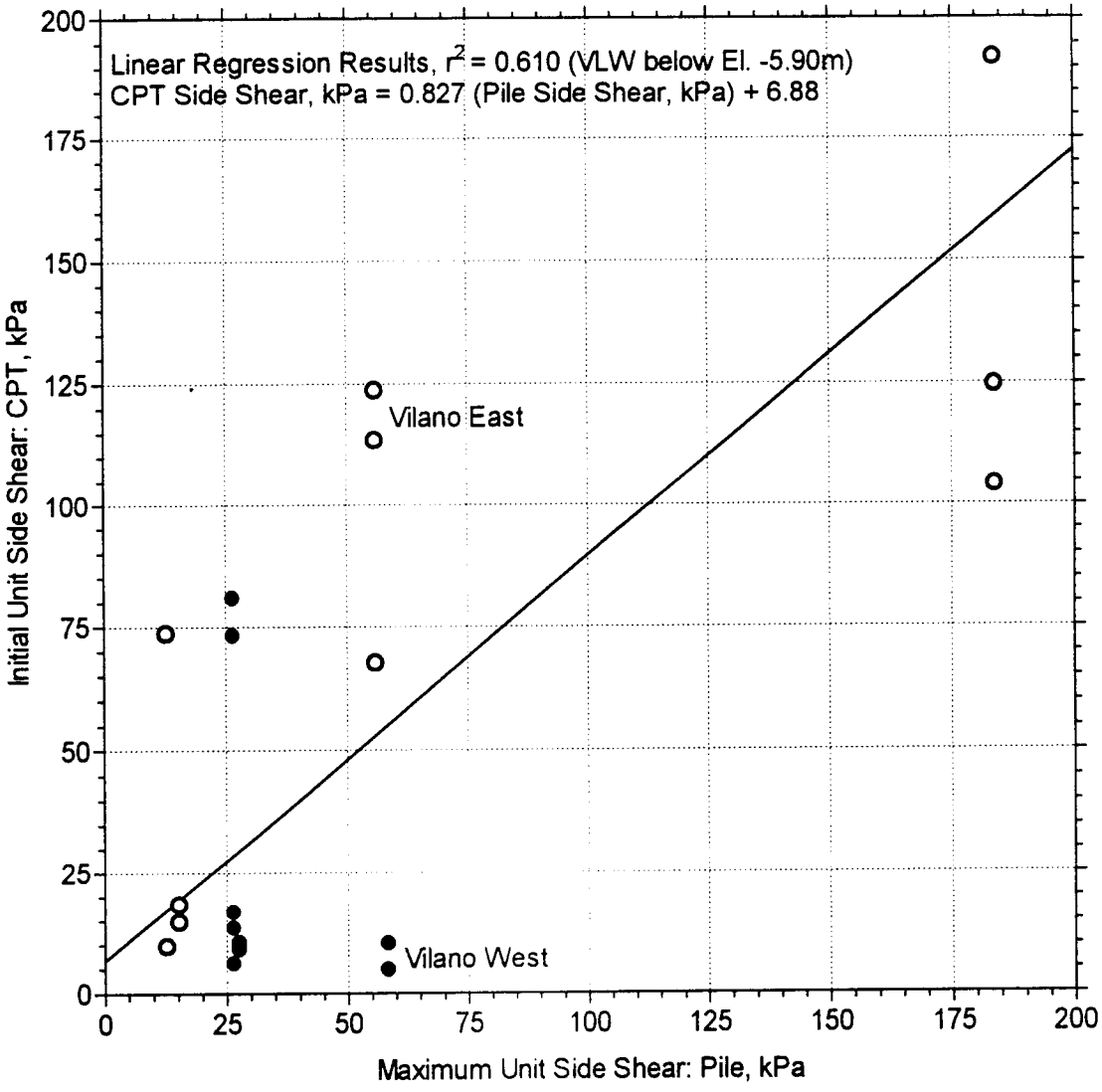

Figure 6.7 Correlation of Pile to Initial CPT Side Shear

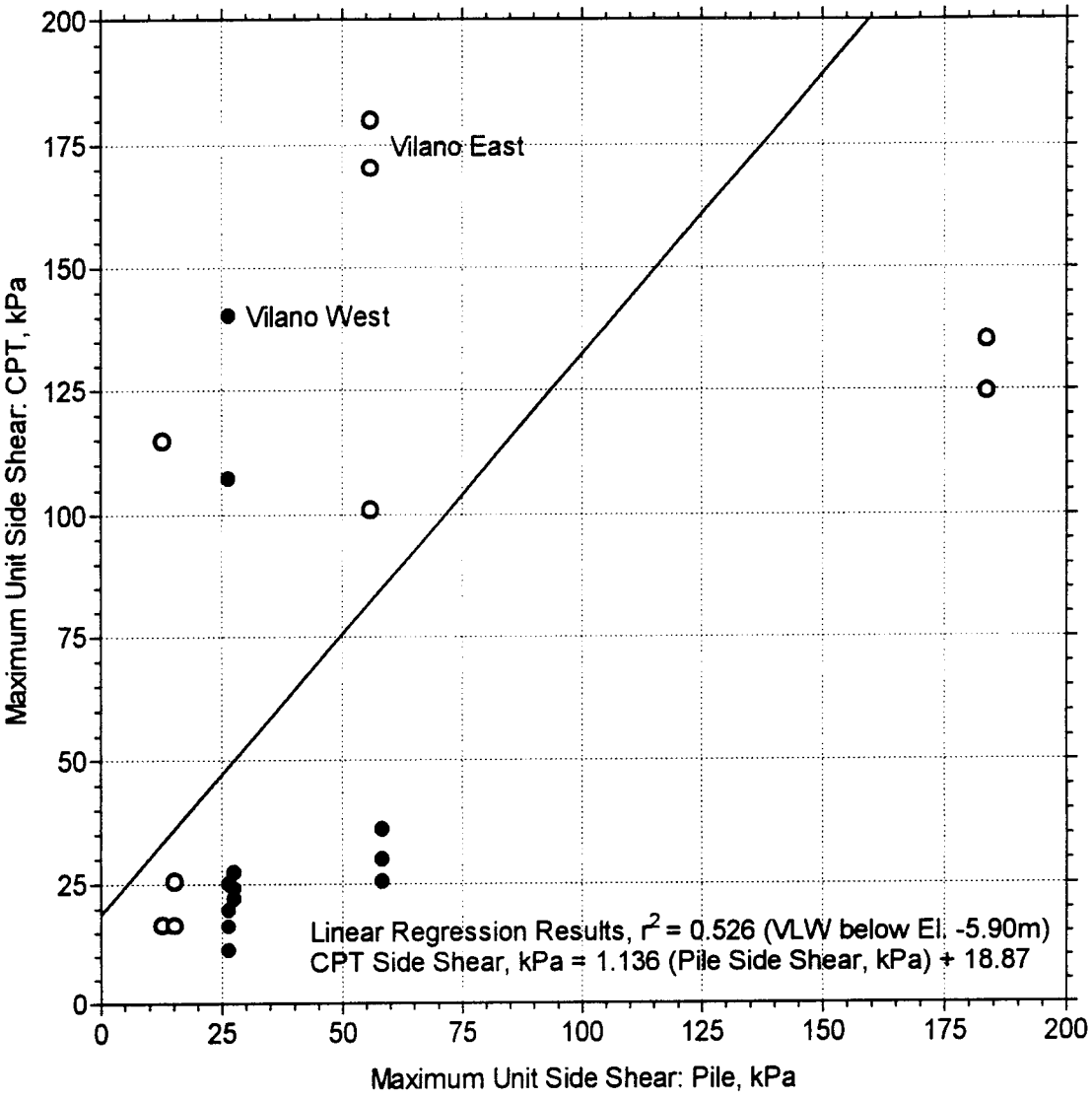

Figure 6.8 Correlation of Pile to Maximum CPT Side Shear

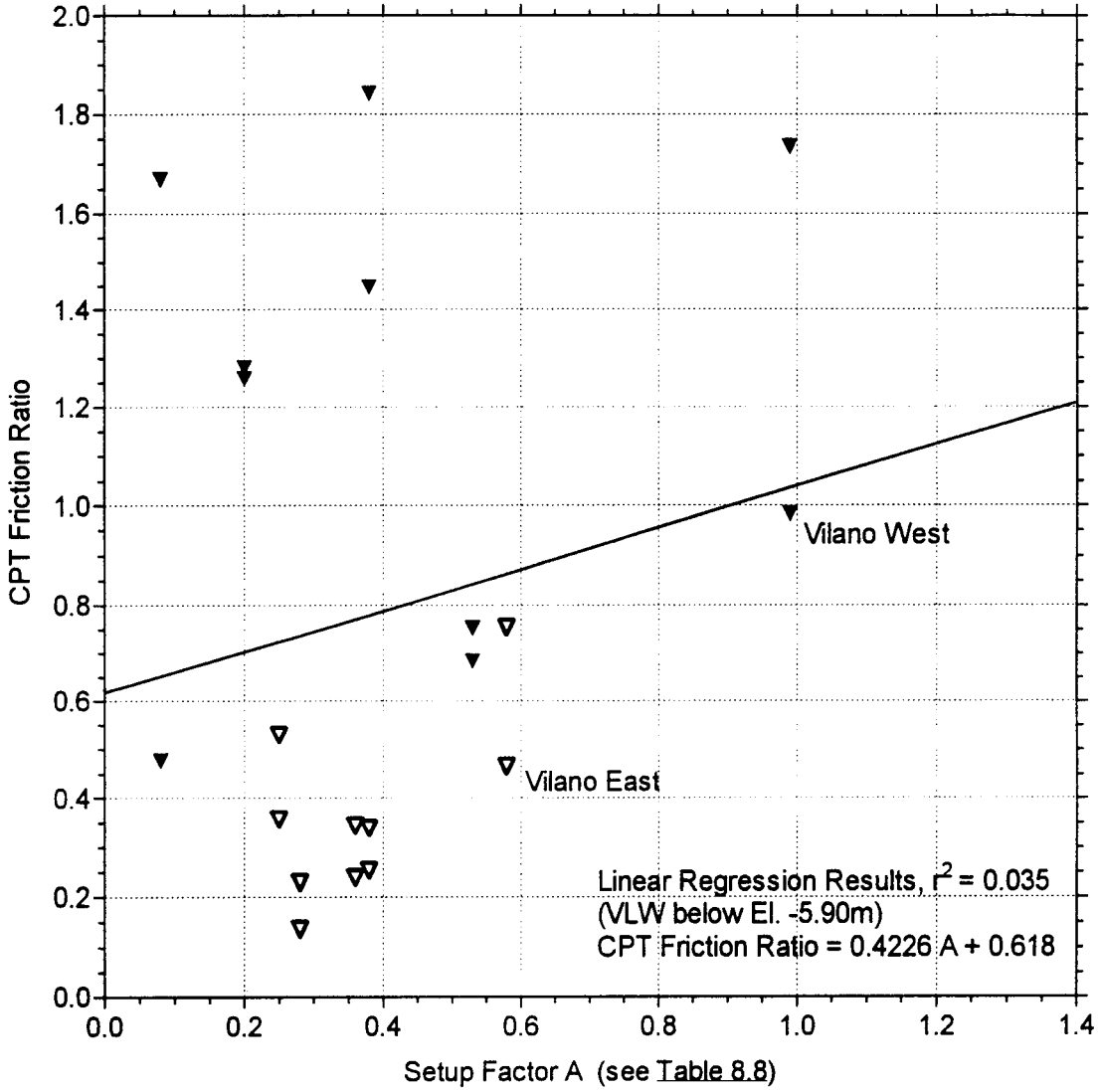

Figure 6.9 Correlation of Setup Factor A to CPT Friction Ratio

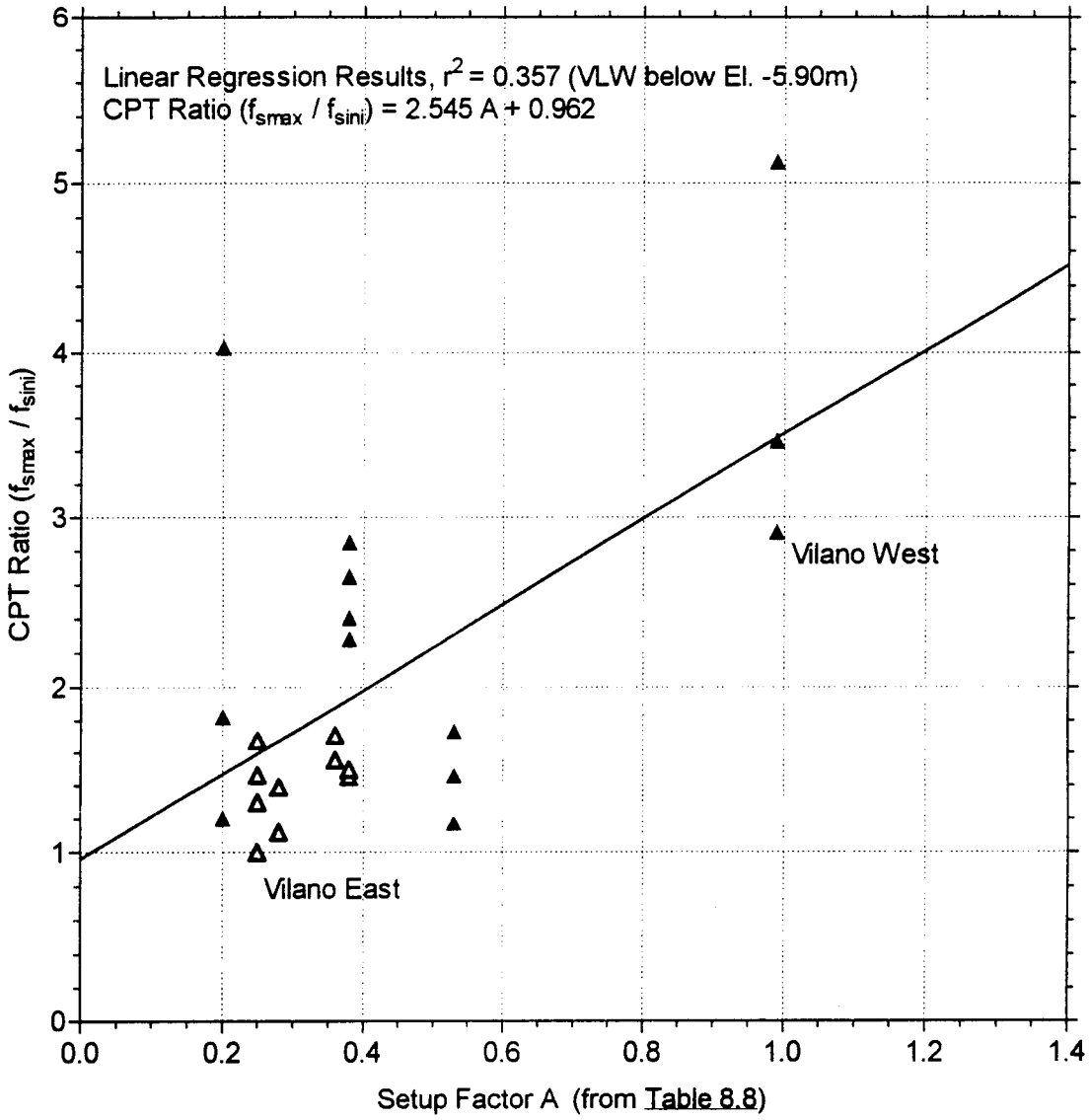

Figure 6.10 Correlation of Setup Factor A to CPT Ratio (f_{smax} / f_{sini})

CHAPTER 7
CENTRIFUGE TESTING

The centrifuge testing for this research was conducted at the University of Florida's geotechnical centrifuge facility by graduate students Jinhui Wang and Wei-Kuo Lo at the direction of Drs. McVay and Townsend. This chapter provides a synopsis of their work. Additional details may be found in Wang (1994) and Lo (1995).

7.1 Centrifuge Description

The University of Florida Civil Engineering Department maintains two centrifuges for research work. The smaller centrifuge, shown in Figure 7.1, was used during this investigation. It has a 1 m radial arm length and a design capacity of 21.4 g-kN. Since its inauguration in 1970, this centrifuge has been used for various geotechnical studies, including: the bearing capacity of shallow footings on sand, sink hole collapse potential, blast loading, consolidation/sedimentation processes, and shallow foundations settlements. It is a Rucker Model 57-2380, with a protective metal housing enclosing two rotating arms with platforms mounted on each end. The overall dimensions of the centrifuge are 2.5 m in diameter and 1.17 m in height. Access to the platform is possible through a swinging side door and hinged top panels.

The original 2.1 kW electric motor and variable unit drive were replaced in 1989 by a larger 3.7 kW electric motor and a Parajust controller. These enhancements

allowed longer flights at elevated g-level and more accurate speed control. Due to the increased electrical control and monitoring demands of the current tests, the old 24-channel slip rings were replaced with a newer 40-channel set. External power for the pile driver, LVDT, etc. was supplied through the slip rings and brought out to the experiment along the centrifuge arm. A one port rotating union, which was located at the top of the rotating shaft, provided pneumatic (compressed air) service to the centrifuge arm. Tubing from the union extended through the slip ring and out to the arm to supply air to the model platform. During the research work the rotating pneumatic union had to be replaced with a newer Deublin union due to excess heat generation.

7.2 Model Pile

Based on preliminary estimates, it was decided that the best material to model the pile in the centrifuge would be a high strength steel rod. The latter provided sufficient stiffness to prevent buckling. The pile manufactured and used in this research had a diameter of 9.52 mm and a length of 420 mm. The driven length of the pile in the soil was 254 mm. This resulted in a prototype pile of 475 mm in diameter and a driven length of 12.7 m when subject to 50 times gravity. In order to attach the load cell and measure pullout force, a small threaded hole (10-32 UNF, depth 5.1 mm) was tapped in the top of the pile. A schematic drawing of the model pile is shown with dimensions in Figure 7.2. A load test determined that the model could carry at least 0.45 kN tensile force.

7.3 Pile Driving Equipment

To ensure the proper modeling the pile installation process, a substantial amount of effort was expended over a two year period to develop a model pile driver which could provide a variety of driving sequences, and then statically load test the pile in flight, without stopping the centrifuge. A brief description of the pile driving components follows.

7.3.1 Gear-Rack System

The Gear-Rack system consisted of a gear (Figure 7.3) and two pieces of rack (Figure 7.4). It was used to lift and drop the hammer during driving. When the gear rotated, it lifted the rack each time a gear tooth was engaged. This resulted in the rack moving toward the center of the centrifuge (i.e. away from the soil surface). After the contacting tooth disengaged, the rack dropped due to the centrifugal force. Consequently, the pile hammer which was connected to the rack, lifted when the rotating gear lifted the rack, and fell and struck the pile when free. Since the gear was spinning at a particular RPM, the pile driving or blow rate was very accurately controlled. The spur gear used initially was made from 2024-T4 (high strength) aluminum. However, based on the initial tests it was observed that wear of the spur gear was excessive, and the material was changed to steel. The new steel gear (Figure 7.3) was 63.5 mm in diameter with 60 threads at 0.95 threads/mm and 4.75 mm thickness. For this research, the majority of the teeth were cut off leaving only 5 teeth placed equidistantly around the gear circumference. The model dropping distance of the hammer was determined to be 21.6 mm. The rack, which supports the hammer at its end, is made from 2024-T4 aluminum with gears (0.95 threads/mm) cut

into one face. The dimension of the rack was 254 mm long by 5.8 mm thick and 12.2 mm deep (Figure 7.4).

7.3.2 Hammer Head, Housing, and Connecting Bar

The pile hammer which drives the pile was machined to a diameter of 30.2 mm, with a height of 22.2 mm and a weight of 0.95 kN. It was located at the front of the driving rack with a 12.7 mm tapered threaded hole which was connected to a steel rod on the rack which lifted the hammer. Guiding the hammer to provide collinear impact with the pile was the hammer housing. As designed, it consisted of a base plate, four spacers and a ball bearing pillow block. The overall dimensions of the base plate were 44.5 mm square with 6.4 mm thickness. A 4.8 mm diameter hole at each corner was used to bolt the plate together with the spacers. During the driving process, the force induced by the hammer was transmitted to the pile through the base plate. In order to connect the dynamic load cell, a 10-32 UNF tapered hole was made in the center of the plate. The dynamic load cell was attached to the plate through the tapered hole. Figure 7.5 presents a photograph of the hammer head, connecting bar and hammer housing.

7.3.3 Estimating Pile Driving Energy

To obtain the energy delivered to the pile during the driving process, the distance from the center of the centrifuge to the gravity center of each part contributing to the potential energy was determined with their corresponding weights. The gravity center of the whole driving system and the corresponding force (centrifugal acceleration times mass) was then determined. Due to the motion of the pile away

from the center of the centrifuge (i.e. penetration), the potential hammer energy varied from 34.7 kJ with the pile at the soil surface to 281.9 kJ after penetration into soil.

7.4 Static Load Testing Equipment

Once the pile was driven with the hammer, it was necessary to conduct a static pullout test on the pile to compare with the field tests (i.e. Osterberg tests) without stopping the centrifuge. The latter required that the pile driving assemblage be mounted on a movable rail system, which is presented as follows.

7.4.1 Superslide System

As shown in Figure 7.6 the Superslide System consisted of several basic components: a dual shaft rail assembly with two 60 case inner races, an integrated carriage with four open type super ball bushing bearings, two integrated end supports with angular contact bearings, and a ball screw assembly (ball screw, ball nut and bearing balls). The overall dimension of the Superslide was 762 mm in length and 150 mm in width. The pile driving equipment was attached to the top of the Superslide which had a total of 533 mm of carriage travel and was controlled by a screw connected to a stepping motor.

7.4.2 Stepping Motor

The stepping motor was controlled by an IMS microstepping driver with a ZYTEC 24 VDC power supply and a WAVETEK pulse generator. The stepping motor provided the tension force used for the static load test. The force was developed when the driver sent a pulse to the motor requesting it to turn 1.8 degrees. This pulled the Superslide and rack (which were connected) toward the pile hammer which pulled

on the base plate of the hammer housing attached to the pile top. Figure 7.8 shows a picture of the stepping motor and its attachment to the Superslide.

7.4.3 Bimba Air Pistons

Bimba Air Pistons with a 22.2 mm bore and a 25.4 mm stroke were utilized after the pile driving to raise the gear motor and spur gear away from the rack prior to the static load test (see Figure 7.6). The air used by the air piston was supplied through the pneumatic rotating union at 690 kPa.

7.4.4 Load Cells

The vertical load was measured initially with a PCB 208A04 dynamic load cell and later with an ALD-W-5 static load cell. The sensitivity of the dynamic load cell was 23.1 N/mV with a tensile and compressive capacity of 3.3 kN and 44.5 kN, respectively. However, it was only utilized for the determination of the driving force and energy during the pile driving process, since it performed poorly (accuracy) while conducting the pullout tests. The ALD-W-5 cell, with a capacity of 2.2 kN and a calibration factor of 0.040 N/mV, was used for the static load test. During preliminary testing, the static load cell was attached to the pillow block mounted on the Superslide carriage. However, this arrangement revealed a problem in the determination of the applied force due to an unanticipated couple resulting from the eccentric distance between the rack and the load cell. As a result, the load cell was relocated to the hammer housing and attached to the bottom plate of the housing. Both load cells employed a 10V power supply accessed through the centrifuge's slip rings.

7.5 Data Acquisition System

The data acquisition system consisted of a 486 personal computer (PC), a DT2831 data acquisition board with a DT717 terminal panel, and a LeCroy oscilloscope. The PC, data acquisition board and panel were used to read the static load cell. A small Quick-C program was written to capture the data. The LeCroy digital storage oscilloscope (DSO) was connected to the dynamic load cell and used to measure the pile driving energy. The DSO was set at a vertical sensitivity of 2 V/div and horizontal scale of 2 ms/division. The DSO had the capability of digitizing the signal, as well as performing FFT (Fast Fourier Transform) for frequency analysis.

7.6 Soil Description

The soil selected for study was a typical Florida sand obtained from the Feldspar Corporation in Edgar, Florida. Figure 7.7 presents the grain size distribution of this sand (EPK sand) and its physical attributes are presented in Table 7.1. The three dry unit weights, along with their corresponding relative densities and void ratios, which were used for the testing are presented in Table 7.2. The latter represents a loose, medium and dense sand deposit. Because of concerns with the electronics, it was decided to run all the tests in the dry. All the specimens were prepared by dry pluviation directly into the bucket, followed by densification on a shaking table. Careful measurement of each specimen's volume and weight provided accurate dry unit weights and relative densities.

7.7 Centrifuge Test Results and Conclusions

A general summary of the pile driving results is given in Table 7.3 for the different relative soil densities. All of the tests were conducted at 50 g in a dry state.

Given in the table are the model and prototype dimensions of the pile, number of blows required to drive the pile, driving rate, and blow count (i.e. blows/0.3 m), along with measured dynamic forces.

Presented in Figure 7.9 are three different static tension tests run on three samples of sand with relative densities of 78-80% to demonstrate the repeatability of the tests. As expected the skin resistance (y-axis, force) is mobilized with very small amounts of vertical displacement as found in the field. Shown in Figure 7.10 are the stage tests for one of the piles (relative density=79%). The staged test sequence was begun immediately after the pile was driven and proceeded as follows:

4. 15 min of centrifuge (model) flight time elapsed following the driving. Then the pile was pulled until a limiting force (tension failure) developed.

5. Without advancing the stepping motor or unloading the pile, the flight was continued until 2 hrs had elapsed after driving. The pile was then pulled to a limiting force again.

6. The process in 2. was repeated after a total of 4 hrs elapsed time.

It was initially thought that the drop in model load at the beginning of each test stage (see Figure 7.10) was due to electronic drift of the static load cell. The results presented by Lo (1995) include an increase in each failure load equal to the measured drift, and appeared to show setup. However, if this adjustment for drift was incorrect, then the pile capacity would have decreased with time, not increased. To test the drift of the static load cell, the sand in the container bucket was replaced with water, and the pile and load cell were monitored while suspended in the bucket at 50 g for 1.5 hr. Figure 7.11 shows the measured zero drift (VDC) of the static load cell versus time. Figure 7.12 shows the measured raw load (VDC) for the tests in Figure 7.10. The drift after 15 minutes shown in Figure 7.11 was on the order of 0.002 VDC, which doesn't

compensate for the load decrease measured in Figure 7.12, and hence, the conclusions presented in Lo (1995) are incorrect.

Other possible explanations for the loss in pile capacity between stages could be a decreasing pile-soil contact surface area, or creep resulting from the strain-controlled test. To investigate these possibilities, the tests were rerun with the pile completely unloaded between stages. Figure 7.13 shows the results of these tests for elapsed times of 15 minutes, 2 hours, 4 hours, and 6 hours after driving. To minimize the loss of pile-soil contact area, the pull distance for each test was decreased to the minimum. However, as shown by Figure 7.13, there is still a loss of skin friction with time on the pile.

Consequently, it was concluded that even though the centrifuge model could replicate the driving and axial load-deformation behavior of the pile, it did not exhibit the pile freeze that was observed in the field, at least not in the time frame tested. One possible explanation for this result is that pile freeze is associated with creep of the soil grains, and the creep time is modeled one to one in the experiment vs. the field.

Table 7.1 Physical Properties of the EPK Sand Used in Centrifuge

D_{10} mm	Cu	Gs	γ_{dmax} kN/m^3	γ_{dmin} kN/m^3	e_{max}	e_{min}
0.3	1.7	2.65	16.16	13.49	0.93	0.61

Table 7.2 Centrifuge Specimen Unit Weights

Dry Unit Weight, γ_d kN/m^3	Relative Density, D_r %	Void Ratio, e
14.45	40	0.80
14.98	60	0.73
15.55	80	0.67

Table 7.3 Summary of Pile Driving Results in Centrifuge

Test *	Self Weight Penetration **	Driven Length	Driving Time	Number of Blows	Blow Rate	Blow Count	Peak Voltage	Peak Dynamic Force ***
T40 Model Dr=40%	38 mm	216 mm	134 sec	306	137.0 blows/min	36.0 blows / 25mm	2.0-4.2 volts	1.71 to 3.60 kN
T40 Prototype Dr=40%	1.92 m	10.79 m	112 min		2.74 blows/min	8.6 blows / 0.3 m		4.28 to 9.00 MN
T60 Model Dr=60%	25 mm	229 mm	189 sec	420	133.3 blows/min	46.7 blows / 25mm	2.2-4.0 volts	1.89 to 3.43 kN
T60 Prototype Dr=60%	1.28 m	11.43 m	158 min		2.67 blows/min	11.2 blows / 0.3 m		4.88 to 8.57 MN
T80 Model Dr=80%	20 mm	234 mm	235 sec	521	133.0 blows/min	45.8 blows / 25mm	2.0-4.5 volts	1.71 to 3.86 kN
T80 Prototype Dr=80%	1.01 m	11.70 m	196 min		2.66 blows/min	13.6 blows / 0.3 m		4.28 to 9.64 MN

* All tests were performed at 50g. Total soil penetration = 254 mm (Model), 12.7 m (Prototype)
** The distance of pile freely penetrating into the soil without driving
*** Peak dynamic force=Peak voltage/Sensitivity (Sensitivity = 23 N/mv)

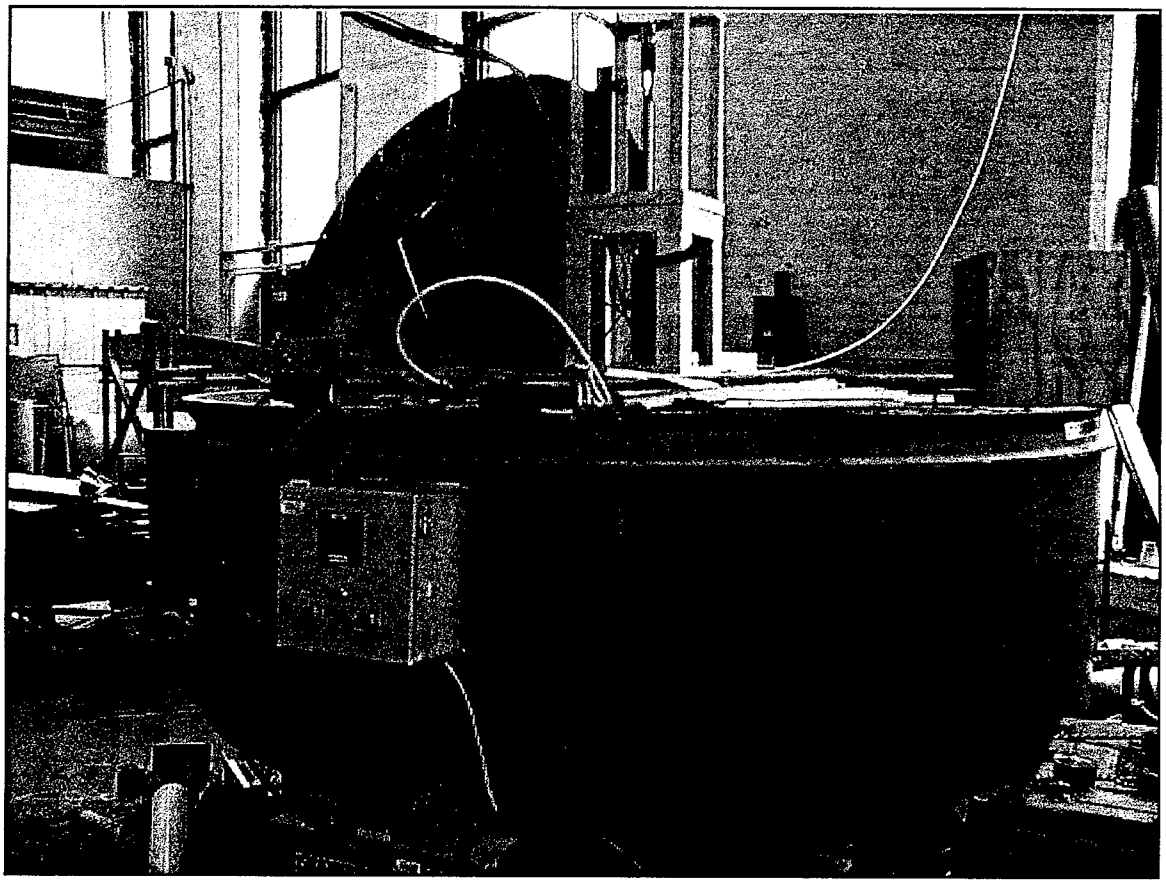

Figure 7.1 Centrifuge Used for Pile Freeze Study

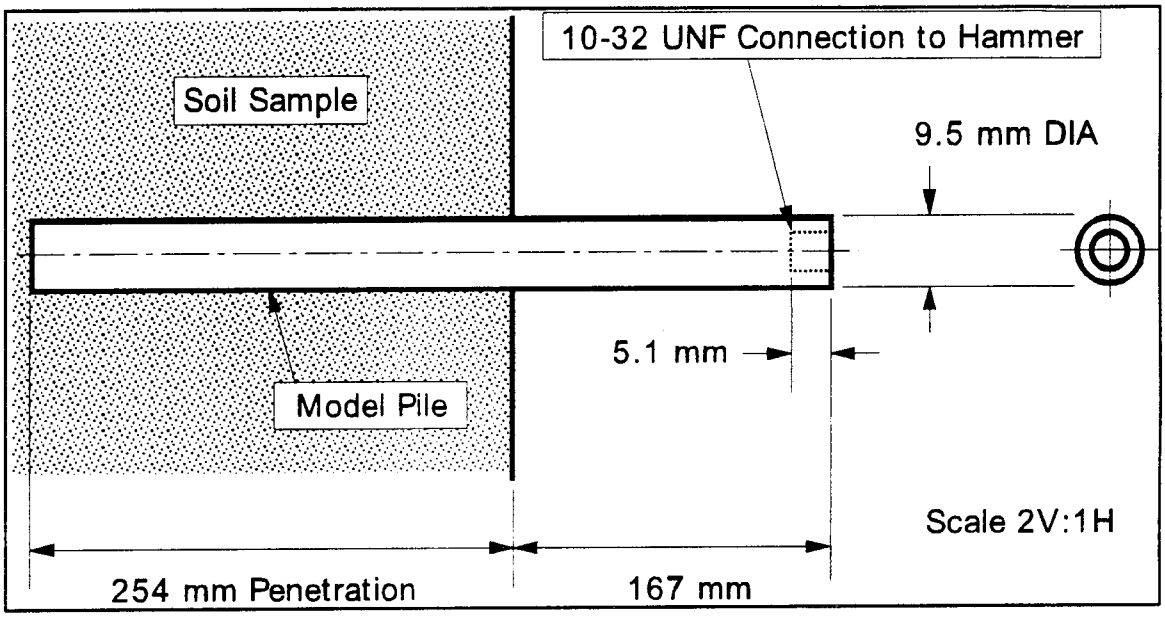

Figure 7.2 Schematic Drawing of Model Pile

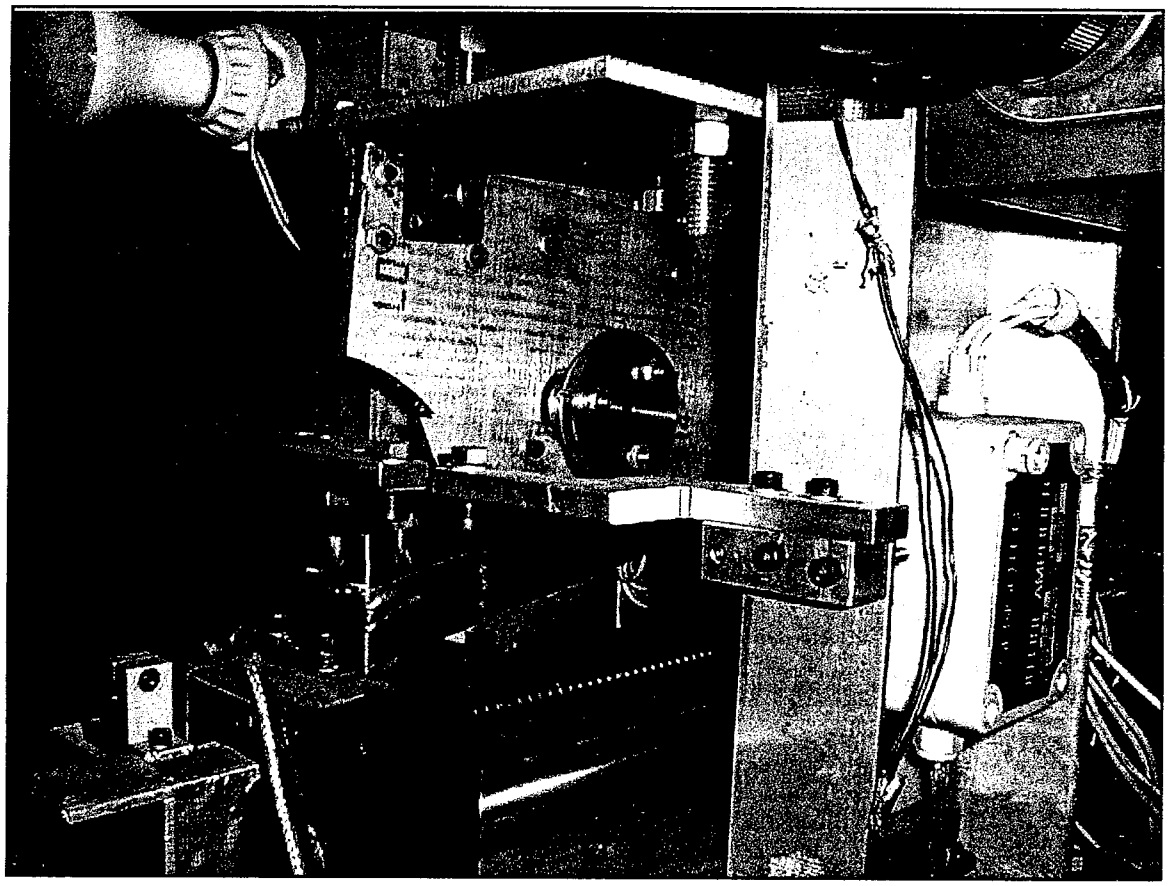

Figure 7.3 Rotating Spur Gear Used to Lift Pile Hammer

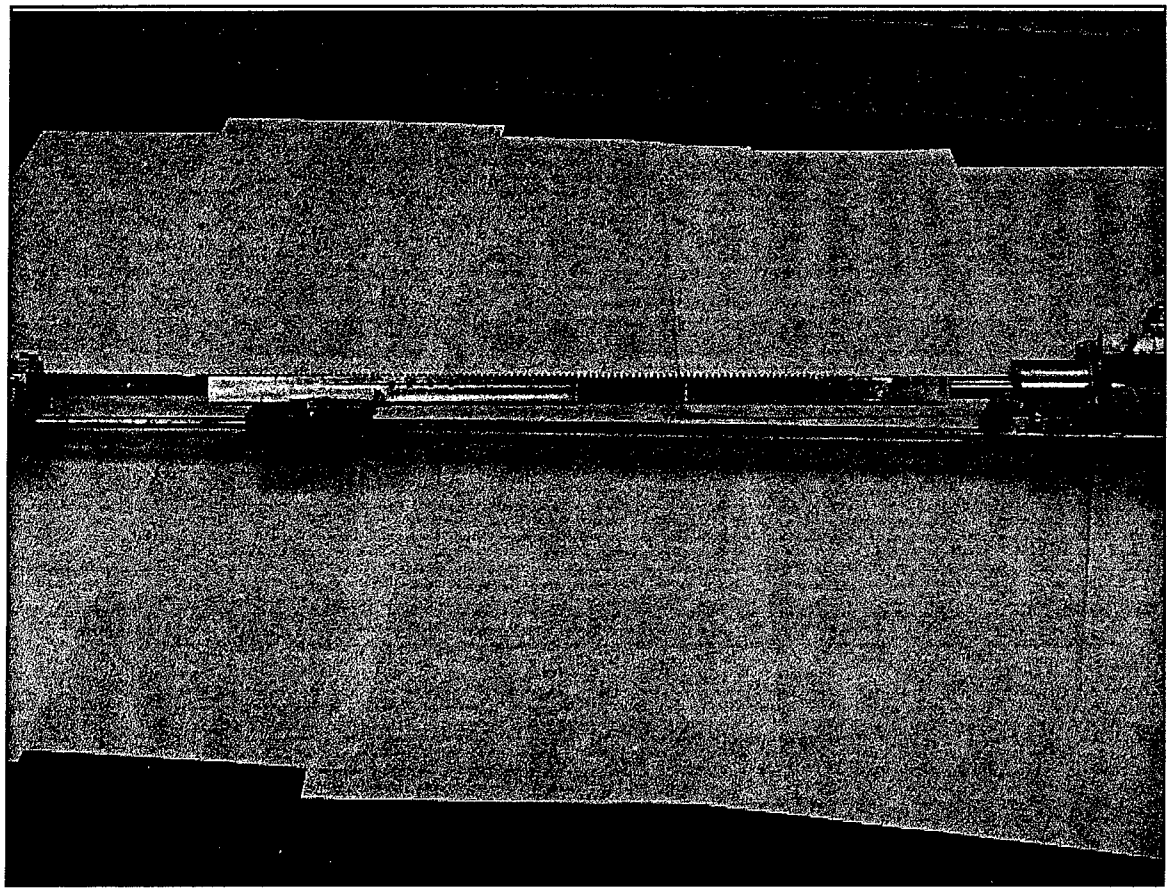

Figure 7.4 Rack Which Engaged Spur Gear was Attached to Pile Hammer

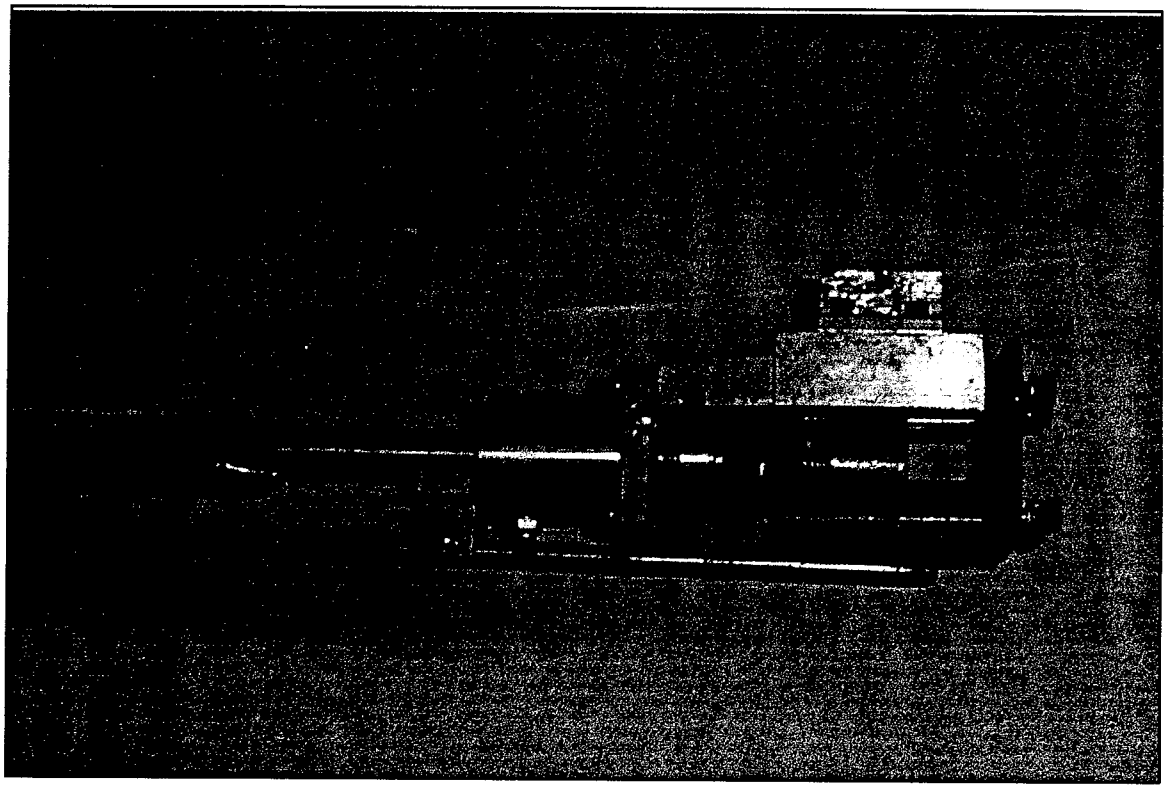

Figure 7.5 Pile Hammer and Housing Assembly

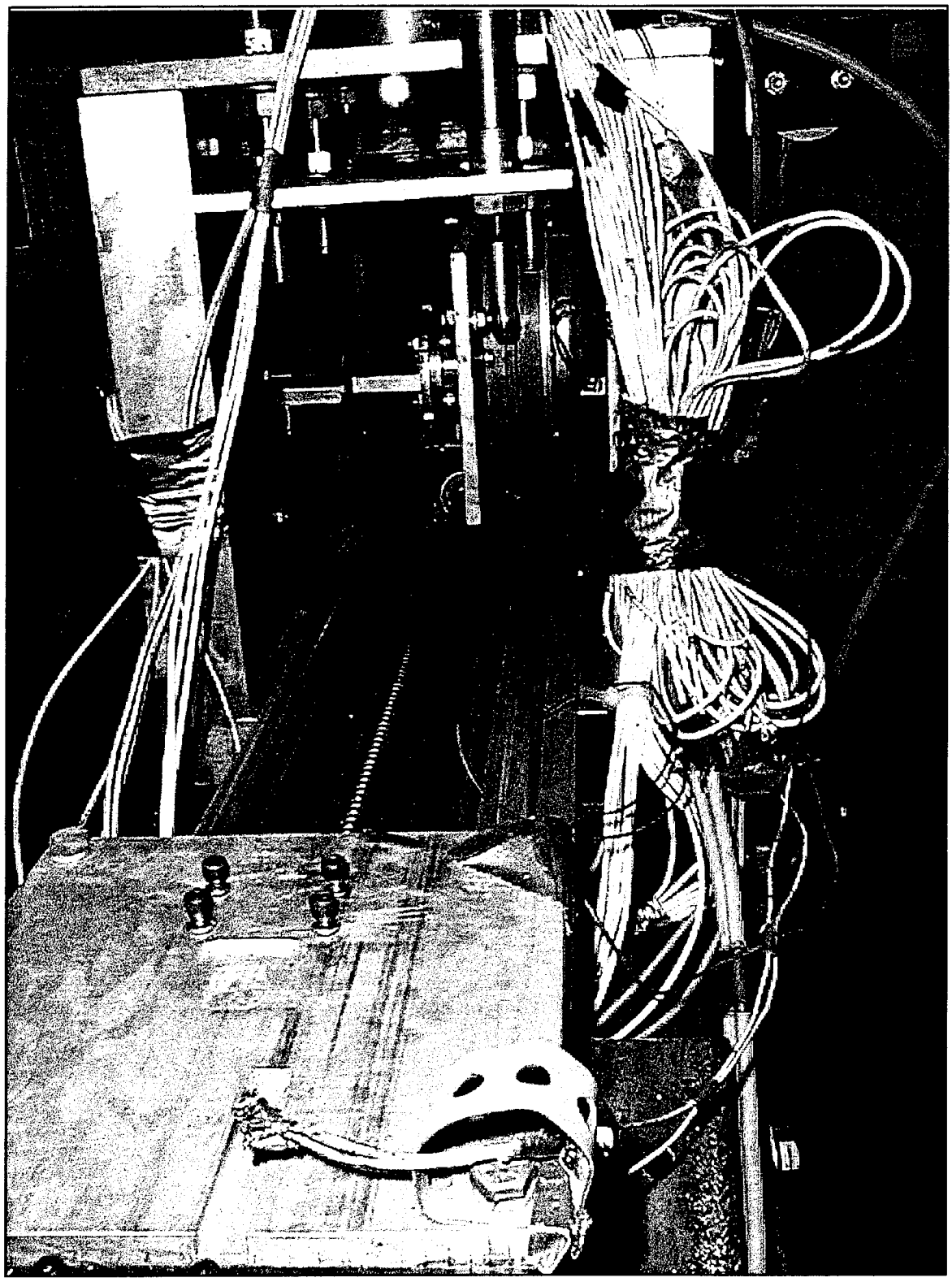

Figure 7.6 Superslide Carriage Which Supported Pile Driving Apparatus

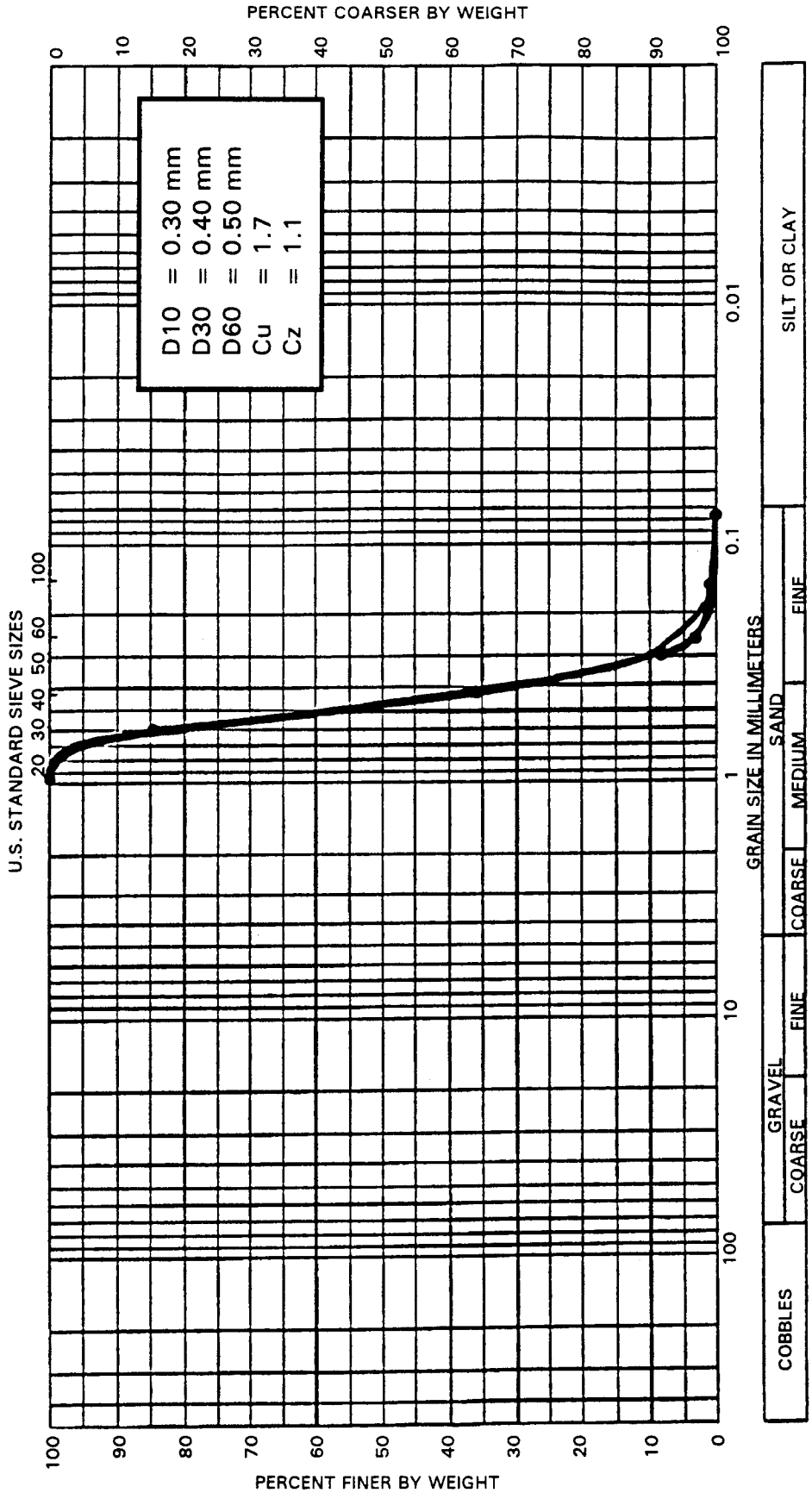

Figure 7.7 Grain Size Distribution of EPK Sand (Lo, 1995)

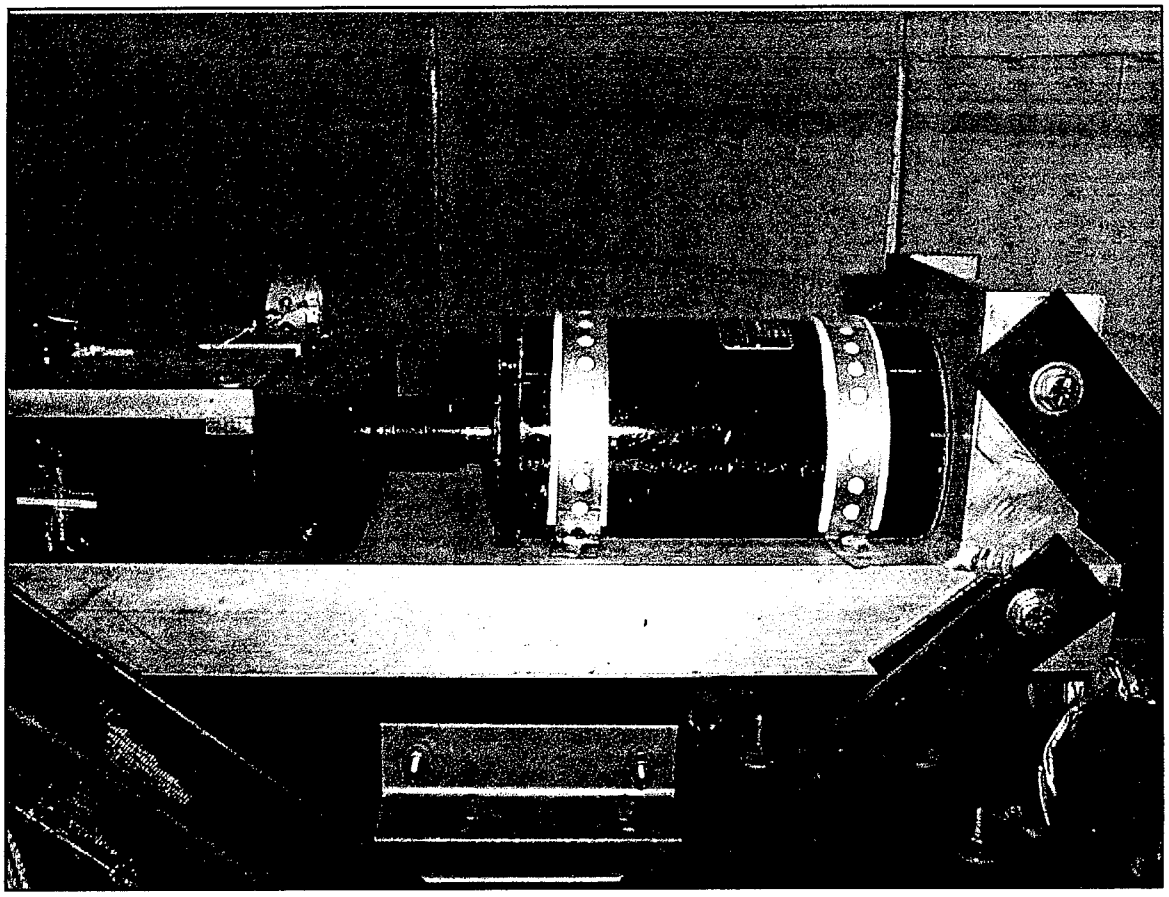

Figure 7.8 Stepping Motor Used to Provide Axial Force for Static Test

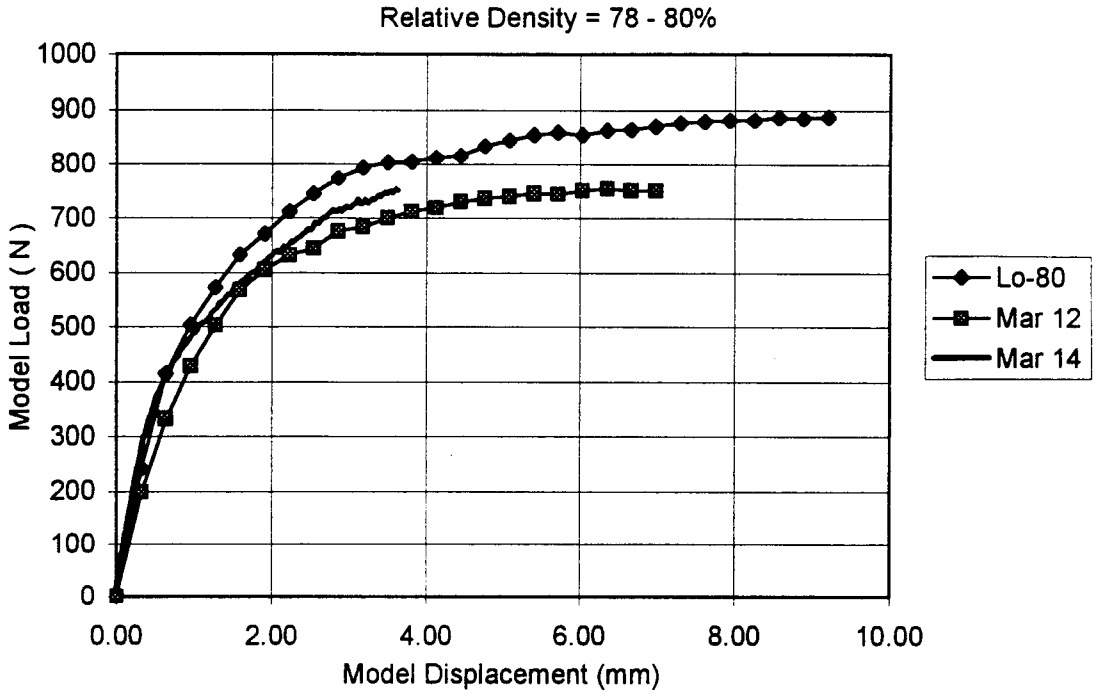

Figure 7.9 Repeatability of Centrifuge's Static Pull Test

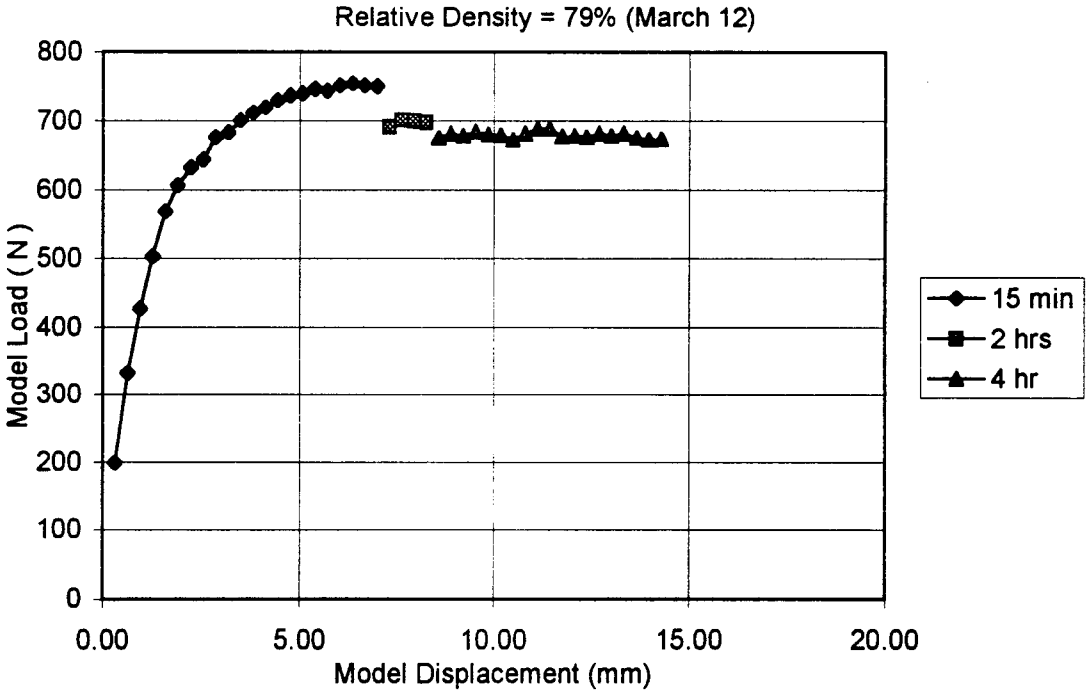

Figure 7.10 Stage Tension Testing of Pile Embedded in Sand

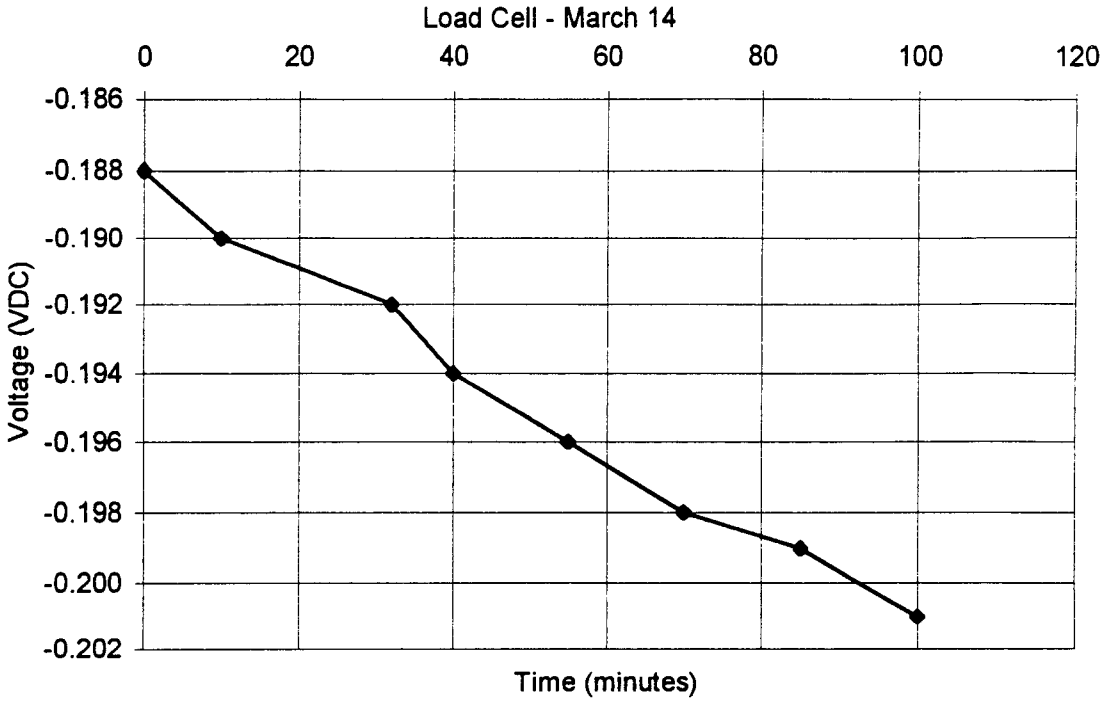

Figure 7.11 Measurement of Zero Drift of Static Load Cell

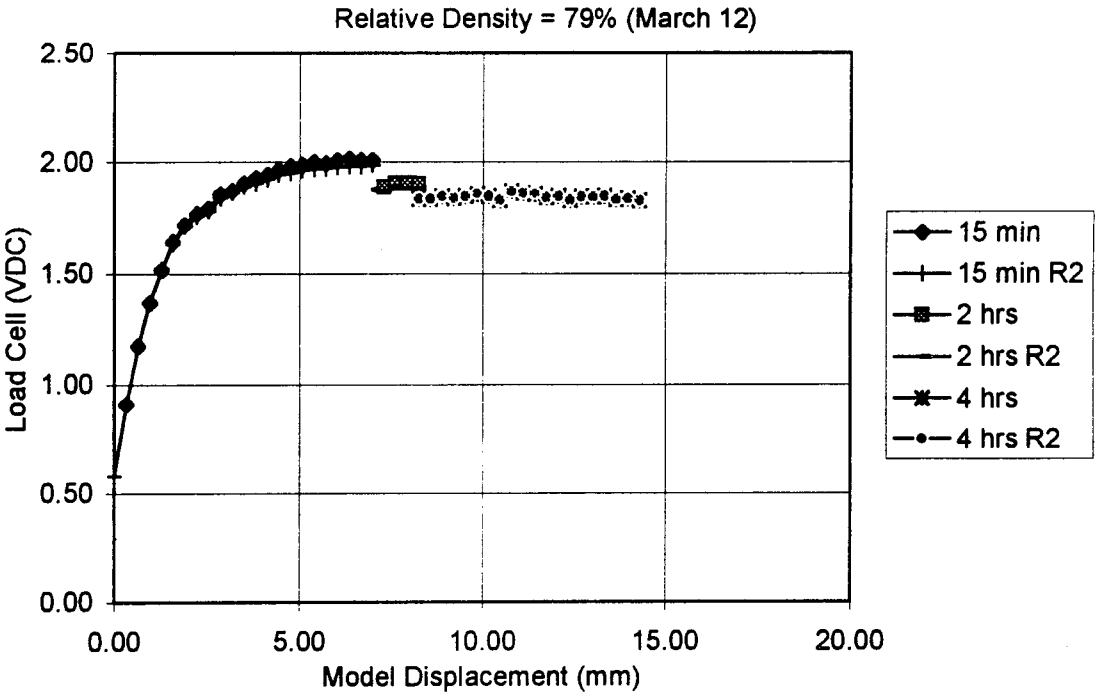

Figure 7.12 Raw Data from Stage Testing Without Removal of Static Load

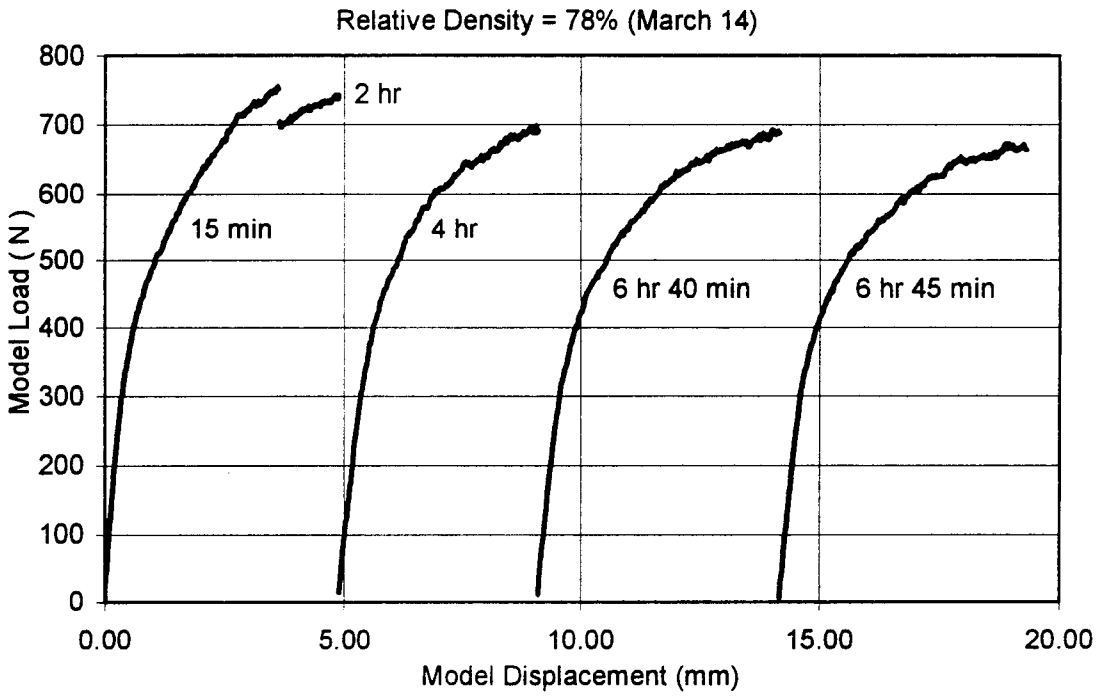

Figure 7.13 Stage Testing Results: Load Removed Between Stages

CHAPTER 8
ANALYSIS OF PILE AND INSITU TESTS

8.1 Objectives

The primary objective of this research was to develop a method to design for side shear setup on driven piles in a representative selection of north Florida soils. Toward this end, five 457 mm square prestressed concrete piles were constructed and installed, each containing extensive instrumentation and an Osterberg cell at its tip. Subsequently, these piles were stage-tested periodically to measure side shear capacity and setup. The objective of this testing was to identify how the setup varied in different soils ranging from sand to clay, before and especially after pore pressure dissipation, and also how the setup varied with time and effective stresses against the pile. In addition, the research explored the potential usefulness of three common insitu tests; the SPT, the CPT, and the DMT, as possible predictors for pile side shear setup during the design process. Chapter 5 reviewed the use of redrives on test piles for the same purpose. In the following text, specific comments are provided and numbered for easy reference

8.2 Preliminary Analyses

8.2.1 The Pile Segments:

One of the possibly unique features of this research involves the study of setup over discrete segments of pile length. Table 8.1 summarizes the number of pile

segments potentially suitable for analysis at each of the five test sites, and categorizes them into one of the following three broadly defined soil types:

"Clay" - Clays and silty clays, with low permeability. These soils likely would exhibit significant pore pressure dissipation after the driving of displacement piles.

"Mix" - Soils with varying mixtures of sand/silt/clay and enough cohesion to have some plasticity. This soil type includes silty clayey sand, sandy clayey silt, silty and clayey sand, etc. It also includes intermixed thin layers of sand, clay, and mixed soils.

"Sand" - Soils considered essentially cohesionless, with shell content varying from none to very shelly. These sands are generally fine sands and silty sands.

Chapter 5 presents detailed tabular and graphical summaries of the results at each of the five sites, with breakdowns for each site by pile segment. Chapter 5 also includes some preliminary analyses, mostly in the form of graphical presentations. These results are discussed further herein.

8.2.2 The Precursor Insitu Tests

Table 8.2 summarizes the precursor insitu test program. This program involved the Vilano East and Vilano West test sites, and the performance of a total of four SPT borings, four CPT soundings, and four DMT soundings. These tests all included pore pressure dissipation and stage testing for setup, as follows:

SPT-T: The four SPT borings included forty SPT N determinations. Fourteen of these involved staged torque testing for side shear against the sampler; seven in sand, two in mixed soil, and five in clays. Appendix K contains the details of the SPT results and also includes some preliminary analyses.

CPT-f_s: The four CPT soundings had a total length of 64.5 m and included thirteen pore pressure and stage tests for sleeve side shear (f_s) in sands, four in mixed soils, and eight in clays, for a total of twenty-five CPT precursor tests. The reader can

find the detailed results of this testing in Appendix I, along with some preliminary analyses.

DMT-P: The four DMT soundings totaled 59.3 m, with a DMT test every 0.20 m. Twenty-six of these included A-pressure dissipation and stage testing of the thrust P to advance the DMT blade. Fourteen precursor tests were performed in sands, two in mixed soils, and ten in clays. Appendix J includes the detailed data from these tests, together with some preliminary analyses.

Other than Setup: Because of the special information obtained from the above insitu tests, and the detailed information obtained from the adjacent research piles, it was also of interest to compare all this information for possible use in pile design other than setup. Chapter 6 includes some of the findings related to these tests and pile performance other than setup.

8.3 Further Analysis of the Pile Data

This section looks at different trial combinations of data. Later review of the combinations provides some general conclusions from this research which will be useful for the setup design of driven piles in north Florida.

Table 8.3 compares the pile segment unit side shear values with horizontal effective stress. For each of the eighteen pile segments with the sufficient data, Table 8.3 lists the time and measured horizontal effective stress for the initial and final static tests, as well as for the first test at which the excess pore pressure had essentially dissipated. Figure 8.1 presents an arithmetic graph of the side shear versus the horizontal effective stress measured during the initial static test, while Figure 8.2 shows the same for the final test. Both figures include a best fit line, a bias factor for the best fit line, and its coefficient of variation. The bias factor describes the prediction

accuracy of the best fit line and is defined as the ratio of the measured to predicted side shear for a given horizontal stress.

Comments:

C1. With the exception of a possible instrument error from the VLE test at -7.53 m, the bounding lines in Figure 8.1 have slopes of about 1/6 and 4/6 which represent a reasonable range of values for the pile/soil friction coefficient. This provides some confidence in the overall validity of the pile segment side shear, the pressure instrumentation data, and the analyses of the data herein.

C2. The upper bound of Figure 8.2 has a slope of 1/1, significantly greater than that of Figure 8.1. The average slope of 0.53 shown in Figure 8.2 also exceeds the average of 0.37 found in Figure 8.1. The bias factors for these average slopes have relatively high coefficients of variation, with both exceeding 60%. From this comparison it may be concluded that change in the side shear during the elapsed time between the initial and final static tests is, at least in part, independent of the change in horizontal effective stress during this same period.

C3. The data shows considerable scatter, but one needs to consider that the side shear represents a computed average for the entire pile increment while the horizontal effective stress gives the difference between two point values (total and pore pressure cells) at the approximate center of each increment.

C4. All three soil types plot more or less randomly within the data band, with the possible exception of clay points which lay closer to the average slope.

Table 8.4 lists the initial and final times, and the corresponding unit side shear values for the test period after the piezometers showed that the pore pressure dissipation was about complete. From this data, Table 8.4 also calculates the "Setup Factor B" defined as the rate of side shear setup per log cycle of elapsed time, and the "Setup Factor A" which is the Setup Factor B normalized by the initial side shear.

$$\text{Setup Factor A} = (\Delta f_s / f_{si}) / \log (T_f / T_i)$$

$$\text{Setup Factor B} = \Delta f_s / \log (T_f / T_i)$$

where:
- f_{si} = initial side shear
- Δf_s = change in side shear during T_i to T_f
- T_i = initial time
- T_f = final time

Note that Table 8.4 includes pile segments which do not have piezometers. The dissipation time for these segments is inferred based on their soil type and the behavior of piezometers on adjacent segments. Figure 8.3 and 8.4 present the Setup Factors A and B respectively versus the shear at the beginning of the setup time interval.

Comments:

C5. The data in Figure 8.3 generally follow a hyperbolic shape because the Setup Factor A includes division by the same the initial side shear value that it is plotted against. This type of graph is similar to the plot of sleeve friction normalized by tip bearing (friction ratio) versus tip bearing which is used to estimate soil type from CPT data.

C6. Both figures show considerable scatter of the data, but again show that all soil types behaved in a generally similar, random manner. Although not specifically shown herein, removal of the points which do not have piezometers does not affect this randomness. Note that from the nature of the measurements made, the calculations therefrom, and the inevitable soil variability, one should expect some scatter in these results.

C7. The slopes of the lines in Figure 8.4 indicate the side shear setup, after pore pressure dissipation, per log cycle of the time interval of the measurements.

During analysis of the data for the pile segments in sands, it was noted that when the pore pressure had essentially dissipated prior to the first static test (based on the piezometers), that the first increment of setup was sometimes negative. Table 8.5 lists the center depth for each segment in sand along with the incremental change in side shear between the first two static tests, typically over the period from one to four days after driving. Figure 8.5 presents a graph of the Setup Factor A during this time interval versus depth for all of the fourteen pile increments with good data in sand. This figure includes an "eyeballed" trend line through the points.

Comments:

C8. The data, and the trend line show negative setup in sands, both above and below the water table at depths of less than about 5 m.

C9. The negative setup in sands may be an after-effect of driving vibrations at shallow depth or may indicate that stress-induced creep is important to setup.

Next the increase in side shear before and after the essentially complete dissipation of the pore pressure was investigated. Table 8.3 includes the change in side shear and horizontal effective stress for each of the pile segments, split between these two phases of pore pressure change. Of course, dissipation was essentially complete at time of the first test for the pile segments in sand, so only the cohesive (clay and mix) segments have data available prior to dissipation. Figure 8.6 presents the side shear change versus the horizontal effective stress change during the pore pressure dissipation, all points for cohesive soils. Figure 8.7 presents the same information, but for the times after pore pressure dissipation, and with data for all soils.

Comments:

C10. Figure 8.6 suggests an interdependence between side shear and effective stress increase during the dissipation of pore pressure. As expected from the cohesive soils shown in Figure 8.1, a slope of 1/3 roughly fits the Figure 8.6 data.

C11. Figure 8.7 indicates that, in all soils, most of the side shear increase after pore pressure dissipation is essentially independent of horizontal effective stress changes.

C12. Combining C2., C10. and C11. suggests a different cause for the setup after and before the pore pressure dissipation. Two points (indicated with a ?) fall significantly to the right of the 1/3 slope in Figure 8.7 and are suspicious. The first is from the surface clay layer at Aucilla (+11.96 m) and may involve remolding effects. The second is from the deepest layer at Vilano East (-7.53 m) and may involve instrument error in measuring the total stress.

Also of interest was how the Setup Factor A might vary with the depth to the center point of each pile segment, and whether a trend by soil type might exist. Because of the potential importance of these findings, the data were reviewed in two ways. First a least squares regression was used to fit a straight line to each of the side

shear ratio verus log time 'curves' shown in Figures 5.9, 5.14, 5.19, 5.24 and 5.29, including times both before and after pore pressure dissipation. These overall Setup Factors (A) are listed in Table 8.8 and plotted versus depth in Figure 8.8. Note that the initial time, T_i = T0, chosen for these Setup Factors was one day. Next the Setup Factor A calculated after pore pressure dissipation (in Table 8.4) was plotted versus depth in Figure 8.9.

Comments:

C13. The data shown Figures 8.8 and 8.9 include scatter due to the propagation of measurement errors in the calculations for side shear. Side shear values resulting from the very low strains measured at Buckman are particularly sensitive to statistical error, and may be affected by non-uniform strain patterns as well. Buckman accounts for all four of the questionable high-setup sand points at depths above 8 m in Figure 8.8.

C14. Once again, all the soil types behaved approximately the same with respect to normalized setup after pore pressure dissipation. As shown in the bottom tabulation, the average overall Setup Factors presented in Table 8.8 are essentially the same for all three soil types.

C15. There does not appear to be an observable depth effect in either figure. Both figures also show similar magnitudes for the Setup Factor A, suggesting that the Setup Factor during pore pressure dissipation is not significantly different from that measured after pore pressure dissipation.

C16. Both figures suggest it would be conservative, in the absence of any setup tests, to assume a constant Setup Factor A = 0.20 for all depths in all soils.

8.4 Further Analysis of the Insitu Precursor Test Data

After preliminary evaluation of the insitu test data, it was concluded that the SPT-T and CPT sleeve friction stage tests provided the most optimistic results with respect to predicting setup of the nearby full-scale test piles. This section examines the results of these tests in more detail. Table 8.6 lists the SPT-T stage test results, in all soil types, from the Vilano borings. Figures 8.10 and 8.11 show these SPT-T setup

points superimposed on the previous Figures 8.3 and 8.4. Figure 8.12 shows the SPT-T setup tests in sands superimposed on the previous Figure 8.5.

Comments:

C17. The SPT setup data in cohesive soils, ignoring any SPT pore pressure effects, fits in well with the prior pile setup data after pore pressure dissipation.

C18. The SPT-T setup data in sands does not fit well. They give a negative normalized setup when it should be positive. This may occur because of the shallow depth effect for the piles noted in C9. Perhaps the bottom of the borehole has a similar shallow depth effect.

C19. The negative setup effect for the SPT-T in sands may be a stage testing effect, enhanced by the differences in size and roughness between the larger concrete pile and the smaller smooth-steel sampler.

C20. The poor fit of the SPT-T setup data in sands may result from a lack of setup time. Perhaps setup measured on the sampler over a period of months, rather than hours, would follow the trend observed on the pile segments, initially decreasing and then increasing again.

The CPT sleeve friction setup data produced results similar to the SPT-T. Table 8.7 lists the setup results obtained from the Vilano sleeve friction tests, for both cohesive soils and sands. These results have also been added to previous Figures 8.3 and 8.4 and presented in Figures 8.13 and 8.14.

Comments:

C21. The CPT setup tests in clay soils fit roughly with the setup tests of the pile segments, similar to the SPT-T setup tests.

C22. The CPT setup tests in sands match poorly with the prior pile segment data, possibly for the same reasons mentioned in C19. and C20. for the SPT-T.

C23. The CPT results in mixed soils do not match the pile data as well as the SPT-T (although neither test has a statistically significant sample).

Data from the DMT-P and A-dissipation testing proved less useful than the SPT-T and CPT. The DMT-P was taken only before and after dissipation testing and

was not stage tested. Similar to the other insitu tests, it showed negative setup in sands. Although the DMT-P setup was positive in cohesive soils, the testing was not staged and cannot be analyzed to determine a Setup Factor. Figures 8.16 and 8.17 show the initial and final horizontal effective stress measured against the pile (from 6 pile segments) superimposed on a depth profile of the insitu horizontal effective stress from the DMT measurements.

Comments:

C24. The initial horizontal effective stresses against the pile are nearly the same as the insitu horizontal effective stress predicted by the DMT. Of course there are only 6 points, 3 in sand and 3 in weak cohesive soils.

C25. Three of the final horizontal effective stresses measured against the pile are dramatically different from the DMT-determined insitu horizontal stress, both high and low. Another three are about the same. No trend is observed.

C26. The thrust required for the DMT blade to penetrate is the sum of side shear on the blade flat sides and the bearing on the blade tip. These values have not been independently measured, but indications are that a large percentage of the required thrust may be used in bearing. Since bearing does not apparently have significant setup, any side shear setup effects may be only a small part of the measured thrust and be effectively masked.

8.5 Summary of Analyses

This section offers some overall findings from the above analyses, referenced to the previous comment numbers, and in turn to the appropriate tables and figures.

1. Comments C4., C6., C11. and C14. suggest that for practical purposes the Setup Factors are not affected by soil type.

2. Comments C14. and C15. indicate that the Setup Factor A is independent of depth, whether considering the overall setup or only the post-dissipation setup.

3. Comments C2., C10., C11., C12., C14. and C15. indicate that the setup measured before and after the pore pressure dissipation have a different cause, but a similar magnitude.

4. Comments C11. and C12. indicate that, in all soils, much of the setup occurring after pore pressure dissipation does not depend significantly on a change in horizontal effective stress.

5. Comments C18. and C22. indicate that none of the insitu precursor tests investigated produced good results, versus piles, in sands.

6. Comments C17., C21., and C23. indicate that the SPT-T and CPT both show reasonably good results as precursor tests in cohesive soils. The fact that the results from these two tests are similar validates both. As discussed subsequently, the SPT-T is recommended for continued precursor research because of its better fit in mixed soils and because of its simplicity.

7. Comment C24. suggests that the designer may be able to use the DMT to predict the initial horizontal effective stresses against the pile.

8. Comments C15. and C16. indicate that, in the absence of a precursor test, it appears conservative to use a Setup Factor of $A = 0.20$ in all of the soil types tested in this research, at all depths, and both before and after pore pressure dissipation.

Table 8.1 Number of Pile Segments Suitable for Analysis

Test Site	Total No. of Pile Segments with Shear Setup			No. of Pile Segments with Effective Stress Measurement		
	Clay	Mix	Sand	Clay	Mix	Sand
Buckman	0	0	5	0	0	3
Aucilla	3	4	1	3	2	0
Vilano East	0	1	4	0	0	3
Vilano West	2	2	1	2	1	0
Seabreeze	2	0	3	2	0	2
Subtotal	7	7	14	7	3	8
Total	28			18		

Table 8.2 Summary of Precursor Insitu Tests (Vilano East and Vilano West)

	CPT		SPT-T		DMT	
	VLE	VLW	VLE	VLW	VLE	VLW
Borings (or Soundings)	FRZ001 FRZ002/3	FRZ008 FRZ009/10	FRZ011 FRZ012	FRZ013 FRZ014	FRZ004 FRZ005	FRZ006 FRZ007
Total No. Tests	21.3 m	43.2 m	26	14	20.1 m	39.2 m
Test Interval	0.05 m		1.5 m or less		0.20 m	
No. Setup Tests						
in Clay	0	8	0	5	0	10
in Mix	0	4	0	2	0	2
in Sand	11	2	6	1	12	2
Total	11	14	6	8	12	14
Detailed Data	Appendix I		Appendix K		Appendix J	
Tables in Main Text	6.1	6.1	6.1	6.1	6.1	6.1
Figures in Main Text	6.5, 6.7 6.8, 6.9 6.10 8.13 8.14 8.15	6.6, 6.7 6.8, 6.9 6.10 8.13 8.14 8.15	6.1, 6.3 6.4 8.10 8.11 8.12	6.2, 6.3 6.4 8.10 8.11 8.12	8.16	8.17

Table 8.3 Pile Segment Side Shear vs. Horizontal Effective Stress, During- and Post-Dissipation

Test Site	Pile Segment Centerline		Soil Type	Elapsed Time Since EOD days			Horizontal Effective Stress, kPa			Average Unit Side Shear, kPa			Change During-Dissip.		Change Post-Dissip.	
	Elev. m, msl	Depth m		Initial T_i	Dissip. T_d	Final T_f	Initial σ'_{hi}	Dissip. σ'_{hd}	Final σ'_{hf}	Initial f_{si}	Dissip. f_{sd}	Final f_{sf}	$\Delta\sigma'_h$ kPa	Δf_s kPa	$\Delta\sigma'_h$ kPa	Δf_s kPa
BKM	-0.25	4.58	Sand	0.25	0.25	276.96	4.9	4.9	2.6	0.1	0.1	5.5	N/A	N/A	-2.3	5.4
	-1.93	6.26	Sand	0.25	0.25	276.96	8.3	8.3	15.8	0.7	0.7	4.8	N/A	N/A	7.5	4.1
	-3.53	7.86	Sand	0.25	0.25	276.96	11.0	11.0	8.9	3.7	3.7	11.3	N/A	N/A	-2.1	7.6
AUC	11.96	4.26	Clay	0.98	2.97	1727.1	51.6	55.0	163.8	22.2	21.9	46.3	3.4	-0.3	108.8	24.4
	7.62	8.60	Clay	0.98	2.97	265.05	13.6	12.7	20.5	9.9	11.5	19.9	-0.9	1.6	7.8	8.4
	5.11	11.11	Clay	0.98	2.97	65.10	114.4	164.7	158.5	34.2	47.7	53.3	50.3	13.5	-6.2	5.6
	2.21	14.01	Mix	0.98	2.97	1727.1	78.6	77.8	118.9	12.7	24.5	77.0	-0.8	11.8	41.1	52.5
	-1.30	17.52	Mix	0.98	2.97	1727.1	125.5	130.7	142.6	84.2	103.6	136.0	5.2	19.4	11.9	32.4
VLE	-3.04	4.13	Sand	3.93	3.93	76.99	29.2	29.2	40.7	8.2	8.2	16.7	N/A	N/A	11.5	8.5
	-4.94	6.03	Sand	0.32	0.32	15.91	52.3	52.3	55.6	31.7	31.7	55.8	N/A	N/A	3.3	24.1
	-7.53	8.62	Sand	0.32	0.32	15.91	69.6	69.6	334.4	124.6	124.6	183.7	N/A	N/A	264.8	59.1
VLW	-6.04	7.43	Mix	0.26	0.26	157.01	30.7	30.7	46.9	3.3	3.3	9.6	N/A	N/A	16.2	6.3
	-12.29	13.68	Clay	0.26	157.01	157.01	67.7	45.9	45.9	11.3	27.4	27.4	-21.8	16.1	N/A	N/A
	-14.88	16.27	Clay	0.26	18.98	157.01	84.2	137.7	112.5	14.8	35.9	58.2	53.5	21.1	-25.2	22.3
SBZ	-7.74	9.66	Sand	0.35	0.35	1057.9	29.5	29.5	47.7	12.5	12.5	37.0	N/A	N/A	18.2	24.5
	-12.61	14.53	Sand	0.35	0.35	69.94	46.4	46.4	49.2	15.3	15.3	18.5	N/A	N/A	2.8	3.2
	-15.89	17.81	Clay	0.35	4.03	1057.9	81.2	164.6	160.0	29.1	29.5	86.2	83.4	0.4	-4.6	56.7
	-19.24	21.16	Clay	0.35	4.03	1057.9	132.9	226.6	232.4	44.2	86.0	114.5	93.7	41.8	5.8	28.5

Notes: "Dissip." indicates essentially complete dissipation of excess pore pressure. All segments have piezometers.
T_i for VLE segment at -3.04 m chosen later to reduce near-surface pile driving disturbance effect.
Choice of final readings is affected by availability of effective stress measurements.

Table 8.4 Shear Increase on Pile Segments After Pore Pressure Dissipation

Test Site	Pile Segment CL		Soil Type	Elapsed Time		Avg. Unit Side Shear			Δf_s / $\log(T_f/T_i)$	Setup Factor
	Elev. msl, m	Depth m		T_i days	T_f days	f_{si} kPa	f_{sf} kPa	Δf_s kPa	B, kPa	A
BKM	3.41	0.92	Sand	0.25	277.0	5.6	12.6	7.0	2.30	0.411
	1.58	2.75	Sand*	0.25	277.0	4.5	21.2	16.7	5.49	1.219
	-0.25	4.58	Sand*	0.25	277.0	0.1	5.5	5.4	1.77	17.737
	-1.93	6.26	Sand*	0.25	277.0	0.7	4.8	4.1	1.35	1.924
	-3.53	7.86	Sand*	0.25	277.0	3.7	11.3	7.6	2.50	0.675
AUC	14.70	1.52	Mix	2.97	1727.1	6.4	8.7	2.3	0.83	0.130
	11.96	4.26	Clay *	16.10	1727.1	29.2	46.3	17.1	8.42	0.288
	9.68	6.54	Mix	2.97	1727.1	20.8	38.2	17.4	6.29	0.303
	7.62	8.60	Clay *	2.97	1727.1	11.5	24.0	12.5	4.52	0.393
	5.11	11.11	Clay *	2.97	1727.1	47.7	60.2	12.5	4.52	0.095
	2.21	14.01	Mix *	2.97	1727.1	24.5	77.0	52.5	18.99	0.775
	0.38	15.84	Sand	0.98	1727.1	21.3	81.2	59.9	18.45	0.866
	-1.30	17.52	Mix *	2.97	1727.1	103.6	136.0	32.4	11.72	0.113
VLE	0.17	0.92	Mix	0.32	76.99	0.9	2.6	1.7	0.71	0.793
	-1.44	2.53	Sand	0.32	76.99	8.6	17.3	8.7	3.65	0.425
	-3.04	4.13	Sand*	3.93	76.99	8.2	16.7	8.5	6.58	0.802
	-4.94	6.03	Sand*	0.32	15.91	31.7	55.8	24.1	14.21	0.448
	-7.53	8.62	Sand*	0.32	15.91	124.6	183.7	59.1	34.84	0.280
VLW	-6.04	7.43	Mix *	0.26	157.0	3.3	9.6	6.3	2.27	0.686
	-9.70	11.09	Mix *	0.26	18.98	17.6	26.3	8.7	4.67	0.265
	-14.88	16.27	Clay *	18.98	157.0	14.8	58.2	43.4	47.30	3.196
	-16.33	17.72	Sand	0.26	18.98	105.5	132.9	27.4	14.70	0.139
SBZ	-7.74	9.66	Sand*	0.35	1057.9	12.5	37.0	24.5	7.04	0.563
	-12.61	14.53	Sand*	0.35	1057.9	15.3	24.6	9.3	2.67	0.175
	-15.89	17.81	Clay *	4.03	1057.9	29.5	86.2	56.7	23.44	0.795
	-19.24	21.16	Clay *	4.03	1057.9	86.0	114.5	28.5	11.78	0.137
	-21.68	23.60	Sand	0.35	1057.9	170.4	111.5	-58.9	-16.92	-0.099

* Denotes pile segments with piezometers

Table 8.5 Shear Decrease on Pile Segments in Sand Just After Initial Test

Test Site	Pile Segment CL Elev. msl, m	Pile Segment CL Depth m	Soil Type	Elapsed Time T_i days	Elapsed Time T_f days	Avg. Unit Side Shear f_{si} kPa	Avg. Unit Side Shear f_{sf} kPa	Avg. Unit Side Shear Δf_s kPa	Δf_s / log(T_f/T_i) B, kPa	Setup Factor A
BKM	3.41	0.92	Sand#	0.25	3.13	5.6	1.1	-4.5	-4.10	-0.732
	1.58	2.75	Sand*#	0.25	3.13	4.5	0.2	-4.3	-3.92	-0.871
	-0.25	4.58	Sand*	0.25	3.13	0.1	0.4	0.3	0.27	2.733
	-1.93	6.26	Sand*	0.25	3.13	0.7	0.0	-0.7	-0.64	-0.911
	-3.53	7.86	Sand*	0.25	3.13	3.7	5.4	1.7	1.55	0.419
AUC	0.38	15.84	Sand	0.98	2.97	21.3	30.5	9.2	19.11	0.897
VLE	-1.44	2.53	Sand	0.32	3.93	8.6	3.3	-5.3	-4.87	-0.566
	-3.04	4.13	Sand*	0.32	3.93	9.7	8.2	-1.5	-1.38	-0.142
	-4.94	6.03	Sand*	0.32	3.93	31.7	44.7	13.0	11.93	0.376
	-7.53	8.62	Sand*	0.32	3.93	124.6	150.3	25.7	23.59	0.189
VLW	-16.33	17.72	Sand	0.26	2.84	105.5	115.0	9.5	9.15	0.087
SBZ	-7.74	9.66	Sand*	0.35	4.03	12.5	17.3	4.8	4.52	0.362
	-12.61	14.53	Sand*	0.35	4.03	15.3	10.8	-4.5	-4.24	-0.277
	-21.68	23.60	Sand	0.35	4.03	170.4	269.1	98.7	93.00	0.546

* Denotes pile segments with piezometers.

# Indicates pile segment above groundwater table (all others below).

Table 8.6 SPT-T Shear Increase at Vilano East and West

Test Site & Boring	Test Location		Soil Type	Elapsed Time		Avg. Unit Side Shear			Δf_s / $\log(T_f/T_i)$	Setup Factor
	Elev. msl, m	Depth m		T_i min	T_f min	f_{si} kPa	f_{sf} kPa	Δf_s kPa	B, kPa	A
VLE	-3.43	4.88	Sand	3.6	236.7	25.8	21.9	-3.9	-2.15	-0.083
FRZ011	-4.95	6.40	Sand	3.5	980.7	52.8	46.2	-6.6	-2.70	-0.051
	-8.00	9.45	Sand	5.0	235.5	84.2	68.2	-16.0	-9.56	-0.114
VLE	-3.73	4.73	Sand	4.0	169.5	14.6	14.7	0.1	0.06	0.004
FRZ012	-5.10	6.10	Sand	4.1	910.8	15.6	15.2	-0.4	-0.17	-0.011
	-8.15	9.15	Sand	4.2	233.1	187.8	126.7	-61.1	-35.03	-0.187
VLW	-6.68	7.63	Clay	4.0	236.2	27.4	43.0	15.6	8.81	0.321
FRZ013	-10.03	10.98	Mix	4.5	946.7	39.0	76.9	37.9	16.32	0.418
	-12.47	13.42	Clay	4.0	258.7	17.6	32.5	14.9	8.23	0.468
	-14.90	15.85	Clay	5.1	1011.1	19.9	34.9	15.0	6.53	0.328
VLW	-6.52	7.92	Sand	5.0	214.0	43.3	36.7	-6.6	-4.05	-0.093
FRZ014	-9.57	10.97	Mix	4.4	861.9	30.3	47.7	17.4	7.59	0.251
	-12.31	13.71	Clay	4.0	239.9	17.0	31.2	14.2	7.99	0.470
	-14.75	16.15	Clay	4.2	1087.9	12.3	35.4	23.1	9.57	0.778

Table 8.7 CPT Shear Increase at Vilano East and West

Test Site & Boring	Test Location		Soil Type	Elapsed Time		Avg. Unit Side Shear			Δf_s / $\log(T_f/T_i)$	Setup Factor
	Elev. msl, m	Depth m		T_i min	T_f min	f_{si} kPa	f_{sf} kPa	Δf_s kPa	B, kPa	A
VLE	-3.06	4.35	Sand	1.3	982.0	17.1	23.2	6.1	2.12	0.124
FRZ001	-4.96	6.25	Sand	1.1	16.2	96.9	101.0	4.1	3.54	0.037
	-5.06	6.35	Sand	1.0	262.6	179.7	179.2	-0.5	-0.21	-0.001
	-6.06	7.35	Sand	3.4	958.2	135.3	124.1	-11.2	-4.56	-0.034
	-7.61	8.90	Sand	4.5	240.1	367.9	328.5	-39.5	-22.86	-0.062
VLE	-1.04	2.00	Sand	4.6	186.2	6.4	14.7	8.4	5.20	0.818
FRZ002	-1.54	2.50	Sand	4.0	240.2	114.8	110.0	-4.8	-2.72	-0.024
FRZ003	-3.04	4.00	Sand	4.2	1131.3	16.6	13.9	-2.7	-1.11	-0.067
	-4.94	5.90	Sand	4.1	239.5	170.2	153.1	-17.1	-9.68	-0.057
	-7.54	8.50	Sand	4.1	240.2	281.1	260.3	-20.8	-11.77	-0.042
	-7.74	8.70	Sand	4.2	818.9	112.7	99.2	-13.5	-5.89	-0.052
VLE	-6.53	8.01	Sand	4.1	201.4	107.3	91.4	-15.8	-9.35	-0.087
FRZ008	-9.72	11.20	Mix	4.4	60.3	16.0	16.4	0.4	0.39	0.025
	-10.12	11.60	Clay	4.1	775.8	18.4	23.2	4.8	2.10	0.114
	-12.32	13.80	Clay	4.1	255.0	12.5	24.1	11.6	6.46	0.515
	-14.92	16.40	Clay	4.0	248.3	7.1	25.6	18.5	10.32	1.463
VLE	-2.56	3.50	Mix	4.0	63.2	3.4	4.5	1.2	0.98	0.290
FRZ009	-6.56	7.50	Mix	4.1	60.7	140.4	109.2	-31.1	-26.60	-0.189
FRZ010	-8.16	9.10	Sand	4.1	60.1	19.4	18.7	-0.7	-0.62	-0.032
	-9.76	10.70	Mix	4.5	60.1	8.8	9.7	0.9	0.80	0.090
	-11.27	12.21	Clay	4.1	246.8	11.2	22.1	11.0	6.16	0.551
	-12.36	13.30	Clay	60.0	781.1	14.4	24.1	9.7	8.72	0.606
	-13.56	14.50	Clay	4.0	247.5	12.3	27.4	15.1	8.42	0.686
	-14.96	15.90	Clay	4.2	752.3	10.7	30.0	19.4	8.59	0.806
	-15.96	16.90	Clay	4.2	251.2	15.7	36.0	20.3	11.43	0.727

Table 8.8 Summary of Overall Setup Factor by Pile Segment

Test Site	Elevation msl meters	Depth meters	Setup Factor A	Soil Type	Soil Type	Effective Stress Measured?
Buckman	3.41	0.92	0.33	Weakly Cemented Sand	Sand	No
	1.58	2.75	1.03	Weakly Cemented Sand	Sand	Yes
	-0.25	4.58	1.48	Weakly Cemented Sand	Sand	Yes
	-1.93	6.26	0.97	Weakly Cemented Sand	Sand	Yes
	-3.53	7.86	0.85	Weakly Cemented Sand	Sand	Yes
Aucilla	14.70	1.52	0.04	Clayey Silty Sand	Mix	No
	11.96	4.26	0.36	Silty Clay	Clay	Yes
	9.68	6.54	0.38	Sandy Clayey Silt	Mix	No
	7.62	8.60	0.45	Silty Clay	Clay	Yes
	5.11	11.11	0.26	Silty Clay	Clay	Yes
	2.21	14.01	1.60	Sandy Clayey Silt	Mix	Yes
	0.38	15.84	0.79	Silty Sand	Sand	No
	-1.30	17.52	0.17	Clayey Silt	Mix	Yes
Vilano East	0.17	0.92	0.58	Silty & Clayey Sand	Mix	No
	-1.44	2.53	0.36	Shelly Sand	Sand	No
	-3.04	4.13	0.28	Shelly Sand	Sand	Yes
	-4.94	6.03	0.38	Sand	Sand	Yes
	-7.53	8.62	0.25	Sand	Sand	Yes
Vilano West	-6.04	7.43	0.53	Silty/Clayey Sand	Mix	Yes
	-9.70	11.09	0.20	Si Cl Sand & Silty Clay	Mix	No
	-12.29	13.68	0.38	Silty Clay	Clay	Yes
	-14.88	16.27	0.99	Silty Clay	Clay	Yes
	-16.33	17.72	0.08	Cemented Sand	Sand	No
Seabreeze	-7.74	9.66	0.47	Silty Sand	Sand	Yes
	-12.61	14.53	0.21	Sand w/shell	Sand	Yes
	-15.89	17.81	0.67	Silty Clay	Clay	Yes
	-19.24	21.16	0.30	Silty Clay	Clay	Yes
	-21.68	23.60	-0.07	Sand w/shell	Sand	No

Setup Factor determined by linear regression of all static tests, with T0=1day.

Statistical Summary of Overall Setup Factor:

Clay	average of 7 = 0.49 (cv 53.1%, range 0.26 to 0.99)
Mixed	average of 7 = 0.50 (cv 104.6%, range 0.04 to 1.60)
Sand	average of 14 = 0.53 (cv 81.5%, range -0.07 to 1.48)

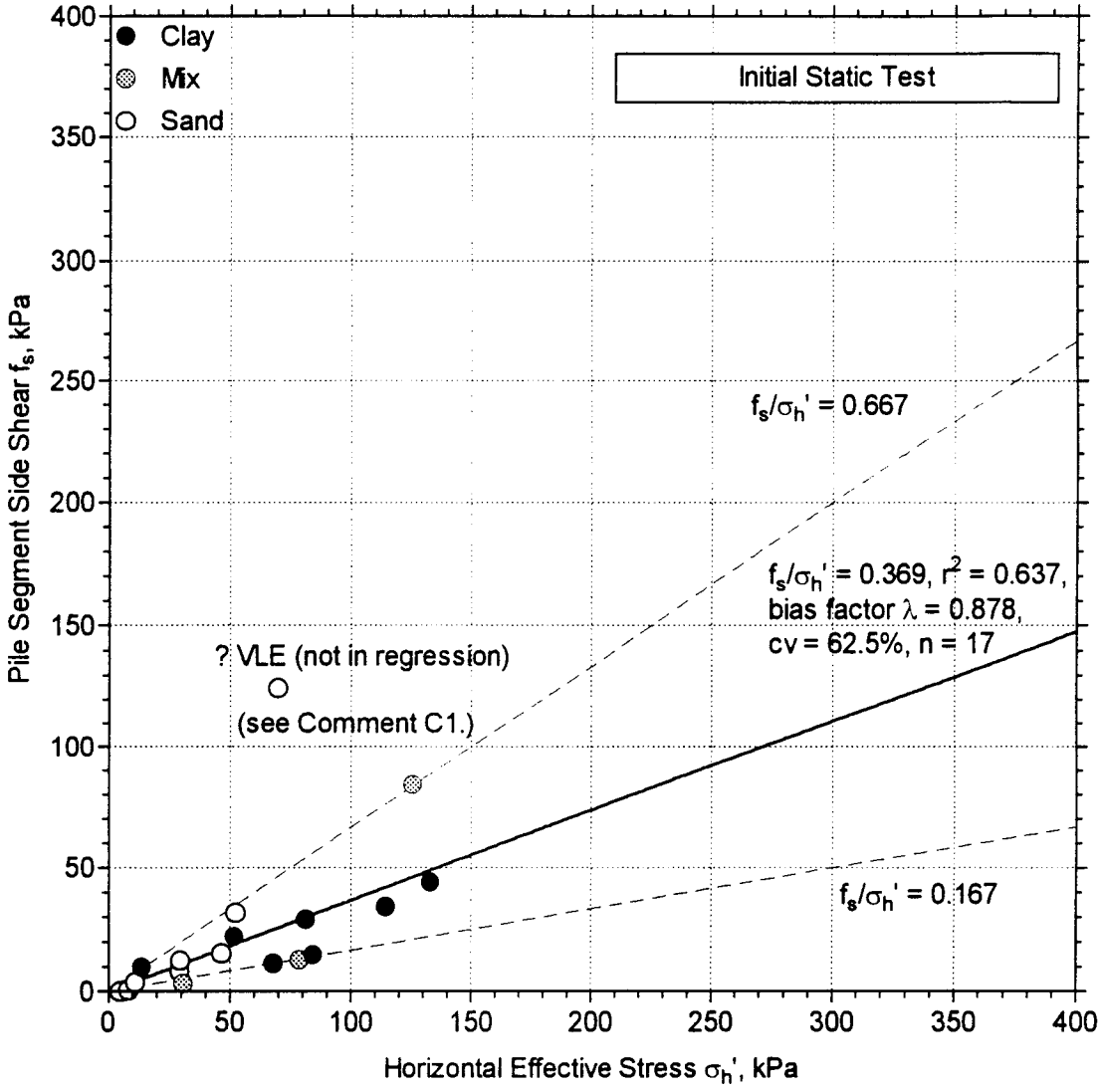

Figure 8.1 Effective Stress vs. Initial Pile Segment Side Shear

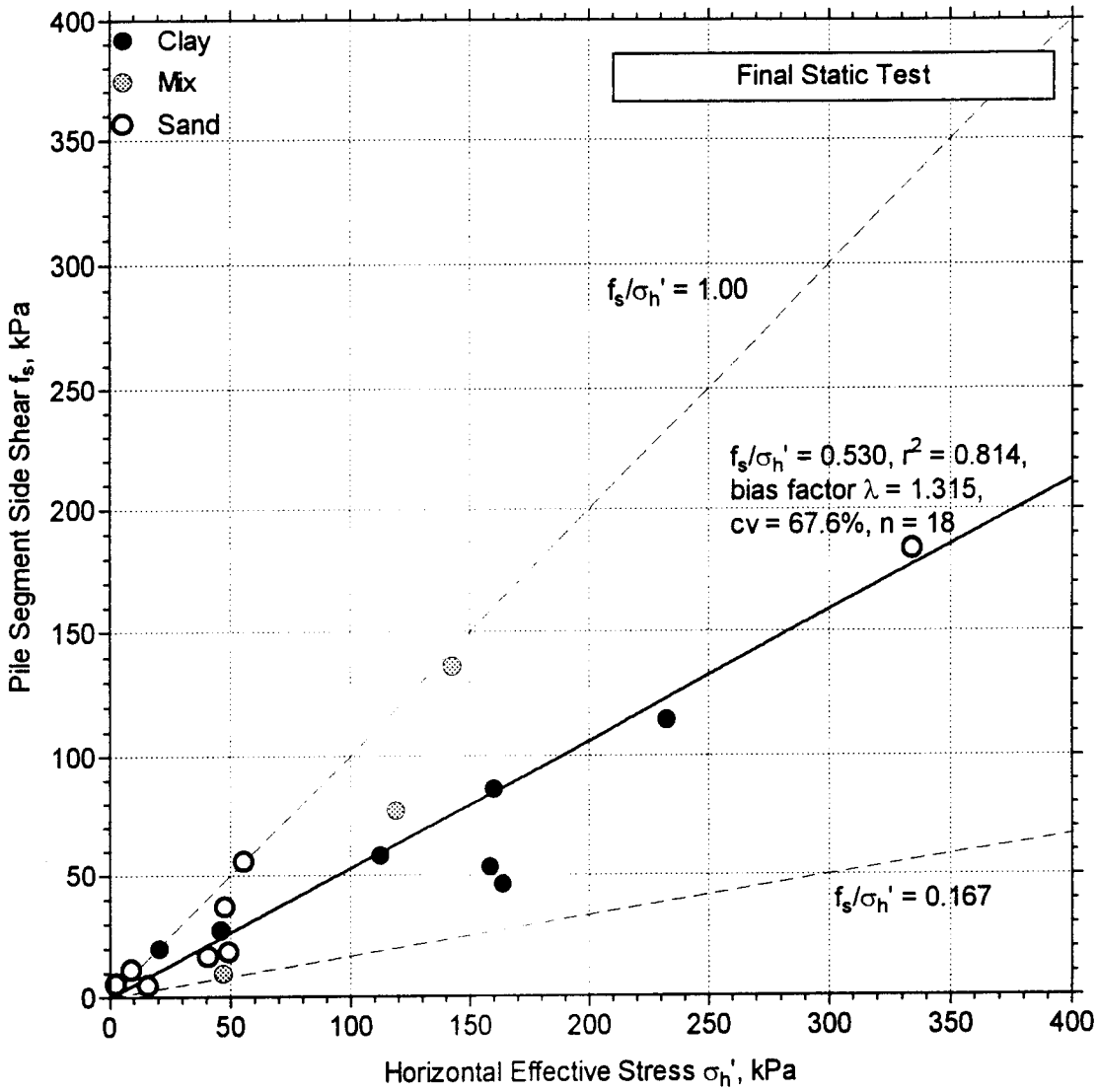

Figure 8.2 Effective Stress vs. Final Pile Segment Side Shear

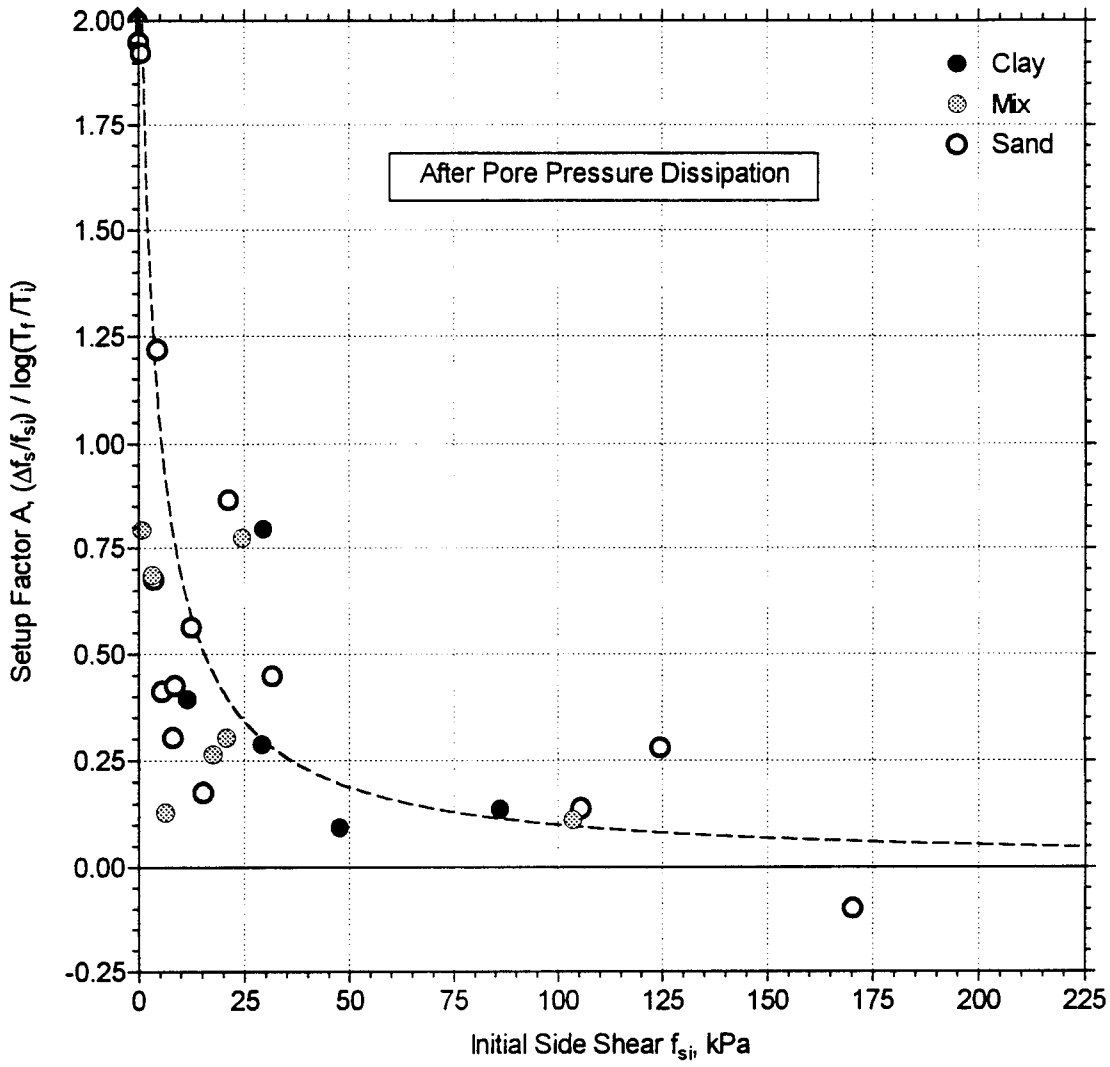

Figure 8.3 Post-Dissipation Setup Factor (Pile Segments Only)

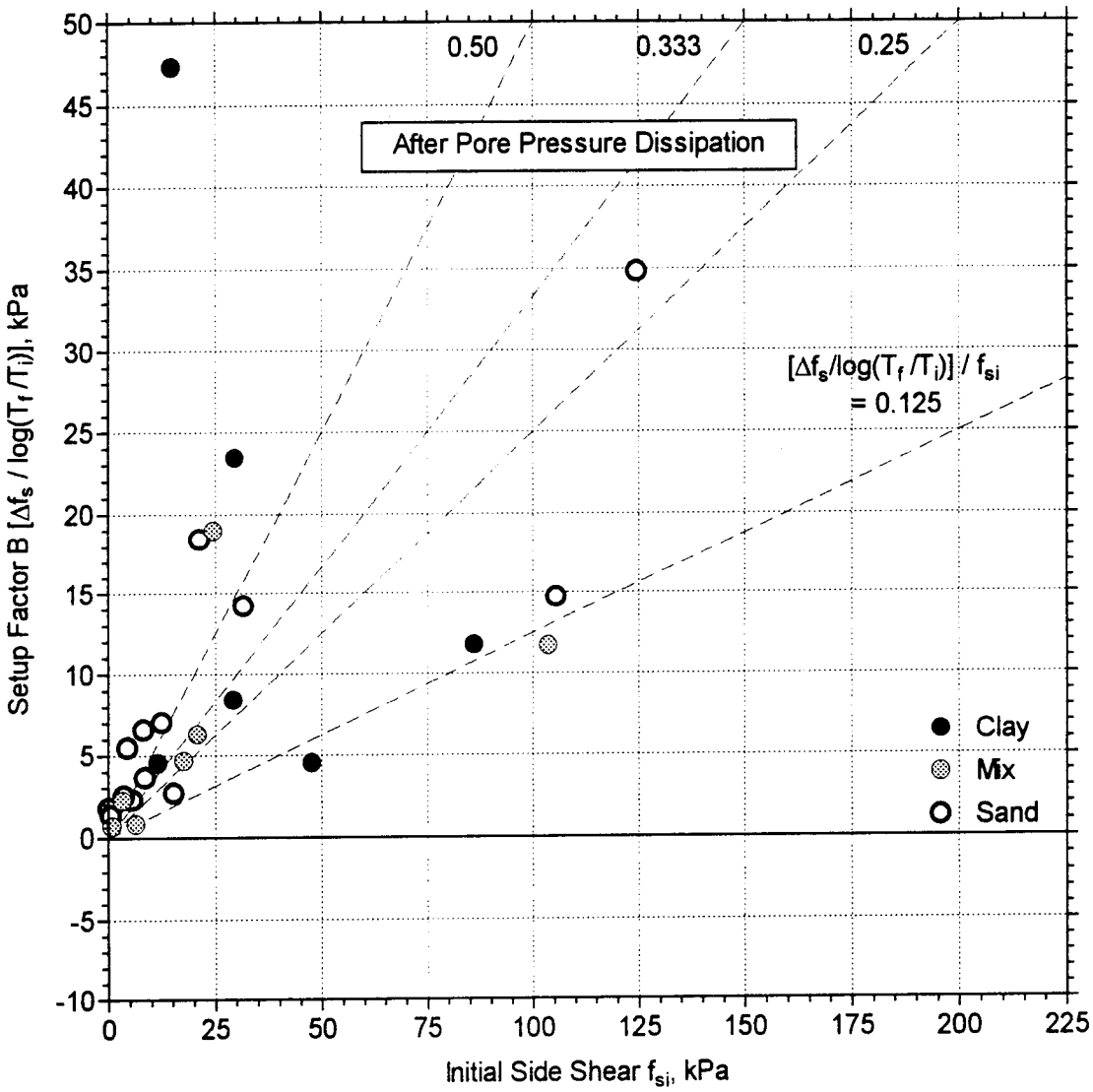

Figure 8.4 Post-Dissipation Time Rate of Shear Increase (Pile Segments Only)

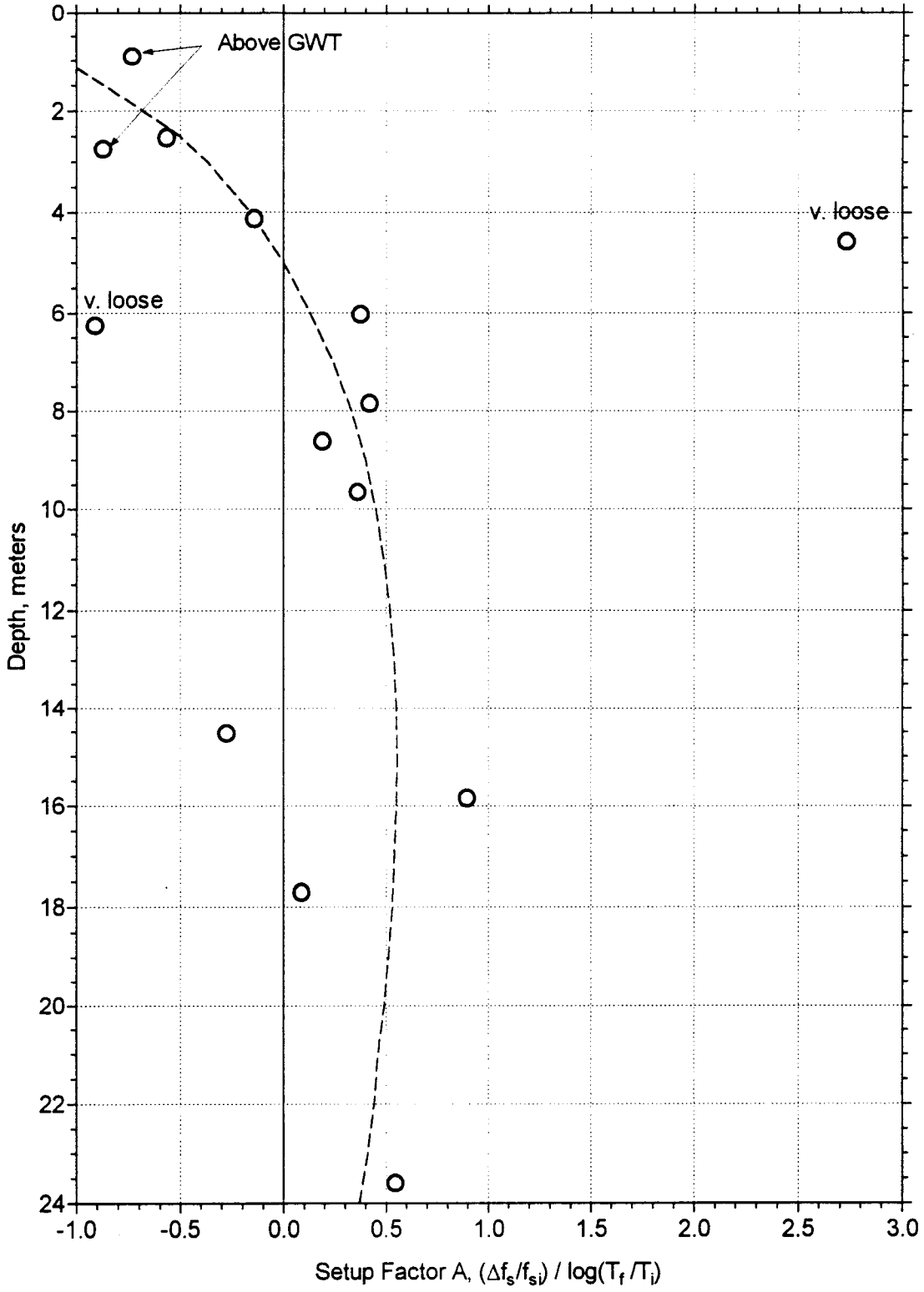

Figure 8.5 Depth Profile of Initial Setup Factor in Sands (Pile Segments Only)

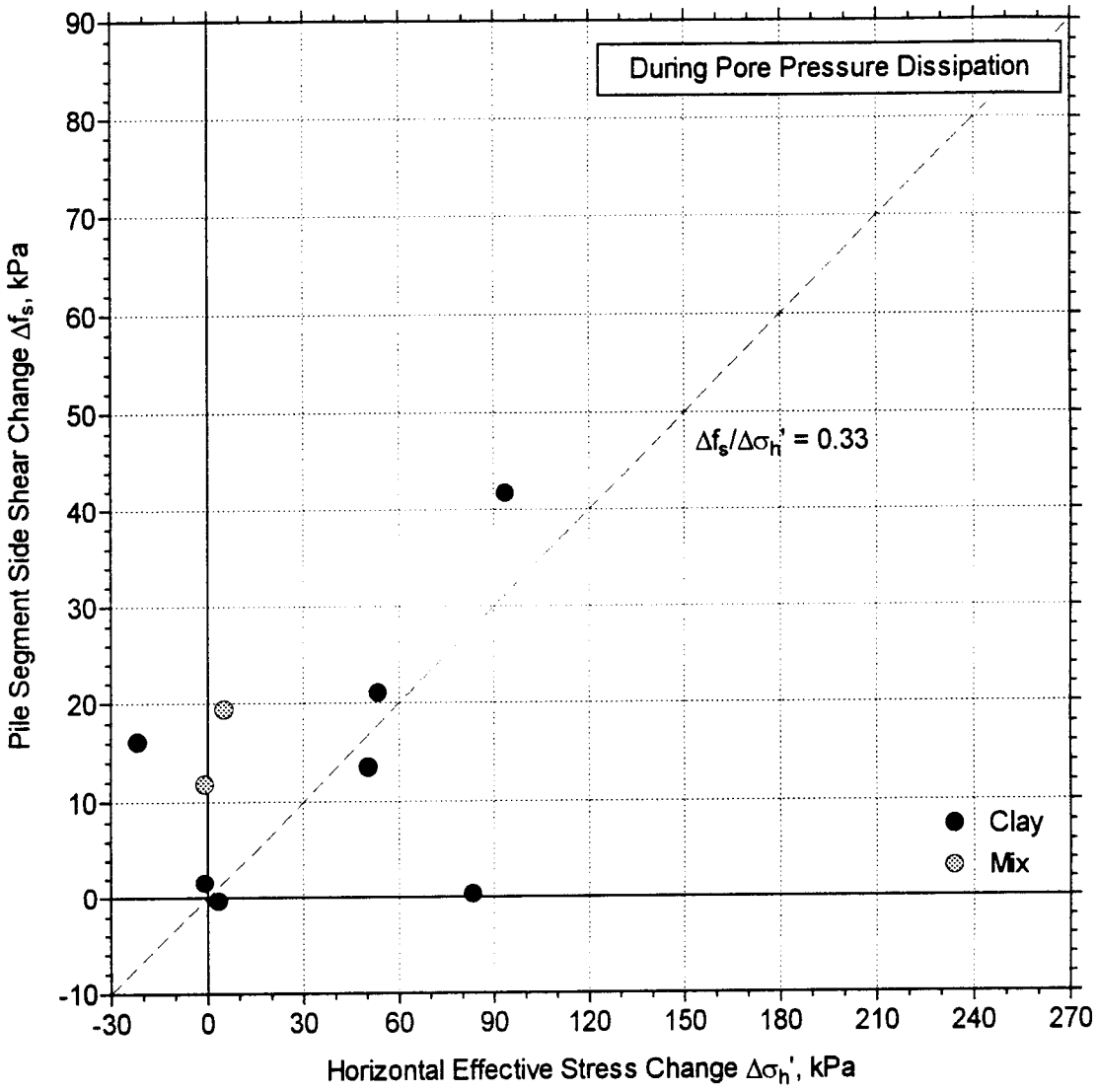

Figure 8.6 Pile Segment Side Shear Change During PP Dissipation

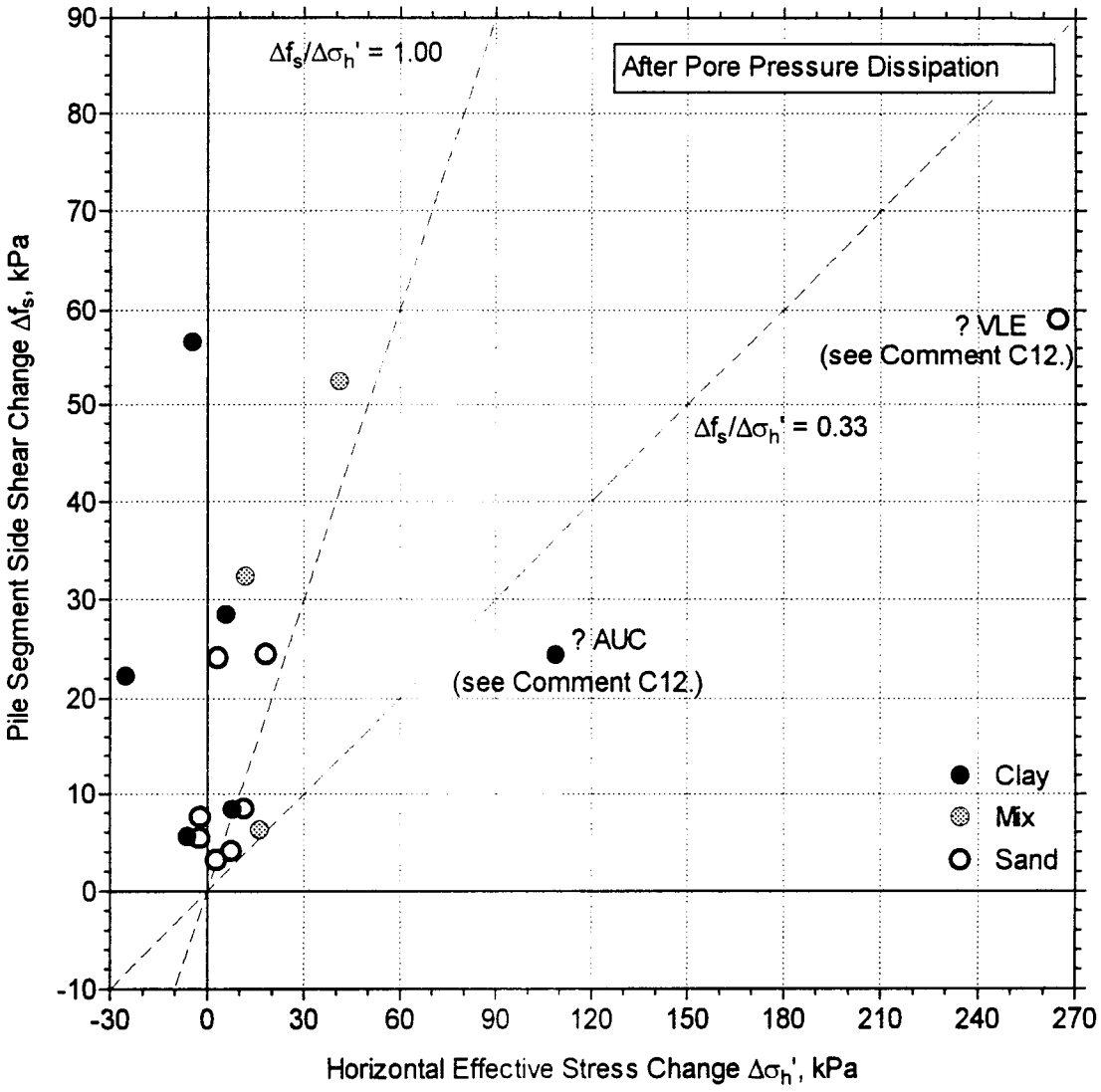

Figure 8.7 Pile Segment Side Shear Change After PP Dissipation

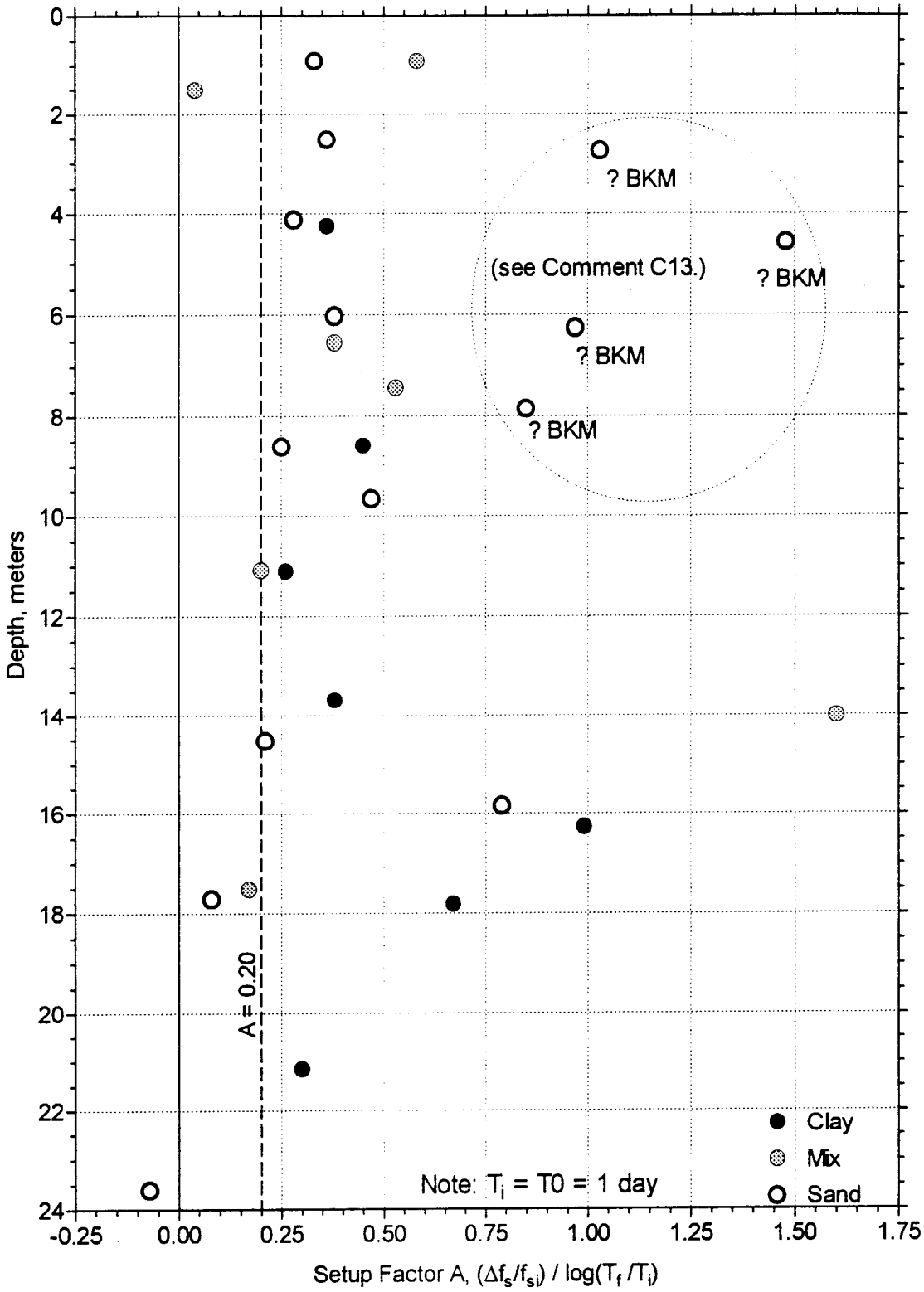

Figure 8.8 Depth Profile of Overall Setup Factor (Pile Segments Only)

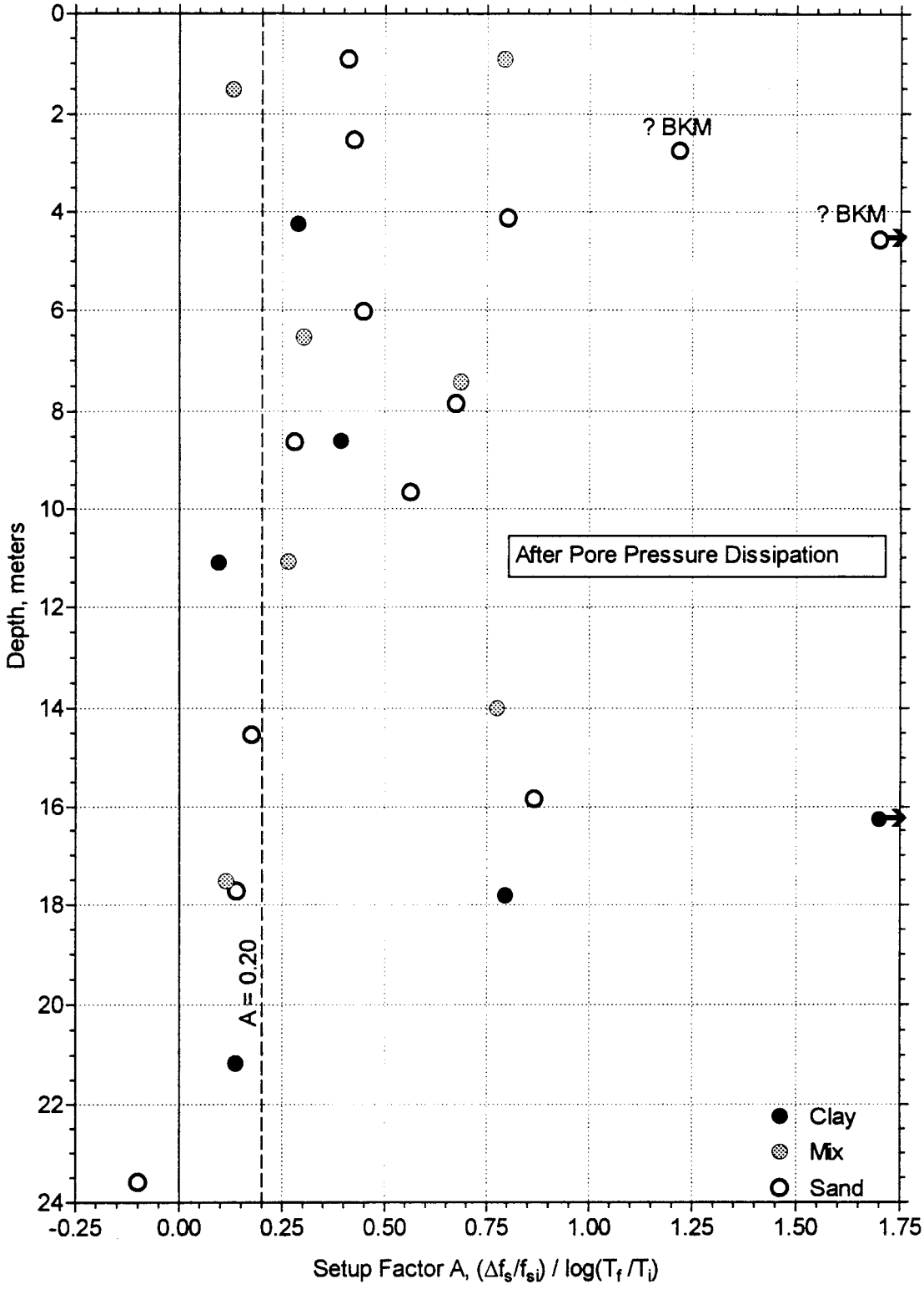

Figure 8.9 Depth Profile of Post-Dissipation Setup Factor (Pile Segments Only)

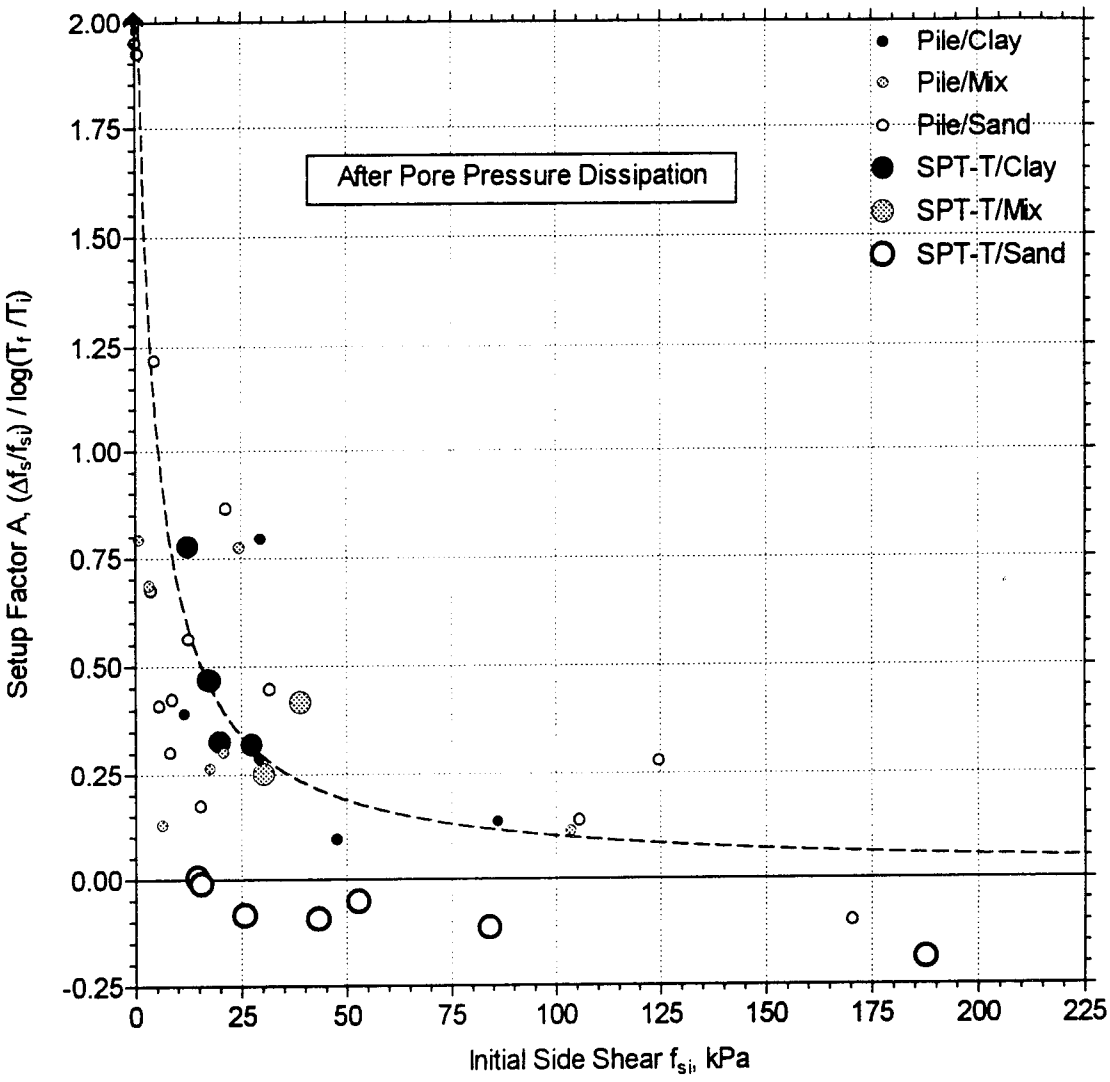

Figure 8.10 Post-Dissipation Setup Factor (Pile Segments and SPT-T)

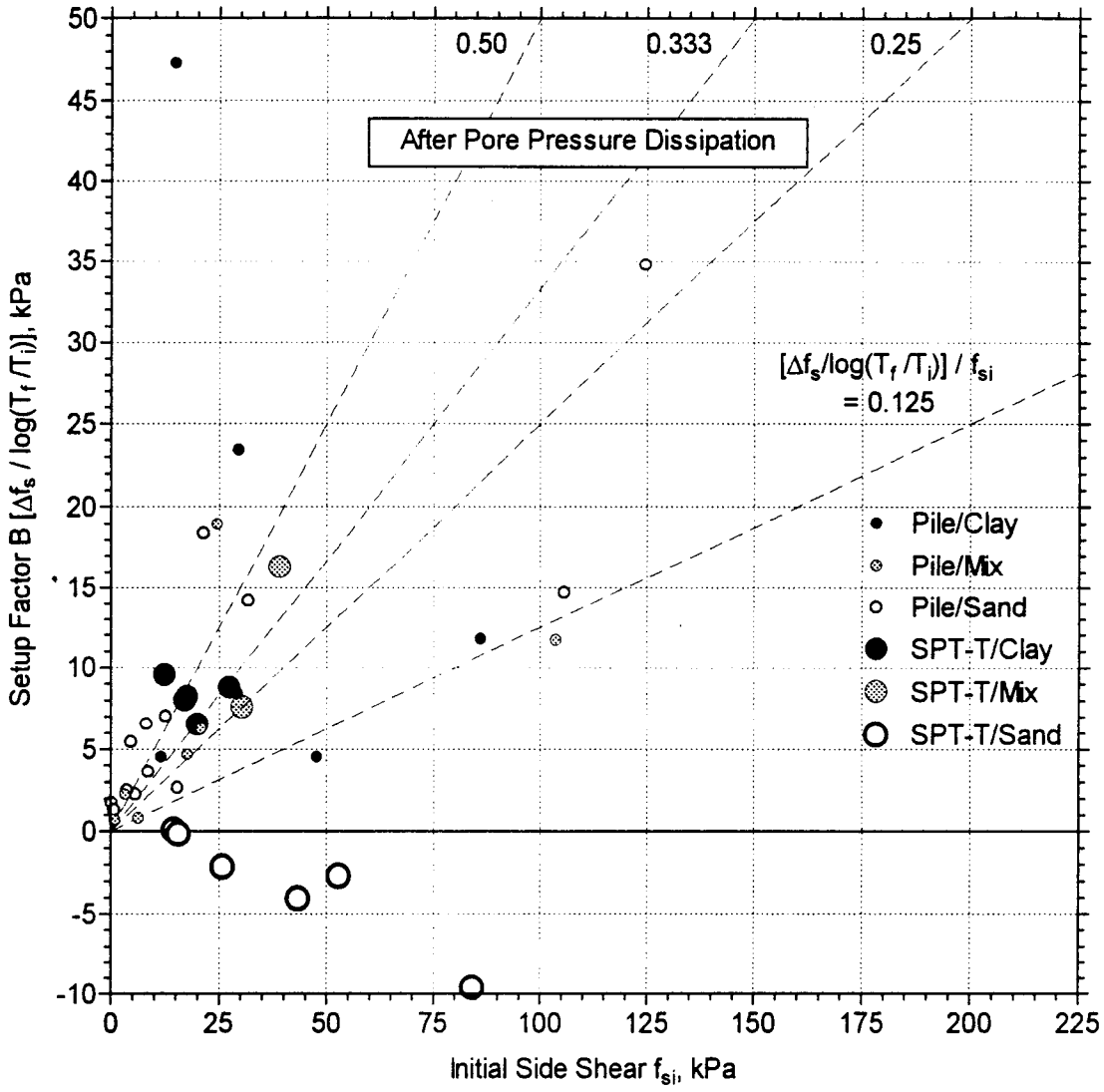

Figure 8.11 Post-Dissipation Time Rate of Shear Increase (Pile Segments and SPT-T)

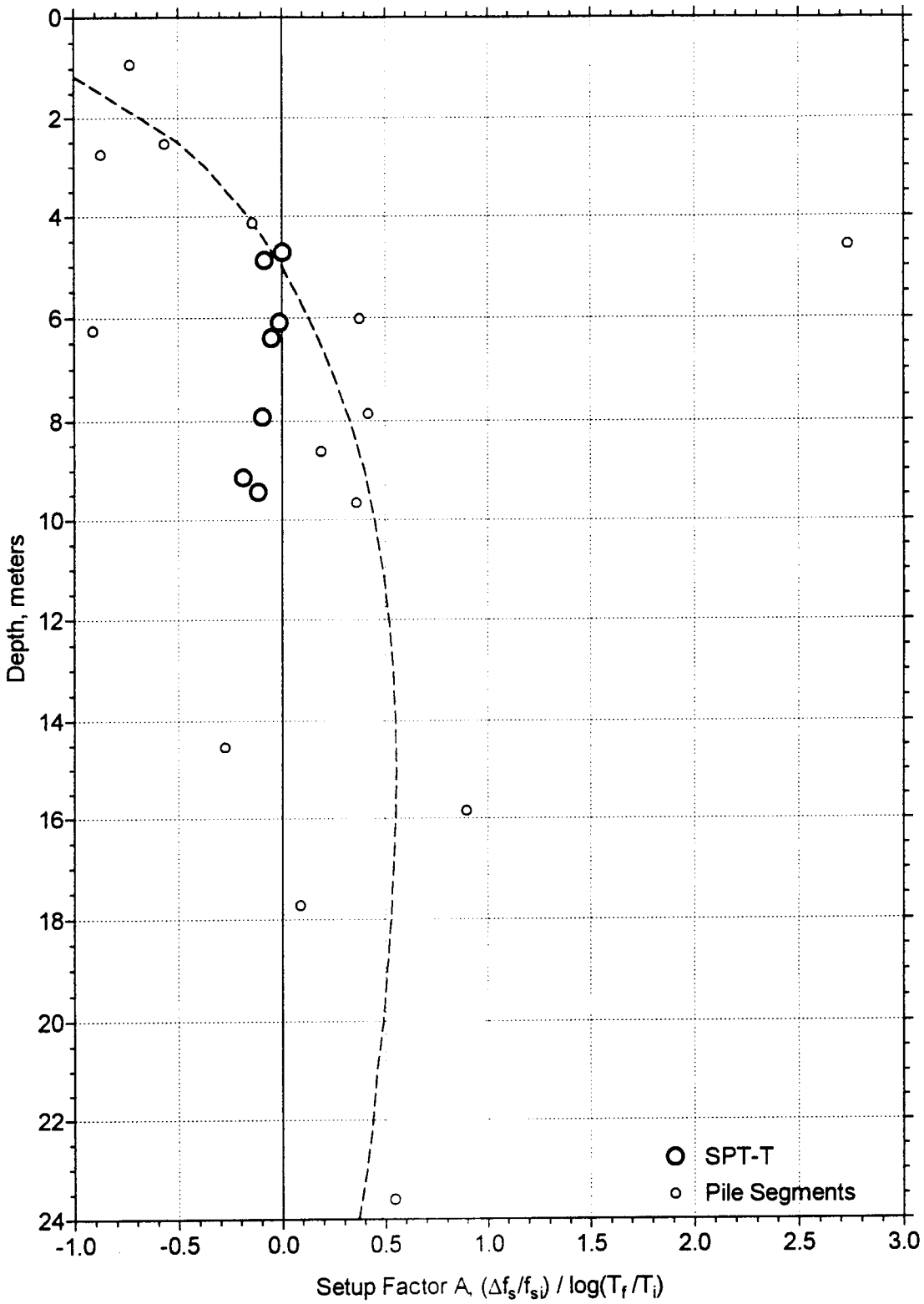

Figure 8.12 Depth Profile of Initial Setup Factor in Sands (Pile Segments and SPT-T)

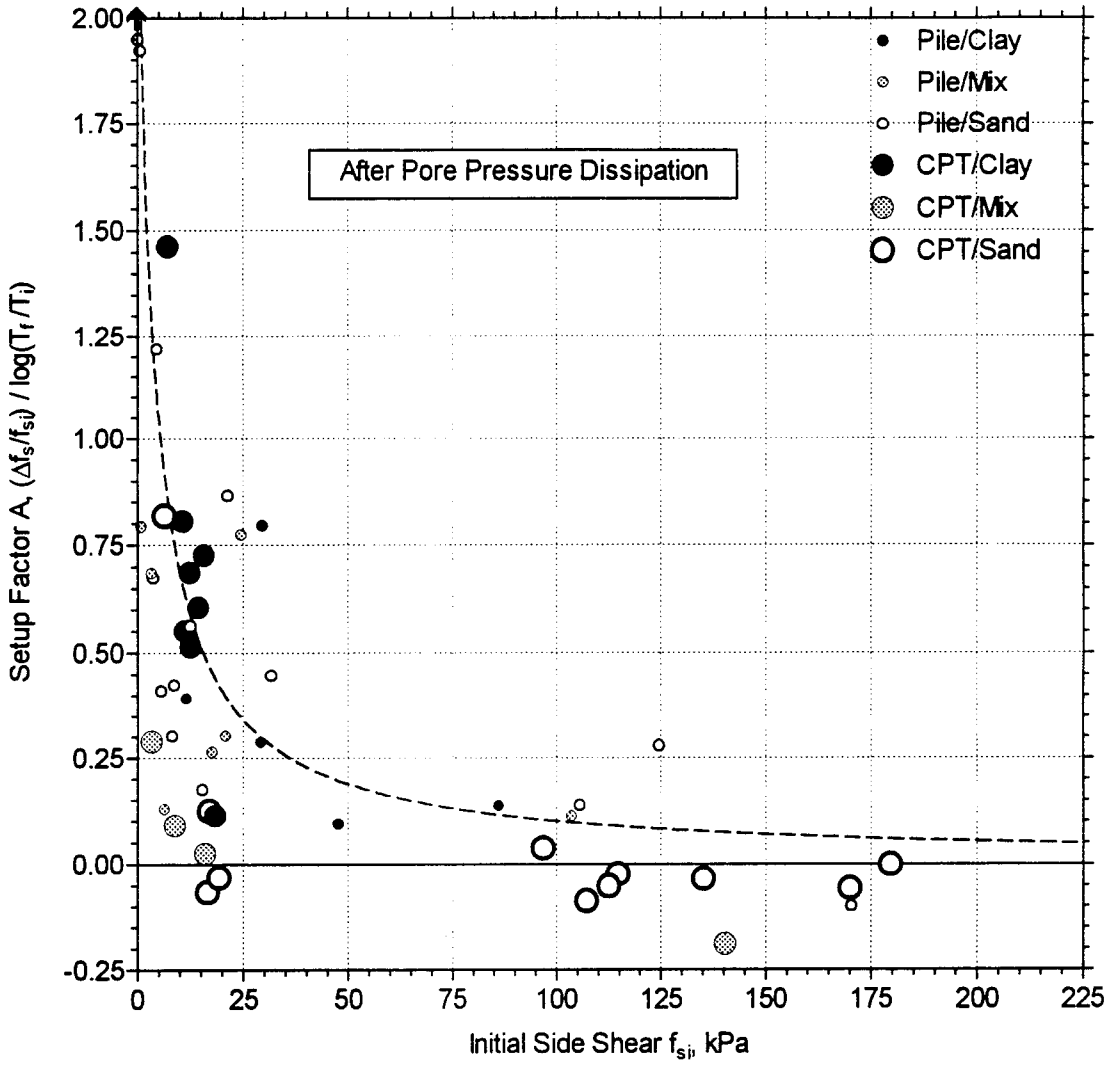

Figure 8.13 Post-Dissipation Setup Factor (Pile Segments and CPT)

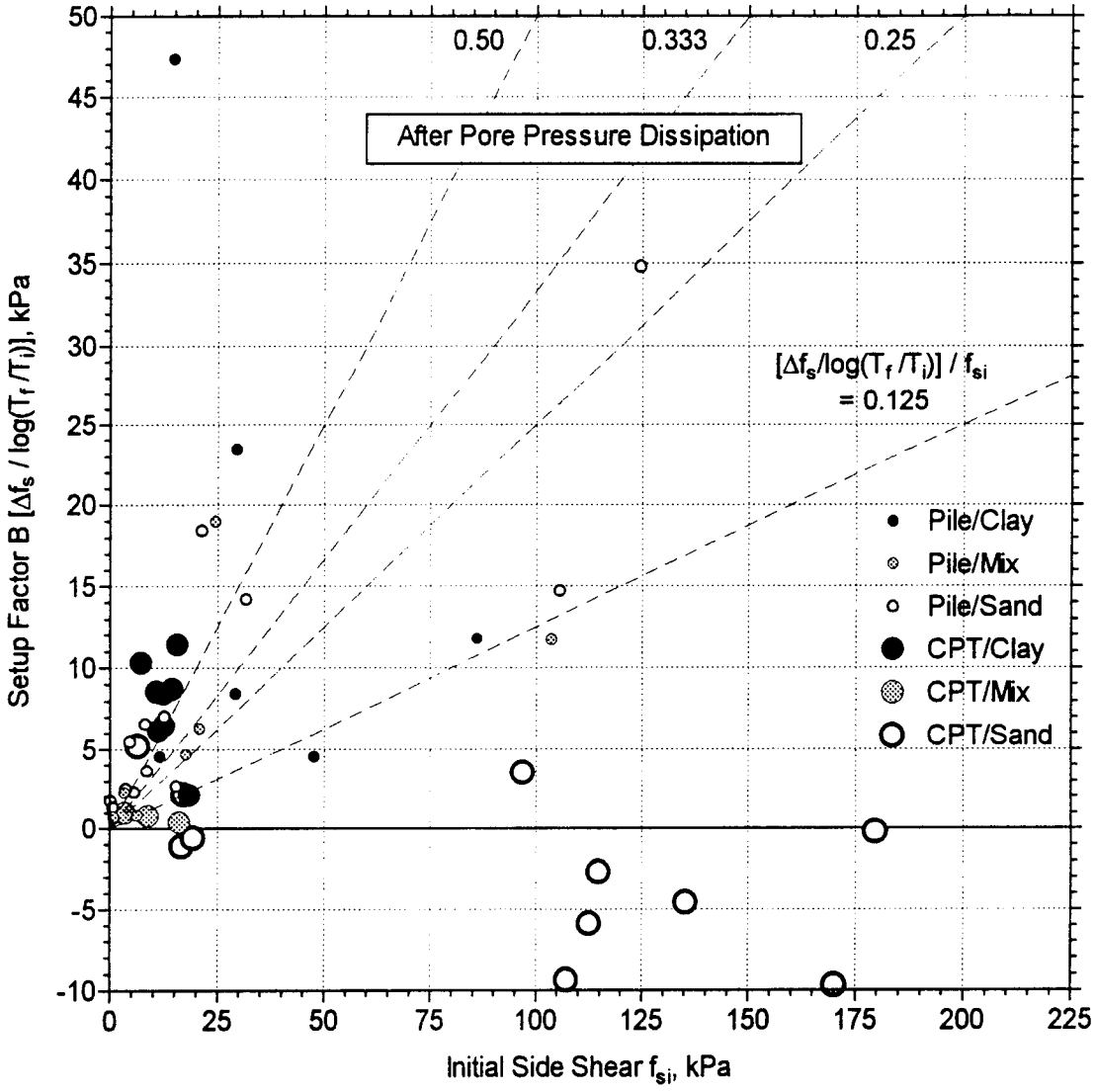

Figure 8.14 Post-Dissipation Time Rate of Shear Increase (Pile Segments and CPT)

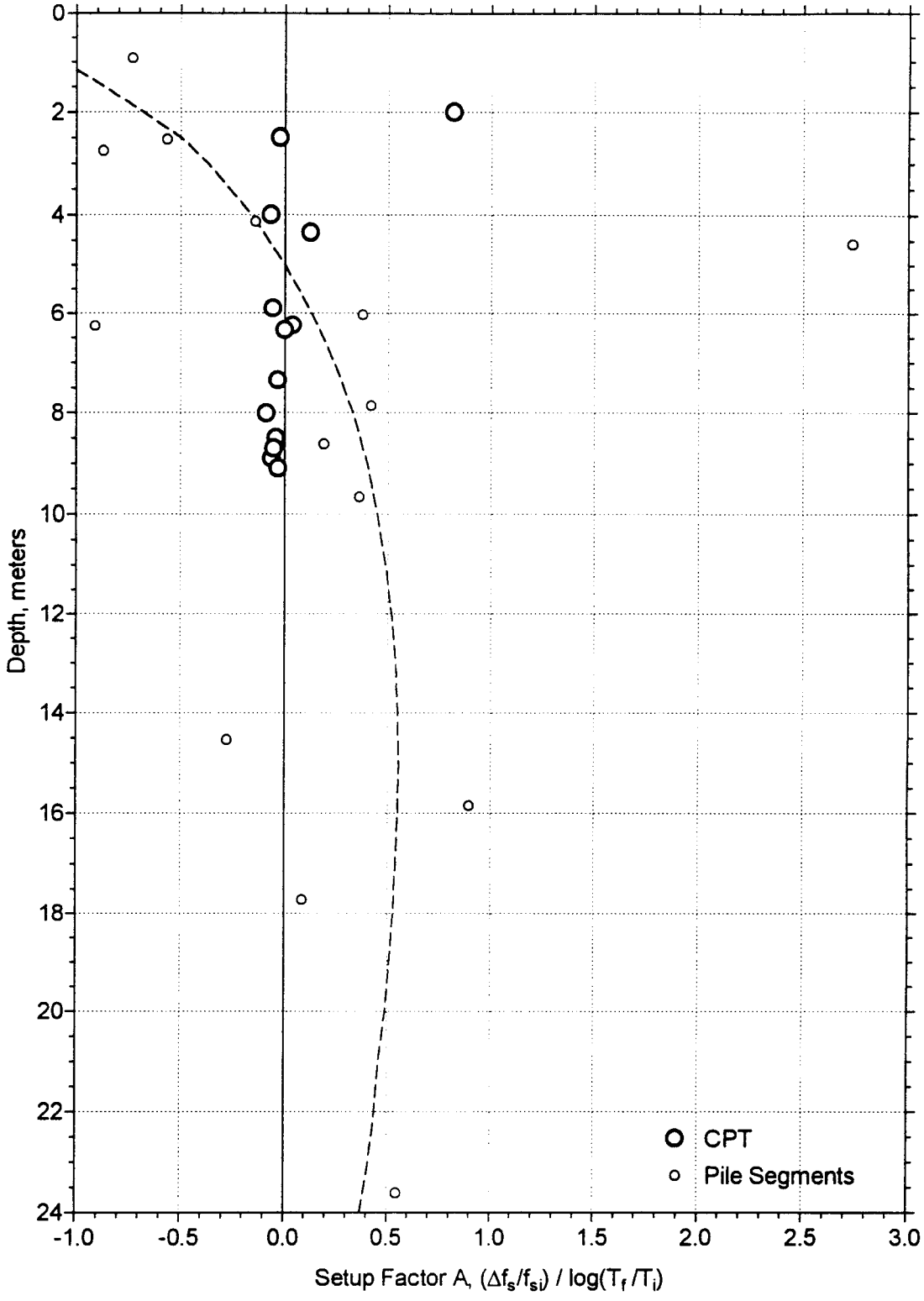

Figure 8.15 Depth Profile of Initial Setup Factor in Sands (Pile Segments and CPT)

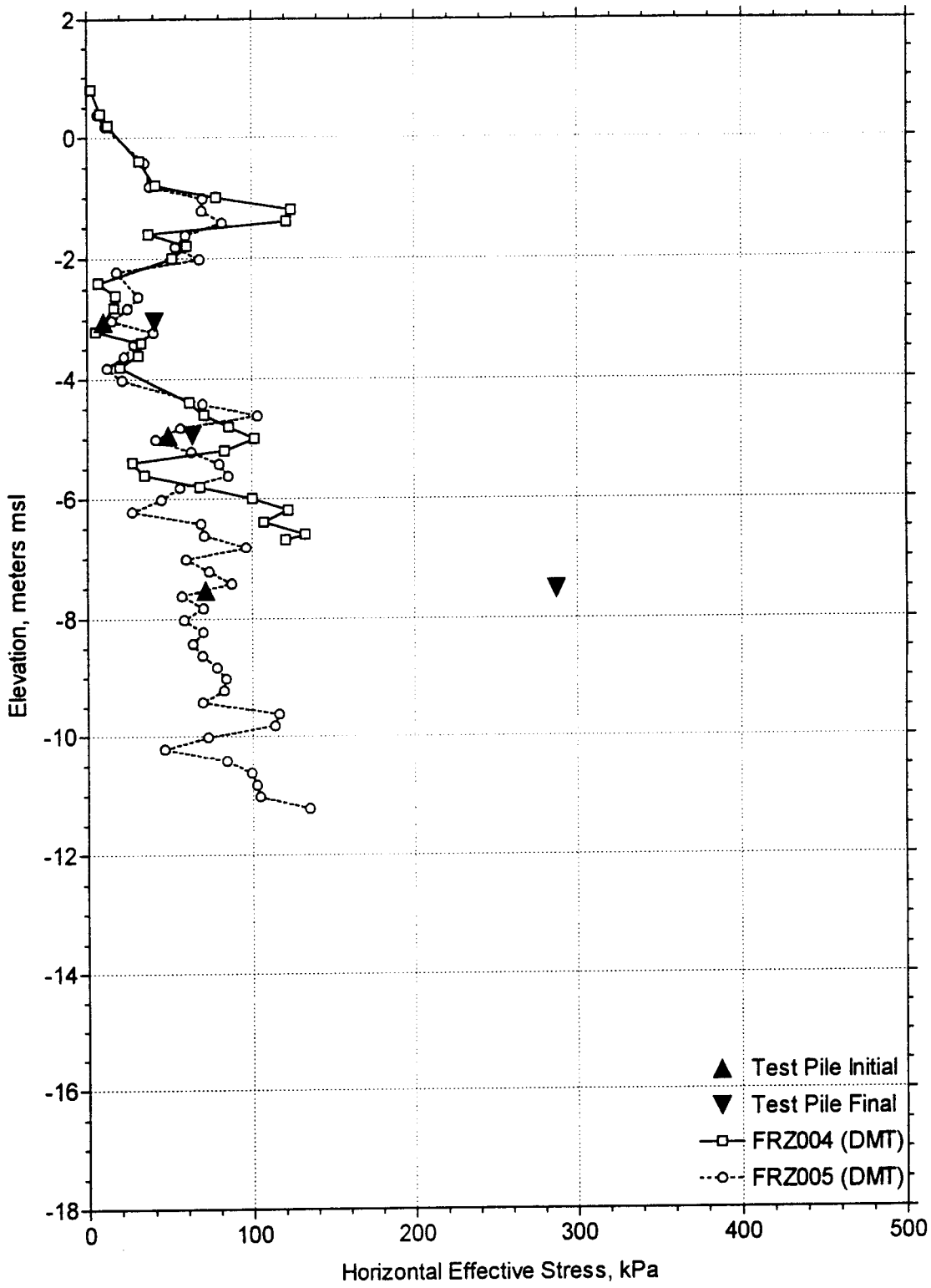

Figure 8.16 Horizontal Effective Stress Profile at Vilano East

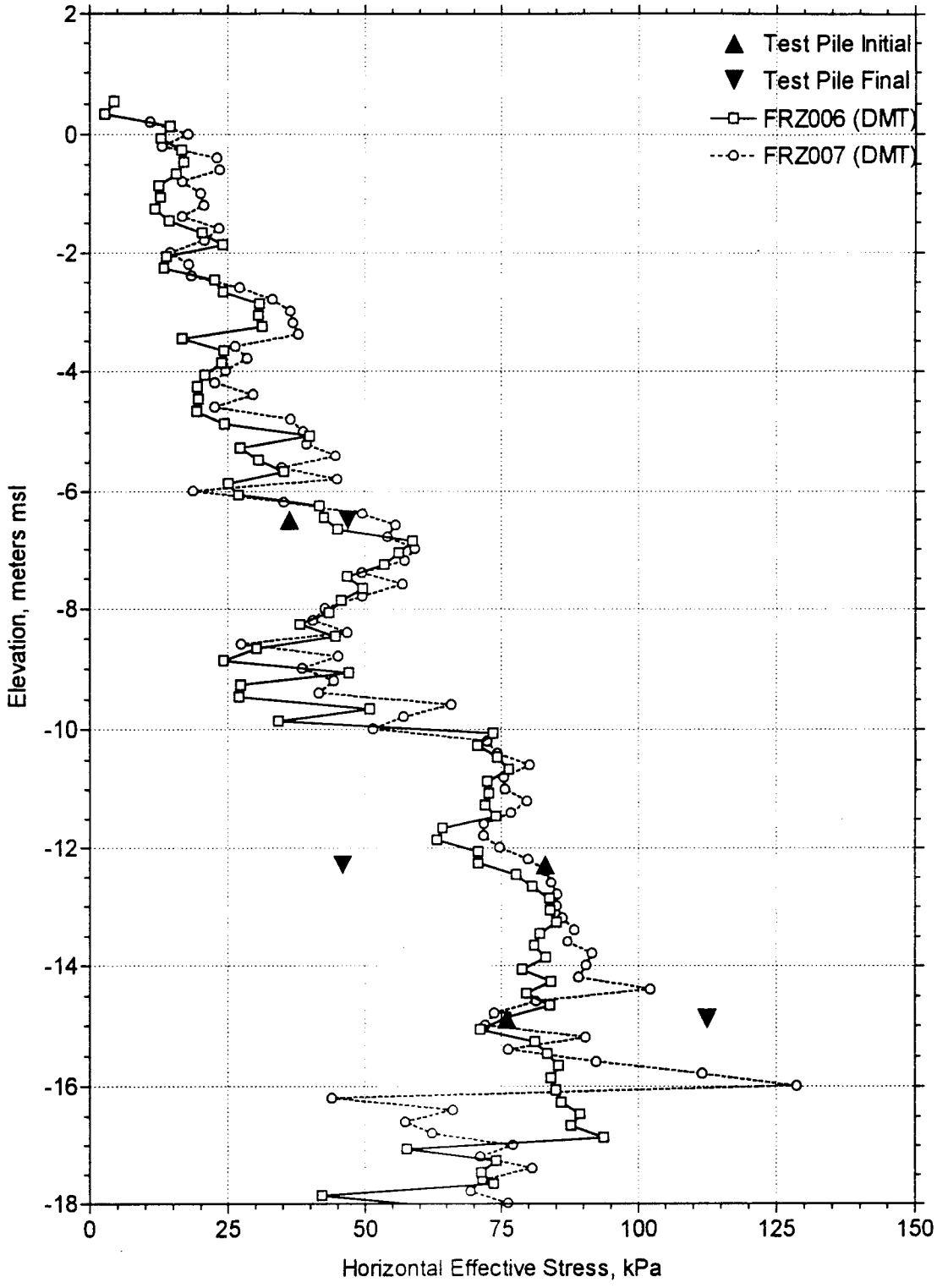

Figure 8.17 Horizontal Effective Stress Profile at Vilano West

CHAPTER 9
CONCLUSIONS AND RECOMMENDATIONS

9.1 Conclusions

The following conclusions are derived from the results of this research:

1. The centrifuge model testing did not accelerate pile setup/freeze in dry sands.

2. Five full-scale, 457 mm (18 inch) square FDOT prestressed concrete piles were successfully modified for the installation of an Osterberg cell at their tips and instrumentation including strain gages, piezometers and total pressure cells.

3. The research piles were successfully driven at five sites, in a variety of soils, and stage tested (25 tests total) to measure the setup in side shear capacity. The initial tests began as soon as practical after driving and the final tests were performed in the range from 77 to 1,727 days after driving.

4. The pile instrumentation generally performed well after driving and over the setup times investigated. With only a few exceptions, the data appeared reasonable and usable. Interpretation of the strain gage data provided a total of 28 pile segments for analysis of setup behavior.

5. The O-cell tests indicated a trend of the side shear capacity to increase approximately linearly with the log of elapsed time, both during and after the dissipation of any pore pressure developed as a result of the pile driving.

6. All the soils tested, ranging from shelly sands to clays, showed significant setup and all showed similar setup behavior over the range of depths investigated. The results herein suggest setup is not significantly dependent on soil type or depth. This is potentially very useful for design.

7. Setup before pore pressure dissipation showed some correlation with the horizontal effective stresses against the piles. Setup afterwards appeared mostly independent of effective stress, probably developing from some type of aging effect that increases the friction angle at the pile-soil interface.

8. It is useful, both for analysis and design, to define the setup potential using the Setup Factor A which is the change in capacity per log cycle of time normalized by the initial capacity. The value of A is specific to an assumed initial time and capacity (T0 and Q0).

9. It appears, for practical purposes, that the Setup Factor A is essentially the same both during and after pore pressure dissipation.

10. Investigation of the SPT-T, CPT and DMT as possible precursor tests for side shear setup in displacement piles showed the SPT-T with good potential in clays and mixed soils and the CPT with fair potential in clays. None of the tests worked in sands, at least not in the short term tested. Staged torque measurement with the SPT-T appears to offer a practical and accurate test in soils all but sands.

11. The horizontal effective stress against the pile at the end of driving can be used to predict its side shear capacity at that time. This stress is nearly the same as

the insitu horizontal effective stress predicted by the DMT (at least for the two Vilano sites).

12. The side shear from dynamic tests during pile set checks and redrives produced Setup Factors (A) similar to those found from subsequent static testing research. Dynamic testing may be used to predict the Setup Factor A.

9.2 Recommendations

Recommendations for application of the results of this research and for additional research are as follows:

1. This research project did not check the possibly important effects of the stage testing on setup, either for the piles or for the precursor tests. Practical use of the research findings should be delayed until these effects are investigated. The SPT-T is recommended as a practical test method for checking stage test effects on setup in cohesive soils.

2. Standardize the calculation of the Setup Factor A to use an initial time (T0) of one day. When possible, report Setup Factors by soil type and for side shear only.

3. In the absence of any precursor tests, this research indicates the conservative design use of a Setup Factor A = 0.20 for all pile lengths and in all soils in north Florida generally similar to those tested at the five test sites (but with the caveat in 1. above). To use this method, first calculate a design capacity (Q) and assign it to a particular time (T), then use A = 0.20 to find the initial capacity (Q0) at an initial time T0 = 1 day, and lastly use A = 0.20 again to calculate the

final design capacity at a time no greater than when the structure will be put into service. (The amount of setup time already included in particular design capacity methods was not addressed by this research.)

4. When feasible, use pile set checks and redrives to assess and confirm setup design assumptions during the test pile phase of construction projects.

5. Perform additional DMT and staged SPT-T tests at the Seabreeze and Aucilla sites to confirm the observations in conclusions 10. and 11. above.

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Chow, F.C., Jardine, R.J., Brucy, F., and Nauroy, J.F. (1998). "Effects of time on capacity of pipe piles in dense marine sand." *Journal of Geotechnical and Geoenvironmental Engineering*. ASCE, Reston, VA, 124(3), 254-264.

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APPENDIX A
TEST PILE SOIL INFORMATION (PRELIMINARY)

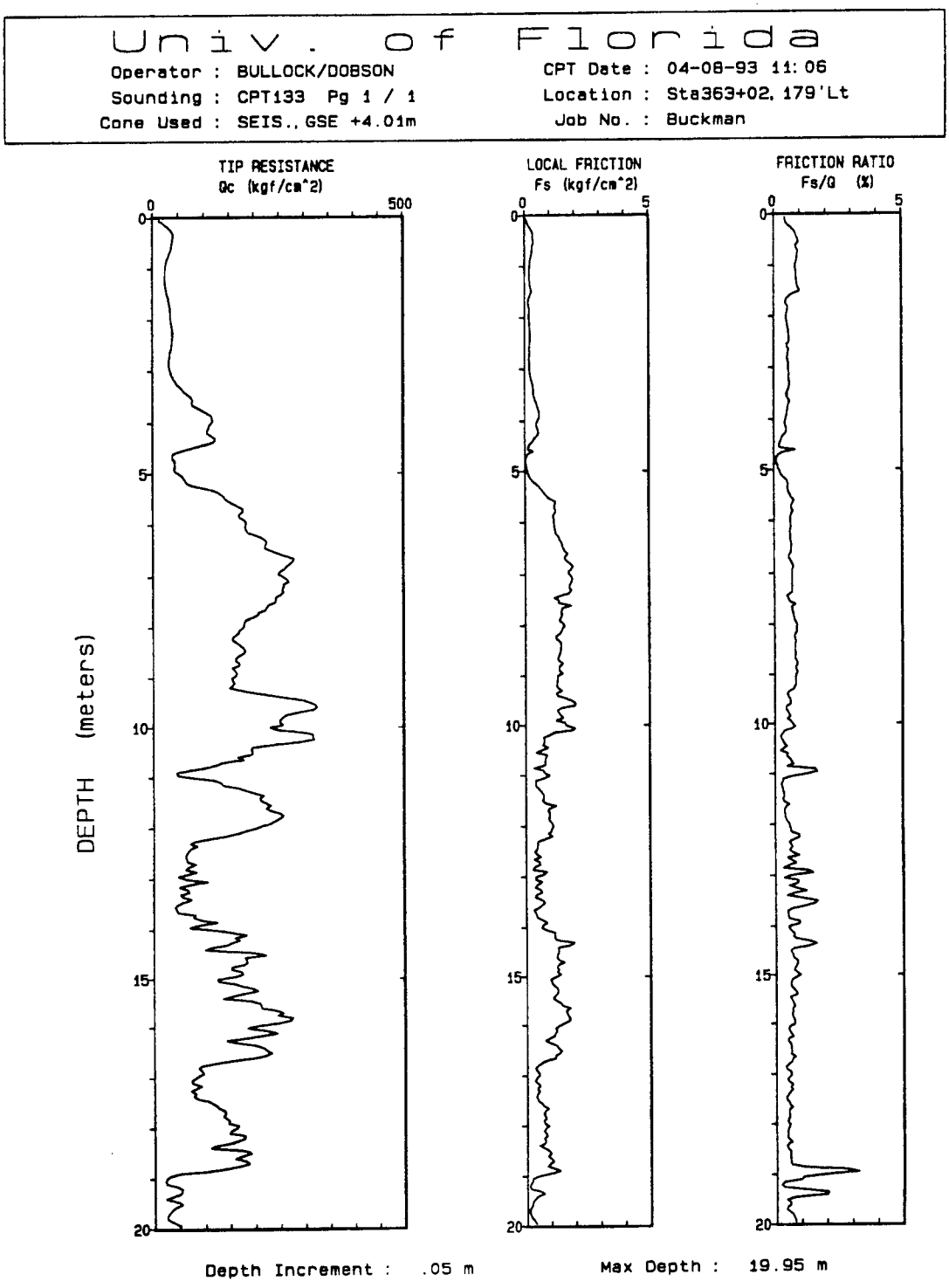


Figure A.1 CPT 133 at Buckman

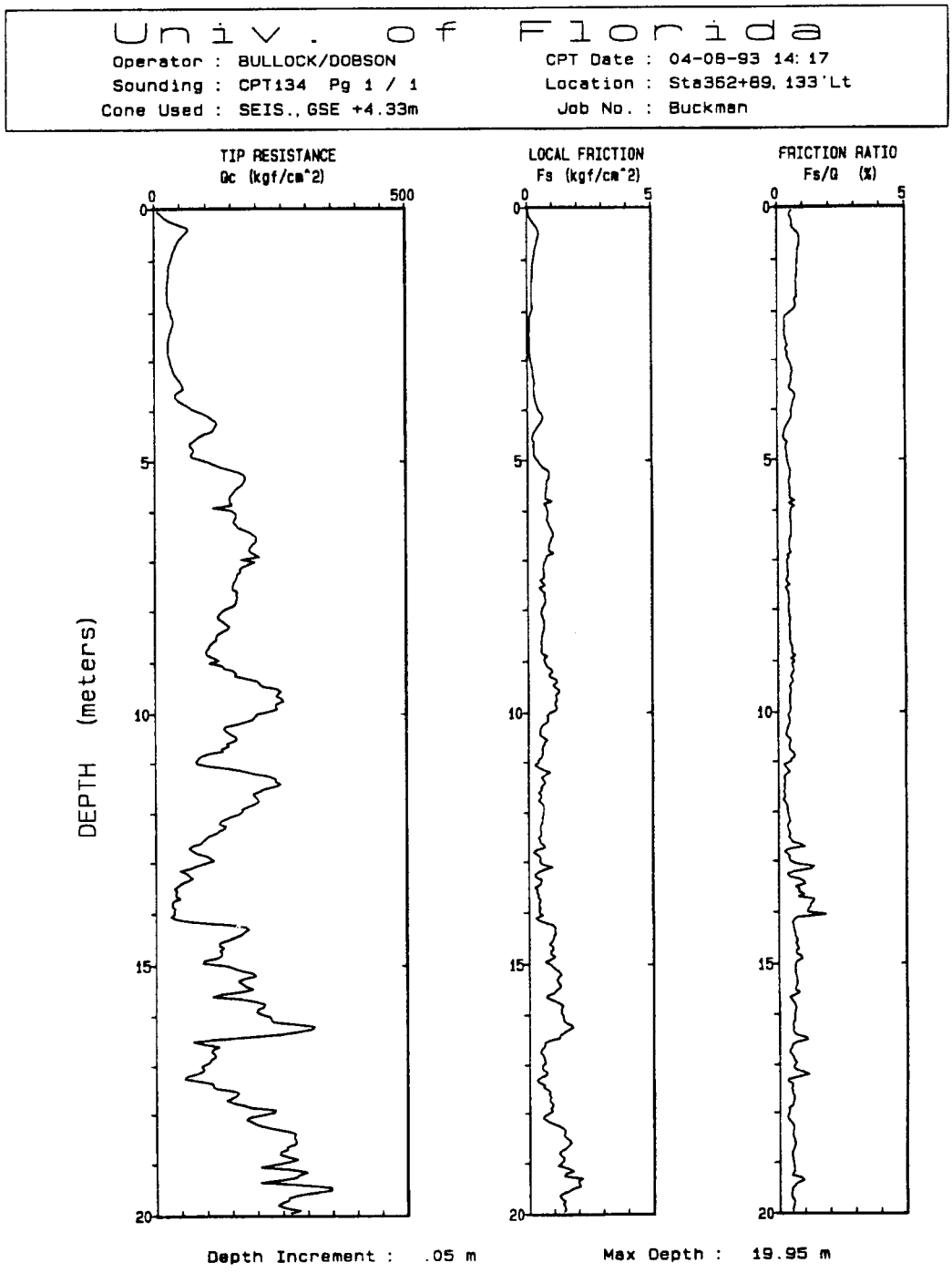
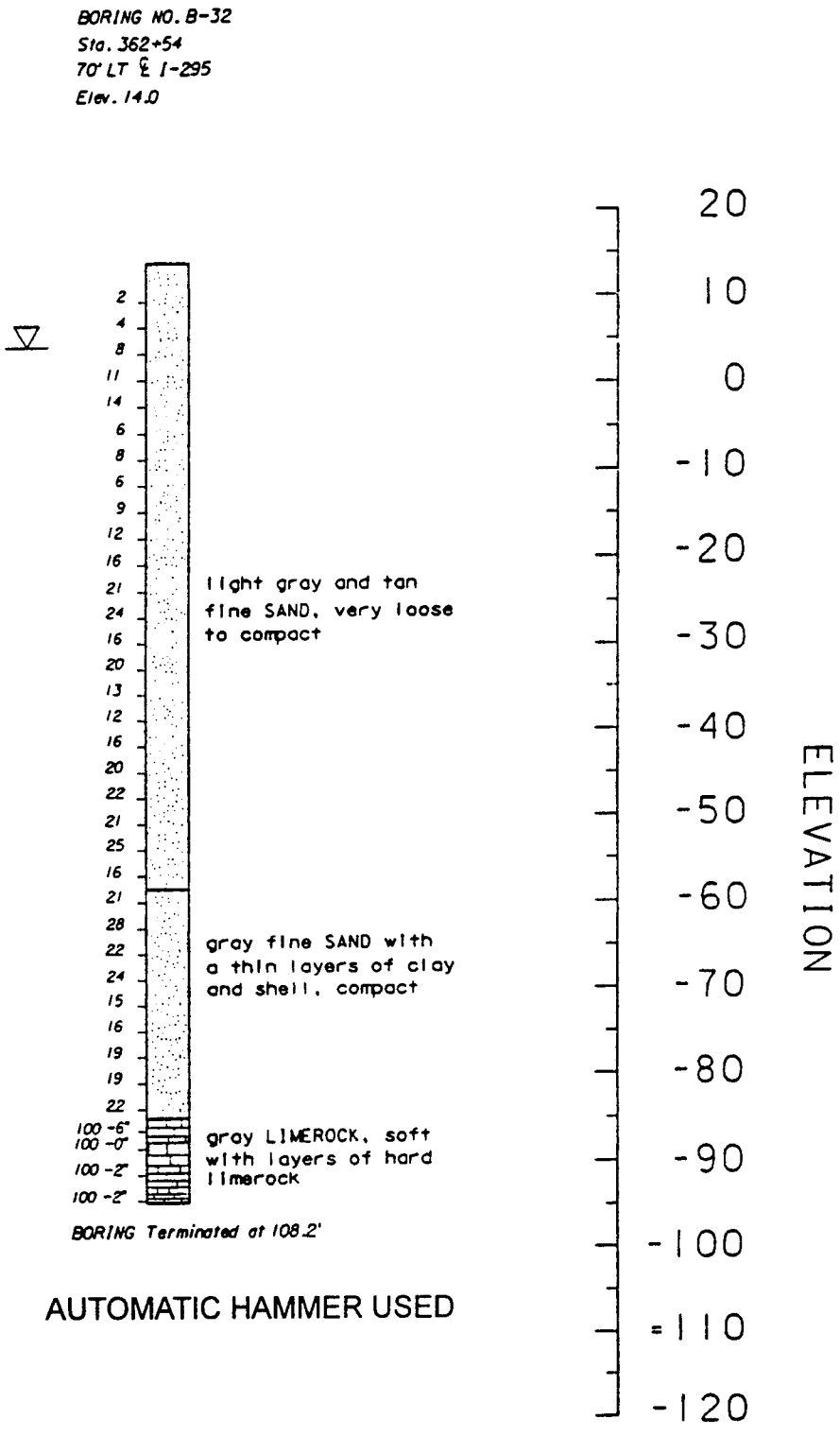


Figure A.2 CPT 134 at Buckman



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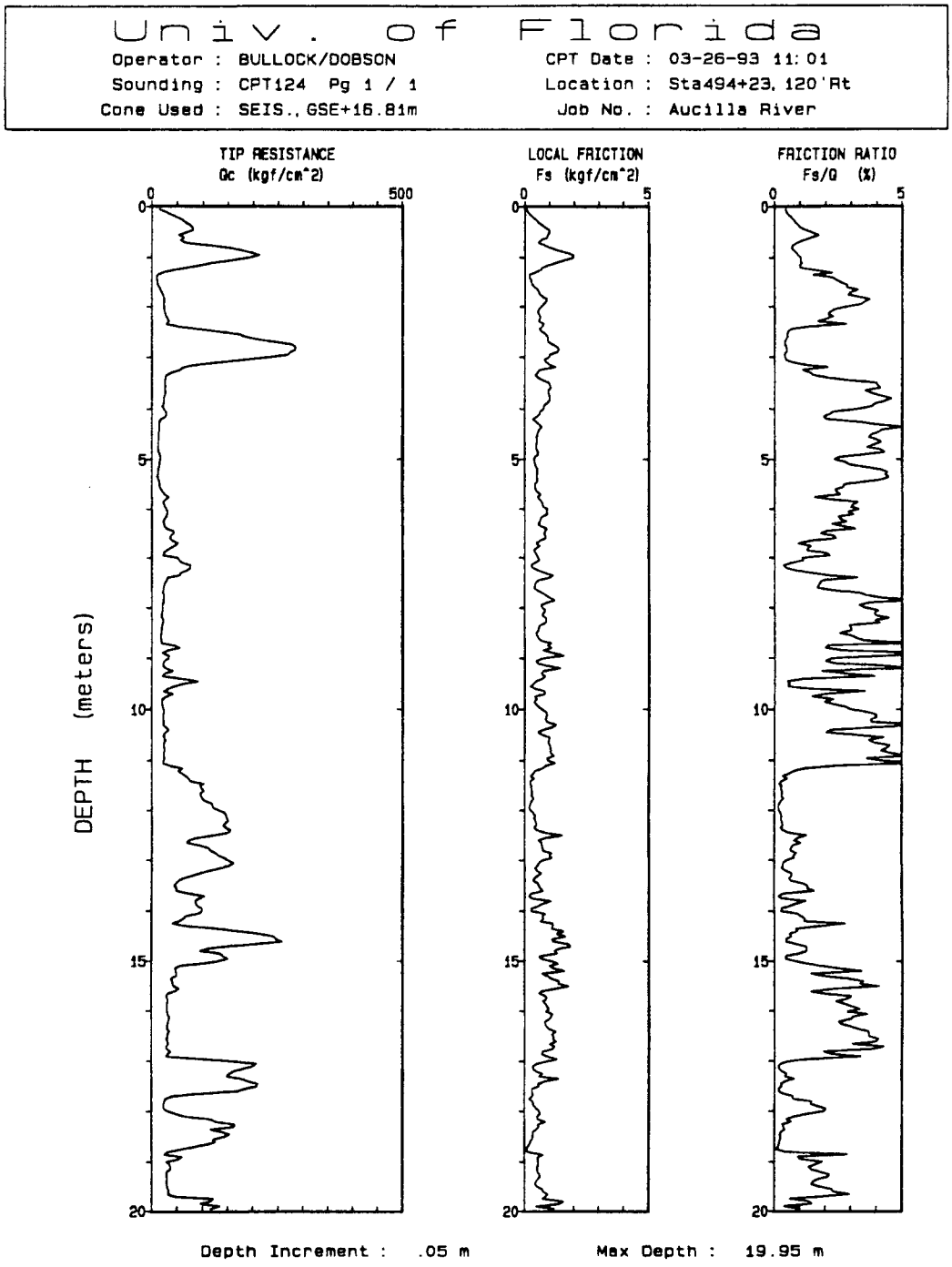


Figure A.4 CPT 124 at Aucilla River

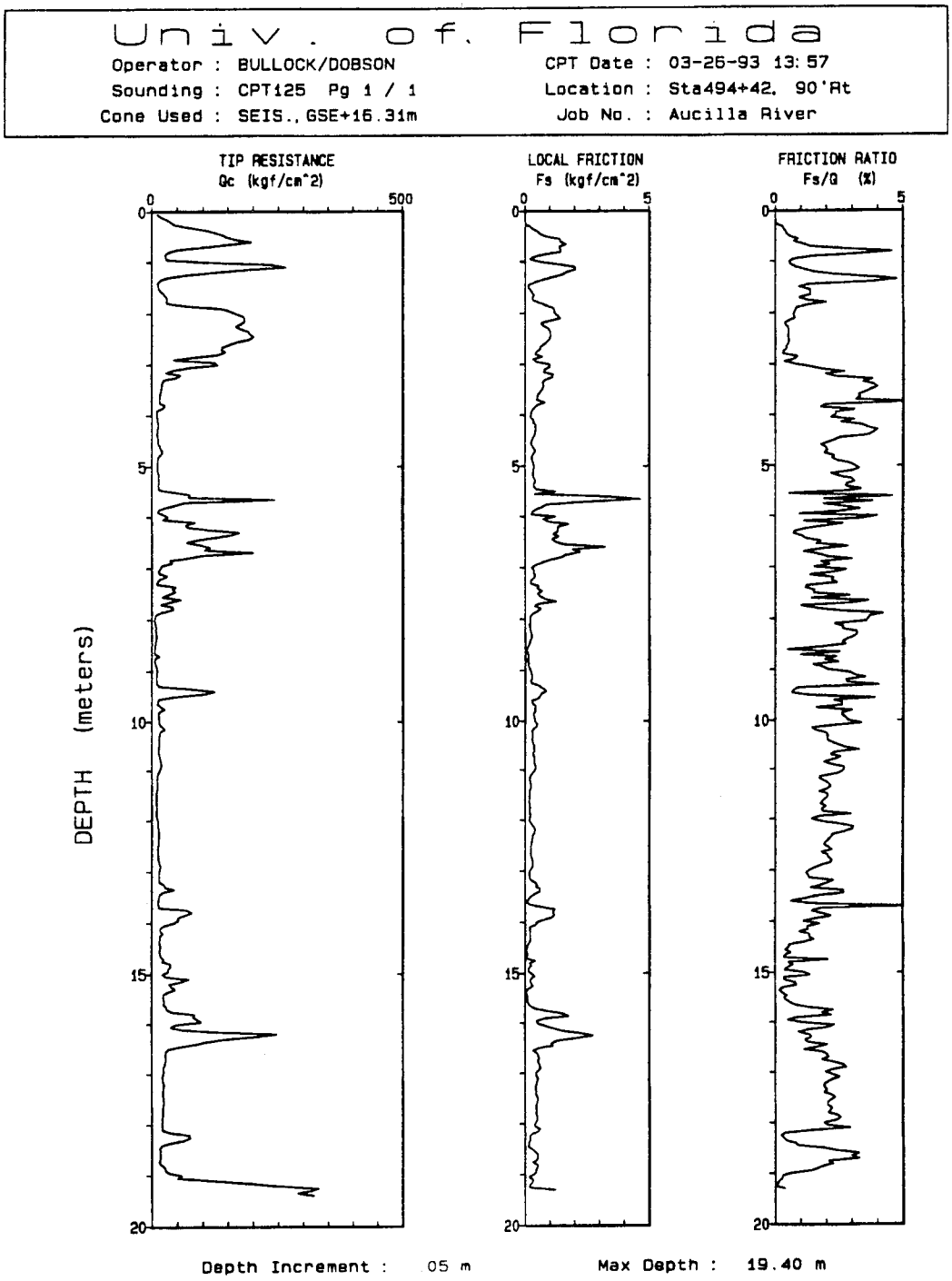


Figure A.5 CPT 125 at Aucilla River

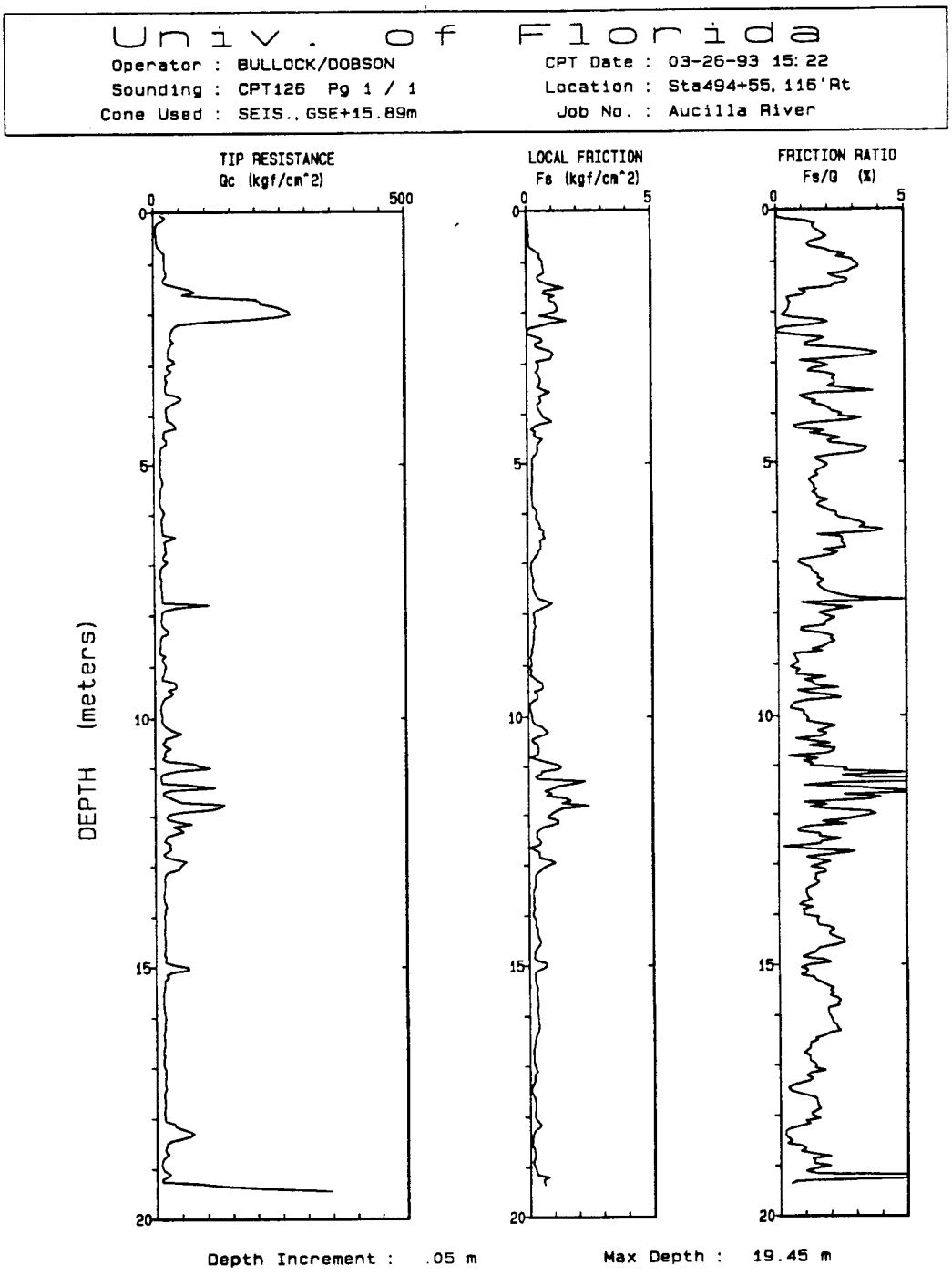


Figure A.6 CPT 126 at Aucilla River

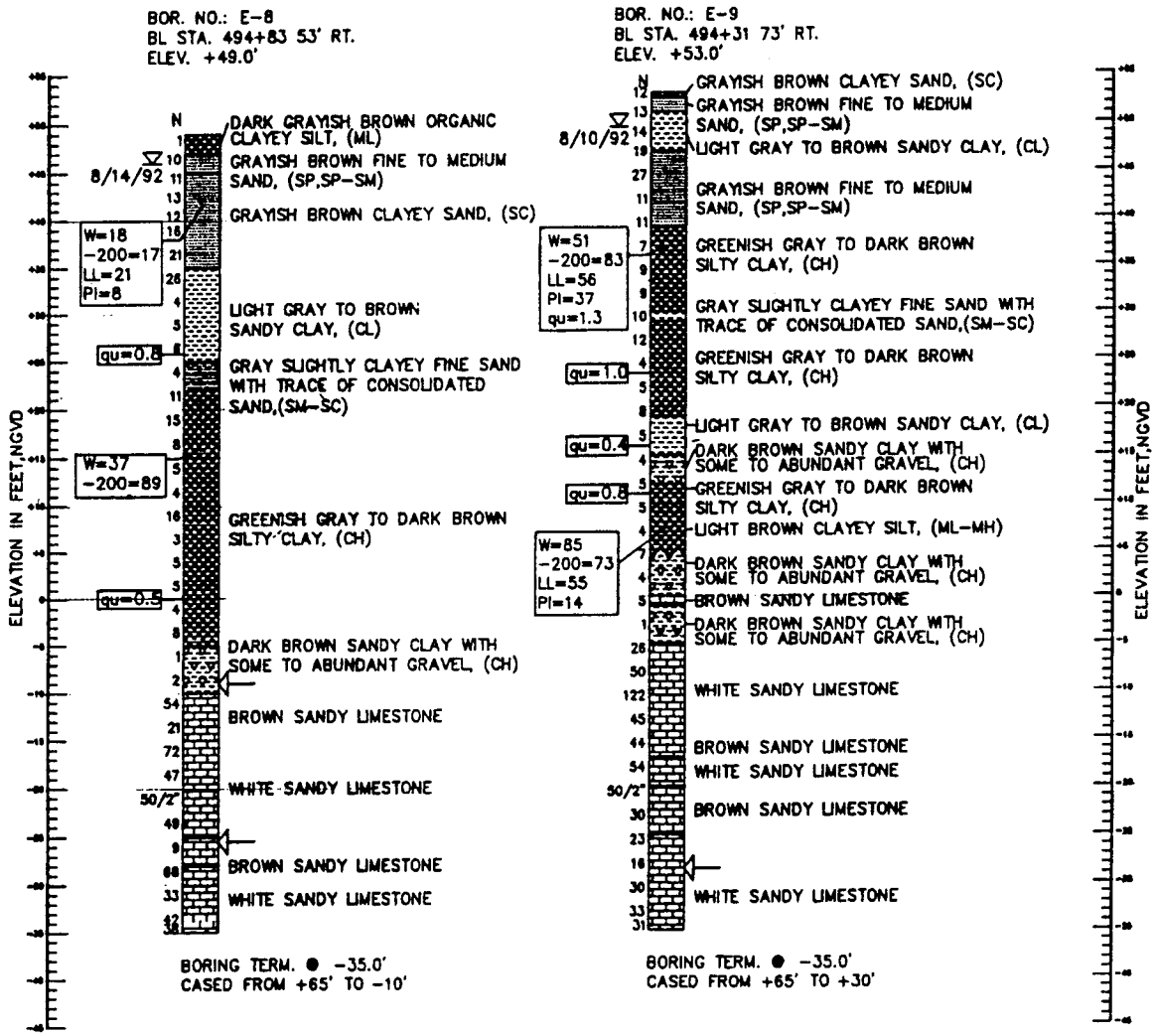


Figure A.7 SPT E8 and E9 at Aucilla River

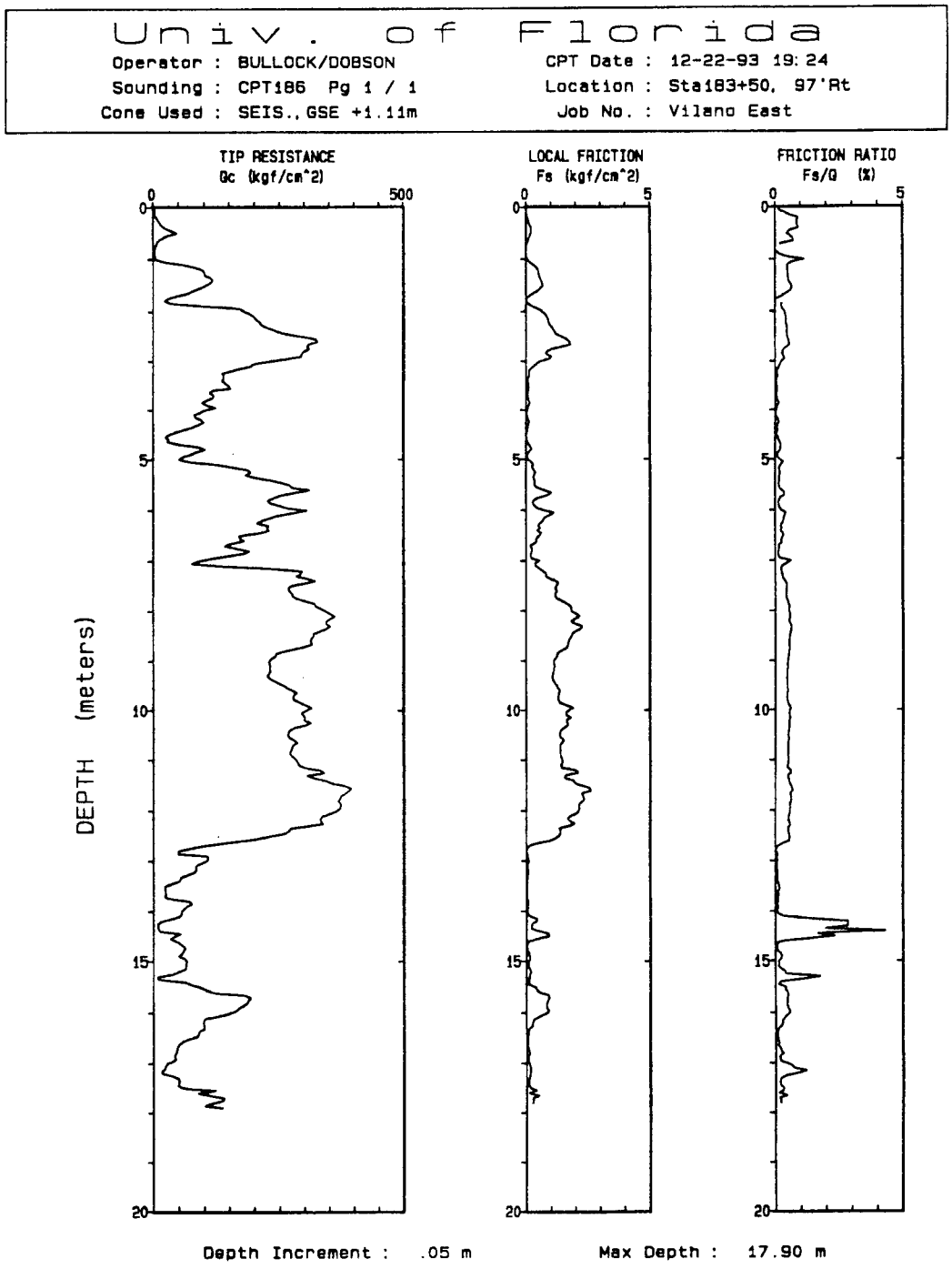


Figure A.8 CPT 186 at Vilano East

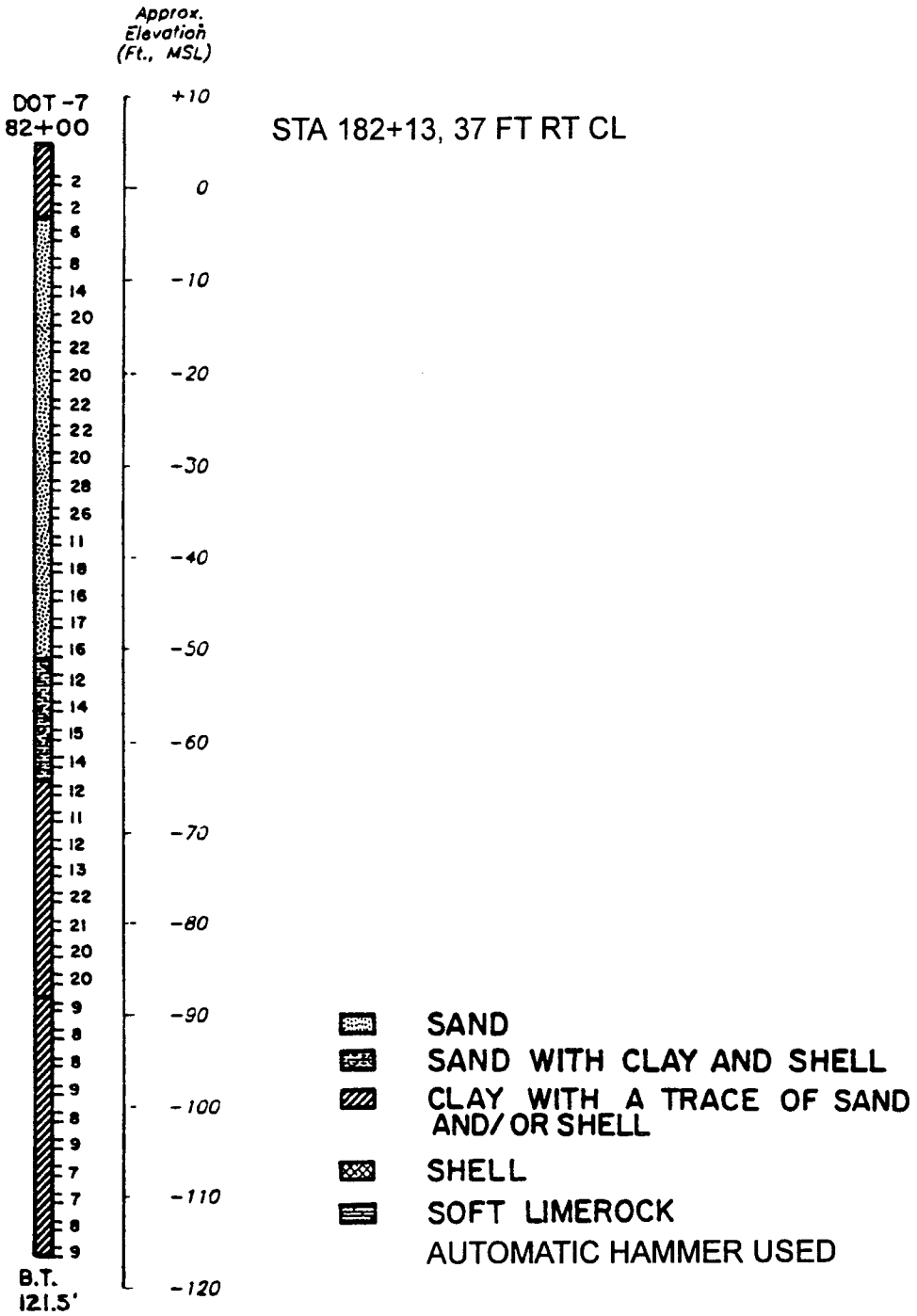
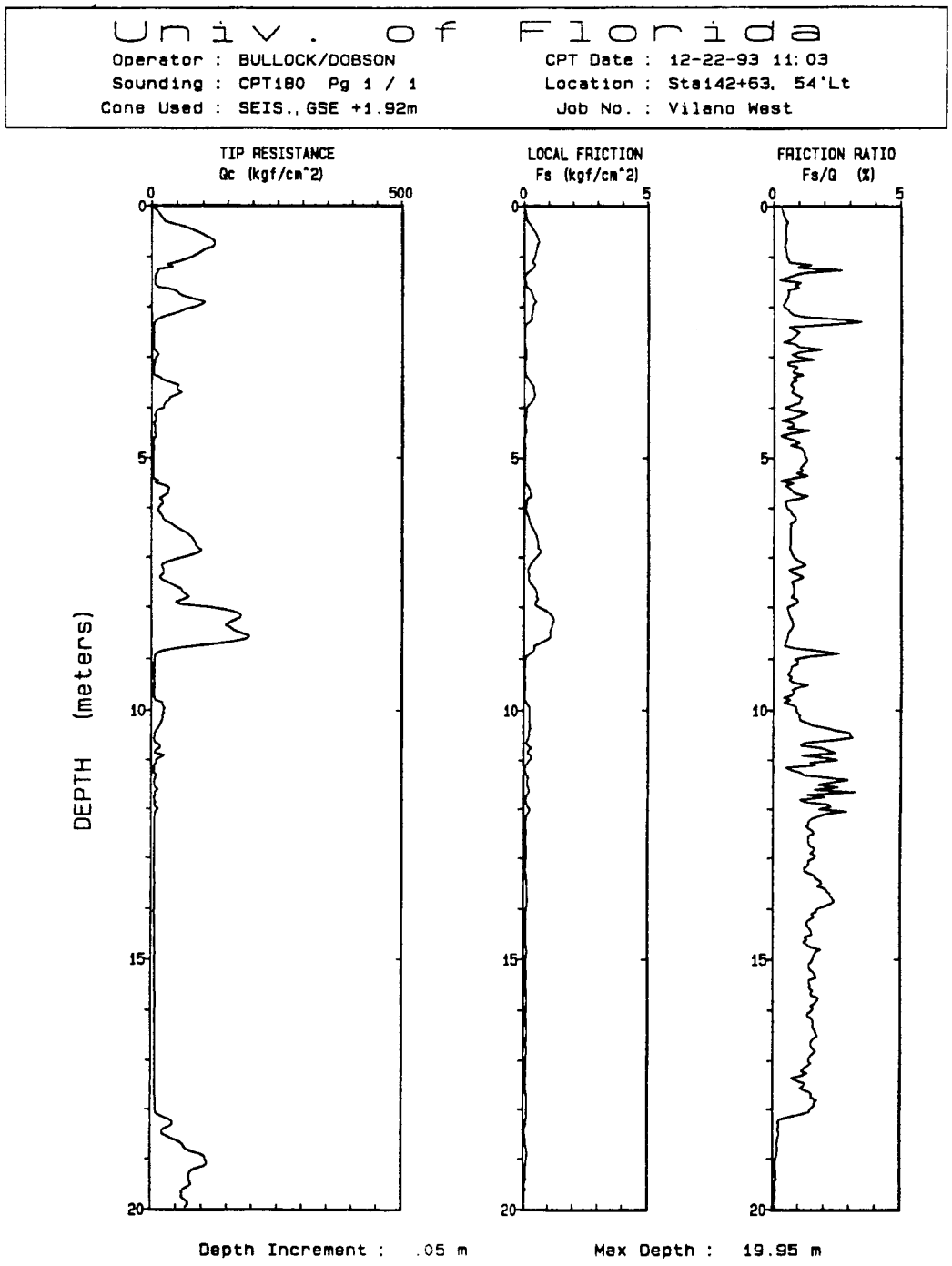


Figure A.9 SPT DOT7 at Vilano East



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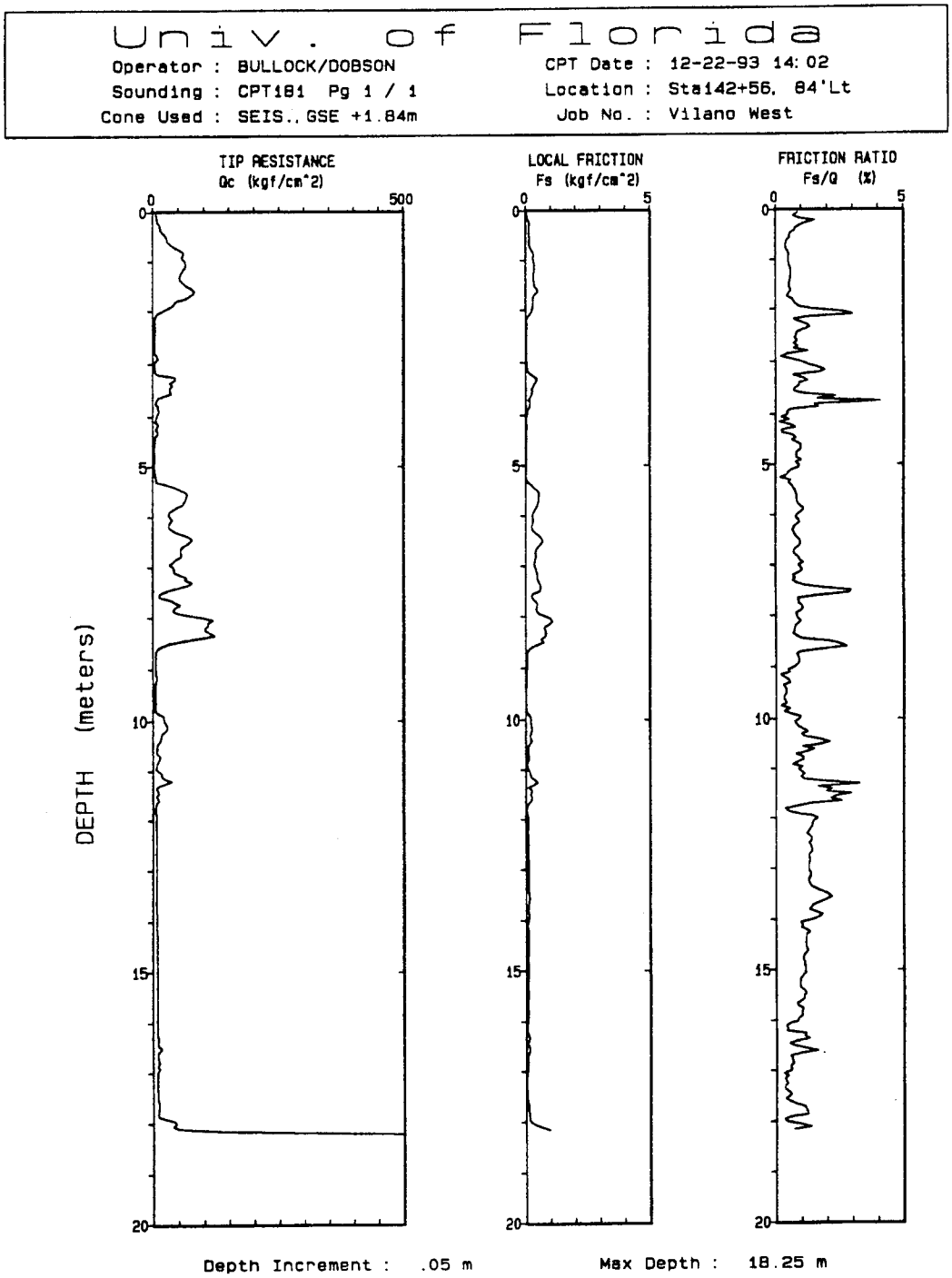

Figure A.11 CPT 181 at Vilano West

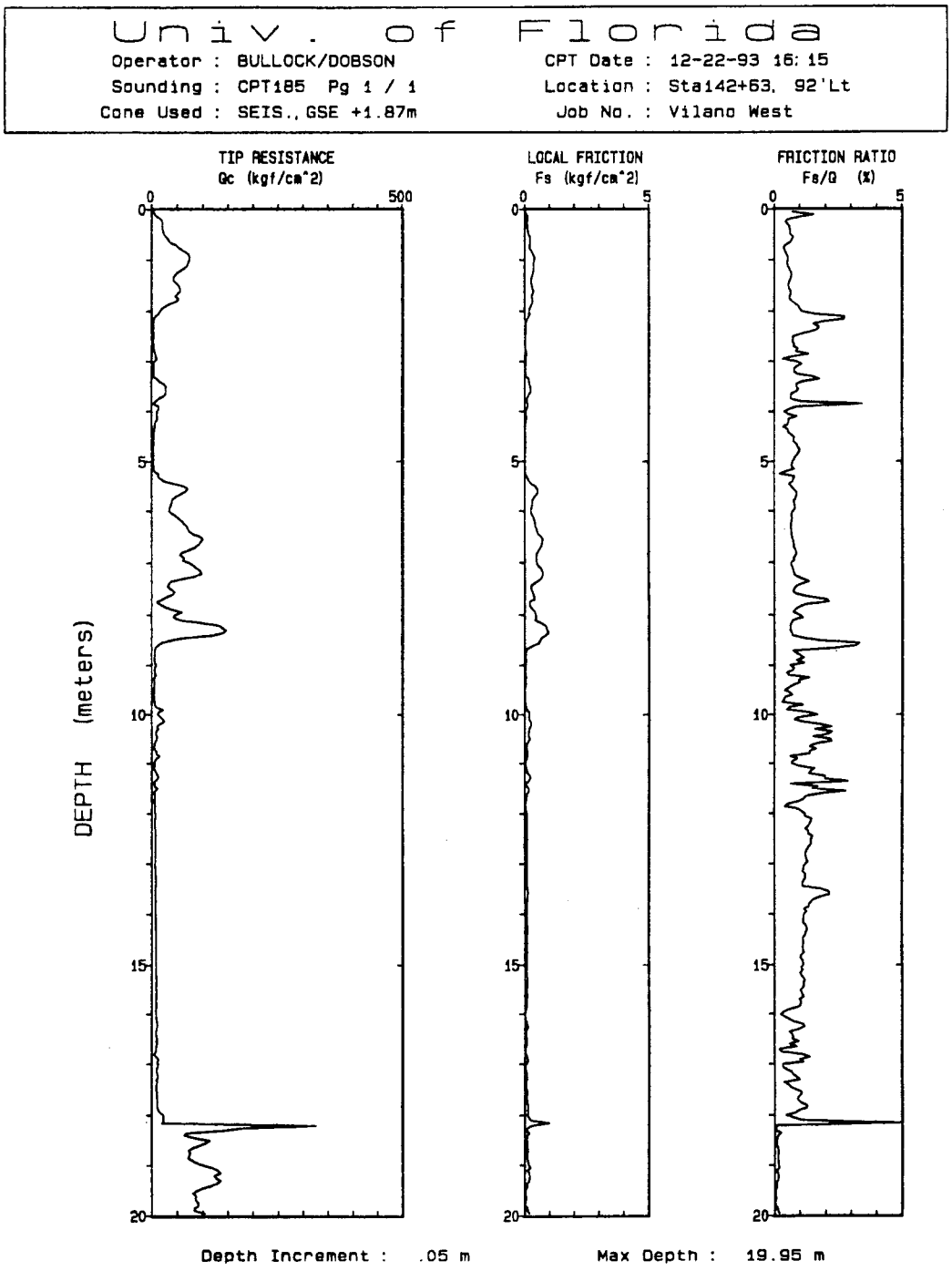

Figure A.12 CPT 185 at Vilano West

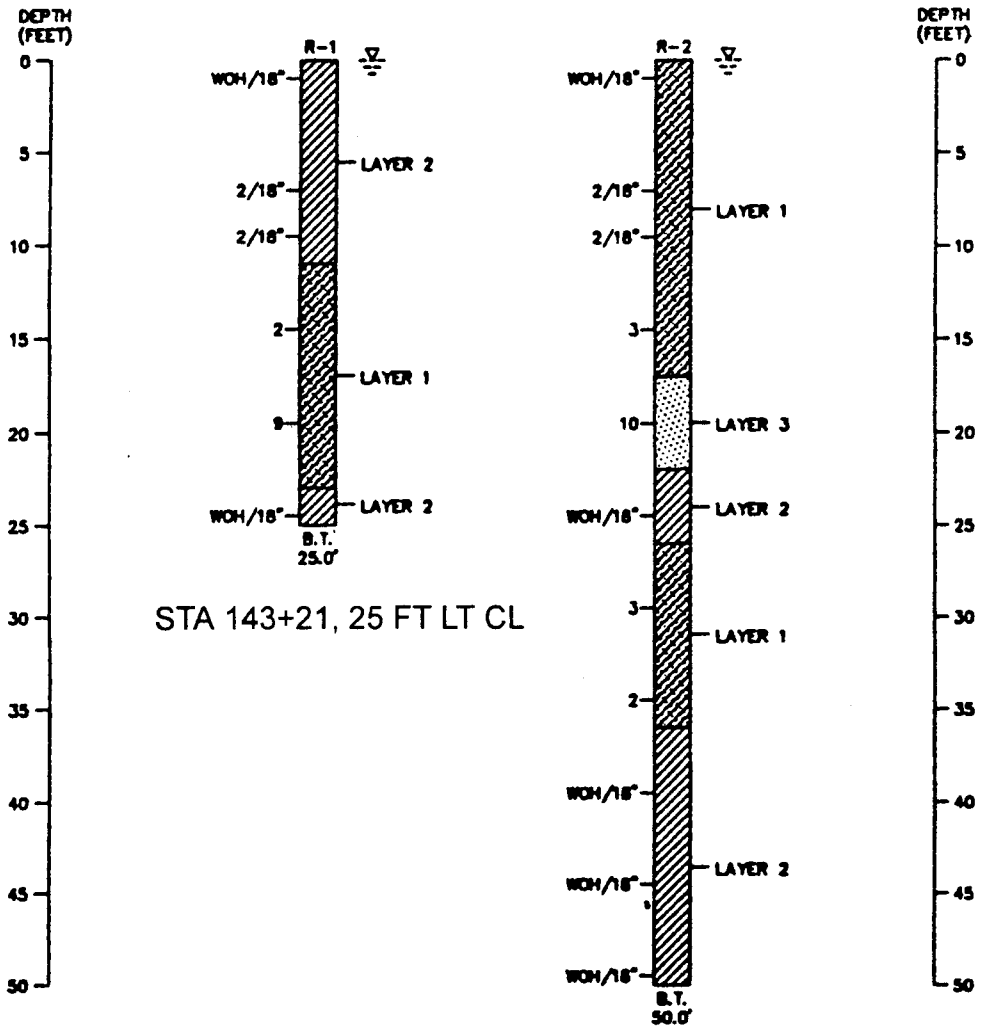

Figure A.13 SPT R1 and R2 at Vilano West

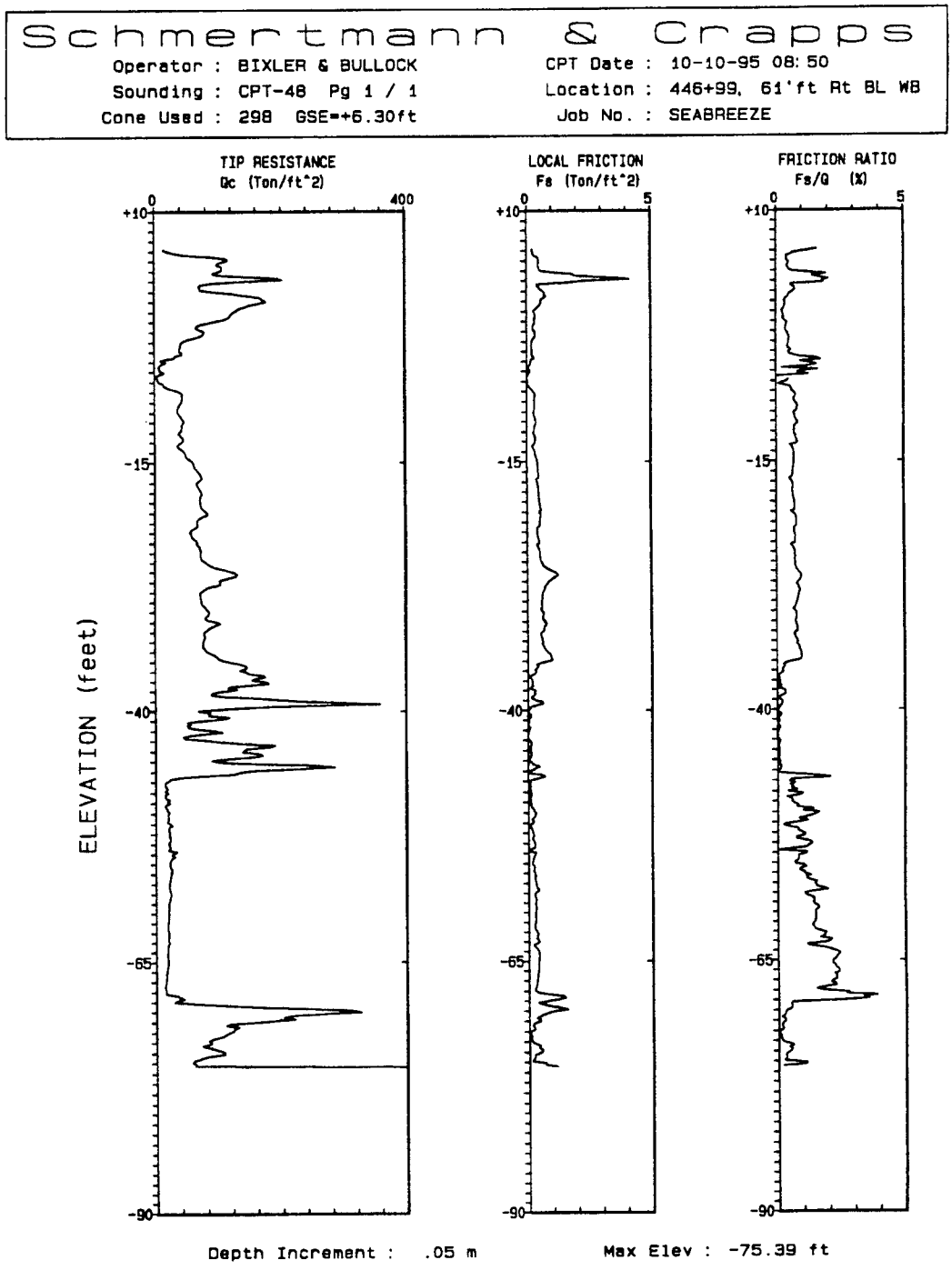

Figure A.14 CPT 48 at Seabreeze

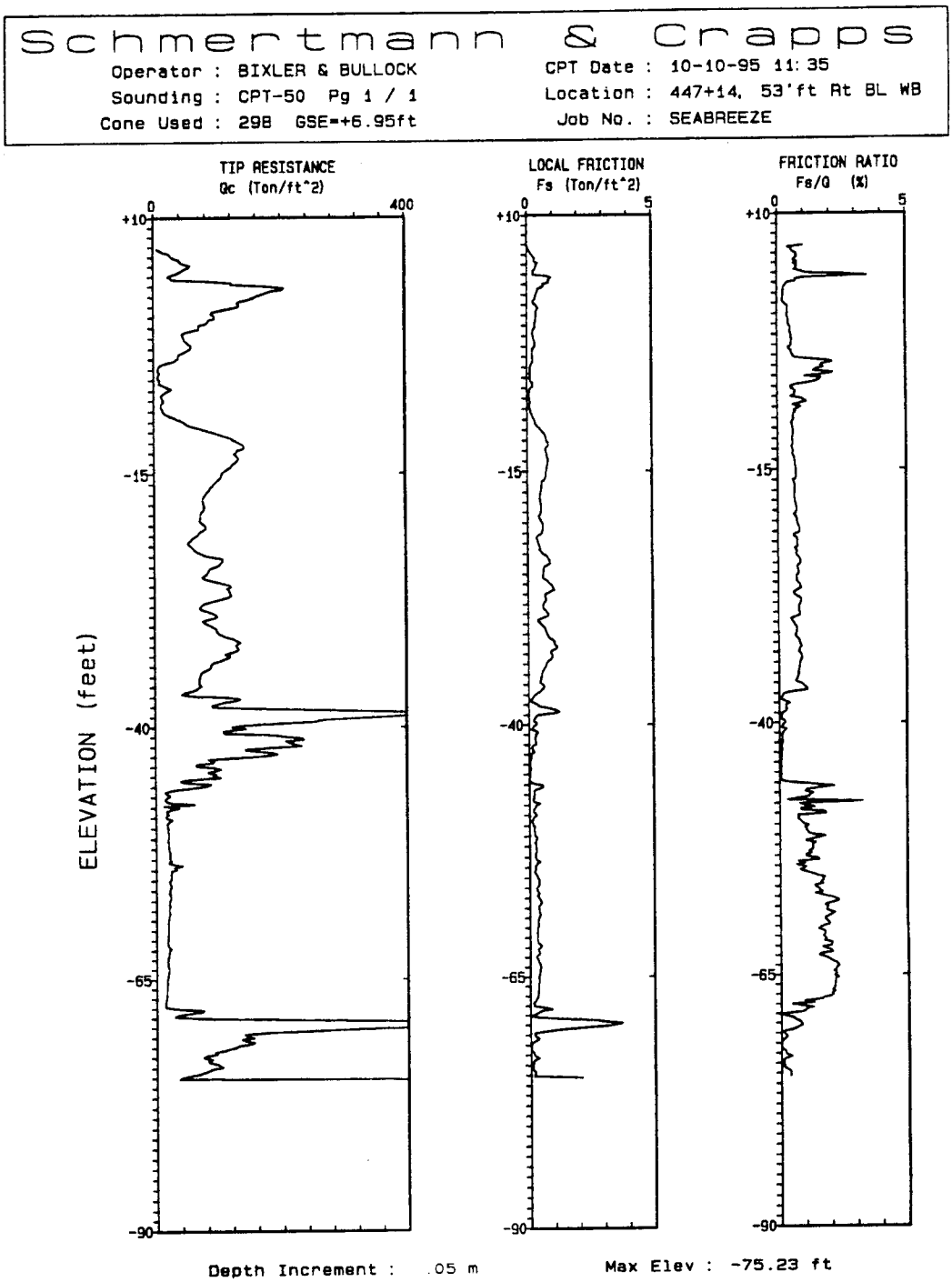

Figure A.15 CPT 50 at Seabreeze

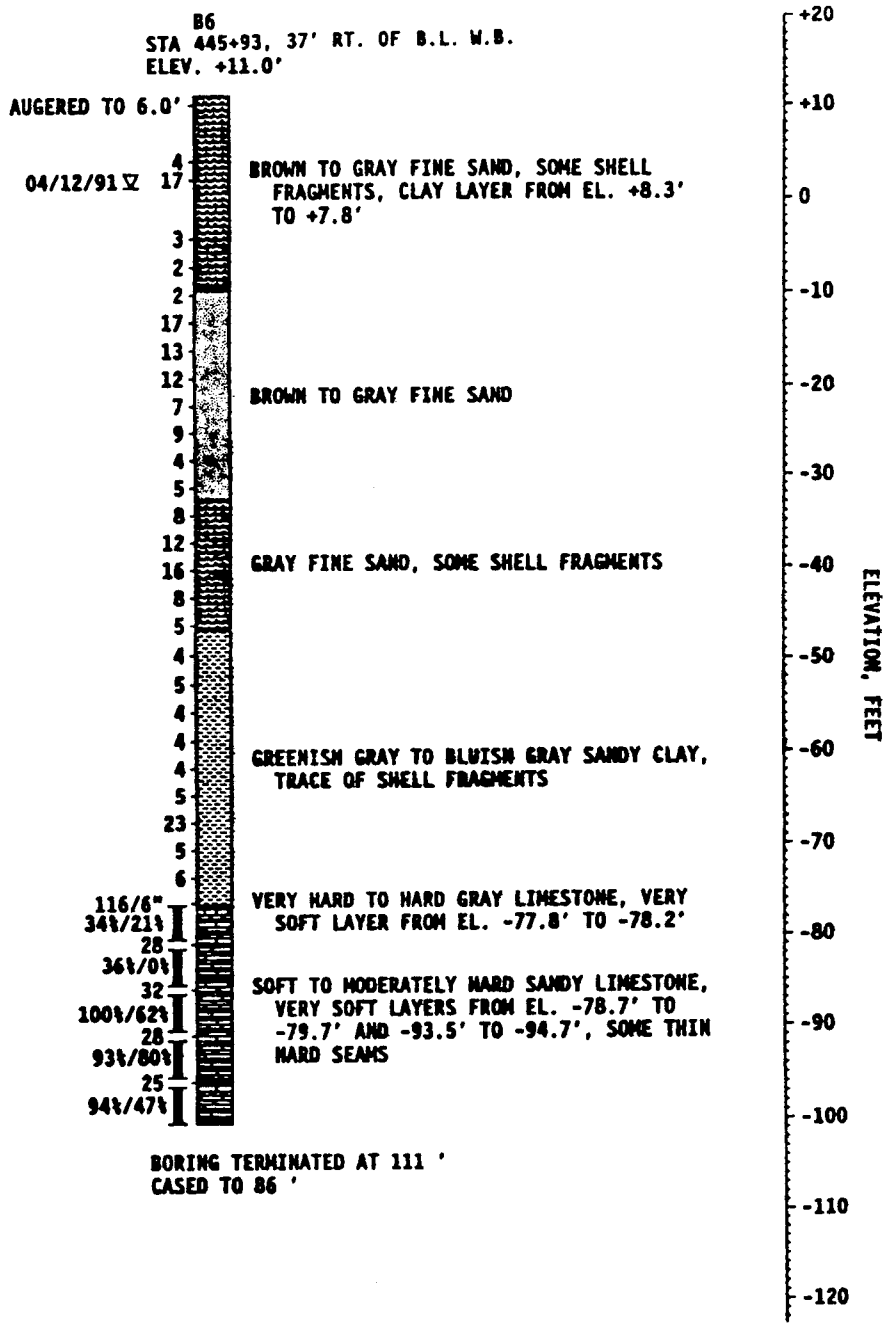

Figure A.16 SPT B6 at Seabreeze

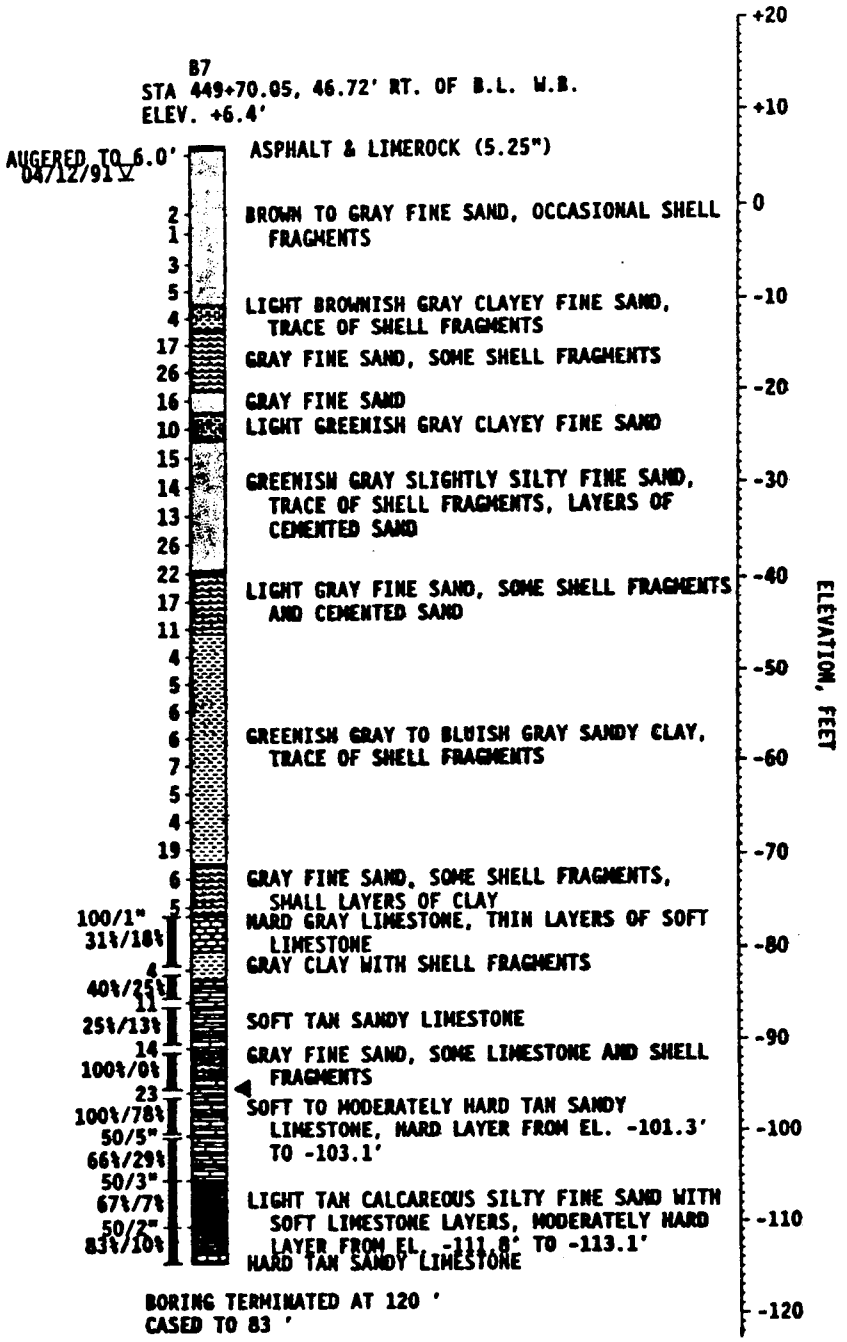

Figure A.17 SPT B7 at Seabreeze

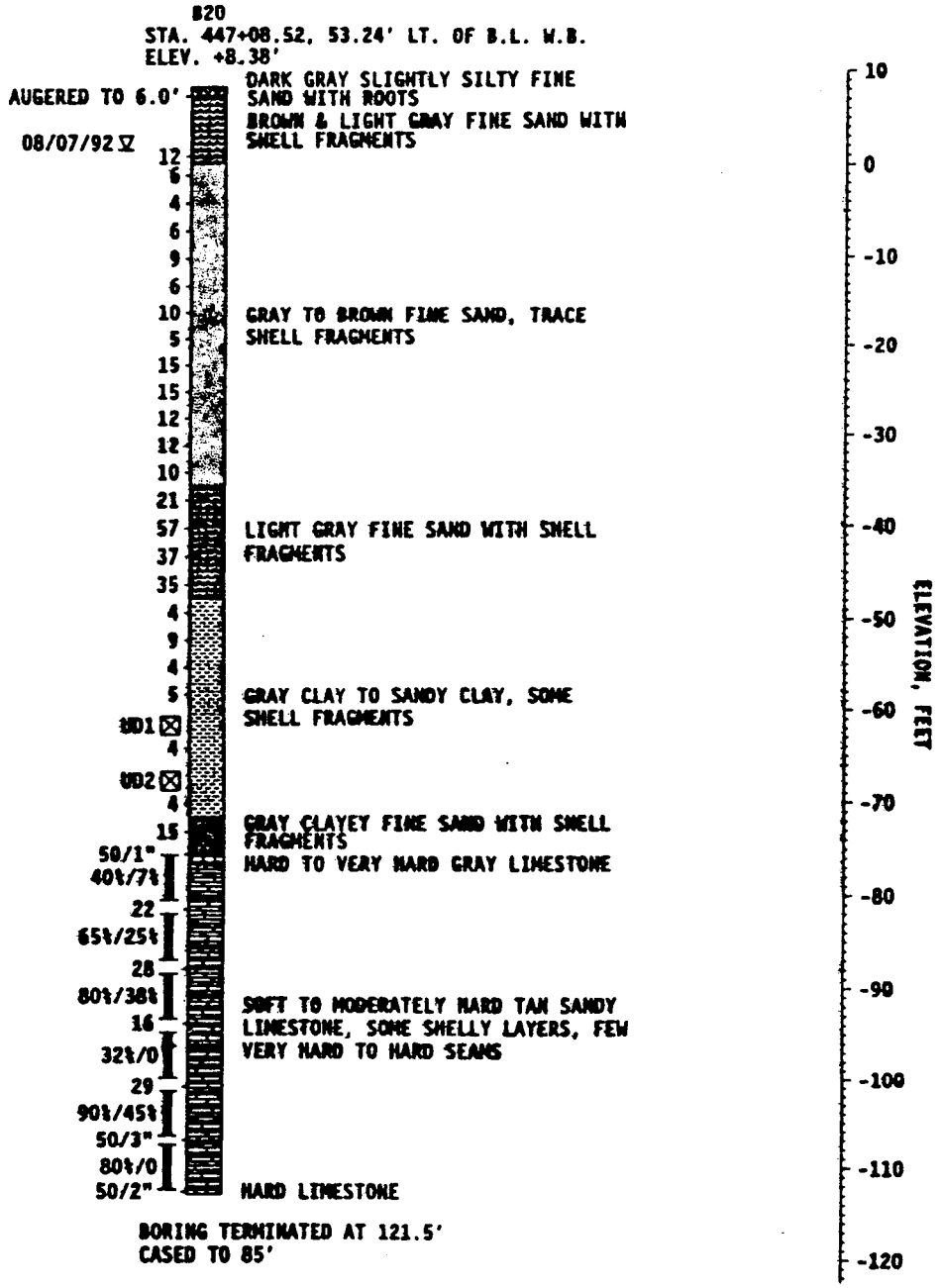

Figure A.18 SPT B20 at Seabreeze

APPENDIX A
TEST PILE SOIL INFORMATION (PRELIMINARY)

Figure B.1 O-cell Set in Place Above Pile Form

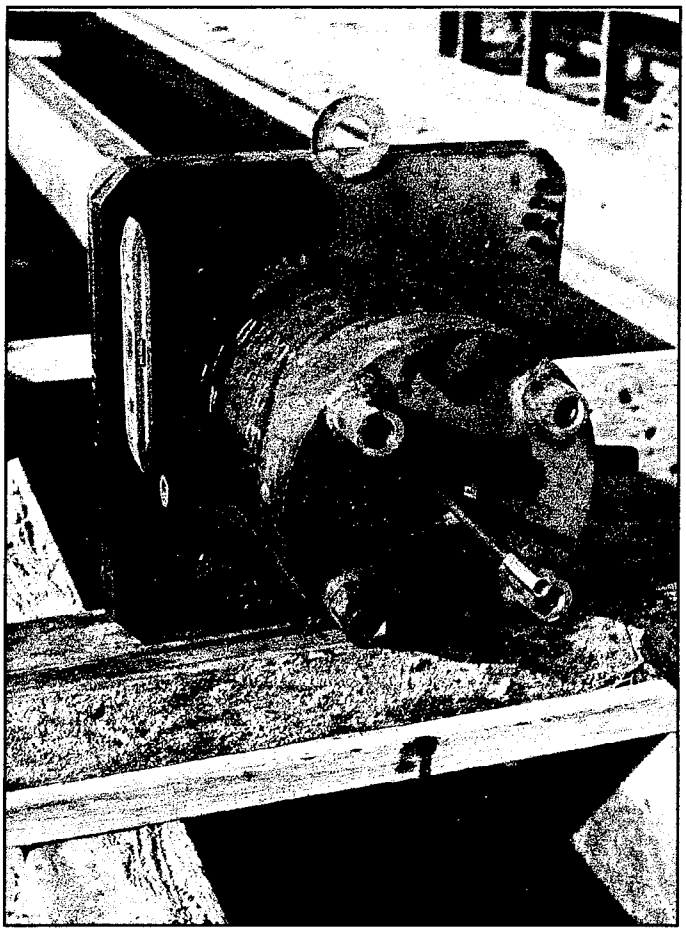

Figure B.2 O-cell Bottom Telltale Installed and Dywidag Bar Couplers

Figure B.3 Grout Plug Inside O-cell Piston, Holes for Prestress Cables

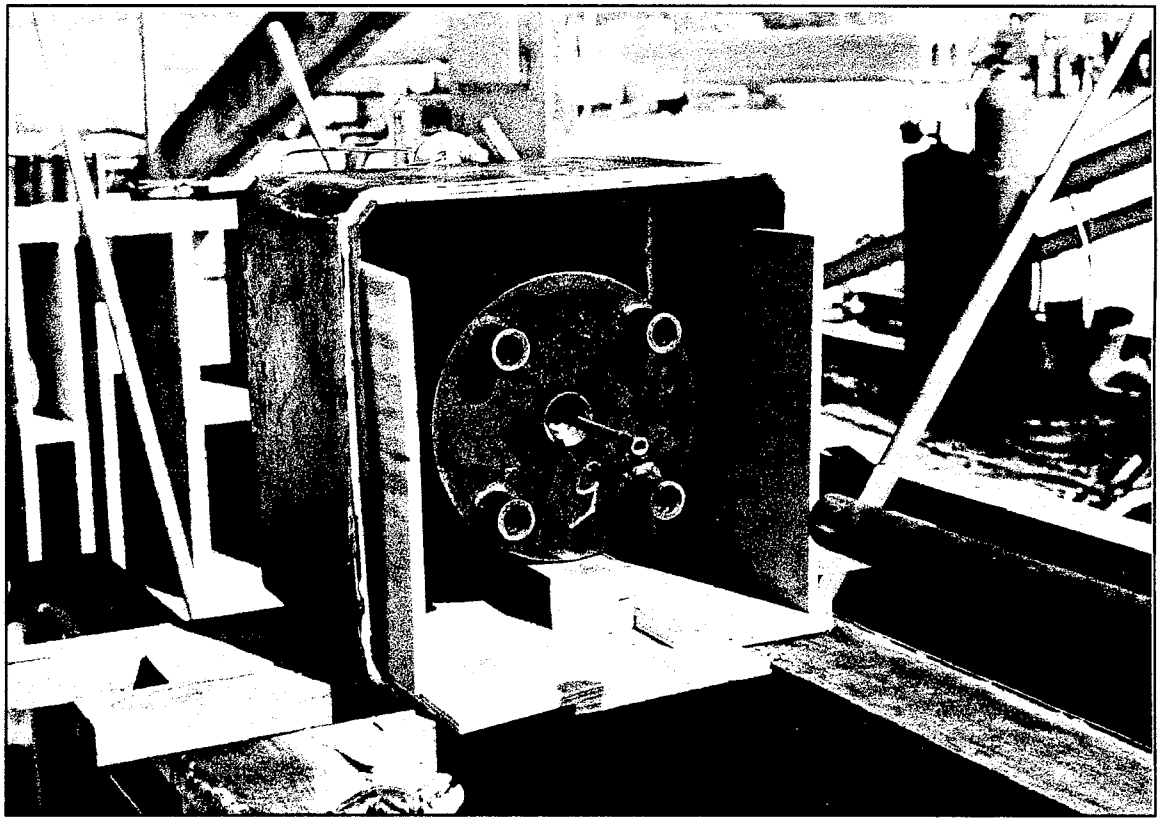

Figure B.4 O-cell with Skirt used for Vilano West and Seabreeze Piles

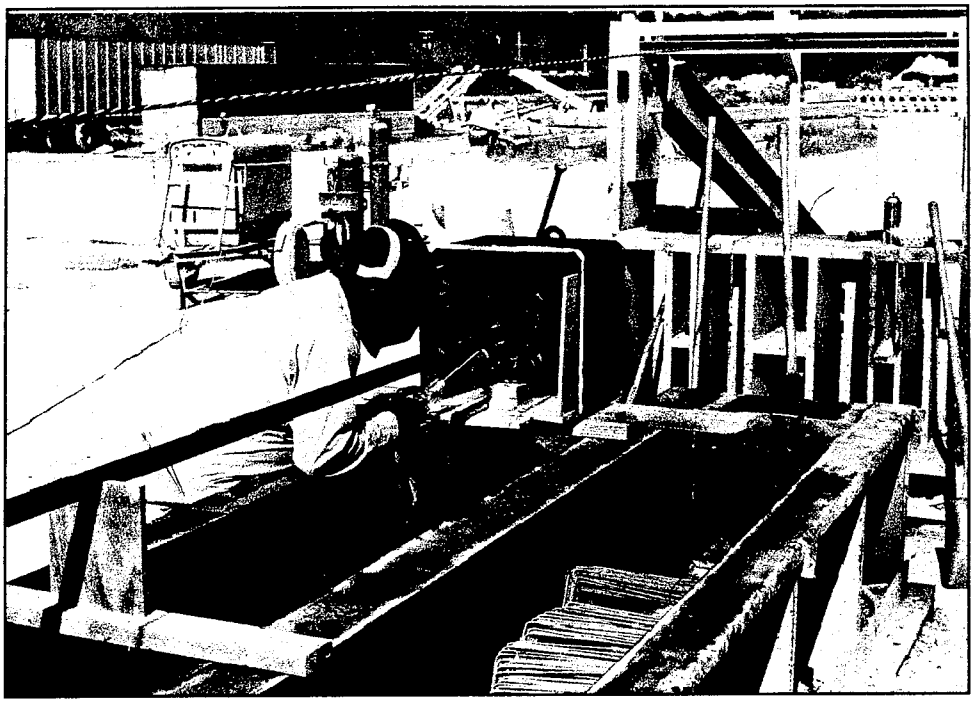

Figure B.5 1-1/4 in XXS Pipe Being Welded to O-cell

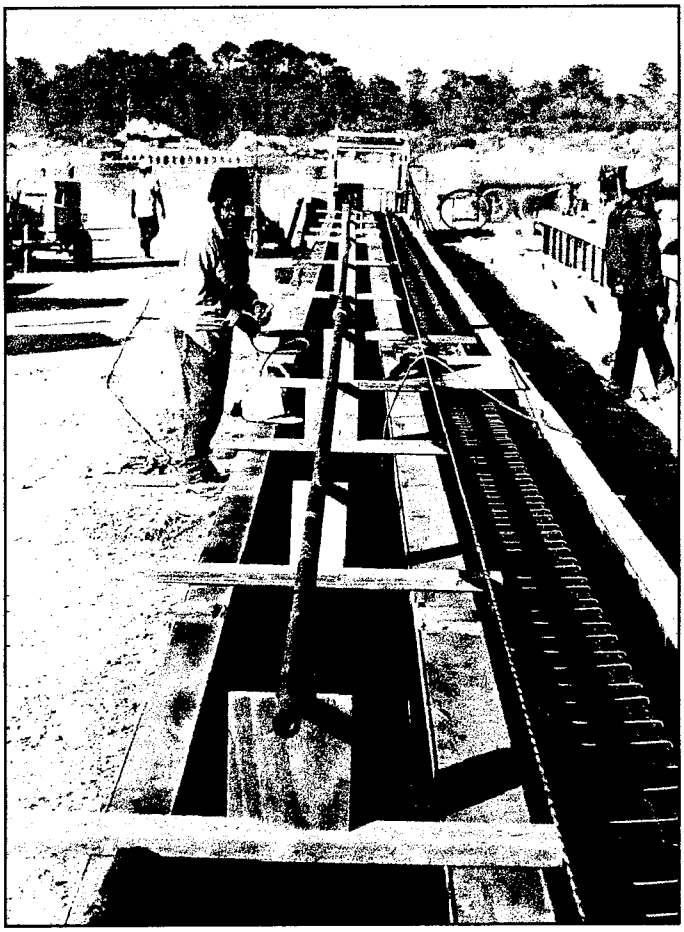

Figure B.6 O-cell Pipe with Welded Couplings Supported over Pile Form

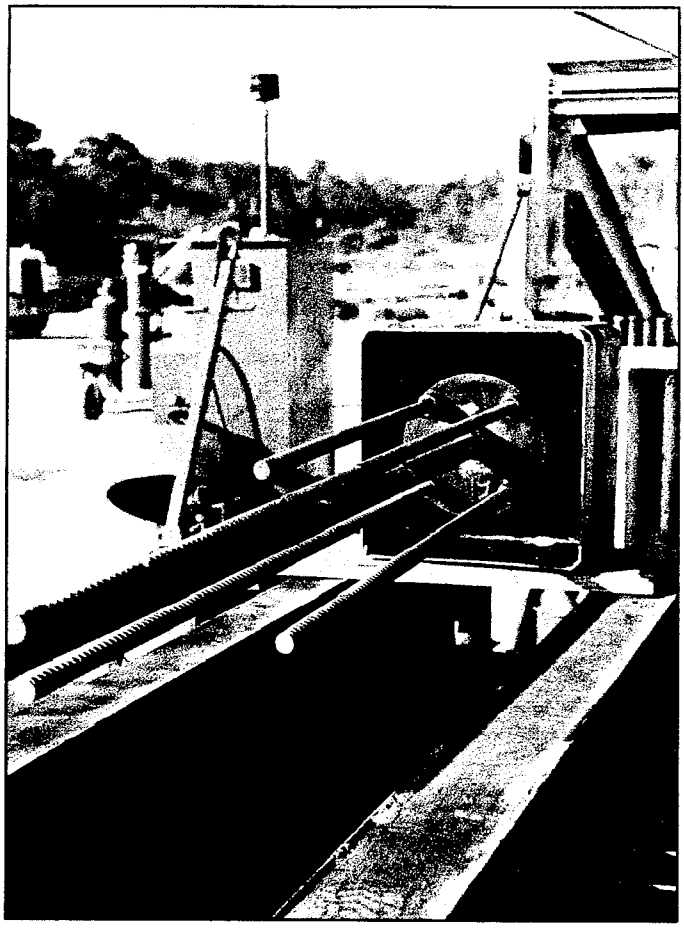

Figure B.7 Dywidag Rebar Used to Anchor O-cell in Pile Tip

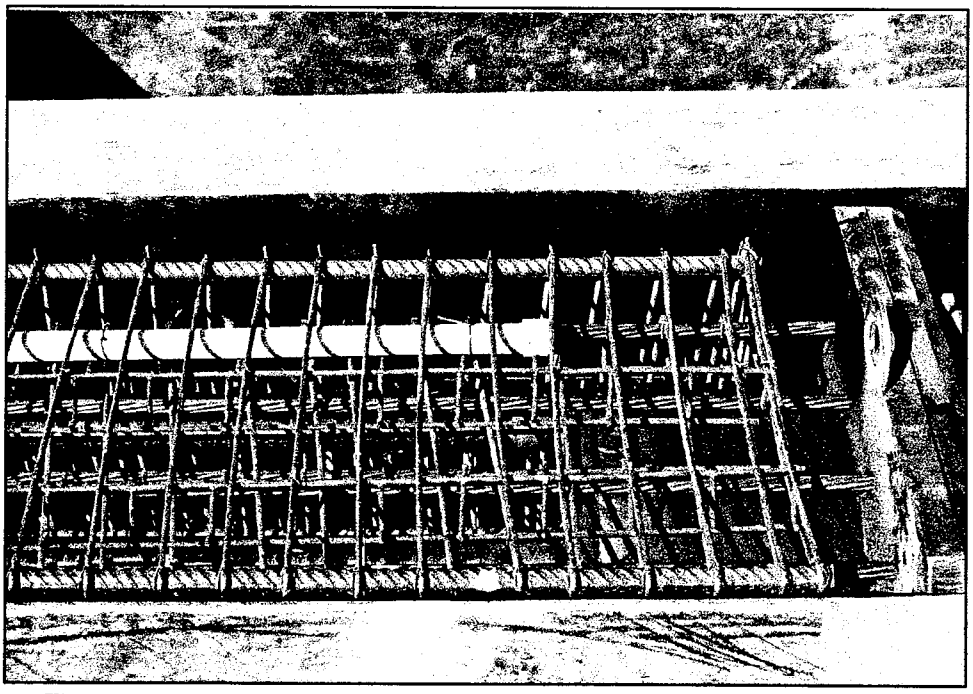

Figure B.8 O-cell in Pile Form with Prestress Cables and Spiral Tie

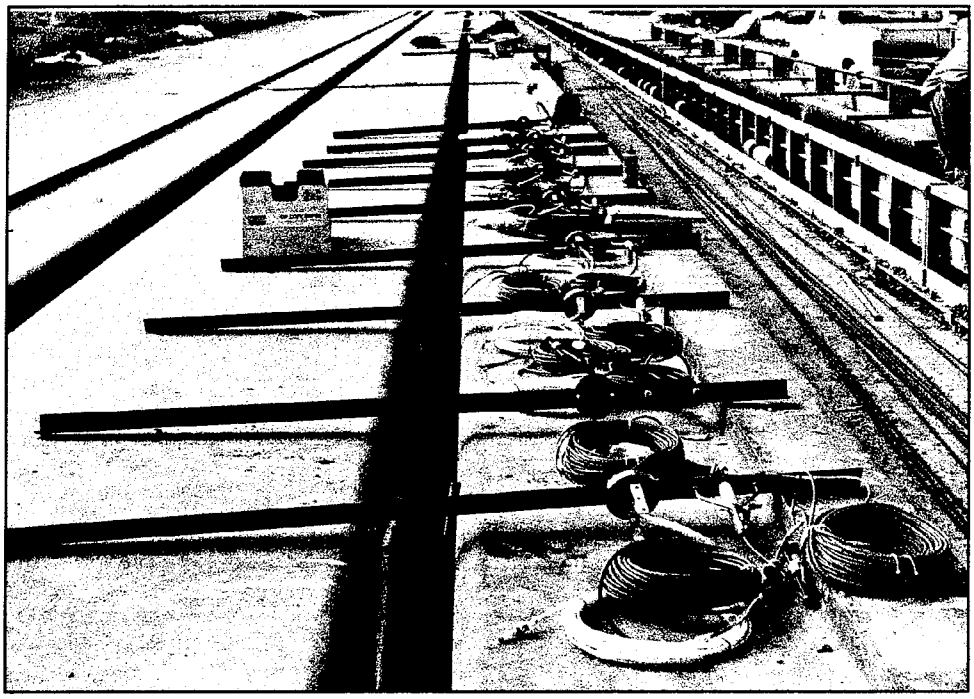

Figure B.9 Instrumentation Assembled for Aucilla and Buckman Piles

Figure B.10 Installing Instrumentation and Wire

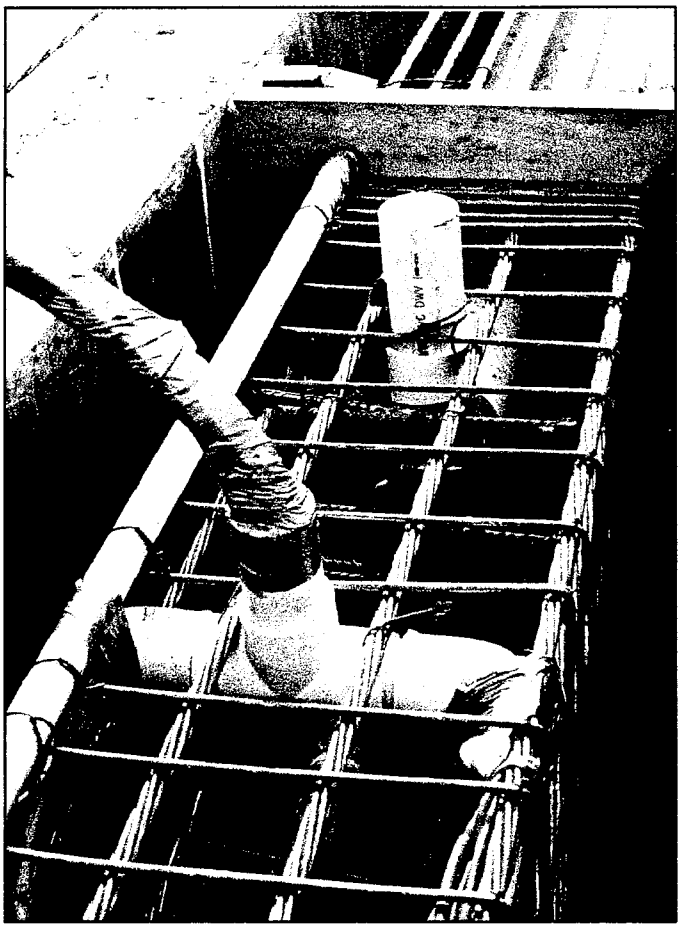

Figure B.11 Instrumentation Wires Exit Pile Top Through PVC Pipe

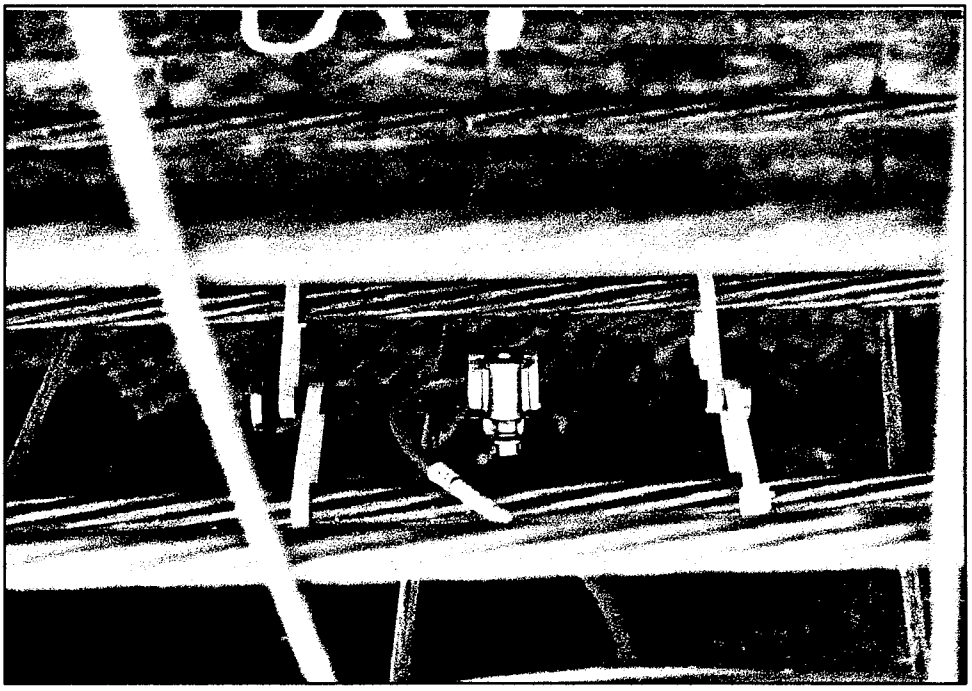

Figure B.12 VW Strain Gage Centered Between Prestress Cables

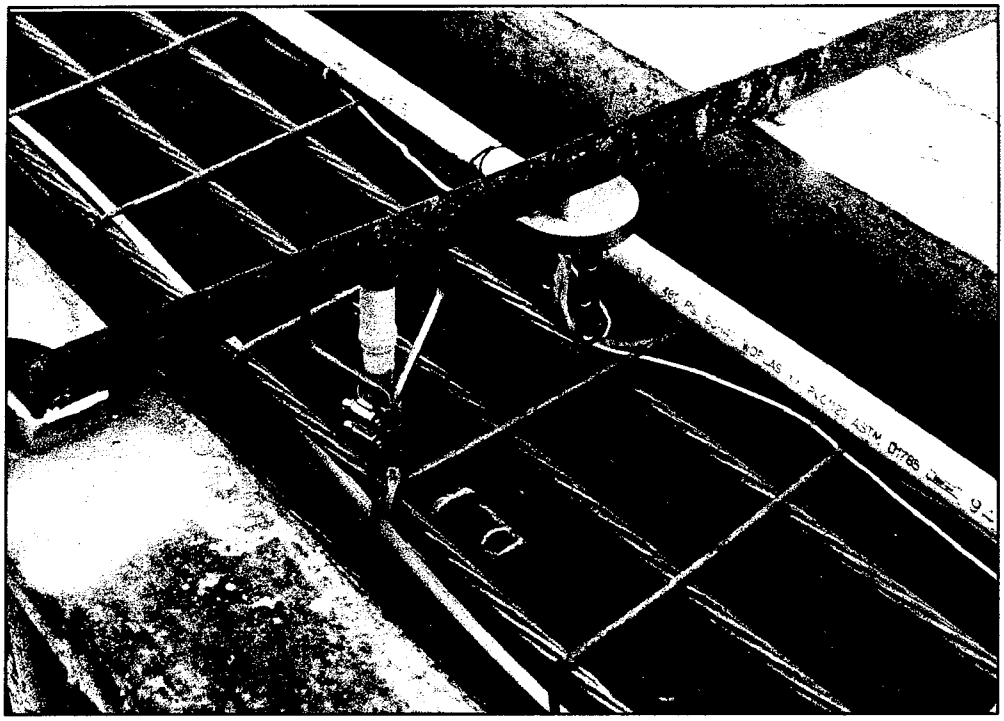

Figure B.13 VW Piezometer and DMT Cells Supported by Cross Members

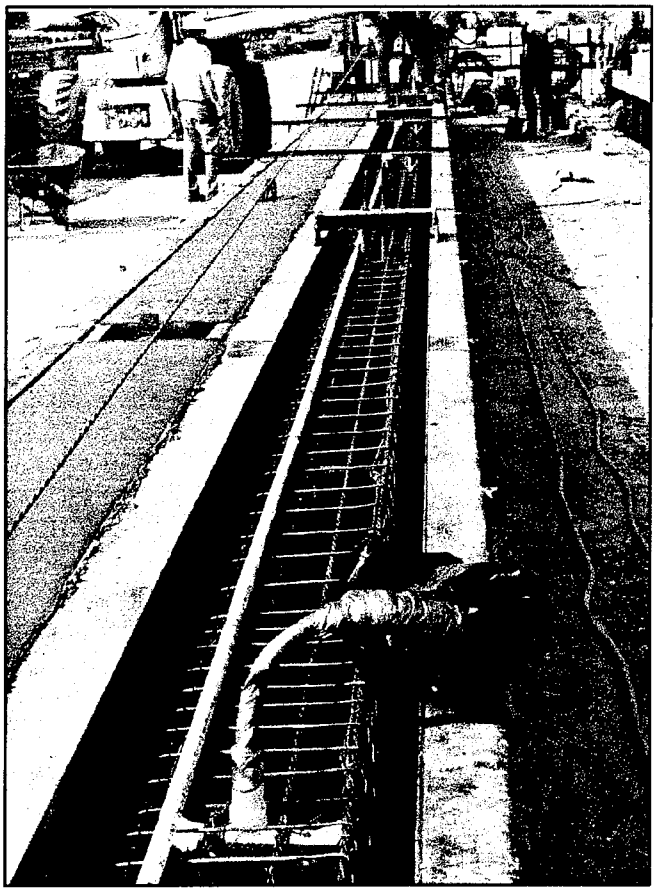

Figure B.14 Telltale Pipes Complete Instrumentation Assembly

Figure B.15 Concrete Vibrated with Care Around O-cell

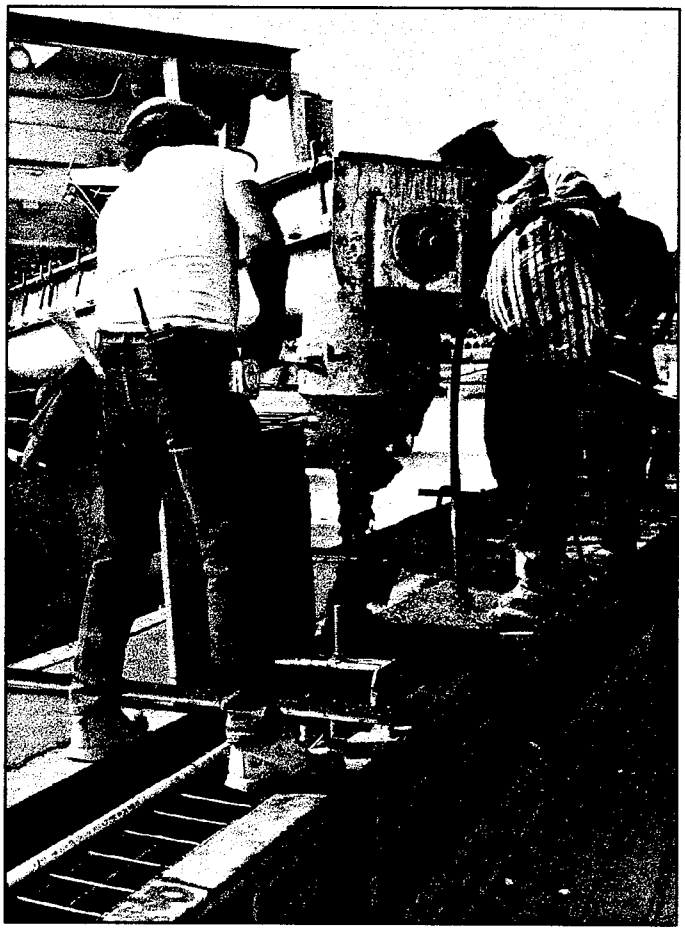

Figure B.16 Concrete Placement and Vibrator Used to Densify Wet Concrete

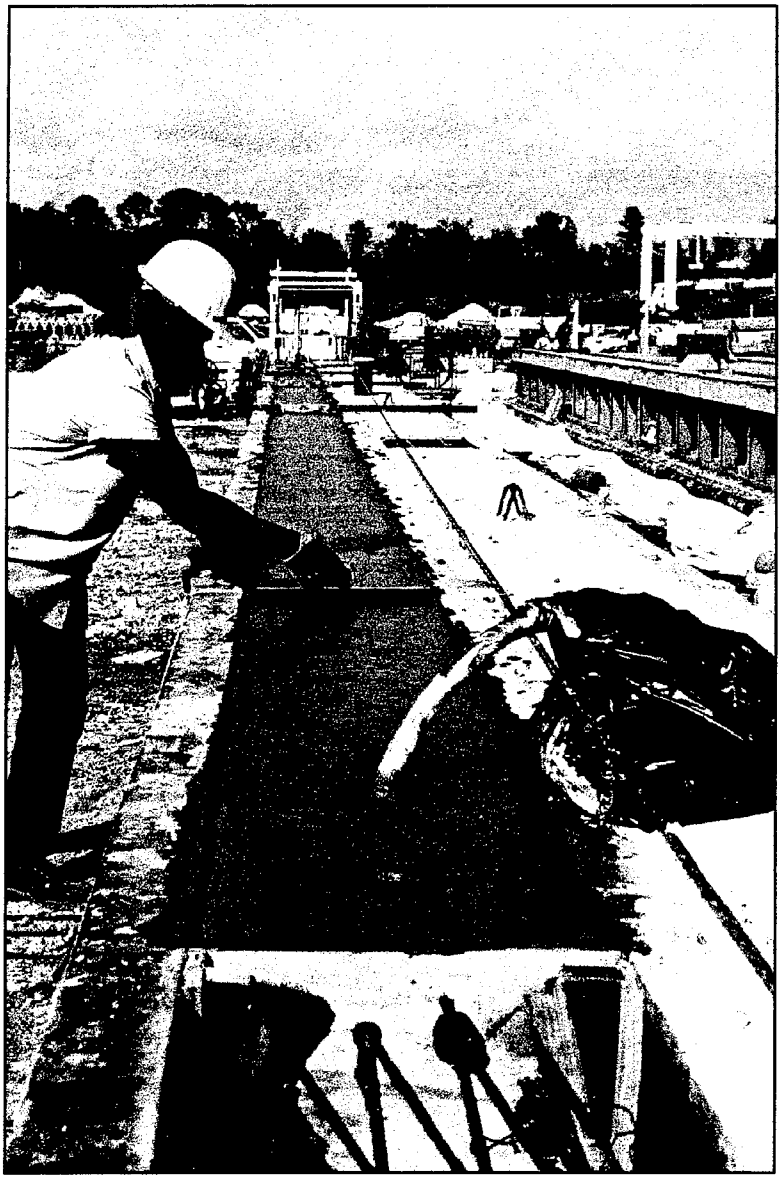

Figure B.17 Finishing Fresh Concrete on Pile Face

Figure B.18 Finished Piles Stripped out of Forms

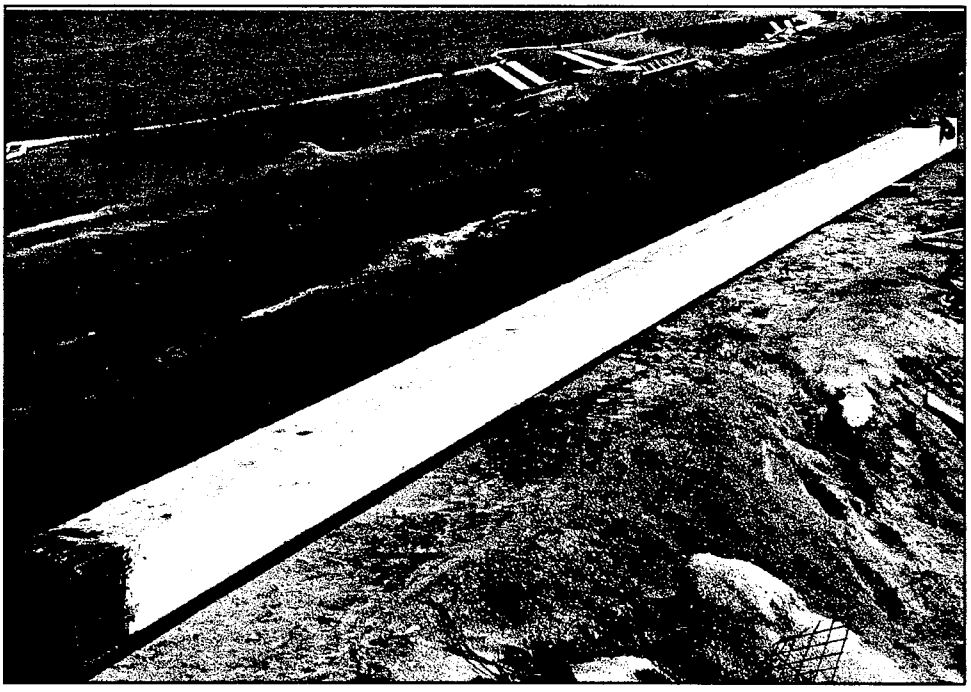

Figure B.19 Pile with Modified O-cell at Vilano West Site

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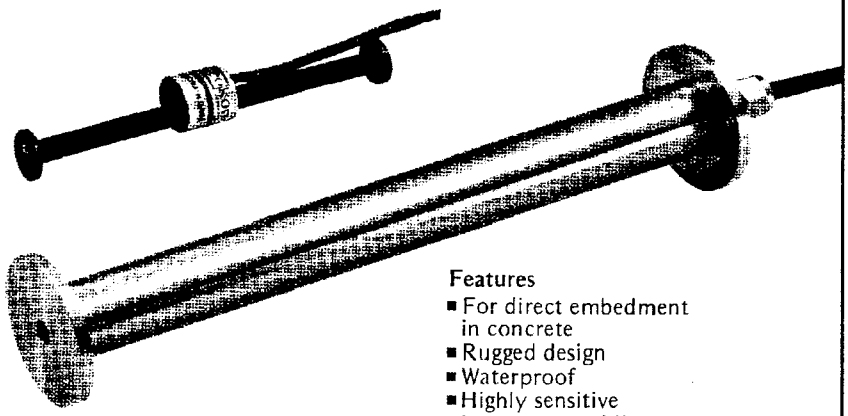
GEOTECHNICAL
INSTRUMENTATION

Vibrating Wire Strain Gages

EMBEDMENT TYPE

Model VCE-4200

Model VCE-4210



Features
- For direct embedment in concrete
- Rugged design
- Waterproof
- Highly sensitive
- Long-term stability
- Suitable for long cable lengths

The Models VCE-4200 and VCE-4210 Vibrating Wire Strain Gages are designed for direct embedment in concrete. The VCE-4200 is six inches long and is commonly used for strain measurement, in foundations, piles, bridges, dams, containment vessels, tunnel liners etc. The VCE-4210 is 10 inches long and is designed for use in mass concrete with coarse aggregates. It is extra rugged to resist bending, and has large flanges to provide greater engagement area.

The gages may be positioned either by means of wires wrapped around the body or by attachment to a rosette which will hold the gage at a predetermined orientation in the concrete. (One type of rosette is shown overleaf).

Strains are measured using the vibrating wire principle: A length of steel wire is tensioned between two end blocks that are embedded directly in concrete. Deformations (i.e. strain changes) of the concrete mass, will cause the two end blocks to move relative to one another, thus altering the tension in the steel wire. The tension is measured by plucking the wire and measuring its resonant frequency of vibration using an electromagnetic coil.

The Model GK-401 Readout Box, used in conjunction with the Vibrating Wire Strain Gage, will provide the necessary voltage pulses to pluck the wire and will convert the resulting frequency reading directly into strain units by means of an internal microprocessor. The strain reading is displayed on a 5-digit LCD.

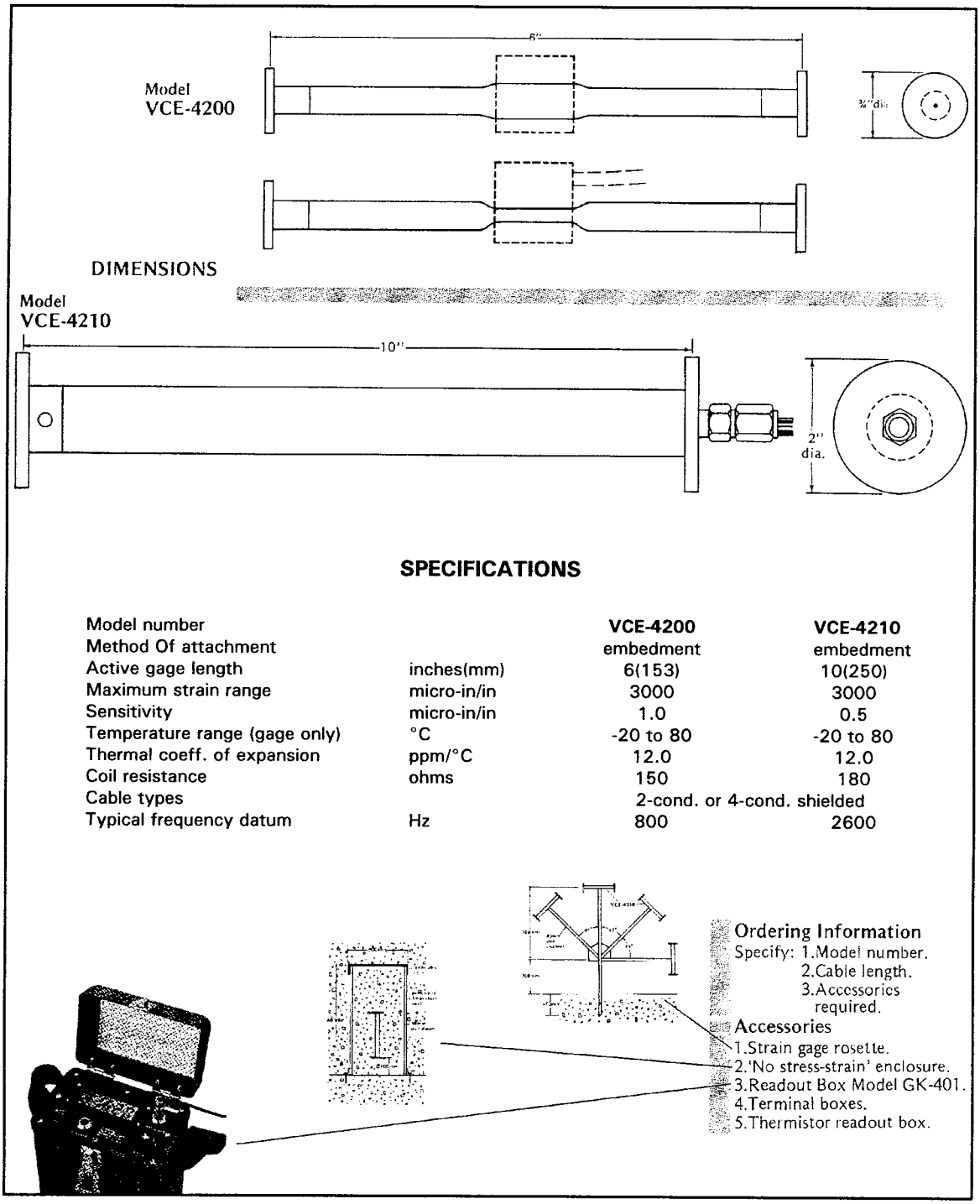
The advantage of the Vibrating Wire Strain Gage over more conventional electrical resistance (or semiconductor) types lies mainly in the use of a frequency, rather than a voltage, as the output signal from the strain gage. Frequencies may be transmitted over long cable lengths without appreciable degradation caused by variations in cable resistance, contact resistance, or leakage to ground. Vibrating wire gages also have excellent long-term zero stability. For measurement of dynamic strains (up to 100Hz) autoresonant versions are available.

Where 'no-stress' strain gages are required, a sheet steel container is available which is lined with styrofoam. This container isolates the section of concrete around the gage from the rest of the concrete so that no stresses can fall on the gage, yet apart from this it experiences the same environmental conditions as adjacent gages, and thus provides a measure of effects due to temperature, moisture, autogenous growth etc.

The strain gages are provided with thermistors encapsulated next to the wire plucking coil. The thermistor enables temperatures to be measured. Overvoltage protection can be provided in the gage and this can be supplemented by gas tube arrestors at the terminal box location.

Installation procedures are fully explained in manuals supplied with the gages.

Figure B.20 VW Strain Gage VCE-4200 (Geokon, Inc.)



SPECIFICATIONS

Model number		VCE-4200	VCE-4210
Method Of attachment		embedment	embedment
Active gage length	inches(mm)	6(153)	10(250)
Maximum strain range	micro-in/in	3000	3000
Sensitivity	micro-in/in	1.0	0.5
Temperature range (gage only)	°C	-20 to 80	-20 to 80
Thermal coeff. of expansion	ppm/°C	12.0	12.0
Coil resistance	ohms	150	180
Cable types		2-cond. or 4-cond. shielded	
Typical frequency datum	Hz	800	2600

Ordering Information
Specify: 1.Model number.
2.Cable length.
3.Accessories required.

Accessories
1.Strain gage rosette.
2.'No stress-strain' enclosure.
3.Readout Box Model GK-401.
4.Terminal boxes.
5.Thermistor readout box.

Figure B.21 VW Strain Gage VCE-4200 Specifications (Geokon, Inc.)

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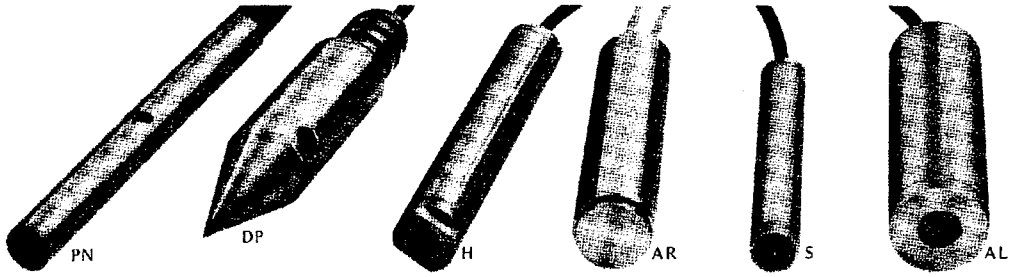
GEOTECHNICAL
INSTRUMENTATION

Vibrating Wire Piezometers and Pressure Transducers



Geokon Vibrating Wire Piezometers and Pressure Transducers are designed to measure fluid pressures (e.g. ground water elevations, pore pressures) in boreholes, embankments, foundations, pipelines, wells and pressure vessels.

Features
- Long-term stability in difficult environments
- Hermetically sealed
- High resolution
- Stainless steel construction
- Not affected by long cable length.

The transducer employs a sensitive diaphragm, coupled to a vibrating wire, that converts the fluid pressures to be measured into an equivalent frequency signal. Transmitred through a cable to the readout location, the fequencv signal is conditioned and displayed on a portable readout box. Alternatively, Dataloggers can be used to record the data automatically. (Low Cost battery operated loggers for remote, unattended data collection are available).

Several different models and options are available. The standard sensor is dimensionally small enough to be installed into fills, embankments, boreholes, standpipes or observation wells. A drive-in version is available for pushing directly into soft ground on the end of drill rods. Another model is for use in typical pressure transducer applications where a hydraulic pressure connection is required to permit easy coupling to pressurized tanks, pipelines, earth pressure cells etc.

Construction: Geokon piezometers utilize the latest developments in vibrating wire pressure transducer technology. The transducer is fabricated entirely from stainless steel components, selected to minimize temperature effects and welded together to create a hermetically sealed chamber for the vibrating wire element. The ends of the vibrating wire are clamped using a patented swaging technique that ensures high stability while allowing miniaturization of the components.

Electromagnetic coils located close to the wire are used to both pluck the wire and to convert the wire vibrations so produced into an electrical output current whose frequency is identical to the natural resonant frequency of the wire. Changing pressure causes deflection of the diaphragm thereby altering the tension of the wire and its resonant frequency of vibration. Thus for each pressure there is a corresponding frequency output.

Electrical cable: 4-conductor cable is standard. Two of the conductors are available for use with the built-in thermistor (or VW temperature gage) if temperatures are to be measured. The standard cable has a thick PVC outer jacket. Optional direct burial cable is armored and gel-filled. It should be noted that lead wire resistance changes brought about by water penetration, temperature variations and contact resistance do not affect the frequency of the output signal. This factor, coupled with excellent zero stability, makes the Geokon Vibrating Wire Transducer preferable to conventional strain gage transducers for long-term measurements in difficult environments.

In geotechnical environments it is necessary to use a filter stone to prevent soil particles from impinging directly on the diaphragm. The standard filter stone is made from sintered stainless steel with a 50 micron pore size. In partially saturated soils, where air is to be excluded from the piezometer cavity, a high air entry filter stone may be specified. Note that negative pressures (suction) can be measured.

Figure B.22 VW Piezometer 4500S (Geokon, Inc.)

MODELS AVAILABLE

Model 4500S STANDARD MODEL
This model is designed for direct burial in embankments, fills etc. Also for installation inside boreholes or observation wells. Its small size allows for its installation in conventional standpipe piezometer riser pipe (minimum I.D. is 3/4").

Model 4500DP DRIVE POINT MODEL
This transducer is located inside an EW drill rod coupling with a pointed nose cone attached. When screwed onto the end of EW drill rods the unit can he pushed directly into soft ground with the signal cable located inside the drill rod. This model is recoverable at the end of the job.

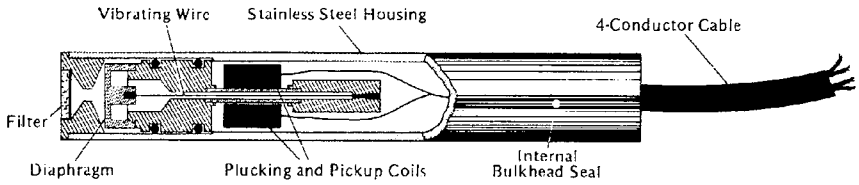
Model 4500B/C SMALL DIAMETER MODELS
The Model 4500B is designed to go down a 3/4" Sch. 80 standpipe. Model 4500C is designed to go down a 1/2" Sch.80 standpipe.

Model 4500N VIBRO/PNEUMATIC MODEL
A pneumatic transducer packaged in tandem with the vibrating wire transducer permits a second evaluation of the measured pressures. The signal cable is supplemented by two pneumatic tubes.

Model 4500AL/ALV LOW PRESSURE MODEL
For low pressure ranges (0-5,0-10psi), vented (ALV) and unvented (AL) transducers are used. For long-term (over twelve months) outdoor use the the vented version is recommended with compensation for barometric pressure changes provided by a second unvented transducer acting as a barometer. The low pressure models are ideally suited for the measurement of water levels and stream levels where fluctuations as small as .02inches (0.5 mm) can be detected.

Model 4500H PRESSURE TRANSDUCER MODEL
This model is Supplied with a 1/4" male or female pipe thread fitting to permit the transducer to be coupled directly into hydraulic or pneumatic pressure lines.

Model 4500AR AUTORESONANT MODE L
This model is excited by 12v D.C. and gives a continuous frequency output. For industrial applications the output can be readily adapted to microprocessor based controls or to continuous 0-10v or 4-20mA output. Using the Geokon 4500CPR controller, the transducer can follow dynamic pressure variations of up to 120Hz. These units can be hardened for use in high radiation environments.



Readout Instrumentation
All models can be read using the Geokon Model CK-401 Portable Readout Box. The box displays the reading on a 5-digit liquid crystal display (LCD). The displayed readings can be converted into engineering units using calibration data supplied with the piezometer. junction boxes and termindl boxes are available to protect cable splices and electrical connectors. Automatic and remote recording can be accomplished using any of the range of Geokon Dataloggers (See the Datalogger data sheet).

GENERAL SPECIFICATIONS

Standard ranges (lbs./sq.in.)	5,10,25,50,100,250,1500,1000,5000
Over range	2X rated pressure
Resolution	.025% F.S. minimum
Accuracy	±0.5% F.S. (±0.1% F.S. optional)
Operating temperature	-20° to 150°F (-29° to 65°C)*
Thermal zero shift	<0.02% F.S./°F
Diaphragm displacement	<.001 cc at F.S.
Cable	vinyl, 2 pair, 22ga. 0.25in(6.4mm) dia.
Filter	Standard: 50 micron sintered stainless steel High air entry: Alumina approx. 2 microns

*Units for use up to 200DC ire available is an option.

WEIGHTS AND DIMENSIONS

Model	D in (mm)	L in (mm)	Wt. lbs(kg)
4500S	0.750(19)	5.250(133)	.26(,12)
450ODP	1.312(33.3)	6.750(171)	1.0(.45)
4500PN	1 .000(25.4)	9.125(181)	0.5(.23)
4500B	0.688(17)	5.250(133)	.23(.11)
4500H	1.000(25.4)	5.000(127)	1.0(.45)
4500AR	0.750(19)	8.250(210)	0.5(.23)
4500AL/V	1.500(38)	5.250(1 33)	1.0(.4-5)
450OHD	1.000(25.4)	5.000(127)	1.0(.45)
4500C	0.438(11.1)	5.000(127)	.20(-09)

Ordering Information
Specify: 1. Model number
2. Pressure range.
3. Cable length.
4. Options required.

Optional Accessories
Thermistor — Terminal boxes.
High-entry filter stone. — Junction boxes.
Gel-filled cable. — Lightning protection.

Figure B.23 VW Piezometer 4500S Specifications (Geokon, Inc.)

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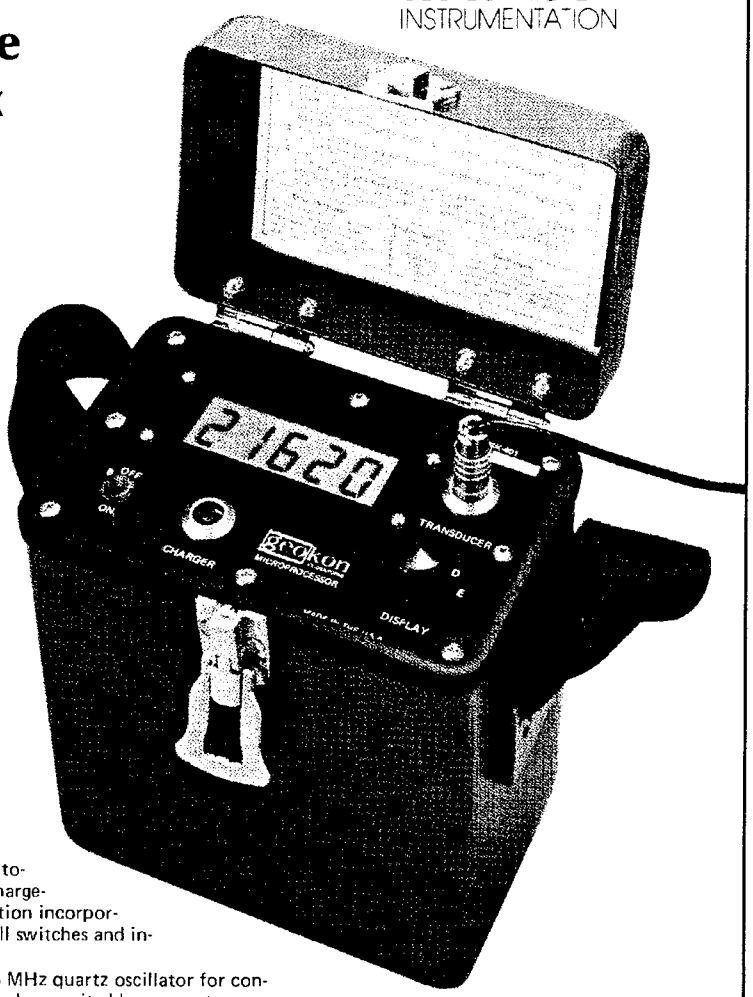
GEOTECHNICAL INSTRUMENTATION

Model GK-401

Vibrating Wire Readout Box



- ♦ Microprocessor controlled.
- ♦ Portable.
- ♦ Easy to operate.
- ♦ High accuracy and resolution.
- ♦ Rugged and reliable.
- ♦ Waterproofed.
- ♦ Rechargeable batteries.
- ♦ Cold weather operation.

The Model GK-401 Vibrating Wire Readout Box is a portable, waterproofed, battery-operated instrument for the readout of all Geokon vibrating wire gages and transducers.

Gages are read out by connecting them to the readout box using the input plug or patchcord provided. The box is switched on and set to the appropriate display setting, whereupon the gage reading is displayed on a 5-digit liquid crystal display (LCD).

The instrument utilizes a low power CMOS Microprocessor to perform the function of gage excitation and readout. It also manipulates the data to provide a readout directly in engineering units (Strain gages) or in units proportional to pressure, load, etc.(piezometers, total pressure cells, etc.).

The instrument features a 5-digit display, automatic shut-off for battery conservation, rechargeable sealed gel-type batteries and a construction incorporing water-proof seals on the face plate and all switches and input plugs.

The microprocessor utilizes an ultra-stable 6 MHz quartz oscillator for control and timing functions. The gage is plucked or excited by a swept square wave frequency pulse and senses the period of vibration of the return signal to a resolution of 0.1 microseconds.

A program function for reading weak gages is provided automatically. There are five separate switch positions for different readout functions.

Cold weather operation is allowed by use of special components and LCDs. A carrying strap is provided for easy portability. The battery charger is supplied with the instrument.

Specifications of the Model GK-401 Readout Box

Dimensions	6½"x4"x8½" (16.5cmx10cmx21.5cm)
Weight	5 pounds (2¼kg)
Temperature range	–30°C to 50°C (–20°F to 120°F)
Resolution	Period: 0.1 microsecond Strain: 1 microstrain
Batteries	Battery life: 10 hours Charger requires: 115V±10% 50-60Hz (230V optional) Batteries are sealed, gel-type 8V, 2.6 amphr.
Options	Backlighting Audio output of gage signal.
Ordering information	a). Options required. b). 115V or 230V AC Charger.

Figure B.24 VW Readout Box Specifications (Geokon, Inc.)

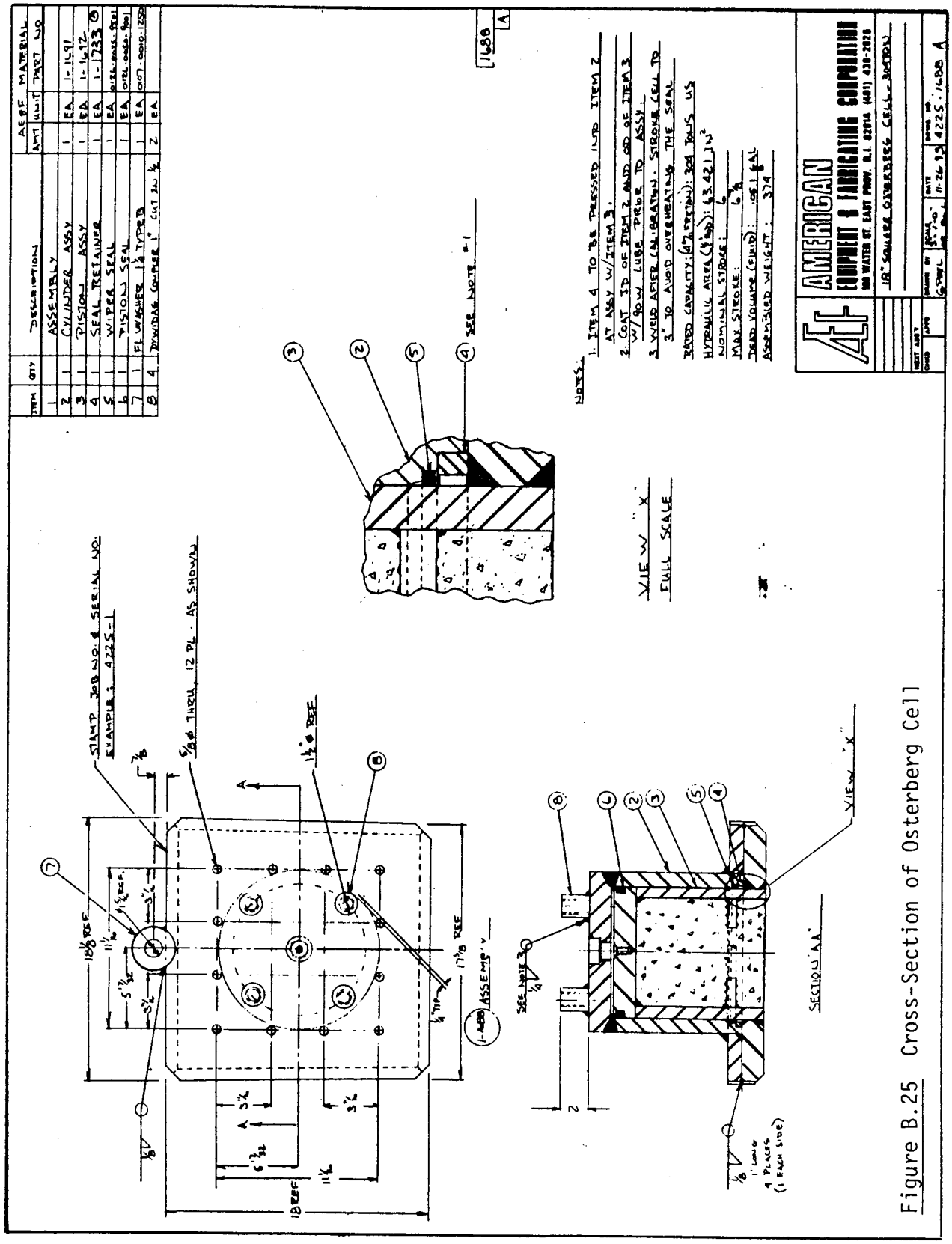


Figure B.25 Cross-Section of Osterberg Cell

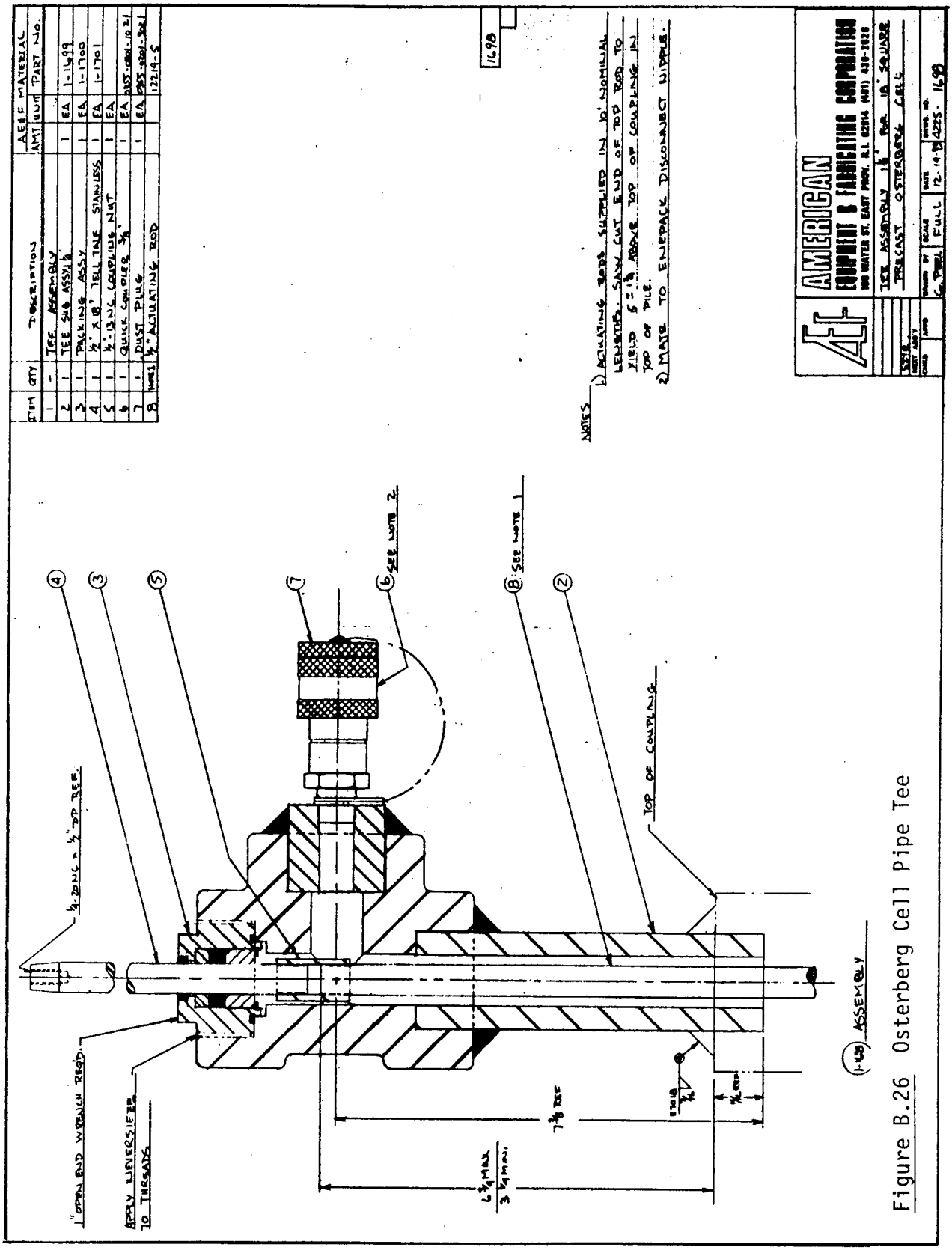
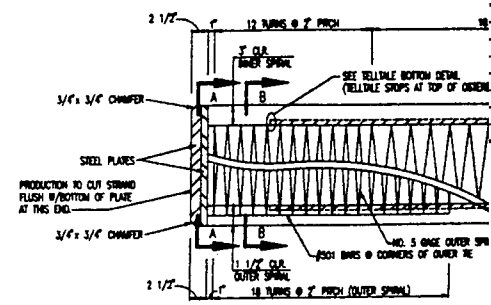
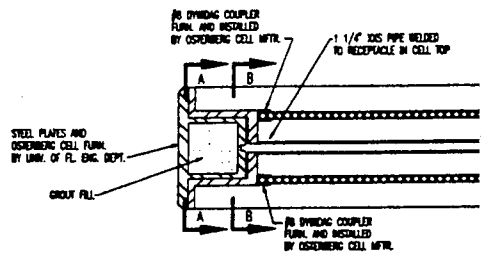
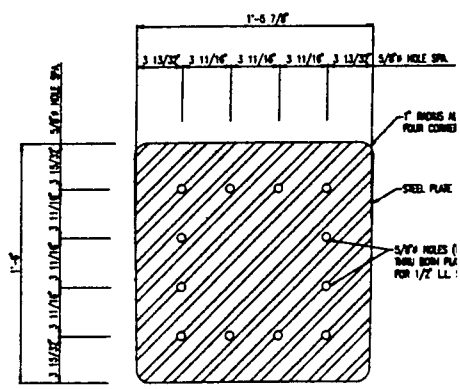


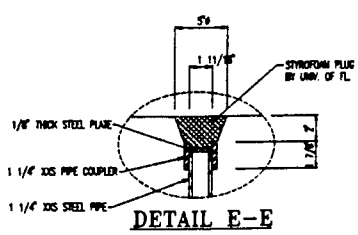
Figure B.26 Osterberg Cell Pipe Tee







SECTION A-A



DETAIL E-E

18" SQUARE PILING SCHEDULE

DESCRIPTION	NO. REQ'D	LENGTH	REMARKS
1/2"ø LL SPEC. @ 32,400 PSI	1	53'-6"	
	1	65'-6"	
	1	38'-6"	
	1	33'-0"	
	1	71'-0"	

TOTAL PILING 5

REBAR SCHEDULE

MK. NO.	QTY.	LENGTH	GRADE	REMARKS
#501	20	3'-0"	60	STRAIGHT

MISC. SCHEDULE

DISCRIPTION	QTY.	LENGTH	GRADE	REMARKS
1 1/4" XXS PIPE	14	21'-0"	XXS	CUT AND FIT AS REQ'D
1 1/4" XXS COUPLERS	15	----	XXS	WELDABLE
#8 DYWIDAG THREADBAR	20	VARIES	60	
3/4" PVC TELLTALE CASINGS	28	20'-0"	SCHD. 40	CUT TO FIT AS REQ'D
3/4" PVC CAPS	10	----	SCHD. 40	CAPS FOR TELLTALE CASINGS
1/8" PLATE (STEEL)	18	1" DIA.	A36	FOR TELLTALE CASINGS
1/8" PLATE (STEEL)	5	1 1/16" DIA.	A36	FURN. BY UNIV. OF FL.
STYROFOAM PLUG	5	5" DIA.		FURN. BY UNIV. OF FL.

NOTES

CONCRETE: F'C = 6000 PSI @ 28 DAYS
F'CI = 4000 PSI @ RELEASE
CLASS V (SPECIAL)

SPIRALS: SHALL MEET REQUIREMENTS OF ANY GRADE REINFORCING STEEL TIE TO 2 CORNERS PER WRAP.

FINISH: SIDES & BOTTOM - STEELFORM
TOP - STEEL TROWEL
ENDS - NO FINISH (EXCEPT AS NOTED ABOVE)

PRODUCTION TO BE VERY CAREFUL W/VIBRATION OF CONCRETE NEAR THE INSTRUMENTATION.

PLACE DUCT TAPE OVER THE TOP END OF THE TELLTALE CASINGS TO KEEP CONCRETE AND DEBRIS OUT.

THE STEEL PLATE AT THE BOTTOM OF THE TELLTALE CASING SHALL BE PERPENDICULAR TO THE AXIS OF THE TELLTALE.

LIFTING LOOPS TO BE CUT BACK 1"± INTO CONCRETE AND PATCHED W/APPROVED EPOXY MORTAR, BEFORE LEAVING THE PRODUCTION YARD.

ADDITIONAL INSTRUMENTATION TO BE FURNISHED AND INSTALLED BY THE UNIVERSITY OF FLORIDA ENG. DEPT BEFORE CASTING. GATE CONCRETE WILL HELP SECURE THE ADDITIONAL INSTRUMENTATION.

TELLTALE CASING TO BE SECURELY FASTENED TO THE SPIRAL AT 3'-0" ON CENTERS.

THE SURFACE OF THE PILE HEAD SHALL NOT DEVIATE MORE THAN 3/16" FROM A REFERENCE PLANE NORMAL TO THE PILE AXIS.

1 1/4" XXS PIPE WELDS RATED TO 10,000 PSI. ALL TORCH CUT PIPE ENDS TO BE GROUND FREE OF SLAG.

PRINTED
FEB 21 1994
JACKSONVILLE, FL

APPROVED
DRAWINGS

UARE PILING
DA D.O.T. SPECIFICATION

ITY OF FLORIDA
RCH PROJECT

PERRY, & JACKSONVILLE, FL.
CIVIL ENGINEERING DEPARTMENT

APPROVED DATE	SHEET NO.	JOB NO.
02/17/94	1 OF 1	3-94-030

GATE INC
CONCRETE PRODUCTS COMPANY
Jacksonville, Florida

Figure B.27 Construction Det

APPENDIX C
TEST PILE DRIVING RECORDS

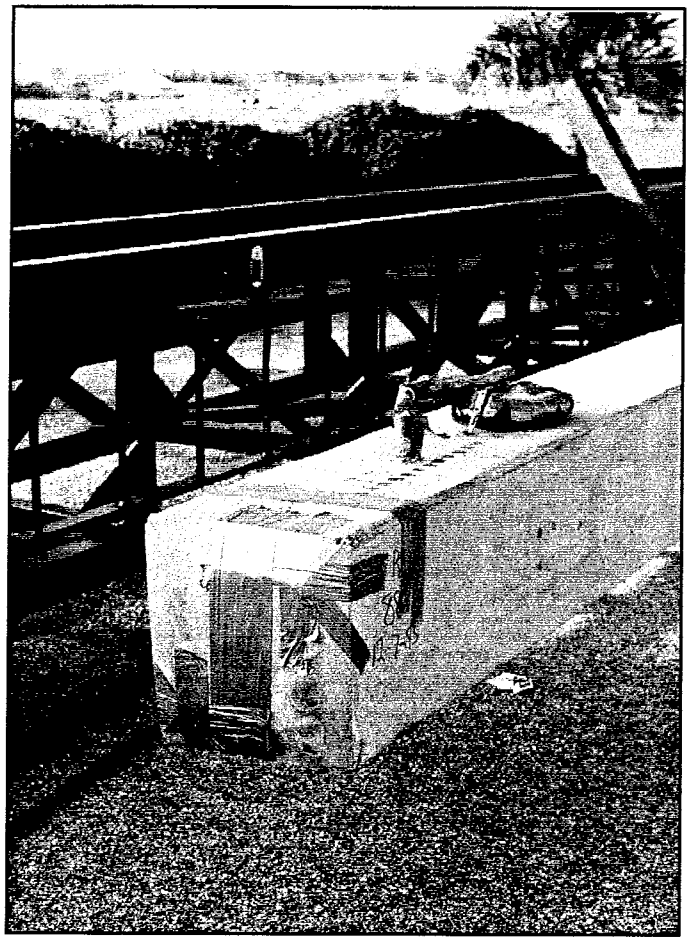


Figure C.1 Telltale Pipes and Instrumentation Wires Protected for Driving

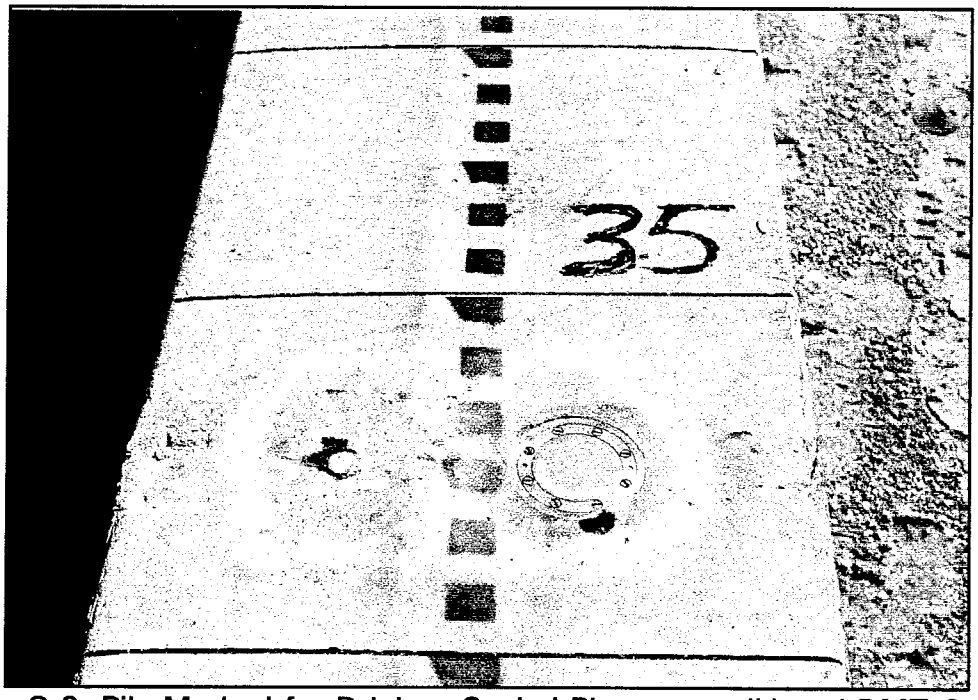


Figure C.2 Pile Marked for Driving, Sealed Piezometer (L) and DMT Cell (R)

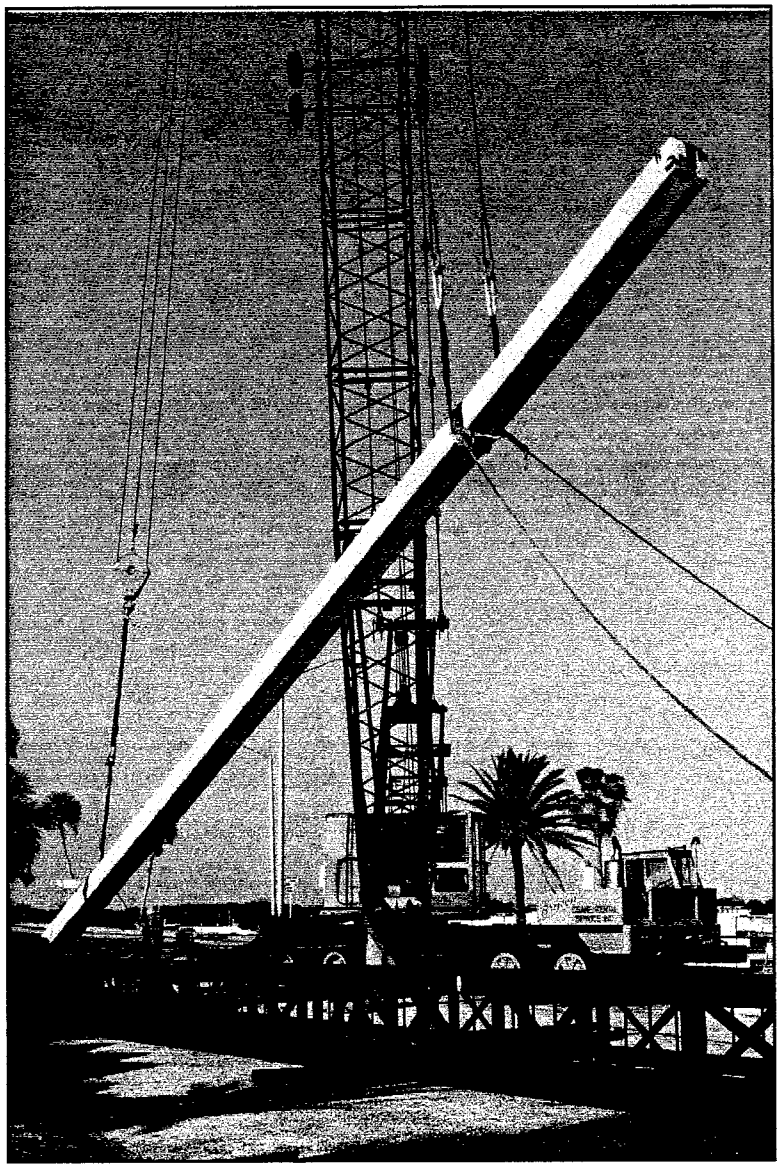


Figure C.3 Piles Handled with Multiple Pickup Points

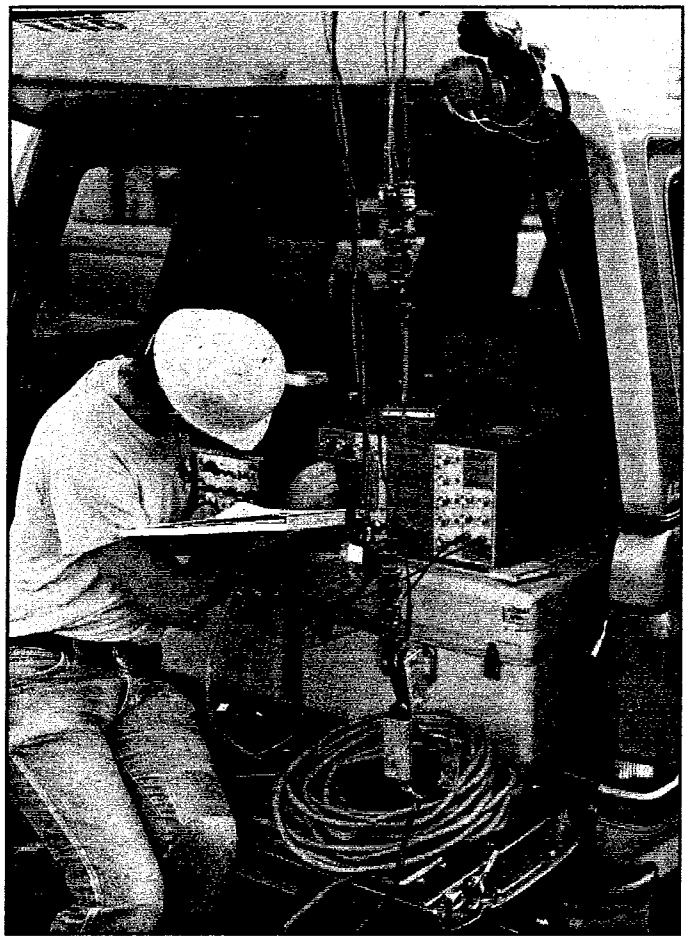


Figure C.4 S&C Personnel Assisted with Dynamic Measurements

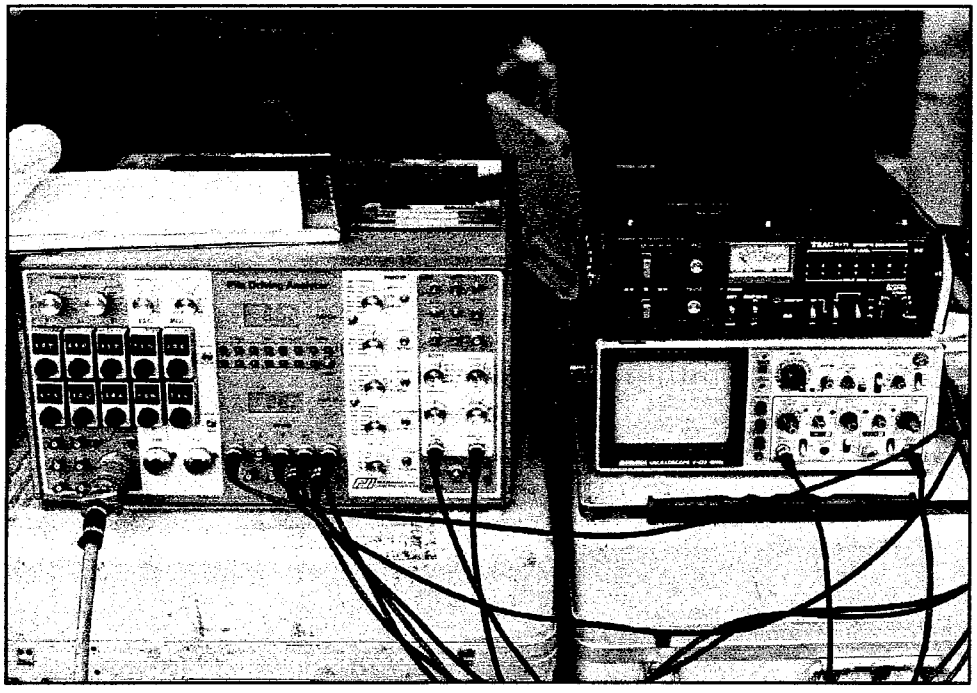


Figure C.5 GCX Pile Driving Analyzer Supplied by FDOT

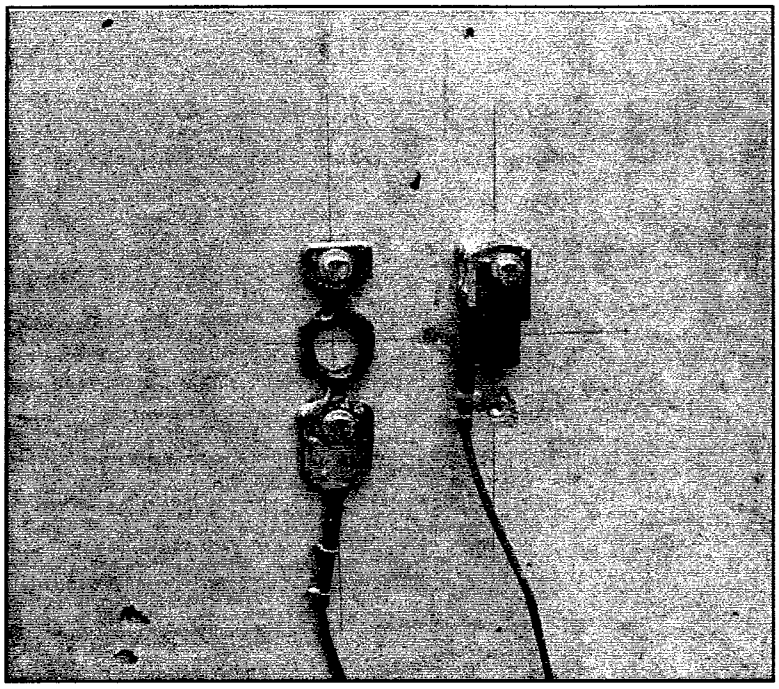


Figure C.6 Strain Gage (L) and Accelerometer (R) on Test Pile

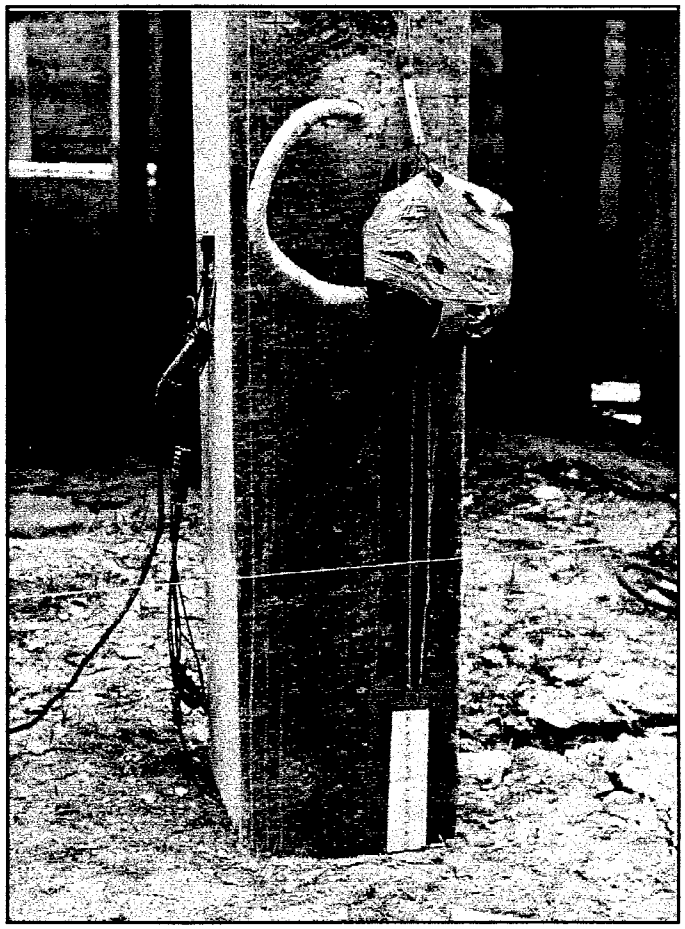


Figure C.7 PDA Instruments, Depth Reference Stringline (Aucilla Site)

Figure C.8 Delmag D46-32 Diesel Pile Hammer at Buckman Site

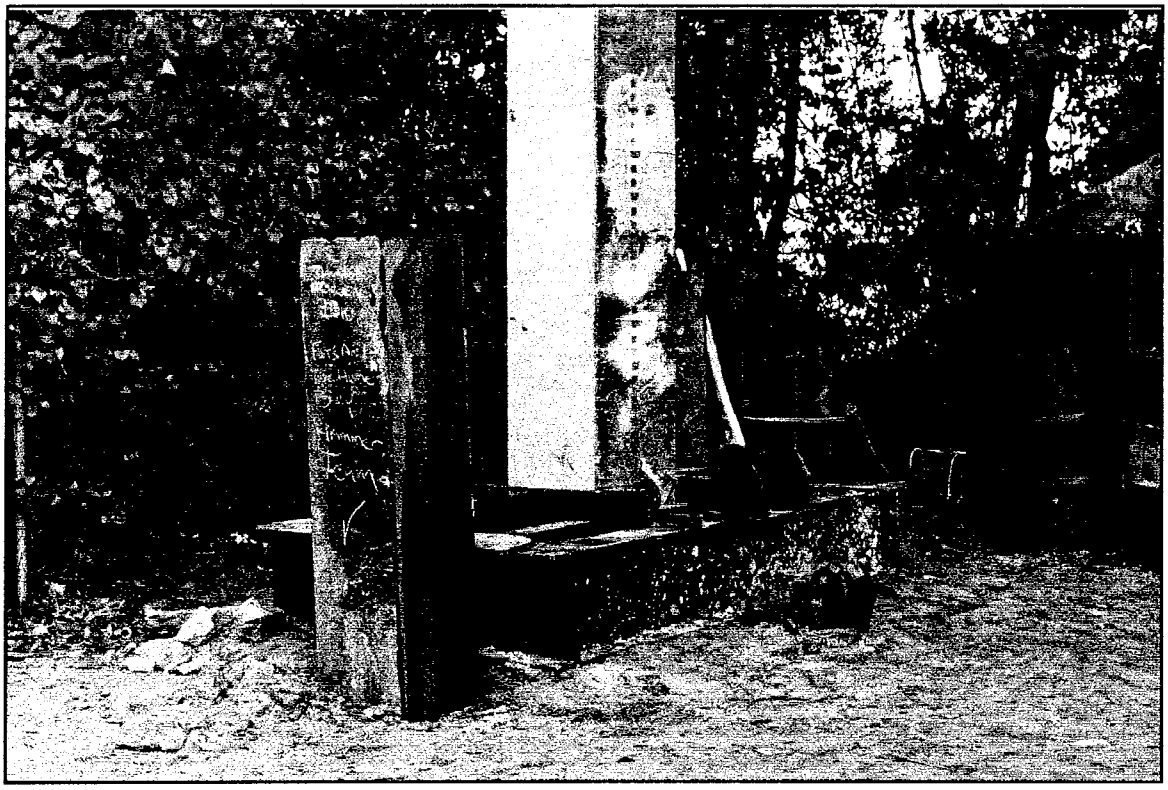


Figure C.9 Pile Template at Buckman Site

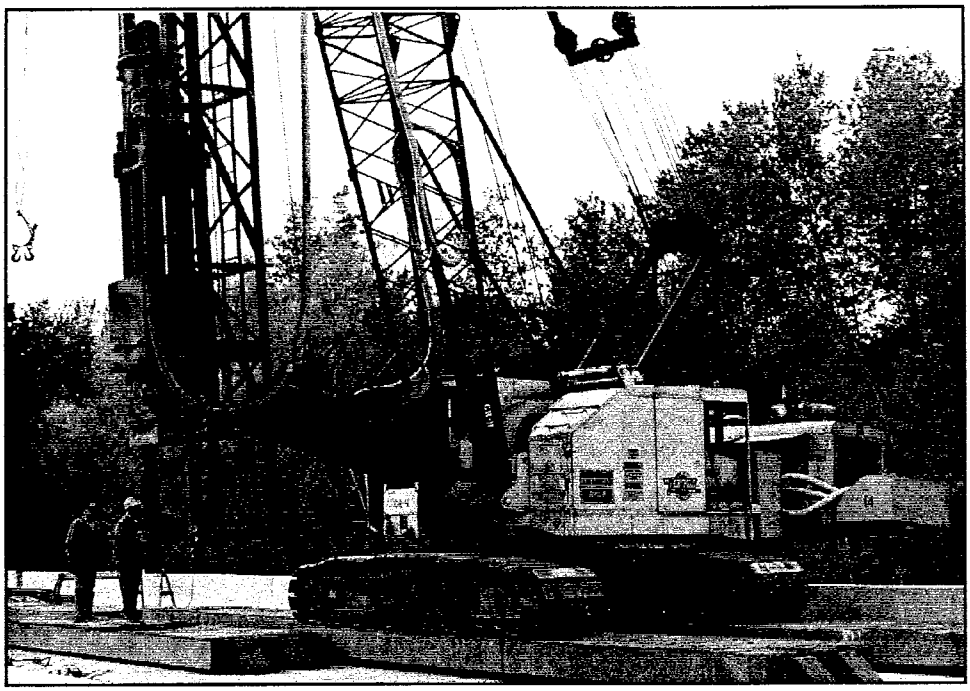


Figure C.10 Fairchild 32 Air/Steam Hammer with Fixed Leads (Aucilla Site)

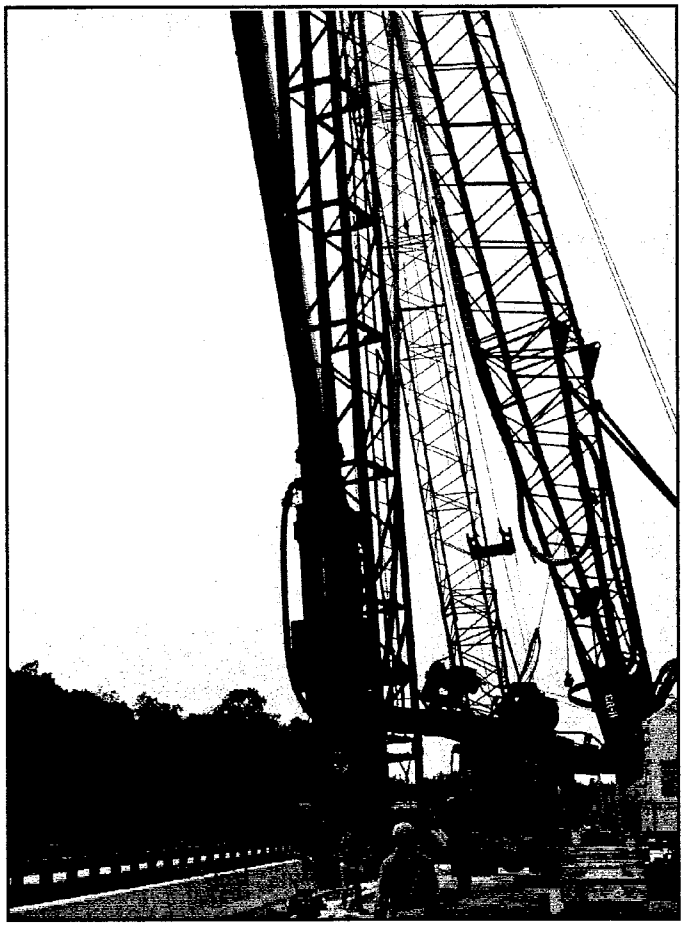


Figure C.11 Helper Crane Required to Assist Pile Lift (Aucilla Site)

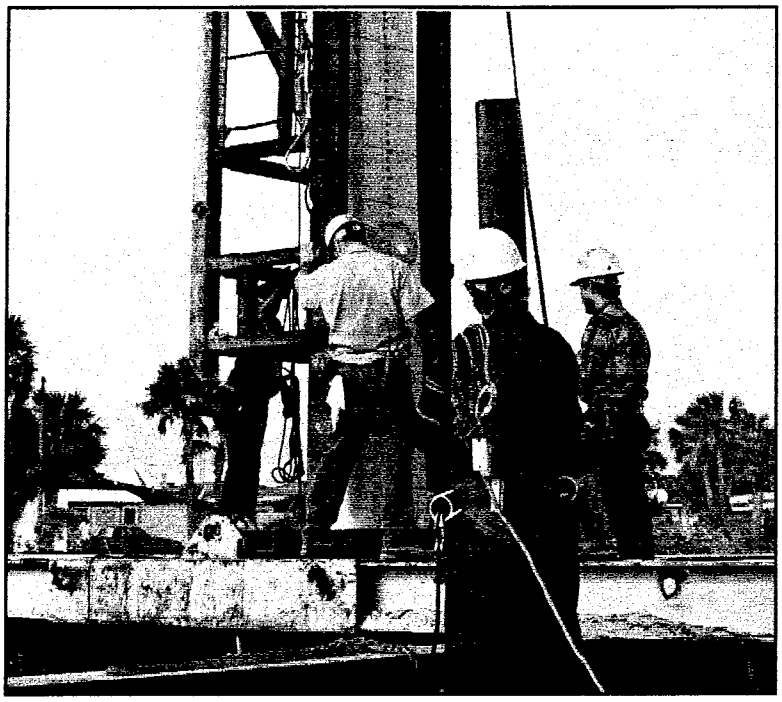


Figure C.12 Large Template at Vilano East

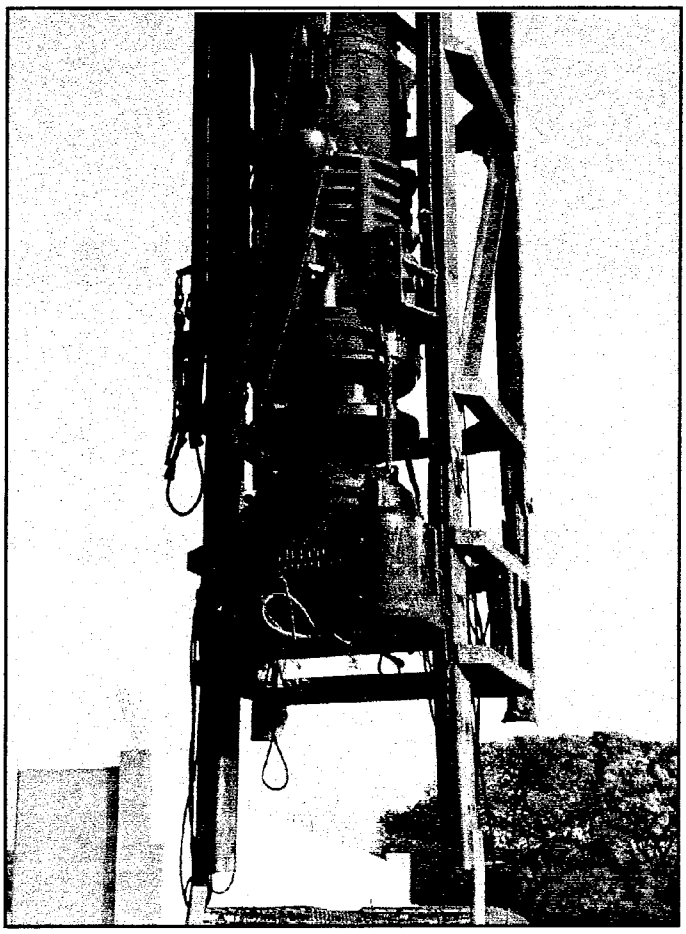


Figure C.13 Delmag D46-23 Diesel Hammer Used at Vilano East Site

Figure C.14 Prejetting Through Upper Sands at Vilano West Site

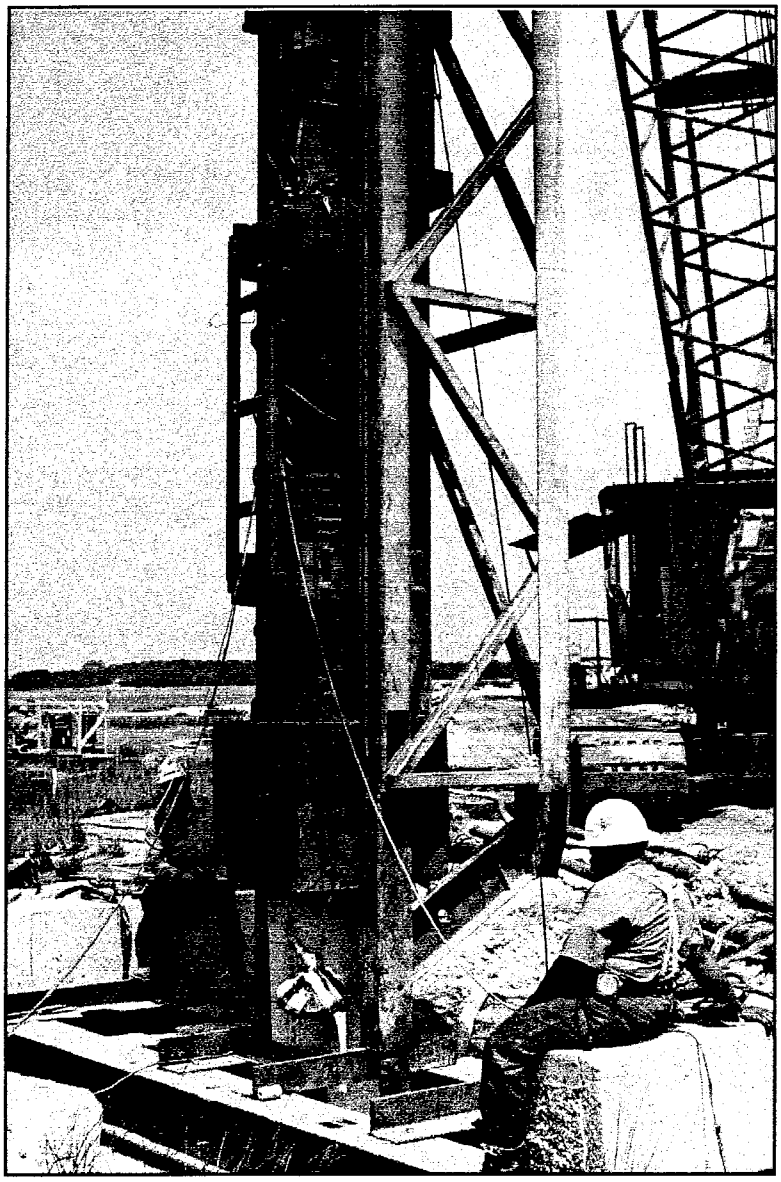


Figure C.15 Delmag D46-23 and Template at Vilano West Site

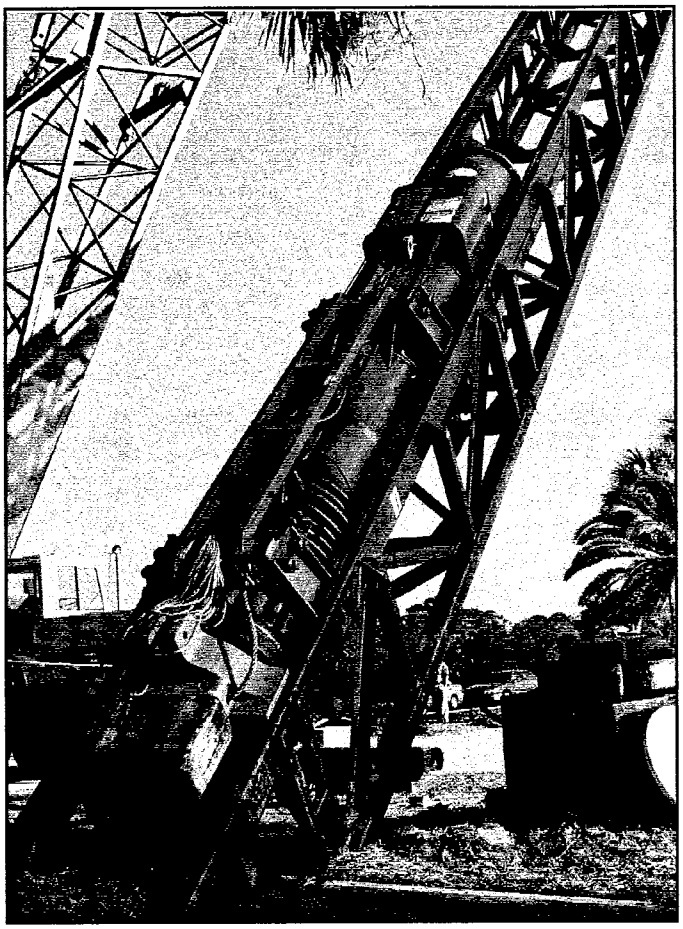


Figure C.16 Delmag D62-22 Diesel Hammer at Seabreeze Site

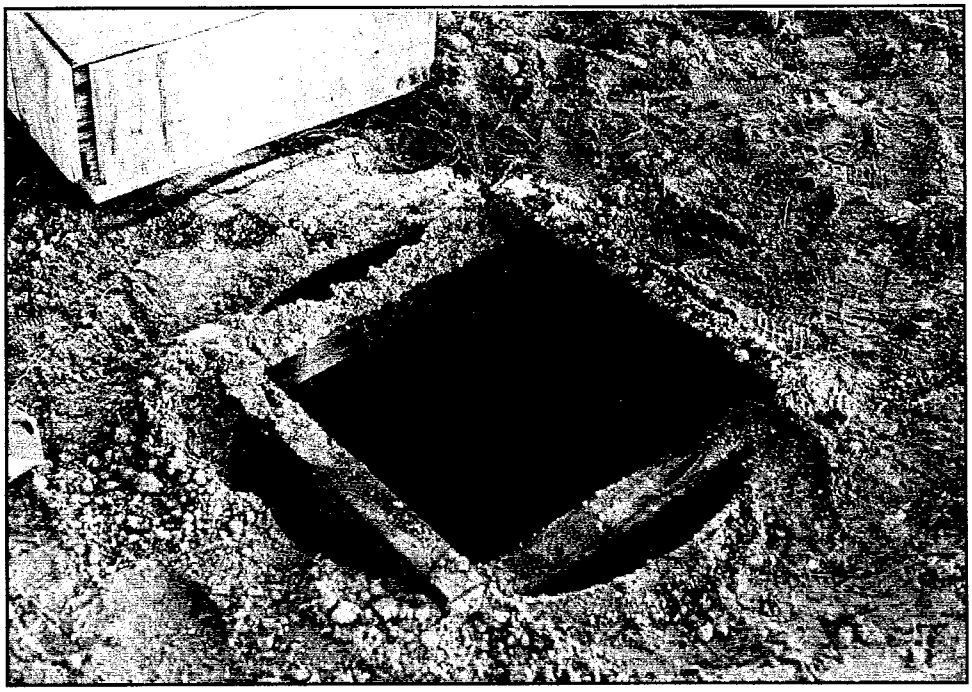


Figure C.17 36 in Casing Failed as Template at Seabreeze Site

Table C.1 Pile Driving Record (BKM)

BUCKMAN BRIDGE — PILE DRIVING RECORD — PAGE 1 OF 2

LOCATION	: STA362+90,160'LT CL	TIP PROTECTOR:	NONE	S & C PROJECT NO.	: 91-866
PILE INFO.	: CAST 3/14/94	SPLICES :	NONE	FDOT PROJECT NO.	: 99700-7584
PILE TYPE	: 18" SQ.PRSTR. CONC.	PREPUNCH :	AUGER TO ELEV. +10.30 ft	GROUND SURF. ELEV.	: +14.22 ft
CUTOFF ELEV.	: +17.00	JET :	NONE	REFERENCE ELEV.	: +15.47 ft
DATE DRIVEN	: 3/26/94	HAMMER :	DELMAG D46-32, SINGLE ACTING DIESEL		
INITIAL LGTH.	: 32.96 ft	CAP BLOCK :	2" MICARTA & 1.5" ALUMINUM	RATED ENERGY	: 107,177 ft-lbs
		PILE CUSHION :	10" PLYWOOD, NEW	RAM WEIGHT	: 10,143 lbs
DATE REDRIVEN	: N/A	HAMMER :	N/A		
REDRIVE LGTH.	: N/A	CAP BLOCK :	N/A	RATED ENERGY	: N/A ft-lbs
		PILE CUSHION :	N/A	RAM WEIGHT	: N/A lbs

PILE TIP ELEV. FT	LENGTH DRIVEN FT	NUMBER OF BLOWS	BLOWS PER FOOT	MEASURED STROKE FT	CALC. STROKE FT	HAMMER ENERGY FT-LBS	PDA RESULTS BPM	J = 0.4 EMAX FT-TONS	CTN TONS	RMAX TONS	FMAX TONS
10.76		WOP									
10.70	0.06	WOH									
	START 10:19, SINGLE DROPS, FUEL OFF										
9.68	1.02	1	1								
9.09	0.58	1	2					5.1	-17	0	143
8.63	0.46	1	2					5.7	-34	0	174
8.26	0.38	1	3					6.3	-30	0	194
7.93	0.33	1	3					7.0	-36	0	213
7.63	0.29	1	3					7.2	-25	0	226
7.38	0.25	1	4					7.5	-20	0	237
	NO STOP, FUEL #1, HAMMER QUIT AFTER EACH DEPTH INCREMENT										
6.49	0.90	3	3		4.0	40,100	58.4	9.8	-6	6	203
5.47	1.02	5	5		3.8	38,800	59.3	10.6	-1	19	189
	NO STOP, HAMMER RUNNING OK										
4.47	1.00	6	6		4.4	44,300	55.7	8.6	-3	42	227
3.47	1.00	9	9		4.6	46,500	54.5	8.8	-1	76	270
2.47	1.00	9	9		4.7	47,700	53.8	9.0	0	83	291
1.47	1.00	8	8		4.8	48,800	53.3	9.8	0	84	303
0.72	0.75	7	9		4.7	48,000	53.7	9.2	0	77	296
	STOP 10:26, UNCOVER PIEZOMETER, 3 MIN. STOP										
	START 10:29, FUEL #1										
0.47	0.25	2	8		5.2	53,200	51.1	14.9	-9	44	344
-0.53	1.00	8	8		4.6	46,500	54.5	8.9	0	84	282
-1.53	1.00	9	9		5.0	50,600	52.3	10.3	0	96	324
-2.53	1.00	11	11		5.2	52,600	51.4	10.8	0	101	342
-3.53	1.00	12	12		5.5	55,400	50.1	11.8	0	113	369
-4.62	1.08	16	15		5.5	56,100	49.8	11.3	0	127	375
	STOP 10:31, REMOVE TEMPLATE, 126 MIN. STOP										
	START 12:37, FUEL #1										
-4.70	0.08	1	12					14.4	0	137	338
-5.57	0.88	12	14		5.4	55,000	50.3	11.6	0	129	368
-6.57	1.00	13	13		5.5	55,400	50.1	11.9	0	134	384
-7.57	1.00	14	14		5.5	56,300	49.8	12.1	0	138	394
-8.57	1.00	15	15		5.6	57,000	49.5	12.2	0	145	402
-9.57	1.00	16	16		5.6	56,700	49.6	12.1	0	146	396
-10.57	1.00	14	14		5.5	56,000	49.9	11.9	0	139	387
-11.57	1.00	14	14		5.4	54,800	50.4	11.4	0	134	376
-12.57	1.00	13	13		5.5	55,800	50.0	12.1	0	133	383
-13.57	1.00	14	14		5.5	56,300	49.8	11.8	0	137	382
-14.57	1.00	15	15		5.6	57,200	49.4	11.7	0	154	389
-15.28	0.71	12	17		6.1	61,700	47.6	13.1	0	180	419
	STOP 12:40, SET CHECK, 20 MIN. STOP										
	START 13:00, FUEL #1										
-15.32	0.04	1	24					14.2	0	198	404
-15.39	0.06	1	16		7.8	78,700	42.4	18.5	0	229	524
-15.47	0.08	2	26		6.6	67,000	45.8	13.5	0	212	458
	STOP 13:01, SET CHECK, 44 MIN. STOP										
	CONTINUED NEXT PAGE										

Table C.1 continued

BUCKMAN BRIDGE — PILE DRIVING RECORD — PAGE 2 OF 2

PILE TIP ELEV. FT	LENGTH DRIVEN FT	NUMBER OF BLOWS	BLOWS PER FOOT	MEASURED STROKE FT	CALC. STROKE FT	HAMMER ENERGY FT-LBS	PDA RESULTS BPM	J = 0.4 EMAX FT-TONS	CTN TONS	RMAX TONS	FMAX TONS
	CONTINUED										
	START 13:45, FUEL #1										
-15.51	0.04	1	24					11.6	0	209	407
-15.55	0.04	1	24		6.5	66,100	46.1	15.1	0	225	476
-15.63	0.08	2	24		6.3	63,500	47.0	12.6	0	215	455
-15.83	0.20	5	25		6.0	60,700	48.0	12.0	0	215	437
	STOP 13:45, END OF DRIVING										

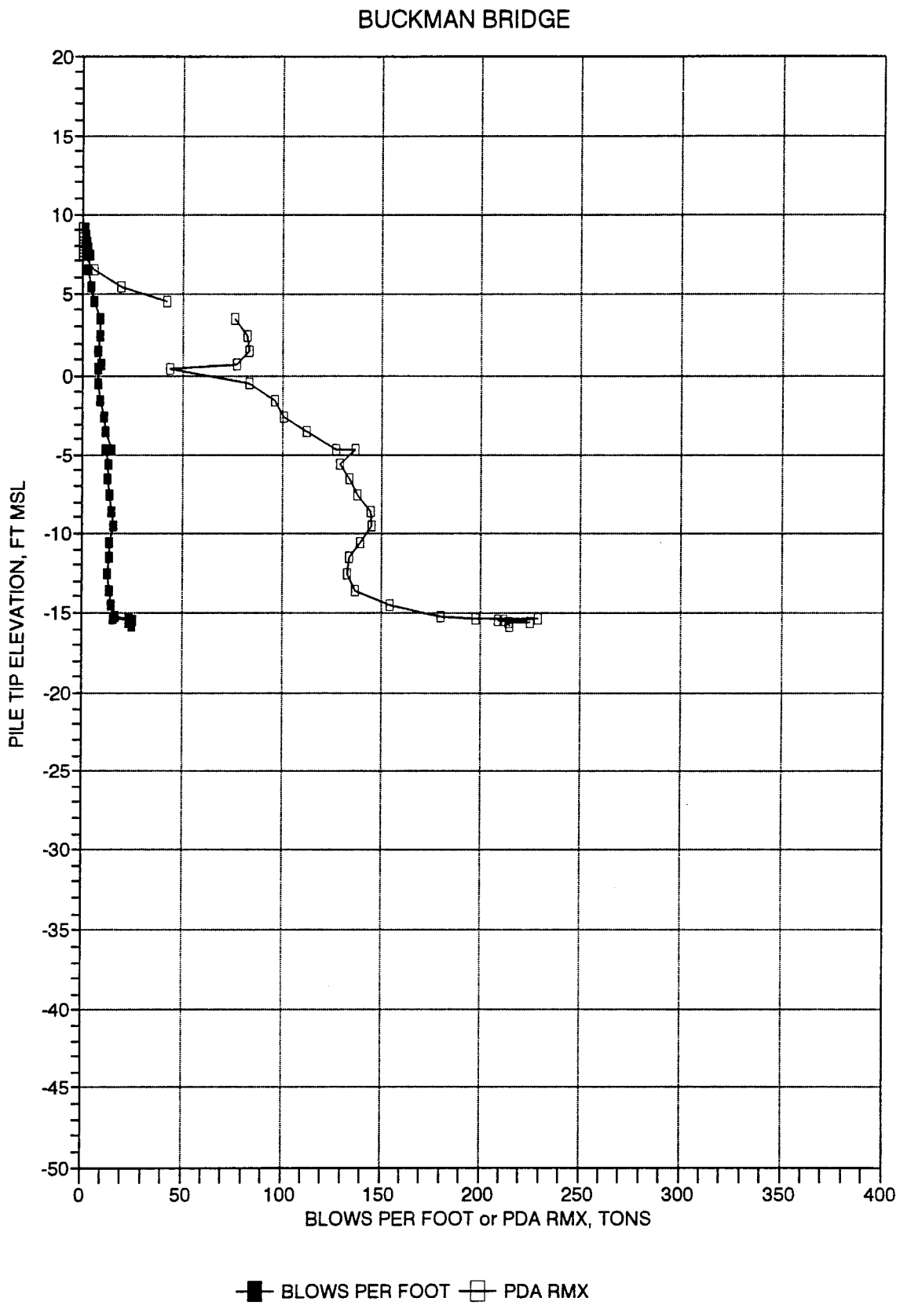


Figure C.18 Driving Resistance (BKM)

Table C.2 Pile Driving Record (AUC)

AUCILLA RIVER BRIDGE — PILE DRIVING RECORD — PAGE 1 OF 2

LOCATION : STA494+47,93'RT BL
PILE INFO. : CAST 3/14/94
PILE TYPE : 18" SQ.PRSTR. CONC.
CUTOFF ELEV. : +59.50 ft

TIP PROTECTOR: NONE
SPLICES : NONE
PREPUNCH : NONE
JET : NONE

S & C PROJECT NO. : 91-866
FDOT PROJECT NO. : 99700-7584
GROUND SURF. ELEV.: +53.21 ft
REFERENCE ELEV. : +55.19 ft

DATE DRIVEN : 3/30/94
INITIAL LGTH.: 69.97 ft

HAMMER : FAIRCHILD 32 (AIR/STEAM)
CAP BLOCK : 5" BLUE POLYMER
PILE CUSHION : 6" PLYWOOD, NEW

RATED ENERGY : 32,000 ft-lbs
RAM WEIGHT : 10,846 lbs

DATE REDRIVEN: N/A
REDRIVE LGTH.: N/A

HAMMER : N/A
CAP BLOCK : N/A
PILE CUSHION : N/A

RATED ENERGY : N/A ft-lbs
RAM WEIGHT : N/A lbs

PILE TIP ELEV. FT	LENGTH DRIVEN FT	NUMBER OF BLOWS	BLOWS PER FOOT	MEASURED STROKE FT	NOMINAL STROKE FT	HAMMER ENERGY FT-LBS	PDA RESULTS BPM	J = 0.4 EMAX FT-TONS	CTN TONS	RMAX TONS	FMAX TONS
53.21		WOH									
	START 9:45, HALF STROKE										
52.25	0.96	14	15		1.5	16,300	62.2	3.7	-60	22	208
51.25	1.00	9	9		1.5	16,300	32.5	4.4	-93	8	253
50.17	1.08	8	7		1.5	16,300	32.7	4.2	-90	0	250
	STOP 9:47, UNCOVER PIEZOMETER, 5 MIN. STOP										
	START 9:52, HALF STROKE										
49.25	0.92	8	9		1.5	16,300	62.9	3.9	-79	9	242
48.25	1.00	12	12		1.5	16,300	32.9	4.7	-82	32	265
47.25	1.00	26	26		1.5	16,300	37.8	4.8	-79	65	267
46.25	1.00	44	44		1.5	16,300	35.2	4.7	-73	81	266
45.25	1.00	36	36		1.5	16,300	61.2	4.5	-80	63	258
44.25	1.00	20	20		1.5	16,300	62.2	5.1	-92	53	277
43.25	1.00	15	15		1.5	16,300	63.7	5.1	-87	33	274
42.25	1.00	13	13		1.5	16,300	63.1	4.9	-84	28	269
41.25	1.00	12	12		1.5	16,300	63.5	4.9	-85	27	273
40.25	1.00	12	12		1.5	16,300	63.6	4.9	-85	27	271
39.25	1.00	12	12		1.5	16,300	63.5	4.9	-85	28	270
38.25	1.00	12	12		1.5	16,300	63.4	4.9	-84	29	269
37.67	0.58	6	10		1.5	16,300	63.5	4.7	-84	29	268
	STOP 9:55, UNCOVER PIEZOMETER, 6 MIN. STOP										
	START 10:01, HALF STROKE										
37.25	0.42	7	17		1.5	16,300	48.2	4.2	-71	33	250
36.25	1.00	12	12		1.5	16,300	32.6	5.2	-96	28	286
35.25	1.00	13	13		1.5	16,300	32.6	5.5	-100	29	296
34.25	1.00	12	12		1.5	16,300	32.7	5.5	-98	28	296
33.25	1.00	12	12		1.5	16,300	32.6	5.3	-94	26	292
32.25	1.00	12	12		1.5	16,300	53.7	5.1	-90	26	285
31.25	1.00	10	10		1.5	16,300	61.1	5.0	-90	25	281
30.25	1.00	11	11		1.5	16,300	43.0	5.0	-87	26	279
29.25	1.00	17	17		1.5	16,300	32.8	5.2	-73	51	284
28.25	1.00	29	29		1.5	16,300	32.9	5.2	-51	66	284
27.69	0.56	20	36		3.0	32,500	32.8	5.1	-47	67	280
	STOP 10:04, UNCOVER PIEZOMETER, 19 MIN. STOP										
	START 10:23, FULL STROKE										
27.66	0.03	1	32		3.0	32,500	0.0	4.6	-28	72	242
27.63	0.03	1	32		3.0	32,500	43.0	6.6	-45	68	297
27.25	0.38	7	19		3.0	32,500	47.5	7.7	-66	75	343
26.25	1.00	14	14		3.0	32,500	49.4	8.2	-98	71	368
25.25	1.00	11	11		3.0	32,500	48.2	8.1	-114	61	367
24.25	1.00	12	12		3.0	32,500	48.1	8.2	-112	66	365
23.25	1.00	18	18		3.0	32,500	48.3	8.2	-86	79	363
22.25	1.00	29	29		3.0	32,500	48.9	8.2	-61	95	363
21.25	1.00	26	26		3.0	32,500	48.5	8.1	-76	78	358
20.25	1.00	20	20		3.0	32,500	48.7	8.1	-87	78	355
19.77	0.48	8	17		3.0	32,500	48.5	8.1	-92	79	353
	STOP 10:26, UNCOVER PIEZOMETER, 4 MIN. STOP										
	CONTINUED NEXT PAGE										

Table C.2 continued

AUCILLA RIVER BRIDGE — PILE DRIVING RECORD — PAGE 2 OF 2

PILE TIP ELEV. FT	LENGTH DRIVEN FT	NUMBER OF BLOWS	BLOWS PER FOOT	MEASURED STROKE FT	CALC. STROKE FT	HAMMER ENERGY FT-LBS	PDA RESULTS BPM	J = 0.4 EMAX FT-TONS	CTN TONS	RMAX TONS	FMAX TONS
	START 10:30, FULL STROKE										
19.25	0.52	9	17		3.0	32,500	47.4	8.3	-113	80	360
18.25	1.00	12	12		3.0	32,500	48.1	8.3	-127	72	363
17.25	1.00	10	10		3.0	32,500	47.8	8.2	-136	63	360
16.25	1.00	9	9		3.0	32,500	47.9	8.2	-137	57	358
15.25	1.00	9	9		3.0	32,500	47.9	8.1	-138	51	355
14.25	1.00	8	8		3.0	32,500	48.2	8.1	-138	46	354
13.25	1.00	8	8		3.0	32,500	48.3	8.1	-140	44	356
12.25	1.00	8	8		3.0	32,500	48.2	8.1	-140	43	356
11.25	1.00	8	8		3.0	32,500	48.2	8.1	-137	44	356
10.25	1.00	8	8		3.0	32,500	48.2	8.0	-137	47	356
9.25	1.00	9	9		3.0	32,500	48.3	8.0	-137	42	356
8.25	1.00	8	8		3.0	32,500	48.2	7.9	-135	45	355
7.25	1.00	9	9		3.0	32,500	48.2	7.9	-132	48	354
6.25	1.00	9	9		3.0	32,500	48.3	7.9	-127	51	356
5.72	0.53	5	9		3.0	32,500	48.2	8.0	-125	53	357
	STOP 10:32, UNCOVER PIEZOMETER, 4 MIN. STOP										
	START 10:36, FULL STROKE										
5.25	0.47	6	13		3.0	32,500	47.2	8.3	-148	82	372
4.25	1.00	10	10		3.0	32,500	47.6	8.3	-150	84	376
3.25	1.00	11	11		3.0	32,500	47.8	8.4	-151	84	378
2.25	1.00	12	12		3.0	32,500	47.9	8.3	-145	91	378
1.25	1.00	12	12		3.0	32,500	48.0	8.4	-142	94	378
0.25	1.00	13	13		3.0	32,500	47.9	8.3	-141	96	376
-0.75	1.00	12	12		3.0	32,500	47.8	8.3	-141	98	377
-1.75	1.00	13	13		3.0	32,500	48.0	8.2	-139	100	376
-2.75	1.00	13	13		3.0	32,500	48.1	8.2	-137	95	376
-3.75	1.00	13	13		3.0	32,500	48.6	8.3	-134	94	377
-4.75	1.00	12	12		3.0	32,500	48.8	8.3	-134	91	379
-5.75	1.00	13	13		3.0	32,500	49.0	8.4	-129	84	380
-6.75	1.00	13	13		3.0	32,500	49.0	8.4	-121	74	382
-6.94	0.19	3	16		3.0	32,500	48.8	8.3	-114	68	377
	STOP 10:40, BRIEF STOP, <1 MIN. STOP										
	START 10:40, FULL STROKE										
-7.17	0.23	5	22		3.0	32,500	47.8	8.4	-108	77	377
-7.83	0.67	19	28		3.0	32,500	48.7	8.6	-51	120	385
	STOP 10:41, SET CHECK, 15 MIN. STOP										
	START 10:56, FULL STROKE										
-7.85	0.02	1	48		3.0	32,500		8.2	-21	171	405
-7.91	0.05	2	38		3.0	32,500	48.9	9.3	-63	163	437
-8.01	0.10	4	38		3.0	32,500	49.5	9.7	-72	168	442
	STOP 10:57, SET CHECK, 44 MIN. STOP										
	START 11:41, FULL STROKE										
-8.02	0.01	1	96		3.0	32,500		8.1	-31	211	414
-8.04	0.02	1	48		3.0	32,500	43.5	9.4	-72	215	444
-8.08	0.04	2	48		3.0	32,500	45.9	9.7	-91	213	455
-8.75	0.67	35	53		3.0	32,500	49.3	10.4	-121	220	469
-9.25	0.50	33	66		3.0	32,500	48.9	10.4	-132	272	465
-9.50	0.25	24	96		3.0	32,500	50.3	10.3	-121	347	461
-9.67	0.17	20	120		3.0	32,500	50.5	10.3	-124	382	457
-9.75	0.08	16	192		3.0	32,500	51.0	10.4	-116	404	456
	STOP 11:43, END OF DRIVING										

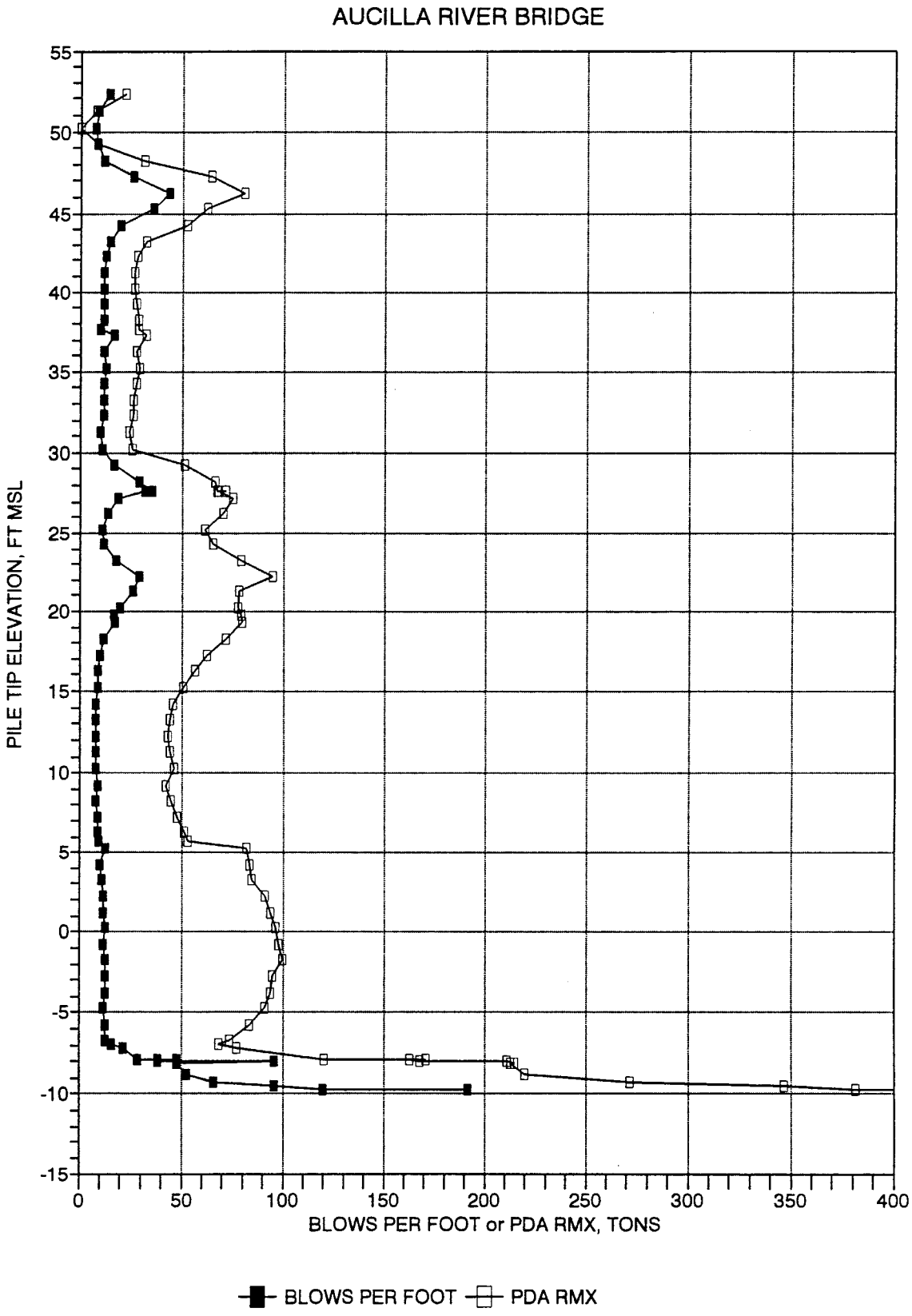


Figure C.19 Driving Resistance (AUC)

Table C.3 Pile Driving Record (VLE)

VILANO BEACH BRIDGE EAST — PILE DRIVING RECORD — PAGE 1 OF 2

LOCATION	: STA183+47, 96'RT CL	TIP PROTECTOR:	NONE	S & C PROJECT NO.	: 91-866
PILE INFO.	: CAST 3/22/94	SPLICES :	NONE	FDOT PROJECT NO.	: 99700-7584
PILE TYPE	: 18" SQ.PRSTR. CONC.	PREPUNCH :	NONE	GROUND SURF. ELEV.	: +3.57 ft
CUTOFF ELEV.	: +7.50 ft	JET :	NONE	REFERENCE ELEV.	: +10.65 ft
DATE DRIVEN	: 4/14/94	HAMMER :	DELMAG D46-23, SINGLE ACTING DIESEL		
INITIAL LGTH.	: 38.99 ft	CAP BLOCK :	2" MICARTA & 1.5" ALUMINUM	RATED ENERGY	: 105,000 ft-lbs
		PILE CUSHION :	9.75" PLYWOOD , NEW	RAM WEIGHT	: 10,100 lbs
DATE REDRIVEN	: N/A	HAMMER :	N/A		
REDRIVE LGTH.	: N/A	CAP BLOCK :	N/A	RATED ENERGY	: N/A ft-lbs
		PILE CUSHION :	N/A	RAM WEIGHT	: N/A lbs

PILE TIP ELEV. FT	LENGTH DRIVEN FT	NUMBER OF BLOWS	BLOWS PER FOOT	MEASURED STROKE FT	CALC. STROKE FT	HAMMER ENERGY FT-LBS	PDA RESULTS BPM	J = 0.4 EMAX FT-TONS	CTN TONS	RMAX TONS	FMAX TONS
0.37		WOP									
0.29	0.08	WOH									
	START 9:38, SINGLE DROPS, FUEL OFF										
0.04	0.25	1	4					7.0	0	29	115
-0.38	0.42	3	7		4.7	47,700	53.7	9.7	0	64	156
	NO STOP, FUEL #1, HAMMER QUITS EACH DEPTH INCREMENT BELOW										
-0.71	0.33	3	9		5.0	50,100	52.5	9.0	0	91	196
-1.04	0.33	3	9		5.1	51,300	51.9	8.8	0	106	213
-1.38	0.33	3	9		5.1	51,800	51.7	8.6	0	112	221
-1.71	0.33	4	12		5.2	52,300	51.4	8.5	0	122	228
	NO STOP, SWITCH TO FUEL #2, HAMMER ERRATIC BELOW										
-2.13	0.42	5	12		5.2	52,200	51.5	9.4	0	132	234
-2.50	0.38	5	13		5.5	55,200	50.1	10.2	0	142	259
-2.88	0.38	6	16		5.2	52,300	51.4	9.3	0	138	254
-3.29	0.42	7	17		4.8	48,700	53.2	8.0	0	130	235
-3.88	0.58	10	17		4.9	50,000	52.5	8.3	0	129	244
-4.46	0.58	7	12		5.1	52,000	51.6	9.7	0	128	262
-5.17	0.71	8	11		4.9	49,700	52.7	9.2	0	116	246
-5.61	0.44	5	11		4.7	47,700	53.7	10.4	0	104	243
-6.21	0.60	4	7		5.3	53,100	51.1	12.6	0	109	279
-6.88	0.67	6	9		4.9	49,700	52.7	10.5	0	103	251
-7.46	0.58	6	10		4.8	48,400	53.4	10.1	0	104	249
	NO STOP, HAMMER OPERATES CONTINUOUSLY BELOW										
-7.92	0.46	5	11		5.0	50,500	52.3	10.9	0	111	274
-8.38	0.46	4	9		6.1	61,300	47.7	14.7	0	126	342
-9.38	1.00	19	19		4.8	48,000	53.5	7.4	0	115	238
-10.21	0.83	15	18		5.1	51,900	51.6	8.0	0	136	272
	STOP 9:50, UNCOVER PIEZOMETER, 3 MIN. STOP										
	START 9:53, FUEL #2										
-10.38	0.17	2	12		6.1	61,800	47.5	11.2	0	161	333
-11.38	1.00	20	20		5.7	57,400	49.2	9.7	0	159	317
-12.38	1.00	24	24		5.6	56,600	49.6	9.1	0	166	318
-13.38	1.00	28	28		5.7	58,100	48.9	9.3	0	171	332
-14.38	1.00	33	33		6.0	60,300	48.1	9.7	0	191	348
-15.38	1.00	35	35		6.1	61,400	47.7	9.8	0	205	354
-16.38	1.00	34	34		6.1	61,700	47.5	10.1	0	205	362
	STOP 9:56, UNCOVER PIEZOMETER, 5 MIN. STOP										
	START 10:06, FUEL #2										
-16.46	0.08	3	36		6.6	67,000	45.7	10.5	0	206	369
-16.88	0.42	14	34		6.2	62,100	47.4	10.0	0	204	359
-17.38	0.50	19	38		6.2	62,500	47.3	9.9	0	214	366
-18.38	1.00	43	43		6.2	63,100	47.0	9.9	0	232	370
-18.96	0.58	32	55		6.2	62,100	47.4	9.4	0	250	361
	NO STOP, SWITCH TO FUEL #3										
-19.38	0.42	19	46		6.8	69,100	45.0	12.1	0	270	421
-20.38	1.00	49	49		6.8	68,900	45.1	11.9	0	286	428
-21.38	1.00	51	51		7.0	70,700	44.5	12.5	0	299	467
-22.38	1.00	54	54		7.1	71,600	44.3	12.7	0	304	504
-23.40	1.02	58	57		7.1	71,800	44.2	12.5	0	303	517
	CONTINUED NEXT PAGE										

Table C.3 continued

VILANO BEACH BRIDGE EAST — PILE DRIVING RECORD — PAGE 2 OF 2

PILE TIP ELEV. FT	LENGTH DRIVEN FT	NUMBER OF BLOWS	BLOWS PER FOOT	MEASURED STROKE FT	CALC. STROKE FT	HAMMER ENERGY FT-LBS	PDA RESULTS BPM	J = 0.4 EMAX FT-TONS	CTN TONS	RMAX TONS	FMAX TONS
	CONTINUED										
	STOP 10:14, REMOVE TEMPLATE, 87 MIN. STOP										
	START 11:41, FUEL #3										
-23.48	0.08	6	72		7.5	75,800	43.1	12.3	0	298	446
-23.69	0.21	13	62		7.1	71,900	44.2	11.4	0	293	442
-24.44	0.75	41	55		7.1	71,800	44.2	11.8	0	296	468
	NO STOP, SWITCH TO FUEL #4										
-24.69	0.25	18	72		7.4	74,500	43.5	13.4	0	313	516
-25.69	1.00	53	53		7.5	75,300	43.2	13.8	0	316	542
-26.69	1.00	51	51		7.5	75,700	43.1	13.9	0	319	560
-27.69	1.00	53	53		7.5	76,200	43.0	14.0	0	320	570
-27.81	0.13	7	56		7.6	76,600	42.9	13.8	0	318	573
	NO STOP, SWITCH TO FUEL #3										
-28.69	0.88	54	62		7.3	73,300	43.8	12.3	0	305	539
-29.69	1.00	73	73		7.1	71,400	44.3	10.9	0	300	513
-30.69	1.00	90	90		6.7	67,500	45.6	9.1	0	293	466
-31.27	0.58	45	77		7.0	70,200	44.7	10.0	0	293	602
	STOP 11:52, SET CHECK, 18 MIN. STOP										
	START 12:10, FUEL #3										
-31.29	0.02	2	96		7.3	73,600	43.7	11.3	0	311	493
-31.37	0.07	6	82		7.5	76,100	43.0	11.8	0	311	514
	STOP 12:11, SET CHECK, 49 MIN. STOP										
	START 13:00, FUEL #3, HAMMER WET/COLD										
-31.38	0.02	6	384		4.5	45,900	54.7	3.9	0	255	297
	STOP 13:01, HAMMER QUIT, 1 MIN. STOP										
	START 13:02, FUEL #3										
-31.41	0.03	3	115		6.4	64,800	46.5	8.4	0	315	435
-31.46	0.05	4	77		7.6	77,100	42.7	13.8	0	327	555
	STOP 13:04, END OF DRIVING										

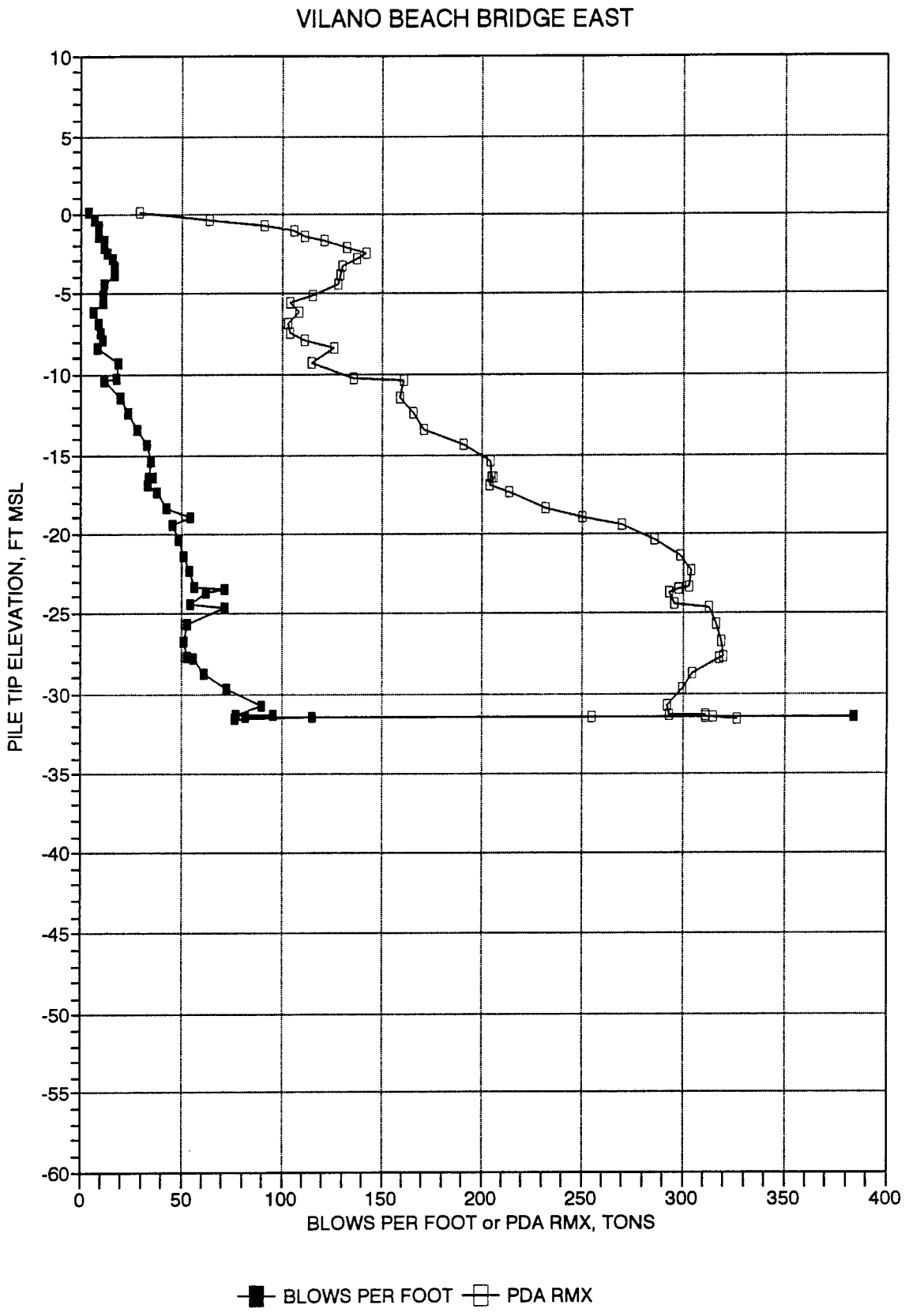


Figure C.20 Driving Resistance (VLE)

Table C.4 Pile Driving Record (VLW)

VILANO BEACH BRIDGE WEST — PILE DRIVING RECORD — PAGE 1 OF 1

LOCATION : STA142+60, 70'LT CL
PILE INFO. : CAST 3/22/94
PILE TYPE : 18" SQ.PRSTR. CONC.
CUTOFF ELEV. : +9.50 ft

TIP PROTECTOR: NONE
SPLICES : NONE
PREPUNCH : NONE
JET : PREJET TO ELEV. -19.3'

S & C PROJECT NO. : 91-866
FDOT PROJECT NO. : 99700-7584
GROUND SURF. ELEV.: +4.57 ft
REFERENCE ELEV. : +5.73 ft

DATE DRIVEN : 8/24/94
INITIAL LGTH.: 65.48 ft

HAMMER : DELMAG D46-23, SINGLE-ACTING DIESEL
CAP BLOCK : 2" MICARTA & 1.5" ALUMINUM
PILE CUSHION : 12" PLYWOOD, NEW

RATED ENERGY : 105,000 ft-lbs
RAM WEIGHT : 10,100 lbs

DATE REDRIVEN: N/A
REDRIVE LGTH.: N/A

HAMMER : N/A
CAP BLOCK : N/A
PILE CUSHION : N/A

RATED ENERGY : N/A ft-lbs
RAM WEIGHT : N/A lbs

PILE TIP ELEV. FT	LENGTH DRIVEN FT	NUMBER OF BLOWS	BLOWS PER FOOT	MEASURED STROKE FT	CALC. STROKE FT	HAMMER ENERGY FT-LBS	PDA RESULTS BPM	J = 0.4 EMAX FT-TONS	CTN TONS	RMAX TONS	FMAX TONS
-25.60		WOP									
-25.85	0.25	WOH									
	START 13:33, SINGLE DROPS, FUEL OFF										
-52.44	26.58	1	0		5.0	50,500		8.5	-194	10	374
-53.02	0.58	1	2		5.0	50,500		9.0	-205	35	388
-53.60	0.58	1	2		5.0	50,500		9.0	-212	40	397
-54.02	0.42	1	2		5.0	50,500		9.0	-236	62	409
-54.35	0.33	1	3		5.0	50,500		9.3	-228	48	415
-54.60	0.25	1	4		5.0	50,500		9.5	-229	59	420
-54.85	0.25	1	4		5.0	50,500		10.1	-225	71	429
-55.02	0.17	1	6		5.0	50,500		10.4	-213	82	436
-55.19	0.17	1	6		5.0	50,500		10.4	-211	88	429
-55.35	0.17	1	6		5.0	50,500		10.1	-199	80	437
-55.44	0.08	1	12		5.0	50,500		9.5	-209	72	436
	STOP 13:44, SET CHECK, 17 MIN. STOP										
	START 14:01, FUEL OFF										
-55.52	0.08	1	12		5.0	50,500		12.6	-150	112	446
-55.60	0.08	1	12		5.0	50,500		9.7	-208	105	445
-55.71	0.10	1	10		5.0	50,500		INSTRUMENT MALFUNCTION			
	STOP 14:02, SET CHECK, 47 MIN. STOP										
	START 14:49, FUEL OFF										
-55.76	0.05	1	19		5.0	50,500		8.8	-166	111	440
-55.81	0.05	1	19		5.0	50,500		9.1	-161	125	447
	STOP 14:52, END OF DRIVING										

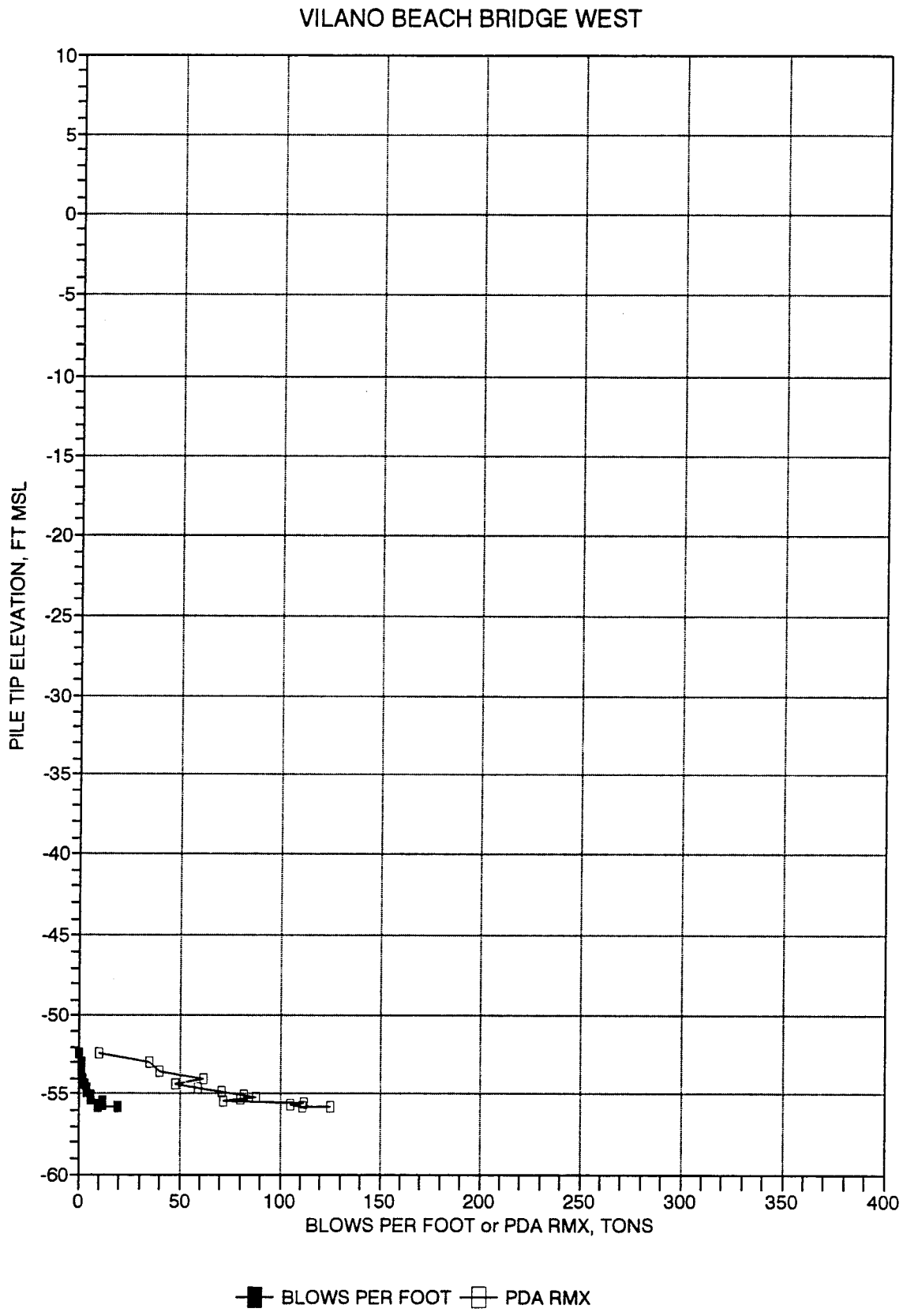


Figure C.21 Driving Resistance (VLW)

Table C.5 Pile Driving Record (SBZ)

SEABREEZE BRIDGE — PILE DRIVING RECORD — PAGE 1 OF 2

LOCATION : STA447+08, 60'RT BL
PILE INFO. : CAST 12/07/95
PILE TYPE : 18" SQ.PRSTR. CONC.
CUTOFF ELEV. : +11.00 ft

TIP PROTECTOR: NONE
CASING : INSTALLED 15' OF 30" OD CASING (TIP ELEV. -9.23 FT)
JET : CASING OPEN TO -1.9'

S & C PROJECT NO. : 91-866
FDOT PROJECT NO. : 99700-7584
GROUND SURF. ELEV.: +6.30 ft
REFERENCE ELEV. : +5.77 ft

DATE DRIVEN : 01/26/96
INITIAL LGTH.: 88.06 ft

HAMMER : DELMAG D62-22, SINGLE ACTING DIESEL
CAP BLOCK : 2" BLUE POLYMER + 0.5" ALUMINUM
PILE CUSHION : 11.25" PLYWOOD , NEW

RATED ENERGY : 165,000 ft-lbs
RAM WEIGHT : 14,600 lbs

DATE REDRIVEN: N/A
REDRIVE LGTH.: N/A

HAMMER : N/A
CAP BLOCK : N/A
PILE CUSHION : N/A

RATED ENERGY : N/A ft-lbs
RAM WEIGHT : N/A lbs

PILE TIP ELEV. FT	LENGTH DRIVEN FT	NUMBER OF BLOWS	BLOWS PER FOOT	MEASURED STROKE FT	CALC. STROKE FT	HAMMER ENERGY FT-LBS	PDA RESULTS BPM	J = 0.4 EMAX FT-LBS	CTN TONS	RMAX TONS	FMAX TONS
-3.53		WOP									
-4.03	0.50	WOH									
	START 13:57, SINGLE DROPS, FUEL OFF										
-5.13	1.10	4	4					7,700	-43	0	204
	FUEL #1										
-5.28	0.15	1	7					7,700	-43	0	204
	HAMMER STOP, FUEL #2										
-5.71	0.44	2	5		7.9	115,500	42.0	38,600	-14	0	302
-6.71	1.00	7	7		5.8	84,500	48.8	26,100	-80	27	325
-7.71	1.00	7	7		5.7	82,700	49.3	25,500	-100	35	315
-9.71	2.00	9	5		5.0	72,700	52.4	19,500	-103	0	287
-10.71	1.00	6	6		5.3	77,600	50.8	23,700	-109	2	298
-11.71	1.00	4	4		5.1	74,500	51.8	20,200	-90	0	272
-12.71	1.00	5	5		5.1	74,200	51.9	21,600	-90	0	272
-13.71	1.00	6	6		5.2	75,700	51.4	22,200	-97	0	284
-14.55	0.83	4	5		5.1	74,200	51.9	19,000	-90	4	273
	STOP 14:02, UNCOVER PIEZOMETER, ALIGN HAMMER										
	CHAIN CASING TO LEADS, NEW REFERENCE, 65 MIN. STOP, FUEL #2										
-15.51	0.96	6	6		5.6	82,300	49.4	25,000	-118	30	362
-16.51	1.00	6	6		5.3	77,300	50.9	22,100	-121	18	315
-17.51	1.00	6	6		5.2	75,400	51.5	20,500	-111	5	293
-18.51	1.00	5	5		5.2	75,700	51.4	21,700	-107	0	282
-19.51	1.00	6	6		5.1	73,900	52.0	20,000	-112	0	292
-20.51	1.00	4	4		5.0	73,600	52.1	20,800	-100	0	269
-21.51	1.00	5	5		5.0	73,300	52.2	20,700	-102	0	269
-22.51	1.00	5	5		5.1	74,200	51.9	20,900	-108	0	288
-23.51	1.00	6	6		5.4	78,900	50.4	25,100	-108	6	319
-24.51	1.00	6	6		5.5	79,900	50.1	24,400	-116	36	336
-25.51	1.00	7	7		5.4	78,600	50.5	22,700	-100	40	297
-26.51	1.00	6	6		5.5	80,200	50.0	25,000	-106	26	313
-27.51	1.00	6	6		5.3	77,300	50.9	23,500	-100	9	293
-28.03	0.52	4	8		5.1	74,500	51.8	18,400	-93	9	271
	STOP 15:09, UNCOVER PIEZOMETER, 4 MIN. STOP, FUEL #2										
-28.51	0.48	3	6		5.8	85,200	48.6	26,100	-123	34	344
-29.51	1.00	7	7		5.4	78,600	50.5	22,500	-94	43	298
-30.51	1.00	7	7		5.6	82,300	49.4	24,600	-107	66	333
-31.51	1.00	7	7		5.9	85,900	48.4	26,100	-104	90	343
-32.51	1.00	8	8		5.8	84,500	48.8	25,100	-99	86	331
-33.51	1.00	8	8		5.8	84,100	48.9	23,800	-91	98	326
-34.51	1.00	10	10		5.9	85,900	48.4	23,100	-95	129	350
-35.51	1.00	11	11		6.2	90,200	47.3	24,500	-80	168	363
-36.51	1.00	14	14		6.3	92,600	46.7	24,800	-62	194	376
-37.51	1.00	17	17		6.6	96,900	45.7	26,500	-58	224	397
-38.51	1.00	19	19		6.8	99,600	45.1	27,400	-48	239	408
-39.51	1.00	21	21		6.9	101,000	44.8	28,300	-46	245	417
-40.51	1.00	22	22		7.0	102,000	44.6	28,800	-45	248	425
-41.51	1.00	21	21		7.0	101,500	44.7	28,900	-47	239	428
-42.51	1.00	18	18		6.9	100,600	44.9	28,800	-52	226	422
-43.51	1.00	17	17		6.8	99,200	45.2	28,400	-55	205	409
	CONTINUED NEXT PAGE										

Table C.5 continued

SEABREEZE BRIDGE — PILE DRIVING RECORD — PAGE 2 OF 2

PILE TIP ELEV. FT	LENGTH DRIVEN FT	NUMBER OF BLOWS	BLOWS PER FOOT	MEASURED STROKE FT	CALC. STROKE FT	HAMMER ENERGY FT-LBS	PDA RESULTS BPM	J = 0.4 EMAX FT-TONS	CTN TONS	RMAX TONS	FMAX TONS
	CONTINUED										
-44.02	0.51	8	16		6.7	97,800	45.5	27,600	-111	190	408
	STOP 15:18, UNCOVER PIEZOMETER, 10 MIN. STOP, FUEL #2										
-44.09	0.07	2	27		6.3	91,800	46.9	25,000	-29	202	370
-44.51	0.42	6	14		6.7	97,800	45.5	28,700	-66	192	432
-45.51	1.00	11	11		6.6	96,900	45.7	31,500	-89	145	408
-46.51	1.00	9	9		5.9	86,300	48.3	26,600	-87	86	362
-47.51	1.00	7	7		5.8	85,200	48.6	26,000	-93	85	365
-48.51	1.00	7	7		6.1	89,800	47.4	28,100	-103	109	383
-49.51	1.00	8	8		6.3	91,400	47.0	27,600	-100	121	392
-50.51	1.00	9	9		6.3	92,200	46.8	27,300	-106	132	389
-51.51	1.00	9	9		6.4	93,500	46.5	27,800	-105	140	395
-52.51	1.00	10	10		6.5	94,700	46.2	28,000	-97	146	401
-53.51	1.00	9	9		6.4	93,000	46.6	27,200	-109	138	399
-54.51	1.00	8	8		6.3	91,800	46.9	27,700	-110	123	377
-55.51	1.00	8	8		6.2	90,200	47.3	27,200	-112	114	365
-56.51	1.00	8	8		6.2	90,600	47.2	27,400	-110	118	368
-57.51	1.00	8	8		6.2	91,000	47.1	27,100	-103	127	367
-58.51	1.00	8	8		6.2	91,000	47.1	26,700	-110	118	369
-59.51	1.00	9	9		6.1	89,800	47.4	26,200	-113	110	365
-60.51	1.00	8	8		6.1	88,600	47.7	25,400	-111	99	363
-61.51	1.00	8	8		5.9	86,700	48.2	23,300	-104	87	339
-62.51	1.00	7	7		6.0	87,100	48.1	23,600	-102	78	344
-63.51	1.00	8	8		5.9	86,300	48.3	23,700	-99	79	333
-64.51	1.00	8	8		6.0	87,100	48.1	23,800	-103	80	341
-65.51	1.00	8	8		6.0	87,400	48.0	24,100	-97	87	338
-66.51	1.00	8	8		5.9	86,300	48.3	22,900	-88	94	331
-67.51	1.00	9	9		6.0	87,400	48.0	23,900	-90	99	340
-68.51	1.00	12	12		6.5	94,700	46.2	24,700	-84	155	420
-69.51	1.00	25	25		7.4	107,900	43.4	29,000	-1	265	455
-70.51	1.00	30	30		7.4	107,900	43.4	29,100	0	280	461
-71.51	1.00	28	28		7.4	107,400	43.5	29,400	0	277	461
-72.51	1.00	25	25		7.4	107,400	43.5	30,000	-9	262	465
-73.51	1.00	17	17		7.2	104,400	44.1	30,100	-47	224	461
-74.59	1.08	15	14		6.9	101,000	44.8	28,800	-78	188	437
	STOP 15:36, SET CHECK, 19 MIN. STOP, FUEL #2										
-74.63	0.04	2	48		6.6	96,500	45.8	15,200	0	224	362
-74.68	0.05	2	38		7.5	110,000	43.0	25,100	0	251	478
-74.86	0.18	4	23		7.5	110,000	43.0	28,300	-39	246	487
	STOP 15:55, SET CHECK, 42 MIN. STOP, FUEL #2										
-74.88	0.02	2	96		6.7	97,800	45.5	20,000	0	328	449
-74.94	0.06	2	32		8.4	122,100	40.9	30,100	0	333	547
-75.03	0.08	4	48		7.8	113,900	42.3	28,700	0	309	536
-75.51	0.48	15	31		7.8	114,400	42.2	31,800	0	296	545
-75.76	0.25	12	48		7.6	110,600	42.9	30,600	0	289	526
-76.01	0.25	10	40		7.7	112,700	42.5	31,600	0	337	536
-76.09	0.08	4	48		7.9	115,000	42.1	32,300	0	385	545
-76.13	0.04	4	96		7.9	115,000	42.1	30,700	0	433	540
	STOP 16:39, END OF DRIVING										

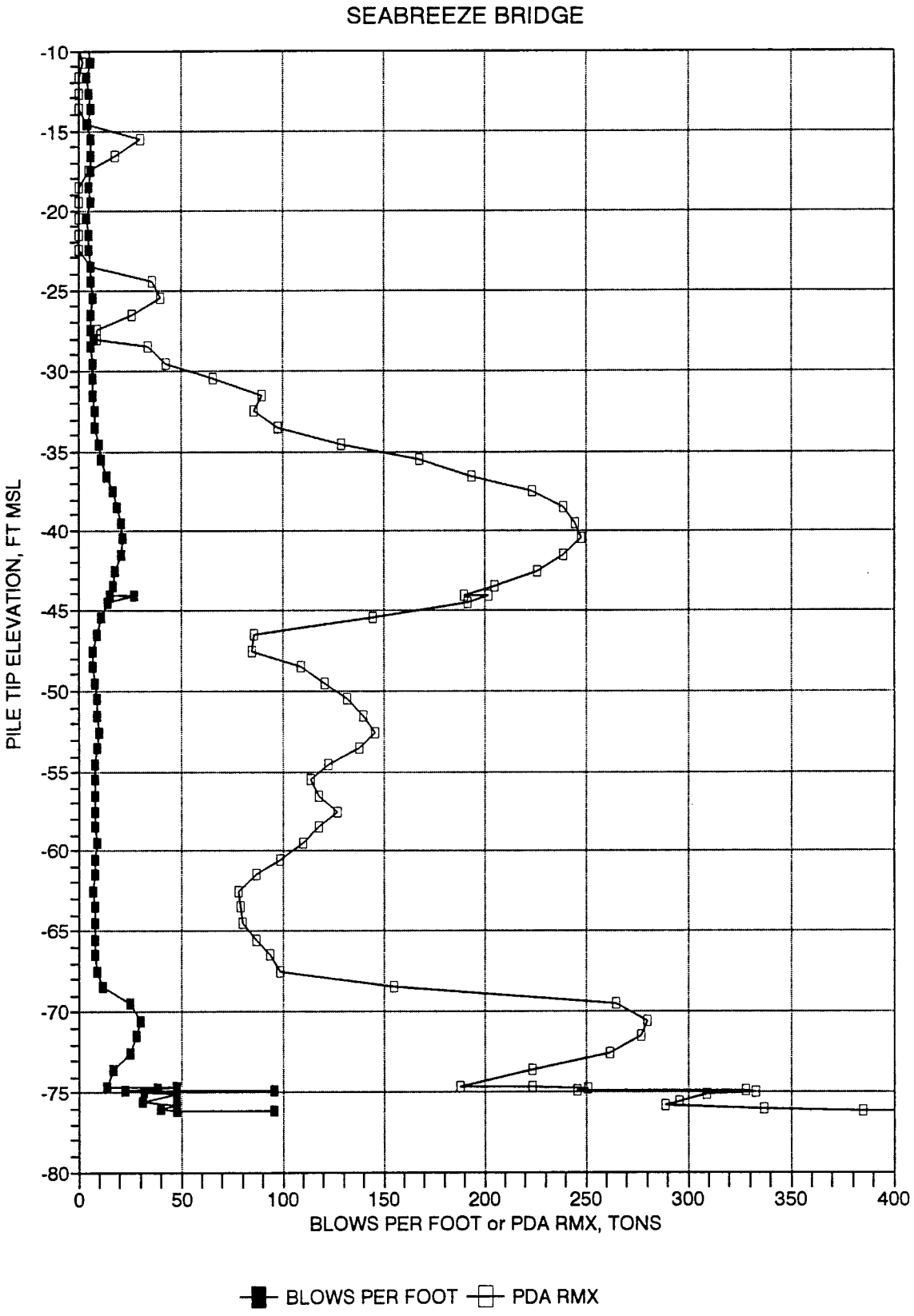


Figure C.22 Driving Resistance (SBZ)

APPENDIX D
TEST PILE DYNAMIC TEST RESULTS

Table D.1 Calibration of Dynamic Instruments

Instrument	Initial * Calibration (PDI Dec 91)	Final Calibration (PDI May 96)	Calibration Ratio (Final/Initial)	
			Gage	Average **
Accelerometer 9190	1163 g/volt	1190 g/volt	1.023	1.013
Accelerometer 9193	1176 g/volt	1176 g/volt	1.003	
Strain Gage 378D	127 με/volt	133.6 με/volt	1.052	0.954
Strain Gage 461D	124 με/volt	106.2 με/volt	0.857	

* Initial calibration used during all field tests
** Average ratio used to correct field measurements during CAPWAP

Table D.2 Summary of CAPWAP Results

TEST SITE	TIP ELEV. MSL, FT	BLOW TYPE	BLOW COUNT MSD./CALC. BLOW/FT	STATIC CAPACITY			SMITH DAMPING		QUAKE			MAX. COMPR. FORCE KIPS	MAX. TRANSF. ENERGY KIP-FT
				SKIN KIPS	TOE KIPS	TOTAL KIPS	SKIN SEC/FT	TOE SEC/FT	SKIN IN	TOE IN	TOE GAP IN		
BUCKMAN	-15.16	EOD	17/18	197.0	216.0	413.0	0.006	0.005	0.120	0.640	0.000	857.8	31.39
	-15.39	BOR	16/17	196.3	261.7	458.0	0.010	0.010	0.089	0.565	0.000	994.1	37.70
	-15.55	BOR	24/25	198.2	237.8	436.0	0.010	0.026	0.089	0.700	0.000	905.9	30.22
AUCILLA	-7.79	EOD	24/29	153.6	158.4	312.0	0.035	0.113	0.016	0.225	0.004	709.6	16.36
	-7.91	BOR	32/36	195.6	157.4	353.0	0.057	0.197	0.017	0.224	0.000	820.5	17.76
	-8.23	BOR	48/48	235.0	175.0	410.0	0.061	0.294	0.031	0.353	0.000	901.1	19.77
VILANO EAST	-31.27	EOD	72/73	286.5	314.5	601.0	0.120	0.028	0.062	0.341	0.000	950.6	21.23
	-31.29	BOR	72/72	326.0	327.0	653.0	0.125	0.020	0.060	0.375	0.000	945.9	23.71
	-31.39	BOR	115/80	314.9	290.1	605.0	0.150	0.020	0.043	0.279	0.000	820.6	18.21
VILANO WEST	-55.44	EOD	12/12	64.3	58.3	122.6	0.239	0.026	0.020	0.153	0.000	855.2	18.45
	-55.52	BOR	12/13	104.5	80.0	184.5	0.170	0.070	0.021	0.400	0.000	857.1	25.44
	-55.76	BOR	19/21	111.2	94.8	206.0	0.247	0.014	0.010	0.088	0.000	873.2	17.20
SEABREEZE	-74.25	EOD	14/15	158.1	172.3	330.4	0.054	0.030	0.054	0.120	0.000	788.8	27.49
	-74.68	BOR	38/39	310.0	208.0	518.0	0.068	0.099	0.027	0.363	0.000	901.0	27.53
	-74.94	BOR	48/51	399.0	132.0	531.0	0.257	0.140	0.029	0.313	0.000	1002.6	28.09

Table D.2 continued

TEST SITE	CASE DAMPING SKIN K/FT/SEC	CASE DAMPING TOE K/FT/SEC	PILE DAMPING %	UNLOAD QUAKE SKIN %	UNLOAD QUAKE TOE %	SKIN UNLOAD LEVEL %	CAPWAP ADJUSTMENTS A12	ACAS	VPCL	FCPL	MATCH QUALITY NO. MQN	FILE NAME
BUCKMAN	0.009	0.008	3.5	19.0	100.0	0.0	0.3	-0.31	1.013	0.954	2.06	BKM30C.EOD
	0.015	0.020	3.6	30.0	100.0	0.0	0.3	-0.23	1.013	0.954	1.94	BKM30F.BOR
	0.015	0.046	2.9	30.0	100.0	0.0	0.3	-0.23	1.013	0.954	1.82	BKM30J.BOR
AUCILLA	0.039	0.130	2.9	20.0	9.0	3.0	0.0	0.03	1.013	0.948	2.44	AUC63C1.EOD
	0.081	0.226	2.1	100.0	87.0	56.9	0.0	0.00	1.013	0.948	1.59	AUC63F.EOD
	0.104	0.374	2.3	65.0	45.0	29.0	0.0	-0.04	1.013	0.948	1.72	AUC63K.BOR
VILANO EAST	0.268	0.069	2.0	38.0	47.0	0.0	0.3	-0.30	1.013	0.912	2.21	VLE-30B.EOD
	0.318	0.051	2.0	16.0	28.0	0.0	0.3	-0.35	1.013	0.911	2.40	VLE-31A.BOR
	0.369	0.044	2.0	30.0	33.0	0.0	0.3	-0.32	1.013	0.912	2.38	VLE-32C.FR
VILANO WEST	0.106	0.011	4.9	1.7	62.0	33.0	0.1	0.00	1.013	0.959	1.98	VLWA-61.EOD
	0.123	0.039	4.6	20.0	100.0	20.0	0.1	-0.05	1.013	0.959	1.73	VLWA-61C.BOR
	0.191	0.009	4.8	8.0	100.0	20.0	0.1	0.04	1.013	0.959	1.97	VLWA-61D.BOR
SEABREEZE	0.063	0.038	2.8	1.0	30.0	0.0	0.3	-0.19	1.013	0.930	1.79	PJB82A.EOD
	0.157	0.152	2.9	14.0	21.0	0.5	0.3	-0.22	1.013	0.930	1.91	PJB82G.BOR
	0.758	0.137	1.9	100.0	42.0	0.0	0.3	-0.19	1.013	0.930	1.97	PJB83N.BOR

Table D.3 CAPWAP, BKM at Elev. -15.16 ft

Schmertmann & Crapps, Inc. 26-Jul-96

BUCKMAN / UF RESEARCH, Project: 866
Blow: -3 Data: EOD
Collected: 3/26/94 CAPWAP(R) Ver. 1996-2

CAPWAP FINAL RESULTS

Total CAPWAP Capacity: 413.0; along Shaft 197.0; at Toe 216.0 kips

Soil Sgmnt No.	Dist. Below Gages ft	Depth Below Grade ft	Ru kips	Force in Pile at Ru kips	Sum of Ru kips	Unit w. Respect to Depth kips/ft	Resist. Area kips/f2	Smith Damping Factor s/ft	Quake inch
				413.0					
1	6.7	3.1	27.8	385.2	27.8	8.36	1.39	.006	.120
2	10.0	6.4	18.7	366.4	46.6	5.63	.94	.006	.120
3	13.3	9.8	8.9	357.5	55.5	2.67	.45	.006	.120
4	16.6	13.1	7.8	349.8	63.2	2.33	.39	.006	.120
5	20.0	16.4	17.8	331.9	81.1	5.36	.89	.006	.120
6	23.3	19.8	32.3	299.6	113.4	9.71	1.62	.006	.120
7	26.6	23.1	41.1	258.5	154.5	12.36	2.06	.006	.120
8	30.0	26.4	42.5	216.0	197.0	12.76	2.13	.006	.120
Average Skin Values			24.6			7.46	1.23	.006	.120
	Toe		216.0				96.00	.005	.640

Soil Model Parameters/Extensions		Skin	Toe
Case Damping Factor		.009	.008
Unloading Quake	(% of loading quake)	18	100
Reloading Level	(% of Ru)	100	100
Unloading Level	(% of Ru)	0	

Table D.3 continued

Schmertmann & Crapps, Inc. 26-Jul-96

BUCKMAN / UF RESEARCH, Project: 866
Blow: -3 Data: EOD
Collected: 3/26/94 CAPWAP(R) Ver. 1996-2

EXTREMA TABLE

Pile Sgmnt No.	Dist. Below Gages ft	max. Force kips	min. Force kips	max. Comp. Stress kips/in2	max. Tension Stress kips/in2	max. Trnsfd. Energy kips-ft	max. Veloc. ft/s	max. Displ. in
1	3.3	857.8	.0	2.647	.000	31.39	8.3	1.111
2	6.7	857.1	.0	2.645	.000	31.35	8.6	1.107
3	10.0	785.0	.0	2.423	.000	28.83	8.8	1.103
4	13.3	659.6	.0	2.036	.000	27.12	9.3	1.099
5	16.6	593.2	.0	1.831	.000	26.28	9.5	1.095
6	20.0	500.4	.0	1.544	.000	25.52	9.3	1.089
7	23.3	389.9	.0	1.203	.000	23.87	9.6	1.082
8	26.6	341.0	.0	1.053	.000	20.95	9.9	1.076
9	30.0	266.5	.0	.822	.000	14.06	10.0	1.070
Absolute	3.3			2.647		(T=	22.6 ms)	
	.0				.000	(T=	.0 ms)	

CASE METHOD

	J=0.0	J=0.1	J=0.2	J=0.3	J=0.4	J=0.5	J=0.6	J=0.7	J=0.8	J=0.9
RS1	356.	224.	93.	0.	0.	0.	0.	0.	0.	0.
RMX	452.	435.	418.	401.	384.	373.	371.	369.	368.	366.
RSU	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

RAU 361. RA2 429.

Current CAPWAP Ru= 413.0; Corresponding J(Rs)= .00; J(Rx)= .23

VMX	VFN	VT1*Z	FT1	FMX	DMX	DFN	EMX	EFN	RLT	REN
8.26	-2.36	810.8	858.1	858.1	1.120	1.020	31.2	30.2	411.	465.

PILE PROFILE AND PILE MODEL

Depth ft	Area in2	E-Modulus kips/in2	Spec. Weight kips/ft3	Circumf. ft
.00	324.00	5297.6	.150	6.000
29.96	324.00	5297.6	.150	6.000

Toe Area 2.250 ft2

Top Segment Length 3.33 feet, Top Impedance 134.16 kips/ft/s

Pile Damping 3.5 %, Time Incr .260 ms, Wave Speed 12793.9 ft/s

Table D.3 continued

Schmertmann & Crapps, Inc. 26-Jul-96

BUCKMAN / UF RESEARCH, Project: 866
Blow: -3 Data: EOD
Collected: 3/26/94 CAPWAP(R) Ver. 1996-2

CAPWAP ANNOTATIONS

Notes for BUCKMAN / UF RESEARCH
Records: 1/ 1 for PDA Temporary File: D:\CW96\DATA\BKM30C.EOD

QSkn	UNld	CSkn	LSkn	JSkn	SSkn	REss	SKdp	MSkn	PIld
.120	.000	.190	1.000	.009	.006	.000	.000	.000	.035
QToe	TGap	CToe	LToe	JToe	SToe	OPtd	BTdp	MToe	PLug
.640	.000	1.000	1.000	.008	.005	.000	.000	.000	.000

FOsc	VEsc	DIsc	TIsc	FDsc	DFsc	RSsc	FPsc
1000.	8.00	1.000	5.50	500.00	1.250	15.00	500.00
STcw	RUcw	BLcw					
40.00	1000.	1200.					

TVpk	ACas	T1ad	T2ad	A12	T3ad	T4ad	A34
22.4	-.31	.0	22.4	.30	22.4	102.3	.00
VCal	VPcl	FCal	FZcl	FPcl	TBeg	TEnd	
3.32	1.013	3.13	1376.9	.954	.5	46.8	
VAsh	FAsh	VTsh	FTsh	VFil	FFil		
.0	.0	0	0	0	0		

PEnt	M-BLct	C-BLct	CIrc	BTar	MQno	Freq	J-Rx	J-Rs	RSA
26.4	17.0	17.7	6.000	2.250	2.06	10000.	.23	.00	0

Added Quake	Cut-Off	E-Modul Multiplier	Toe Quake and Damping Optn	Uplift Frictn Reduct. Factr
.00	.00	1.00	0	.80

Added Impedance
None

Added Damping
None

Damping Multipliers
All ones

Capacity Reduction Factors
All ones

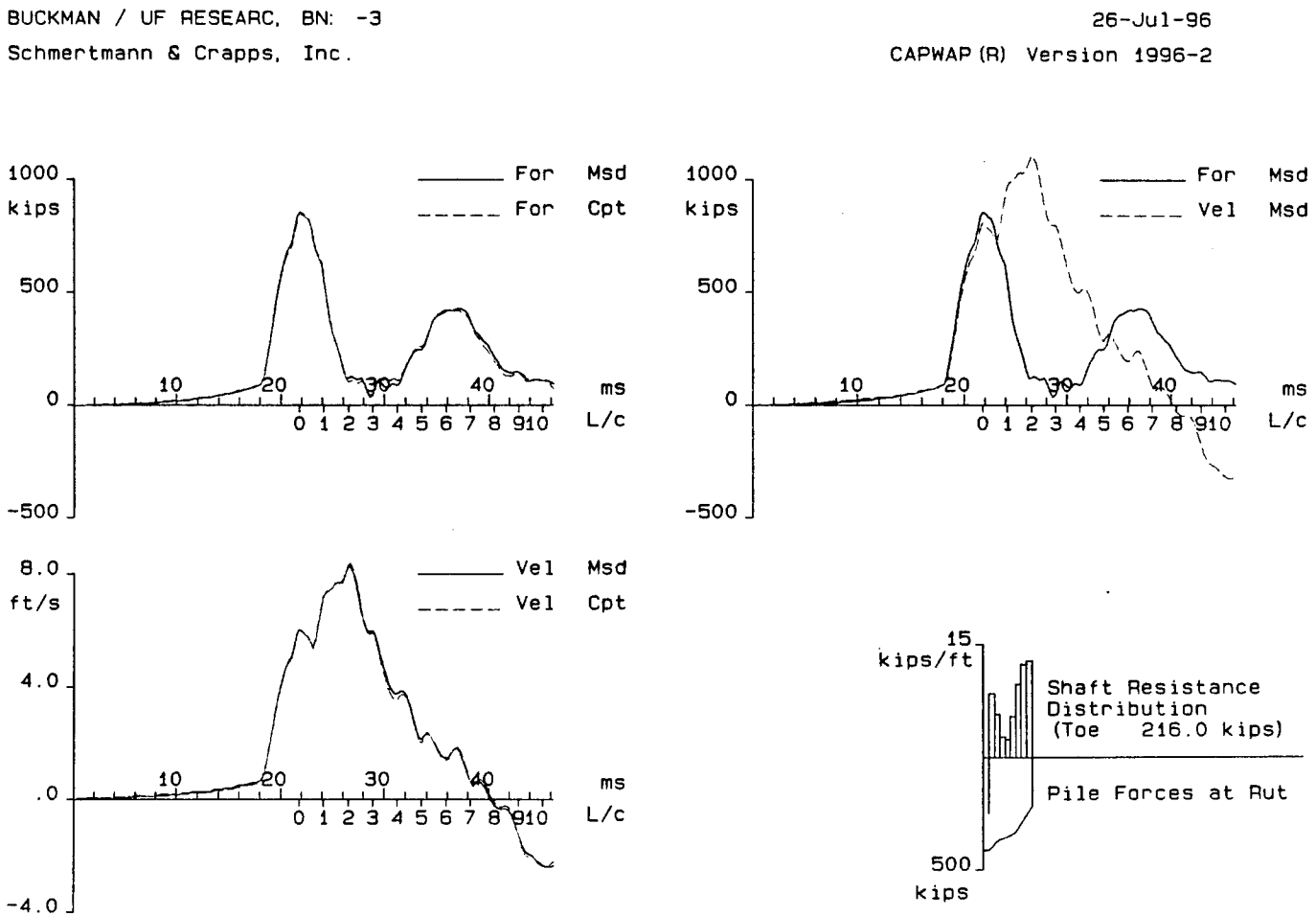


Figure D.1 CAPWAP Match, BKM at Elev. -15.16 ft

BUCKMAN / UF RESEARC, BN: -3
Schmertmann & Crapps, Inc.

26-Jul-96
CAPWAP(R) Version 1996-2

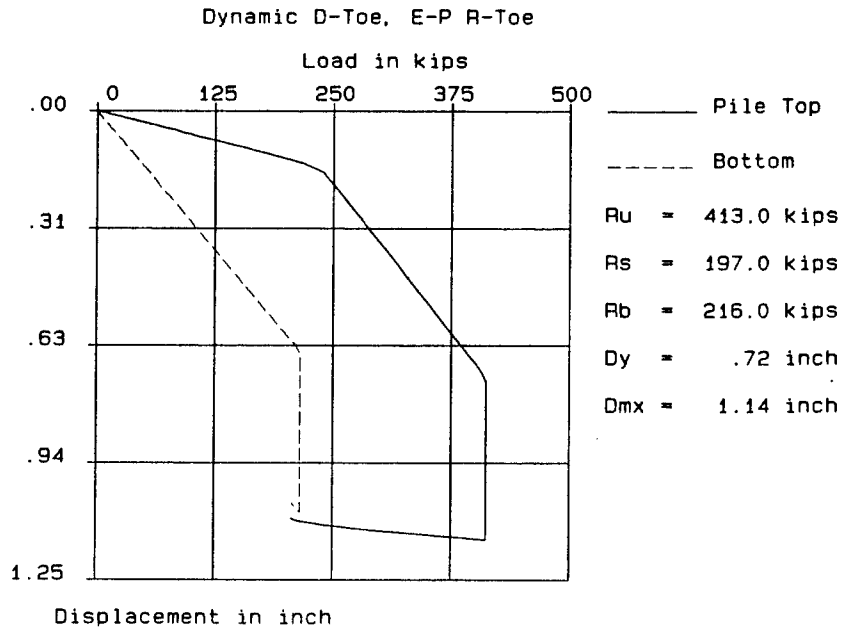


Figure D.2 CAPWAP, BKM at Elev. -15.16 ft

Table D.4 CAPWAP, BKM at Elev. -15.39 ft

Schmertmann & Crapps, Inc. 26-Jul-96

BUCKMAN / UF RESEARCH, Project: 866
Blow: -3 Data: 15 MIN SC
Collected: 3/26/94 CAPWAP(R) Ver. 1996-2

CAPWAP FINAL RESULTS

Total CAPWAP Capacity: 458.0; along Shaft 196.3; at Toe 261.7 kips

Soil Sgmnt No.	Dist. Below Gages ft	Depth Below Grade ft	Ru kips	Force in Pile at Ru kips	Sum of Ru kips	Unit w. Respect to Depth kips/ft	Resist. Area kips/f2	Smith Damping Factor s/ft	Quake inch
				458.0					
1	6.7	3.3	25.6	432.4	25.6	7.70	1.28	.010	.089
2	10.0	6.6	16.9	415.5	42.5	5.07	.84	.010	.089
3	13.3	10.0	7.6	407.9	50.1	2.30	.38	.010	.089
4	16.6	13.3	5.2	402.7	55.3	1.56	.26	.010	.089
5	20.0	16.6	10.9	391.7	66.3	3.29	.55	.010	.089
6	23.3	20.0	25.0	366.7	91.3	7.52	1.25	.010	.089
7	26.6	23.3	44.9	321.8	136.2	13.47	2.25	.010	.089
8	30.0	26.6	60.1	261.7	196.3	18.06	3.01	.010	.089
Average Skin Values			24.5			7.37	1.23	.010	.089
Toe			261.7				116.32	.010	.565

Soil Model Parameters/Extensions		Skin	Toe
Case Damping Factor		.015	.020
Unloading Quake	(% of loading quake)	30	100
Reloading Level	(% of Ru)	100	100
Unloading Level	(% of Ru)	0	

Table D.4 continued

Schmertmann & Crapps, Inc. 26-Jul-96

BUCKMAN / UF RESEARCH, Project: 866
Blow: -3 Data: 15 MIN SC
Collected: 3/26/94 CAPWAP(R) Ver. 1996-2

EXTREMA TABLE

Pile Sgmnt No.	Dist. Below Gages ft	max. Force kips	min. Force kips	max. Comp. Stress kips/in2	max. Tension Stress kips/in2	max. Trnsfd. Energy kips-ft	max. Veloc. ft/s	max. Displ. in
1	3.3	994.1	.0	3.068	.000	37.70	9.3	1.139
2	6.7	993.8	.0	3.067	.000	37.60	9.7	1.132
3	10.0	929.6	.0	2.869	.000	35.06	9.9	1.126
4	13.3	804.7	.0	2.484	.000	33.38	10.3	1.120
5	16.6	746.3	.0	2.304	.000	32.58	10.5	1.114
6	20.0	635.7	.0	1.962	.000	32.02	10.5	1.108
7	23.3	485.0	.0	1.497	.000	30.90	10.8	1.102
8	26.6	412.6	.0	1.273	.000	28.46	11.1	1.095
9	30.0	349.7	.0	1.079	.000	19.22	11.3	1.088
Absolute	3.3			3.068		(T=	22.9 ms)	
	.0				.000	(T=	.0 ms)	

CASE METHOD

	J=0.0	J=0.1	J=0.2	J=0.3	J=0.4	J=0.5	J=0.6	J=0.7	J=0.8	J=0.9
RS1	414.	263.	112.	0.	0.	0.	0.	0.	0.	0.
RMX	500.	486.	476.	465.	454.	444.	435.	428.	421.	413.
RSU	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

RAU 396. RA2 460.

Current CAPWAP Ru= 458.0; Corresponding J(Rs)= .00; J(Rx)= .37

VMX	VFN	VT1*Z	FT1	FMX	DMX	DFN	EMX	EFN	RLT	REN
9.09	-2.80	930.0	992.9	992.9	1.155	1.019	37.3	35.9	470.	527.

PILE PROFILE AND PILE MODEL

Depth ft	Area in2	E-Modulus kips/in2	Spec. Weight kips/ft3	Circumf. ft
.00	324.00	5297.6	.150	6.000
29.96	324.00	5297.6	.150	6.000

Toe Area 2.250 ft2

Top Segment Length 3.33 feet, Top Impedance 134.16 kips/ft/s

Pile Damping 3.6 %, Time Incr .260 ms, Wave Speed 12793.9 ft/s

Table D.4 continued

Schmertmann & Crapps, Inc. 26-Jul-96

BUCKMAN / UF RESEARCH, Project: 866
Blow: -3 Data: 15 MIN SC
Collected: 3/26/94 CAPWAP(R) Ver. 1996-2

CAPWAP ANNOTATIONS

Notes for BUCKMAN / UF RESEARCH
Records: 1/ 1 for PDA Temporary File: D:\CW96\DATA\BKM30F.BOR

QSkn	UNld	CSkn	LSkn	JSkn	SSkn	REss	SKdp	MSkn	PIld
.089	.000	.300	1.000	.015	.010	.000	.000	.000	.036
QToe	TGap	CToe	LToe	JToe	SToe	OPtd	BTdp	MToe	PLug
.565	.000	1.000	1.000	.020	.010	.000	.000	.000	.000

FOsc	VEsc	DIsc	TIsc	FDsc	DFsc	RSsc	FPsc
1000.	8.00	1.000	5.50	500.00	1.250	20.00	600.00
STcw	RUcw	BLcw					
40.00	600.	1200.					

TVpk	ACas	T1ad	T2ad	A12	T3ad	T4ad	A34
22.6	-.23	.0	22.4	.30	22.4	102.3	.00
VCal	VPcl	FCal	FZcl	FPcl	TBeg	TEnd	
3.32	1.013	3.13	1376.9	.954	.5	46.8	
VAsh	FAsh	VTsh	FTsh	VFil	FFil		
.0	.0	0	0	0	0		

PEnt	M-BLct	C-BLct	CIrc	BTar	MQno	Freq	J-Rx	J-Rs	RSA
26.6	16.0	16.5	6.000	2.250	1.94	10000.	.37	.00	0

Added Quake	Cut-Off	E-Modul Multiplier	Toe Quake and Damping Optn	Uplift Frictn Reduct. Factr
.00	.00	1.00	0	.80

Added Impedance
None

Added Damping
None

Damping Multipliers
All ones

Capacity Reduction Factors
All ones

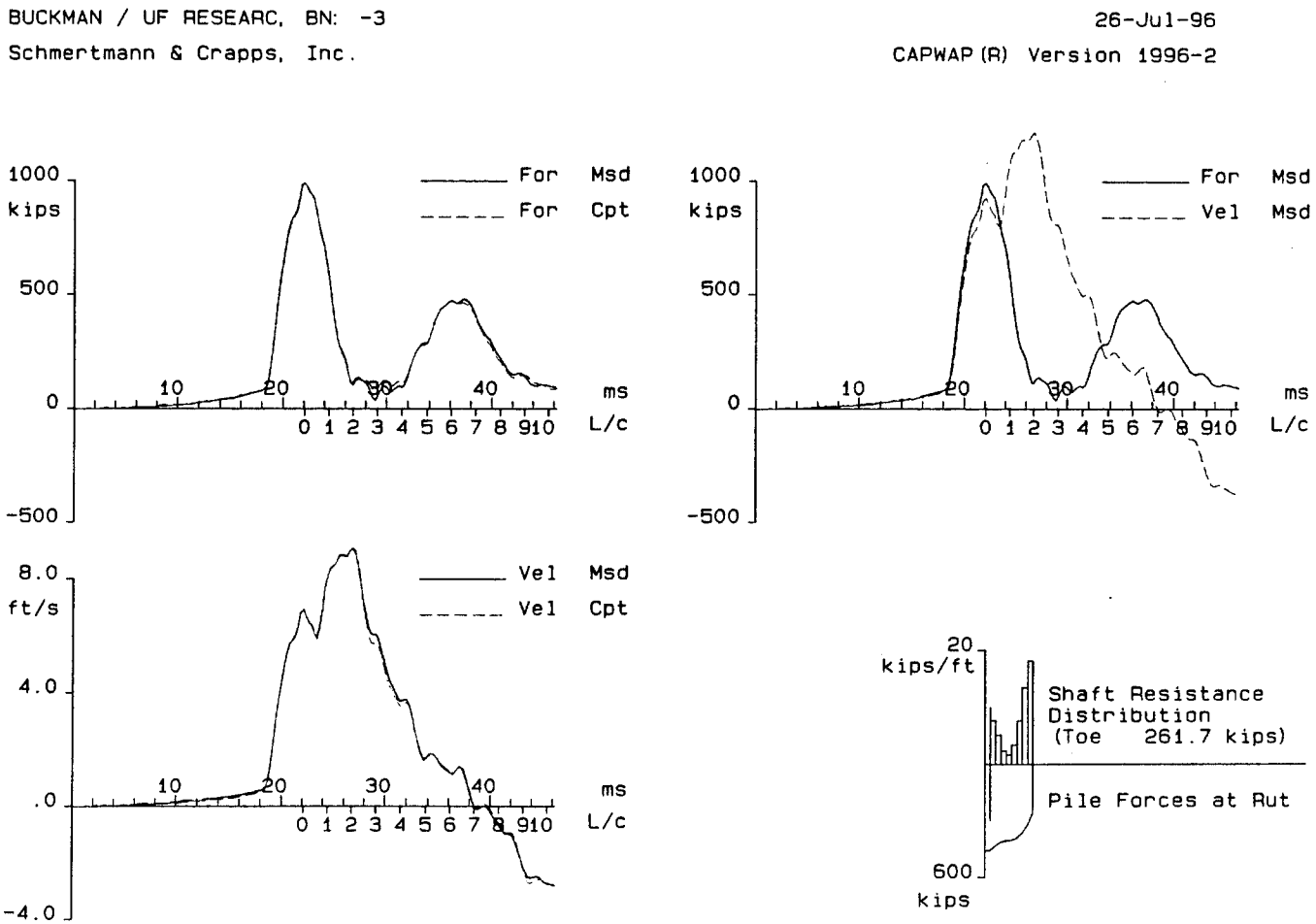


Figure D.3 CAPWAP Match, BKM at Elev. -15.39 ft

BUCKMAN / UF RESEARC, BN: -3
Schmertmann & Crapps, Inc.

26-Jul-96
CAPWAP(R) Version 1996-2

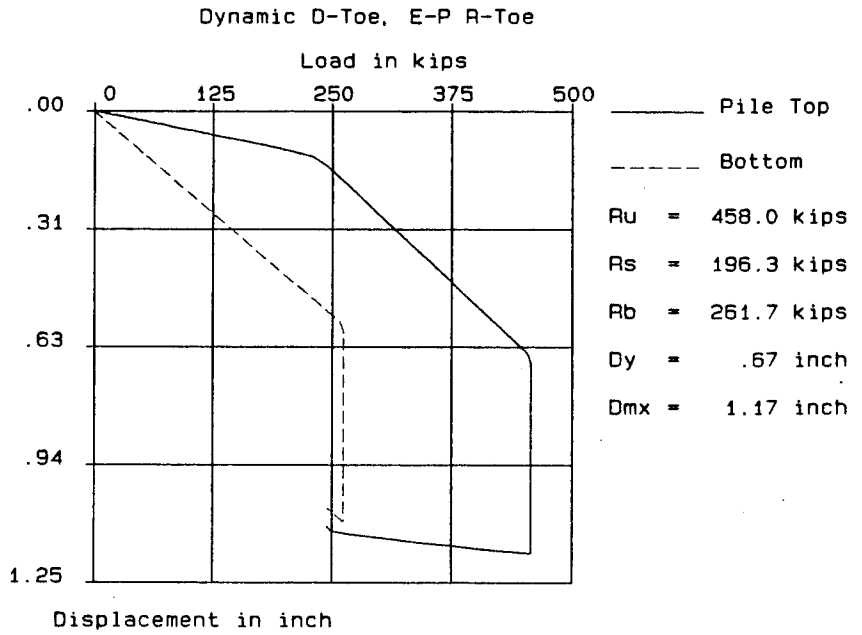


Figure D.4 CAPWAP, BKM at Elev. -15.39 ft

Table D.5 CAPWAP, BKM at Elev. -15.55 ft

Schmertmann & Crapps, Inc. 26-Jul-96

BUCKMAN / UF RESEARCH, Project: 866
Blow: 2 Data: 1 hr SC
Collected: 3/26/94 CAPWAP(R) Ver. 1996-2

CAPWAP FINAL RESULTS

Total CAPWAP Capacity: 436.0; along Shaft 198.2; at Toe 237.8 kips

Soil Sgmnt No.	Dist. Below Gages ft	Depth Below Grade ft	Ru kips	Force in Pile at Ru kips	Sum of Ru kips	Unit w. Respect to Depth kips/ft	Resist. Area kips/f2	Smith Damping Factor s/ft	Quake inch
				436.0					
1	6.7	3.5	22.4	413.6	22.4	6.73	1.12	.010	.089
2	10.0	6.8	17.6	396.0	40.0	5.28	.88	.010	.089
3	13.3	10.2	11.6	384.4	51.6	3.48	.58	.010	.089
4	16.6	13.5	9.6	374.9	61.1	2.88	.48	.010	.089
5	20.0	16.8	15.6	359.3	76.7	4.69	.78	.010	.780
6	23.3	20.2	28.9	330.3	105.7	8.69	1.45	.010	.110
7	26.6	23.5	42.6	287.7	148.3	12.79	2.13	.010	.110
8	30.0	26.8	49.9	237.8	198.2	14.99	2.50	.010	.108
Average Skin Values			24.8			7.39	1.24	.010	.156
Toe			237.8				105.71	.026	.700

Soil Model Parameters/Extensions		Skin	Toe
Case Damping Factor		.015	.046
Unloading Quake	(% of loading quake)	30	100
Reloading Level	(% of Ru)	100	100
Unloading Level	(% of Ru)	0	

Table D.5 continued

Schmertmann & Crapps, Inc. 26-Jul-96

BUCKMAN / UF RESEARCH, Project: 866
Blow: 2 Data: 1 hr SC
Collected: 3/26/94 CAPWAP(R) Ver. 1996-2

EXTREMA TABLE

Pile Sgmnt No.	Dist. Below Gages ft	max. Force kips	min. Force kips	max. Comp. Stress kips/in2	max. Tension Stress kips/in2	max. Trnsfd. Energy kips-ft	max. Veloc. ft/s	max. Displ. in
1	3.3	905.9	.0	2.796	.000	30.22	8.2	.992
2	6.7	905.6	.0	2.795	.000	30.11	8.5	.984
3	10.0	838.0	.0	2.586	.000	28.19	8.7	.978
4	13.3	719.7	.0	2.221	.000	26.68	9.1	.972
5	16.6	658.2	.0	2.031	.000	25.66	9.3	.966
6	20.0	559.4	.0	1.727	.000	24.81	9.3	.960
7	23.3	433.1	.0	1.337	.000	23.96	9.6	.954
8	26.6	377.7	.0	1.166	.000	21.60	10.0	.948
9	30.0	323.0	.0	.997	.000	14.74	10.2	.942
Absolute	3.3			2.796		(T=	22.9 ms)	
	.0				.000	(T=	.0 ms)	

CASE METHOD

	J=0.0	J=0.1	J=0.2	J=0.3	J=0.4	J=0.5	J=0.6	J=0.7	J=0.8	J=0.9
RS1	405.	270.	135.	0.	0.	0.	0.	0.	0.	0.
RMX	480.	470.	461.	451.	441.	432.	425.	419.	413.	407.
RSU	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

RAU 381. RA2 435.

Current CAPWAP Ru= 436.0; Corresponding J(Rs)= .00; J(Rx)= .46

VMX	VFN	VT1*Z	FT1	FMX	DMX	DFN	EMX	EFN	RLT	REN
7.99	-2.75	851.1	901.7	901.7	1.013	.852	30.3	28.6	480.	606.

PILE PROFILE AND PILE MODEL

Depth ft	Area in2	E-Modulus kips/in2	Spec. Weight kips/ft3	Circumf. ft
.00	324.00	5297.6	.150	6.000
29.96	324.00	5297.6	.150	6.000

Toe Area 2.250 ft2

Top Segment Length 3.33 feet, Top Impedance 134.16 kips/ft/s

Pile Damping 2.9 %, Time Incr .260 ms, Wave Speed 12793.9 ft/s

Table D.5 continued

Schmertmann & Crapps, Inc. 26-Jul-96

BUCKMAN / UF RESEARCH, Project: 866
Blow: 2 Data: 1 hr SC
Collected: 3/26/94 CAPWAP(R) Ver. 1996-2

CAPWAP ANNOTATIONS

Notes for BUCKMAN / UF RESEARCH
Records: 2/ 2 for PDA Temporary File: D:\CW96\DATA\BKM30J.BOR

QSkn	UNld	CSkn	LSkn	JSkn	SSkn	REss	SKdp	MSkn	PIld
.089	.000	.300	1.000	.015	.010	.000	.000	.000	.029
QToe	TGap	CToe	LToe	JToe	SToe	OPtd	BTdp	MToe	PLug
.700	.000	1.000	1.000	.046	.026	.000	.000	.000	.000

FOsc	VEsc	DIsc	TIsc	FDsc	DFsc	RSsc	FPsc
1000.	8.00	1.000	5.50	500.00	1.100	15.00	600.00
STcw	RUcw	BLcw					
40.00	600.	1200.					

TVpk	ACas	T1ad	T2ad	A12	T3ad	T4ad	A34
22.6	-.23	.0	22.4	.30	22.4	102.3	.00
VCal	VPcl	FCal	FZcl	FPcl	TBeg	TEnd	
3.32	1.013	3.13	1376.9	.954	.5	46.8	
VAsh	FAsh	VTsh	FTsh	VFil	FFil		
.0	.0	0	0	0	0		

PEnt	M-BLct	C-BLct	CIrc	BTar	MQno	Freq	J-Rx	J-Rs	RSA
26.8	24.0	24.5	6.000	2.250	1.82	10000.	.46	.00	0

Added Quake	Cut-Off	E-Modul Multiplier	Toe Quake and Damping Optn	Uplift Frictn Reduct. Factr
.00	.00	1.00	0	.80

Added Impedance
None

Added Damping
None

Damping Multipliers
All ones

Capacity Reduction Factors
All ones

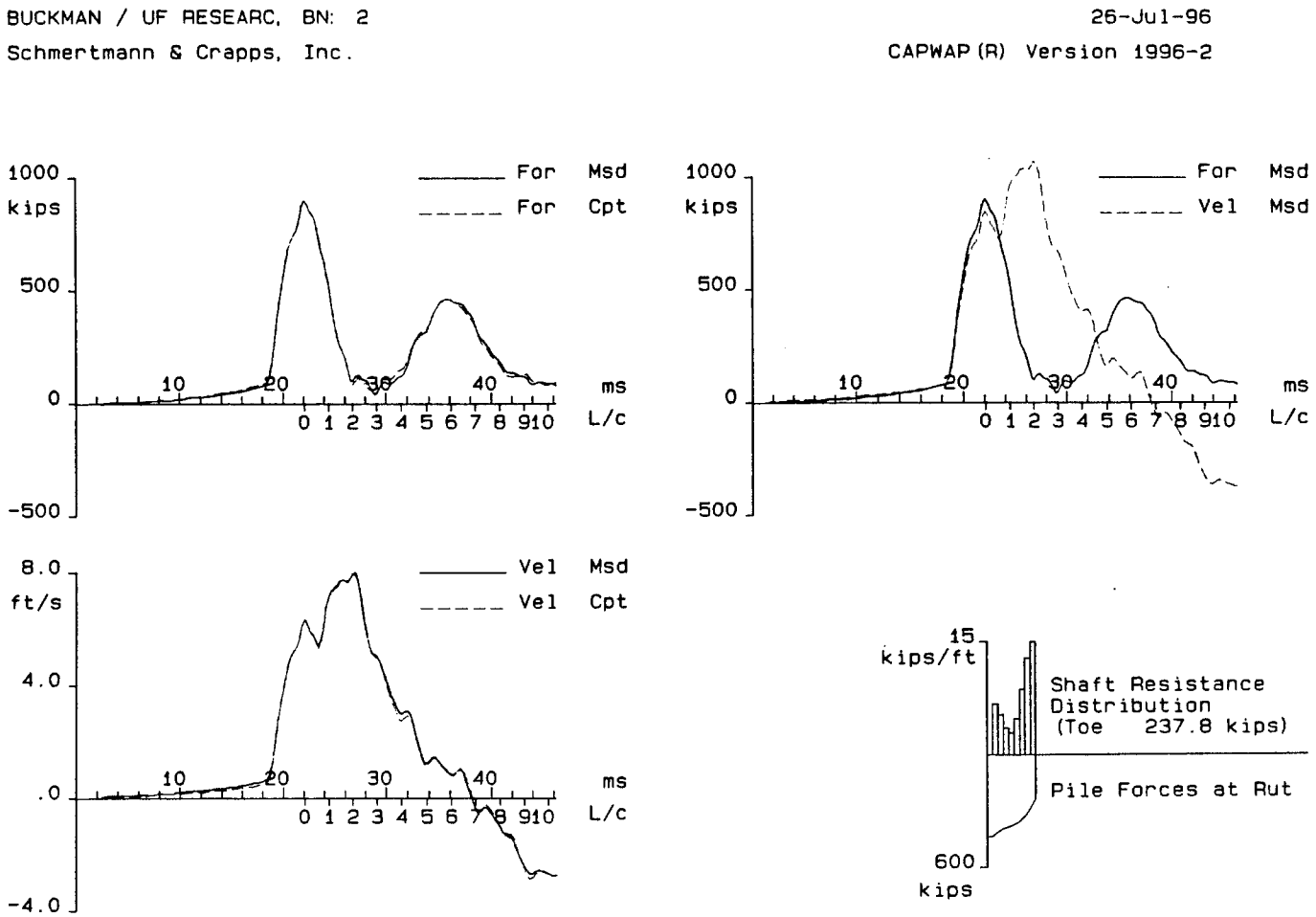


Figure D.5 CAPWAP Match, BKM at Elev. -15.55 ft

BUCKMAN / UF RESEARC, BN: 2 26-Jul-96
Schmertmann & Crapps, Inc. CAPWAP(R) Version 1996-2

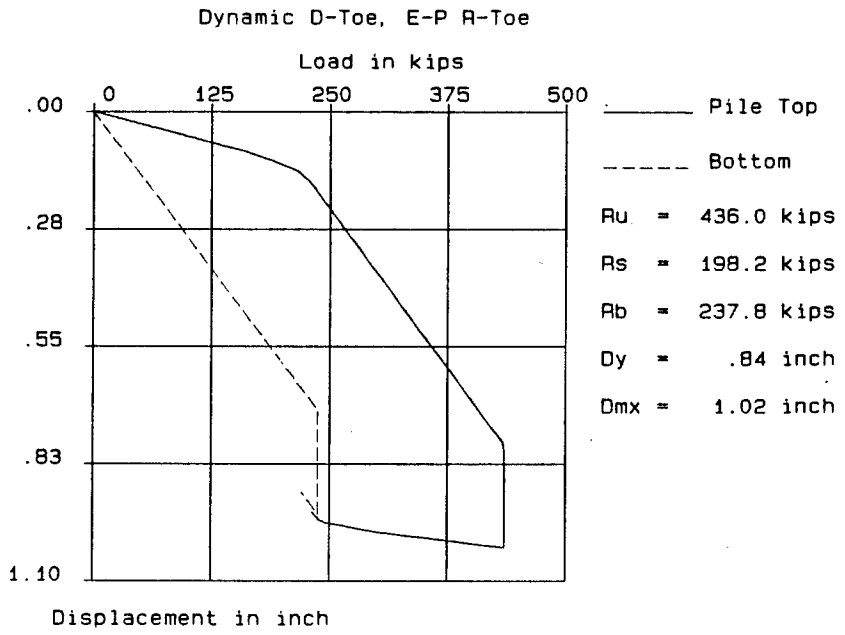


Figure D.6 CAPWAP, BKM at Elev. -15.55 ft

Table D.6 CAPWAP, AUC at Elev. -7.79 ft

Schmertmann & Crapps, Inc. 20-Jul-96

AUCILLA / UF RESEARCH, Project: 866
Blow: -2 Data: EOD
Collected: 3/30/94 CAPWAP(R) Ver. 1996-2

CAPWAP FINAL RESULTS

Total CAPWAP Capacity: 312.0; along Shaft 153.6; at Toe 158.4 kips

Soil Sgmnt No.	Dist. Below Gages ft	Depth Below Grade ft	Ru kips	Force in Pile at Ru kips	Sum of Ru kips	Unit w. Respect to Depth kips/ft	Resist. Area kips/f2	Smith Damping Factor s/ft	Quake inch
				312.0					
1	13.4	7.4	33.7	278.3	33.7	5.03	.84	.035	.016
2	20.1	14.1	20.2	258.2	53.8	3.01	.50	.035	.016
3	26.8	20.8	4.0	254.2	57.8	.59	.10	.035	.016
4	33.5	27.5	.0	254.2	57.8	.00	.00	.035	.016
5	40.2	34.2	.0	254.2	57.8	.00	.00	.035	.016
6	46.9	40.9	6.3	247.9	64.1	.94	.16	.035	.016
7	53.6	47.6	17.9	230.0	82.0	2.67	.45	.035	.016
8	60.3	54.3	30.7	199.3	112.7	4.58	.76	.035	.016
9	67.0	61.0	41.0	158.4	153.6	6.12	1.02	.035	.016
Average Skin Values			17.1			2.52	.42	.035	.016
	Toe		158.4				70.38	.113	.229

Soil Model Parameters/Extensions		Skin	Toe
Case Damping Factor		.039	.130-Smith Type
Unloading Quake	(% of loading quake)	20	9
Reloading Level	(% of Ru)	100	100
Unloading Level	(% of Ru)	2	
Resistance Gap (included in Toe Quake)	(inch)		.004

Table D.6 continued

Schmertmann & Crapps, Inc. 20-Jul-96

AUCILLA / UF RESEARCH, Project: 866
Blow: -2 Data: EOD
Collected: 3/30/94 CAPWAP(R) Ver. 1996-2

EXTREMA TABLE

Pile Sgmnt No.	Dist. Below Gages ft	max. Force kips	min. Force kips	max. Comp. Stress kips/in2	max. Tension Stress kips/in2	max. Trnsfd. Energy kips-ft	max. Veloc. ft/s	max. Displ. in
1	3.3	708.2	-69.2	2.186	-.214	16.36	4.7	.602
2	6.7	709.6	-86.6	2.190	-.267	16.34	4.7	.601
4	13.4	709.6	-73.4	2.190	-.226	16.31	4.7	.595
6	20.1	669.8	-57.4	2.067	-.177	14.43	4.7	.587
8	26.8	651.5	-115.7	2.011	-.357	13.29	4.6	.577
10	33.5	653.9	-45.6	2.018	-.141	13.03	5.8	.575
12	40.2	614.1	-69.1	1.896	-.213	12.98	5.7	.568
14	46.9	471.6	-63.5	1.456	-.196	12.95	6.5	.559
16	53.6	461.0	-52.1	1.423	-.161	12.58	6.5	.552
18	60.3	450.6	-56.6	1.391	-.175	11.61	6.1	.544
19	63.6	344.0	-41.6	1.062	-.128	10.02	6.6	.541
20	67.0	312.8	-27.1	.966	-.084	8.15	6.6	.537
Absolute	10.0			2.191		(T=	24.3 ms)	
	26.8				-.357	(T=	31.7 ms)	

CASE METHOD

	J=0.0	J=0.1	J=0.2	J=0.3	J=0.4	J=0.5	J=0.6	J=0.7	J=0.8	J=0.9
RS1	268.	195.	121.	48.	0.	0.	0.	0.	0.	0.
RMX	446.	363.	324.	301.	279.	266.	256.	249.	241.	234.
RSU	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

RAU 143. RA2 118.

Current CAPWAP Ru= 312.0; Corresponding J(Rs)= .00; J(Rx)= .25

VMX	VFN	VT1*Z	FT1	FMX	DMX	DFN	EMX	EFN	RLT	REN
4.68	.08	500.5	502.7	709.1	.612	.389	16.3	16.2	351.	325.

PILE PROFILE AND PILE MODEL

Depth ft	Area in2	E-Modulus kips/in2	Spec. Weight kips/ft3	Circumf. ft
.00	324.00	5554.0	.150	6.000
66.97	324.00	5554.0	.150	6.000

Toe Area 2.250 ft2

Top Segment Length 3.35 feet, Top Impedance 137.37 kips/ft/s

Pile Damping 2.9 %, Time Incr .256 ms, Wave Speed 13099.8 ft/s

Table D.6 continued

Schmertmann & Crapps, Inc. 20-Jul-96

AUCILLA / UF RESEARCH, Project: 866
Blow: -2 Data: EOD
Collected: 3/30/94 CAPWAP(R) Ver. 1996-2

CAPWAP ANNOTATIONS

Notes for AUCILLA / UF RESEARCH
Records: 1/ 1 for PDA Temporary File: C:\CW96\DATA\AUC63C1.EOD

QSkn	UNld	CSkn	LSkn	JSkn	SSkn	REss	SKdp	MSkn	PIld
.016	.030	.200	1.000	.039	.035	.000	.000	.000	.029
QToe	TGap	CToe	LToe	JToe	SToe	OPtd	BTdp	MToe	PLug
.225	.004	.090	1.000	.130	.113	2.000	.000	.000	.000

FOsc	VEsc	DIsc	TIsc	FDsc	DFsc	RSsc	FPsc
1000.	8.00	1.000	7.00	350.00	.750	10.00	400.00
STcw	RUcw	BLcw					
40.00	400.	1200.					

TVpk	ACas	T1ad	T2ad	A12	T3ad	T4ad	A34
21.0	.03	.0	21.0	.00	21.0	102.0	.00
VCal	VPcl	FCal	FZcl	FPcl	TBeg	TEnd	
3.32	1.013	3.11	1401.4	.948	.5	59.8	
VAsh	FAsh	VTsh	FTsh	VFil	FFil		
.0	.0	0	0	0	0		

PEnt	M-BLct	C-BLct	CIrc	BTar	MQno	Freq	J-Rx	J-Rs	RSA
61.0	24.0	29.1	6.000	2.250	2.44	10000.	.25	.00	0

Added Quake	Cut-Off	E-Modul Multiplier	Toe Quake and Damping Optn	Uplift Frictn Reduct. Factr
.00	.00	1.00	0	.80

Added Impedance
None

Added Damping
None

Damping Multipliers
All ones

Capacity Reduction Factors
All ones

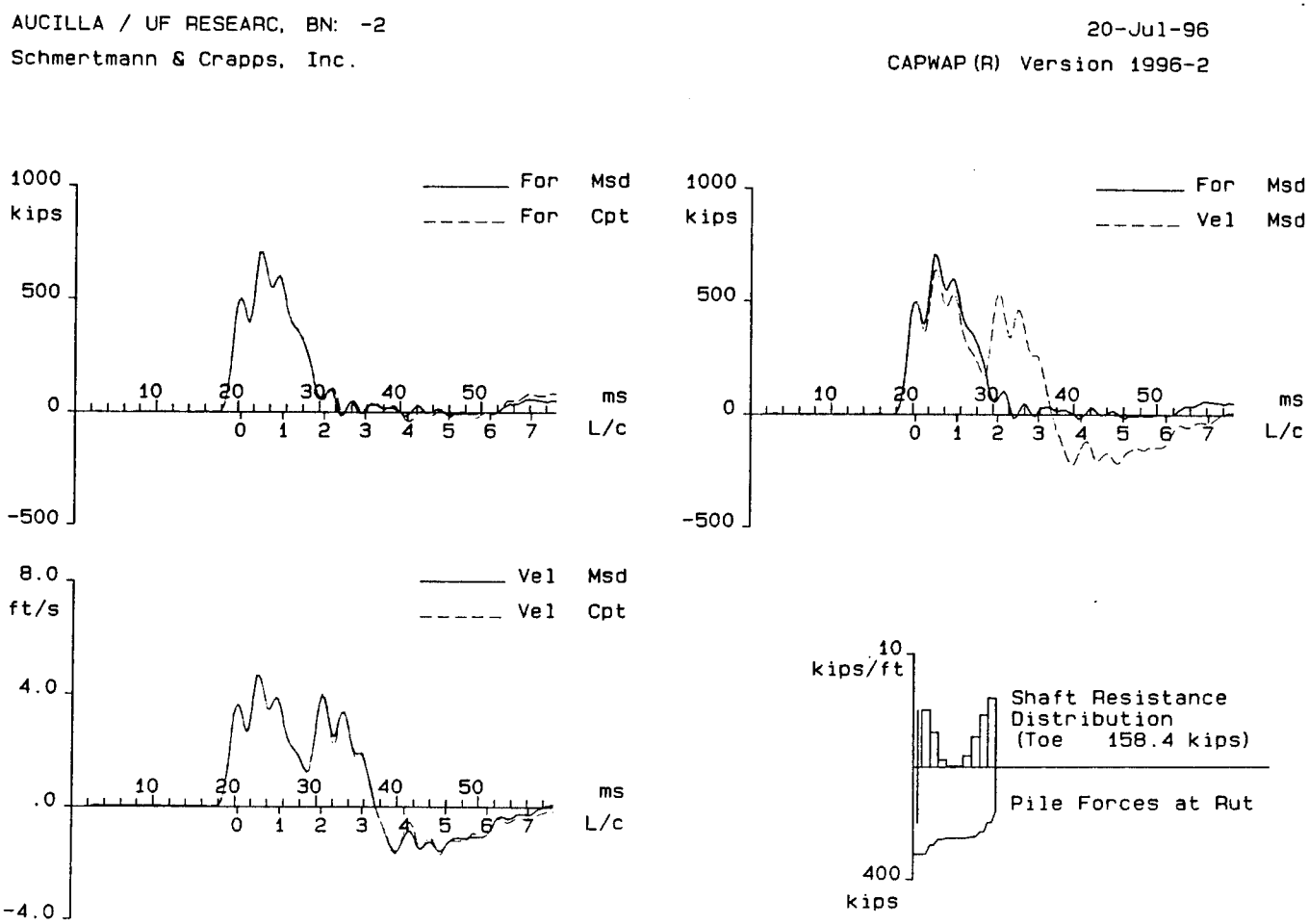


Figure D.7 CAPWAP Match, AUC at Elev. -7.79 ft

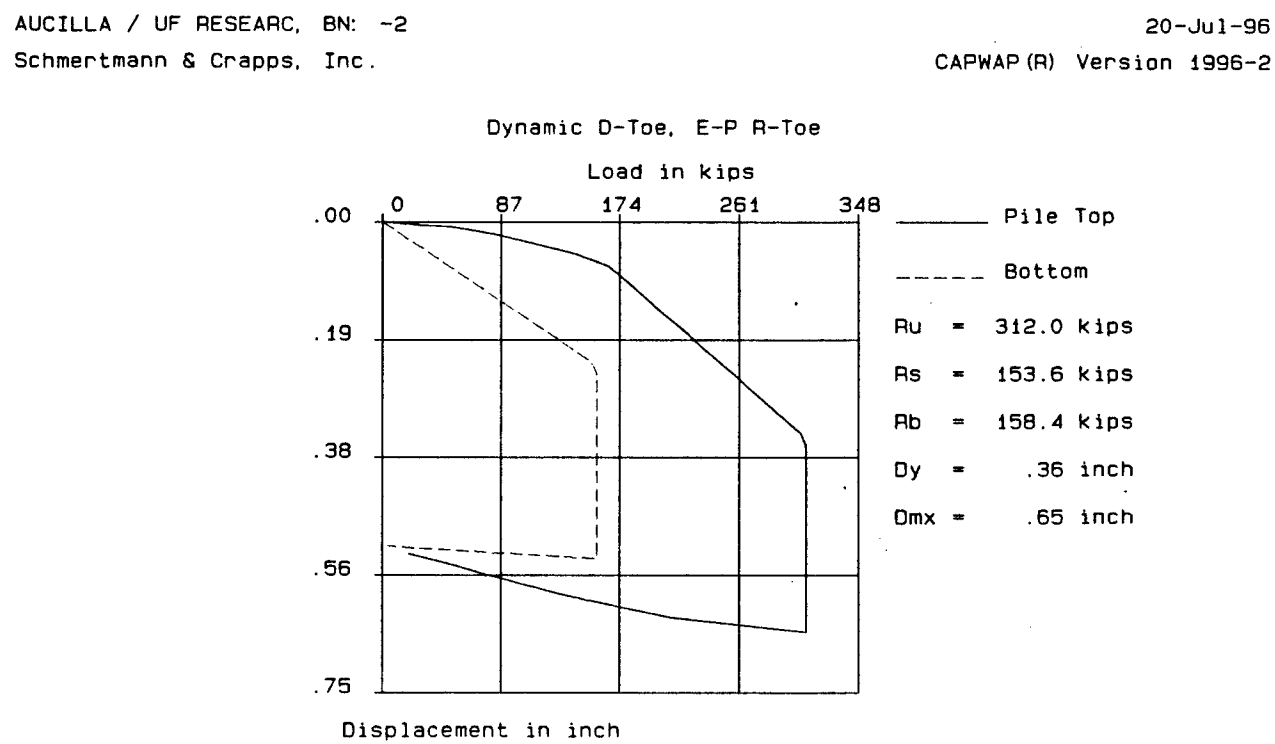


Figure D.8 CAPWAP, AUC at Elev. -7.79 ft

Table D.7 CAPWAP, AUC at Elev. -7.91 ft

Schmertmann & Crapps, Inc. 27-Jun-96

AUCILLA / UF RESEARCH, Project: 866
Blow: -2 Data: 15 MIN SC
Collected: 3/30/94 CAPWAP(R) Ver. 1996-1

CAPWAP FINAL RESULTS

Total CAPWAP Capacity: 353.0; along Shaft 195.6; at Toe 157.4 kips

Soil Sgmnt No.	Dist. Below Gages ft	Depth Below Grade ft	Ru kips	Force in Pile at Ru kips	Sum of Ru kips	Unit w. Respect to Depth kips/ft	Resist. Area kips/f2	Smith Damping Factor s/ft	Quake inch
				353.0					
1	13.4	7.6	52.6	300.4	52.6	7.86	1.31	.057	.017
2	20.1	14.3	25.0	275.4	77.6	3.73	.62	.057	.017
3	26.8	21.0	2.5	272.8	80.2	.38	.06	.057	.017
4	33.5	27.7	.0	272.8	80.2	.00	.00	.057	.017
5	40.2	34.4	.9	271.9	81.1	.14	.02	.057	.017
6	46.9	41.1	10.3	261.6	91.4	1.54	.26	.057	.017
7	53.6	47.8	23.5	238.0	115.0	3.51	.59	.057	.017
8	60.3	54.5	35.5	202.5	150.5	5.30	.88	.057	.017
9	67.0	61.2	45.2	157.4	195.6	6.74	1.12	.057	.017
Average Skin Values			21.7			3.20	.54	.057	.017
Toe			157.4				69.94	.197	.224

Soil Model Parameters/Extensions		Skin	Toe
Case Damping Factor		.081	.226-Smith Type
Unloading Quake	(% of loading quake)	100	87
Reloading Level	(% of Ru)	100	100
Unloading Level	(% of Ru)	56	

Table D.7 continued

Schmertmann & Crapps, Inc. 27-Jun-96

AUCILLA / UF RESEARCH, Project: 866
Blow: -2 Data: 15 MIN SC
Collected: 3/30/94 CAPWAP(R) Ver. 1996-1

EXTREMA TABLE

Pile Sgmnt No.	Dist. Below Gages ft	max. Force kips	min. Force kips	max. Comp. Stress kips/in2	max. Tension Stress kips/in2	max. Trnsfd. Energy kips-ft	max. Veloc. ft/s	max. Displ. in
1	3.3	816.8	-78.8	2.521	-.243	17.76	5.3	.517
2	6.7	817.8	-119.8	2.524	-.370	17.75	5.3	.516
4	13.4	820.5	-96.9	2.533	-.299	17.72	5.2	.512
6	20.1	754.0	-107.9	2.327	-.333	15.11	5.2	.507
8	26.8	725.9	-116.5	2.240	-.360	13.84	5.2	.500
10	33.5	732.5	-35.2	2.261	-.109	13.60	5.5	.489
12	40.2	716.2	-46.8	2.210	-.144	13.51	5.9	.480
14	46.9	560.8	-42.7	1.731	-.132	13.34	6.9	.469
16	53.6	546.3	-47.5	1.686	-.146	12.71	7.2	.458
18	60.3	531.8	-45.6	1.641	-.141	11.52	6.2	.449
19	63.6	428.1	-5.6	1.321	-.017	9.88	6.7	.446
20	67.0	413.6	.0	1.277	.000	8.03	6.8	.442
Absolute	13.4			2.533		(T=	24.3 ms)	
	23.4				-.429	(T=	31.7 ms)	

CASE METHOD

	J=0.0	J=0.1	J=0.2	J=0.3	J=0.4	J=0.5	J=0.6	J=0.7	J=0.8	J=0.9
RS1	361.	278.	194.	110.	26.	0.	0.	0.	0.	0.
RMX	594.	500.	411.	350.	324.	311.	302.	295.	288.	283.
RSU	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

RAU 263. RA2 359.

Current CAPWAP Ru= 353.0; Corresponding J(Rs)= .01; J(Rx)= .30

VMX	VFN	VT1*Z	FT1	FMX	DMX	DFN	EMX	EFN	RLT	REN
5.29	.34	589.1	609.4	813.7	.513	.307	17.8	17.7	480.	449.

PILE PROFILE AND PILE MODEL

Depth ft	Area in2	E-Modulus kips/in2	Spec. Weight kips/ft3	Circumf. ft
.00	324.00	5554.0	.150	6.000
66.97	324.00	5554.0	.150	6.000

Toe Area 2.250 ft2

Top Segment Length 3.35 feet, Top Impedance 137.37 kips/ft/s

Pile Damping 2.1 %, Time Incr .256 ms, Wave Speed 13099.8 ft/s

Table D.7 continued

Schmertmann & Crapps, Inc. 27-Jun-96

AUCILLA / UF RESEARCH, Project: 866
Blow: -2 Data: 15 MIN SC
Collected: 3/30/94 CAPWAP(R) Ver. 1996-1

CAPWAP ANNOTATIONS

Notes for AUCILLA / UF RESEARCH
Records: 1/ 1 for PDA Temporary File: C:\CW96\DATA\AUC63F.EOD

QSkn	UNld	CSkn	LSkn	JSkn	SSkn	REss	SKdp	MSkn	PIld
.017	.569	1.000	1.000	.081	.057	.000	.000	.000	.021
QToe	TGap	CToe	LToe	JToe	SToe	OPtd	BTdp	MToe	PLug
.224	.000	.870	1.000	.226	.197	2.000	.000	.000	.000

FOsc	VEsc	DIsc	TIsc	FDsc	DFsc	RSsc	FPsc
850.	8.00	1.000	7.00	375.00	.700	10.00	450.00
STcw	RUcw	BLcw					
40.00	450.	1200.					

TVpk	ACas	T1ad	T2ad	A12	T3ad	T4ad	A34
21.0	.00	.0	21.0	.00	21.0	100.2	.00
VCal	VPcl	FCal	FZcl	FPcl	TBeg	TEnd	
3.32	1.013	3.11	1401.1	.948	.5	59.8	
VAsh	FAsh	VTsh	FTsh	VFil	FFil		
.0	.0	0	0	0	0		

PEnt	M-BLct	C-BLct	CIrc	BTar	MQno	Freq	J-Rx	J-Rs	RSA
61.2	32.0	36.0	6.000	2.250	1.59	10000.	.30	.01	0

Added Impedance
None

Added Damping
None

Damping Multipliers

1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Capacity Reduction Factors

1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

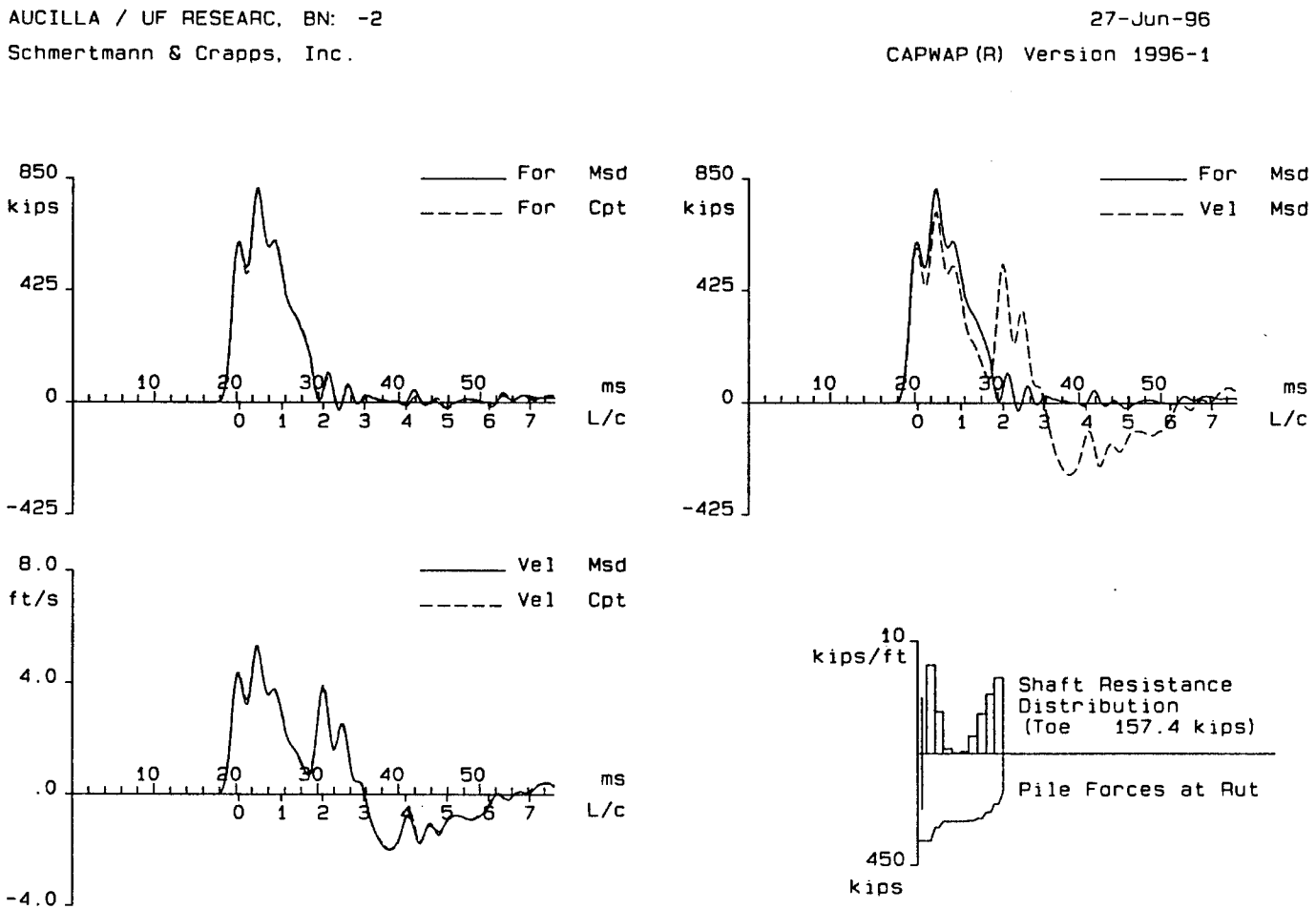


Figure D.9 CAPWAP Match, AUC at Elev. -7.91 ft

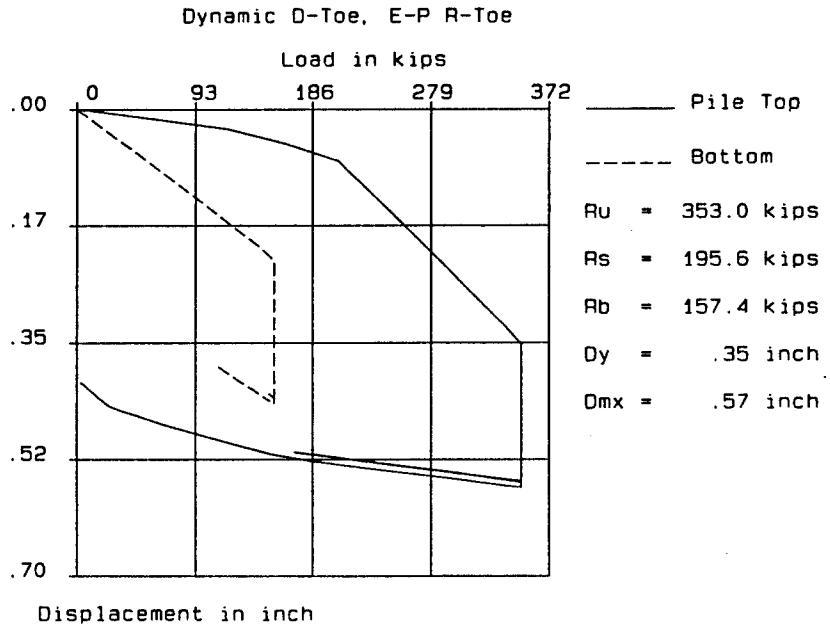


Figure D.10 CAPWAP, AUC at Elev. -7.91 ft

Table D.8 CAPWAP, AUC at Elev. -8.23 ft

Schmertmann & Crapps, Inc. 27-Jun-96

AUCILLA / UF RESEARCH, Project: 866
Blow: 11 Data: 1 hr SC
Collected: 3/30/94 CAPWAP(R) Ver. 1996-1

CAPWAP FINAL RESULTS

Total CAPWAP Capacity: 410.0; along Shaft 235.0; at Toe 175.0 kips

Soil Sgmnt No.	Dist. Below Gages ft	Depth Below Grade ft	Ru kips	Force in Pile at Ru kips	Sum of Ru kips	Unit w. Respect to Depth kips/ft	Resist. Area kips/f2	Smith Damping Factor s/ft	Quake inch
				410.0					
1	13.4	7.9	57.9	352.0	57.9	8.65	1.44	.061	.031
2	20.1	14.6	32.8	319.2	90.8	4.90	.82	.061	.031
3	26.8	21.3	1.9	317.2	92.7	.29	.05	.061	.031
4	33.5	28.0	.0	317.2	92.7	.00	.00	.061	.031
5	40.2	34.7	1.1	316.1	93.8	.17	.03	.061	.031
6	46.9	41.4	14.6	301.6	108.4	2.17	.36	.061	.031
7	53.6	48.1	27.0	274.5	135.4	4.04	.67	.061	.031
8	60.3	54.8	42.6	232.0	178.0	6.35	1.06	.061	.031
9	67.0	61.5	57.0	175.0	235.0	8.51	1.42	.061	.031
Average Skin Values			26.1			3.82	.65	.061	.031
Toe			175.0				77.78	.294	.353

Soil Model Parameters/Extensions		Skin	Toe
Case Damping Factor		.104	.374-Smith Type
Unloading Quake	(% of loading quake)	65	45
Reloading Level	(% of Ru)	100	100
Unloading Level	(% of Ru)	28	

Table D.8 continued

Schmertmann & Crapps, Inc. 27-Jun-96

AUCILLA / UF RESEARCH, Project: 866
Blow: 11 Data: 1 hr SC
Collected: 3/30/94 CAPWAP(R) Ver. 1996-1

EXTREMA TABLE

Pile Sgmnt No.	Dist. Below Gages ft	max. Force kips	min. Force kips	max. Comp. Stress kips/in2	max. Tension Stress kips/in2	max. Trnsfd. Energy kips-ft	max. Veloc. ft/s	max. Displ. in
1	3.3	890.2	-152.3	2.747	-.470	19.77	5.8	.511
2	6.7	898.9	-197.4	2.774	-.609	19.75	5.7	.508
4	13.4	901.1	-157.7	2.781	-.487	19.68	5.7	.501
6	20.1	822.3	-161.3	2.538	-.498	16.85	5.7	.491
8	26.8	779.0	-162.8	2.404	-.502	15.25	5.6	.481
10	33.5	786.3	-76.3	2.427	-.235	14.92	5.5	.472
12	40.2	797.5	-73.7	2.462	-.227	14.77	6.3	.459
14	46.9	675.7	-84.6	2.085	-.261	14.51	7.3	.445
16	53.6	643.5	-99.2	1.986	-.306	13.70	8.1	.436
18	60.3	544.5	-99.2	1.681	-.306	12.38	6.8	.427
19	63.6	447.8	-63.8	1.382	-.197	10.48	7.2	.422
20	67.0	437.5	-52.2	1.350	-.161	8.23	7.3	.418
Absolute	13.4			2.781		(T=	23.8 ms)	
	6.7				-.609	(T=	30.4 ms)	

CASE METHOD

	J=0.0	J=0.1	J=0.2	J=0.3	J=0.4	J=0.5	J=0.6	J=0.7	J=0.8	J=0.9
RS1	410.	309.	207.	106.	5.	0.	0.	0.	0.	0.
RMX	665.	563.	503.	449.	395.	382.	374.	367.	360.	354.
RSU	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

RAU 321. RA2 439.

Current CAPWAP Ru= 410.0; Corresponding J(Rs)= .00; J(Rx)= .37

VMX	VFN	VT1*Z	FT1	FMX	DMX	DFN	EMX	EFN	RLT	REN
5.81	.16	699.4	721.1	892.2	.505	.248	19.7	19.5	627.	677.

PILE PROFILE AND PILE MODEL

Depth ft	Area in2	E-Modulus kips/in2	Spec. Weight kips/ft3	Circumf. ft
.00	324.00	5554.0	.150	6.000
66.97	324.00	5554.0	.150	6.000

Toe Area 2.250 ft2

Top Segment Length 3.35 feet, Top Impedance 137.37 kips/ft/s

Pile Damping 2.3 %, Time Incr .256 ms, Wave Speed 13099.8 ft/s

Table D.8 continued

Schmertmann & Crapps, Inc. 27-Jun-96

AUCILLA / UF RESEARCH, Project: 866
Blow: 11 Data: 1 hr SC
Collected: 3/30/94 CAPWAP(R) Ver. 1996-1

CAPWAP ANNOTATIONS

Notes for AUCILLA / UF RESEARCH
Records: 1/ 1 for PDA Temporary File: C:\CW96\data\AUC63K.BOR

QSkn	UNld	CSkn	LSkn	JSkn	SSkn	REss	SKdp	MSkn	PIld
.031	.290	.650	1.000	.104	.061	.000	.000	.000	.023
QToe	TGap	CToe	LToe	JToe	SToe	OPtd	BTdp	MToe	PLug
.353	.000	.450	1.000	.374	.294	2.000	.000	.000	.000

FOsc	VEsc	DIsc	TIsc	FDsc	DFsc	RSsc	FPsc
1000.	8.00	1.000	7.00	450.00	.700	15.00	600.00
STcw	RUcw	BLcw					
40.00	600.	1200.					

TVpk	ACas	T1ad	T2ad	A12	T3ad	T4ad	A34
20.7	-.04	.0	20.7	.00	20.7	101.5	.00
VCal	VPcl	FCal	FZcl	FPcl	TBeg	TEnd	
3.32	1.013	3.11	1401.4	.948	.5	59.8	
VAsh	FAsh	VTsh	FTsh	VFil	FFil		
.0	.0	0	0	0	0		

PEnt	M-BLct	C-BLct	CIrc	BTar	MQno	Freq	J-Rx	J-Rs	RSA
61.5	48.0	48.0	6.000	2.250	1.72	10000.	.37	.00	0

Added Impedance
None

Added Damping
None

Damping Multipliers

1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Capacity Reduction Factors

1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

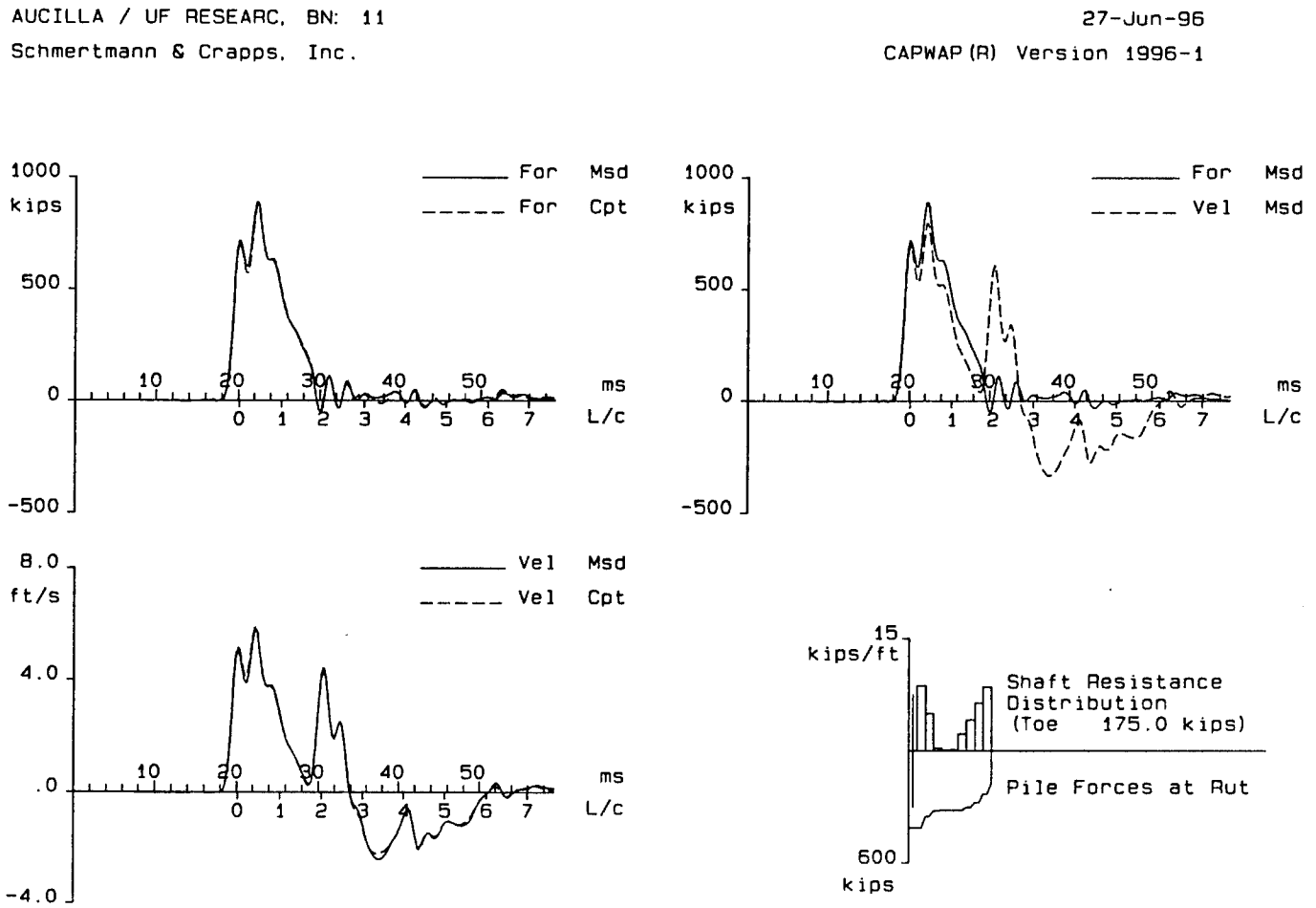


Figure D.11 CAPWAP Match, AUC at Elev. -8.23 ft

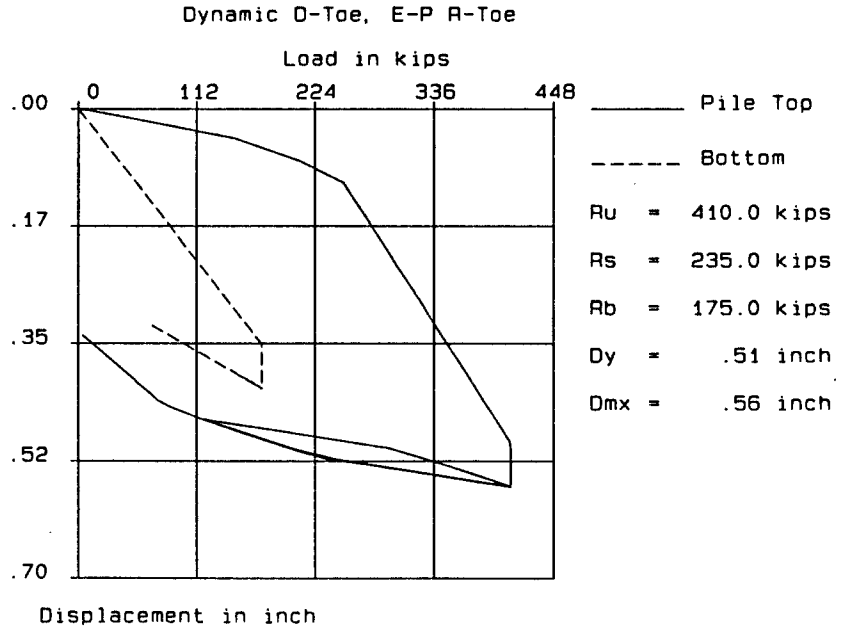


Figure D.12 CAPWAP, AUC at Elev. -8.23 ft

Table D.9 CAPWAP, VLE at Elev. -31.27 ft

Schmertmann & Crapps, Inc. 15-Aug-96

VILANO EAST / UF RESEARCH, Project: 866
Blow: -4 Data: EOD
Collected: 4/14/94 CAPWAP(R) Ver. 1996-2

CAPWAP FINAL RESULTS

Total CAPWAP Capacity: 601.0; along Shaft 286.5; at Toe 314.5 kips

Soil Sgmnt No.	Dist. Below Gages ft	Depth Below Grade ft	Ru kips	Force in Pile at Ru kips	Sum of Ru kips	Unit w. Respect to Depth kips/ft	Resist. Area kips/f2	Smith Damping Factor s/ft	Quake inch
				601.0					
1	3.6	2.4	12.1	588.9	12.1	3.36	.56	.120	.062
2	7.2	6.0	6.8	582.1	18.9	1.90	.32	.120	.062
3	10.8	9.6	.8	581.2	19.8	.23	.04	.120	.062
4	14.4	13.2	.2	581.1	19.9	.05	.01	.120	.062
5	18.0	16.8	9.8	571.3	29.7	2.72	.45	.120	.062
6	21.6	20.4	27.6	543.6	57.4	7.68	1.28	.120	.062
7	25.2	24.0	43.6	500.0	101.0	12.12	2.02	.120	.062
8	28.8	27.6	53.0	446.9	154.1	14.74	2.46	.120	.062
9	32.4	31.2	61.8	385.1	215.9	17.18	2.86	.120	.062
10	36.0	34.8	70.6	314.5	286.5	19.63	3.27	.120	.062
Average Skin Values			28.7			8.22	1.33	.120	.062
	Toe		314.5				139.77	.028	.341

Soil Model Parameters/Extensions		Skin	Toe
Case Damping Factor		.268	.069-Smith Type
Unloading Quake	(% of loading quake)	38	46
Reloading Level	(% of Ru)	15	0
Unloading Level	(% of Ru)	0	

Table D.9 continued

Schmertmann & Crapps, Inc. 15-Aug-96

VILANO EAST / UF RESEARCH, Project: 866
Blow: -4 Data: EOD
Collected: 4/14/94 CAPWAP(R) Ver. 1996-2

EXTREMA TABLE

Pile Sgmnt No.	Dist. Below Gages ft	max. Force kips	min. Force kips	max. Comp. Stress kips/in2	max. Tension Stress kips/in2	max. Trnsfd. Energy kips-ft	max. Veloc. ft/s	max. Displ. in
1	3.6	950.6	.0	2.934	.000	21.23	6.5	.477
2	7.2	941.7	.0	2.906	.000	20.47	6.4	.469
3	10.8	924.3	.0	2.853	.000	19.95	6.4	.459
4	14.4	898.6	.0	2.773	.000	19.69	6.6	.447
5	18.0	893.1	.0	2.756	.000	19.36	6.6	.432
6	21.6	870.4	.0	2.687	.000	18.47	6.6	.416
7	25.2	804.6	.0	2.483	.000	16.83	6.8	.403
8	28.8	675.3	.0	2.084	.000	14.53	7.2	.393
9	32.4	501.3	.0	1.547	.000	11.83	7.8	.383
10	36.0	432.9	.0	1.336	.000	6.01	7.9	.373
Absolute	3.6			2.934		(T= 23.2 ms)		
	.0				.000	(T= .0 ms)		

CASE METHOD

	J=0.0	J=0.1	J=0.2	J=0.3	J=0.4	J=0.5	J=0.6	J=0.7	J=0.8	J=0.9
RS1	737.	633.	528.	424.	320.	215.	111.	6.	0.	0.
RMX	741.	687.	646.	606.	572.	546.	531.	515.	507.	505.
RSU	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

RAU 498. RA2 541.

Current CAPWAP Ru= 601.0; Corresponding J(Rs)= .13; J(Rx)= .31

VMX	VFN	VT1*Z	FT1	FMX	DMX	DFN	EMX	EFN	RLT	REN
6.64	-.41	852.5	928.7	928.7	.490	.332	21.3	18.1	777.	957.

PILE PROFILE AND PILE MODEL

Depth ft	Area in2	E-Modulus kips/in2	Spec. Weight kips/ft3	Circumf. ft
.00	324.00	4844.9	.150	6.000
35.99	324.00	4844.9	.150	6.000

Toe Area 2.250 ft2

Top Segment Length 3.60 feet, Top Impedance 128.30 kips/ft/s

Pile Damping 2.0 %, Time Incr .294 ms, Wave Speed 12235.0 ft/s

Table D.9 continued

Schmertmann & Crapps, Inc. 15-Aug-96

VILANO EAST / UF RESEARCH, Project: 866
Blow: -4 Data: EOD
Collected: 4/14/94 CAPWAP(R) Ver. 1996-2

CAPWAP ANNOTATIONS

Notes for VILANO EAST / UF RESEARCH
Records: 1/ 1 for PDA Temporary File: A:VLE-30B.EOD

QSkn	UNld	CSkn	LSkn	JSkn	SSkn	REss	SKdp	MSkn	PIld
.062	.000	.380	.150	.268	.120	.000	.000	.000	.020
QToe	TGap	CToe	LToe	JToe	SToe	OPtd	BTdp	MToe	PLug
.341	.000	.470	.000	.069	.028	2.000	.000	.000	.000

FOsc	VEsc	DIsc	TIsc	FDsc	DFsc	RSsc	FPsc
1000.	8.00	1.000	6.00	650.00	.700	25.00	650.00
STcw	RUcw	BLcw					
40.00	650.	1200.					

TVpk	ACas	T1ad	T2ad	A12	T3ad	T4ad	A34
22.9	-.30	.0	22.9	.30	22.9	99.1	.00
VCal	VPcl	FCal	FZcl	FPcl	TBeg	TEnd	
3.32	1.013	2.99	1259.3	.912	.6	47.9	
VAsh	FAsh	VTsh	FTsh	VFil	FFil		
.0	.0	0	0	0	0		

PEnt	M-BLct	C-BLct	CIrc	BTar	MQno	Freq	J-Rx	J-Rs	RSA
34.8	72.0	72.9	6.000	2.250	2.21	10000.	.31	.13	0

Added Quake	Cut-Off	E-Modul Multiplier	Toe Quake and Damping Optn	Uplift Frictn Reduct. Factr
.00	.00	1.00	0	.80

Added Impedance
None

Added Damping
None

Damping Multipliers
All ones

Capacity Reduction Factors
All ones

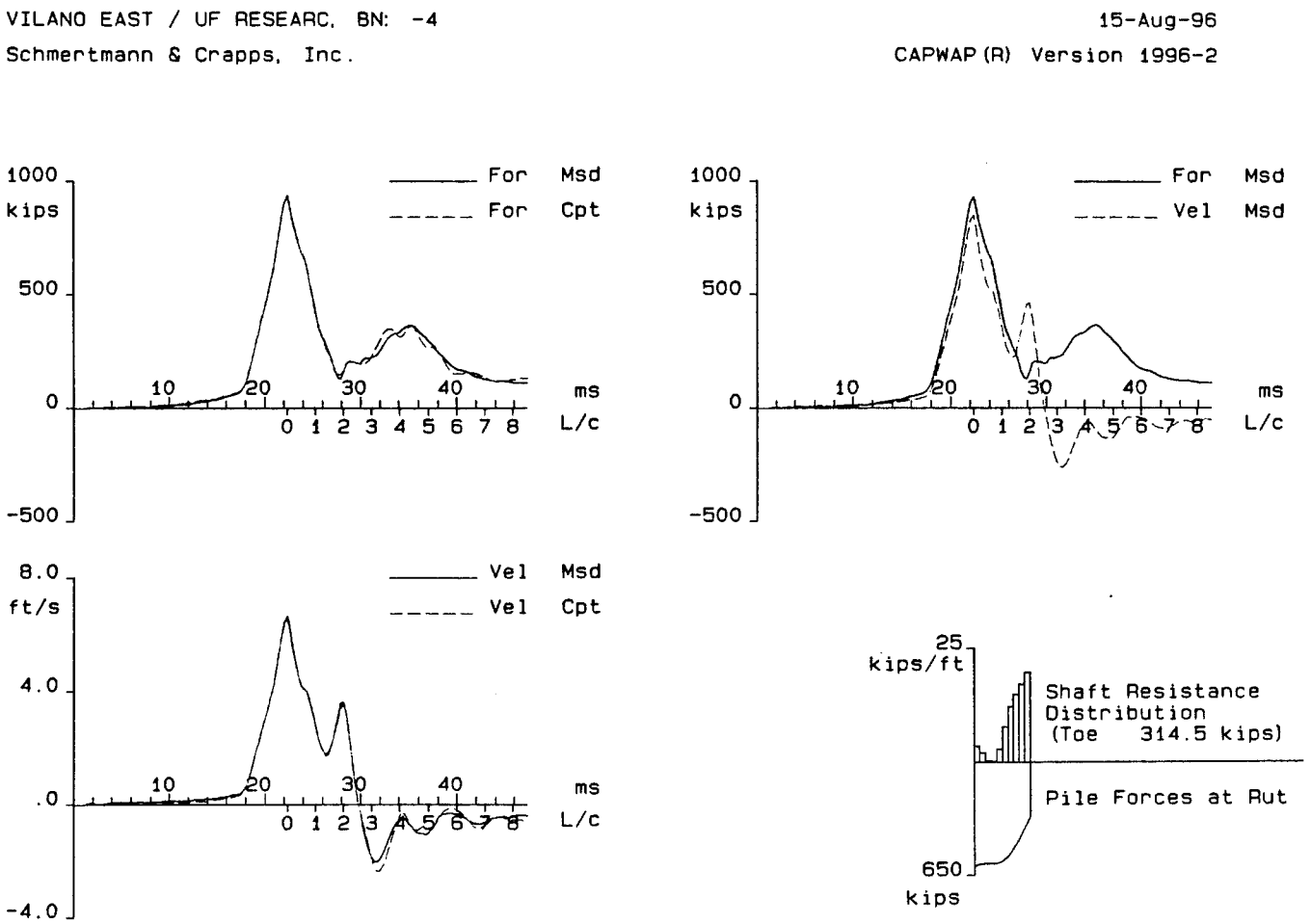


Figure D.13 CAPWAP Match, VLE at Elev. -31.27 ft

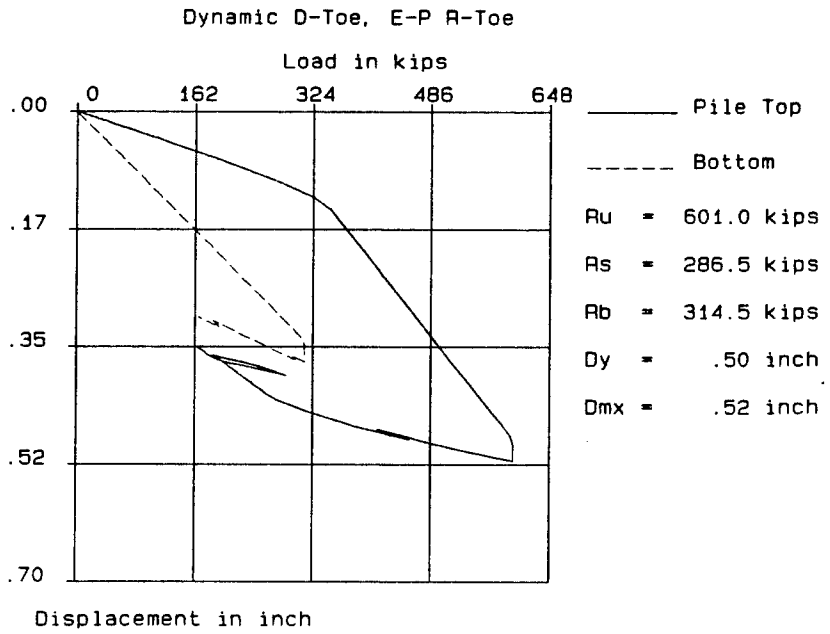


Figure D.14 CAPWAP, VLE at Elev. -31.27 ft

Table D.10 CAPWAP, VLE at Elev. -31.29 ft

Schmertmann & Crapps, Inc. 16-Aug-96

VILANO EAST / UF RESEARCH, Project: 866
Blow: 2 Data: 15 MIN SC
CAPWAP(R) Ver. 1996-2

CAPWAP FINAL RESULTS

Total CAPWAP Capacity: 653.0; along Shaft 326.0; at Toe 327.0 kips

Soil Sgmnt No.	Dist. Below Gages ft	Depth Below Grade ft	Ru kips	Force in Pile at Ru kips	Sum of Ru kips	Unit Resist. w. Respect to Depth kips/ft	Area kips/f2	Smith Damping Factor s/ft	Quake inch
				653.0					
1	3.6	2.5	5.0	648.0	5.0	1.40	.23	.125	.060
2	7.2	6.1	3.9	644.1	8.9	1.07	.18	.125	.060
3	10.8	9.7	3.0	641.1	11.9	.83	.14	.125	.060
4	14.4	13.3	1.0	640.1	12.9	.28	.05	.125	.060
5	18.0	16.9	14.1	626.0	27.0	3.92	.65	.125	.060
6	21.6	20.5	28.0	598.0	55.0	7.79	1.30	.125	.060
7	25.2	24.1	42.3	555.7	97.3	11.75	1.96	.125	.060
8	28.8	27.7	56.2	499.5	153.5	15.61	2.60	.125	.060
9	32.4	31.3	75.2	424.3	228.7	20.90	3.48	.125	.060
10	36.0	34.9	97.3	327.0	326.0	27.03	4.51	.125	.060
Average Skin Values			32.6			9.35	1.51	.125	.060
Toe			327.0				145.33	.020	.375

Soil Model Parameters/Extensions		Skin	Toe
Case Damping Factor		.318	.051-Smith Type
Unloading Quake	(% of loading quake)	15	28
Reloading Level	(% of Ru)	100	0
Unloading Level	(% of Ru)	0	

Table D.10 continued

Schmertmann & Crapps, Inc. 16-Aug-96

VILANO EAST / UF RESEARCH, Project: 866
Blow: 2 Data: 15 MIN SC
CAPWAP(R) Ver. 1996-2

EXTREMA TABLE

Pile Sgmnt No.	Dist. Below Gages ft	max. Force kips	min. Force kips	max. Comp. Stress kips/in2	max. Tension Stress kips/in2	max. Trnsfd. Energy kips-ft	max. Veloc. ft/s	max. Displ. in
1	3.6	938.1	.0	2.895	.000	23.71	6.3	.491
2	7.2	945.9	.0	2.920	.000	23.32	6.2	.484
3	10.8	932.5	.0	2.878	.000	22.98	6.2	.474
4	14.4	901.6	.0	2.783	.000	22.60	6.5	.463
5	18.0	885.4	.0	2.733	.000	22.26	6.5	.449
6	21.6	863.8	.0	2.666	.000	21.16	6.5	.434
7	25.2	799.5	.0	2.468	.000	19.39	6.6	.421
8	28.8	691.6	.0	2.135	.000	16.97	6.9	.408
9	32.4	542.4	.0	1.674	.000	13.94	7.3	.397
10	36.0	460.0	.0	1.420	.000	5.89	7.2	.386
Absolute	7.2			2.920		(T=	23.9 ms)	
	.0				.000	(T=	.0 ms)	

CASE METHOD

	J=0.0	J=0.1	J=0.2	J=0.3	J=0.4	J=0.5	J=0.6	J=0.7	J=0.8	J=0.9
RS1	762.	664.	566.	468.	370.	272.	174.	75.	0.	0.
RMX	762.	707.	658.	608.	567.	535.	519.	511.	503.	497.
RSU	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

RAU 367. RA2 568.

Current CAPWAP Ru= 653.0; Corresponding J(Rs)= .11; J(Rx)= .21

VMX	VFN	VT1*Z	FT1	FMX	DMX	DFN	EMX	EFN	RLT	REN
6.44	-.18	825.2	918.9	918.9	.507	.363	23.7	20.9	845.	1068.

PILE PROFILE AND PILE MODEL

Depth ft	Area in2	E-Modulus kips/in2	Spec. Weight kips/ft3	Circumf. ft
.00	324.00	4834.8	.150	6.000
35.99	324.00	4834.8	.150	6.000

Toe Area 2.250 ft2

Top Segment Length 3.60 feet, Top Impedance 128.17 kips/ft/s

Pile Damping 2.0 %, Time Incr .294 ms, Wave Speed 12222.3 ft/s

Table D.10 continued

Schmertmann & Crapps, Inc. 16-Aug-96

VILANO EAST / UF RESEARCH, Project: 866
Blow: 2 Data: 15 MIN SC
CAPWAP(R) Ver. 1996-2

CAPWAP ANNOTATIONS

Notes for VILANO EAST / UF RESEARCH
Records: 1/ 1 for PDA Temporary File: D:\CW96\DATA\VLE-31A.BOR

QSkn	UNld	CSkn	LSkn	JSkn	SSkn	REss	SKdp	MSkn	PIld
.060	.000	.160	1.000	.318	.125	.000	.000	.000	.020
QToe	TGap	CToe	LToe	JToe	SToe	OPtd	BTdp	MToe	PLug
.375	.000	.280	.000	.051	.020	2.000	.000	.000	.000

FOsc	VEsc	DIsc	TIsc	FDsc	DFsc	RSsc	FPsc
1000.	8.00	1.000	6.00	700.00	.750	30.00	700.00
STcw	RUcw	BLcw					
40.00	700.	1200.					

TVpk	ACas	T1ad	T2ad	A12	T3ad	T4ad	A34
23.3	-.35	.0	23.0	.30	23.0	102.5	.00
VCal	VPcl	FCal	FZcl	FPcl	TBeg	TEnd	
3.32	1.013	2.99	1256.8	.911	.6	46.8	
VAsh	FAsh	VTsh	FTsh	VFil	FFil		
.0	.0	0	0	0	0		

PEnt	M-BLct	C-BLct	CIrc	BTar	MQno	Freq	J-Rx	J-Rs	RSA
34.9	72.0	71.5	6.000	2.250	2.40	10000.	.21	.11	0

Added Quake	Cut-Off	E-Modul Multiplier	Toe Quake and Damping Optn	Uplift Frictn Reduct. Factr
.00	.00	1.00	0	.80

Added Impedance
None

Added Damping
None

Damping Multipliers
All ones

Capacity Reduction Factors
All ones

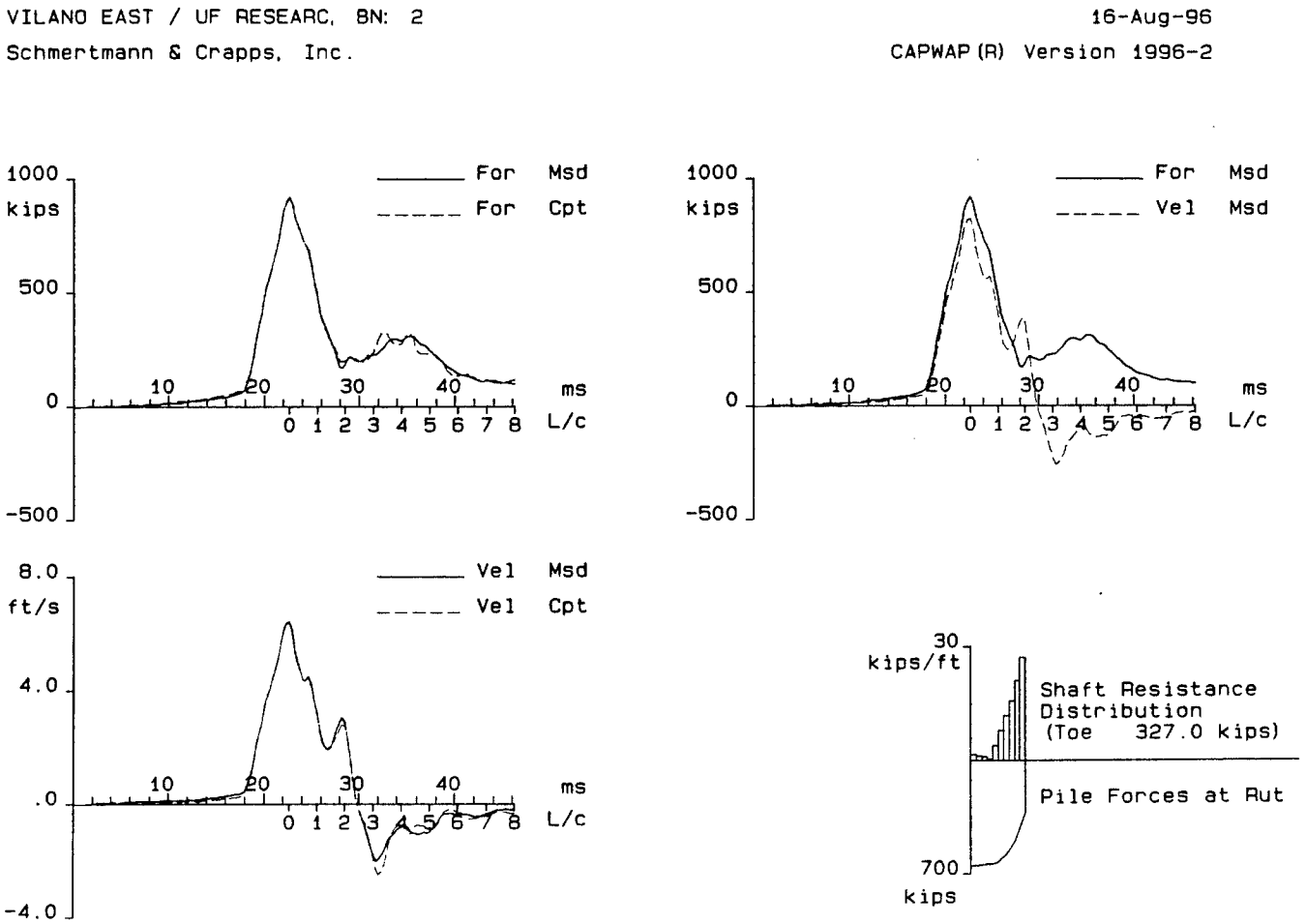


Figure D.15 CAPWAP Match, VLE at Elev. -31.29 ft

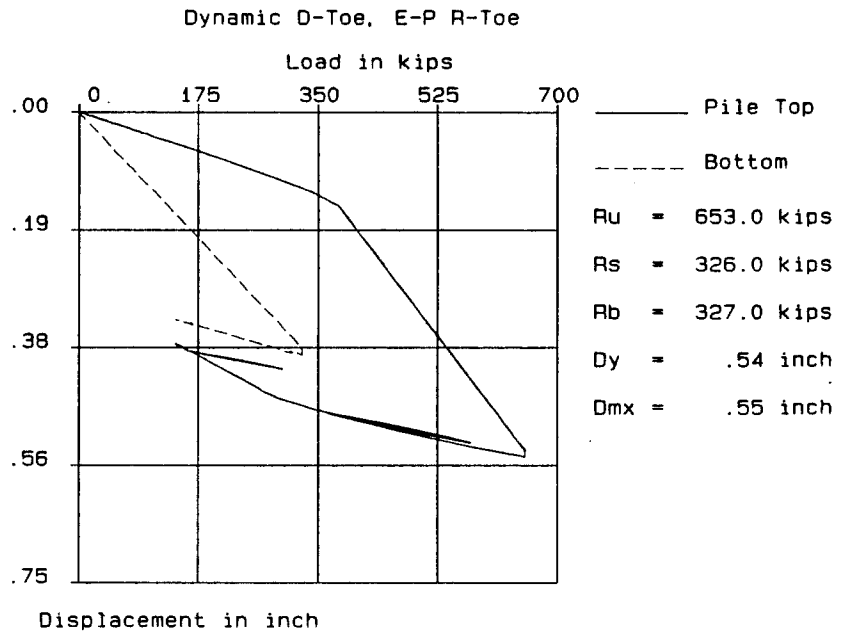


Figure D.16 CAPWAP, VLE at Elev. -31.29 ft

Table D.11 CAPWAP, VLE at Elev. -31.39 ft

Schmertmann & Crapps, Inc. 16-Aug-96

VILANO EAST / UF RESEARCH, Project: 866
Blow: -7 Data: 1 hr SC
Collected: 4/14/94 CAPWAP(R) Ver. 1996-2

CAPWAP FINAL RESULTS

Total CAPWAP Capacity: 605.0; along Shaft 314.9; at Toe 290.1 kips

Soil Sgmnt No.	Dist. Below Gages ft	Depth Below Grade ft	Ru kips	Force in Pile at Ru kips	Sum of Ru kips	Unit w. Respect to Depth kips/ft	Resist. Area kips/f2	Smith Damping Factor s/ft	Quake inch
				605.0					
1	3.6	2.6	10.1	594.9	10.1	2.82	.47	.150	.043
2	7.2	6.2	7.4	587.5	17.5	2.05	.34	.150	.043
3	10.8	9.8	4.8	582.6	22.4	1.34	.22	.150	.043
4	14.4	13.4	5.6	577.1	27.9	1.54	.26	.150	.043
5	18.0	17.0	8.0	569.1	35.9	2.23	.37	.150	.043
6	21.6	20.6	12.0	557.1	47.9	3.34	.56	.150	.043
7	25.2	24.2	25.0	532.0	73.0	6.95	1.16	.150	.043
8	28.8	27.8	40.0	492.0	113.0	11.13	1.85	.150	.043
9	32.4	31.4	76.8	415.2	189.8	21.33	3.56	.150	.043
10	36.0	35.0	125.1	290.1	314.9	34.77	5.80	.150	.043
Average Skin Values			31.5			9.00	1.46	.150	.043
	Toe		290.1				128.92	.020	.279

Soil Model Parameters/Extensions		Skin	Toe
Case Damping Factor		.369	.044
Unloading Quake	(% of loading quake)	30	33
Unloading Level	(% of Ru)	0	

Table D.11 continued

Schmertmann & Crapps, Inc. 16-Aug-96

VILANO EAST / UF RESEARCH, Project: 866
Blow: -7 Data: 1 hr SC
Collected: 4/14/94 CAPWAP(R) Ver. 1996-2

EXTREMA TABLE

Pile Sgmnt No.	Dist. Below Gages ft	max. Force kips	min. Force kips	max. Comp. Stress kips/in2	max. Tension Stress kips/in2	max. Trnsfd. Energy kips-ft	max. Veloc. ft/s	max. Displ. in
1	3.6	820.6	.0	2.533	.000	18.21	5.3	.400
2	7.2	817.4	.0	2.523	.000	17.60	5.2	.391
3	10.8	806.6	.0	2.489	.000	17.09	5.2	.381
4	14.4	781.3	.0	2.411	.000	16.70	5.3	.371
5	18.0	762.0	.0	2.352	.000	16.27	5.4	.360
6	21.6	752.4	.0	2.322	.000	15.74	5.4	.349
7	25.2	715.9	.0	2.209	.000	15.05	5.4	.339
8	28.8	666.0	.0	2.056	.000	13.83	5.4	.328
9	32.4	580.2	.0	1.791	.000	12.05	5.6	.317
10	36.0	467.9	.0	1.444	.000	4.58	5.6	.306
Absolute	3.6			2.533		(T=	23.8 ms)	
	.0				.000	(T=	.0 ms)	

CASE METHOD

	J=0.0	J=0.1	J=0.2	J=0.3	J=0.4	J=0.5	J=0.6	J=0.7	J=0.8	J=0.9
RS1	749.	674.	599.	524.	449.	374.	298.	223.	148.	73.
RMX	783.	720.	657.	614.	578.	544.	512.	480.	462.	449.
RSU	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

RAU 333. RA2 530.

Current CAPWAP Ru= 605.0; Corresponding J(Rs)= .19; J(Rx)= .32

VMX	VFN	VT1*Z	FT1	FMX	DMX	DFN	EMX	EFN	RLT	REN
5.39	-.05	691.2	808.7	808.7	.407	.288	18.2	16.1	856.	1072.

PILE PROFILE AND PILE MODEL

Depth ft	Area in2	E-Modulus kips/in2	Spec. Weight kips/ft3	Circumf. ft
.00	324.00	4844.9	.150	6.000
35.99	324.00	4844.9	.150	6.000

Toe Area 2.250 ft2

Top Segment Length 3.60 feet, Top Impedance 128.30 kips/ft/s

Pile Damping 2.0 %, Time Incr .294 ms, Wave Speed 12235.0 ft/s

Table D.11 continued

Schmertmann & Crapps, Inc. 16-Aug-96

VILANO EAST / UF RESEARCH, Project: 866
Blow: -7 Data: 1 hr SC
Collected: 4/14/94 CAPWAP(R) Ver. 1996-2

CAPWAP ANNOTATIONS

Notes for VILANO EAST / UF RESEARCH
Records: 1/ 1 for PDA Temporary File: a:VLE-32C.FR

QSkn	UNld	CSkn	LSkn	JSkn	SSkn	REss	SKdp	MSkn	PIld
.043	.000	.300	-1.000	.369	.150	.000	.000	.000	.020
QToe	TGap	CToe	LToe	JToe	SToe	OPtd	BTdp	MToe	PLug
.279	.000	.330	.000	.044	.020	.000	.000	.000	.000

FOsc	VEsc	DIsc	TIsc	FDsc	DFsc	RSsc	FPsc
1000.	8.00	1.000	6.00	700.00	.700	40.00	700.00
STcw	RUcw	BLcw					
40.00	700.	1200.					

TVpk	ACas	T1ad	T2ad	A12	T3ad	T4ad	A34
23.2	-.32	.0	22.9	.30	22.9	100.6	.00
VCal	VPcl	FCal	FZcl	FPcl	TBeg	TEnd	
3.32	1.013	2.99	1259.3	.912	.6	47.9	
VAsh	FAsh	VTsh	FTsh	VFil	FFil		
.0	.0	0	0	0	0		

PEnt	M-BLct	C-BLct	CIrc	BTar	MQno	Freq	J-Rx	J-Rs	RSA
35.0	115.0	80.0	6.000	2.250	2.38	10000.	.32	.19	0

Added Quake	Cut-Off	E-Modul Multiplier	Toe Quake and Damping Optn	Uplift Frictn Reduct. Factr
.00	.00	1.00	0	.80

Added Impedance
None

Added Damping
None

Damping Multipliers
All ones

Capacity Reduction Factors
All ones

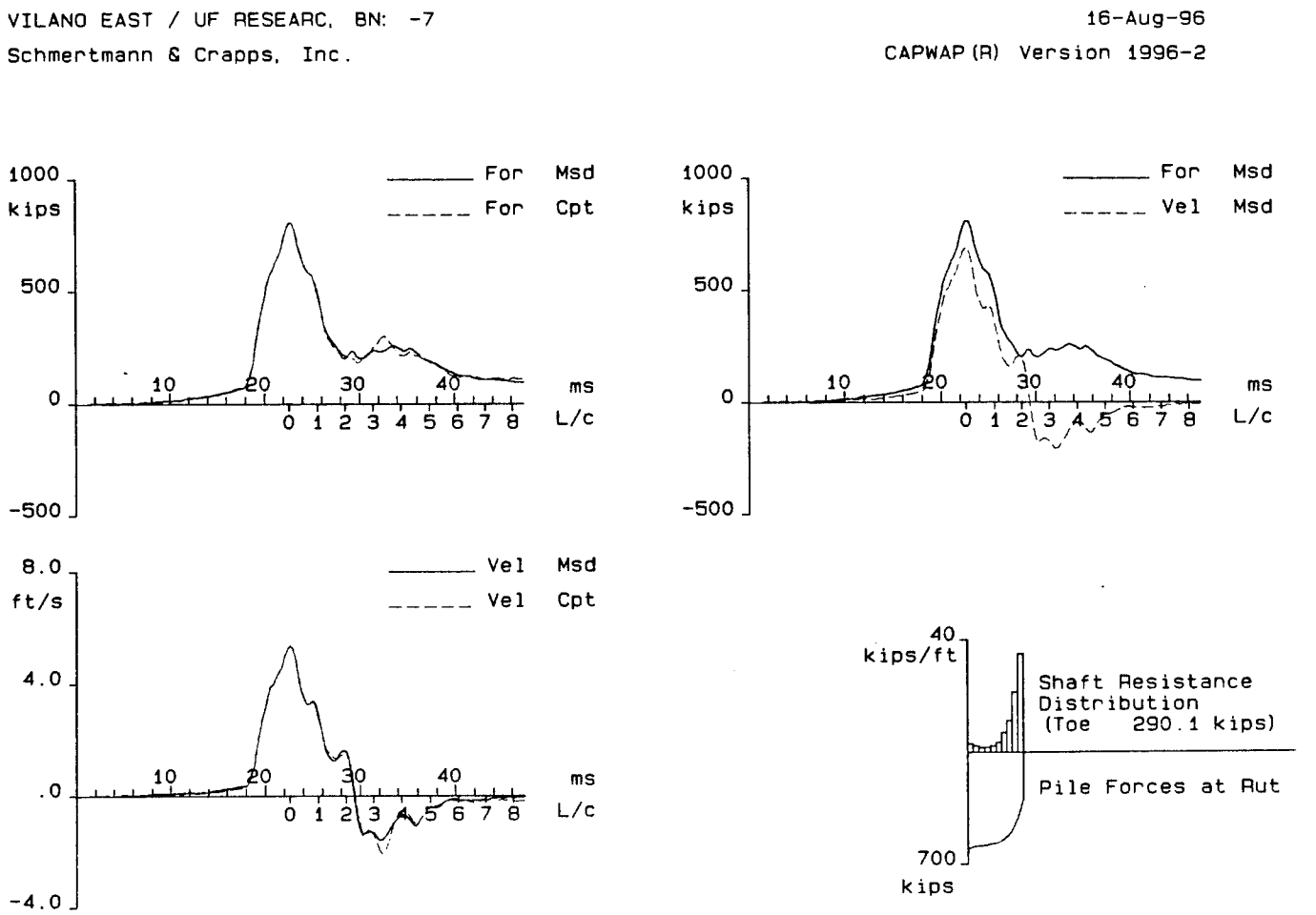


Figure D.17 CAPWAP Match, VLE at Elev. -31.39 ft

VILANO EAST / UF RESEARC, BN: -7 16-Aug-96
Schmertmann & Crapps, Inc. CAPWAP(R) Version 1996-2

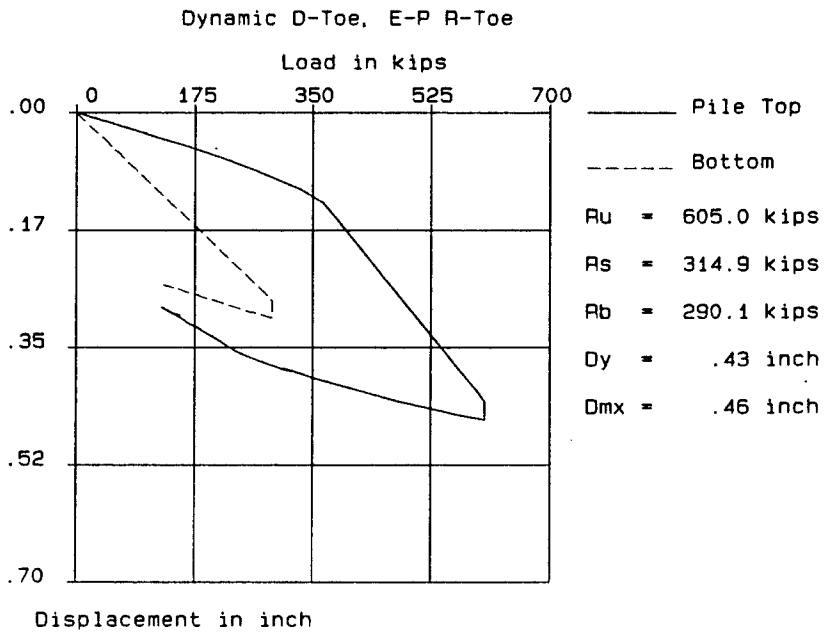


Figure D.18 CAPWAP, VLE at Elev. -31.39 ft

Table D.12 CAPWAP, VLW at Elev. -55.44 ft

Schmertmann & Crapps, Inc. 01-Aug-96

VILANO WEST / UF RESEARCH, Project: 866
Blow: -1 Data: EOD
Collected: 08/24/94 CAPWAP(R) Ver. 1996-2

CAPWAP FINAL RESULTS

Total CAPWAP Capacity: 122.6; along Shaft 64.3; at Toe 58.3 kips

Soil Sgmnt No.	Dist. Below Gages ft	Depth Below Grade ft	Ru kips	Force in Pile at Ru kips	Sum of Ru kips	Unit w. Respect to Depth kips/ft	Resist. Area kips/f2	Smith Damping Factor s/ft	Quake inch
				122.6					
1	9.9	7.3	23.7	98.9	23.7	3.60	.60	.238	.020
2	16.4	13.9	17.0	81.8	40.7	2.59	.43	.238	.020
3	23.0	20.5	10.7	71.2	51.4	1.62	.27	.238	.020
4	29.6	27.0	7.6	63.6	59.0	1.15	.19	.238	.020
5	36.2	33.6	3.5	60.0	62.5	.54	.09	.238	.020
6	42.7	40.2	.0	60.0	62.5	.00	.00	.238	.020
7	49.3	46.8	.0	60.0	62.5	.00	.00	.238	.020
8	55.9	53.3	.6	59.4	63.1	.10	.02	.238	.020
9	62.5	59.9	1.1	58.3	64.3	.17	.03	.238	.020
Average Skin Values			7.1			1.07	.18	.238	.020
Toe			58.3				25.89	.026	.153

Soil Model Parameters/Extensions		Skin	Toe
Case Damping Factor		.106	.011-Smith Type
Unloading Quake	(% of loading quake)	1	62
Reloading Level	(% of Ru)	100	100
Unloading Level	(% of Ru)	33	

Table D.12 continued

Schmertmann & Crapps, Inc. 01-Aug-96

VILANO WEST / UF RESEARCH, Project: 866
Blow: -1 Data: EOD
Collected: 08/24/94 CAPWAP(R) Ver. 1996-2

EXTREMA TABLE

Pile Sgmnt No.	Dist. Below Gages ft	max. Force kips	min. Force kips	max. Comp. Stress kips/in2	max. Tension Stress kips/in2	max. Trnsfd. Energy kips-ft	max. Veloc. ft/s	max. Displ. in
1	3.3	853.4	-226.0	2.634	-.698	18.45	7.3	1.066
2	6.6	853.8	-294.2	2.635	-.908	18.39	7.1	1.064
3	9.9	855.2	-346.5	2.640	-1.070	18.31	6.8	1.066
5	16.4	807.5	-473.0	2.492	-1.460	16.59	6.3	1.072
7	23.0	768.0	-498.7	2.370	-1.539	15.23	5.6	1.080
9	29.6	741.5	-467.1	2.289	-1.442	13.80	5.8	1.088
11	36.2	718.5	-412.7	2.218	-1.274	11.93	7.0	1.094
13	42.7	678.9	-347.3	2.096	-1.072	9.68	8.0	1.099
15	49.3	562.7	-250.4	1.737	-.773	7.18	8.6	1.102
17	55.9	337.2	-115.6	1.041	-.357	6.18	9.1	1.103
18	59.2	186.0	-29.5	.574	-.091	5.93	9.4	1.103
19	62.5	77.9	.0	.240	.000	5.72	9.6	1.102
Absolute	9.9			2.640		(T=	23.0 ms)	
	19.7				-1.595	(T=	30.2 ms)	

CASE METHOD

	J=0.0	J=0.1	J=0.2	J=0.3	J=0.4	J=0.5	J=0.6	J=0.7	J=0.8	J=0.9
RS1	284.	150.	16.	0.	0.	0.	0.	0.	0.	0.
RMX	305.	264.	226.	189.	163.	163.	163.	163.	163.	163.
RSU	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

RAU 55. RA2 64.

Current CAPWAP Ru= 122.6; Corresponding J(Rs)= .12; J(Rx)=1.00

VMX	VFN	VT1*Z	FT1	FMX	DMX	DFN	EMX	EFN	RLT	REN
7.45	2.09	786.6	836.0	836.0	1.076	1.075	18.4	18.2	213.	201.

Table D.12 continued

Schmertmann & Crapps, Inc. 01-Aug-96

VILANO WEST / UF RESEARCH, Project: 866
Blow: -1 Data: EOD
Collected: 08/24/94 CAPWAP(R) Ver. 1996-2

PILE PROFILE AND PILE MODEL

Depth ft	Area in2	E-Modulus kips/in2	Spec. Weight kips/ft3	Circumf. ft
.00	324.00	6102.9	.150	6.000
62.48	324.00	6102.9	.150	6.000

Toe Area 2.250 ft2

Segmnt Number	Dist. B.G. ft	Impedance kips/ft/s	Imped. Change %	Tension Slack inch	Tension Eff.	Compression Slack inch	Compression Eff.	Circ. ft
1	3.29	144.00	.00	.000	.000	.000	.000	6.000
18	59.19	144.00	.00	.000	.000	.000	.000	6.000
19	62.48	144.00	.00	.000	.000	.000	.000	6.000

Pile Damping 4.9 %, Time Incr .239 ms, Wave Speed 13731.9 ft/s

Table D.12 continued

Schmertmann & Crapps, Inc. 01-Aug-96

VILANO WEST / UF RESEARCH, Project: 866
Blow: -1 Data: EOD
Collected: 08/24/94 CAPWAP(R) Ver. 1996-2

CAPWAP ANNOTATIONS

Notes for VILANO WEST / UF RESEARCH
Records: 1/ 1 for PDA Temporary File: D:\CW96\DATA\VLWA-61A.EOD

QSkn	UNld	CSkn	LSkn	JSkn	SSkn	REss	SKdp	MSkn	PIld
.020	.330	.017	1.000	.106	.239	.000	.000	.000	.049
QToe	TGap	CToe	LToe	JToe	SToe	OPtd	BTdp	MToe	PLug
.153	.000	.620	1.000	.011	.026	2.000	.000	.000	.000

FOsc	VEsc	DIsc	TIsc	FDsc	DFsc	RSsc	FPsc
1000.	8.00	1.000	7.00	150.00	1.250	5.00	200.00
STcw	RUcw	BLcw					
40.00	200.	1200.					

TVpk	ACas	T1ad	T2ad	A12	T3ad	T4ad	A34
22.3	.00	.0	22.3	.10	22.3	102.3	.00
VCal	VPcl	FCal	FZcl	FPcl	TBeg	TEnd	
3.32	1.013	3.15	1486.1	.959	.5	59.9	
VAsh	FAsh	VTsh	FTsh	VFil	FFil		
.0	.0	0	0	0	0		

PEnt	M-BLct	C-BLct	CIrc	BTar	MQno	Freq	J-Rx	J-Rs	RSA
59.9	12.0	11.8	6.000	2.250	1.98	10000.	1.00	.12	0

Added Quake	Cut-Off	E-Modul Multiplier	Toe Quake and Damping Optn	Uplift Frictn Reduct. Factr
.00	.00	1.00	0	.80

Added Impedance
None

Added Damping
None

Damping Multipliers
All ones

Capacity Reduction Factors
All ones

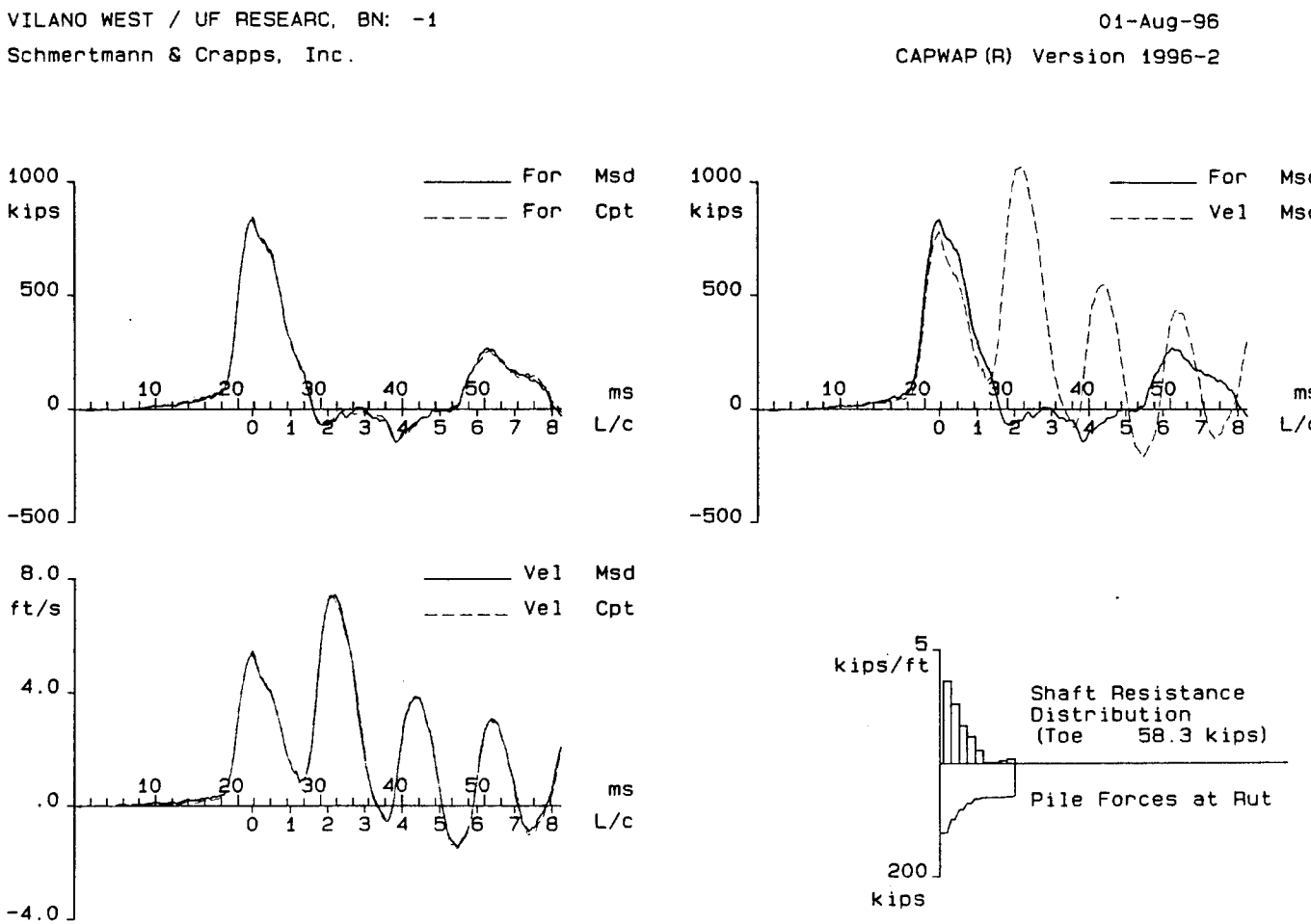


Figure D.19 CAPWAP Match, VLW at Elev. -55.44 ft

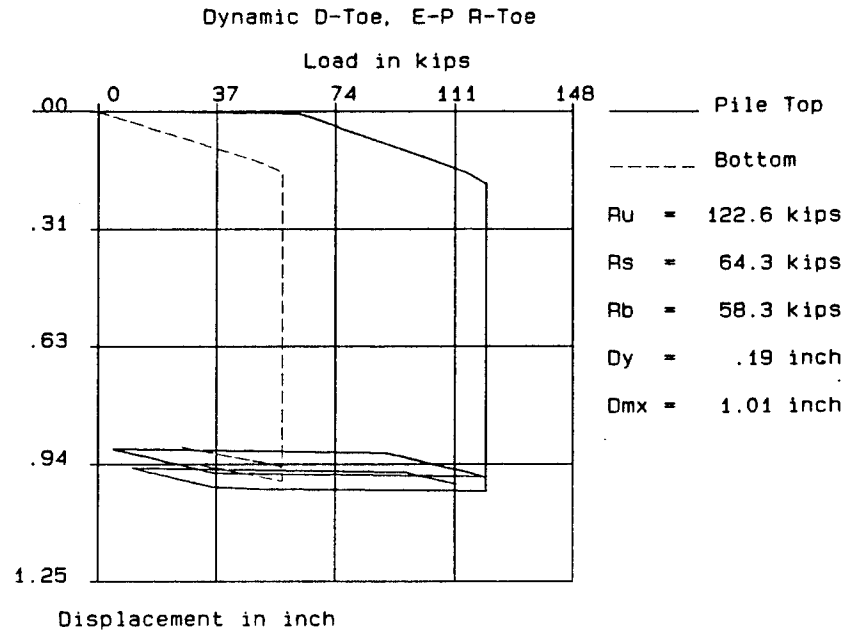


Figure D.20 CAPWAP, VLW at Elev. -55.44 ft

Table D.13 CAPWAP, VLW at Elev. -55.52 ft

Schmertmann & Crapps, Inc. 01-Aug-96

VILANO WEST / UF RESEARCH, Project: 866
Blow: 1 Data: 15 MIN SC
Collected: 8/24/94 CAPWAP(R) Ver. 1996-2

CAPWAP FINAL RESULTS

Total CAPWAP Capacity: 184.5; along Shaft 104.5; at Toe 80.0 kips

Soil Sgmnt No.	Dist. Below Gages ft	Depth Below Grade ft	Ru kips	Force in Pile at Ru kips	Sum of Ru kips	Unit w. Respect to Depth kips/ft	Resist. Area kips/f2	Smith Damping Factor s/ft	Quake inch
				184.5					
1	9.9	7.4	14.2	170.3	14.2	2.16	.36	.170	.021
2	16.4	14.0	10.7	159.7	24.9	1.62	.27	.170	.021
3	23.0	20.5	10.7	149.0	35.6	1.63	.27	.170	.021
4	29.6	27.1	16.0	133.0	51.6	2.43	.41	.170	.021
5	36.2	33.7	18.2	114.7	69.8	2.77	.46	.170	.021
6	42.7	40.3	13.1	101.7	82.9	1.99	.33	.170	.021
7	49.3	46.9	7.7	94.0	90.6	1.17	.20	.170	.021
8	55.9	53.4	6.7	87.2	97.3	1.03	.17	.170	.021
9	62.5	60.0	7.2	80.0	104.5	1.10	.18	.170	.021
Average Skin Values			11.6			1.74	.29	.170	.021
Toe			80.0				35.56	.070	.400

Soil Model Parameters/Extensions		Skin	Toe
Case Damping Factor		.123	.039
Unloading Quake	(% of loading quake)	20	100
Reloading Level	(% of Ru)	100	100
Unloading Level	(% of Ru)	20	

Table D.13 continued

Schmertmann & Crapps, Inc. 01-Aug-96

VILANO WEST / UF RESEARCH, Project: 866
Blow: 1 Data: 15 MIN SC
Collected: 8/24/94 CAPWAP(R) Ver. 1996-2

EXTREMA TABLE

Pile Sgmnt No.	Dist. Below Gages ft	max. Force kips	min. Force kips	max. Comp. Stress kips/in2	max. Tension Stress kips/in2	max. Trnsfd. Energy kips-ft	max. Veloc. ft/s	max. Displ. in
1	3.3	851.7	-97.8	2.629	-.302	25.44	6.8	1.142
2	6.6	856.2	-184.9	2.642	-.571	25.42	6.5	1.141
3	9.9	857.1	-242.8	2.645	-.749	25.39	6.3	1.139
5	16.4	833.5	-328.1	2.572	-1.013	23.16	5.9	1.136
7	23.0	821.5	-310.8	2.535	-.959	21.50	5.2	1.135
9	29.6	811.3	-278.8	2.504	-.860	19.87	5.6	1.133
11	36.2	778.4	-241.4	2.403	-.745	17.45	6.8	1.134
13	42.7	723.7	-223.5	2.234	-.690	14.63	7.9	1.137
15	49.3	598.3	-170.1	1.846	-.525	12.51	8.4	1.139
17	55.9	373.5	-52.1	1.153	-.161	11.18	8.8	1.139
18	59.2	221.3	-.3	.683	-.001	10.00	9.0	1.138
19	62.5	136.7	.0	.422	.000	8.86	9.1	1.136
Absolute	9.9			2.645		(T=	23.0 ms)	
	19.7				-1.030	(T=	30.4 ms)	

CASE METHOD

	J=0.0	J=0.1	J=0.2	J=0.3	J=0.4	J=0.5	J=0.6	J=0.7	J=0.8	J=0.9
RS1	372.	247.	122.	0.	0.	0.	0.	0.	0.	0.
RMX	372.	319.	282.	257.	250.	244.	237.	231.	227.	226.
RSU	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

RAU 139. RA2 167.

Current CAPWAP Ru= 184.5; Corresponding J(Rs)= .15; J(Rx)=1.00

VMX	VFN	VT1*Z	FT1	FMX	DMX	DFN	EMX	EFN	RLT	REN
6.88	.08	774.2	843.8	846.0	1.147	1.109	25.3	25.3	283.	276.

Table D.13 continued

Schmertmann & Crapps, Inc. 01-Aug-96

VILANO WEST / UF RESEARCH, Project: 866
Blow: 1 Data: 15 MIN SC
Collected: 8/24/94 CAPWAP(R) Ver. 1996-2

PILE PROFILE AND PILE MODEL

Depth ft	Area in2	E-Modulus kips/in2	Spec. Weight kips/ft3	Circumf. ft
.00	324.00	6102.9	.150	6.000
62.48	324.00	6102.9	.150	6.000

Toe Area 2.250 ft2

Segmnt Number	Dist. B.G. ft	Impedance kips/ft/s	Imped. Change %	Tension Slack inch	Tension Eff.	Compression Slack inch	Compression Eff.	Circ. ft
1	3.29	144.00	.00	.000	.000	.000	.000	6.000
18	59.19	144.00	.00	.000	.000	.000	.000	6.000
19	62.48	144.00	.00	.000	.000	.000	.000	6.000

Pile Damping 4.6 %, Time Incr .239 ms, Wave Speed 13731.9 ft/s

Table D.13 continued

Schmertmann & Crapps, Inc. 01-Aug-96

VILANO WEST / UF RESEARCH, Project: 866
Blow: 1 Data: 15 MIN SC
Collected: 8/24/94 CAPWAP(R) Ver. 1996-2

CAPWAP ANNOTATIONS

Notes for VILANO WEST / UF RESEARCH
Records: 2/ 2 for PDA Temporary File: a:VLWA-61C.BOR

QSkn	UNld	CSkn	LSkn	JSkn	SSkn	REss	SKdp	MSkn	PIld
.021	.200	.200	1.000	.123	.170	.000	.000	.000	.046
QToe	TGap	CToe	LToe	JToe	SToe	OPtd	BTdp	MToe	PLug
.400	.000	1.000	1.000	.039	.070	.000	.000	.000	.000

FOsc	VEsc	DIsc	TIsc	FDsc	DFsc	RSsc	FPsc
1000.	8.00	1.000	7.50	200.00	1.300	4.00	250.00
STcw	RUcw	BLcw					
40.00	1000.	1200.					

TVpk	ACas	T1ad	T2ad	A12	T3ad	T4ad	A34
22.0	-.05	.0	22.0	.10	22.0	102.3	.00
VCal	VPcl	FCal	FZcl	FPcl	TBeg	TEnd	
3.32	1.013	3.15	1486.1	.959	.5	59.9	
VAsh	FAsh	VTsh	FTsh	VFil	FFil		
.0	.0	0	0	0	0		

PEnt	M-BLct	C-BLct	CIrc	BTar	MQno	Freq	J-Rx	J-Rs	RSA
60.0	12.0	12.6	6.000	2.250	1.73	10000.	1.00	.15	0

Added Quake	Cut-Off	E-Modul Multiplier	Toe Quake and Damping Optn	Uplift Frictn Reduct. Factr
.00	.00	1.00	0	.80

Added Impedance
None

Added Damping
None

Damping Multipliers
All ones

Capacity Reduction Factors
All ones

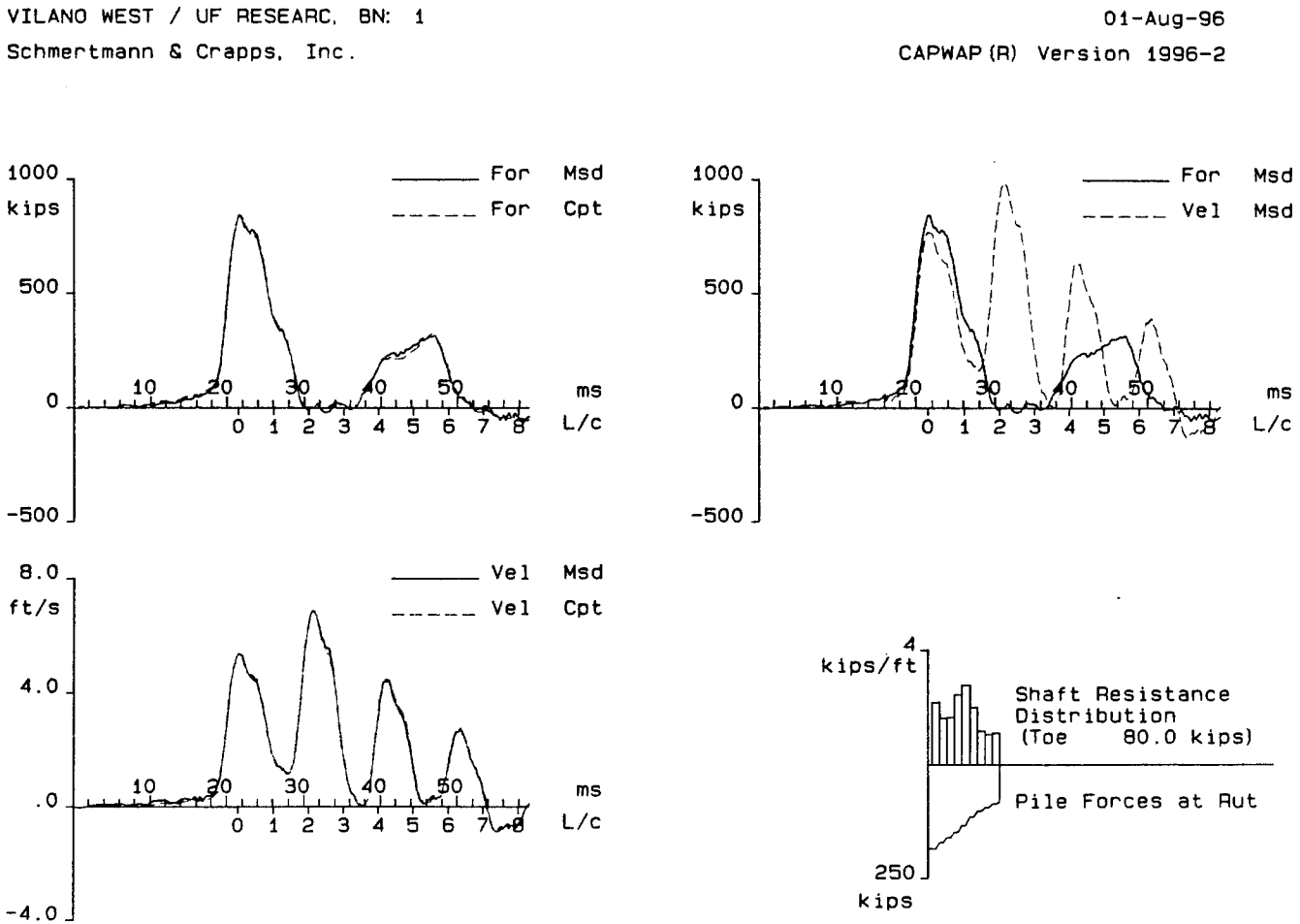


Figure D.21 CAPWAP Match, VLW at Elev. -55.52 ft

VILANO WEST / UF RESEARC, BN: 1
Schmertmann & Crapps, Inc.

01-Aug-96
CAPWAP(R) Version 1996-2

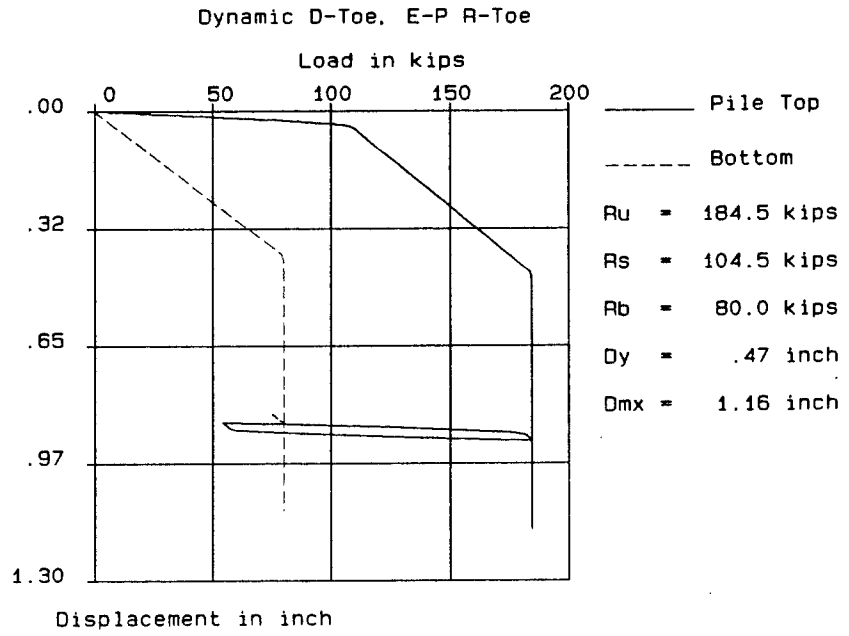


Figure D.22 CAPWAP, VLW at Elev. -55.52 ft

Table D.14 CAPWAP, VLW at Elev. -55.76 ft

Schmertmann & Crapps, Inc. 01-Aug-96

VILANO WEST / UF RESEARCH, Project: 866
Blow: 1 Data: 1 hr SC
Collected: 8/24/94 CAPWAP(R) Ver. 1996-2

CAPWAP FINAL RESULTS

Total CAPWAP Capacity: 206.0; along Shaft 111.2; at Toe 94.8 kips

Soil Sgmnt No.	Dist. Below Gages ft	Depth Below Grade ft	Ru kips	Force in Pile at Ru kips	Sum of Ru kips	Unit Resist. w. Respect to Depth kips/ft	Area kips/f2	Smith Damping Factor s/ft	Quake inch
				206.0					
1	9.9	7.7	20.2	185.8	20.2	3.06	.51	.247	.010
2	16.4	14.2	16.4	169.4	36.6	2.50	.42	.247	.010
3	23.0	20.8	15.4	154.0	52.0	2.34	.39	.247	.010
4	29.6	27.4	17.8	136.2	69.8	2.71	.45	.247	.010
5	36.2	34.0	16.0	120.2	85.8	2.44	.41	.247	.010
6	42.7	40.5	8.9	111.3	94.7	1.36	.23	.247	.010
7	49.3	47.1	4.5	106.7	99.3	.69	.12	.247	.010
8	55.9	53.7	5.2	101.5	104.5	.79	.13	.247	.010
9	62.5	60.3	6.7	94.8	111.2	1.02	.17	.247	.010
Average Skin Values			12.4			1.85	.31	.247	.010
Toe			94.8				42.12	.014	.088

Soil Model Parameters/Extensions		Skin	Toe
Case Damping Factor		.191	.009
Unloading Quake	(% of loading quake)	7	100
Reloading Level	(% of Ru)	35	100
Unloading Level	(% of Ru)	20	

Table D.14 continued

Schmertmann & Crapps, Inc. 01-Aug-96

VILANO WEST / UF RESEARCH, Project: 866
Blow: 1 Data: 1 hr SC
Collected: 8/24/94 CAPWAP(R) Ver. 1996-2

EXTREMA TABLE

Pile Sgmnt No.	Dist. Below Gages ft	max. Force kips	min. Force kips	max. Comp. Stress kips/in2	max. Tension Stress kips/in2	max. Trnsfd. Energy kips-ft	max. Veloc. ft/s	max. Displ. in
1	3.3	859.7	-135.8	2.653	-.419	17.20	5.6	.639
2	6.6	867.1	-205.3	2.676	-.634	17.16	5.3	.639
3	9.9	873.2	-261.7	2.695	-.808	17.11	5.1	.637
5	16.4	840.0	-374.9	2.593	-1.157	16.00	5.0	.634
7	23.0	813.6	-381.7	2.511	-1.178	14.95	4.9	.630
9	29.6	786.0	-364.3	2.426	-1.124	13.64	4.9	.625
11	36.2	750.1	-312.5	2.315	-.964	11.73	5.9	.621
13	42.7	702.1	-278.9	2.167	-.861	9.41	6.9	.618
15	49.3	585.3	-198.0	1.806	-.611	7.04	7.4	.619
17	55.9	359.0	-60.7	1.108	-.187	6.38	8.1	.621
18	59.2	211.5	-2.9	.653	-.009	5.67	8.4	.621
19	62.5	127.7	-2.0	.394	-.006	4.93	8.6	.619
Absolute	9.9			2.695		(T=	23.0 ms)	
	19.7				-1.267	(T=	30.2 ms)	

CASE METHOD

	J=0.0	J=0.1	J=0.2	J=0.3	J=0.4	J=0.5	J=0.6	J=0.7	J=0.8	J=0.9
RS1	428.	310.	193.	75.	0.	0.	0.	0.	0.	0.
RMX	428.	311.	284.	262.	243.	239.	234.	230.	228.	227.
RSU	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

RAU 192. RA2 181.

Current CAPWAP Ru= 206.0; Corresponding J(Rs)= .19; J(Rx)=1.00

VMX	VFN	VT1*Z	FT1	FMX	DMX	DFN	EMX	EFN	RLT	REN
5.73	-.54	768.4	836.6	842.1	.636	.583	17.5	17.5	333.	290.

Table D.14 continued

Schmertmann & Crapps, Inc. 01-Aug-96

VILANO WEST / UF RESEARCH, Project: 866
Blow: 1 Data: 1 hr SC
Collected: 8/24/94 CAPWAP(R) Ver. 1996-2

PILE PROFILE AND PILE MODEL

Depth ft	Area in2	E-Modulus kips/in2	Spec. Weight kips/ft3	Circumf. ft
.00	324.00	6102.9	.150	6.000
62.48	324.00	6102.9	.150	6.000

Toe Area 2.250 ft2

Segmnt Number	Dist. B.G. ft	Impedance kips/ft/s	Imped. Change %	Tension Slack inch	Tension Eff.	Compression Slack inch	Compression Eff.	Circ. ft
1	3.29	144.00	.00	.000	.000	.000	.000	6.000
18	59.19	144.00	.00	.000	.000	.000	.000	6.000
19	62.48	144.00	.00	.000	.000	.000	.000	6.000

Pile Damping 4.8 %, Time Incr .239 ms, Wave Speed 13731.9 ft/s

Table D.14 continued

Schmertmann & Crapps, Inc. 01-Aug-96

VILANO WEST / UF RESEARCH, Project: 866
Blow: 1 Data: 1 hr SC
Collected: 8/24/94 CAPWAP(R) Ver. 1996-2

CAPWAP ANNOTATIONS

Notes for VILANO WEST / UF RESEARCH
Records: 2/ 2 for PDA Temporary File: D:\CW96\DATA\VLWA-61D.BOR

QSkn	UNld	CSkn	LSkn	JSkn	SSkn	REss	SKdp	MSkn	PIld
.010	.200	.080	.350	.191	.247	.000	.000	.000	.048
QToe	TGap	CToe	LToe	JToe	SToe	OPtd	BTdp	MToe	PLug
.088	.000	1.000	1.000	.009	.014	.000	.000	.000	.000

FOsc	VEsc	DIsc	TIsc	FDsc	DFsc	RSsc	FPsc
1000.	8.00	1.000	7.50	250.00	.750	4.00	300.00
STcw	RUcw	BLcw					
40.00	300.	1200.					

TVpk	ACas	T1ad	T2ad	A12	T3ad	T4ad	A34
22.0	.04	.0	22.0	.10	22.0	102.3	.00
VCal	VPcl	FCal	FZcl	FPcl	TBeg	TEnd	
3.32	1.013	3.15	1486.1	.959	.5	59.9	
VAsh	FAsh	VTsh	FTsh	VFil	FFil		
.0	.0	0	0	0	0		

PEnt	M-BLct	C-BLct	CIrc	BTar	MQno	Freq	J-Rx	J-Rs	RSA
60.3	19.2	20.9	6.000	2.250	1.97	10000.	1.00	.19	0

Added Quake	Cut-Off	E-Modul Multiplier	Toe Quake and Damping Optn	Uplift Frictn Reduct. Factr
.00	.00	1.00	0	.80

Added Impedance
None

Added Damping
None

Damping Multipliers
All ones

Capacity Reduction Factors
All ones

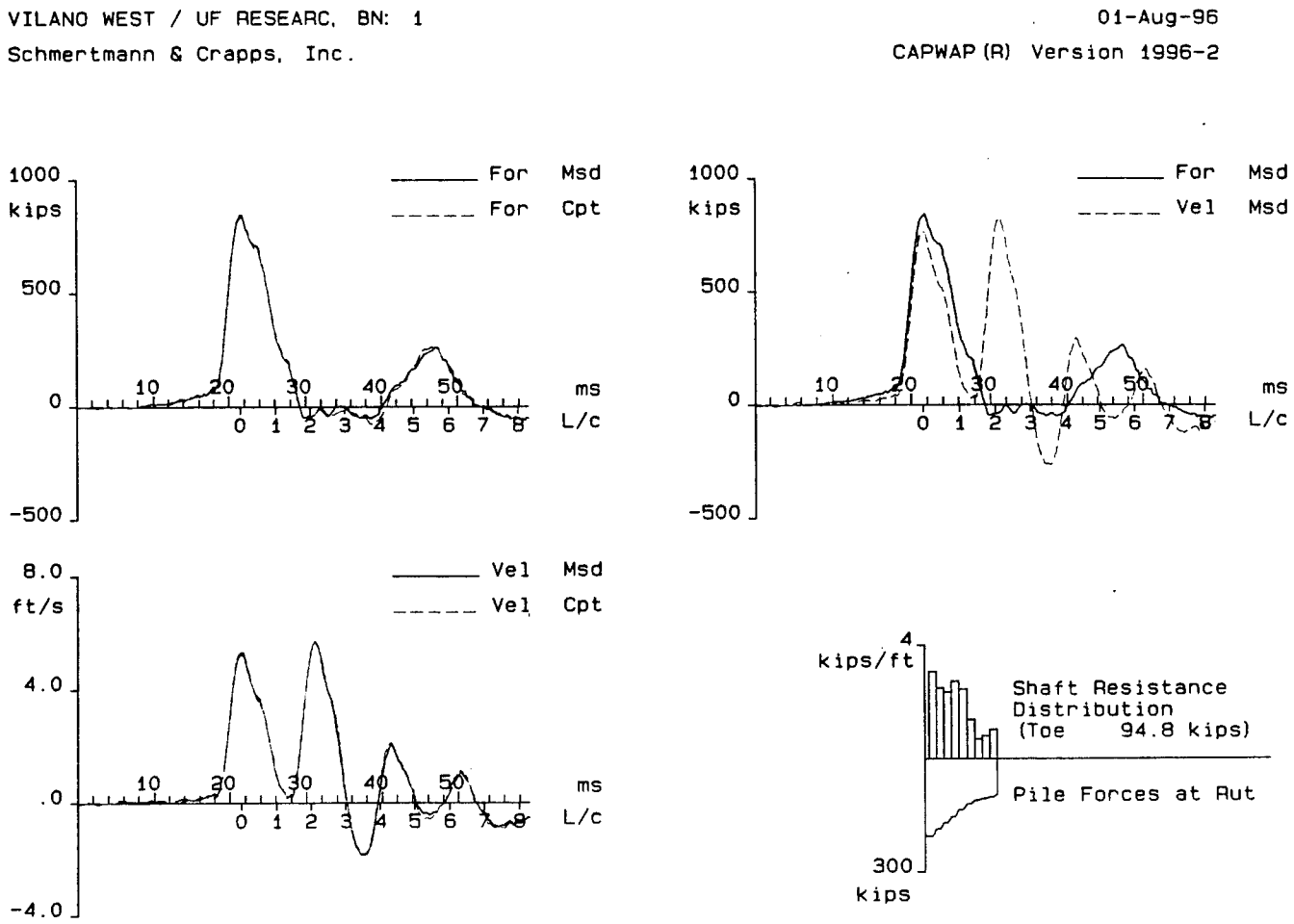


Figure D.23 CAPWAP Match, VLW at Elev. -55.76 ft

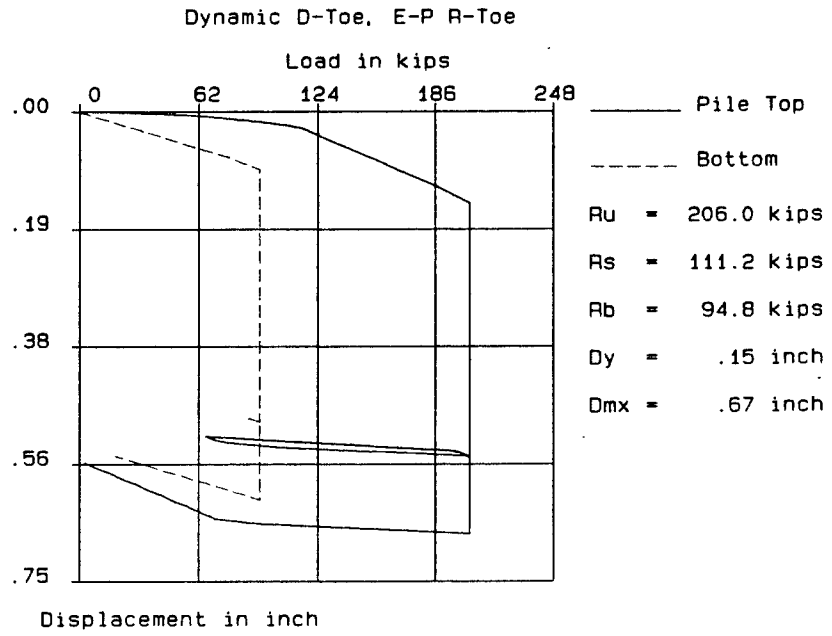


Figure D.24 CAPWAP, VLW at Elev. -55.76 ft

Table D.15 CAPWAP, SBZ at Elev. -74.25 ft

Schmertmann & Crapps, Inc. 03-Jul-96

SEABREEZE / UF RESEARCH, Project: 866
Blow: -8 Data: EOD
Collected: 1/26/96 CAPWAP(R) Ver. 1996-2

CAPWAP FINAL RESULTS

Total CAPWAP Capacity: 330.4; along Shaft 158.1; at Toe 172.3 kips

Soil Sgmnt No.	Dist. Below Gages ft	Depth Below Grade ft	Ru kips	Force in Pile at Ru kips	Sum of Ru kips	Unit w. Depth kips/ft	Resist. Respect to Area kips/f2	Smith Damping Factor s/ft	Quake inch
				330.4					
1	17.0	6.3	22.8	307.6	22.8	3.35	.56	.054	.054
2	23.8	13.1	19.7	287.9	42.4	2.89	.48	.054	.054
3	30.6	19.9	17.6	270.4	60.0	2.58	.43	.054	.054
4	37.4	26.6	17.2	253.2	77.2	2.53	.42	.054	.054
5	44.2	33.4	14.2	238.9	91.4	2.10	.35	.054	.054
6	51.0	40.2	11.9	227.0	103.4	1.75	.29	.054	.054
7	57.8	47.0	15.4	211.6	118.7	2.26	.38	.054	.054
8	64.6	53.9	18.4	193.2	137.2	2.71	.45	.054	.054
9	71.4	60.7	14.5	178.7	151.6	2.13	.35	.054	.054
10	78.2	67.5	6.3	172.4	158.0	.93	.16	.054	.054
11	85.0	74.3	.1	172.3	158.1	.01	.00	.054	.054
Average Skin Values			14.4			2.13	.35	.054	.054
	Toe		172.3				76.58	.030	.120

Soil Model Parameters/Extensions		Skin	Toe
Case Damping Factor		.063	.038
Unloading Quake	(% of loading quake)	0	30
Reloading Level	(% of Ru)	100	100
Unloading Level	(% of Ru)	0	

Table D.15 continued

Schmertmann & Crapps, Inc. 03-Jul-96

SEABREEZE / UF RESEARCH, Project: 866
Blow: -8 Data: EOD
Collected: 1/26/96 CAPWAP(R) Ver. 1996-2

EXTREMA TABLE

Pile Sgmnt No.	Dist. Below Gages ft	max. Force kips	min. Force kips	max. Comp. Stress kips/in2	max. Tension Stress kips/in2	max. Trnsfd. Energy kips-ft	max. Veloc. ft/s	max. Displ. in
1	3.4	778.8	-18.3	2.404	-.057	27.49	5.0	.942
2	6.8	782.4	-21.6	2.415	-.067	27.47	4.9	.940
4	13.6	788.8	-40.0	2.434	-.123	27.44	5.1	.935
7	23.8	768.3	-94.4	2.371	-.291	25.36	4.8	.924
9	30.6	747.8	-116.6	2.308	-.360	23.63	4.8	.922
12	40.8	712.4	-171.2	2.199	-.528	20.61	4.7	.922
14	47.6	696.6	-165.8	2.150	-.512	19.36	4.7	.920
17	57.8	655.5	-149.7	2.023	-.462	18.31	5.3	.916
19	64.6	637.6	-67.7	1.968	-.209	16.94	6.8	.912
22	74.8	485.8	-50.2	1.499	-.155	14.01	7.3	.904
24	81.6	260.3	.0	.803	.000	13.41	7.2	.898
25	85.0	211.8	-1.3	.654	-.004	13.53	7.5	.894
Absolute	17.0			2.443		(T=	25.1 ms)	
	40.8				-.528	(T=	34.1 ms)	

CASE METHOD

	J=0.0	J=0.1	J=0.2	J=0.3	J=0.4	J=0.5	J=0.6	J=0.7	J=0.8	J=0.9
RS1	444.	348.	253.	158.	63.	0.	0.	0.	0.	0.
RMX	444.	395.	372.	349.	331.	317.	304.	294.	284.	274.
RSU	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

RAU 143. RA2 327.

Current CAPWAP Ru= 330.4; Corresponding J(Rs)= .12; J(Rx)= .41

VMX	VFN	VT1*Z	FT1	FMX	DMX	DFN	EMX	EFN	RLT	REN
5.09	-.16	652.0	743.1	763.7	.939	.844	27.3	26.9	363.	340.

Table D.15 continued

Schmertmann & Crapps, Inc. 03-Jul-96

SEABREEZE / UF RESEARCH, Project: 866
Blow: -8 Data: EOD
Collected: 1/26/96 CAPWAP(R) Ver. 1996-2

PILE PROFILE AND PILE MODEL

Depth ft	Area in2	E-Modulus kips/in2	Spec. Weight kips/ft3	Circumf. ft
.00	324.00	5368.4	.150	6.000
85.00	324.00	5368.4	.150	6.000

Toe Area 2.250 ft2

Segmnt Number	Dist. B.G. ft	Impedance kips/ft/s	Imped. Change %	Tension Slack inch	Tension Eff.	Compression Slack inch	Compression Eff.	Circ. ft
1	3.40	135.05	.00	.000	.000	.000	.000	6.000
16	54.40	135.05	.00	.000	.000	.000	.000	6.000
25	85.00	135.05	.00	.000	.000	.000	.000	6.000

Pile Damping 2.8 %, Time Incr .264 ms, Wave Speed 12879.1 ft/s

Table D.15 continued

Schmertmann & Crapps, Inc. 03-Jul-96

SEABREEZE / UF RESEARCH, Project: 866
Blow: -8 Data: EOD
Collected: 1/26/96 CAPWAP(R) Ver. 1996-2

CAPWAP ANNOTATIONS

Notes for SEABREEZE / UF RESEARCH
Records: 1/ 1 for PDA Temporary File: A:\SBZ\PJB82A.EOD

QSkn	UNld	CSkn	LSkn	JSkn	SSkn	REss	SKdp	MSkn	PIld
.054	.000	.010	1.000	.063	.054	.000	.000	.000	.028
QToe	TGap	CToe	LToe	JToe	SToe	OPtd	BTdp	MToe	PLug
.120	.000	.300	1.000	.038	.030	.000	.000	.000	.000

FOsc	VEsc	DIsc	TIsc	FDsc	DFsc	RSsc	FPsc
800.	8.00	1.000	8.00	400.00	1.100	8.00	800.00
STcw	RUcw	BLcw					
40.00	800.	1200.					

TVpk	ACas	T1ad	T2ad	A12	T3ad	T4ad	A34
21.6	-.19	.0	21.6	.30	21.6	102.4	.00
VCal	VPcl	FCal	FZcl	FPcl	TBeg	TEnd	
3.32	1.013	3.05	1352.2	.930	.5	70.0	
VAsh	FAsh	VTsh	FTsh	VFil	FFil		
.0	.0	0	0	0	0		

PEnt	M-BLct	C-BLct	CIrc	BTar	MQno	Freq	J-Rx	J-Rs	RSA
74.3	13.9	14.9	6.000	2.250	1.79	10000.	.41	.12	0

Added Quake	Cut-Off	E-Modul Multiplier	Toe Quake and Damping Optn	Uplift Frictn Reduct. Factr
.00	.00	1.00	0	.80

Added Impedance
None

Added Damping
None

Damping Multipliers
All ones

Capacity Reduction Factors
All ones

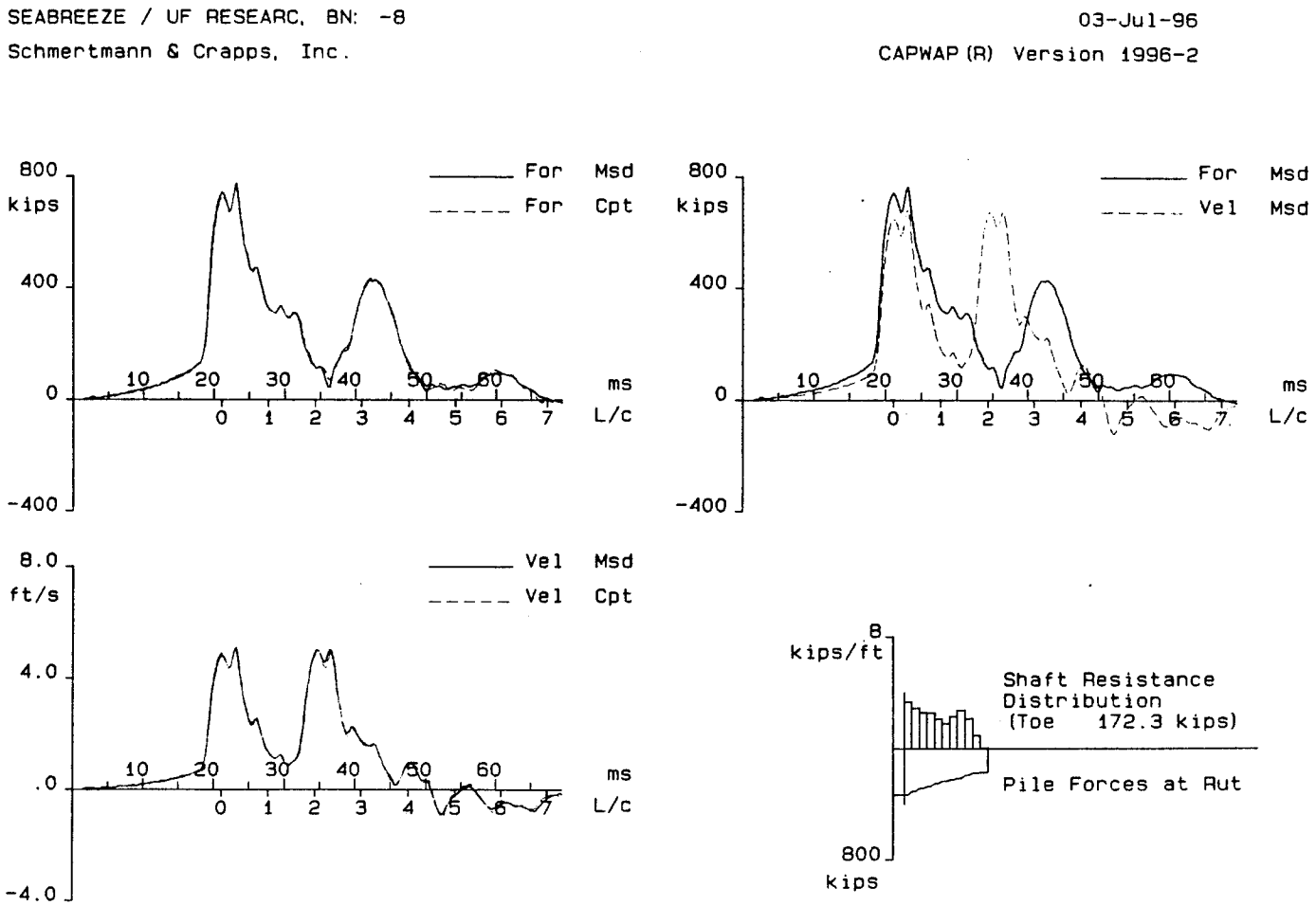


Figure D.25 CAPWAP Match, SBZ at Elev. -74.25 ft

SEABREEZE / UF RESEARC, BN: -8 03-Jul-96
Schmertmann & Crapps, Inc. CAPWAP(R) Version 1996-2

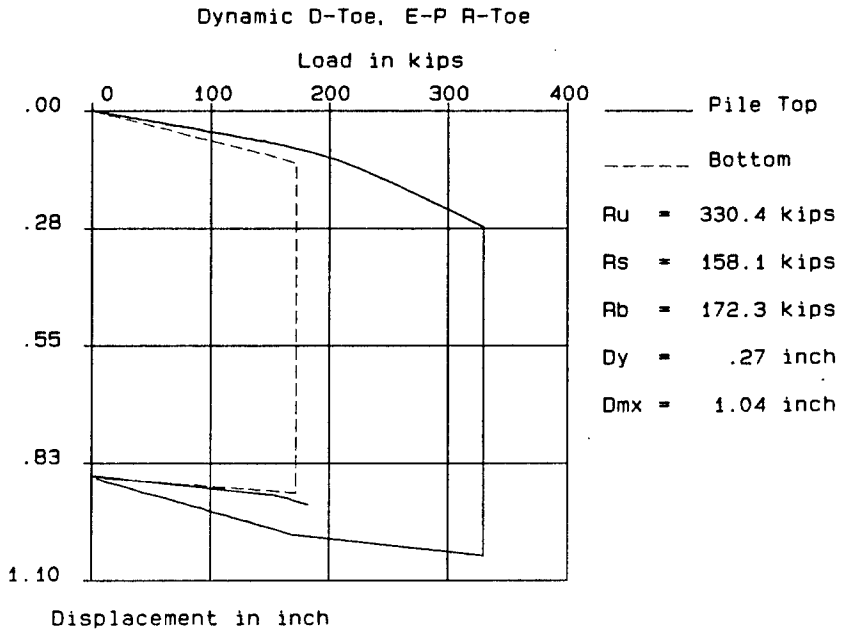


Figure D.26 CAPWAP, SBZ at Elev. -74.25 ft

Table D.16 CAPWAP, SBZ at Elev. -74.68 ft

Schmertmann & Crapps, Inc. 05-Jul-96

SEABREEZE / UF RESEARCH, Project: 866
Blow: 4 Data: 15 MIN SC
Collected: 1/26/96 CAPWAP(R) Ver. 1996-2

CAPWAP FINAL RESULTS

Total CAPWAP Capacity: 518.0; along Shaft 310.0; at Toe 208.0 kips

Soil Sgmnt No.	Dist. Below Gages ft	Depth Below Grade ft	Ru kips	Force in Pile at Ru kips	Sum of Ru kips	Unit w. Depth kips/ft	Resist. Respect to Area kips/f2	Smith Damping Factor s/ft	Quake inch
				518.0					
1	17.0	6.4	26.6	491.4	26.6	3.91	.65	.068	.027
2	23.8	13.2	28.9	462.5	55.5	4.25	.71	.068	.027
3	30.6	20.0	33.4	429.1	88.9	4.91	.82	.068	.027
4	37.4	26.8	37.5	391.6	126.4	5.51	.92	.068	.027
5	44.2	33.6	39.0	352.7	165.3	5.73	.96	.068	.027
6	51.0	40.4	40.1	312.6	205.4	5.89	.98	.068	.027
7	57.8	47.2	38.8	273.8	244.2	5.70	.95	.068	.027
8	64.6	54.0	31.6	242.2	275.8	4.64	.77	.068	.027
9	71.4	60.8	21.3	220.9	297.1	3.14	.52	.068	.027
10	78.2	67.6	10.7	210.2	307.8	1.58	.26	.068	.027
11	85.0	74.4	2.2	208.0	310.0	.32	.05	.068	.027
Average Skin Values			28.2			4.17	.69	.068	.027
Toe			208.0				92.44	.099	.363

Soil Model Parameters/Extensions		Skin	Toe
Case Damping Factor		.157	.152
Unloading Quake	(% of loading quake)	14	21
Reloading Level	(% of Ru)	70	93
Unloading Level	(% of Ru)	0	

Table D.16 continued

Schmertmann & Crapps, Inc. 05-Jul-96

SEABREEZE / UF RESEARCH, Project: 866
Blow: 4 Data: 15 MIN SC
Collected: 1/26/96 CAPWAP(R) Ver. 1996-2

EXTREMA TABLE

Pile Sgmnt No.	Dist. Below Gages ft	max. Force kips	min. Force kips	max. Comp. Stress kips/in2	max. Tension Stress kips/in2	max. Trnsfd. Energy kips-ft	max. Veloc. ft/s	max. Displ. in
1	3.4	880.6	.0	2.718	.000	27.53	5.3	.637
2	6.8	888.4	.0	2.742	.000	27.42	5.2	.629
4	13.6	901.0	.0	2.781	.000	27.19	5.1	.613
7	23.8	889.1	.0	2.744	.000	25.05	4.9	.583
9	30.6	868.2	-28.6	2.680	-.088	23.09	4.8	.566
12	40.8	798.8	-77.4	2.465	-.239	18.92	4.6	.543
14	47.6	759.5	-91.4	2.344	-.282	16.67	4.5	.527
17	57.8	695.8	-77.5	2.147	-.239	14.35	5.0	.506
19	64.6	624.2	-.5	1.927	-.001	12.27	6.4	.495
22	74.8	461.9	-12.1	1.426	-.037	9.46	6.8	.485
24	81.6	286.9	-19.5	.885	-.060	8.81	6.7	.476
25	85.0	298.7	-20.4	.922	-.063	8.99	6.6	.471
Absolute	17.0			2.804		(T= 25.1 ms)		
	54.4				-.320	(T= 32.7 ms)		

CASE METHOD

	J=0.0	J=0.1	J=0.2	J=0.3	J=0.4	J=0.5	J=0.6	J=0.7	J=0.8	J=0.9
RS1	635.	547.	460.	372.	285.	197.	110.	22.	0.	0.
RMX	650.	556.	516.	497.	479.	478.	478.	478.	478.	478.
RSU	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

RAU 478. RA2 519.

Current CAPWAP Ru= 518.0; Corresponding J(Rs)= .13; J(Rx)= .19

VMX	VFN	VT1*Z	FT1	FMX	DMX	DFN	EMX	EFN	RLT	REN
5.39	.57	700.7	808.5	864.4	.652	.397	27.6	25.5	685.	797.

Table D.16 continued

Schmertmann & Crapps, Inc. 05-Jul-96

SEABREEZE / UF RESEARCH, Project: 866
Blow: 4 Data: 15 MIN SC
Collected: 1/26/96 CAPWAP(R) Ver. 1996-2

PILE PROFILE AND PILE MODEL

Depth ft	Area in2	E-Modulus kips/in2	Spec. Weight kips/ft3	Circumf. ft
.00	324.00	5368.4	.150	6.000
85.00	324.00	5368.4	.150	6.000

Toe Area 2.250 ft2

Segmnt Number	Dist. B.G. ft	Impedance kips/ft/s	Imped. Change %	Tension Slack inch	Tension Eff.	Compression Slack inch	Compression Eff.	Circ. ft
1	3.40	135.05	.00	.000	.000	.000	.000	6.000
16	54.40	135.05	.00	.000	.000	.000	.000	6.000
25	85.00	135.05	.00	.000	.000	.000	.000	6.000

Pile Damping 2.9 %, Time Incr .264 ms, Wave Speed 12879.1 ft/s

Table D.16 continued

Schmertmann & Crapps, Inc. 05-Jul-96

SEABREEZE / UF RESEARCH, Project: 866
Blow: 4 Data: 15 MIN SC
Collected: 1/26/96 CAPWAP(R) Ver. 1996-2

CAPWAP ANNOTATIONS

Notes for SEABREEZE / UF RESEARCH
Records: 1/ 1 for PDA Temporary File: A:\SBZ\PJB82G.BOR

QSkn	UNld	CSkn	LSkn	JSkn	SSkn	REss	SKdp	MSkn	PIld
.027	.005	.140	.700	.157	.068	.000	.000	.000	.029
QToe	TGap	CToe	LToe	JToe	SToe	OPtd	BTdp	MToe	PLug
.363	.000	.210	.930	.152	.099	.000	.000	.000	.000

FOsc	VEsc	DIsc	TIsc	FDsc	DFsc	RSsc	FPsc
1000.	8.00	1.000	8.00	600.00	.800	8.00	1000.00
STcw	RUcw	BLcw					
40.00	1000.	1200.					

TVpk	ACas	T1ad	T2ad	A12	T3ad	T4ad	A34
21.6	-.22	.0	21.6	.30	21.6	102.4	.00
VCal	VPcl	FCal	FZcl	FPcl	TBeg	TEnd	
3.32	1.013	3.05	1352.2	.930	.5	70.0	
VAsh	FAsh	VTsh	FTsh	VFil	FFil		
.0	.0	0	0	0	0		

PEnt	M-BLct	C-BLct	CIrc	BTar	MQno	Freq	J-Rx	J-Rs	RSA
74.4	38.0	38.8	6.000	2.250	1.91	10000.	.19	.13	0

Added Quake	Cut-Off	E-Modul Multiplier	Toe Quake and Damping Optn	Uplift Frictn Reduct. Factr
.00	.00	1.00	0	.80

Added Impedance
None

Added Damping
None

Damping Multipliers
All ones

Capacity Reduction Factors
All ones

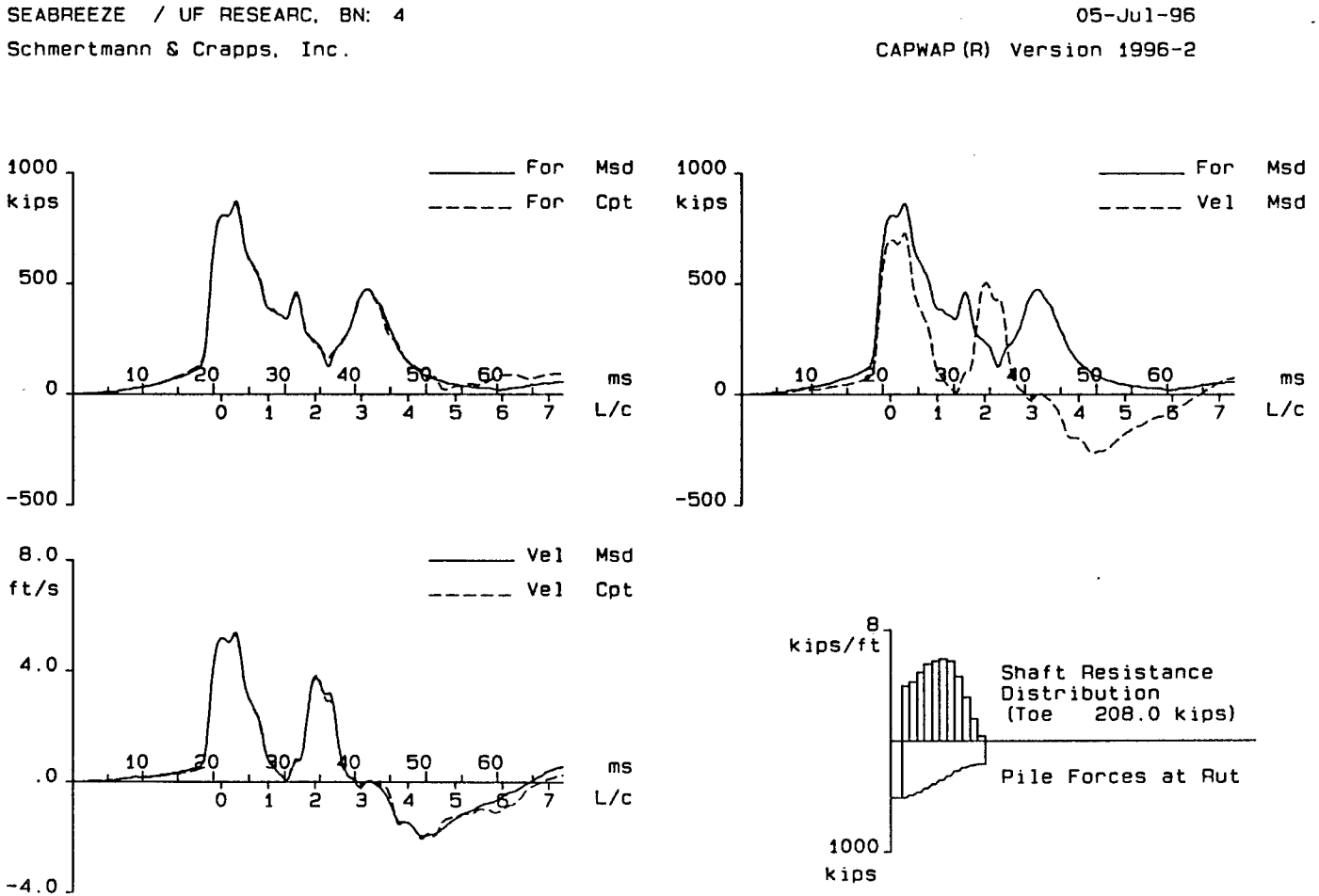


Figure D.27 CAPWAP Match, SBZ at Elev. -74.68 ft

SEABREEZE / UF RESEARC, BN: 4 05-Jul-96
Schmertmann & Crapps, Inc. CAPWAP(R) Version 1996-2

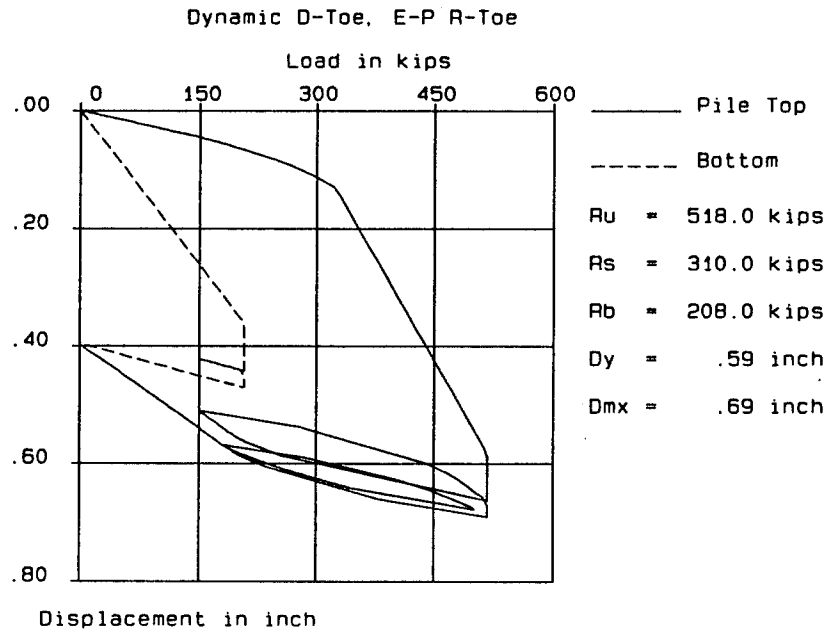


Figure D.28 CAPWAP, SBZ at Elev. -74.68 ft

Table D.17 CAPWAP, SBZ at Elev. -74.94 ft

Schmertmann & Crapps, Inc. 20-Jul-96

SEABREEZE / UF RESEARCH, Project: 866
Blow: 3 Data: 1 hr SC
Collected: 1/26/96 CAPWAP(R) Ver. 1996-2

CAPWAP FINAL RESULTS

Total CAPWAP Capacity: 531.0; along Shaft 399.0; at Toe 132.0 kips

Soil Sgmnt No.	Dist. Below Gages ft	Depth Below Grade ft	Ru kips	Force in Pile at Ru kips	Sum of Ru kips	Unit w. Depth kips/ft	Resist. Respect to Area kips/f2	Smith Damping Factor s/ft	Quake inch
				531.0					
1	17.0	6.7	20.5	510.5	20.5	3.02	.50	.257	.029
2	23.8	13.4	19.5	491.0	40.0	2.87	.48	.257	.029
3	30.6	20.3	21.4	469.6	61.4	3.15	.52	.257	.029
4	37.4	27.0	27.4	442.3	88.7	4.02	.67	.257	.029
5	44.2	33.8	36.4	405.8	125.2	5.36	.89	.257	.029
6	51.0	40.6	52.2	353.6	177.4	7.68	1.28	.257	.029
7	57.8	47.5	48.4	305.2	225.8	7.12	1.19	.257	.029
8	64.6	54.3	41.2	264.1	266.9	6.05	1.01	.257	.029
9	71.4	61.1	41.5	222.6	308.4	6.11	1.02	.257	.029
10	78.2	67.9	46.2	176.3	354.7	6.80	1.13	.257	.029
11	85.0	74.7	44.3	132.0	399.0	6.52	1.09	.257	.029
Average Skin Values			36.3			5.34	.89	.257	.029
	Toe		132.0				58.67	.140	.313

Soil Model Parameters/Extensions		Skin	Toe
Case Damping Factor		.758	.137-Smith Type
Unloading Quake	(% of loading quake)	100	42
Reloading Level	(% of Ru)	0	78
Unloading Level	(% of Ru)	0	

Table D.17 continued

Schmertmann & Crapps, Inc. 20-Jul-96

SEABREEZE / UF RESEARCH, Project: 866
Blow: 3 Data: 1 hr SC
Collected: 1/26/96 CAPWAP(R) Ver. 1996-2

EXTREMA TABLE

Pile Sgmnt No.	Dist. Below Gages ft	max. Force kips	min. Force kips	max. Comp. Stress kips/in2	max. Tension Stress kips/in2	max. Trnsfd. Energy kips-ft	max. Veloc. ft/s	max. Displ. in
1	3.4	966.8	.0	2.984	.000	28.09	5.9	.499
2	6.8	977.5	.0	3.017	.000	28.00	5.8	.492
4	13.6	1002.6	.0	3.095	.000	27.77	5.7	.476
7	23.8	997.4	.0	3.078	.000	25.86	5.4	.450
9	30.6	992.1	.0	3.062	.000	24.19	5.2	.431
12	40.8	940.1	.0	2.902	.000	20.63	4.8	.401
14	47.6	897.2	.0	2.769	.000	18.35	4.5	.385
17	57.8	822.5	.0	2.539	.000	15.28	4.1	.362
19	64.6	703.8	.0	2.172	.000	12.65	5.2	.353
22	74.8	470.4	.0	1.452	.000	8.06	5.7	.345
24	81.6	249.8	.0	.771	.000	5.40	5.7	.339
25	85.0	268.4	.0	.828	.000	3.00	5.6	.335
Absolute	17.0			3.132		(T=	25.1 ms)	
	.0				.000	(T=	.0 ms)	

CASE METHOD

	J=0.0	J=0.1	J=0.2	J=0.3	J=0.4	J=0.5	J=0.6	J=0.7	J=0.8	J=0.9
RS1	891.	810.	728.	647.	565.	484.	402.	321.	240.	158.
RMX	905.	821.	736.	652.	591.	560.	531.	503.	479.	460.
RSU	1049.	983.	917.	852.	786.	720.	655.	589.	523.	458.

RAU 434. RA2 679.

Current CAPWAP Ru= 531.0; Corresponding J(Rs)= .44; J(Rx)= .60

VMX	VFN	VT1*Z	FT1	FMX	DMX	DFN	EMX	EFN	RLT	REN
5.94	.36	794.4	910.7	952.4	.505	.326	28.1	25.5	894.	964.

Table D.17 continued

Schmertmann & Crapps, Inc. 20-Jul-96

SEABREEZE / UF RESEARCH, Project: 866
Blow: 3 Data: 1 hr SC
Collected: 1/26/96 CAPWAP(R) Ver. 1996-2

PILE PROFILE AND PILE MODEL

Depth ft	Area in2	E-Modulus kips/in2	Spec. Weight kips/ft3	Circumf. ft
.00	324.00	5368.4	.150	6.000
85.00	324.00	5368.4	.150	6.000

Toe Area 2.250 ft2

Segmnt Number	Dist. B.G. ft	Impedance kips/ft/s	Imped. Change %	Tension Slack inch	Tension Eff.	Compression Slack inch	Compression Eff.	Circ. ft
1	3.40	135.05	.00	.000	.000	.000	.000	6.000
16	54.40	135.05	.00	.000	.000	.000	.000	6.000
25	85.00	135.05	.00	.000	.000	.000	.000	6.000

Pile Damping 1.9 %, Time Incr .264 ms, Wave Speed 12879.1 ft/s

Table D.17 continued

Schmertmann & Crapps, Inc. 20-Jul-96

SEABREEZE / UF RESEARCH, Project: 866
Blow: 3 Data: 1 hr SC
Collected: 1/26/96 CAPWAP(R) Ver. 1996-2

CAPWAP ANNOTATIONS

Notes for SEABREEZE / UF RESEARCH
Records: 1/ 1 for PDA Temporary File: A:\SBZ\PJB83N.BOR

QSkn	UNld	CSkn	LSkn	JSkn	SSkn	REss	SKdp	MSkn	PIld
.029	.000	1.000	.000	.758	.257	.000	.000	.000	.019
QToe	TGap	CToe	LToe	JToe	SToe	OPtd	BTdp	MToe	PLug
.313	.000	.420	.780	.137	.140	2.000	.000	.000	.000

FOsc	VEsc	DIsc	TIsc	FDsc	DFsc	RSsc	FPsc
1000.	8.00	1.000	8.00	600.00	.750	10.00	800.00
STcw	RUcw	BLcw					
40.00	800.	1200.					

TVpk	ACas	T1ad	T2ad	A12	T3ad	T4ad	A34
21.6	-.19	.0	21.6	.30	21.6	102.4	.00
VCal	VPcl	FCal	FZcl	FPcl	TBeg	TEnd	
3.32	1.013	3.05	1352.2	.930	.5	70.0	
VAsh	FAsh	VTsh	FTsh	VFil	FFil		
.0	.0	0	0	0	0		

PEnt	M-BLct	C-BLct	CIrc	BTar	MQno	Freq	J-Rx	J-Rs	RSA
74.7	48.0	51.0	6.000	2.250	1.97	10000.	.60	.44	0

Added Quake	Cut-Off	E-Modul Multiplier	Toe Quake and Damping Optn	Uplift Frictn Reduct. Factr
.00	.00	1.00	0	.80

Added Impedance
None

Added Damping
None

Damping Multipliers
All ones

Capacity Reduction Factors
All ones

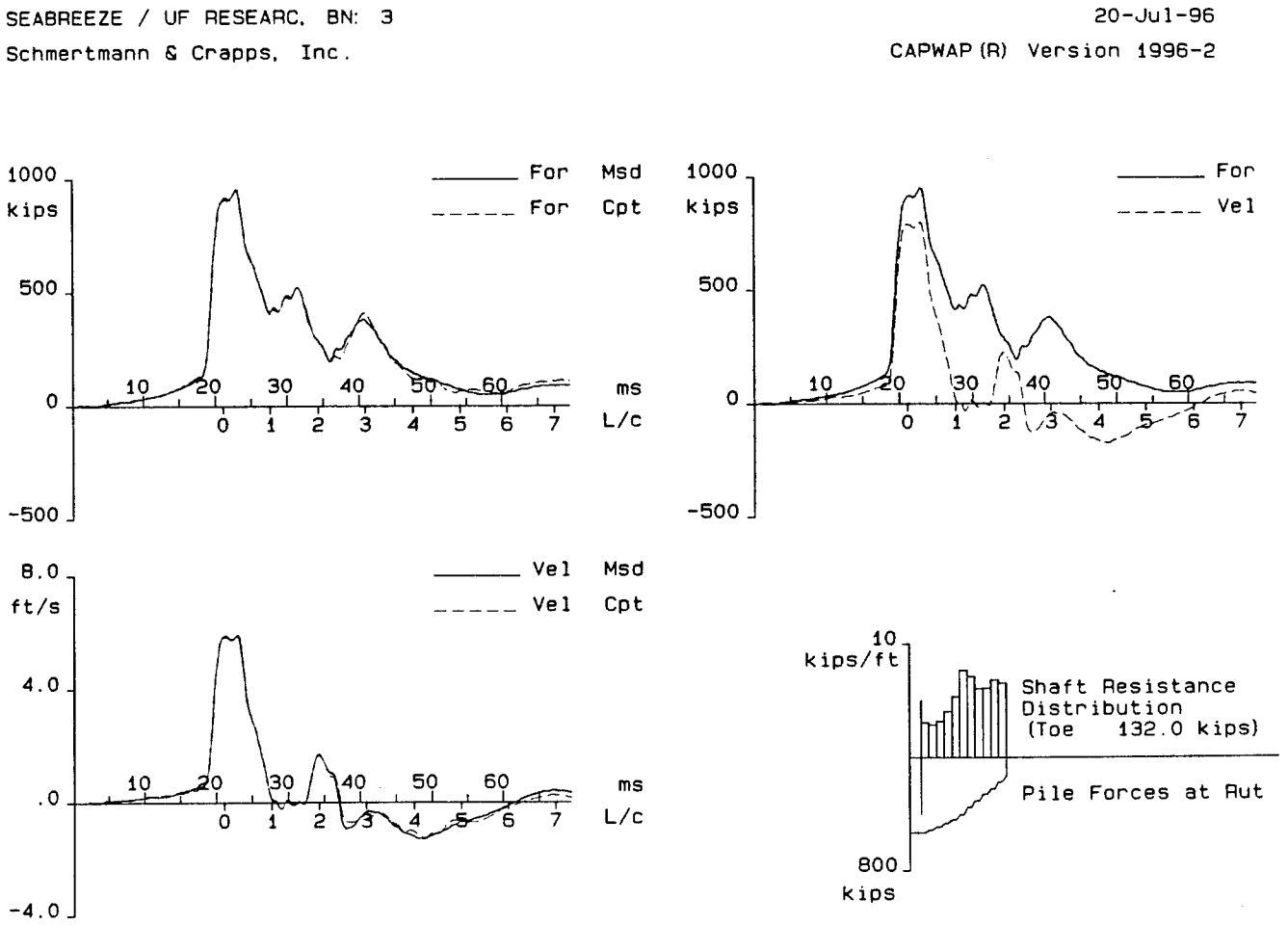


Figure D.29 CAPWAP Match, SBZ at Elev. -74.94 ft

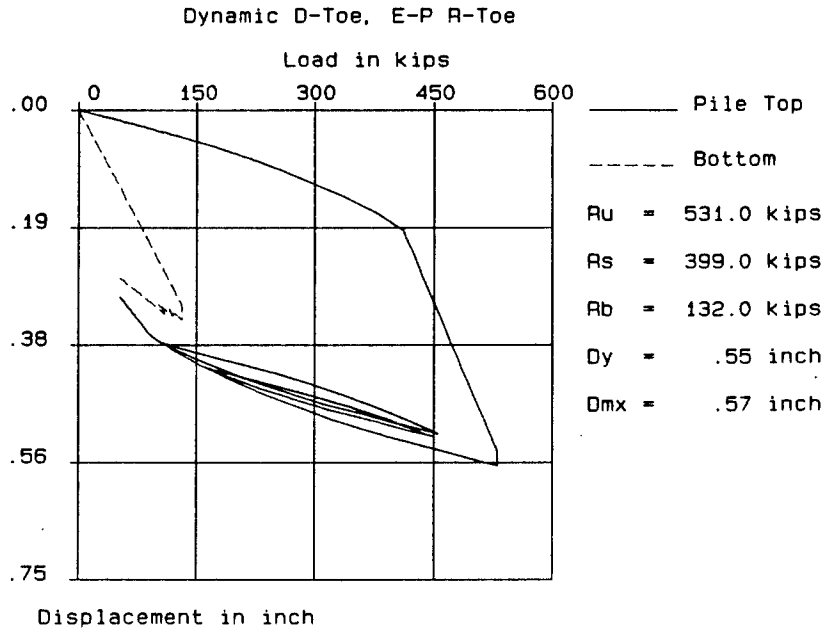


Figure D.30 CAPWAP, SBZ at Elev. -74.94 ft

APPENDIX E
TEST PILE STATIC TEST RESULTS

Figure E.1 O-cell Pressure Tee Welded in Place After Driving

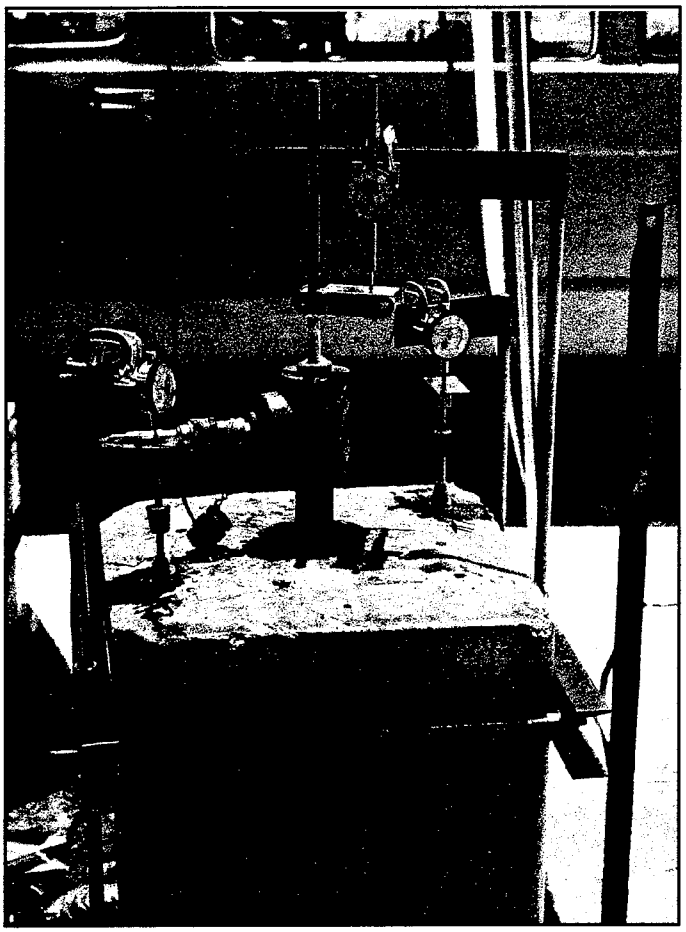


Figure E.2 Dial Gages Measured Telltale Movement

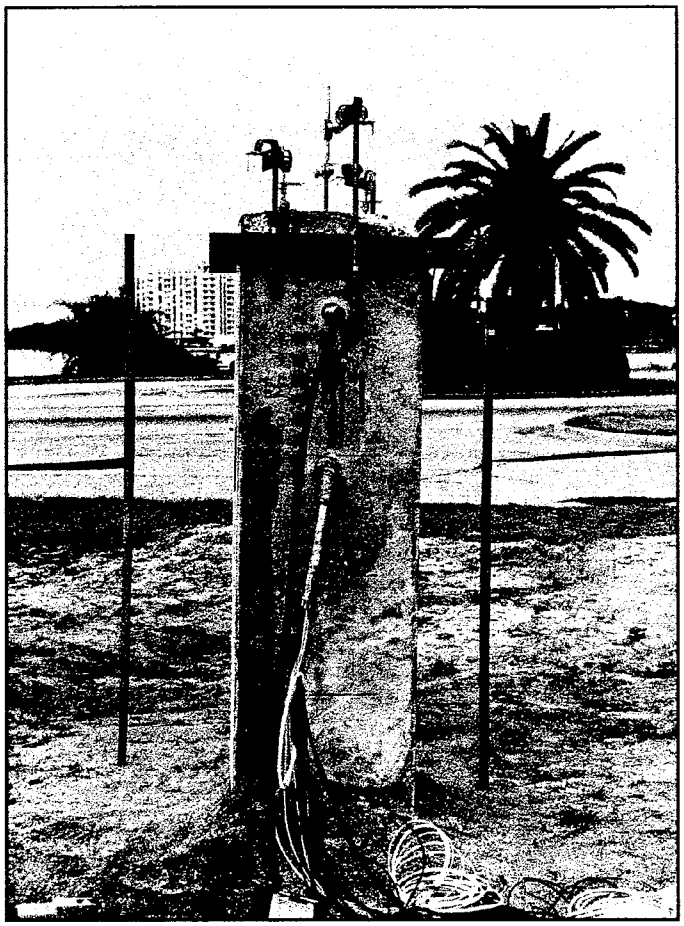


Figure E.3 Pressure Tee Cast into Pile (Seabreeze Site)

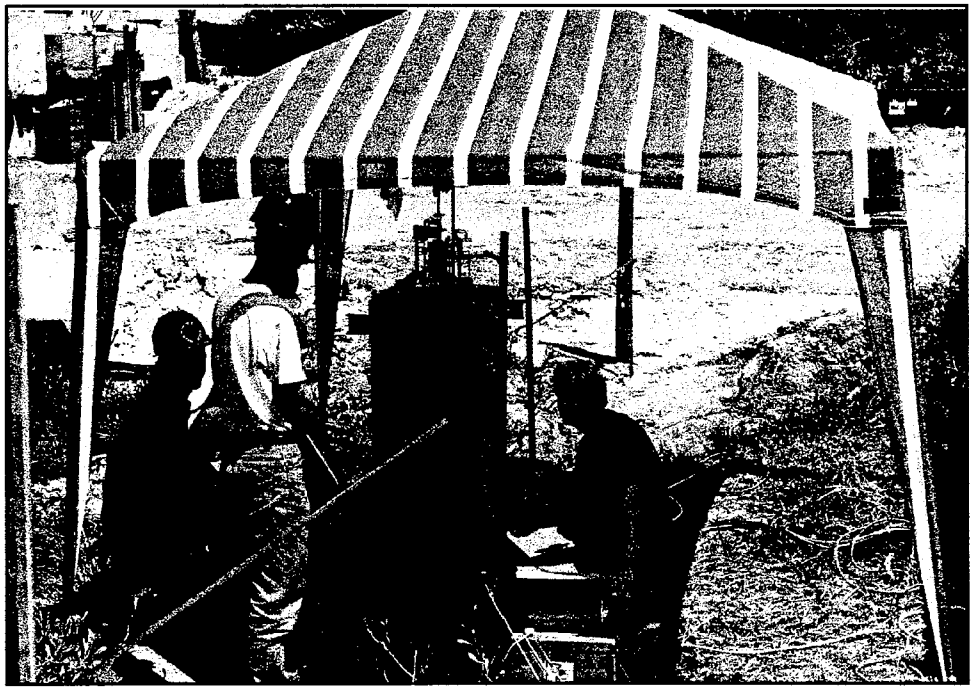


Figure E.4 Tarp for Sun and Rain Protection (Vilano East Site)

Figure E.5 O-cell Pressurized by Hand Pump (Aucilla Site)

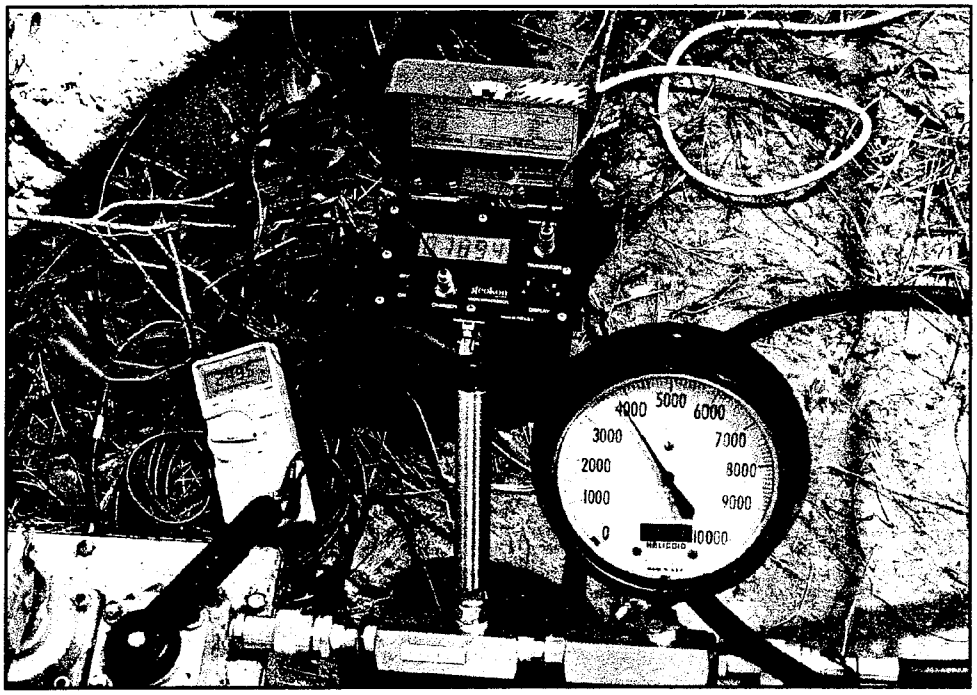


Figure E.6 VW Piezometer and Bourdon Gage Measured O-cell Pressure

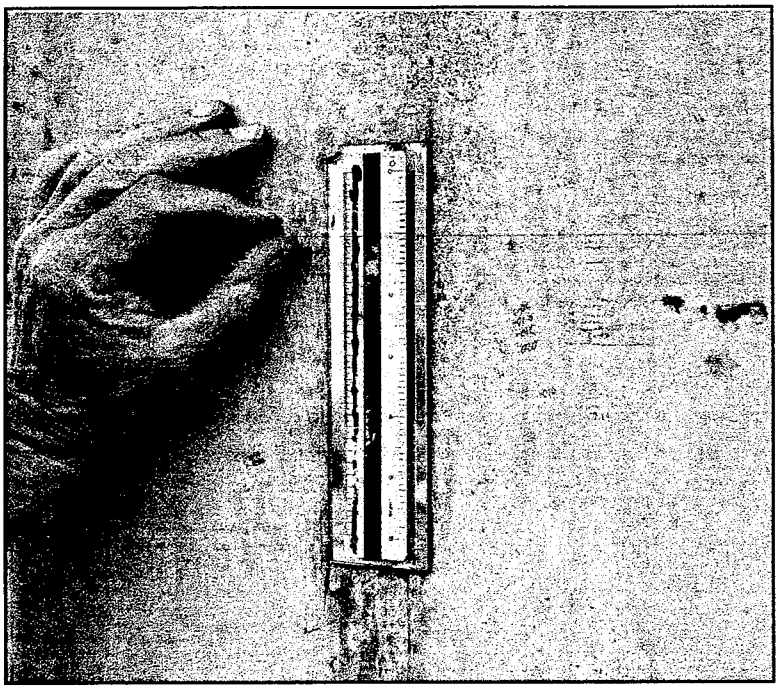


Figure E.7 Mirror-Backed Scale Used with Wireline

Figure E.8 Wireline and Scale Measured Pile Movement

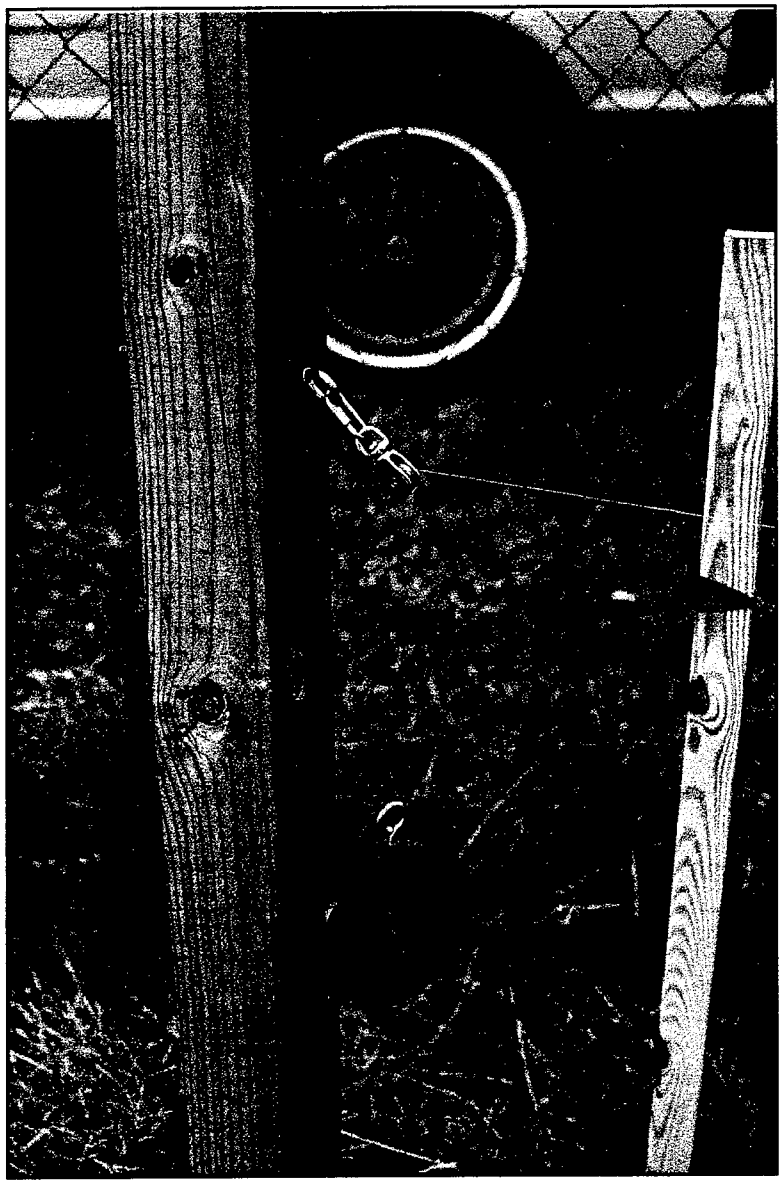


Figure E.9 Pulleyed Weight Maintained Wireline Tension

Figure E.10 Survey Level and Scale Measured Pile Top Movement (Aucilla)

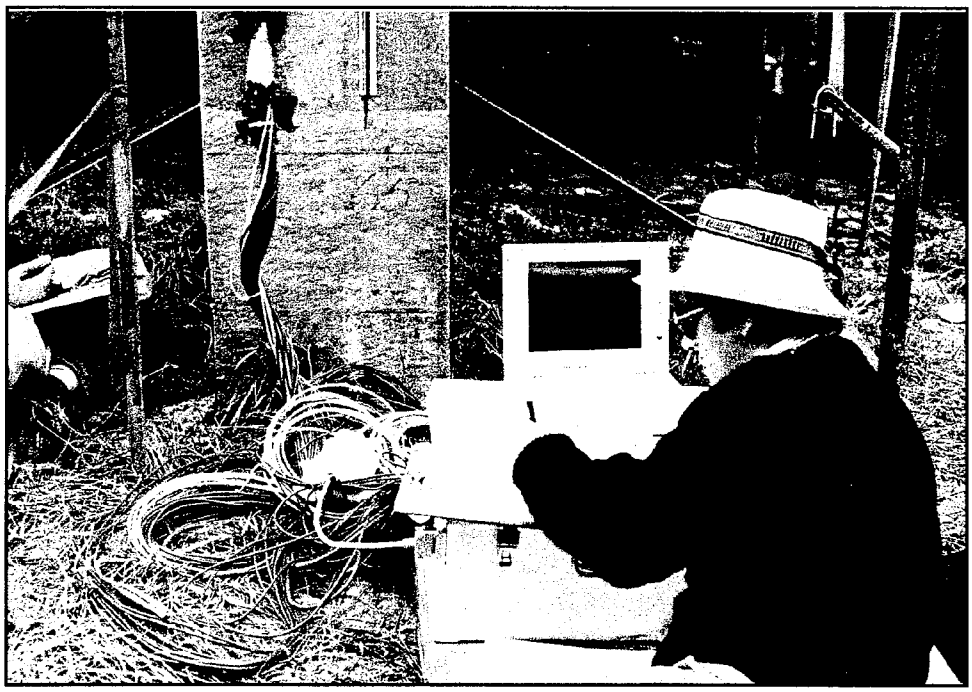


Figure E.11 Datalogger and Computer Monitored VW Strain Gages (Aucilla)

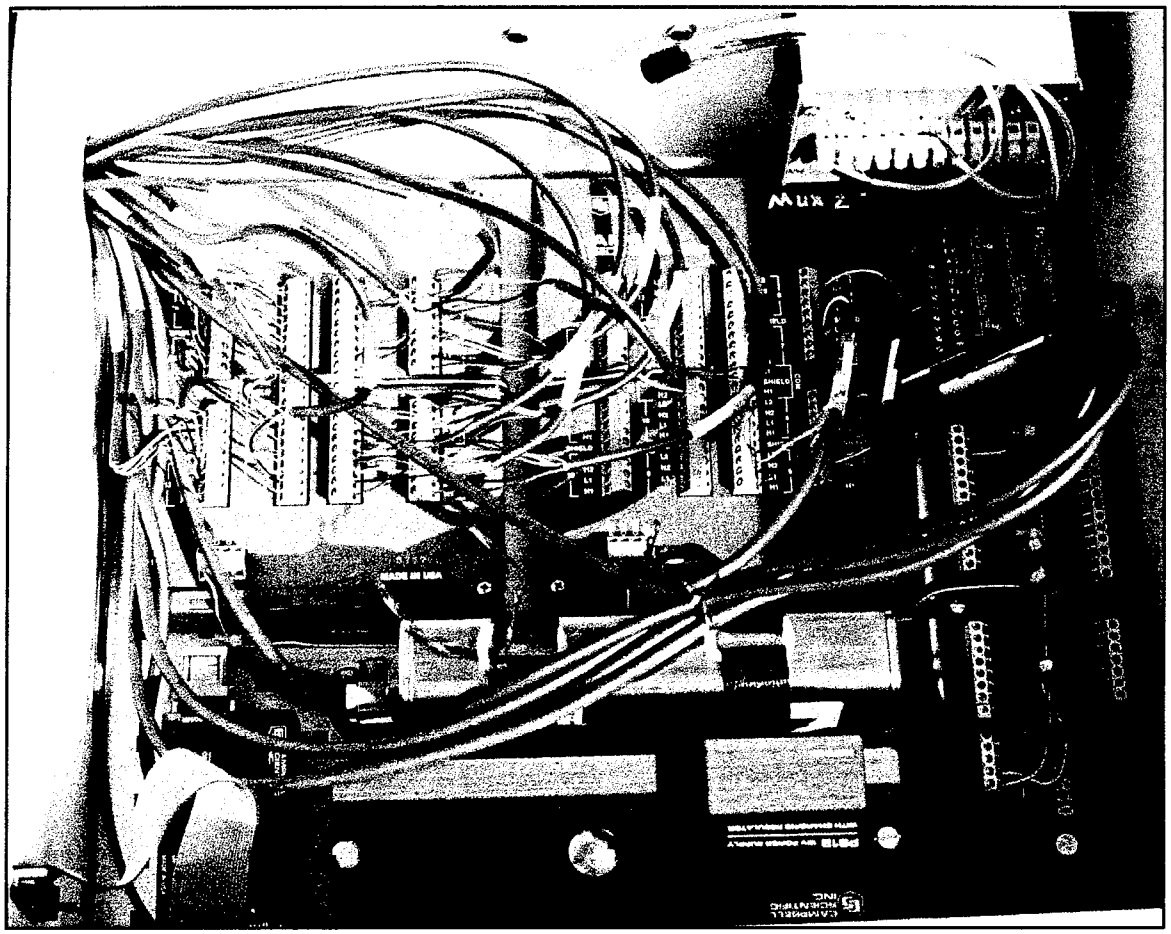


Figure E.12 Campbell Scientific Datalogger (clockwise from top left): AM416 Multiplexers (2), Load Cell Power Supply (10V), AVW1 Vibrating Wire Interface, CR10 Measurement & Control Module, PS12 Alkaline Battery Power Supply (12V), SM192 Storage Module (middle) and RS-232 Interface.

Table E.1 Summary of Osterberg Load Cell Calibrations

Serial No. 4225-1, Calibrated 28 Dec 93 (VLW) Load,tons = 0.03121 (Gage,PSI) + 0.30208 (Extension,inches)
Serial No. 4225-2, Calibrated 05 Jan 94 (BKM) Load,tons = 0.03099 (Gage,psi) - 0.07972 (Extension,inches)
Serial No. 4225-3, Calibrated 05 Jan 94 (AUC) Load,tons = 0.03091 (Gage,psi) + 0.08818 (Extension,inches)
Serial No. 4225-4, Calibrated 07 Jan 94 (VLE) Load,tons = 0.03103 (Gage,psi) + 0.19177 (Extension,inches)
Serial No. 4225-5, Calibrated 07 Jan 94 (SBZ) Load,tons = 0.03145 (Gage,psi) - 0.19649 (Extension,inches)

Table E.2 Osterberg Load Cell Calibration (VLW)

SERIAL NO. 4225-1, CALIBRATED 28 DEC 93
CALIBRATION BY AMERICAN EQUIPMENT & FABRICATING CORP.

GAGE PSI	MSD.LOAD TONS	EXTENSION INCHES	CALC.LOAD TONS	DEVIATION %
0	0.00	1.00	0.30	INF.
1000	31.80	1.00	31.51	-0.9
2000	63.60	1.00	62.72	-1.4
3000	94.25	1.00	93.93	-0.3
4000	126.05	1.00	125.14	-0.7
5000	155.93	1.00	156.35	0.3
6000	185.82	1.00	187.56	0.9
7000	217.62	1.00	218.77	0.5
8000	249.04	1.00	249.98	0.4
9000	280.45	1.00	281.19	0.3
10000	313.02	1.00	312.40	-0.2
0	0.00	3.00	0.91	INF.
1000	32.18	3.00	32.12	-0.2
2000	63.60	3.00	63.33	-0.4
3000	94.63	3.00	94.53	-0.1
4000	125.28	3.00	125.74	0.4
5000	155.55	3.00	156.95	0.9
6000	186.59	3.00	188.16	0.8
7000	218.39	3.00	219.37	0.4
8000	249.42	3.00	250.58	0.5
9000	281.60	3.00	281.79	0.1
10000	314.55	3.00	313.00	-0.5
0	0.00	5.00	1.51	INF.
1000	31.80	5.00	32.72	2.9
2000	63.98	5.00	63.93	-0.1
3000	95.01	5.00	95.14	0.1
4000	125.67	5.00	126.35	0.5
5000	156.70	5.00	157.56	0.5
6000	187.73	5.00	188.77	0.6
7000	219.92	5.00	219.98	0.0
8000	253.87	5.00	251.19	-1.1
9000	283.52	5.00	282.40	-0.4
10000	316.09	5.00	313.60	-0.8

LOAD,TONS = 0.03121 (GAGE,PSI) + 0.30208 (EXTENSION,INCHES), R^2 = 0.9999

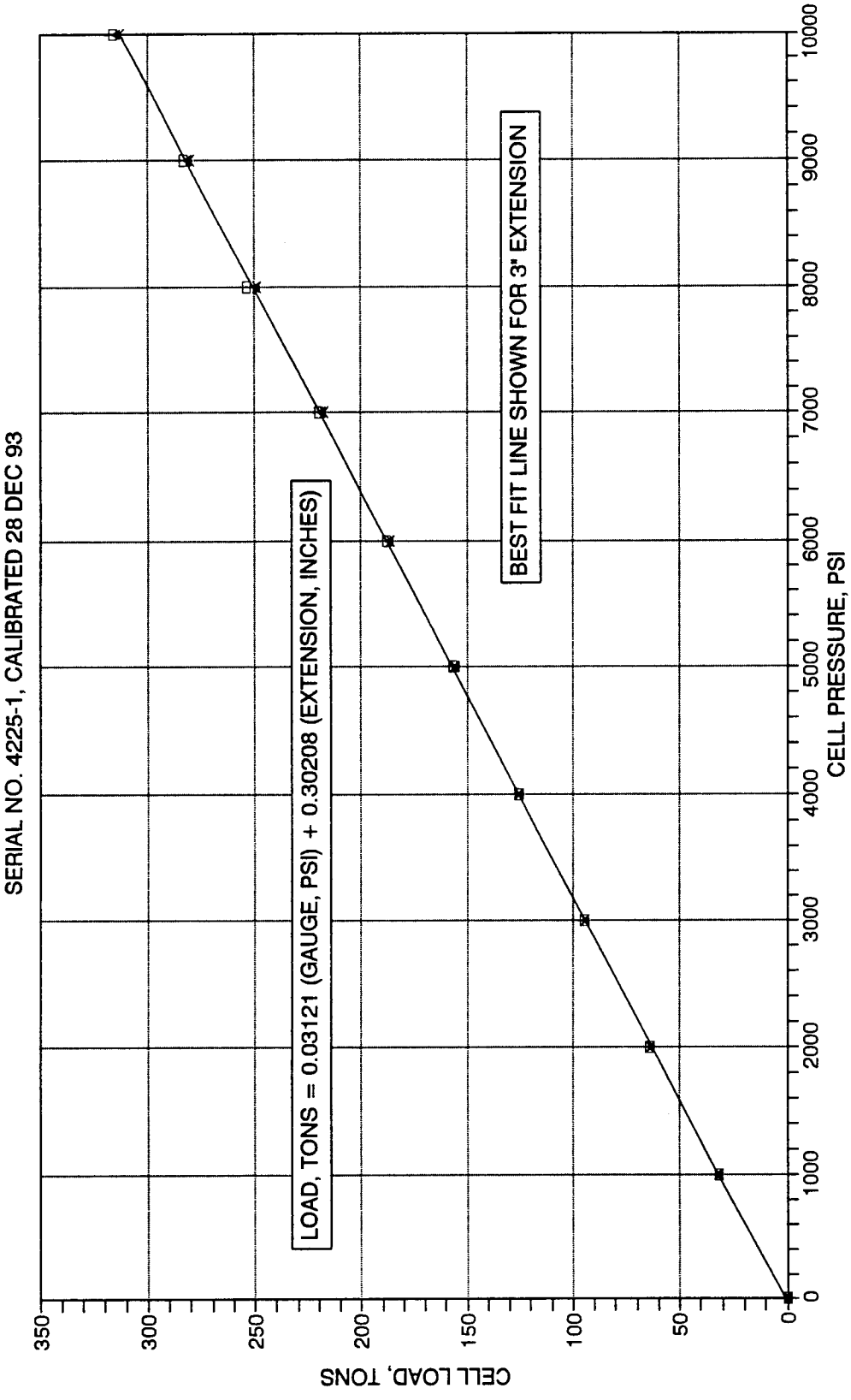


Figure E.13 Osterberg Cell Calibration (VLW)

Table E.3 Osterberg Load Cell Calibration (BKM)

SERIAL NO. 4225-2, CALIBRATED 05 JAN 94
CALIBRATION BY AMERICAN EQUIPMENT & FABRICATING CORP.

GAGE PSI	MSD.LOAD TONS	EXTENSION INCHES	CALC.LOAD TONS	DEVIATION %
0	0.00	1.00	-0.08	INF.
1000	31.41	1.00	30.91	-1.6
2000	62.82	1.00	61.89	-1.5
3000	93.85	1.00	92.88	-1.0
4000	124.50	1.00	123.86	-0.5
5000	154.77	1.00	154.85	0.1
6000	185.41	1.00	185.83	0.2
7000	216.06	1.00	216.82	0.4
8000	247.09	1.00	247.81	0.3
9000	277.74	1.00	278.79	0.4
10000	310.69	1.00	309.78	-0.3
0	0.00	3.00	-0.24	INF.
1000	31.03	3.00	30.75	-0.9
2000	62.82	3.00	61.73	-1.7
3000	93.09	3.00	92.72	-0.4
4000	124.12	3.00	123.70	-0.3
5000	154.38	3.00	154.69	0.2
6000	185.03	3.00	185.67	0.3
7000	215.68	3.00	216.66	0.5
8000	247.09	3.00	247.65	0.2
9000	278.89	3.00	278.63	-0.1
10000	311.45	3.00	309.62	-0.6
0	0.00	5.00	-0.40	INF.
1000	30.64	5.00	30.59	-0.2
2000	62.06	5.00	61.57	-0.8
3000	92.32	5.00	92.56	0.3
4000	123.35	5.00	123.54	0.2
5000	154.00	5.00	154.53	0.3
6000	184.26	5.00	185.52	0.7
7000	215.68	5.00	216.50	0.4
8000	246.71	5.00	247.49	0.3
9000	278.89	5.00	278.47	-0.1
10000	311.07	5.00	309.46	-0.5

LOAD,TONS = 0.03099 (GAGE,PSI) - 0.07972 (EXTENSION,INCHES), R^2 = 0.9999

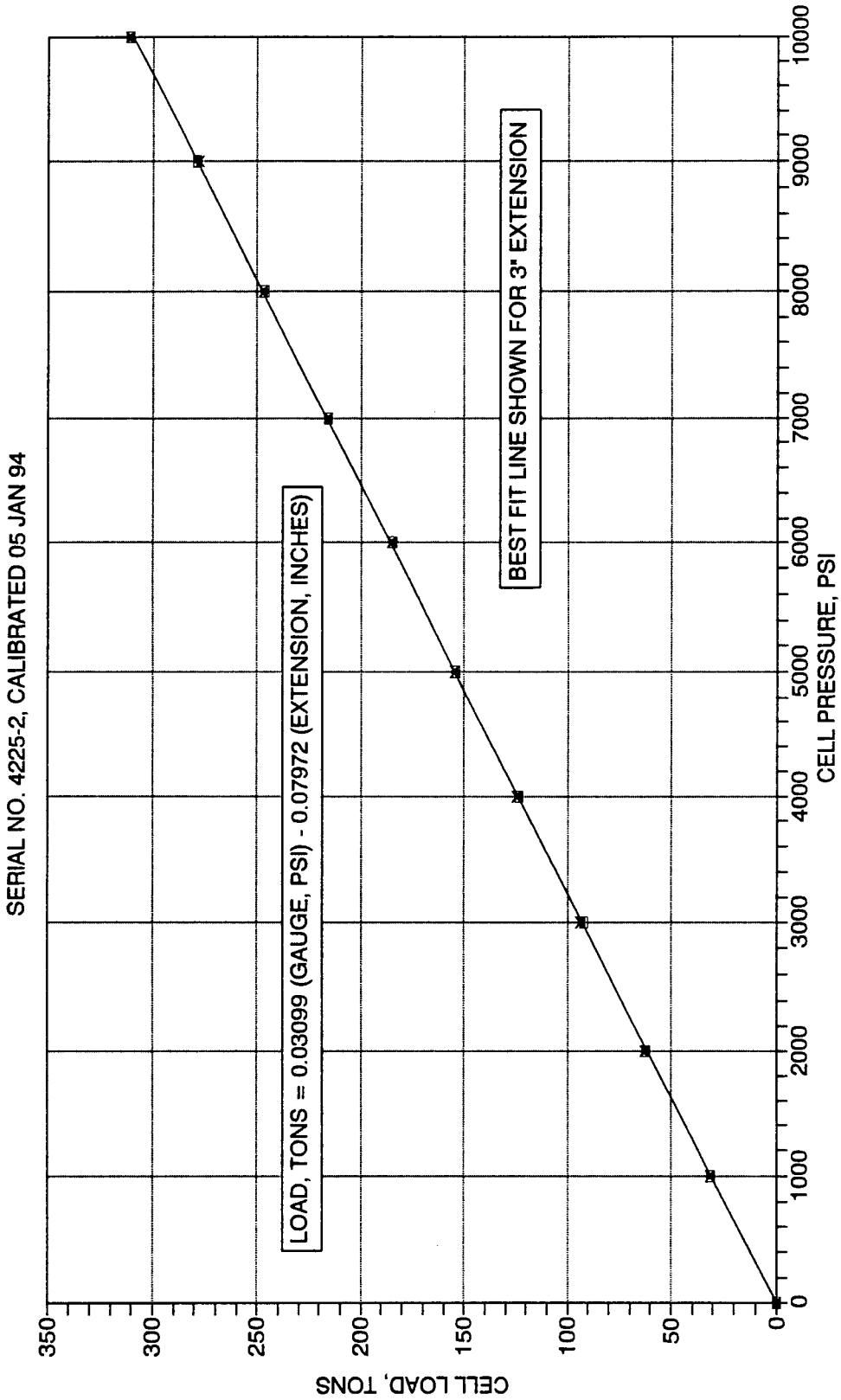


Figure E.14 Osterberg Cell Calibration (BKM)

Table E.4 Osterberg Load Cell Calibration (AUC)

SERIAL NO. 4225-3, CALIBRATED 05 JAN 94
CALIBRATION BY AMERICAN EQUIPMENT & FABRICATING CORP.

GAGE PSI	MSD.LOAD TONS	EXTENSION INCHES	CALC.LOAD TONS	DEVIATION %
0	0.00	1.00	0.09	INF.
1000	31.41	1.00	30.99	-1.3
2000	62.44	1.00	61.90	-0.9
3000	92.70	1.00	92.81	0.1
4000	122.59	1.00	123.71	0.9
5000	153.23	1.00	154.62	0.9
6000	183.12	1.00	185.53	1.3
7000	214.91	1.00	216.43	0.7
8000	245.56	1.00	247.34	0.7
9000	277.36	1.00	278.25	0.3
10000	309.54	1.00	309.15	-0.1
0	0.00	3.00	0.26	INF.
1000	30.64	3.00	31.17	1.7
2000	62.44	3.00	62.08	-0.6
3000	92.70	3.00	92.98	0.3
4000	123.74	3.00	123.89	0.1
5000	154.00	3.00	154.80	0.5
6000	184.36	3.00	185.70	0.7
7000	216.06	3.00	216.61	0.3
8000	247.48	3.00	247.52	0.0
9000	280.04	3.00	278.42	-0.6
10000	312.22	3.00	309.33	-0.9
0	0.00	5.00	0.44	INF.
1000	31.03	5.00	31.35	1.0
2000	62.06	5.00	62.25	0.3
3000	93.09	5.00	93.16	0.1
4000	123.35	5.00	124.07	0.6
5000	154.00	5.00	154.97	0.6
6000	184.65	5.00	185.88	0.7
7000	216.06	5.00	216.79	0.3
8000	247.86	5.00	247.69	-0.1
9000	280.42	5.00	278.60	-0.6
10000	312.60	5.00	309.50	-1.0

LOAD,TONS = 0.03091 (GAGE,PSI) + 0.08818 (EXTENSION,INCHES), R^2 = 0.9998

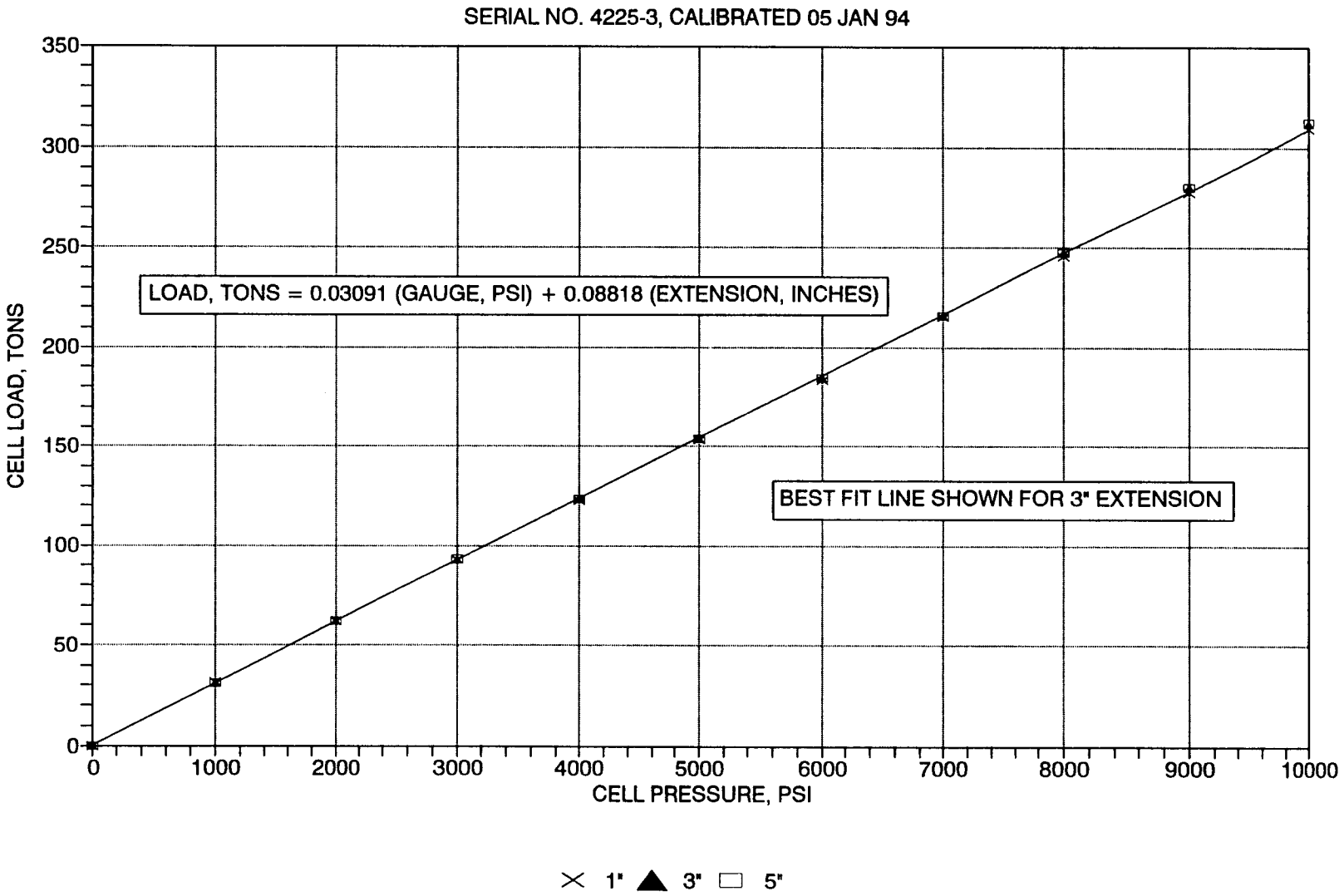


Figure E.15 Osterberg Cell Calibration (AUC)

Table E.5 Osterberg Load Cell Calibration (VLE)

SERIAL NO. 4225-4, CALIBRATED 07 JAN 94
CALIBRATION BY AMERICAN EQUIPMENT & FABRICATING CORP.

GAGE PSI	MSD.LOAD TONS	EXTENSION INCHES	CALC.LOAD TONS	DEVIATION %
0	0.00	1.00	0.19	INF.
1000	30.64	1.00	31.22	1.9
2000	61.29	1.00	62.24	1.6
3000	92.32	1.00	93.27	1.0
4000	122.20	1.00	124.29	1.7
5000	152.85	1.00	155.32	1.6
6000	183.12	1.00	186.34	1.8
7000	215.15	1.00	217.37	1.0
8000	246.73	1.00	248.39	0.7
9000	278.51	1.00	279.42	0.3
10000	310.69	1.00	310.44	-0.1
0	0.00	3.00	0.58	INF.
1000	30.64	3.00	31.60	3.1
2000	62.06	3.00	62.63	0.9
3000	92.70	3.00	93.65	1.0
4000	124.12	3.00	124.68	0.4
5000	154.72	3.00	155.70	0.6
6000	185.41	3.00	186.73	0.7
7000	216.83	3.00	217.75	0.4
8000	249.39	3.00	248.78	-0.2
9000	281.57	3.00	279.80	-0.6
10000	314.13	3.00	310.83	-1.1
0	0.00	5.00	0.96	INF.
1000	31.41	5.00	31.98	1.8
2000	62.82	5.00	63.01	0.3
3000	93.47	5.00	94.03	0.6
4000	124.50	5.00	125.06	0.4
5000	155.15	5.00	156.09	0.6
6000	186.18	5.00	187.11	0.5
7000	217.59	5.00	218.14	0.3
8000	250.16	5.00	249.16	-0.4
9000	282.72	5.00	280.19	-0.9
10000	315.28	5.00	311.21	-1.3

LOAD,TONS = 0.03103 (GAGE,PSI) + 0.19177 (EXTENSION,INCHES), R^2 = 0.9997

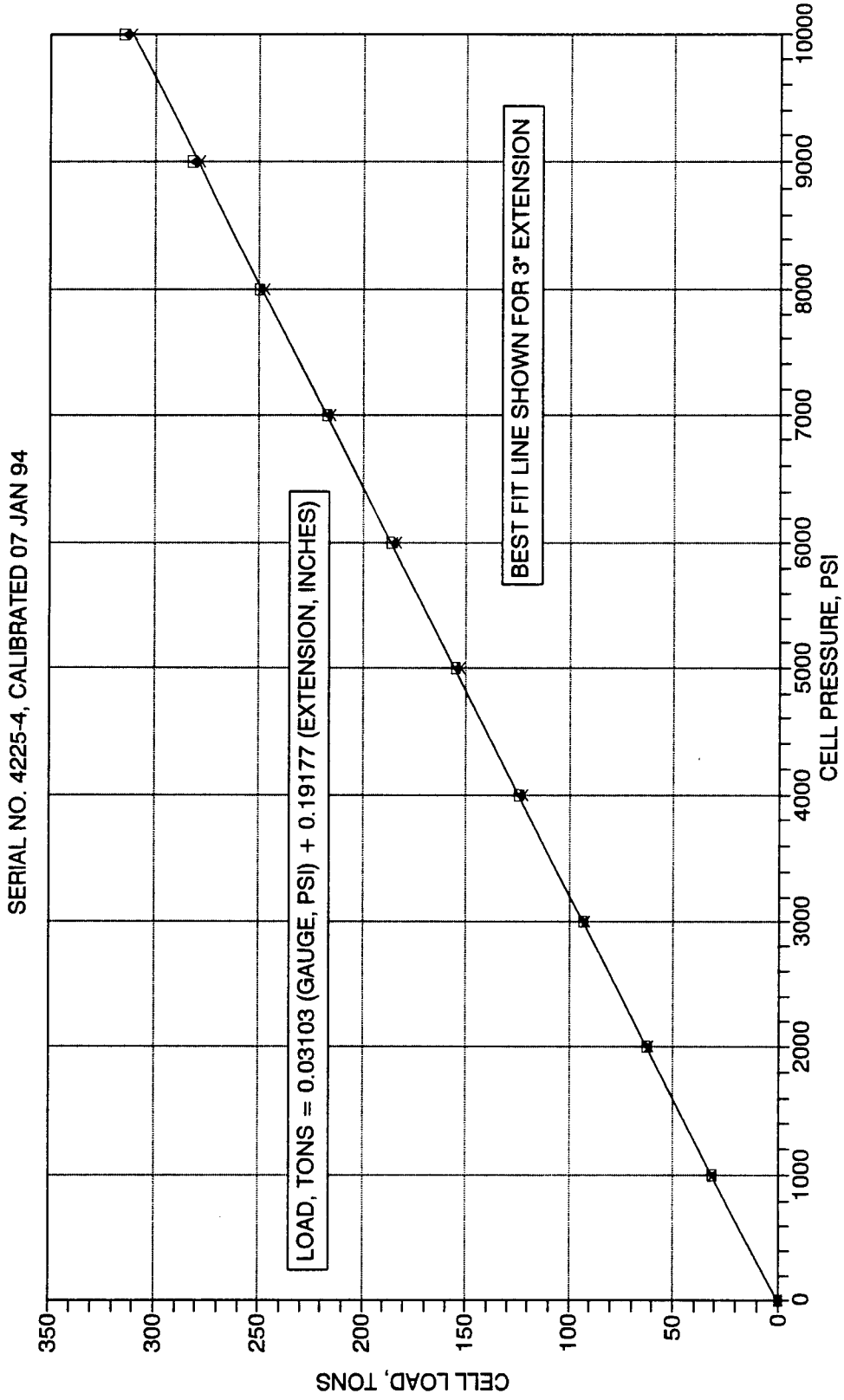


Figure E.16 Osterberg Cell Calibration (VLE)

Table E.6 Osterberg Load Cell Calibration (SBZ)

SERIAL NO. 4225-5, CALIBRATED 07 JAN 94
CALIBRATION BY AMERICAN EQUIPMENT & FABRICATING CORP.

GAGE PSI	MSD.LOAD TONS	EXTENSION INCHES	CALC.LOAD TONS	DEVIATION %
0	0.00	1.00	-0.20	INF.
1000	30.64	1.00	31.25	2.0
2000	62.82	1.00	62.69	-0.2
3000	94.24	1.00	94.14	-0.1
4000	125.65	1.00	125.59	-0.1
5000	155.53	1.00	157.03	1.0
6000	186.95	1.00	188.48	0.8
7000	218.24	1.00	219.92	0.8
8000	250.16	1.00	251.37	0.5
9000	282.34	1.00	282.81	0.2
10000	315.67	1.00	314.26	-0.4
0	0.00	3.00	-0.59	INF.
1000	30.64	3.00	30.86	0.7
2000	62.82	3.00	62.30	-0.8
3000	93.47	3.00	93.75	0.3
4000	124.12	3.00	125.19	0.9
5000	154.77	3.00	156.64	1.2
6000	185.80	3.00	188.08	1.2
7000	218.36	3.00	219.53	0.5
8000	250.54	3.00	250.98	0.2
9000	283.10	3.00	282.42	-0.2
10000	316.05	3.00	313.87	-0.7
0	0.00	5.00	-0.98	INF.
1000	30.64	5.00	30.46	-0.6
2000	62.06	5.00	61.91	-0.2
3000	93.47	5.00	93.35	-0.1
4000	124.12	5.00	124.80	0.5
5000	155.53	5.00	156.25	0.5
6000	186.95	5.00	187.69	0.4
7000	218.74	5.00	219.14	0.2
8000	251.31	5.00	250.58	-0.3
9000	283.87	5.00	282.03	-0.6
10000	316.43	5.00	313.47	-0.9

LOAD,TONS = 0.03145 (GAGE,PSI) - 0.19649 (EXTENSION,INCHES), R^2 = 0.9998

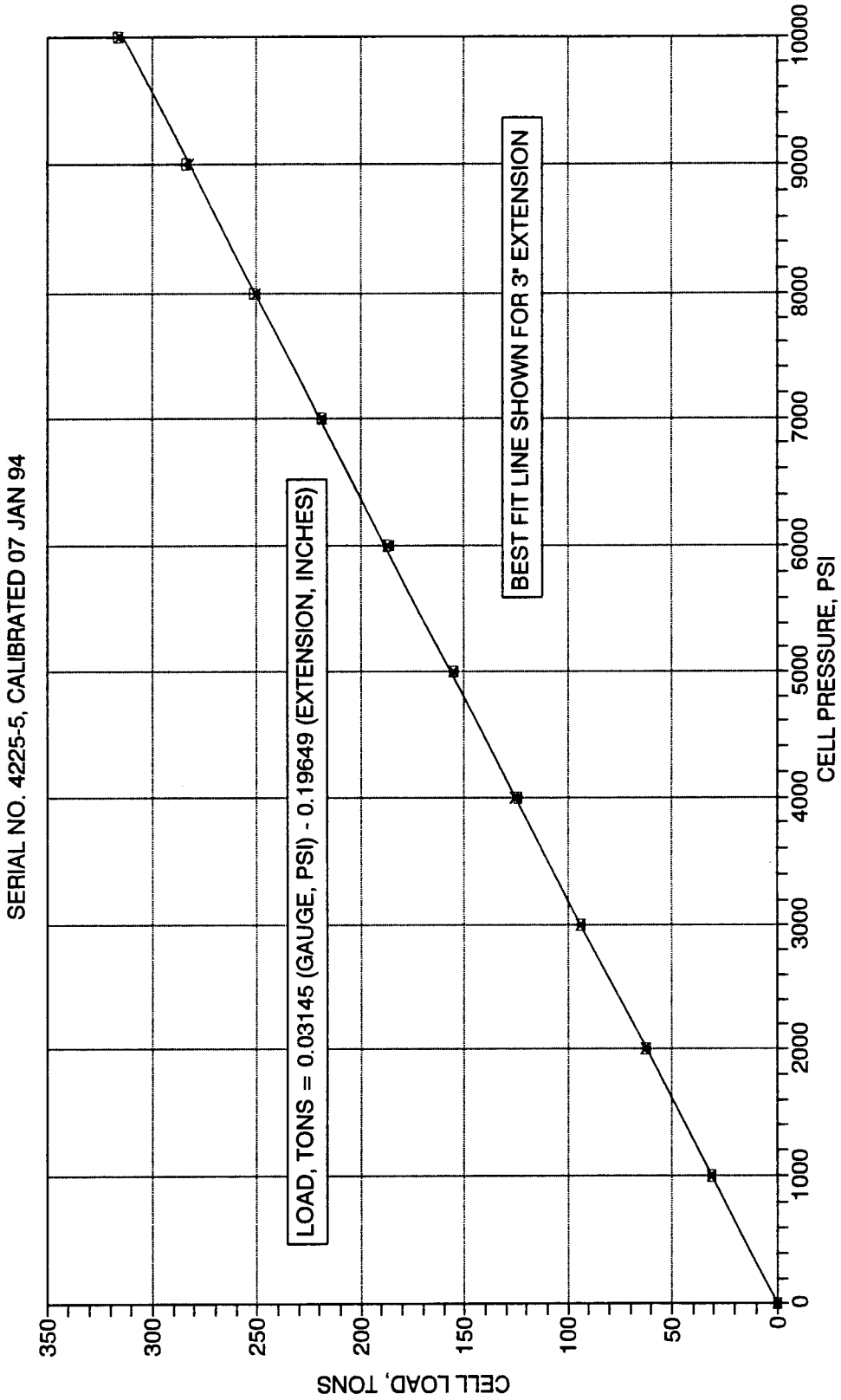


Figure E.17 Osterberg Cell Calibration (SBZ)

geokon
incorporated

Vibrating Wire Pressure Transducer Calibration

Model Number:	4500H-10,000	Pressure Range:	10,000 psi
Serial Number:	26478	Mfg. Number:	4-1207
Customer:	Schmertmann & Crapps	Temp:	22 °C
Cust. I.D. Number:	n/a	Baro:	999 mbar.
Job No.:	6383	Date:	3/17/94
Test Gage:	335	By:	SPE 94

	Applied Pressure (psi)	Readings	Change
First Cycle	-0.2316	9131	
	2017.00	8452	679
	4011.60	7767	685
	6000.70	7077	690
	7996.60	6380	697
	10030.00	5667	713
Second Cycle	3.2085	9114	
	2041.80	8438	676
	4021.90	7759	679
	6002.00	7074	685
	8024.80	6370	704
	9996.00	5680	690

Calibration Factor (C): 2.8987 **(PSI/Digit)**

Thermal Factor (K): 2.6088 **(PSI//Deg.C.Rise)**

Calculated Pressure = C(R0-R1)+K(T1-T0)

GK-401 Reading at Shipment:		Date:	3/24/94
Position "B":*	9143	Temperature:	25.5 Deg.C.
or			
Position "F":*		Baro:	1011 mbar**

* Users are advised to establish their own zero conditions.

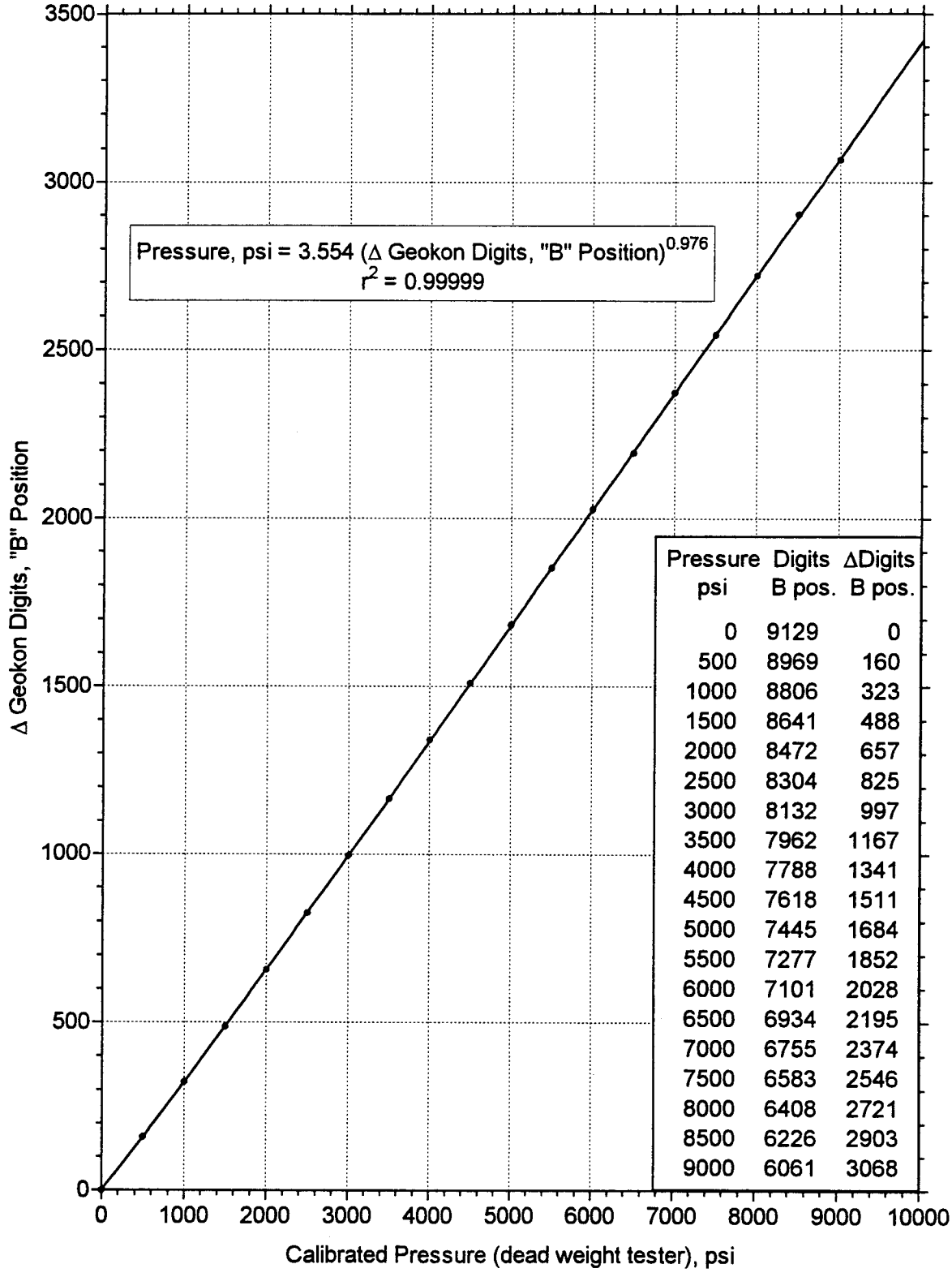
** Barometric pressure is corrected for 580 ft.above sea level.

Wiring Code:

Red and Black: Gage — White and Green: Thermistor

Figure E.18 Pressure Transducer Calibration Supplied by Geokon, Inc.

(S/N 26478, Calibrated 15 Aug 95 at Weedon Engineering)



Pressure psi	Digits B pos.	ΔDigits B pos.
0	9129	0
500	8969	160
1000	8806	323
1500	8641	488
2000	8472	657
2500	8304	825
3000	8132	997
3500	7962	1167
4000	7788	1341
4500	7618	1511
5000	7445	1684
5500	7277	1852
6000	7101	2028
6500	6934	2195
7000	6755	2374
7500	6583	2546
8000	6408	2721
8500	6226	2903
9000	6061	3068

Figure E.19 Geokon Piezometer Calibration

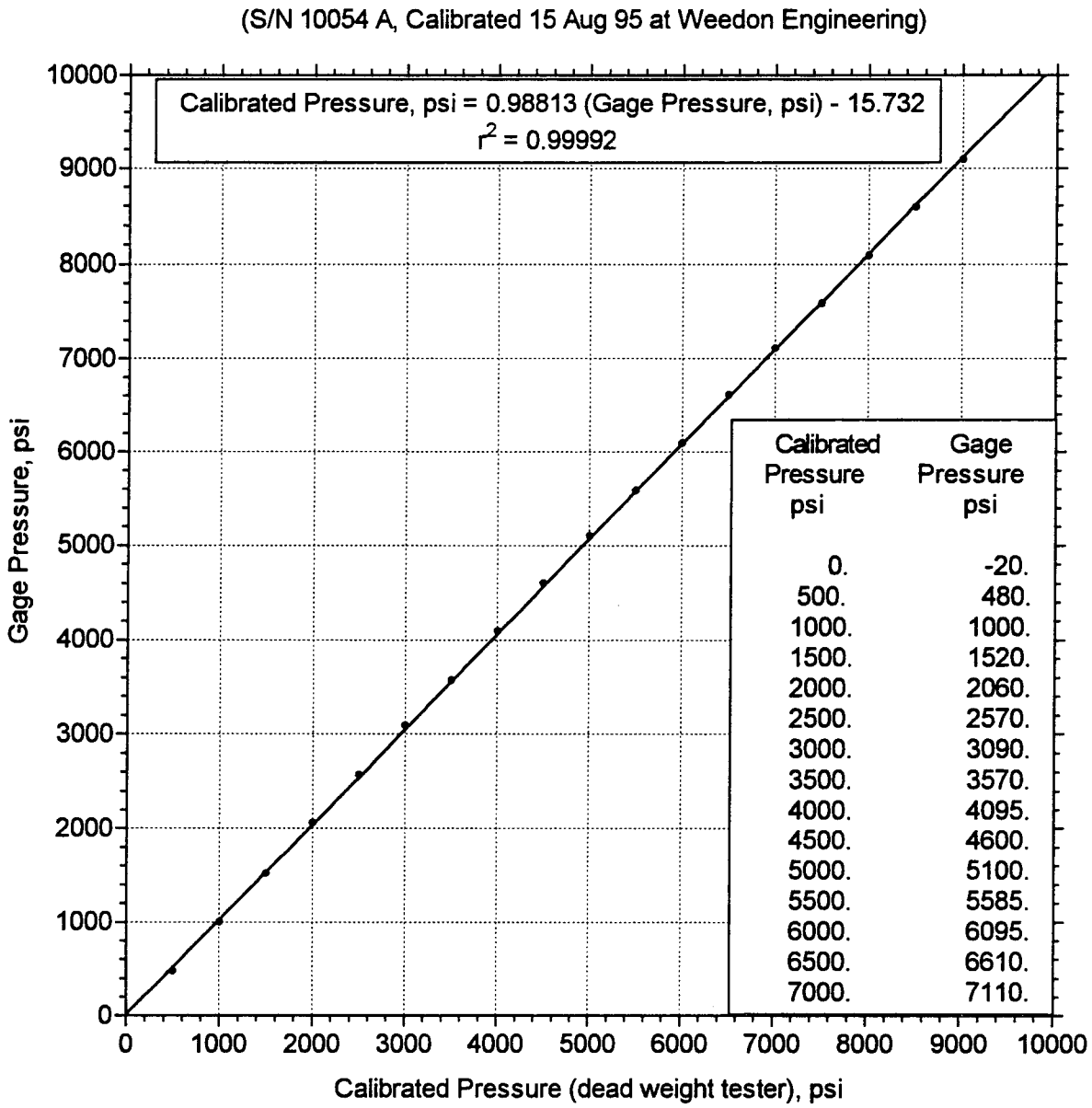


Figure E.20 Helicoid Gage Calibration

Table E.7 Load Cell Calibration for Top Load at VLW

Houston Scientific Model 3500-200K, s/n 8366-001
Calibrated 27 Jan 94 at UF by D.Richardson & P.Bullock
Excitation Voltage = 8.908-8.910 volts

Applied Load kips	Applied Load tons	Msd. Voltage millivolts	Volt. Difference millivolts	Calc.Load tons	Deviation %
0.00	0.00	0.02	0.00	0.11	INF.
5.00	2.50	0.42	0.40	2.49	-0.28
10.00	5.00	0.84	0.82	5.00	-0.07
15.00	7.50	1.25	1.23	7.44	-0.79
20.00	10.00	1.67	1.65	9.94	-0.56
25.00	12.50	2.10	2.08	12.51	0.06
30.00	15.00	2.51	2.49	14.95	-0.33
35.00	17.50	2.93	2.91	17.45	-0.26
40.00	20.00	3.35	3.33	19.96	-0.21
45.00	22.50	3.78	3.76	22.52	0.09
50.00	25.00	4.20	4.18	25.02	0.10
55.00	27.50	4.62	4.60	27.53	0.10
60.00	30.00	5.05	5.03	30.09	0.30
50.00	25.00	4.21	4.19	25.08	0.34
40.00	20.00	3.34	3.32	19.90	-0.51
30.00	15.00	2.51	2.49	14.95	-0.33
20.00	10.00	1.67	1.65	9.94	-0.56
10.00	5.00	0.84	0.82	5.00	-0.07
0.00	0.00	0.02	0.00	0.11	INF.

Load,tons = (Voltage Difference,mv + 0.0183) / 0.1678, r^2 = 0.9996

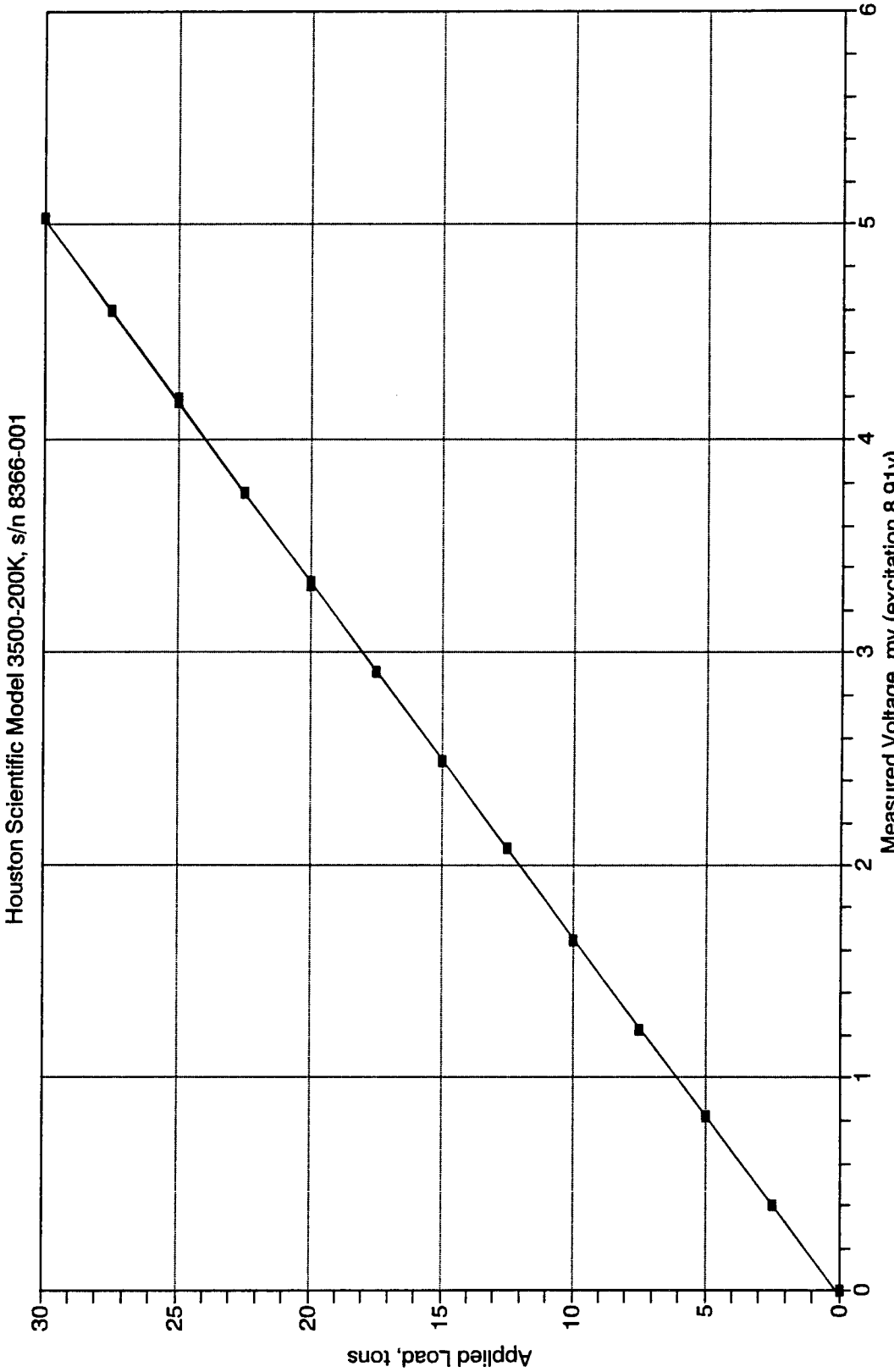


Figure E.21 Load Cell Calibration for Top Load at VLW

Table E.8 Poisson Effect Correction for O-cell Bottom Telltale (TT3)

Test Site	Telltale Length Inside O-cell Pipe L_{TT}, ft	Poisson Correction Factor c, in/psi	Poisson Correction at 10,000 psi in
Buckman	32.96-0.85+0.50 = 32.61	0.810 E-05	0.081
Aucilla	69.67-0.85+0.50 = 69.62	1.728 E-05	0.173
Vilano East	38.99-0.85+0.50 = 38.64	0.959 E-05	0.096
Vilano West	65.48-0.85+0.50 = 65.13	1.617 E-05	0.162
Seabreeze	88.06-0.85+0.60 = 86.61	2.150 E-05	0.215

Notes:

Corrected Telltale Measurement = $(TT3+\Delta_{TT})$ = $(TT3+c\sigma_p)$

TT3 = Measured Telltale Displacement

Δ_{TT} = Poisson Correction = $c\sigma_p$

σ_p = O-cell Pressure (surrounds telltale inside O-cell pipe), compression (+)

c = Poisson Correction Factor = $(-12\ \epsilon_z\ L_{TT}) / \sigma_p$ = $(24\ \upsilon\ L_{TT}) / E$

L_{TT} = O-cell telltale rod length

ϵ_z = Poisson Induced Longitudinal Strain = $[(\sigma_z - \upsilon\ (\sigma_x + \sigma_y)) / E]$ = $(-2\ \upsilon\ \sigma_p) / E$

σ_z = Longitudinal Stress = 0

σ_x, σ_y = Lateral Stress = σ_p

υ = Poisson Ratio, Steel = 0.30 (assumed)

E = Young's Modulus, Steel = 29,000,000 psi (assumed)

The effect of increasing O-cell fluid pressure is to lengthen the O-cell telltale rod, causing TT3 to decrease. The Poisson Correction adds this decrease back to the TT3 measurement.

Bottom of Telltale ~ 0.85 ft above bottom of pile
Top of pressure tee ~ 0.50 ft above top of pile
(except Seabreeze which is ~ 0.60 ft below top of pile)

Table E.9 Test Pile Summary (English Units)

Test Site	Pile Location	Primary Soil Type	Pile Length ft	Cast Date mm/dd/yy	End of Driving mm/dd/yy hh:mm	Tip Elevation EOD msl,ft	Ground Surface Elevation msl,ft	Measured Wave Speed ft/sec	Calc. Dynamic Modulus ksi	Telltale Gage Length ft
Buckman Bridge I-295 Jacksonville, FL	Sta 362+90 160 ft Lt CL	Dense Fine Sand	32.96	03/14/94	03/26/94 1:45	-15.83	14.22	12,800	5,300	29.05
Aucilla River Bridge U.S.19 (S.R.20) Aucilla, FL	Sta 494+47 93 ft Rt BL	Soft to Med. Stiff Silty Clay & Fn. Sand	69.97	03/14/94	03/30/94 11:43	-9.75	53.21	13,186	5,625	61.96
Vilano Bridge East AIA Vilano Beach, FL	Sta 183+47 96 ft Rt CL	Dense Fine Sand	38.99	03/22/94	04/14/94 1:04	-31.46	3.57	12,823	5,319	34.03
Vilano Bridge West AIA Vilano Beach, FL	Sta 142+60 70 ft Lt CL	Soft to Med. Stiff Silty Clay	65.48	03/22/94	08/24/94 2:52	-55.81	4.57	13,663	6,039	59.38
Seabreeze Bridge S.R.430 EB Daytona Beach, FL	Sta 447+08 60 ft Rt BL	Med. to Fn. Sand & Silty Clay	88.06	12/07/95	01/26/96 3:36	-76.13	6.30	13,209	5,644	81.43

Notes: All Piles are 18" Square Prestressed Concrete. EOD = End of Driving.
Dynamic Modulus = (Concrete Unit Weight/g)*(Wave Speed^2), Conc. Unit Weight = 150 pcf, g = 32.2 ft/sec^2

Table E.10 Summary of Static Test Results at Maximum Sustained O-cell Load (English Units)

Test Site	Start of Test		Elapsed Time	Max. Sustained O-Cell Load		Buoyant Pile	Side Shear	Q/Q0	Pile Top	O-Cell Top	O-Cell Bottom	Cum. O-Cell
	Date	Time	from EOD	Load	Load	Weight	Q		Mvmt.	Mvmt.	Mvmt.	Expansion
	mm/dd/yy	hh:mm	days	No.	tons	tons	tons		inches	inches	inches	inches
Buckman	03/26/94	7:46	0.25	2L5	19.5	4.5	15.0	1.00	0.010	0.011	-0.010	0.742
	03/29/94	4:56	3.13	L10	19.4	4.5	14.9	1.00	0.170	0.171	-0.005	1.355
Q0=14.9 tons	04/11/94	11:32	15.91	L14	21.5	4.5	17.0	1.14	0.310	0.313	-0.030	1.594
T0=1 day	05/31/94	1:08	65.97	L14	24.9	4.5	20.4	1.36	0.150	0.154	-0.093	1.984
	12/19/94	12:42	267.96	L17	26.4	4.5	21.9	1.47	0.220	0.226	-0.109	2.470
Aucilla	03/31/94	11:11	0.98	L23	116.8	7.5	109.3	1.00	0.650	0.676	-0.121	0.680
	04/02/94	11:06	2.97	L23	142.0	7.5	134.5	1.22	0.135	0.176	-0.175	1.510
Q0=109.8 tons	04/15/94	2:01	16.10	L17	167.9	7.5	160.4	1.46	0.440	0.490	-0.187	2.193
T0=1 day	06/03/94	2:10	65.10	2L19	179.3	7.5	171.8	1.56	0.285	0.340	-0.178	2.592
	34688	0.53403	265.05	L20	200.0	7.5	192.5	1.75	0.390	0.455	-0.180	3.013
	12/21/98	1:32	1727.08	L22	230.3	7.5	222.8	2.03	0.465	0.533	-0.217	3.519
Vilano	04/14/94	8:43	0.32	L36	137.5	4.3	133.2	0.94	0.170	0.175	-0.090	0.591
East	04/18/94	11:29	3.93	L22	155.4	4.3	151.1	1.07	0.120	0.132	-0.391	1.093
Q0=141.3 tons	04/30/94	11:00	15.91	L18	165.8	4.3	161.5	1.14	0.095	0.110	-1.053	2.148
T0=1 day	06/30/94	12:45	76.99	L10	105.7	4.3	E.B. Failure		0.030	0.042	-1.964	3.644
Vilano	08/24/94	9:11	0.26	L14	52.7	7.0	45.7	0.87	0.250	0.254	-0.062	0.819
West	08/27/94	11:07	2.84	L17	65.3	7.0	58.3	1.10	0.330	0.341	-0.142	1.545
Q0=52.8 tons	09/12/94	2:29	18.98	L21	78.4	7.0	71.4	1.35	0.143	0.143	-0.775	2.796
T0=1 day	01/28/95	3:01	157.01	2L13	95.0	7.0	88.0	1.67	0.255	0.251	-0.115	3.408
Seabreeze	01/27/96	12:00	0.35	L18	174.7	9.4	165.3	0.88	0.350	0.369	-0.067	0.534
	01/30/96	4:21	4.03	L17	224.8	9.4	215.4	1.15	0.235	0.278	-0.183	0.842
Q0=186.8 tons	02/13/96	2:11	17.94	L13	249.7	9.4	240.3	1.29	0.320	0.377	-0.210	1.270
T0=1 day	04/05/96	2:06	69.94	L16	257.5	9.4	248.1	1.33	0.165	0.227	-0.207	1.457
	11/14/96	1:13	292.90	L17	275.2	9.4	265.8	1.42	0.185	0.258	-0.275	2.139
	12/19/98	1:15	1057.90	L19	274.9	9.4	265.5	1.42	0.550	0.630	-0.356	2.839

Notes: Movements from end of 4 minute load interval: (+)up,(-)down. Q0 at T0 = 1day interpolated vs. log time.
EOD = End of Driving. Cum.O-Cell Expansion is cumulative measured cell expansion at end of each test

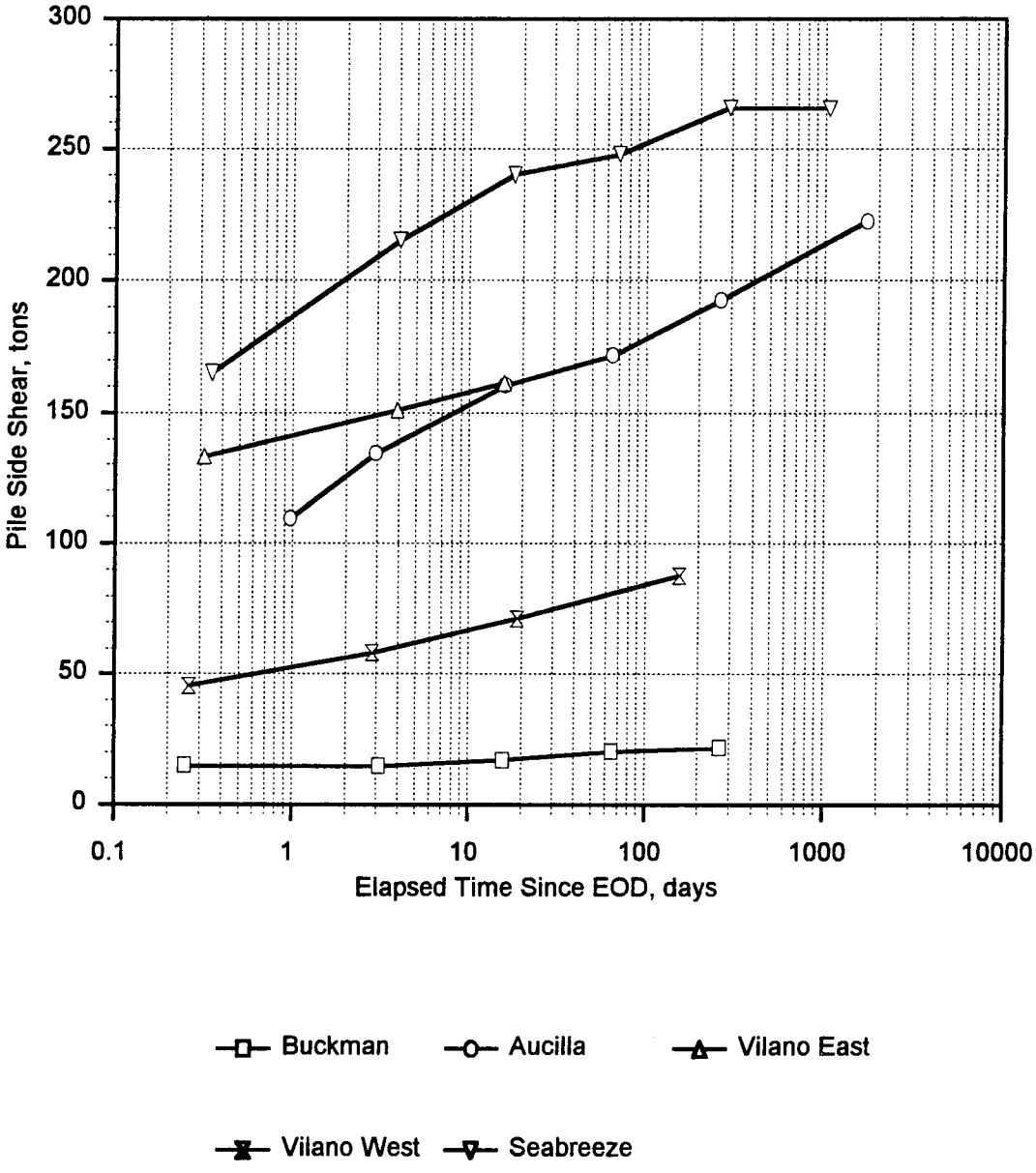


Figure E.22 Summary of Pile Side Shear (English Units)

Table E.11 Data for Load Test 1: Buckman

BKM 1 LOAD NUMBER	TIME INCR. (min)	OSTERBERG CELL LOAD: MEASURED PRESSURE (psi)	CORRECTED PRESSURE (psi)	VW TRANSDUCER READING (tons)	EXTENSION PRESSURE (psi)	EXTENSION @4 MIN. (inches)	LOAD (tons)	OSTERBERG CELL BOTTOM TELLTALE: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)	POISSON EFFECT ADJ. (inches)	OSTERBERG CELL BOTTOM MOVEMENT: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)
1L0		0	0	9120	0	0.000	0.0				0.5000	0.0000				0.0000
1L1	4	95	78	9087	108	0.001	3.3	0.5000	0.5000	0.5000	0.5000	0.0009	-0.0009	-0.0009	-0.0009	-0.0009
1L2	4	230	212	9042	250	0.002	7.7	0.5000	0.5000	0.5000	0.5000	0.0020	-0.0020	-0.0020	-0.0020	-0.0020
1L3	4	350	330	9002	374	0.003	11.6	0.5000	0.5000	0.5000	0.5000	0.0030	-0.0030	-0.0030	-0.0030	-0.0030
1L4	4	495	473	8961	500	0.004	15.5	0.5000	0.5000	0.5000	0.5000	0.0041	-0.0041	-0.0041	-0.0041	-0.0041
1L5	4	610	587	8920	626	0.005	19.4	0.5000	0.5000	0.5000	0.5000	0.0051	-0.0051	-0.0051	-0.0051	-0.0051
1L6	4	750	725	8876	760	0.006	23.6	0.5000	0.5000	0.5000	0.5000	0.0062	-0.0062	-0.0062	-0.0062	0.0038
1L7	4	790	765	8867	787	0.018	24.4	0.5110	0.5110	0.5110	0.5120	0.0064	0.0026	0.0026	0.0026	0.0016
1L8	0.5	610	587	8831	897	0.037	27.8				0.5300	0.0073				0.0027
1L8A	3.5	610	587	8917	635	0.087	19.7		0.5550	0.5800	0.5820	0.0051		0.0099	0.0149	0.0129
1U1	3	0	0	9118	0	0.078	0.0	0.5790	0.5790	0.5790	0.5790	0.0000	0.0210	0.0210	0.0210	0.0210

NOTE: THE RETAINING WELDS ON THE OSTERBERG CELL SHEARED ABRUPTLY AFTER 0.5 MIN DURING LOAD 1L8.
THE RESULTING PILE LOAD EXCEEDED THE SIDE FRICTION CAPACITY AND IMMEDIATE FAILURE OCCURED.
A SECOND LOAD CYCLE WAS APPLIED TO DETERMINE THE ACTUAL FAILURE LOAD.

2L0	1	0	0	9118	0	0.078	0.0				0.5770	0.0000				0.0000
2L1	4	94	77	9083	114	0.079	3.5	0.5770	0.5770	0.5770	0.5770	0.0009	-0.0009	-0.0009	-0.0009	-0.0009
2L2	4	220	202	9042	243	0.078	7.5	0.5760	0.5760	0.5760	0.5750	0.0020	-0.0010	-0.0010	-0.0010	0.0000
2L3	4	354	334	9001	371	0.080	11.5	0.5760	0.5760	0.5760	0.5760	0.0030	-0.0020	-0.0020	-0.0020	-0.0020
2L4	4	500	478	8959	500	0.082	15.5	0.5760	0.5760	0.5760	0.5760	0.0041	-0.0031	-0.0031	-0.0031	-0.0031
2L5	4	610	587	8917	629	0.099	19.5	0.5820	0.5850	0.5890	0.5920	0.0051	-0.0101	-0.0131	-0.0071	-0.0101
2L6	0.5	600	577	8914	638	0.377	19.7				0.8700	0.0052				-0.0482
2L6i	1	550	528	8927	598	0.507	18.5				1.0000	0.0048				-0.0278
2L6ii	0.75	525	503	8938	565	0.667	17.4				1.1600	0.0046				-0.0076
2L6A	1.25	525	503	8945	543	0.823	16.8				1.3160	0.0044				0.0066
2L6B	1	525	503	8945	543	0.823	16.8				1.3160	0.0044				-0.0034
2L6C	2	525	503	8945	543	0.823	16.8				1.3160	0.0044				-0.0034
2L6D	2	525	503	8945	543	0.823	16.8				1.3160	0.0044				-0.0034
2U1	3	400	380	8984	423	0.821	13.1				1.3160	0.0034				-0.0024
2U2	3	250	231	9030	281	0.793	8.6				1.2900	0.0023				0.0047
2U3	3	100	83	9080	124	0.751	3.8				1.2500	0.0010				0.0360
2U4	3	0	0	9110	0	0.744	0.0				1.2440	0.0000				0.0430
2U4B	3	0	0	9116	0	0.742	0.0				1.2420	0.0000				0.0450
2U4C	4	0	0	9118	0	0.742	0.0				1.2420	0.0000				0.0450

Table E.11 continued

BKM 1 LOAD NUMBER	OSTERBERG CELL TOP TELLTALE TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	PILE COMPRESSION TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	OSTERBERG CELL TOP TELLTALE TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)	PILE COMPRESSION TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)
1L0				-0.00015				0.00000				0.00000				0.00000
1L1	-0.00015	-0.00150	-0.00015	-0.00015	0.00000	-0.00135	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1L2	-0.00020	-0.00020	-0.00020	-0.00025	-0.00005	-0.00005	-0.00005	-0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1L3	-0.00025	-0.00025	-0.00025	-0.00025	-0.00010	-0.00010	-0.00010	-0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1L4	-0.00025	-0.00025	-0.00025	-0.00030	-0.00010	-0.00010	-0.00010	-0.00015	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1L5	-0.00030	-0.00030	-0.00030	-0.00030	-0.00015	-0.00015	-0.00015	-0.00015	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1L6	-0.00030	-0.00030	-0.00030	-0.00035	-0.00015	-0.00015	-0.00015	-0.00020	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
1L7	-0.00060	-0.00060	-0.00065	-0.00065	-0.00045	-0.00045	-0.00050	-0.00050	0.00040	0.00040	0.00040	0.00040	0.00040	0.00040	0.00040	0.00040
1L8				-0.00050				-0.00035				0.00030				0.00030
1L8A		-0.00050	-0.00050	-0.00050		-0.00035	-0.00035	-0.00035		0.00020	0.00020	0.00020		0.00020	0.00020	0.00020
1U1	-0.00075	-0.00070	-0.00070	-0.00065	-0.00060	-0.00055	-0.00055	-0.00050	-0.00110	-0.00110	-0.00110	-0.00110	-0.00110	-0.00110	-0.00110	-0.00110
2L0				-0.00110				0.00000				-0.00110				0.00000
2L1	-0.00110	-0.00110	-0.00110	-0.00110	0.00000	0.00000	0.00000	0.00000	-0.00110	-0.00110	-0.00110	-0.00110	0.00000	0.00000	0.00000	0.00000
2L2	-0.00105	-0.00105	-0.00105	-0.00105	0.00005	0.00005	0.00005	0.00005	-0.00110	-0.00110	-0.00110	-0.00110	0.00000	0.00000	0.00000	0.00000
2L3	-0.00105	-0.00105	-0.00105	-0.00105	0.00005	0.00005	0.00005	0.00005	-0.00100	-0.00100	-0.00100	-0.00100	0.00010	0.00010	0.00010	0.00010
2L4	-0.00095	-0.00095	-0.00095	-0.00095	0.00015	0.00015	0.00015	0.00015	-0.00060	-0.00060	-0.00050	-0.00050	0.00050	0.00050	0.00060	0.00060
2L5	-0.00065	-0.00065	-0.00065	-0.00065	0.00045	0.00045	0.00045	0.00045	-0.00010	-0.00010	0.00000	0.00000	0.00100	0.00100	0.00110	0.00110
2L6				-0.00075				0.00035				0.00040				0.00150
2L6i				-0.00075				0.00035				0.00040				0.00150
2L6ii				-0.00065				0.00045				0.00040				0.00150
2L6A				-0.00065				0.00045				0.00040				0.00150
2L6B				-0.00065				0.00045				0.00030				0.00140
2L6C				-0.00065				0.00045				0.00030				0.00140
2L6D				-0.00065				0.00045				0.00030				0.00140
2U1				-0.00115				-0.00005				-0.00030				0.00080
2U2				-0.00225				-0.00115				-0.00110				0.00000
2U3				-0.00245				-0.00135				-0.00200				-0.00090
2U4				-0.00245				-0.00135				-0.00220				-0.00110
2U4B				-0.00240				-0.00130				-0.00220				-0.00110
2U4C				-0.00235				-0.00125				-0.00220				-0.00110

NOTE: THE RETAINING WELDS ON THE OSTERBERG CELL SHEARED ABRUPTLY AFTER 0.5 MIN DURING LOAD 1L8.
THE RESULTING PILE LOAD EXCEEDED THE SIDE FRICTION CAPACITY AND IMMEDIATE FAILURE OCCURED.
A SECOND LOAD CYCLE WAS APPLIED TO DETERMINE THE ACTUAL FAILURE LOAD.

Table E.11 continued

BKM 1 LOAD NUMBER	PILE COMPRESSION TT-1 & TT-2 AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP MOVEMENT AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP CREEP 1-4 MIN (inches)	CREEP 2-4 MIN (inches)
1L0				0.0000				0.0000	0.0000	0.0000
1L1	0.0000	-0.0007	0.0000	0.0000	0.0000	-0.0007	0.0000	0.0000	0.0007	0.0000
1L2	-0.0000	-0.0000	-0.0000	-0.0001	-0.0000	-0.0000	-0.0000	-0.0001	-0.0000	-0.0000
1L3	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	0.0000	0.0000
1L4	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0000	-0.0000
1L5	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	0.0000	0.0000
1L6	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	0.0099	0.0100	0.0100
1L7	-0.0000	-0.0000	-0.0000	-0.0000	0.0200	0.0200	0.0200	0.0200	-0.0000	0.0000
1L8				-0.0000				0.0400	0.0400	0.0400
1L8A		-0.0001	-0.0001	-0.0001		0.0699	0.0999	0.0999	0.0300	0.0000
1U1	-0.0009	-0.0008	-0.0008	-0.0008	0.0992	0.0992	0.0992	0.0992	0.0000	0.0000

NOTE: THE RETAINING WELDS ON THE OSTERBERG CELL SHEARED ABRUPTLY AFTER 0.5 MIN DURING LOAD 1L8.
THE RESULTING PILE LOAD EXCEEDED THE SIDE FRICTION CAPACITY AND IMMEDIATE FAILURE OCCURED.
A SECOND LOAD CYCLE WAS APPLIED TO DETERMINE THE ACTUAL FAILURE LOAD.

2L0				0.0000				0.0000	0.0000	0.0000
2L1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2L2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2L3	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0000	0.0000
2L4	0.0003	0.0003	0.0004	0.0004	0.0003	0.0003	0.0004	0.0004	0.0000	0.0000
2L5	0.0007	0.0007	0.0008	0.0008	0.0007	0.0007	0.0108	0.0108	0.0101	0.0000
2L6				0.0009				0.2509		
2L6i				0.0009				0.4009		
2L6ii				0.0010				0.5810		
2L6A				0.0010				0.7510		
2L6B				0.0009				0.7409		
2L6C				0.0009				0.7409		
2L6D				0.0009				0.7409		
2U1				0.0004				0.7404		
2U2				-0.0006				0.7194		
2U3				-0.0011				0.7089		
2U4				-0.0012				0.7088		
2U4B				-0.0012				0.7088		
2U4C				-0.0012				0.7088		

Table E.11 continued

BKM 1 LOAD NUMBER	TOP OF PILE MOVEMENT - WIRELINE READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)	BSIGHT @0.5MIN. (inches)	TOP OF PILE MOVEMENT - SURVEY LEVEL READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)
1L0				1.000				0.000	1.000				1.000				0.000
1L1	1.000	1.000	1.000	1.000	0.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	0.000
1L2	1.000	1.000	1.000	1.000	0.000	0.000	0.000	0.000		1.000	1.000	1.000	1.000	0.000	0.000	0.000	0.000
1L3	1.000	1.000	1.000	1.000	0.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	0.000
1L4	1.000	1.000	1.000	1.000	0.000	0.000	0.000	0.000		1.000	1.000	1.000	1.000	0.000	0.000	0.000	0.000
1L5	1.000	1.000	1.000	1.000	0.000	0.000	0.000	0.000	1.000	1.000	1.000	1.000	1.000	0.000	0.000	0.000	0.000
1L6	1.000	1.000	1.000	1.010	0.000	0.000	0.000	0.010		1.000	1.000	1.000	1.000	0.000	0.000	0.000	0.000
1L7	1.020	1.020	1.020	1.020	0.020	0.020	0.020	0.020	1.000	1.000	1.000	1.000	1.010	0.000	0.000	0.000	0.010
1L8				1.040				0.040					1.030				0.030
1L8A		1.070	1.100	1.100		0.070	0.100	0.100			1.060	1.090	1.090		0.060	0.090	0.090
1U1	1.100	1.100	1.100	1.100	0.100	0.100	0.100	0.100	1.000	1.080	1.080	1.080	1.080	0.080	0.080	0.080	0.080

NOTE: THE RETAINING WELDS ON THE OSTERBERG CELL SHEARED ABRUPTLY AFTER 0.5 MIN DURING LOAD 1L8.
THE RESULTING PILE LOAD EXCEEDED THE SIDE FRICTION CAPACITY AND IMMEDIATE FAILURE OCCURED.
A SECOND LOAD CYCLE WAS APPLIED TO DETERMINE THE ACTUAL FAILURE LOAD.

2L0				1.100				0.000					1.080				0.000
2L1	1.100	1.100	1.100	1.100	0.000	0.000	0.000	0.000	1.000	1.080	1.080	1.080	1.080	0.000	0.000	0.000	0.000
2L2	1.100	1.100	1.100	1.100	0.000	0.000	0.000	0.000		1.080	1.080	1.080	1.080	0.000	0.000	0.000	0.000
2L3	1.100	1.100	1.100	1.100	0.000	0.000	0.000	0.000	1.000	1.080	1.080	1.080	1.080	0.000	0.000	0.000	0.000
2L4	1.100	1.100	1.100	1.100	0.000	0.000	0.000	0.000		1.080	1.080	1.080	1.080	0.000	0.000	0.000	0.000
2L5	1.100	1.100	1.110	1.110	0.000	0.000	0.010	0.010	1.000	1.100	1.100	1.100	1.100	0.020	0.020	0.020	0.020
2L6				1.350				0.250					1.350				0.270
2L6i				1.500				0.400					1.470				0.390
2L6ii				1.680				0.580					1.640				0.560
2L6A				1.850				0.750					1.810				0.730
2L6B				1.840				0.740					1.810				0.730
2L6C				1.840				0.740					1.820				0.740
2L6D				1.840				0.740	1.000				1.820				0.740
2U1				1.840				0.740					1.810				0.730
2U2				1.820				0.720					1.800				0.720
2U3				1.810				0.710					1.800				0.720
2U4				1.810				0.710	1.000				1.800				0.720
2U4B				1.810				0.710					1.800				0.720
2U4C				1.810				0.710	1.000				1.800				0.720

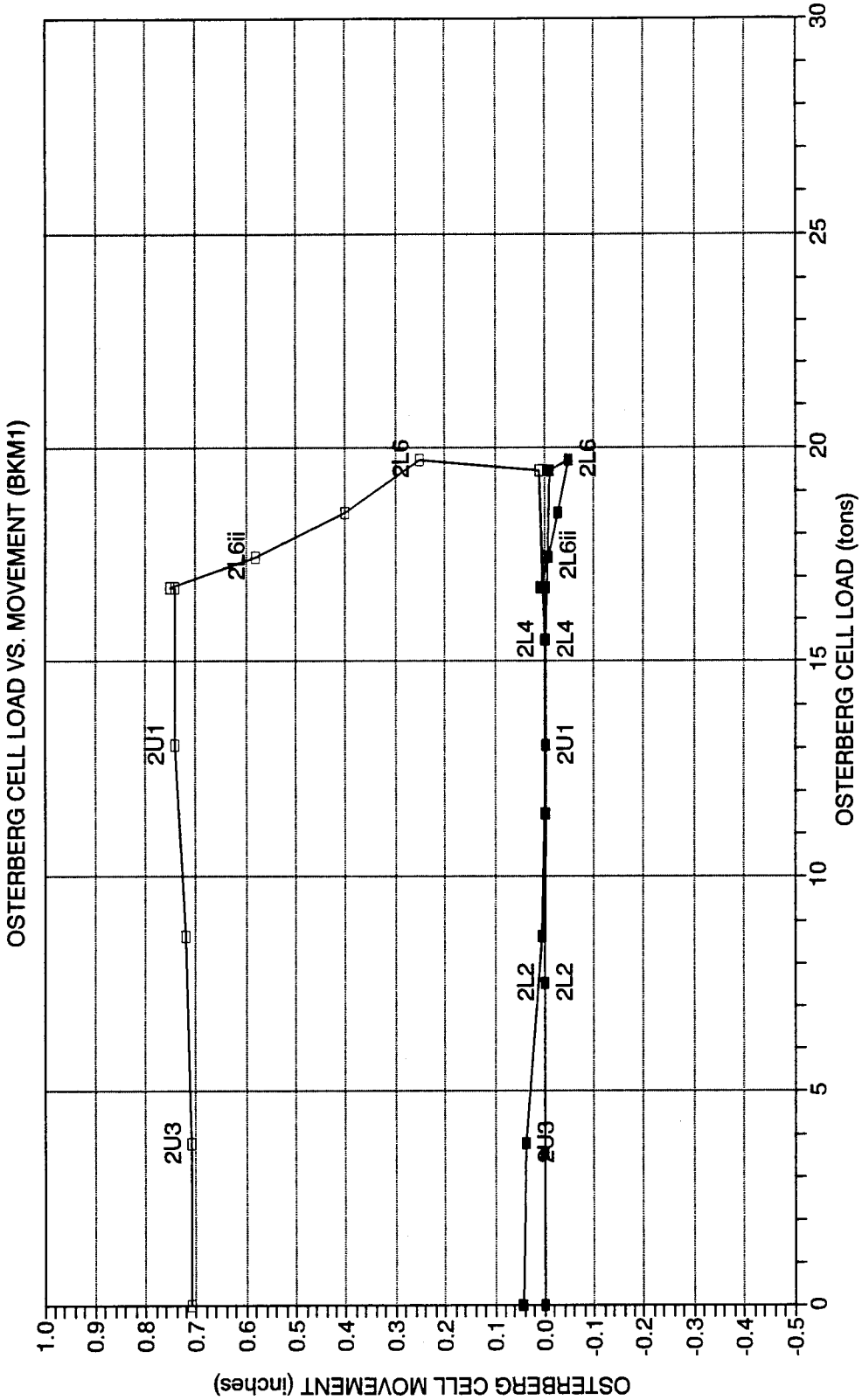


Figure E.23 Load Test 1 Movement: Buckman

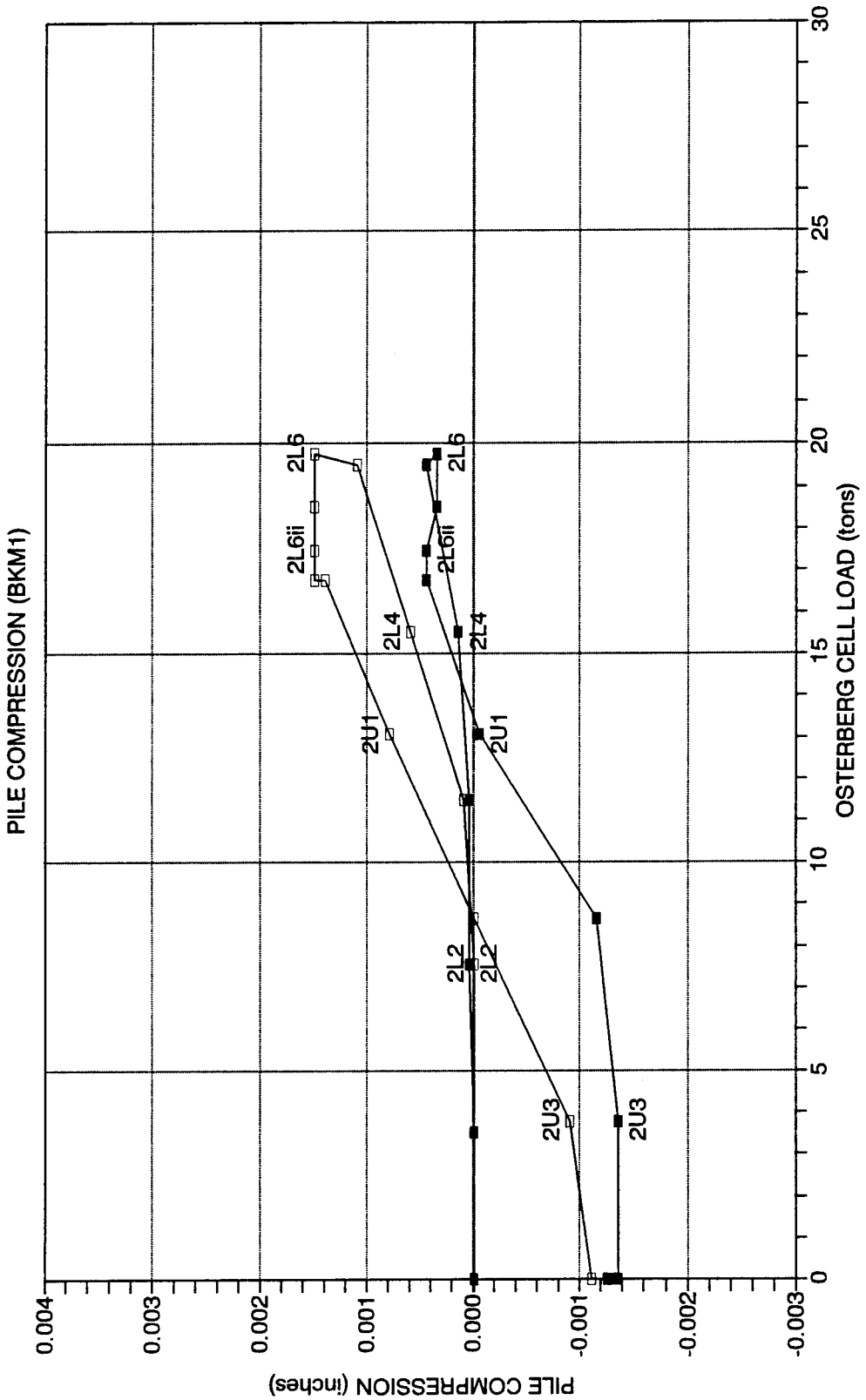


Figure E.24 Load Test 1 Compression: Buckman

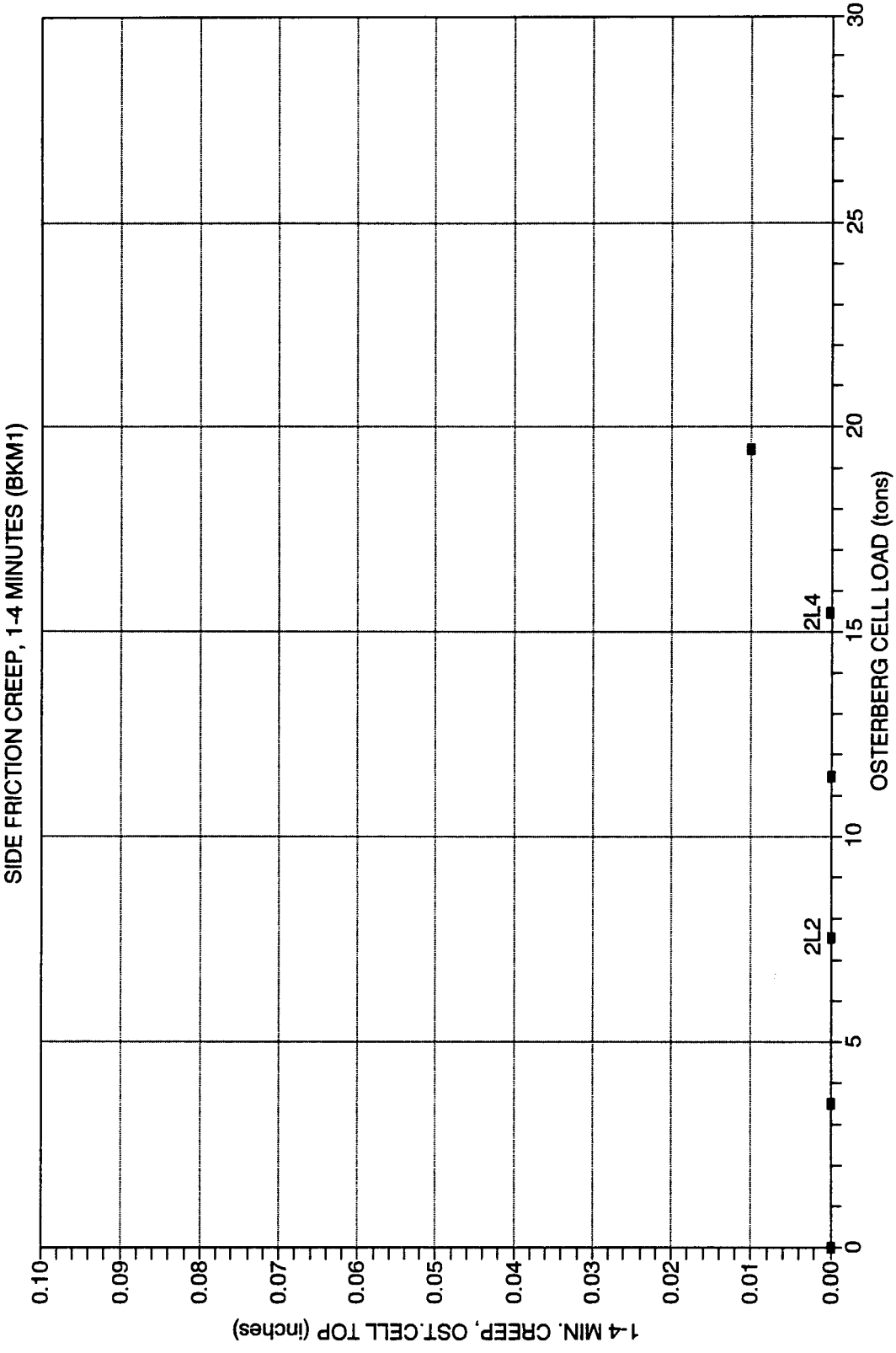


Figure E.25 Load Test 1 Creep: Buckman

Table E.12 Data for Load Test 2: Buckman

BKM 2 LOAD NUMBER	TIME INCR. (min)	OSTERBERG CELL LOAD: MEASURED PRESSURE (psi)	CORRECTED PRESSURE (psi)	VW TRANSDUCER READING (tons)	PRESSURE (psi)	EXTENSION @4 MIN. (inches)	LOAD (tons)	OSTERBERG CELL BOTTOM TELLTALE: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)	POISSON EFFECT ADJ. (inches)	OSTERBERG CELL BOTTOM MOVEMENT: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)
L0		0	0	9119	0	0.742	0.0				0.5003	0.0000				0.0000
L1	4	50	34	9106	43	0.742	1.3	0.5003	0.5003	0.5003	0.5003	0.0004	-0.0004	-0.0004	-0.0004	-0.0004
L1A	4	50	34	9107	40	0.742	1.2				0.5003	0.0003				-0.0003
L2	4	75	58	9094	82	0.743	2.5	0.5003	0.5003	0.5003	0.5003	0.0007	-0.0007	-0.0007	-0.0007	-0.0007
L3	4	100	83	9077	136	0.743	4.2	0.5003	0.5003	0.5003	0.5003	0.0011	-0.0011	-0.0011	-0.0011	-0.0011
L4	4	190	172	9057	200	0.744	6.1	0.5003	0.5003	0.5003	0.5003	0.0016	-0.0016	-0.0016	-0.0016	-0.0016
L5	4	220	202	9043	243	0.744	7.5	0.5002	0.5002	0.5002	0.5002	0.0020	-0.0019	-0.0019	-0.0019	-0.0019
L5A	5	225	207	9045	237	0.744	7.3				0.5002	0.0019				-0.0018
L6	4	295	276	9025	300	0.744	9.2	0.5002	0.5002	0.5002	0.5002	0.0024	-0.0023	-0.0023	-0.0023	-0.0023
L7	4	325	305	9010	346	0.745	10.7	0.5002	0.5002	0.5002	0.5002	0.0028	-0.0027	-0.0027	-0.0027	-0.0027
L8	4	390	370	8995	393	0.745	12.1	0.5002	0.5002	0.5002	0.5002	0.0032	-0.0031	-0.0031	-0.0031	-0.0031
L9	4	445	424	8977	448	0.746	13.8	0.5002	0.5002	0.5002	0.5002	0.0036	-0.0035	-0.0035	-0.0035	-0.0035
L10	4	610	587	8918	629	0.918	19.4	0.5590	0.5761	0.6112	0.6705	0.0051	-0.0138	-0.0109	-0.0060	-0.0053
L11	2	610	587	8920	623	1.434	19.2		0.7880	0.9650	1.1860	0.0050		-0.0027	-0.0197	-0.0007
L11A	1	580	557	8936	574	1.470	17.7				1.2229	0.0046				0.0028
L11B	1	550	528	8939	565	1.470	17.4				1.2229	0.0046				0.0028
L11C	2	550	528	8940	562	1.470	17.3				1.2229	0.0045				0.0029
U1	3	450	429	8976	451	1.468	13.9				1.2229	0.0037				0.0037
U2	3	350	330	9004	365	1.464	11.2				1.2197	0.0030				0.0076
U3	3	250	231	9042	247	1.439	7.5				1.1965	0.0020				0.0118
U4	3	140	123	9073	149	1.396	4.5				1.1553	0.0012				0.0438
U5	3	0	0	9120	0	1.355	0.0				1.1165	0.0000				0.0638
U5A	3	0	0	9121	0	1.355	0.0				1.1165	0.0000				0.0638

NOTE: FAILURE LOAD WAS INADVERTANTLY EXCEEDED WHILE APPLYING L10 LOAD AND WAS GREATER THAN THE LOAD HELD DURING L10.

Table E.12 continued

BKM 2 LOAD NUMBER	OSTERBERG CELL TOP TELLTALE TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	PILE COMPRESSION TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	OSTERBERG CELL TOP TELLTALE TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)	PILE COMPRESSION TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)
L0				0.02000				0.00000				0.02010				0.00000
L1	0.02000	0.02000	0.02000	0.01995	0.00000	0.00000	0.00000	-0.00005	0.02010	0.02010	0.02010	0.02010	0.00000	0.00000	0.00000	0.00000
L1A				0.01995				-0.00005				0.02020				0.00010
L2	0.01995	0.01995	0.01995	0.01995	-0.00005	-0.00005	-0.00005	-0.00005	0.02020	0.02020	0.02020	0.02020	0.00010	0.00010	0.00010	0.00010
L3	0.02000	0.02000	0.02000	0.02000	0.00000	0.00000	0.00000	0.00000	0.02020	0.02020	0.02025	0.02030	0.00010	0.00010	0.00015	0.00020
L4	0.01995	0.01995	0.01995	0.01995	-0.00005	-0.00005	-0.00005	-0.00005	0.02030	0.02030	0.02030	0.02030	0.00020	0.00020	0.00020	0.00020
L5	0.01995	0.01995	0.01995	0.01990	-0.00005	-0.00005	-0.00005	-0.00010	0.02030	0.02030	0.02031	0.02033	0.00020	0.00020	0.00021	0.00023
L5A				0.01985				-0.00015				0.02036				0.00026
L6	0.01985	0.01985	0.01985	0.01985	-0.00015	-0.00015	-0.00015	-0.00015	0.02037	0.02038	0.02039	0.02039	0.00027	0.00028	0.00029	0.00029
L7	0.01985	0.01985	0.01985	0.01985	-0.00015	-0.00015	-0.00015	-0.00015	0.02041	0.02041	0.02041	0.02044	0.00031	0.00031	0.00031	0.00034
L8	0.01985	0.01985	0.01985	0.01985	-0.00015	-0.00015	-0.00015	-0.00015	0.02065	0.02065	0.02066	0.02069	0.00055	0.00055	0.00056	0.00059
L9	0.01985	0.01985	0.01985	0.01985	-0.00015	-0.00015	-0.00015	-0.00015	0.02096	0.02098	0.02098	0.02098	0.00086	0.00088	0.00088	0.00088
L10	0.02010	0.02010	0.02010	0.02010	0.00010	0.00010	0.00010	0.00010	0.02161	0.02157	0.02155	0.02146	0.00151	0.00147	0.00145	0.00136
L11		0.02015	0.02015	0.02020		0.00015	0.00015	0.00020		0.02142	0.02143	0.02142		0.00132	0.00133	0.00132
L11A				0.02010				0.00010				0.02130				0.00120
L11B				0.02010				0.00010				0.02130				0.00120
L11C				0.02005				0.00005				0.02129				0.00119
U1				0.01945				-0.00055				0.02085				0.00075
U2				0.01875				-0.00125				0.02034				0.00024
U3				0.01770				-0.00230				0.01956				-0.00054
U4				0.01670				-0.00330				0.01892				-0.00118
U5				0.01655				-0.00345				0.01812				-0.00198
U5A				0.01655				-0.00345				0.01808				-0.00202

Table E.12 continued

BKM 2 LOAD NUMBER	PILE COMPRESSION TT-1 & TT-2 AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP MOVEMENT AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP CREEP 1-4 MIN (inches)	CREEP 2-4 MIN (inches)
L0				0.0000				0.0000	0.0000	0.0000
L1	0.0000	0.0000	0.0000	-0.0000	0.0000	0.0000	0.0000	-0.0000	-0.0000	-0.0000
L1A				0.0000				0.0000	0.0000	0.0000
L2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
L3	0.0000	0.0000	0.0001	0.0001	0.0000	0.0000	0.0001	0.0001	0.0000	0.0000
L4	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0000	0.0000
L5	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	-0.0000	-0.0000
L5A				0.0001				0.0001	0.0001	0.0001
L6	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0000	0.0000
L7	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0000	0.0000
L8	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0000	0.0000
L9	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0000	0.0000
L10	0.0008	0.0008	0.0008	0.0007	0.0508	0.0708	0.1108	0.1707	0.0999	0.0600
L11		0.0007	0.0007	0.0008		0.2907	0.4507	0.6908		
L11A				0.0006				0.7307		
L11B				0.0006				0.7307		
L11C				0.0006				0.7306		
U1				0.0001				0.7301		
U2				-0.0005				0.7295		
U3				-0.0014				0.7086		
U4				-0.0022				0.6978		
U5				-0.0027				0.6773		
U5A				-0.0027				0.6773		

Table E.12 continued

BKM 2 LOAD NUMBER	TOP OF PILE MOVEMENT - WIRELINE READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)	BSIGHT @0.5MIN. (inches)	TOP OF PILE MOVEMENT - SURVEY LEVEL READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)
L0				1.650				0.000	0.945				0.880				0.000
L1	1.650	1.650	1.650	1.650	0.000	0.000	0.000	0.000		0.880	0.880	0.880	0.880	0.000	0.000	0.000	0.000
L1A				1.650				0.000	0.945				0.880				0.000
L2	1.650	1.650	1.650	1.650	0.000	0.000	0.000	0.000		0.880	0.880	0.880	0.880	0.000	0.000	0.000	0.000
L3	1.650	1.650	1.650	1.650	0.000	0.000	0.000	0.000	0.945	0.880	0.880	0.880	0.880	0.000	0.000	0.000	0.000
L4	1.650	1.650	1.650	1.650	0.000	0.000	0.000	0.000		0.880	0.880	0.880	0.880	0.000	0.000	0.000	0.000
L5	1.650	1.650	1.650	1.650	0.000	0.000	0.000	0.000	0.945	0.880	0.880	0.880	0.880	0.000	0.000	0.000	0.000
L5A				1.650				0.000					0.880				0.000
L6	1.650	1.650	1.650	1.650	0.000	0.000	0.000	0.000	0.945	0.880	0.880	0.880	0.880	0.000	0.000	0.000	0.000
L7	1.650	1.650	1.650	1.650	0.000	0.000	0.000	0.000		0.880	0.880	0.880	0.880	0.000	0.000	0.000	0.000
L8	1.650	1.650	1.650	1.650	0.000	0.000	0.000	0.000	0.945	0.880	0.880	0.880	0.880	0.000	0.000	0.000	0.000
L9	1.650	1.650	1.650	1.650	0.000	0.000	0.000	0.000		0.880	0.880	0.880	0.880	0.000	0.000	0.000	0.000
L10	1.700	1.720	1.760	1.820	0.050	0.070	0.110	0.170	0.945	0.940	0.960	0.990	1.040	0.060	0.080	0.110	0.160
L11		1.940	2.100	2.340		0.290	0.450	0.690			1.160	1.310	1.570		0.280	0.430	0.690
L11A				2.380				0.730	0.945				1.600				0.720
L11B				2.380				0.730					1.600				0.720
L11C				2.380				0.730	0.945				1.600				0.720
U1				2.380				0.730					1.600				0.720
U2				2.380				0.730	0.945				1.600				0.720
U3				2.360				0.710					1.580				0.700
U4				2.350				0.700	0.945				1.570				0.690
U5				2.330				0.680					1.560				0.680
U5A				2.330				0.680	0.945				1.560				0.680

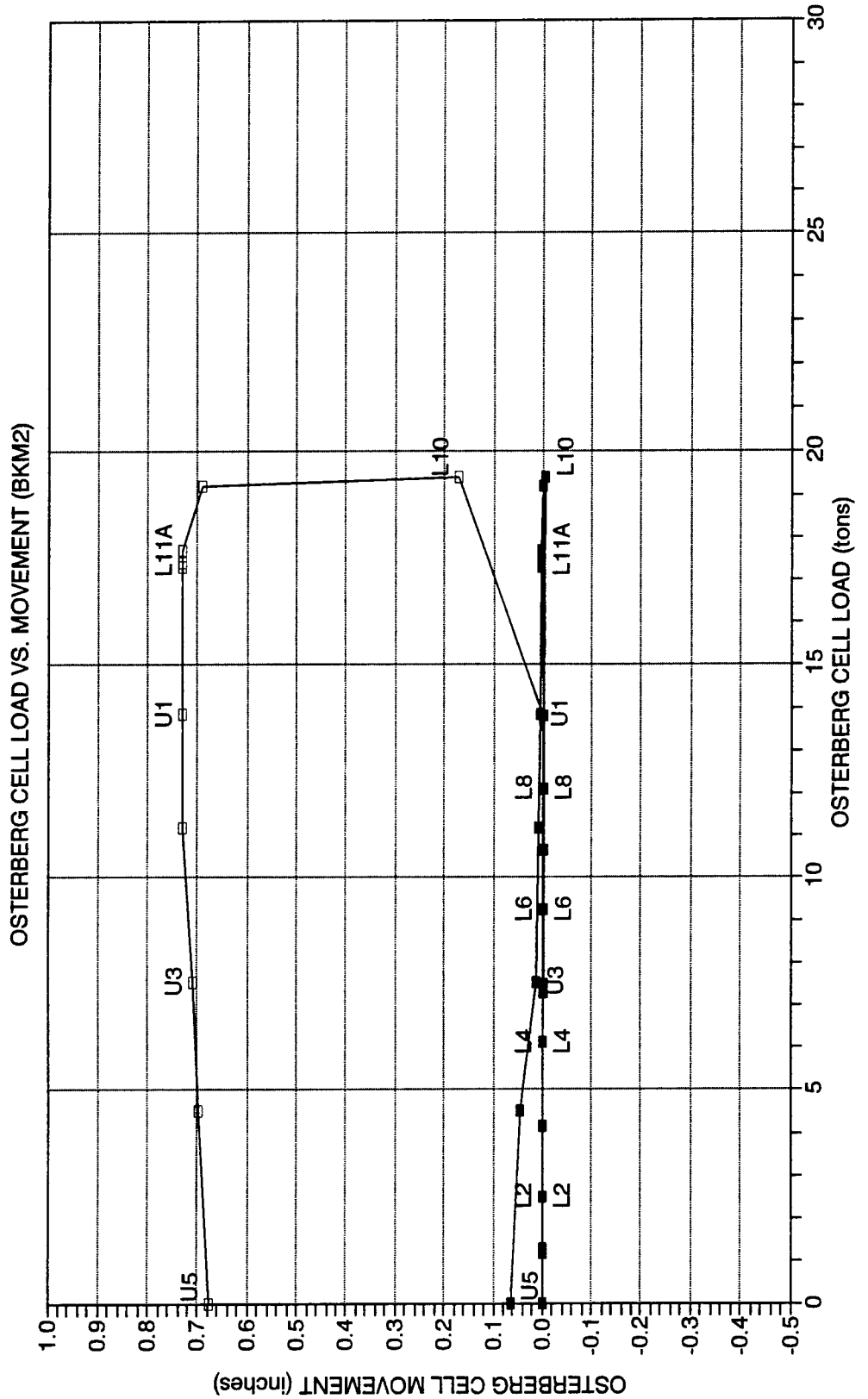


Figure E.26 Load Test 2 Movement: Buckman

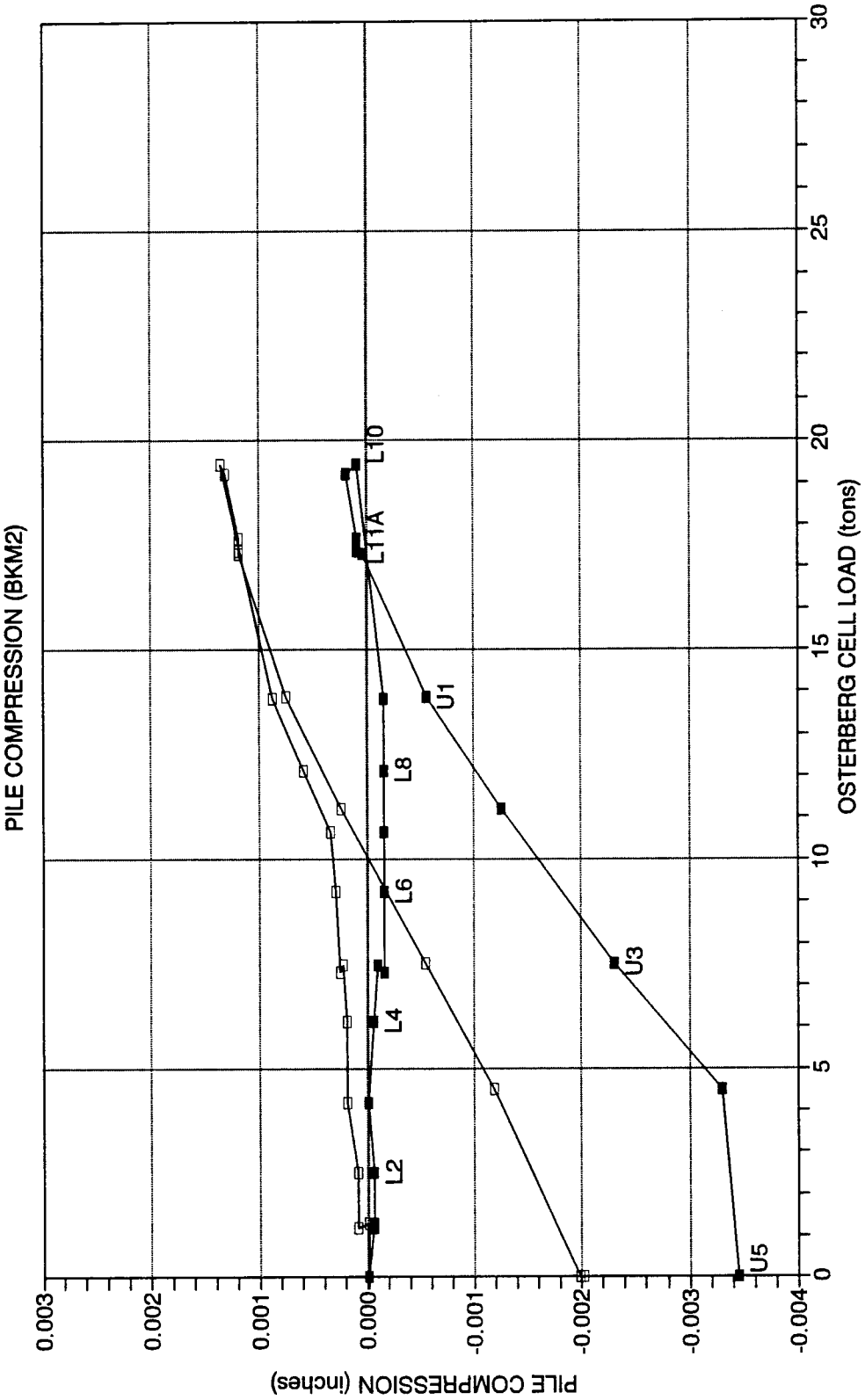


Figure E.27 Load Test 2 Compression: Buckman

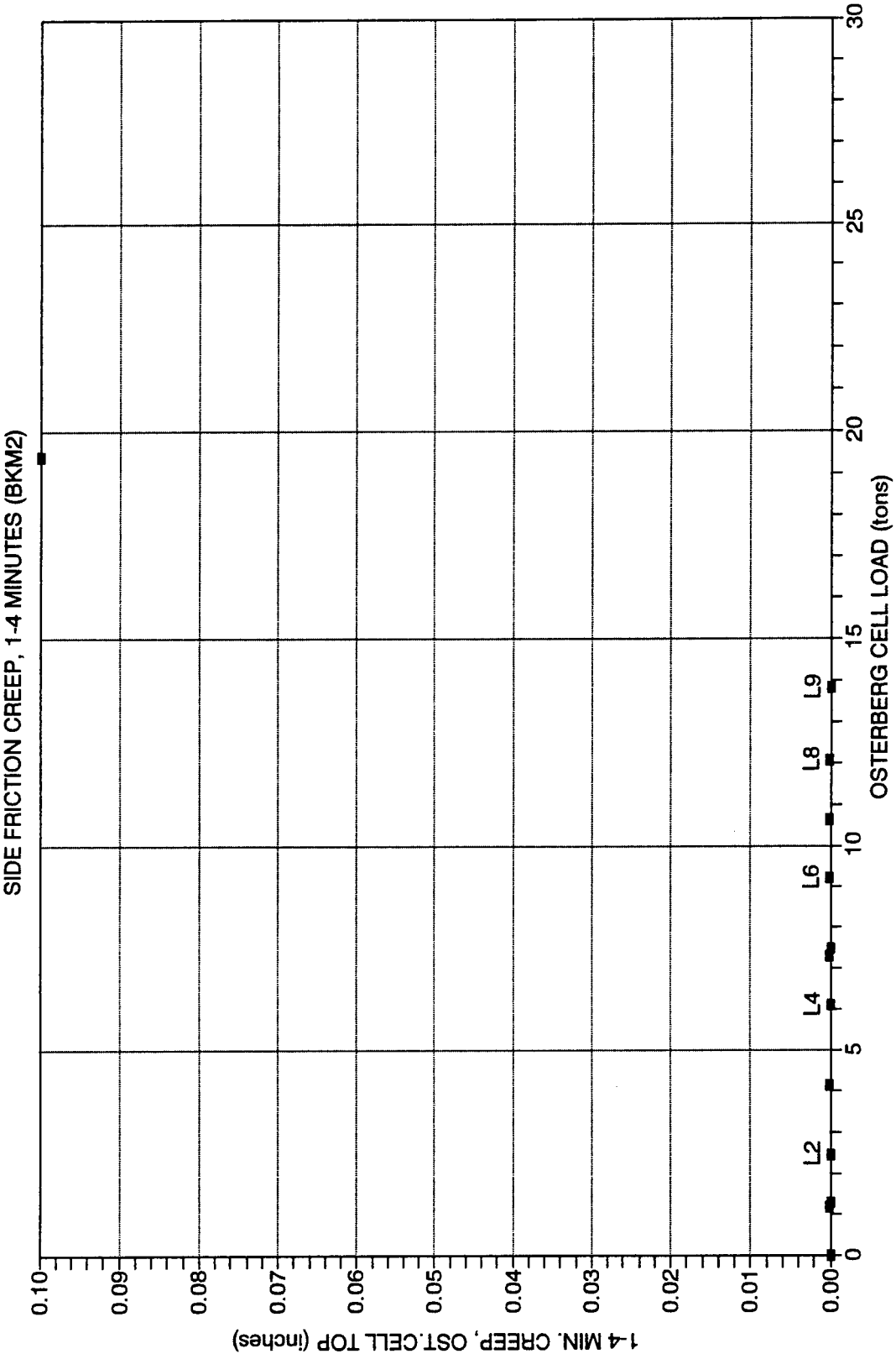


Figure E.28 Load Test 2 Creep: Buckman

Table E.13 Data for Load Test 3: Buckman

BKM 3 LOAD NUMBER	TIME INCR. (min)	OSTERBERG CELL LOAD: MEASURED PRESSURE (psi)	CORRECTED PRESSURE (psi)	VW TRANSDUCER READING (tons)	EXTENSION @4 MIN. PRESSURE (psi)	EXTENSION @4 MIN. (inches)	LOAD (tons)	OSTERBERG CELL BOTTOM TELLTALE: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)	POISSON EFFECT ADJ. (inches)	OSTERBERG CELL BOTTOM MOVEMENT: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)
L0		0	0	9127	0	1.355	0.0				0.4997	0.0000				0.0000
L1	4	25	9	9120	24	1.355	0.6	0.4997	0.4997	0.4997	0.4998	0.0002	-0.0002	-0.0002	-0.0002	-0.0003
L2	4	50	34	9102	82	1.356	2.4	0.4998	0.4998	0.4998	0.4998	0.0007	-0.0008	-0.0008	-0.0008	-0.0008
L3	4	110	93	9085	136	1.356	4.1	0.4999	0.4999	0.4999	0.4999	0.0011	-0.0013	-0.0013	-0.0013	-0.0013
L4	4	160	142	9069	187	1.357	5.7	0.4998	0.4998	0.4998	0.4998	0.0015	-0.0016	-0.0016	-0.0016	-0.0016
L5	4	220	202	9052	240	1.357	7.3	0.4998	0.4998	0.4998	0.4998	0.0019	0.0030	0.0030	0.0030	-0.0020
L6	4	275	256	9035	293	1.358	9.0	0.4998	0.4998	0.4998	0.4998	0.0024	0.0025	0.0025	0.0025	0.0025
L7	4	325	305	9019	343	1.359	10.5	0.5000	0.5000	0.5000	0.5000	0.0028	0.0019	0.0019	0.0019	0.0019
L8	4	380	360	9003	393	1.364	12.1	0.5041	0.5046	0.5046	0.5047	0.0032	-0.0026	0.0019	0.0019	0.0018
L9	4	440	419	8986	445	1.374	13.7	0.5120	0.5127	0.5127	0.5133	0.0036	-0.0059	-0.0066	-0.0066	-0.0072
L10	4	490	468	8969	497	1.384	15.3	0.5217	0.5225	0.5230	0.5231	0.0040	-0.0160	-0.0168	-0.0173	-0.0174
L11	4	550	528	8951	553	1.396	17.0	0.5320	0.5330	0.5337	0.5343	0.0045	-0.0218	-0.0228	-0.0235	-0.0191
L12	4	600	577	8935	601	1.410	18.5	0.5432	0.5446	0.5455	0.5469	0.0049	-0.0234	-0.0248	-0.0257	-0.0271
L13	4	650	627	8918	653	1.431	20.1	0.5591	0.5616	0.5642	0.5672	0.0053	-0.0347	-0.0372	-0.0348	-0.0328
L14	4	700	676	8903	699	1.698	21.5	0.5955	0.6060	0.6302	0.8340	0.0057	-0.0315	-0.0370	-0.0362	-0.0300
L14A	4	640	617	8921	644	1.769	19.8				0.9059	0.0052				-0.0264
U1	3	520	498	8961	522	1.769	16.0				0.9068	0.0042				-0.0313
U2	3	470	449	8982	457	1.768	14.0				0.9068	0.0037				-0.0308
U3	3	410	389	8998	408	1.767	12.5				0.9068	0.0033				-0.0354
U4	3	325	305	9024	328	1.753	10.0				0.8941	0.0027				-0.0271
U5	3	280	261	9041	275	1.743	8.4				0.8849	0.0022				-0.0174
U6	3	180	162	9072	178	1.719	5.4				0.8622	0.0014				0.0011
U7	3	110	93	9094	108	1.693	3.2				0.8368	0.0009				0.0120
U8	3	0	0	9128	0	1.596	0.0				0.7421	0.0000				0.0876
U8A	3	0	0	9128	0	1.594	0.0				0.7400	0.0000				0.0897

Table E.13 continued

BKM 3	OSTERBERG CELL TOP TELLTALE				PILE COMPRESSION				OSTERBERG CELL TOP TELLTALE				PILE COMPRESSION			
LOAD	TT-1	TT-1	TT-1	TT-1	TT-1	TT-1	TT-1	TT-1	TT-2	TT-2	TT-2	TT-2	TT-2	TT-2	TT-2	TT-2
NUMBER	@0.5MIN. (inches)	@1MIN. (inches)	@2MIN. (inches)	@4 MIN. (inches)	@0.5MIN. (inches)	@1MIN. (inches)	@2MIN. (inches)	@4 MIN. (inches)	@0.5MIN. (inches)	@1MIN. (inches)	@2MIN. (inches)	@4 MIN. (inches)	@0.5MIN. (inches)	@1MIN. (inches)	@2MIN. (inches)	@4 MIN. (inches)
L0				0.02000				0.00000				0.02015				0.00000
L1	0.02001	0.02001	0.02002	0.02003	0.00001	0.00001	0.00002	0.00003	0.02016	0.02017	0.02018	0.02019	0.00001	0.00002	0.00003	0.00004
L2	0.02004	0.02004	0.02004	0.02004	0.00004	0.00004	0.00004	0.00004	0.02020	0.02021	0.02021	0.02021	0.00005	0.00006	0.00006	0.00006
L3	0.02004	0.02006	0.02006	0.02009	0.00004	0.00006	0.00006	0.00009	0.02030	0.02031	0.02031	0.02032	0.00015	0.00016	0.00016	0.00017
L4	0.02009	0.02009	0.02010	0.02010	0.00009	0.00009	0.00010	0.00010	0.02043	0.02045	0.02046	0.02047	0.00028	0.00030	0.00031	0.00032
L5	0.02010	0.02010	0.02010	0.02011	0.00010	0.00010	0.00010	0.00011	0.02061	0.02065	0.02067	0.02067	0.00046	0.00050	0.00052	0.00052
L6	0.02015	0.02015	0.02015	0.02016	0.00015	0.00015	0.00015	0.00016	0.02090	0.02091	0.02091	0.02093	0.00075	0.00076	0.00076	0.00078
L7	0.02029	0.02029	0.02029	0.02029	0.00029	0.00029	0.00029	0.00029	0.02122	0.02125	0.02127	0.02131	0.00107	0.00110	0.00112	0.00116
L8	0.02050	0.02052	0.02052	0.02059	0.00050	0.00052	0.00052	0.00059	0.02165	0.02168	0.02169	0.02170	0.00150	0.00153	0.00154	0.00155
L9	0.02095	0.02099	0.02100	0.02100	0.00095	0.00099	0.00100	0.00100	0.02205	0.02209	0.02210	0.02211	0.00190	0.00194	0.00195	0.00196
L10	0.02140	0.02145	0.02146	0.02150	0.00140	0.00145	0.00146	0.00150	0.02249	0.02250	0.02250	0.02250	0.00234	0.00235	0.00235	0.00235
L11	0.02180	0.02187	0.02187	0.02188	0.00180	0.00187	0.00187	0.00188	0.02280	0.02285	0.02285	0.02287	0.00265	0.00270	0.00270	0.00272
L12	0.02213	0.02219	0.02220	0.02225	0.00213	0.00219	0.00220	0.00225	0.02320	0.02325	0.02325	0.02330	0.00305	0.00310	0.00310	0.00315
L13	0.02259	0.02262	0.02262	0.02262	0.00259	0.00262	0.00262	0.00262	0.02352	0.02353	0.02340	0.02345	0.00337	0.00338	0.00325	0.00330
L14	0.02270	0.02271	0.02281	0.02280	0.00270	0.00271	0.00281	0.00280	0.02349	0.02346	0.02340	0.02345	0.00334	0.00331	0.00325	0.00330
L14A				0.02275				0.00275				0.02341				0.00326
U1				0.02222				0.00222				0.02290				0.00275
U2				0.02190				0.00190				0.02260				0.00245
U3				0.02155				0.00155				0.02232				0.00217
U4				0.02099				0.00099				0.02187				0.00172
U5				0.02050				0.00050				0.02155				0.00140
U6				0.01963				-0.00037				0.02089				0.00074
U7				0.01908				-0.00092				0.02051				0.00036
U8				0.01831				-0.00169				0.01965				-0.00050
U8A				0.01841				-0.00159				0.01965				-0.00050

Table E.13 continued

BKM 3 LOAD NUMBER	PILE COMPRESSION TT-1 & TT-2 AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP MOVEMENT AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP CREEP 1-4 MIN (inches)	CREEP 2-4 MIN (inches)
L0				0.0000				0.0000	0.0000	0.0000
L1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
L2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
L3	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0000	0.0000
L4	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0000	0.0000
L5	0.0003	0.0003	0.0003	0.0003	0.0053	0.0053	0.0053	0.0003	-0.0050	-0.0050
L6	0.0004	0.0005	0.0005	0.0005	0.0055	0.0055	0.0055	0.0055	0.0000	0.0000
L7	0.0007	0.0007	0.0007	0.0007	0.0057	0.0057	0.0057	0.0057	0.0000	0.0000
L8	0.0010	0.0010	0.0010	0.0011	0.0060	0.0110	0.0110	0.0111	0.0000	0.0000
L9	0.0014	0.0015	0.0015	0.0015	0.0114	0.0115	0.0115	0.0115	0.0000	0.0000
L10	0.0019	0.0019	0.0019	0.0019	0.0119	0.0119	0.0119	0.0119	0.0000	0.0000
L11	0.0022	0.0023	0.0023	0.0023	0.0172	0.0173	0.0173	0.0223	0.0050	0.0050
L12	0.0026	0.0026	0.0027	0.0027	0.0276	0.0276	0.0277	0.0277	0.0001	0.0001
L13	0.0030	0.0030	0.0029	0.0030	0.0330	0.0330	0.0379	0.0430	0.0100	0.0050
L14	0.0030	0.0030	0.0030	0.0030	0.0730	0.0780	0.1030	0.3130	0.2350	0.2100
L14A				0.0030				0.3880		
U1				0.0025				0.3825		
U2				0.0022				0.3822		
U3				0.0019				0.3769		
U4				0.0014				0.3714		
U5				0.0009				0.3710		
U6				0.0002				0.3652		
U7				-0.0003				0.3497		
U8				-0.0011				0.3289		
U8A				-0.0010				0.3290		

Table E.13 continued

BKM 3 LOAD NUMBER	TOP OF PILE MOVEMENT - WIRELINE READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)	BSIGHT @0.5MIN. (inches)	TOP OF PILE MOVEMENT - SURVEY LEVEL READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)
L0				0.910				0.000	1.020				1.000				0.000
L1	0.910	0.910	0.910	0.910	0.000	0.000	0.000	0.000		1.000	1.000	1.000	1.000	0.000	0.000	0.000	0.000
L2	0.910	0.910	0.910	0.910	0.000	0.000	0.000	0.000	1.020	1.000	1.000	1.000	1.000	0.000	0.000	0.000	0.000
L3	0.910	0.910	0.910	0.910	0.000	0.000	0.000	0.000		1.000	1.000	1.000	1.000	0.000	0.000	0.000	0.000
L4	0.910	0.910	0.910	0.910	0.000	0.000	0.000	0.000	1.020	1.000	1.000	1.000	1.000	0.000	0.000	0.000	0.000
L5	0.915	0.915	0.915	0.910	0.005	0.005	0.005	0.000		1.010	1.010	1.010	1.010	0.010	0.010	0.010	0.010
L6	0.915	0.915	0.915	0.915	0.005	0.005	0.005	0.005	1.020	1.010	1.010	1.010	1.010	0.010	0.010	0.010	0.010
L7	0.915	0.915	0.915	0.915	0.005	0.005	0.005	0.005		1.010	1.010	1.010	1.010	0.010	0.010	0.010	0.010
L8	0.915	0.920	0.920	0.920	0.005	0.010	0.010	0.010	1.020	1.020	1.020	1.020	1.020	0.020	0.020	0.020	0.020
L9	0.920	0.920	0.920	0.920	0.010	0.010	0.010	0.010		1.020	1.020	1.020	1.020	0.020	0.020	0.020	0.020
L10	0.920	0.920	0.920	0.920	0.010	0.010	0.010	0.010	1.020	1.030	1.030	1.030	1.030	0.030	0.030	0.030	0.030
L11	0.925	0.925	0.925	0.930	0.015	0.015	0.015	0.020		1.040	1.040	1.040	1.040	0.040	0.040	0.040	0.040
L12	0.935	0.935	0.935	0.935	0.025	0.025	0.025	0.025	1.020	1.040	1.040	1.040	1.040	0.040	0.040	0.040	0.040
L13	0.940	0.940	0.945	0.950	0.030	0.030	0.035	0.040		1.050	1.050	1.050	1.050	0.050	0.050	0.050	0.050
L14	0.980	0.985	1.010	1.220	0.070	0.075	0.100	0.310	1.020	1.090	1.100	1.100	1.350	0.090	0.100	0.100	0.350
L14A				1.295				0.385					1.400				0.400
U1				1.290				0.380	1.020				1.400				0.400
U2				1.290				0.380					1.400				0.400
U3				1.285				0.375	1.020				1.390				0.390
U4				1.280				0.370					1.390				0.390
U5				1.280				0.370	1.020				1.380				0.380
U6				1.275				0.365					1.380				0.380
U7				1.260				0.350	1.020				1.370				0.370
U8				1.240				0.330					1.350				0.350
U8A				1.240				0.330	1.020				1.350				0.350

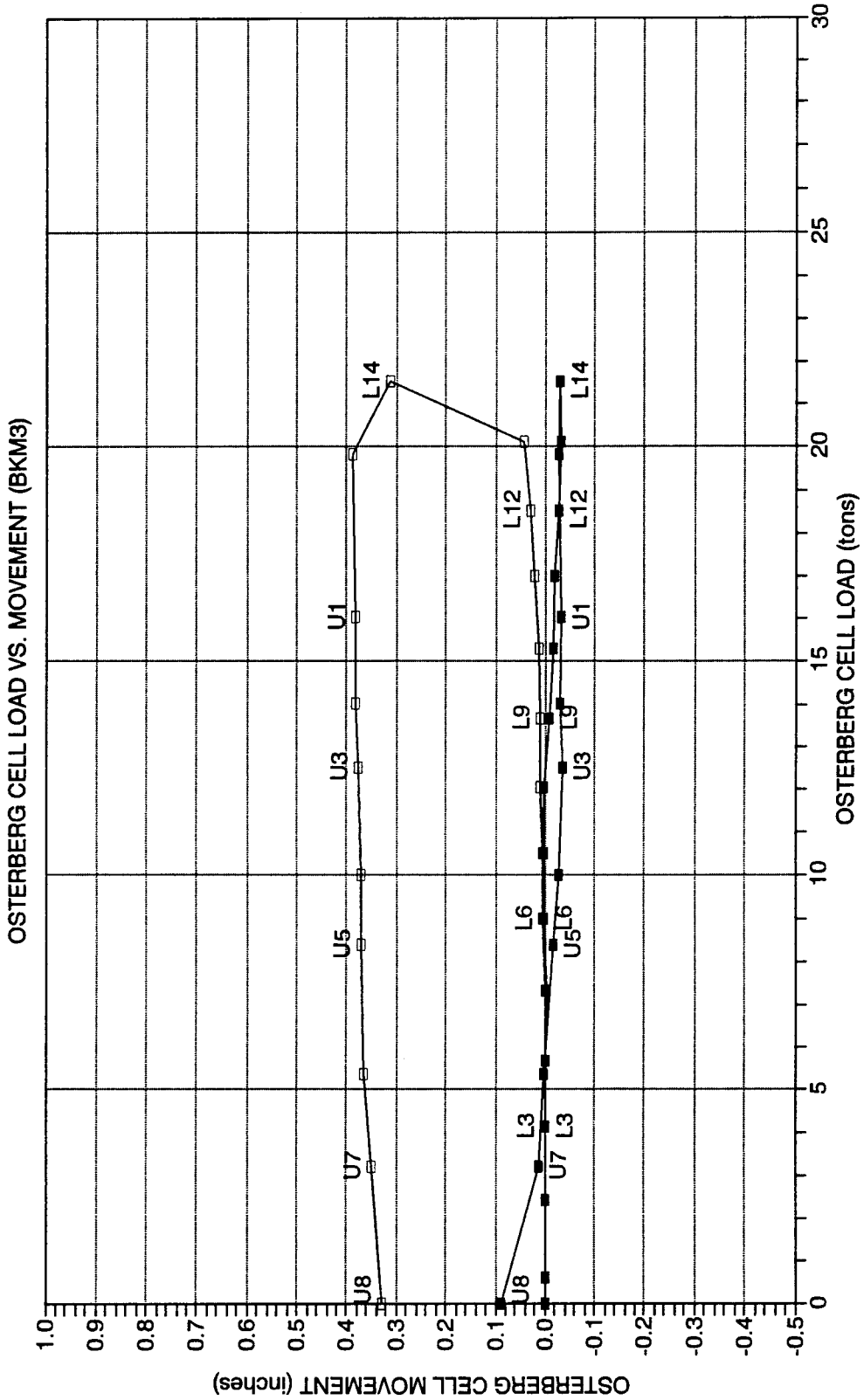


Figure E.29 Load Test 3 Movement: Buckman

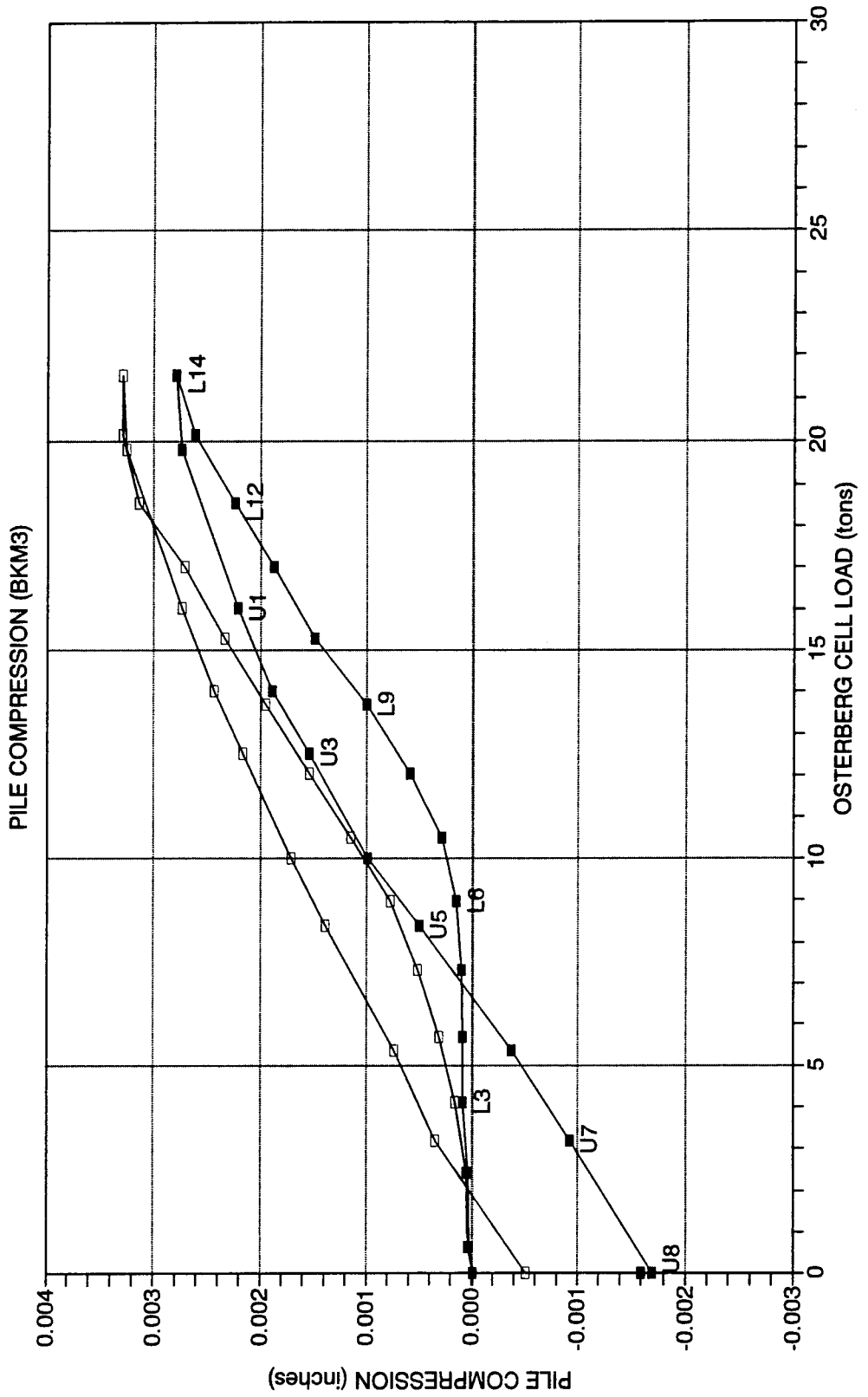


Figure E.30 Load Test 3 Compression: Buckman

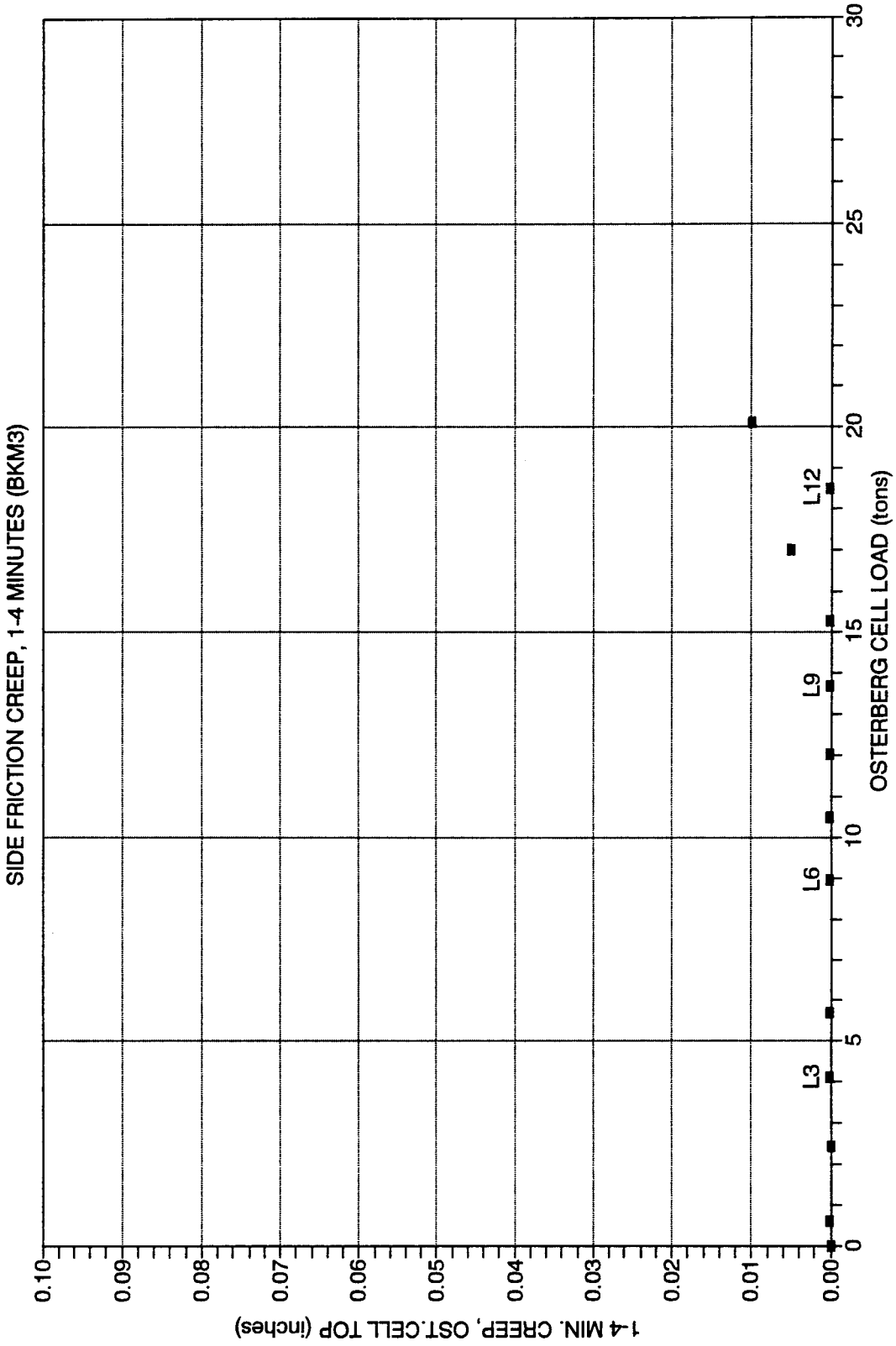


Figure E.31 Load Test 3 Creep: Buckman

Table E.14 Data for Load Test 4: Buckman

BKM 4 LOAD NUMBER	TIME INCR. (min)	OSTERBERG CELL LOAD: MEASURED PRESSURE (psi)	CORRECTED PRESSURE (psi)	VW TRANSDUCER READING (tons)	PRESSURE (psi)	EXTENSION @4 MIN. (inches)	LOAD (tons)	OSTERBERG CELL BOTTOM TELLTALE: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)	POISSON EFFECT ADJ. (inches)	OSTERBERG CELL BOTTOM MOVEMENT: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)
L0		-10	0	9130	0	1.594	0.0				0.4991	0.0000				0.0000
L1	4	130	113	9082	155	1.595	4.7	0.4991	0.4991	0.4991	0.4991	0.0013	-0.0013	-0.0013	-0.0013	-0.0013
L2	4	160	142	9072	187	1.596	5.7	0.4991	0.4991	0.4991	0.4991	0.0015	-0.0015	-0.0015	-0.0015	-0.0015
L3	4	205	187	9055	240	1.602	7.3	0.5040	0.5043	0.5045	0.5050	0.0019	-0.0068	-0.0071	-0.0073	-0.0078
L4	4	270	251	9038	293	1.613	9.0	0.5137	0.5138	0.5142	0.5148	0.0024	-0.0120	-0.0121	-0.0125	-0.0131
L5	4	320	300	9021	346	1.624	10.6	0.5234	0.5238	0.5242	0.5246	0.0028	-0.0221	-0.0225	-0.0229	-0.0233
L6	4	380	360	9005	396	1.634	12.1	0.5325	0.5330	0.5333	0.5340	0.0032	-0.0316	-0.0321	-0.0324	-0.0331
L7	4	440	419	8988	448	1.644	13.8	0.5417	0.5422	0.5429	0.5438	0.0036	-0.0412	-0.0417	-0.0424	-0.0433
L8	4	495	473	8971	500	1.656	15.4	0.5522	0.5530	0.5537	0.5547	0.0041	-0.0522	-0.0530	-0.0537	-0.0547
L9	4	540	518	8955	549	1.668	16.9	0.5638	0.5642	0.5650	0.5663	0.0044	-0.0591	-0.0595	-0.0603	-0.0566
L10	4	600	577	8937	605	1.681	18.6	0.5753	0.5762	0.5776	0.5783	0.0049	-0.0611	-0.0620	-0.0634	-0.0641
L11	4	640	617	8921	653	1.695	20.1	0.5878	0.5890	0.5901	0.5914	0.0053	-0.0690	-0.0702	-0.0713	-0.0726
L12	4	700	676	8905	702	1.712	21.6	0.6021	0.6035	0.6053	0.6077	0.0057	-0.0787	-0.0801	-0.0819	-0.0793
L13	4	750	725	8887	757	1.738	23.3	0.6215	0.6240	0.6277	0.6322	0.0061	-0.0835	-0.0860	-0.0897	-0.0892
L14	4	800	775	8870	809	1.841	24.9	0.6612	0.6699	0.6865	0.7355	0.0065	-0.0936	-0.0923	-0.0889	-0.0929
L14A	2	800	775	8879	781	2.041	24.0				0.9350	0.0063				-0.0972
L14B	0.5	740	715	8890	748	2.140	23.0				1.0350	0.0061				-0.0920
L14C	4	745	720	8890	748	2.147	23.0				1.0420	0.0061				-0.0890
U1	3	570	548	8950	565	2.150	17.3				1.0472	0.0046				-0.0927
U2	3	380	360	9011	377	2.130	11.5				1.0294	0.0031				-0.0784
U3	3	300	281	9036	300	2.117	9.1				1.0172	0.0024				-0.0705
U4	3	190	172	9071	190	2.093	5.7				0.9955	0.0015				-0.0529
U5	3	100	83	9096	111	2.065	3.3				0.9689	0.0009				-0.0357
U6	3	0	0	9130	0	1.987	0.0				0.8923	0.0000				0.0318
U6A	4	0	0	9130	0	1.984	0.0				0.8890	0.0000				0.0301

Table E.14 continued

BKM 4 LOAD NUMBER	OSTERBERG CELL TOP TELLTALE TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	PILE COMPRESSION TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	OSTERBERG CELL TOP TELLTALE TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)	PILE COMPRESSION TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)
L0				0.02010				0.00000				0.02010				0.00000
L1	0.02010	0.02010	0.02010	0.02010	0.00000	0.00000	0.00000	0.00000	0.02040	0.02040	0.02040	0.02040	0.00030	0.00030	0.00030	0.00030
L2	0.02010	0.02010	0.02010	0.02010	0.00000	0.00000	0.00000	0.00000	0.02060	0.02060	0.02060	0.02070	0.00050	0.00050	0.00050	0.00060
L3	0.02030	0.02030	0.02030	0.02030	0.00020	0.00020	0.00020	0.00020	0.02100	0.02100	0.02100	0.02100	0.00090	0.00090	0.00090	0.00090
L4	0.02050	0.02060	0.02060	0.02060	0.00040	0.00050	0.00050	0.00050	0.02110	0.02110	0.02110	0.02110	0.00100	0.00100	0.00100	0.00100
L5	0.02080	0.02090	0.02090	0.02090	0.00070	0.00080	0.00080	0.00080	0.02160	0.02170	0.02170	0.02180	0.00150	0.00160	0.00160	0.00170
L6	0.02130	0.02130	0.02130	0.02140	0.00120	0.00120	0.00120	0.00130	0.02200	0.02200	0.02200	0.02210	0.00190	0.00190	0.00190	0.00200
L7	0.02170	0.02180	0.02180	0.02180	0.00160	0.00170	0.00170	0.00170	0.02220	0.02230	0.02230	0.02230	0.00210	0.00220	0.00220	0.00220
L8	0.02210	0.02210	0.02220	0.02220	0.00200	0.00200	0.00210	0.00210	0.02280	0.02280	0.02290	0.02290	0.00270	0.00270	0.00280	0.00280
L9	0.02260	0.02260	0.02260	0.02270	0.00250	0.00250	0.00250	0.00260	0.02310	0.02310	0.02310	0.02310	0.00300	0.00300	0.00300	0.00300
L10	0.02290	0.02290	0.02290	0.02290	0.00280	0.00280	0.00280	0.00280	0.02360	0.02370	0.02370	0.02370	0.00350	0.00360	0.00360	0.00360
L11	0.02340	0.02340	0.02350	0.02350	0.00330	0.00330	0.00340	0.00340	0.02400	0.02400	0.02400	0.02400	0.00390	0.00390	0.00390	0.00390
L12	0.02380	0.02380	0.02380	0.02390	0.00370	0.00370	0.00370	0.00380	0.02410	0.02410	0.02410	0.02410	0.00400	0.00400	0.00400	0.00400
L13	0.02410	0.02420	0.02430	0.02430	0.00400	0.00410	0.00420	0.00420	0.02440	0.02440	0.02450	0.02450	0.00430	0.00430	0.00440	0.00440
L14	0.02450	0.02450	0.02460	0.02470	0.00440	0.00440	0.00450	0.00460	0.02450	0.02450	0.02440	0.02420	0.00440	0.00440	0.00430	0.00410
L14A				0.02490				0.00480				0.02410				0.00400
L14B				0.02490				0.00480				0.02410				0.00400
L14C				0.02490				0.00480				0.02410				0.00400
U1				0.02430				0.00420				0.02330				0.00320
U2				0.02300				0.00290				0.02220				0.00210
U3				0.02240				0.00230				0.02180				0.00170
U4				0.02140				0.00130				0.02100				0.00090
U5				0.02060				0.00050				0.02050				0.00040
U6				0.01980				-0.00030				0.01970				-0.00040
U6A				0.01980				-0.00030				0.01960				-0.00050

Table E.14 continued

BKM 4 LOAD NUMBER	PILE COMPRESSION TT-1 & TT-2 AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP MOVEMENT AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP CREEP 1-4 MIN (inches)	CREEP 2-4 MIN (inches)
L0				0.0000				0.0000	0.0000	0.0000
L1	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0000	0.0000
L2	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0000	0.0000
L3	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0000	0.0000
L4	0.0007	0.0008	0.0008	0.0008	0.0057	0.0058	0.0058	0.0058	0.0000	0.0000
L5	0.0011	0.0012	0.0012	0.0012	0.0061	0.0062	0.0062	0.0063	0.0000	0.0000
L6	0.0015	0.0015	0.0015	0.0017	0.0066	0.0066	0.0066	0.0067	0.0001	0.0001
L7	0.0019	0.0020	0.0020	0.0020	0.0069	0.0070	0.0070	0.0070	0.0000	0.0000
L8	0.0024	0.0024	0.0025	0.0025	0.0074	0.0074	0.0075	0.0075	0.0001	0.0000
L9	0.0027	0.0027	0.0027	0.0028	0.0128	0.0128	0.0128	0.0178	0.0051	0.0051
L10	0.0032	0.0032	0.0032	0.0032	0.0232	0.0232	0.0232	0.0232	0.0000	0.0000
L11	0.0036	0.0036	0.0037	0.0037	0.0286	0.0286	0.0287	0.0287	0.0001	0.0000
L12	0.0039	0.0039	0.0039	0.0039	0.0339	0.0339	0.0339	0.0389	0.0051	0.0051
L13	0.0042	0.0042	0.0043	0.0043	0.0492	0.0492	0.0493	0.0543	0.0051	0.0050
L14	0.0044	0.0044	0.0044	0.0044	0.0794	0.0894	0.1094	0.1544	0.0649	0.0450
L14A				0.0044				0.3494		
L14B				0.0044				0.4544		
L14C				0.0044				0.4644		
U1				0.0037				0.4637		
U2				0.0025				0.4575		
U3				0.0020				0.4520		
U4				0.0011				0.4461		
U5				0.0005				0.4355		
U6				-0.0003				0.4247		
U6A				-0.0004				0.4196		

Table E.14 continued

BKM 4 LOAD NUMBER	TOP OF PILE MOVEMENT - WIRELINE READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)	TOP OF PILE MOVEMENT - SURVEY LEVEL BSIGHT @0.5MIN. (inches)	READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)
L0				1.035				0.000	1.000				0.940				0.000
L1	1.035	1.035	1.035	1.035	0.000	0.000	0.000	0.000	1.000	0.940	0.940	0.940	0.940	0.000	0.000	0.000	0.000
L2	1.035	1.035	1.035	1.035	0.000	0.000	0.000	0.000		0.940	0.940	0.940	0.940	0.000	0.000	0.000	0.000
L3	1.035	1.035	1.035	1.035	0.000	0.000	0.000	0.000	1.000	0.940	0.940	0.940	0.940	0.000	0.000	0.000	0.000
L4	1.040	1.040	1.040	1.040	0.005	0.005	0.005	0.005		0.940	0.940	0.940	0.940	0.000	0.000	0.000	0.000
L5	1.040	1.040	1.040	1.040	0.005	0.005	0.005	0.005	1.000	0.940	0.940	0.940	0.940	0.000	0.000	0.000	0.000
L6	1.040	1.040	1.040	1.040	0.005	0.005	0.005	0.005		0.940	0.940	0.940	0.940	0.000	0.000	0.000	0.000
L7	1.040	1.040	1.040	1.040	0.005	0.005	0.005	0.005	1.000	0.950	0.950	0.950	0.950	0.010	0.010	0.010	0.010
L8	1.040	1.040	1.040	1.040	0.005	0.005	0.005	0.005		0.950	0.950	0.950	0.960	0.010	0.010	0.010	0.020
L9	1.045	1.045	1.045	1.050	0.010	0.010	0.010	0.015	1.000	0.960	0.960	0.960	0.960	0.020	0.020	0.020	0.020
L10	1.055	1.055	1.055	1.055	0.020	0.020	0.020	0.020		0.970	0.970	0.970	0.970	0.030	0.030	0.030	0.030
L11	1.060	1.060	1.060	1.060	0.025	0.025	0.025	0.025	1.000	0.970	0.970	0.970	0.980	0.030	0.030	0.030	0.040
L12	1.065	1.065	1.065	1.070	0.030	0.030	0.030	0.035		0.980	0.980	0.980	0.980	0.040	0.040	0.040	0.040
L13	1.080	1.080	1.080	1.085	0.045	0.045	0.045	0.050	1.000	0.990	0.990	0.990	1.000	0.050	0.050	0.050	0.060
L14	1.110	1.120	1.140	1.185	0.075	0.085	0.105	0.150		1.010	1.020	1.040	1.100	0.070	0.080	0.100	0.160
L14A				1.380				0.345	1.000				1.300				0.360
L14B				1.485				0.450	1.000				1.400				0.460
L14C				1.495				0.460					1.400				0.460
U1				1.495				0.460	1.000				1.400				0.460
U2				1.490				0.455					1.400				0.460
U3				1.485				0.450	1.000				1.390				0.450
U4				1.480				0.445					1.380				0.440
U5				1.470				0.435	1.000				1.370				0.430
U6				1.460				0.425					1.360				0.420
U6A				1.455				0.420					1.360				0.420

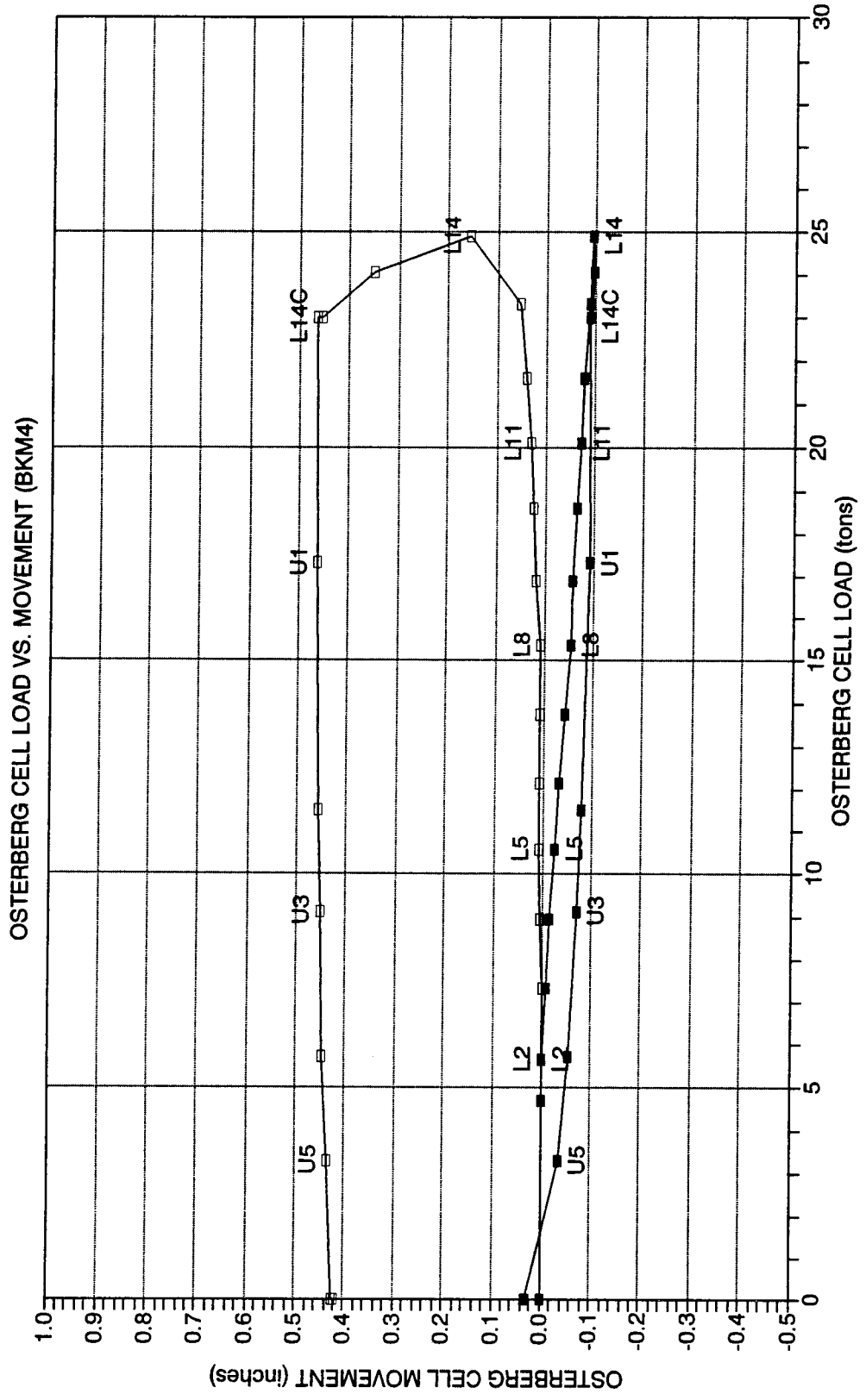


Figure E.32 Load Test 4 Movement: Buckman

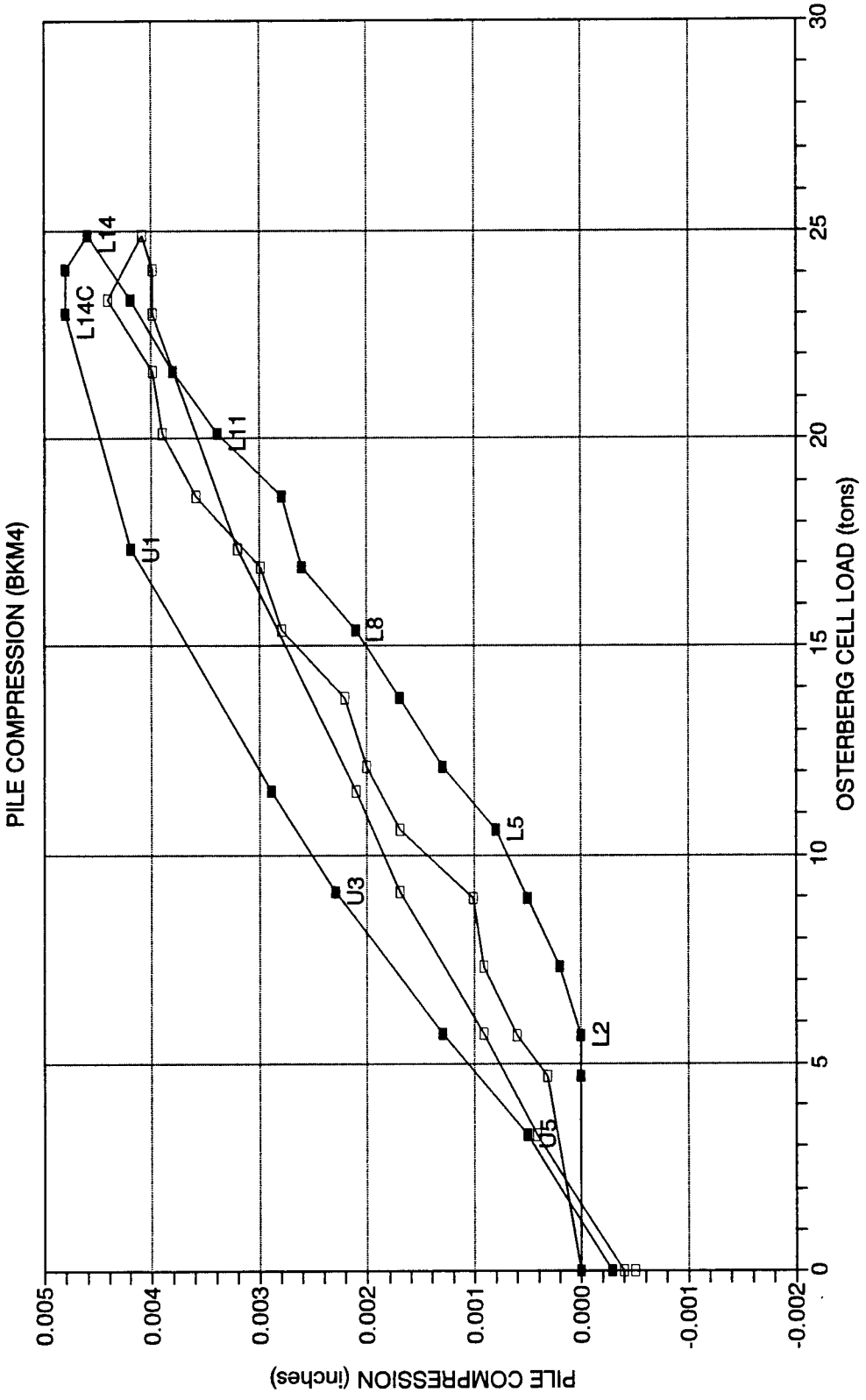


Figure E.33 Load Test 4 Compression: Buckman

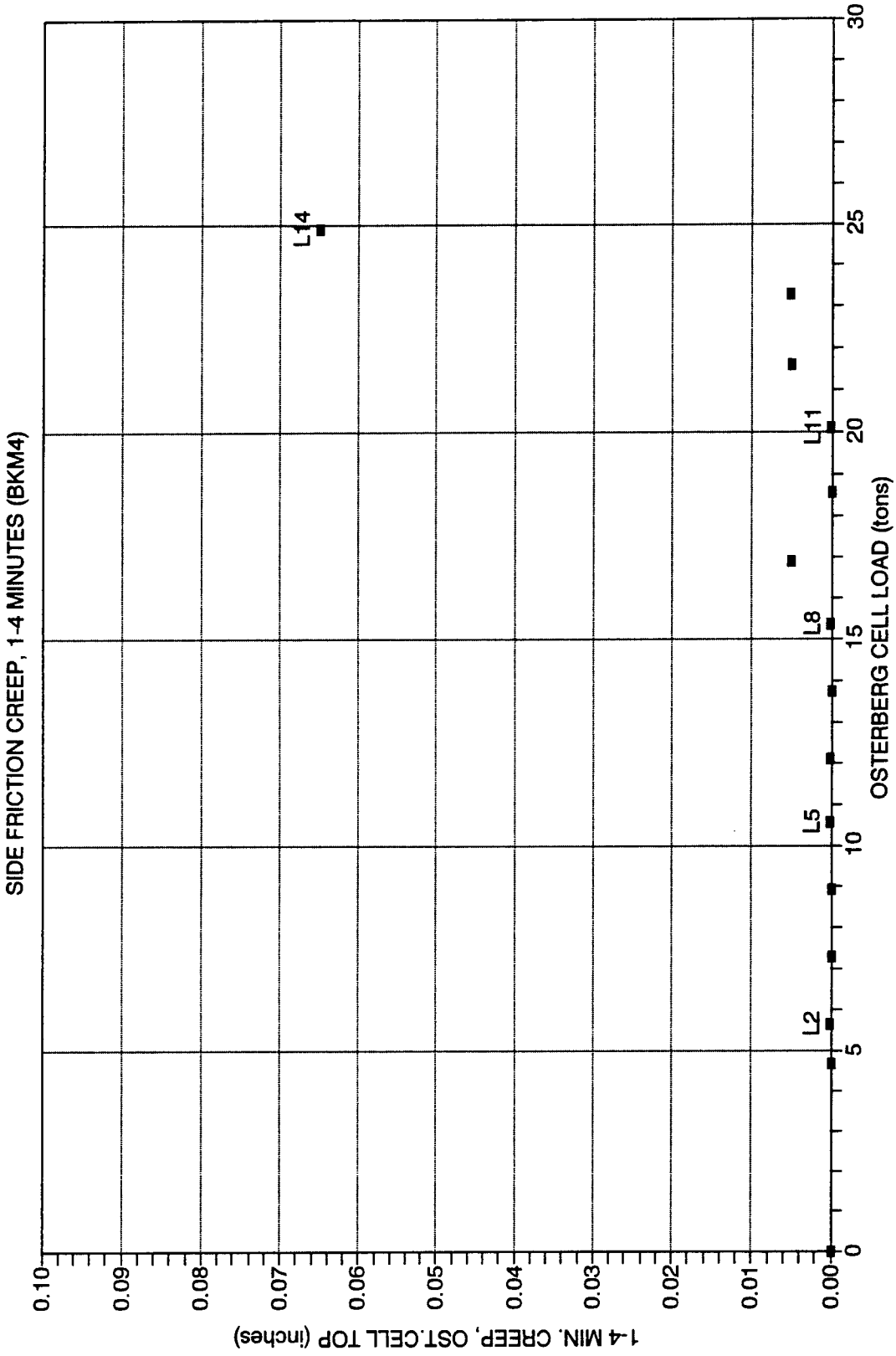


Figure E.34 Load Test 4 Creep: Buckman

Table E.15 Data for Load Test 5: Buckman

BKM 5 LOAD NUMBER	TIME INCR. (min)	OSTERBERG CELL LOAD: MEASURED PRESSURE (psi)	CORRECTED PRESSURE (psi)	VW TRANSDUCER READING (tons)	PRESSURE (psi)	EXTENSION @4 MIN. (inches)	LOAD (tons)	OSTERBERG CELL BOTTOM TELLTALE: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)	POISSON EFFECT ADJ. (inches)	OSTERBERG CELL BOTTOM MOVEMENT: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)
L0		0	0	9122	0	1.984	0.0				0.1999	0.0000				0.0000
L1	4	50	34	9108	47	1.984	1.3	0.1999	0.1999	0.1999	0.1999	0.0004	-0.0004	-0.0004	-0.0004	-0.0004
L2	4	70	53	9097	82	1.985	2.4	0.1999	0.1999	0.1999	0.1999	0.0007	-0.0007	-0.0007	-0.0007	-0.0007
L3	4	100	83	9080	136	1.993	4.1	0.2065	0.2068	0.2074	0.2075	0.0011	-0.0077	-0.0080	-0.0086	-0.0087
L4	4	130	113	9064	187	2.004	5.6	0.2162	0.2167	0.2169	0.2174	0.0015	-0.0128	-0.0133	-0.0135	-0.0140
L5	4	180	162	9047	240	2.015	7.3	0.2263	0.2266	0.2272	0.2276	0.0019	-0.0233	-0.0236	-0.0242	-0.0246
L6	4	240	221	9030	293	2.027	8.9	0.2368	0.2372	0.2379	0.2388	0.0024	-0.0293	-0.0297	-0.0304	-0.0313
L7	4	300	281	9013	346	2.038	10.6	0.2465	0.2475	0.2484	0.2495	0.0028	-0.0394	-0.0404	-0.0413	-0.0424
L8	4	360	340	8997	396	2.049	12.1	0.2568	0.2575	0.2588	0.2592	0.0032	-0.0501	-0.0508	-0.0521	-0.0525
L9	4	400	380	8980	448	2.061	13.7	0.2671	0.2682	0.2694	0.2704	0.0036	-0.0558	-0.0569	-0.0581	-0.0591
L10	4	460	439	8963	500	2.072	15.3	0.2779	0.2782	0.2794	0.2809	0.0041	-0.0621	-0.0574	-0.0586	-0.0601
L11	4	520	498	8946	553	2.085	17.0	0.2890	0.2900	0.2912	0.2929	0.0045	-0.0636	-0.0646	-0.0658	-0.0675
L12	4	580	557	8929	605	2.098	18.6	0.3003	0.3019	0.3031	0.3050	0.0049	-0.0753	-0.0769	-0.0781	-0.0800
L13	4	620	597	8913	653	2.111	20.1	0.3125	0.3145	0.3150	0.3169	0.0053	-0.0779	-0.0799	-0.0804	-0.0823
L14	4	680	656	8896	705	2.126	21.7	0.3263	0.3277	0.3297	0.3318	0.0057	-0.0871	-0.0855	-0.0855	-0.0876
L15	4	740	715	8879	757	2.142	23.3	0.3411	0.3425	0.3449	0.3473	0.0061	-0.0973	-0.0987	-0.1011	-0.0985
L16	4	790	765	8862	809	2.170	24.9	0.3604	0.3631	0.3671	0.3735	0.0065	-0.0970	-0.0997	-0.1037	-0.1101
L17	4	830	804	8846	857	2.319	26.4	0.3948	0.4028	0.4173	0.5220	0.0069	-0.1118	-0.1098	-0.1143	-0.1090
L17A	5	830	804	8846	857	2.636	26.4				0.8388	0.0069				-0.0958
U1	3	800	775	8853	836	2.654	25.7				0.8578	0.0068				-0.1147
U2	3	620	597	8917	641	2.652	19.7				0.8578	0.0052				-0.1131
U3	3	90	73	9095	89	2.561	2.5				0.7743	0.0007				-0.0551
U4	3	0	0	9123	0	2.473	0.0				0.6885	0.0000				0.0114
U4A	3	0	0	9124	0	2.470	0.0				0.6852	0.0000				0.0147

Table E.15 continued

BKM 5 LOAD NUMBER	OSTERBERG CELL TOP TELLTALE TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	PILE COMPRESSION TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	OSTERBERG CELL TOP TELLTALE TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)	PILE COMPRESSION TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)
L0				0.00990				0.00000				0.01000				0.00000
L1	0.00990	0.00990	0.00990	0.00990	0.00000	0.00000	0.00000	0.00000	0.01015	0.01015	0.01015	0.01015	0.00015	0.00015	0.00015	0.00015
L2	0.00990	0.00990	0.00990	0.00990	0.00000	0.00000	0.00000	0.00000	0.01029	0.01030	0.01031	0.01031	0.00029	0.00030	0.00031	0.00031
L3	0.01020	0.01022	0.01030	0.01031	0.00030	0.00032	0.00040	0.00041	0.01050	0.01050	0.01055	0.01058	0.00050	0.00050	0.00055	0.00058
L4	0.01060	0.01060	0.01060	0.01060	0.00070	0.00070	0.00070	0.00070	0.01071	0.01079	0.01079	0.01079	0.00071	0.00079	0.00079	0.00079
L5	0.01080	0.01080	0.01081	0.01090	0.00090	0.00090	0.00091	0.00100	0.01110	0.01110	0.01120	0.01120	0.00110	0.00110	0.00120	0.00120
L6	0.01120	0.01120	0.01120	0.01130	0.00130	0.00130	0.00130	0.00140	0.01152	0.01152	0.01158	0.01162	0.00152	0.00152	0.00158	0.00162
L7	0.01170	0.01172	0.01178	0.01178	0.00180	0.00182	0.00188	0.00188	0.01180	0.01181	0.01182	0.01190	0.00180	0.00181	0.00182	0.00190
L8	0.01190	0.01190	0.01191	0.01205	0.00200	0.00200	0.00201	0.00215	0.01230	0.01235	0.01242	0.01245	0.00230	0.00235	0.00242	0.00245
L9	0.01260	0.01260	0.01261	0.01268	0.00270	0.00270	0.00271	0.00278	0.01270	0.01270	0.01270	0.01275	0.00270	0.00270	0.00270	0.00275
L10	0.01290	0.01290	0.01290	0.01290	0.00300	0.00300	0.00300	0.00300	0.01296	0.01300	0.01305	0.01310	0.00296	0.00300	0.00305	0.00310
L11	0.01350	0.01351	0.01352	0.01358	0.00360	0.00361	0.00362	0.00368	0.01340	0.01341	0.01345	0.01350	0.00340	0.00341	0.00345	0.00350
L12	0.01385	0.01387	0.01390	0.01390	0.00395	0.00397	0.00400	0.00400	0.01371	0.01375	0.01380	0.01380	0.00371	0.00375	0.00380	0.00380
L13	0.01422	0.01428	0.01430	0.01439	0.00432	0.00438	0.00440	0.00449	0.01415	0.01420	0.01425	0.01430	0.00415	0.00420	0.00425	0.00430
L14	0.01471	0.01472	0.01472	0.01475	0.00481	0.00482	0.00482	0.00485	0.01458	0.01460	0.01461	0.01470	0.00458	0.00460	0.00461	0.00470
L15	0.01490	0.01490	0.01490	0.01492	0.00500	0.00500	0.00500	0.00502	0.01480	0.01480	0.01480	0.01480	0.00480	0.00480	0.00480	0.00480
L16	0.01550	0.01552	0.01562	0.01575	0.00560	0.00562	0.00572	0.00585	0.01500	0.01500	0.01500	0.01500	0.00500	0.00500	0.00500	0.00500
L17	0.01590	0.01590	0.01595	0.01635	0.00600	0.00600	0.00605	0.00645	0.01500	0.01500	0.01500	0.01495	0.00500	0.00500	0.00500	0.00495
L17A				0.01661				0.00671				0.01499				0.00499
U1				0.01661				0.00671				0.01495				0.00495
U2				0.01590				0.00600				0.01430				0.00430
U3				0.01190				0.00200				0.01105				0.00105
U4				0.01091				0.00101				0.01049				0.00049
U4A				0.01091				0.00101				0.01029				0.00029

Table E.15 continued

BKM 5 LOAD NUMBER	PILE COMPRESSION TT-1 & TT-2 AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP MOVEMENT AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP CREEP 1-4 MIN (inches)	CREEP 2-4 MIN (inches)
L0				0.0000				0.0000	0.0000	0.0000
L1	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0000	0.0000
L2	0.0001	0.0001	0.0002	0.0002	0.0001	0.0001	0.0002	0.0002	0.0000	0.0000
L3	0.0004	0.0004	0.0005	0.0005	0.0004	0.0004	0.0005	0.0005	0.0001	0.0000
L4	0.0007	0.0007	0.0007	0.0007	0.0057	0.0057	0.0057	0.0057	0.0000	0.0000
L5	0.0010	0.0010	0.0011	0.0011	0.0060	0.0060	0.0061	0.0061	0.0001	0.0000
L6	0.0014	0.0014	0.0014	0.0015	0.0114	0.0114	0.0114	0.0115	0.0001	0.0001
L7	0.0018	0.0018	0.0019	0.0019	0.0118	0.0118	0.0119	0.0119	0.0001	0.0000
L8	0.0022	0.0022	0.0022	0.0023	0.0122	0.0122	0.0122	0.0123	0.0001	0.0001
L9	0.0027	0.0027	0.0027	0.0028	0.0177	0.0177	0.0177	0.0178	0.0001	0.0001
L10	0.0030	0.0030	0.0030	0.0031	0.0230	0.0280	0.0280	0.0281	0.0001	0.0000
L11	0.0035	0.0035	0.0035	0.0036	0.0335	0.0335	0.0335	0.0336	0.0001	0.0001
L12	0.0038	0.0039	0.0039	0.0039	0.0338	0.0339	0.0339	0.0339	0.0000	0.0000
L13	0.0042	0.0043	0.0043	0.0044	0.0442	0.0443	0.0443	0.0444	0.0001	0.0001
L14	0.0047	0.0047	0.0047	0.0048	0.0497	0.0527	0.0547	0.0548	0.0021	0.0001
L15	0.0049	0.0049	0.0049	0.0049	0.0549	0.0549	0.0549	0.0599	0.0050	0.0050
L16	0.0053	0.0053	0.0054	0.0054	0.0753	0.0753	0.0754	0.0754	0.0001	0.0001
L17	0.0055	0.0055	0.0055	0.0057	0.0955	0.1055	0.1155	0.2257	0.1202	0.1102
L17A				0.0059				0.5559		
U1				0.0058				0.5558		
U2				0.0052				0.5552		
U3				0.0015				0.5215		
U4				0.0007				0.5008		
U4A				0.0006				0.5007		

Table E.15 continued

BKM 5 LOAD NUMBER	TOP OF PILE MOVEMENT - WIRELINE READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)	BSIGHT @0.5MIN. (inches)	TOP OF PILE MOVEMENT - SURVEY LEVEL READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)
L0				0.000				0.000	1.220				0.995				0.000
L1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.995	1.000	1.000	1.000	0.000	0.005	0.005	0.005
L2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.220	1.000	1.000	1.000	1.000	0.005	0.005	0.005	0.005
L3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		1.000	1.005	1.005	1.005	0.005	0.010	0.010	0.010
L4	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	1.220	1.005	1.005	1.005	1.005	0.010	0.010	0.010	0.010
L5	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005		1.005	1.005	1.005	1.005	0.010	0.010	0.010	0.010
L6	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	1.220	1.005	1.005	1.005	1.005	0.010	0.010	0.010	0.010
L7	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010		1.005	1.005	1.005	1.010	0.010	0.010	0.010	0.015
L8	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	1.220	1.010	1.010	1.010	1.010	0.015	0.015	0.015	0.015
L9	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015		1.015	1.015	1.015	1.015	0.020	0.020	0.020	0.020
L10	0.020	0.025	0.025	0.025	0.020	0.025	0.025	0.025	1.220	1.020	1.020	1.020	1.020	0.025	0.025	0.025	0.025
L11	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030		1.020	1.020	1.020	1.020	0.025	0.025	0.025	0.025
L12	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	1.220	1.030	1.030	1.030	1.030	0.035	0.035	0.035	0.035
L13	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040		1.030	1.030	1.030	1.035	0.035	0.035	0.035	0.040
L14	0.045	0.048	0.050	0.050	0.045	0.048	0.050	0.050	1.220	1.035	1.040	1.040	1.040	0.040	0.045	0.045	0.045
L15	0.050	0.050	0.050	0.055	0.050	0.050	0.050	0.055		1.040	1.045	1.045	1.045	0.045	0.050	0.050	0.050
L16	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070	1.220	1.050	1.050	1.060	1.070	0.055	0.055	0.065	0.075
L17	0.090	0.100	0.110	0.220	0.090	0.100	0.110	0.220		1.085	1.085	1.105	1.250	0.090	0.090	0.110	0.255
L17A				0.550				0.550	1.220				1.530				0.535
U1				0.550				0.550					1.550				0.555
U2				0.550				0.550	1.220				1.550				0.555
U3				0.520				0.520					1.500				0.505
U4				0.500				0.500					1.485				0.490
U4A				0.500				0.500	1.220				1.480				0.485

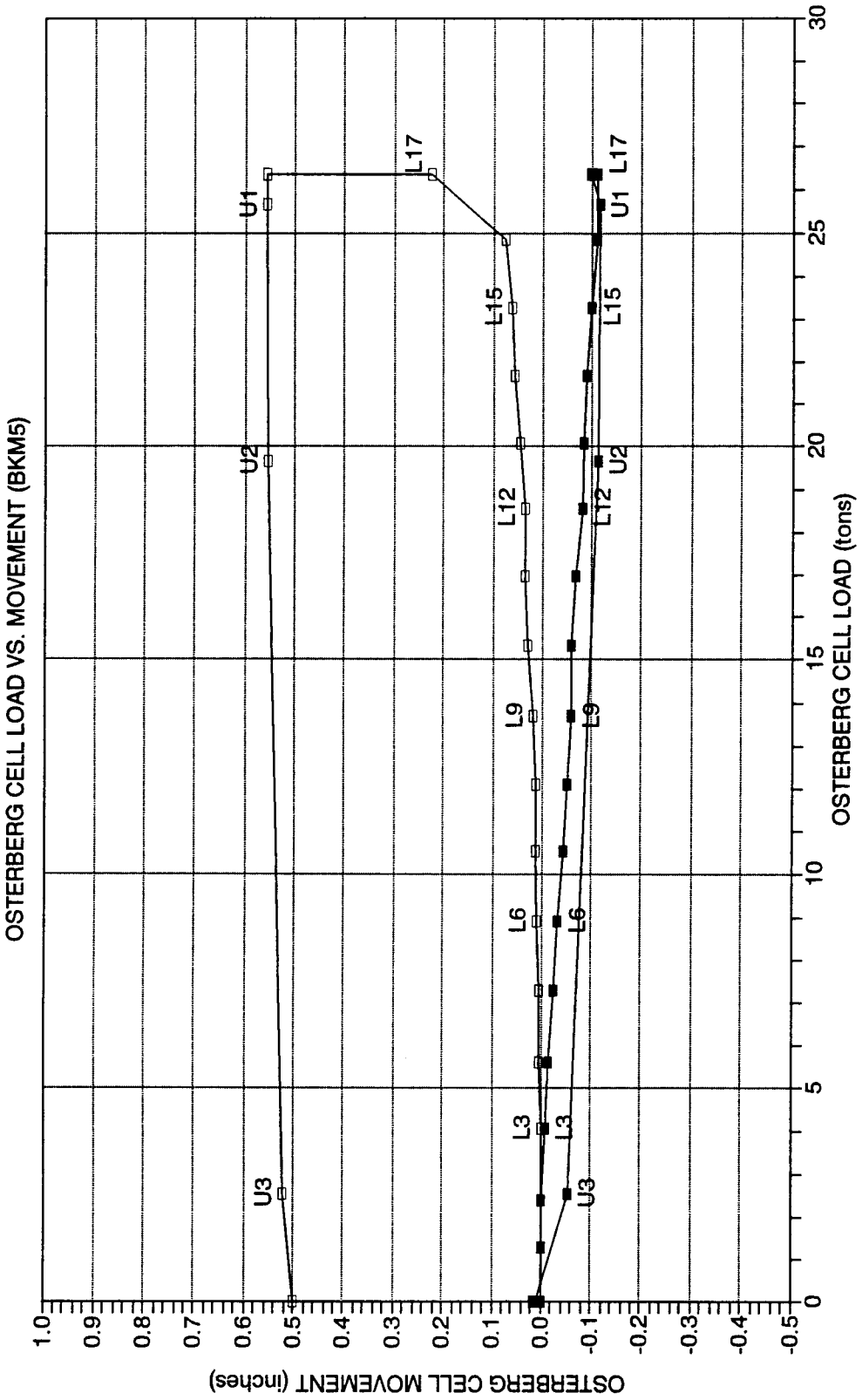


Figure E.35 Load Test 5 Movement: Buckman

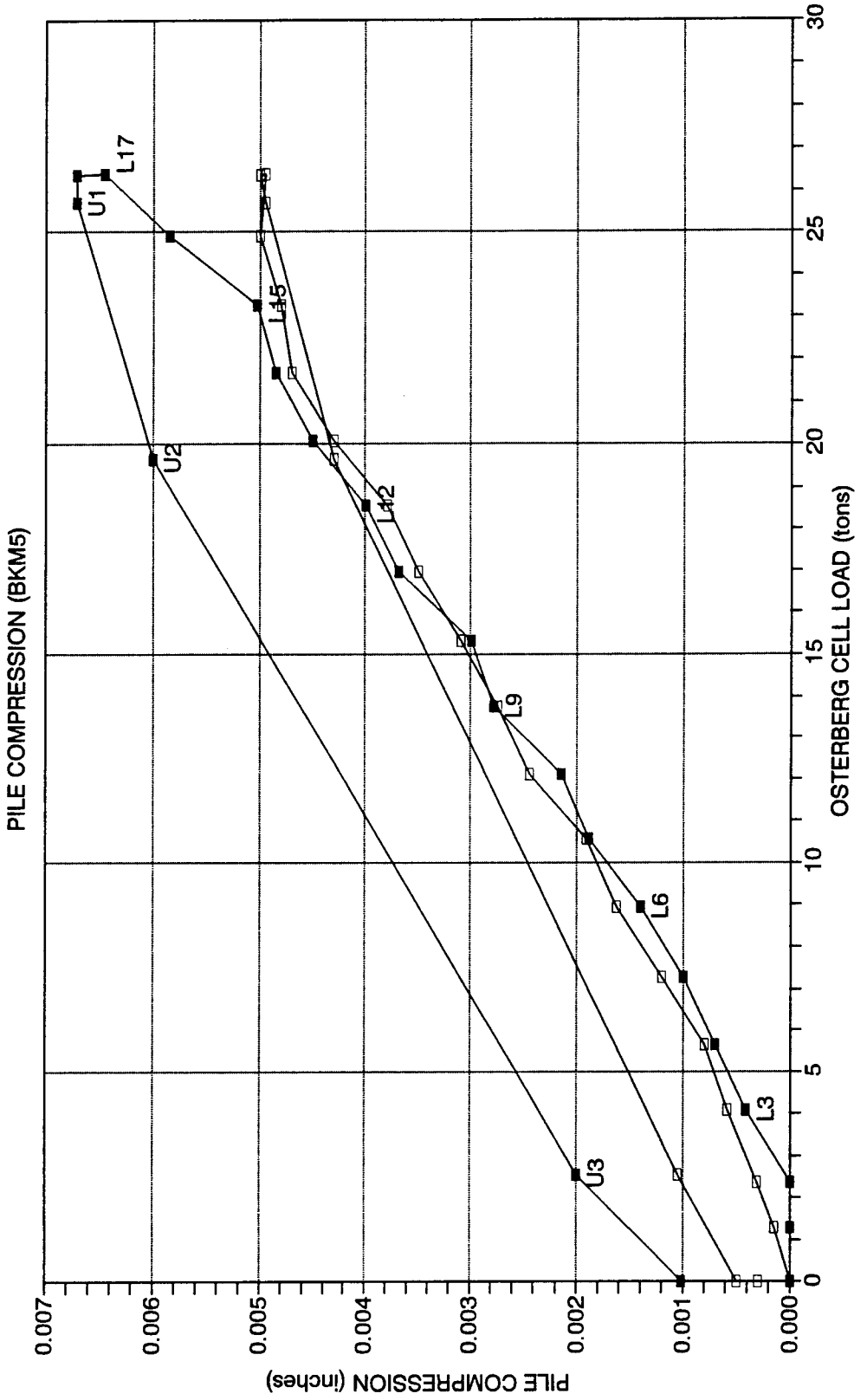


Figure E.36 Load Test 5 Compression: Buckman

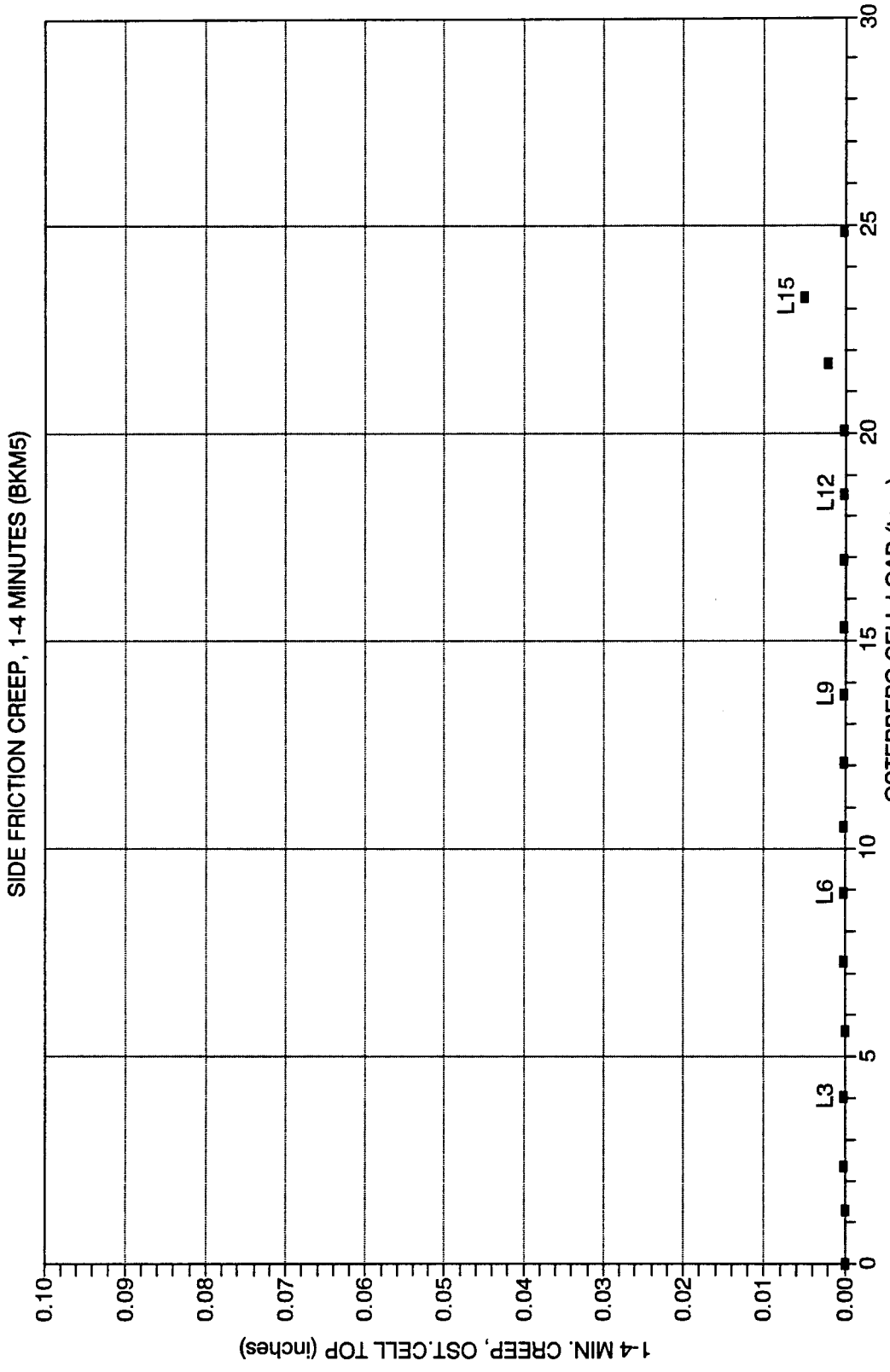


Figure E.37 Load Test 5 Creep: Buckman

Table E.16 Data for Load Test 1: Aucilla

AUC 1 LOAD NUMBER	TIME INCR. (min)	OSTERBERG CELL LOAD: MEASURED PRESSURE (psi)	CORRECTED PRESSURE (psi)	VW TRANSDUCER READING (tons)	EXTENSION PRESSURE (psi)	EXTENSION @4 MIN. (inches)	LOAD (tons)	OSTERBERG CELL BOTTOM TELLTALE: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)	POISSON EFFECT ADJ. (inches)	OSTERBERG CELL BOTTOM MOVEMENT: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)
L0		0	0	9121	0	0.000	0.0									
L1	4	160	142	9065	181	0.003	5.6	0.5000	0.5000	0.5000	0.5000	0.0000				0.0000
L2	4	375	355	9001	380	0.003	11.8	0.4960	0.4960	0.4960	0.5000	0.0031	-0.0031	-0.0031	-0.0031	-0.0031
L3	4	500	478	8953	528	0.002	16.3	0.4960	0.4930	0.4930	0.4960	0.0066	-0.0026	-0.0026	-0.0026	-0.0026
L4	4	690	666	8898	696	0.006	21.5	0.4930	0.4930	0.4930	0.4930	0.0091	-0.0051	-0.0021	-0.0021	-0.0021
L5	4	885	859	8842	866	0.009	26.8	0.4935	0.4935	0.4935	0.4935	0.0120	-0.0050	-0.0050	-0.0050	-0.0055
L6	4	1050	1022	8783	1045	0.012	32.3	0.4935	0.4935	0.4935	0.4935	0.0150	-0.0085	-0.0085	-0.0085	-0.0085
L7	4	1225	1195	8728	1210	0.017	37.4	0.4940	0.4940	0.4940	0.4935	0.0181	-0.0116	-0.0116	-0.0066	-0.0066
L8	4	1410	1378	8673	1375	0.021	42.5	0.4940	0.4945	0.4950	0.4945	0.0209	-0.0099	-0.0099	-0.0099	-0.0104
L9	4	1600	1565	8618	1540	0.026	47.6	0.4960	0.4970	0.4970	0.4955	0.0238	-0.0128	-0.0133	-0.0138	-0.0143
L10	4	1780	1743	8561	1710	0.033	52.9	0.4975	0.4985	0.4995	0.4970	0.0266	-0.0126	-0.0136	-0.0136	-0.0136
L11	4	1975	1936	8504	1879	0.068	58.1	0.5070	0.5165	0.5240	0.5010	0.0296	-0.0171	-0.0181	-0.0191	-0.0206
L12	4	2140	2099	8447	2049	0.081	63.3	0.5325	0.5340	0.5360	0.5290	0.0325	-0.0295	-0.0340	-0.0415	-0.0465
L13	4	2300	2257	8392	2212	0.094	68.4	0.5410	0.5420	0.5440	0.5380	0.0354	-0.0479	-0.0494	-0.0514	-0.0534
L14	4	2490	2445	8336	2377	0.107	73.5	0.5490	0.5500	0.5525	0.5465	0.0382	-0.0592	-0.0602	-0.0622	-0.0647
L15	4	2650	2603	8281	2540	0.120	78.5	0.5580	0.5595	0.5610	0.5550	0.0411	-0.0651	-0.0661	-0.0686	-0.0661
L16	4	2810	2761	8223	2711	0.133	83.8	0.5670	0.5690	0.5705	0.5640	0.0439	-0.0719	-0.0734	-0.0749	-0.0779
L17	4	3000	2949	8168	2873	0.147	88.8	0.5760	0.5775	0.5790	0.5730	0.0469	-0.0789	-0.0809	-0.0824	-0.0799
L18	4	3150	3097	8112	3037	0.161	93.9	0.5855	0.5870	0.5900	0.5830	0.0497	-0.0857	-0.0872	-0.0887	-0.0927
L19	4	3300	3245	8057	3199	0.176	98.9	0.5960	0.5975	0.6010	0.5930	0.0525	-0.0930	-0.0945	-0.0975	-0.0955
L20	4	3470	3413	8001	3363	0.193	104.0	0.6075	0.6105	0.6125	0.6040	0.0553	-0.0963	-0.0978	-0.1013	-0.0993
L21	4	3640	3581	7945	3527	0.216	109.0	0.6195	0.6235	0.6285	0.6165	0.0581	-0.1056	-0.1086	-0.1106	-0.1096
L22	4	3800	3739	7888	3694	0.341	114.2	0.6495	0.6605	0.6885	0.6355	0.0610	-0.1105	-0.1145	-0.1095	-0.1165
L23	4	3850	3789	7860	3776	0.798	116.8	0.8450	0.8970	0.9970	0.7545	0.0639	-0.1134	-0.1144	-0.1224	-0.1234
L23A	4	3700	3640	7930	3571	0.862	110.5				1.2060	0.0653	-0.1203	-0.1223	-0.1223	-0.1213
U1	3	2340	2296	8384	2235	0.839	69.2				1.2755	0.0617				-0.1272
U2	3	2000	1961	8499	1894	0.830	58.6				1.2835	0.0386				-0.1121
U3	3	1560	1526	8642	1468	0.817	45.4				1.2835	0.0327				-0.1062
U4	3	1005	977	8810	963	0.796	29.8				1.2815	0.0254				-0.0969
U5	3	625	602	8936	580	0.766	18.0				1.2750	0.0166				-0.0916
U6	3	400	380	9003	374	0.747	11.6				1.2560	0.0100				-0.0660
U7	3	0	0	9121	0	0.684	0.0				1.2435	0.0065				-0.0550
U7A	3	0	0	9121	0	0.680	0.0				1.1890	0.0000				0.0010
											1.1855	0.0000				0.0045

Table E.16 continued

AUC 1 LOAD NUMBER	OSTERBERG CELL TOP TELLTALE TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	PILE COMPRESSION TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	OSTERBERG CELL TOP TELLTALE TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)	PILE COMPRESSION TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)
L0				0.00010				0.00000				0.00020				0.00000
L1	0.00010	0.00010	0.00010	0.00015	0.00000	0.00000	0.00000	0.00005	0.00020	0.00020	0.00020	0.00020	0.00000	0.00000	0.00000	0.00000
L2	0.00020	0.00020	0.00020	0.00029	0.00010	0.00010	0.00010	0.00019	0.00021	0.00025	0.00025	0.00030	0.00001	0.00005	0.00005	0.00010
L3	0.00031	0.00035	0.00036	0.00040	0.00021	0.00025	0.00026	0.00030	0.00030	0.00035	0.00035	0.00039	0.00010	0.00015	0.00015	0.00019
L4	0.00040	0.00040	0.00044	0.00048	0.00030	0.00030	0.00034	0.00038	0.00040	0.00040	0.00041	0.00044	0.00020	0.00020	0.00021	0.00024
L5	0.00055	0.00058	0.00060	0.00065	0.00045	0.00048	0.00050	0.00055	0.00060	0.00060	0.00063	0.00065	0.00040	0.00040	0.00043	0.00045
L6	0.00090	0.00091	0.00094	0.00098	0.00080	0.00081	0.00084	0.00088	0.00091	0.00095	0.00098	0.00098	0.00071	0.00075	0.00078	0.00078
L7	0.00120	0.00125	0.00130	0.00132	0.00110	0.00115	0.00120	0.00122	0.00128	0.00130	0.00130	0.00132	0.00108	0.00110	0.00110	0.00112
L8	0.00165	0.00165	0.00170	0.00171	0.00155	0.00155	0.00160	0.00161	0.00171	0.00172	0.00176	0.00180	0.00151	0.00152	0.00156	0.00160
L9	0.00215	0.00220	0.00220	0.00225	0.00205	0.00210	0.00210	0.00215	0.00225	0.00235	0.00235	0.00240	0.00205	0.00215	0.00215	0.00220
L10	0.00272	0.00272	0.00275	0.00280	0.00262	0.00262	0.00265	0.00270	0.00291	0.00291	0.00296	0.00300	0.00271	0.00271	0.00276	0.00280
L11	0.00385	0.00560	0.00620	0.00640	0.00375	0.00550	0.00610	0.00630	0.00460	0.00620	0.00680	0.00700	0.00440	0.00600	0.00660	0.00680
L12	0.00750	0.00760	0.00770	0.00770	0.00740	0.00750	0.00760	0.00760	0.00820	0.00820	0.00840	0.00850	0.00800	0.00800	0.00820	0.00830
L13	0.00890	0.00900	0.00910	0.00910	0.00880	0.00890	0.00900	0.00900	0.00980	0.00980	0.00990	0.01000	0.00960	0.00960	0.00970	0.00980
L14	0.01010	0.01030	0.01035	0.01040	0.01000	0.01020	0.01025	0.01030	0.01130	0.01130	0.01135	0.01140	0.01110	0.01110	0.01115	0.01120
L15	0.01150	0.01160	0.01170	0.01170	0.01140	0.01150	0.01160	0.01160	0.01260	0.01280	0.01290	0.01290	0.01240	0.01260	0.01270	0.01270
L16	0.01280	0.01280	0.01280	0.01290	0.01270	0.01270	0.01270	0.01280	0.01410	0.01420	0.01420	0.01430	0.01390	0.01400	0.01400	0.01410
L17	0.01360	0.01385	0.01390	0.01390	0.01350	0.01375	0.01380	0.01380	0.01540	0.01545	0.01550	0.01550	0.01520	0.01525	0.01530	0.01530
L18	0.01480	0.01490	0.01490	0.01490	0.01470	0.01480	0.01480	0.01480	0.01670	0.01670	0.01680	0.01680	0.01650	0.01650	0.01660	0.01660
L19	0.01570	0.01580	0.01580	0.01580	0.01560	0.01570	0.01570	0.01570	0.01790	0.01800	0.01800	0.01800	0.01770	0.01780	0.01780	0.01780
L20	0.01670	0.01675	0.01680	0.01670	0.01660	0.01665	0.01670	0.01660	0.01920	0.01920	0.01930	0.01940	0.01900	0.01900	0.01910	0.01920
L21	0.01790	0.01790	0.01790	0.01800	0.01780	0.01780	0.01780	0.01790	0.02030	0.02030	0.02040	0.02100	0.02010	0.02010	0.02020	0.02080
L22	0.01980	0.02000	0.02060	0.02140	0.01970	0.01990	0.02050	0.02130	0.02300	0.02320	0.02370	0.02470	0.02280	0.02300	0.02350	0.02450
L23	0.02280	0.02280	0.02330	0.02440	0.02270	0.02270	0.02320	0.02430	0.02600	0.02660	0.02730	0.02870	0.02580	0.02640	0.02710	0.02850
L23A				0.02280				0.02270				0.02730				0.02710
U1				0.01500				0.01490				0.01900				0.01880
U2				0.01220				0.01210				0.01620				0.01600
U3				0.00820				0.00810				0.01200				0.01180
U4				0.00250				0.00240				0.00620				0.00600
U5				-0.00200				-0.00210				0.00170				0.00150
U6				-0.00450				-0.00460				-0.00080				-0.00100
U7				-0.00510				-0.00520				-0.00560				-0.00580
U7A				-0.00510				-0.00520				-0.00570				-0.00590

Table E.16 continued

AUC 1 LOAD NUMBER	PILE COMPRESSION TT-1 & TT-2 AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP MOVEMENT AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP CREEP 1-4 MIN. (inches)	CREEP 2-4 MIN. (inches)
L0				0.0000				0.0000		
L1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
L2	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
L3	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0000	0.0000
L4	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0001	0.0000
L5	0.0004	0.0004	0.0005	0.0005	0.0004	0.0004	0.0005	0.0005	0.0001	0.0000
L6	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008	0.0058	0.0058	0.0051	0.0000
L7	0.0011	0.0011	0.0012	0.0012	0.0061	0.0061	0.0062	0.0062	0.0000	0.0000
L8	0.0015	0.0015	0.0016	0.0016	0.0065	0.0065	0.0066	0.0066	0.0001	0.0000
L9	0.0021	0.0021	0.0021	0.0022	0.0121	0.0121	0.0121	0.0122	0.0000	0.0000
L10	0.0027	0.0027	0.0027	0.0028	0.0127	0.0127	0.0127	0.0128	0.0001	0.0000
L11	0.0041	0.0058	0.0064	0.0066	0.0141	0.0208	0.0214	0.0216	0.0008	0.0002
L12	0.0077	0.0078	0.0079	0.0080	0.0277	0.0278	0.0279	0.0280	0.0002	0.0001
L13	0.0092	0.0093	0.0094	0.0094	0.0292	0.0293	0.0294	0.0294	0.0001	0.0000
L14	0.0106	0.0107	0.0107	0.0108	0.0356	0.0357	0.0357	0.0408	0.0051	0.0050
L15	0.0119	0.0121	0.0122	0.0122	0.0419	0.0421	0.0422	0.0422	0.0001	0.0000
L16	0.0133	0.0134	0.0134	0.0135	0.0483	0.0484	0.0484	0.0535	0.0051	0.0051
L17	0.0144	0.0145	0.0146	0.0146	0.0544	0.0545	0.0546	0.0546	0.0001	0.0000
L18	0.0156	0.0157	0.0157	0.0157	0.0606	0.0607	0.0607	0.0657	0.0050	0.0050
L19	0.0167	0.0168	0.0168	0.0168	0.0717	0.0718	0.0718	0.0768	0.0050	0.0050
L20	0.0178	0.0178	0.0179	0.0179	0.0778	0.0778	0.0779	0.0829	0.0051	0.0050
L21	0.0190	0.0190	0.0190	0.0194	0.0890	0.0890	0.0990	0.0994	0.0104	0.0004
L22	0.0213	0.0215	0.0220	0.0229	0.1212	0.1315	0.1520	0.2179	0.0864	0.0659
L23	0.0243	0.0246	0.0252	0.0264	0.3142	0.3646	0.4652	0.6764	0.3119	0.2112
L23A				0.0249				0.7349		
U1				0.0169				0.7269		
U2				0.0141				0.7241		
U3				0.0100				0.7200		
U4				0.0042				0.7042		
U5				-0.0003				0.6997		
U6				-0.0028				0.6922		
U7				-0.0055				0.6845		
U7A				-0.0056				0.6845		

Table E.16 continued

AUC 1 LOAD NUMBER	TOP OF PILE MOVEMENT - WIRELINE READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)	BSIGHT @0.5MIN. (inches)	TOP OF PILE MOVEMENT - SURVEY LEVEL READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)
L0				0.840				0.000	3.960				0.740				0.000
L1	0.840	0.840	0.840	0.840	0.000	0.000	0.000	0.000		0.740	0.740	0.740	0.740	0.000	0.000	0.000	0.000
L2	0.840	0.840	0.840	0.840	0.000	0.000	0.000	0.000	3.960	0.740	0.740	0.740	0.740	0.000	0.000	0.000	0.000
L3	0.840	0.840	0.840	0.840	0.000	0.000	0.000	0.000		0.740	0.740	0.740	0.740	0.000	0.000	0.000	0.000
L4	0.840	0.840	0.840	0.840	0.000	0.000	0.000	0.000	3.960	0.740	0.740	0.740	0.740	0.000	0.000	0.000	0.000
L5	0.840	0.840	0.840	0.840	0.000	0.000	0.000	0.000		0.740	0.740	0.740	0.740	0.000	0.000	0.000	0.000
L6	0.840	0.840	0.845	0.845	0.000	0.000	0.005	0.005	3.960	0.740	0.740	0.740	0.740	0.000	0.000	0.000	0.000
L7	0.845	0.845	0.845	0.845	0.005	0.005	0.005	0.005		0.740	0.740	0.740	0.740	0.000	0.000	0.000	0.000
L8	0.845	0.845	0.845	0.845	0.005	0.005	0.005	0.005	3.960	0.740	0.740	0.740	0.740	0.000	0.000	0.000	0.000
L9	0.850	0.850	0.850	0.850	0.010	0.010	0.010	0.010		0.740	0.740	0.740	0.740	0.000	0.000	0.000	0.000
L10	0.850	0.850	0.850	0.850	0.010	0.010	0.010	0.010	3.960	0.740	0.740	0.740	0.740	0.000	0.000	0.000	0.000
L11	0.850	0.855	0.855	0.855	0.010	0.015	0.015	0.015		0.750	0.750	0.750	0.750	0.010	0.010	0.010	0.010
L12	0.860	0.860	0.860	0.860	0.020	0.020	0.020	0.020	3.960	0.750	0.750	0.750	0.750	0.010	0.010	0.010	0.010
L13	0.860	0.860	0.860	0.860	0.020	0.020	0.020	0.020		0.760	0.760	0.760	0.760	0.020	0.020	0.020	0.020
L14	0.865	0.865	0.865	0.870	0.025	0.025	0.025	0.030	3.960	0.770	0.770	0.770	0.770	0.030	0.030	0.030	0.030
L15	0.870	0.870	0.870	0.870	0.030	0.030	0.030	0.030		0.780	0.780	0.780	0.780	0.040	0.040	0.040	0.040
L16	0.875	0.875	0.875	0.880	0.035	0.035	0.035	0.040	3.960	0.780	0.780	0.780	0.780	0.040	0.040	0.040	0.040
L17	0.880	0.880	0.880	0.880	0.040	0.040	0.040	0.040		0.790	0.790	0.790	0.790	0.050	0.050	0.050	0.050
L18	0.885	0.885	0.885	0.890	0.045	0.045	0.045	0.050	3.960	0.790	0.790	0.790	0.790	0.050	0.050	0.050	0.050
L19	0.895	0.895	0.895	0.900	0.055	0.055	0.055	0.060		0.800	0.800	0.800	0.800	0.060	0.060	0.060	0.060
L20	0.900	0.900	0.900	0.905	0.060	0.060	0.060	0.065	3.960	0.800	0.800	0.800	0.800	0.060	0.060	0.060	0.060
L21	0.910	0.910	0.920	0.920	0.070	0.070	0.080	0.080		0.810	0.810	0.810	0.810	0.070	0.070	0.070	0.070
L22	0.940	0.950	0.970	1.035	0.100	0.110	0.130	0.195	3.960	0.810	0.820	0.880	0.930	0.070	0.080	0.140	0.190
L23	1.130	1.180	1.280	1.490	0.290	0.340	0.440	0.650		1.020	1.080	1.180	1.380	0.280	0.340	0.440	0.640
L23A				1.550				0.710	3.960				1.440				0.700
U1				1.550				0.710					1.440				0.700
U2				1.550				0.710	3.960				1.440				0.700
U3				1.550				0.710					1.430				0.690
U4				1.540				0.700					1.420				0.680
U5				1.540				0.700	3.960				1.420				0.680
U6				1.535				0.695					1.410				0.670
U7				1.530				0.690	3.960				1.400				0.660
U7A				1.530				0.690					1.400				0.660

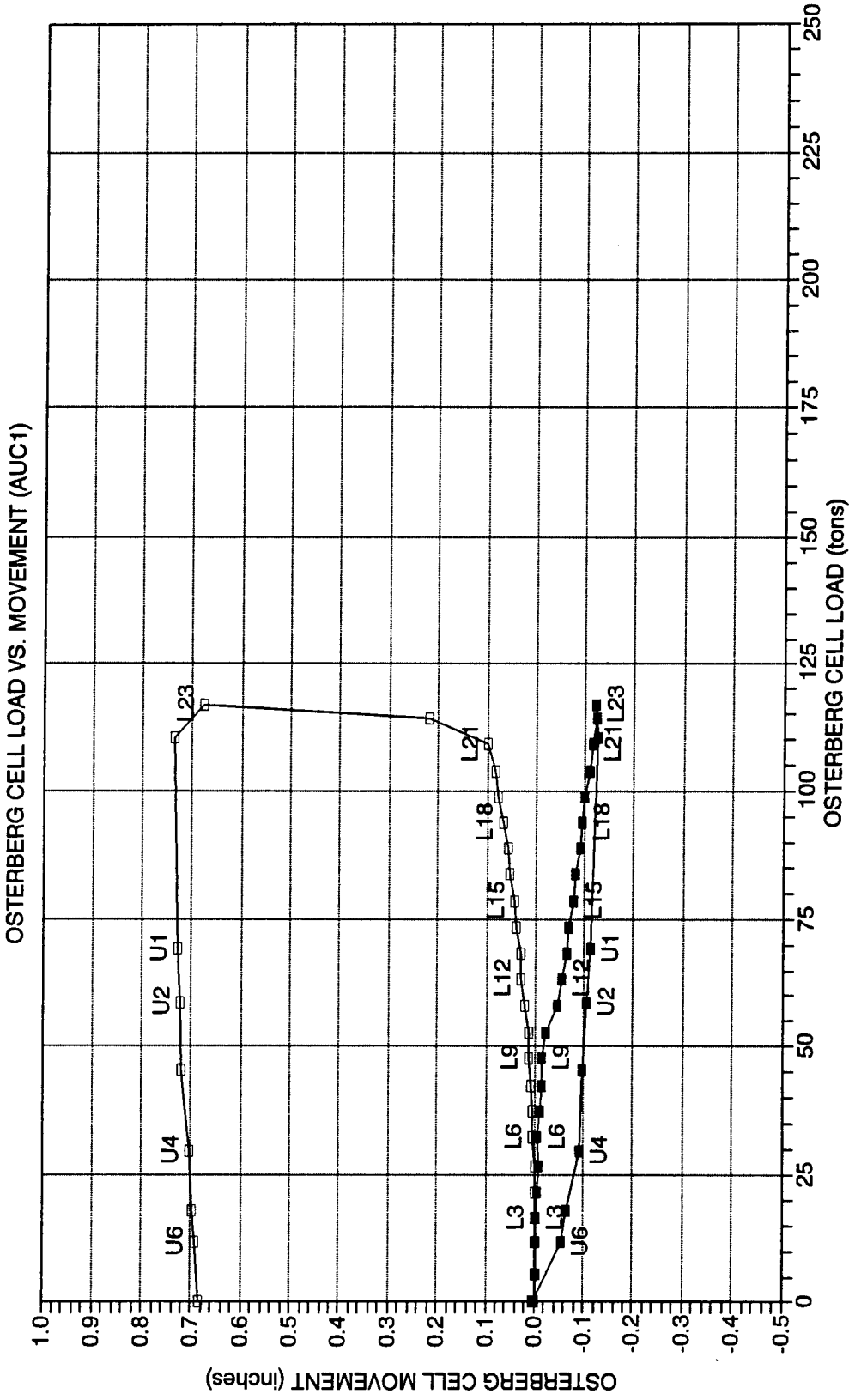


Figure E.38 Load Test 1 Movement: Aucilla

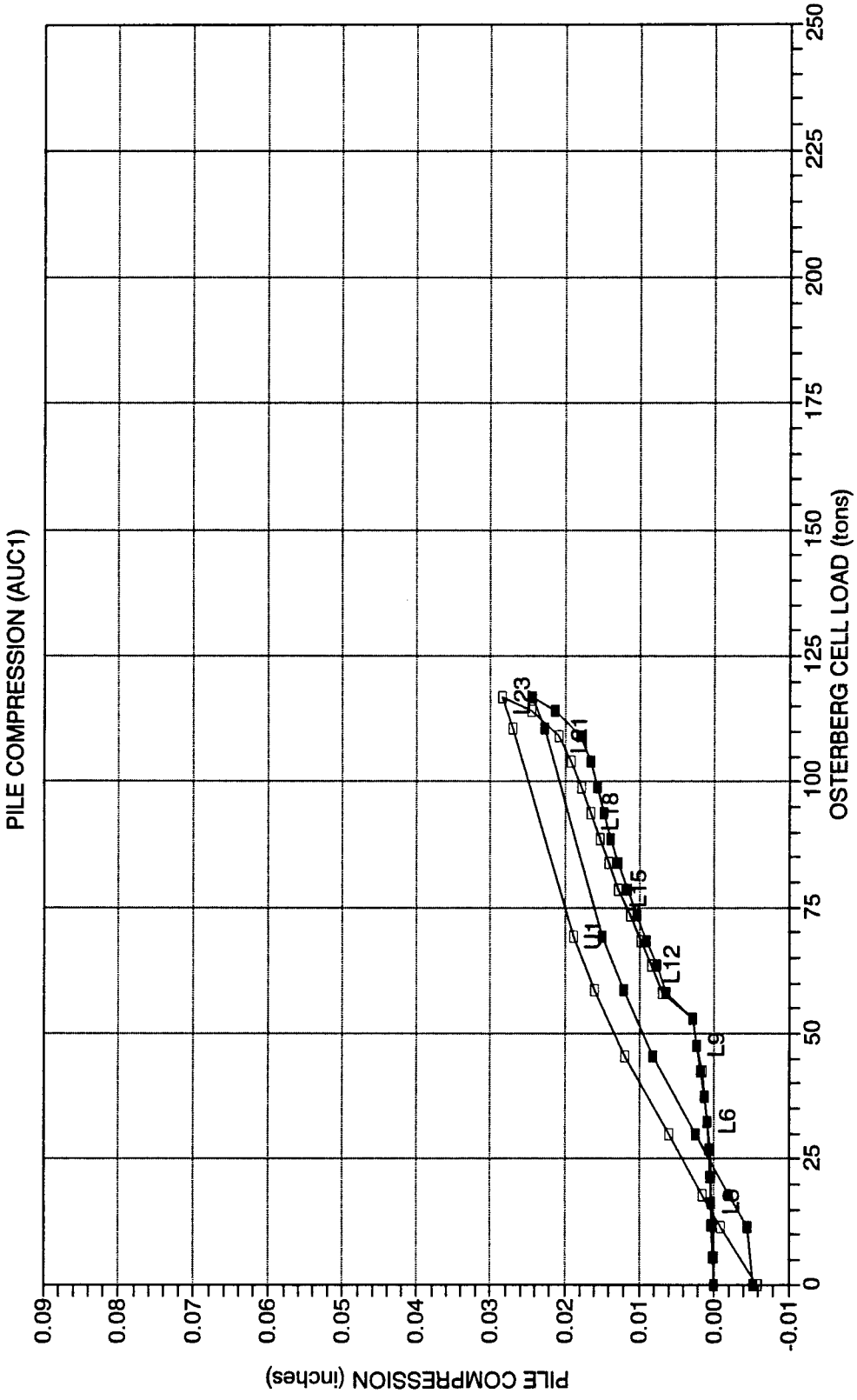


Figure E.39 Load Test 1 Compression: Aucilla

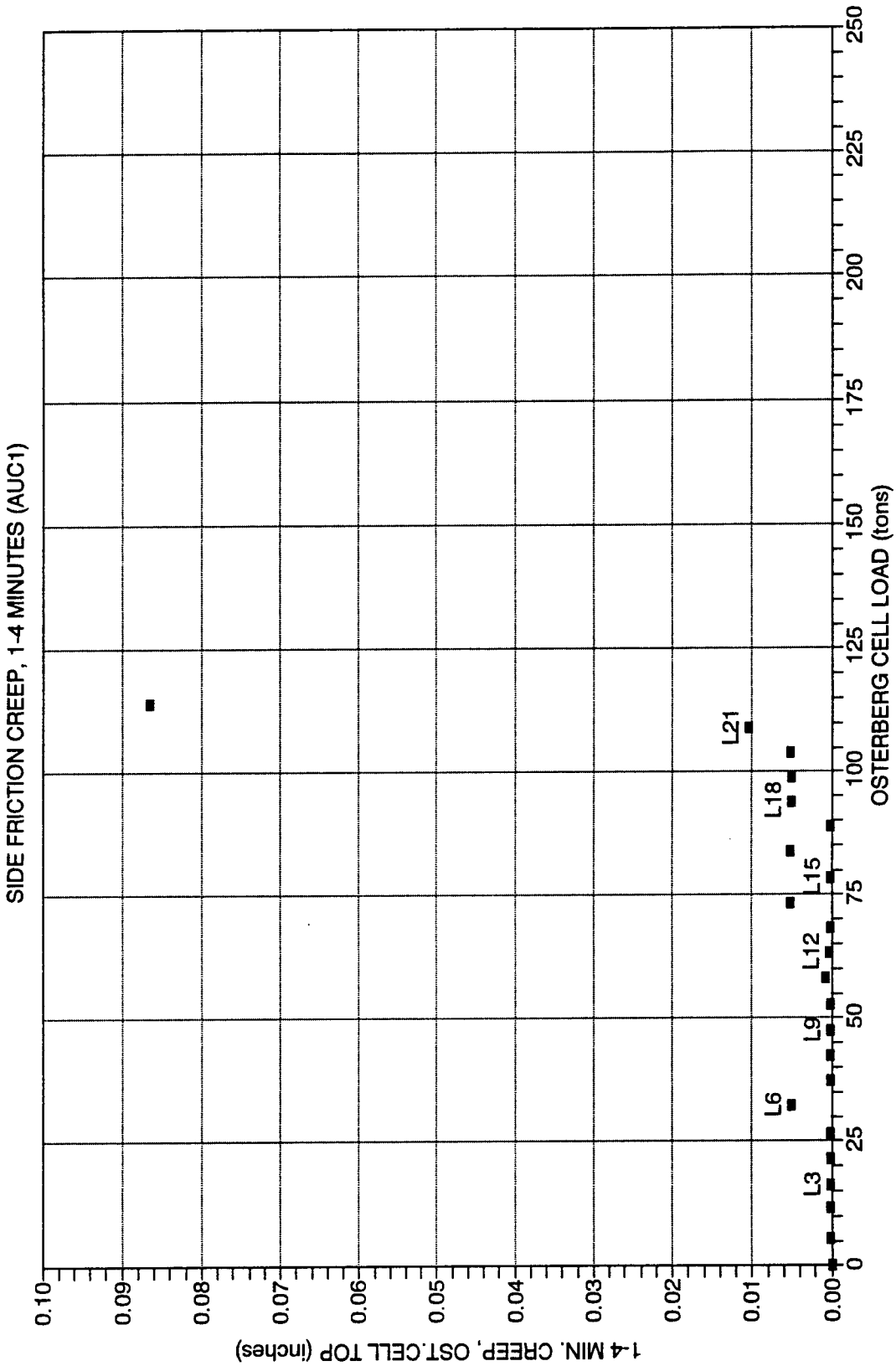


Figure E.40 Load Test 1 Creep: Aucilla

Table E.17 Data for Load Test 2: Aucilla

AUC 2 LOAD NUMBER	TIME INCR. (min)	OSTERBERG CELL LOAD: MEASURED PRESSURE (psi)	CORRECTED PRESSURE (psi)	VW TRANSDUCER READING (tons)	EXTENSION PRESSURE (psi)	EXTENSION @4 MIN. (inches)	LOAD (tons)	OSTERBERG CELL BOTTOM TELLTALE: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)	POISSON EFFECT ADJ. (inches)	OSTERBERG CELL BOTTOM TELLTALE: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)
L0		0	0	9124	0	0.680	0.0				0.5000	0.0000				0.0000
L1	4	340	320	9013	352	0.702	11.0	0.5133	0.5139	0.5148	0.5150	0.0061	-0.0194	-0.0200	-0.0209	-0.0211
L2	4	680	656	8901	696	0.729	21.6	0.5319	0.5322	0.5328	0.5334	0.0120	-0.0439	-0.0442	-0.0448	-0.0454
L3	4	1050	1022	8789	1036	0.749	32.1	0.5429	0.5438	0.5442	0.5452	0.0179	-0.0608	-0.0617	-0.0621	-0.0631
L4	4	1410	1378	8677	1372	0.768	42.5	0.5520	0.5528	0.5537	0.5550	0.0237	-0.0757	-0.0765	-0.0774	-0.0787
L5	4	1770	1733	8565	1707	0.785	52.8	0.5608	0.5612	0.5621	0.5630	0.0295	-0.0853	-0.0857	-0.0866	-0.0875
L6	4	1940	1901	8507	1879	0.794	58.2	0.5649	0.5652	0.5663	0.5671	0.0325	-0.0924	-0.0877	-0.0888	-0.0896
L7	4	2110	2069	8451	2046	0.803	63.3	0.5691	0.5694	0.5708	0.5718	0.0354	-0.0945	-0.0948	-0.0962	-0.0972
L8	4	2280	2237	8396	2209	0.811	68.3	0.5724	0.5730	0.5743	0.5753	0.0382	-0.1006	-0.1012	-0.0975	-0.0985
L9	4	2460	2415	8338	2380	0.820	73.7	0.5762	0.5771	0.5778	0.5791	0.0411	-0.1023	-0.1032	-0.1039	-0.1052
L10	4	2630	2583	8283	2543	0.829	78.7	0.5798	0.5809	0.5827	0.5840	0.0440	-0.1088	-0.1099	-0.1117	-0.1130
L11	4	2740	2692	8228	2705	0.837	83.7	0.5860	0.5862	0.5863	0.5874	0.0468	-0.1178	-0.1180	-0.1181	-0.1192
L12	4	2960	2909	8172	2870	0.846	88.8	0.5884	0.5895	0.5905	0.5912	0.0496	-0.1230	-0.1241	-0.1201	-0.1208
L13	4	3130	3077	8115	3037	0.856	94.0	0.5926	0.5937	0.5949	0.5967	0.0525	-0.1251	-0.1262	-0.1274	-0.1242
L14	4	3280	3225	8059	3202	0.865	99.0	0.5979	0.5982	0.5990	0.6015	0.0553	-0.1282	-0.1285	-0.1293	-0.1318
L15	4	3460	3403	8004	3363	0.873	104.0	0.6015	0.6019	0.6029	0.6046	0.0581	-0.1296	-0.1300	-0.1310	-0.1327
L16	4	3620	3561	7947	3530	0.885	109.2	0.6082	0.6092	0.6096	0.6119	0.0610	-0.1342	-0.1352	-0.1356	-0.1379
L17	4	3790	3729	7891	3694	0.894	114.3	0.6129	0.6140	0.6150	0.6168	0.0639	-0.1418	-0.1429	-0.1439	-0.1457
L18	4	3965	3902	7835	3858	0.907	119.3	0.6183	0.6207	6.2280	0.6251	0.0667	-0.1450	-0.1474	-5.7547	-0.1468
L19	4	4120	4055	7778	4024	0.918	124.5	0.6262	0.6278	0.6296	0.6323	0.0696	-0.1458	-0.1474	-0.1492	-0.1519
L20	4	4280	4213	7722	4187	0.930	129.5	0.6342	0.6358	0.6381	0.6401	0.0724	-0.1516	-0.1532	-0.1555	-0.1575
L21	4	4445	4377	7668	4345	0.944	134.4	0.6423	0.6442	0.6467	0.6510	0.0751	-0.1624	-0.1643	-0.1618	-0.1661
L22	4	4590	4520	7611	4511	0.970	139.5	0.6543	0.6572	0.6631	0.6722	0.0780	-0.1673	-0.1702	-0.1661	-0.1702
L23	4	4695	4624	7583	4592	1.031	142.0	0.6823	0.6891	0.6992	0.7304	0.0794	-0.1667	-0.1735	-0.1686	-0.1748
L24	1			7557	4668	1.158	144.4			0.7900	0.8562	0.0807			-0.1757	-0.1719
L24A	3			7576	4612	1.648	142.7			1.0532	1.3475	0.0797			-0.1679	-0.1772
L24B	4	4510	4441	7640	4426	1.720	137.0				1.4228	0.0765				-0.1743
U1	3	3140	3087	8121	3020	1.707	93.5				1.4433	0.0522				-0.1605
U2	3	2720	2672	8252	2634	1.697	81.6				1.4433	0.0455				-0.1538
U3	3	2170	2129	8434	2096	1.682	64.9				1.4425	0.0362				-0.1437
U4	3	1855	1817	8538	1787	1.672	55.4				1.4411	0.0309				-0.1420
U5	3	1360	1328	8688	1339	1.654	41.5				1.4353	0.0231				-0.1334
U6	3	900	874	8826	924	1.629	28.7				1.4229	0.0160				-0.1189
U7	3	350	330	8982	448	1.590	14.0				1.3979	0.0077				-0.0906
U8	3	0	0	9123	0	1.514	0.0				1.3352	0.0000				-0.0252
U8A	3	0	0	9126	0	1.510	0.0				1.3309	0.0000				-0.0209

Table E.17 continued

AUC 2 LOAD NUMBER	OSTERBERG CELL TOP TELLTALE TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	PILE COMPRESSION TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	OSTERBERG CELL TOP TELLTALE TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)	PILE COMPRESSION MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4 MIN. (inches)
L0				0.02000				0.00000				0.02000				0.00000
L1	0.02100	0.02100	0.02105	0.02110	0.00100	0.00100	0.00105	0.00110	0.02110	0.02115	0.02115	0.02130	0.00110	0.00115	0.00115	0.00130
L2	0.02280	0.02290	0.02300	0.02300	0.00280	0.00290	0.00300	0.00300	0.02300	0.02320	0.02320	0.02330	0.00300	0.00320	0.00320	0.00330
L3	0.02530	0.02540	0.02550	0.02560	0.00530	0.00540	0.00550	0.00560	0.02560	0.02570	0.02590	0.02600	0.00560	0.00570	0.00590	0.00600
L4	0.02820	0.02840	0.02850	0.02870	0.00820	0.00840	0.00850	0.00870	0.02860	0.02870	0.02880	0.02900	0.00860	0.00870	0.00880	0.00900
L5	0.03150	0.03150	0.03180	0.03190	0.01150	0.01150	0.01180	0.01190	0.03190	0.03190	0.03210	0.03240	0.01190	0.01190	0.01210	0.01240
L6	0.03350	0.03350	0.03360	0.03370	0.01350	0.01350	0.01360	0.01370	0.03400	0.03400	0.03410	0.03420	0.01400	0.01400	0.01410	0.01420
L7	0.03520	0.03520	0.03550	0.03550	0.01520	0.01520	0.01550	0.01550	0.03560	0.03580	0.03600	0.03600	0.01560	0.01580	0.01600	0.01600
L8	0.03700	0.03710	0.03730	0.03740	0.01700	0.01710	0.01730	0.01740	0.03750	0.03760	0.03800	0.03800	0.01750	0.01760	0.01800	0.01800
L9	0.03890	0.03900	0.03910	0.03930	0.01890	0.01900	0.01910	0.01930	0.03940	0.03950	0.03950	0.03980	0.01940	0.01950	0.01950	0.01980
L10	0.04080	0.04090	0.04100	0.04110	0.02080	0.02090	0.02100	0.02110	0.04130	0.04140	0.04150	0.04160	0.02130	0.02140	0.02150	0.02160
L11	0.04260	0.04270	0.04270	0.04280	0.02260	0.02270	0.02270	0.02280	0.04320	0.04330	0.04330	0.04340	0.02320	0.02330	0.02330	0.02340
L12	0.04430	0.04450	0.04450	0.04460	0.02430	0.02450	0.02450	0.02460	0.04480	0.04500	0.04510	0.04510	0.02480	0.02500	0.02510	0.02510
L13	0.04610	0.04630	0.04630	0.04640	0.02610	0.02630	0.02630	0.02640	0.04680	0.04680	0.04680	0.04700	0.02680	0.02680	0.02680	0.02700
L14	0.04790	0.04800	0.04800	0.04820	0.02790	0.02800	0.02800	0.02820	0.04850	0.04850	0.04860	0.04890	0.02850	0.02850	0.02860	0.02890
L15	0.04960	0.04970	0.04980	0.04990	0.02960	0.02970	0.02980	0.02990	0.05030	0.05030	0.05040	0.05070	0.03030	0.03030	0.03040	0.03070
L16	0.05140	0.05140	0.05150	0.05150	0.03140	0.03140	0.03150	0.03150	0.05210	0.05210	0.05210	0.05230	0.03210	0.03210	0.03210	0.03230
L17	0.05300	0.05300	0.05300	0.05310	0.03300	0.03300	0.03300	0.03310	0.05370	0.05370	0.05380	0.05390	0.03370	0.03370	0.03380	0.03390
L18	0.05450	0.05450	0.05450	0.05450	0.03450	0.03450	0.03450	0.03450	0.05500	0.05500	0.05500	0.05500	0.03500	0.03500	0.03500	0.03500
L19	0.05570	0.05570	0.05570	0.05570	0.03570	0.03570	0.03570	0.03570	0.05660	0.05670	0.05680	0.05700	0.03660	0.03670	0.03680	0.03700
L20	0.05680	0.05690	0.05680	0.05680	0.03680	0.03690	0.03680	0.03680	0.05820	0.05820	0.05810	0.05820	0.03820	0.03820	0.03810	0.03820
L21	0.05760	0.05760	0.05760	0.05740	0.03760	0.03760	0.03760	0.03740	0.05940	0.05940	0.05940	0.05940	0.03940	0.03940	0.03940	0.03940
L22	0.05860	0.05880	0.05900	0.05910	0.03860	0.03880	0.03900	0.03910	0.06070	0.06100	0.06110	0.06120	0.04070	0.04100	0.04110	0.04120
L23	0.06000	0.06000	0.06000	0.06000	0.04000	0.04000	0.04000	0.04000	0.06210	0.06210	0.06210	0.06210	0.04210	0.04210	0.04210	0.04210
L24			0.06050	0.06040			0.04050	0.04040			0.06280	0.06280			0.04280	0.04280
L24A			0.05950	0.05950			0.03950	0.03950			0.06220	0.06240			0.04220	0.04240
L24B				0.05860				0.03860				0.06200				0.04200
U1				0.05000				0.03000				0.05350				0.03350
U2				0.04680				0.02680				0.05010				0.03010
U3				0.04170				0.02170				0.04500				0.02500
U4				0.03860				0.01860				0.04190				0.02190
U5				0.03360				0.01360				0.03690				0.01690
U6				0.02910				0.00910				0.03170				0.01170
U7				0.02350				0.00350				0.02600				0.00600
U8				0.01820				-0.00180				0.02010				0.00010
U8A				0.01820				-0.00180				0.02000				0.00000

Table E.17 continued

AUC 2 LOAD NUMBER	PILE COMPRESSION TT-1 & TT-2 AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP MOVEMENT AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP CREEP 1-4 MIN. (inches)	CREEP 2-4 MIN. (inches)
L0				0.0000				0.0000	0.0000	0.0000
L1	0.0011	0.0011	0.0011	0.0012	0.0011	0.0011	0.0011	0.0012	0.0001	0.0001
L2	0.0029	0.0030	0.0031	0.0032	0.0029	0.0030	0.0031	0.0032	0.0001	0.0001
L3	0.0055	0.0056	0.0057	0.0058	0.0055	0.0056	0.0057	0.0058	0.0003	0.0001
L4	0.0084	0.0086	0.0087	0.0089	0.0084	0.0086	0.0087	0.0089	0.0003	0.0002
L5	0.0117	0.0117	0.0120	0.0121	0.0167	0.0167	0.0170	0.0172	0.0004	0.0002
L6	0.0138	0.0138	0.0138	0.0140	0.0188	0.0238	0.0239	0.0240	0.0002	0.0001
L7	0.0154	0.0155	0.0158	0.0158	0.0254	0.0255	0.0258	0.0258	0.0002	0.0000
L8	0.0173	0.0174	0.0177	0.0177	0.0273	0.0274	0.0327	0.0327	0.0054	0.0001
L9	0.0192	0.0193	0.0193	0.0196	0.0342	0.0343	0.0343	0.0346	0.0003	0.0003
L10	0.0211	0.0212	0.0213	0.0214	0.0361	0.0362	0.0363	0.0364	0.0002	0.0001
L11	0.0229	0.0230	0.0230	0.0231	0.0379	0.0380	0.0380	0.0381	0.0001	0.0001
L12	0.0246	0.0248	0.0248	0.0249	0.0396	0.0398	0.0448	0.0449	0.0051	0.0000
L13	0.0265	0.0266	0.0266	0.0267	0.0465	0.0466	0.0466	0.0517	0.0052	0.0052
L14	0.0282	0.0283	0.0283	0.0286	0.0532	0.0533	0.0533	0.0536	0.0003	0.0003
L15	0.0300	0.0300	0.0301	0.0303	0.0600	0.0600	0.0601	0.0603	0.0003	0.0002
L16	0.0318	0.0318	0.0318	0.0319	0.0668	0.0668	0.0668	0.0669	0.0001	0.0001
L17	0.0334	0.0334	0.0334	0.0335	0.0684	0.0684	0.0684	0.0685	0.0002	0.0001
L18	0.0348	0.0348	0.0348	0.0348	0.0748	0.0748	0.0748	0.0798	0.0050	0.0050
L19	0.0362	0.0362	0.0363	0.0364	0.0862	0.0862	0.0863	0.0864	0.0001	0.0001
L20	0.0375	0.0376	0.0375	0.0375	0.0925	0.0926	0.0925	0.0925	-0.0000	0.0001
L21	0.0385	0.0385	0.0385	0.0384	0.0935	0.0935	0.0985	0.0984	0.0049	-0.0001
L22	0.0397	0.0399	0.0401	0.0402	0.1047	0.1049	0.1151	0.1201	0.0152	0.0051
L23	0.0411	0.0411	0.0411	0.0411	0.1361	0.1361	0.1511	0.1761	0.0400	0.0250
L24			0.0416	0.0416			0.2366	0.3066	0.3066	
L24A			0.0409	0.0410			0.5059	0.7910	0.7910	
L24B				0.0403				0.8653		
U1				0.0318				0.8668		
U2				0.0285				0.8635		
U3				0.0234				0.8584		
U4				0.0203				0.8503		
U5				0.0153				0.8403		
U6				0.0104				0.8304		
U7				0.0047				0.8198		
U8				-0.0009				0.8092		
U8A				-0.0009				0.8091		

Table E.17 continued

AUC 2 LOAD NUMBER	TOP OF PILE MOVEMENT - WIRELINE READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)	BSIGHT @0.5MIN. (inches)	TOP OF PILE MOVEMENT - SURVEY LEVEL READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)
L0				0.945				0.000	0.990				0.990				0.000
L1	0.945	0.945	0.945	0.945	0.000	0.000	0.000	0.000		0.990	0.990	0.990	0.990	0.000	0.000	0.000	0.000
L2	0.945	0.945	0.945	0.945	0.000	0.000	0.000	0.000	0.990	0.990	0.990	0.990	0.990	0.000	0.000	0.000	0.000
L3	0.945	0.945	0.945	0.945	0.000	0.000	0.000	0.000		0.990	0.990	0.990	0.990	0.000	0.000	0.000	0.000
L4	0.945	0.945	0.945	0.945	0.000	0.000	0.000	0.000	0.990	0.990	0.990	0.990	0.990	0.000	0.000	0.000	0.000
L5	0.950	0.950	0.950	0.950	0.005	0.005	0.005	0.005		0.995	0.995	0.995	0.995	0.005	0.005	0.005	0.005
L6	0.950	0.955	0.955	0.955	0.005	0.010	0.010	0.010	0.990	0.995	0.995	0.995	0.995	0.005	0.005	0.005	0.005
L7	0.955	0.955	0.955	0.955	0.010	0.010	0.010	0.010		1.000	1.000	1.000	1.000	0.010	0.010	0.010	0.010
L8	0.955	0.955	0.960	0.960	0.010	0.010	0.015	0.015	0.990	1.000	1.000	1.000	1.000	0.010	0.010	0.010	0.010
L9	0.960	0.960	0.960	0.960	0.015	0.015	0.015	0.015		1.000	1.000	1.000	1.000	0.010	0.010	0.010	0.010
L10	0.960	0.960	0.960	0.960	0.015	0.015	0.015	0.015	0.990	1.000	1.000	1.000	1.000	0.010	0.010	0.010	0.010
L11	0.960	0.960	0.960	0.960	0.015	0.015	0.015	0.015		1.000	1.000	1.000	1.000	0.010	0.010	0.010	0.010
L12	0.960	0.960	0.965	0.965	0.015	0.015	0.020	0.020	0.990	1.000	1.000	1.000	1.000	0.010	0.010	0.010	0.010
L13	0.965	0.965	0.965	0.970	0.020	0.020	0.020	0.025		1.000	1.000	1.000	1.000	0.010	0.010	0.010	0.010
L14	0.970	0.970	0.970	0.970	0.025	0.025	0.025	0.025	0.990	1.000	1.000	1.000	1.000	0.010	0.010	0.010	0.010
L15	0.975	0.975	0.975	0.975	0.030	0.030	0.030	0.030		1.010	1.010	1.010	1.010	0.020	0.020	0.020	0.020
L16	0.980	0.980	0.980	0.980	0.035	0.035	0.035	0.035	0.990	1.010	1.010	1.010	1.010	0.020	0.020	0.020	0.020
L17	0.980	0.980	0.980	0.980	0.035	0.035	0.035	0.035		1.020	1.020	1.020	1.020	0.030	0.030	0.030	0.030
L18	0.985	0.985	0.985	0.990	0.040	0.040	0.040	0.045	0.990	1.020	1.020	1.020	1.020	0.030	0.030	0.030	0.030
L19	0.995	0.995	0.995	0.995	0.050	0.050	0.050	0.050		1.030	1.030	1.030	1.030	0.040	0.040	0.040	0.040
L20	1.000	1.000	1.000	1.000	0.055	0.055	0.055	0.055	0.990	1.040	1.040	1.040	1.040	0.050	0.050	0.050	0.050
L21	1.000	1.000	1.005	1.005	0.055	0.055	0.060	0.060		1.040	1.040	1.050	1.050	0.050	0.050	0.060	0.060
L22	1.010	1.010	1.020	1.025	0.065	0.065	0.075	0.080	0.990	1.050	1.050	1.060	1.070	0.060	0.060	0.070	0.080
L23	1.040	1.040	1.055	1.080	0.095	0.095	0.110	0.135		1.080	1.090	1.100	1.110	0.090	0.100	0.110	0.120
L24			1.140	1.210			0.195	0.265	0.990			1.180	1.240			0.190	0.250
L24A			1.410	1.695			0.465	0.750	0.990			1.450	1.740			0.460	0.750
L24B				1.770				0.825					1.810				0.820
U1				1.780				0.835	0.990				1.810				0.820
U2				1.780				0.835					1.810				0.820
U3				1.780				0.835	0.990				1.800				0.810
U4				1.775				0.830					1.800				0.810
U5				1.770				0.825	0.990				1.800				0.810
U6				1.765				0.820					1.795				0.805
U7				1.760				0.815					1.790				0.800
U8				1.755				0.810					1.785				0.795
U8A				1.755				0.810					1.780				0.790

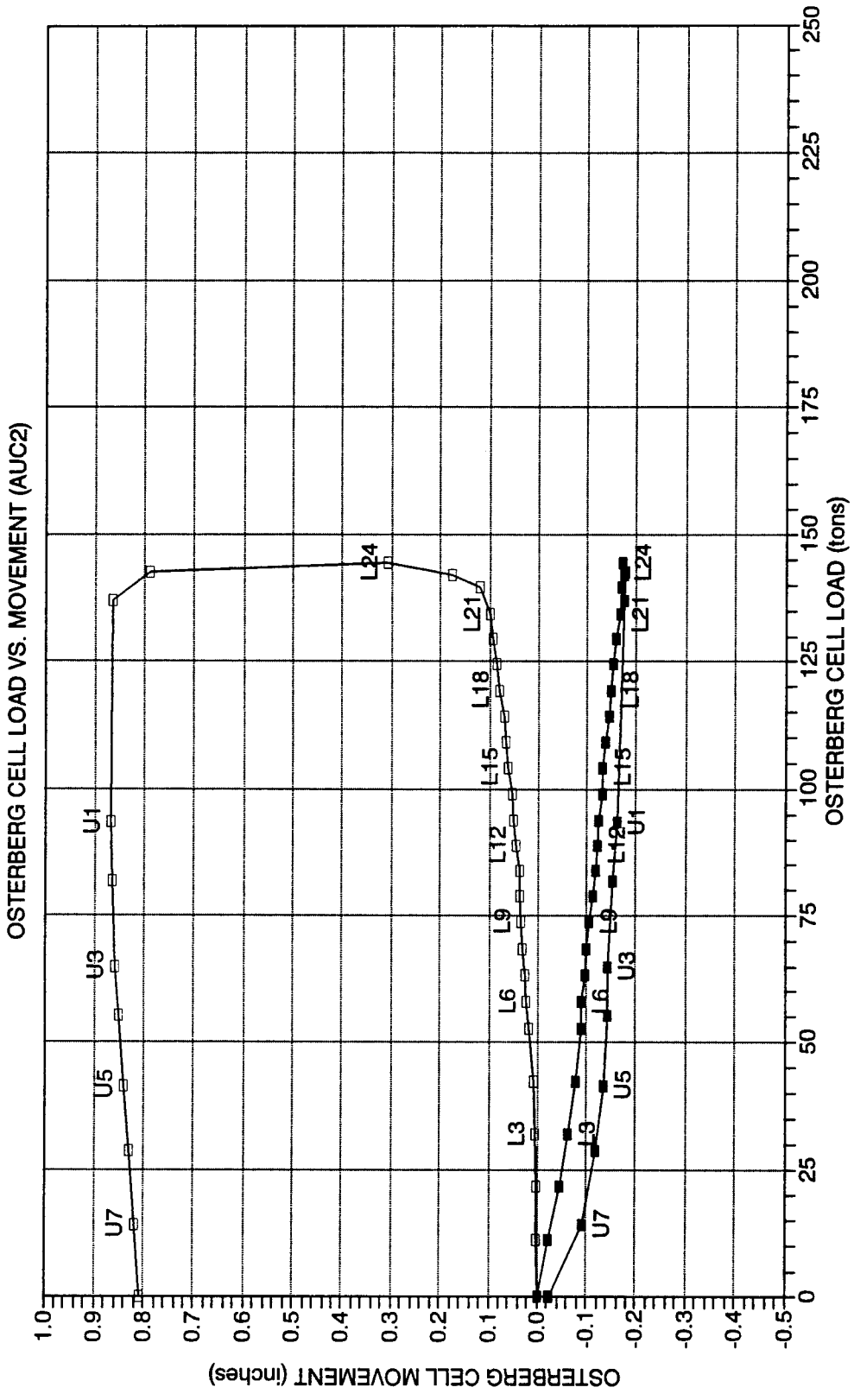


Figure E.41 Load Test 2 Movement: Aucilla

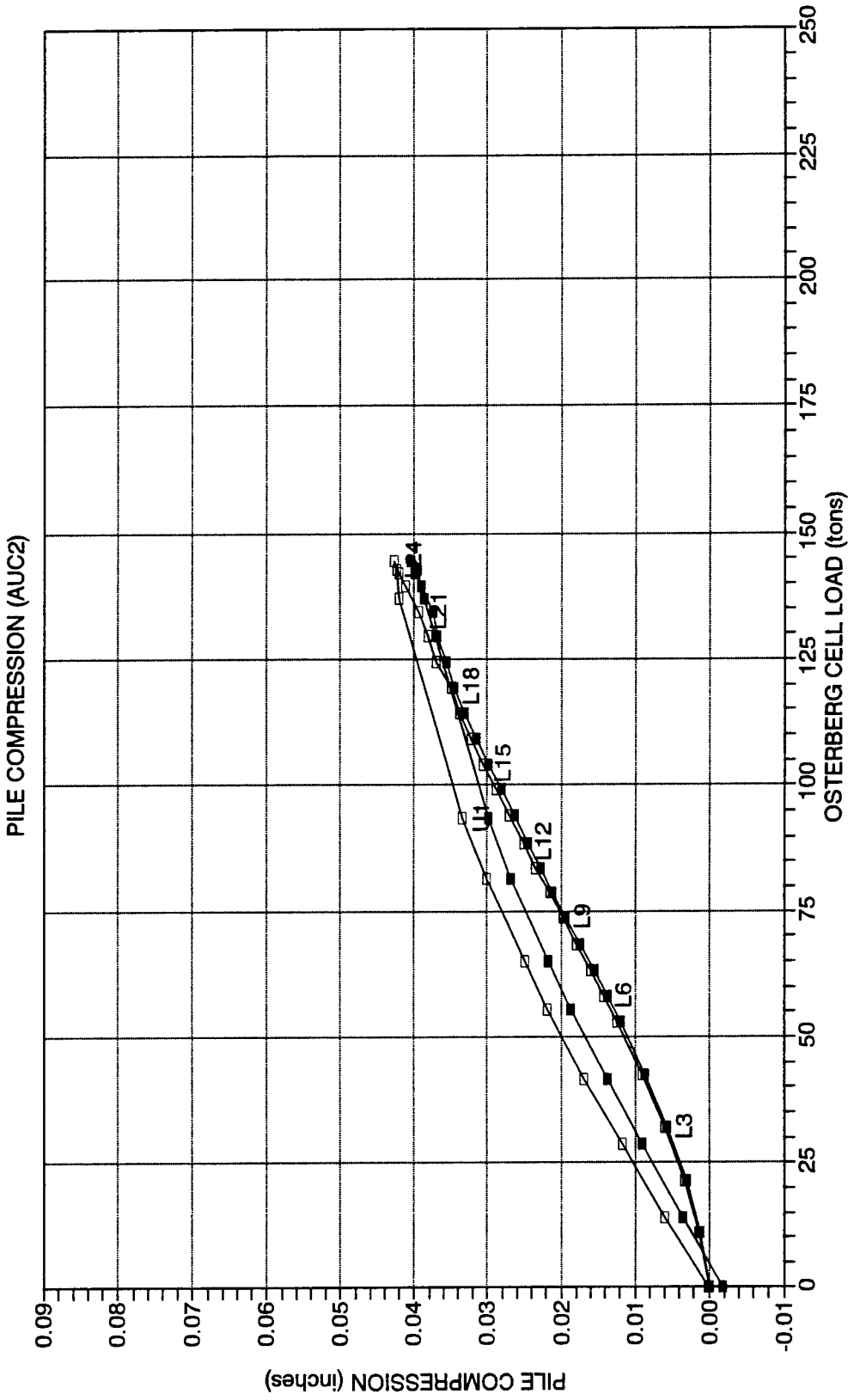


Figure E.42 Load Test 2 Compression: Aucilla

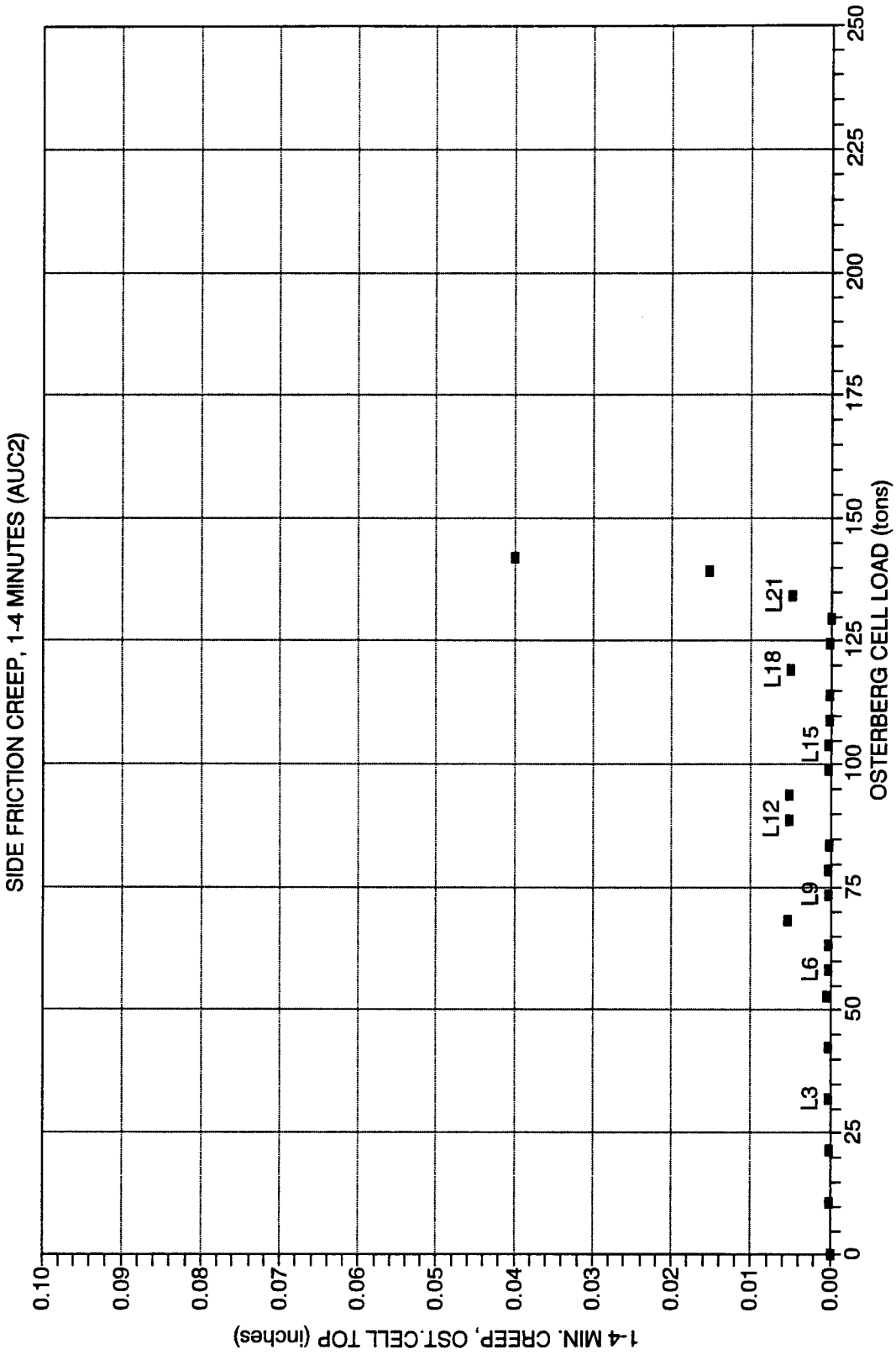


Figure E.43 Load Test 2 Creep: Aucilla

Table E.18 Data for Load Test 3: Aucilla

AUC 3 LOAD NUMBER	TIME INCR. (min)	OSTERBERG CELL LOAD: MEASURED PRESSURE (psi)	CORRECTED PRESSURE (psi)	VW TRANSDUCER READING (tons)	PRESSURE (psi)	EXTENSION @4 MIN. (inches)	LOAD (tons)	OSTERBERG CELL BOTTOM TELLTALE: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)	POISSON EFFECT ADJ. (inches)	OSTERBERG CELL BOTTOM MOVEMENT: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)
L0		0	0	9128	0	1.510	0.0				0.4990	0.0000				0.0000
L1	4	300	281	9015	359	1.535	11.2	0.5150	0.5150	0.5157	0.5162	0.0062	-0.0222	-0.0222	-0.0229	-0.0234
L2	4	700	676	8904	699	1.562	21.7	0.5334	0.5341	0.5348	0.5353	0.0121	-0.0465	-0.0472	-0.0479	-0.0484
L3	4	1050	1022	8793	1036	1.583	32.1	0.5465	0.5470	0.5477	0.5483	0.0179	-0.0654	-0.0659	-0.0666	-0.0672
L4	4	1400	1368	8681	1372	1.600	42.6	0.5553	0.5559	0.5567	0.5573	0.0237	-0.0800	-0.0806	-0.0814	-0.0820
L5	4	1750	1713	8567	1713	1.617	53.1	0.5621	0.5628	0.5638	0.5647	0.0296	-0.0907	-0.0914	-0.0894	-0.0903
L6	4	2100	2059	8454	2049	1.632	63.5	0.5685	0.5690	0.5700	0.5704	0.0354	-0.0999	-0.1004	-0.1014	-0.1018
L7	4	2500	2455	8344	2374	1.646	73.5	0.5737	0.5740	0.5750	0.5758	0.0410	-0.1107	-0.1110	-0.1100	-0.1108
L8	4	2800	2751	8232	2705	1.660	83.8	0.5780	0.5783	0.5790	0.5800	0.0468	-0.1158	-0.1161	-0.1168	-0.1178
L9	4	3150	3097	8118	3040	1.674	94.1	0.5818	0.5825	0.5837	0.5853	0.0526	-0.1204	-0.1211	-0.1223	-0.1239
L10	4	3500	3443	8006	3369	1.689	104.3	0.5873	0.5885	0.5891	0.5910	0.0582	-0.1285	-0.1297	-0.1283	-0.1302
L11	4	3800	3739	7895	3694	1.705	114.3	0.5922	0.5935	0.5949	0.5970	0.0639	-0.1371	-0.1384	-0.1398	-0.1419
L12	4	4100	4036	7783	4021	1.721	124.4	0.5990	0.6007	0.6019	0.6040	0.0695	-0.1495	-0.1492	-0.1484	-0.1505
L13	4	4450	4381	7672	4345	1.738	134.4	0.6065	0.6080	0.6102	0.6123	0.0751	-0.1536	-0.1541	-0.1563	-0.1534
L14	4	4850	4777	7561	4668	1.758	144.4	0.6153	0.6171	0.6200	0.6238	0.0807	-0.1580	-0.1588	-0.1617	-0.1655
L15	4	5100	5024	7447	4999	1.782	154.7	0.6280	0.6305	0.6341	0.6389	0.0864	-0.1734	-0.1749	-0.1715	-0.1713
L16	4	5400	5320	7334	5327	1.875	164.8	0.6520	0.6640	0.6820	0.7230	0.0921	-0.1751	-0.1771	-0.1751	-0.1811
L17	4	5500	5419	7300	5425	2.186	167.9	0.7870	0.8205	0.8850	1.0320	0.0938	-0.1818	-0.1853	-0.1798	-0.1868
U1	3	5300	5221	7372	5216	2.259	161.4				1.1095	0.0902				-0.1857
U2	3	0	0	9128	0	2.189	0.0				1.1311	0.0000				-0.1021
U2A	3	0	0	9130	0	2.191	0.0				1.1334	0.0000				-0.1024
U2B	6	0	0	9128	0	2.193	0.0				1.1361	0.0000				-0.1171

Table E.18 continued

AUC 3 LOAD NUMBER	TOP OF OSTERBERG CELL TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	PILE COMPRESSION, TT-1 MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4 MIN. (inches)	TOP OF OSTERBERG CELL TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)	PILE COMPRESSION, TT-2 MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4 MIN. (inches)
L0				0.00010				0.00000				0.00010				0.00000
L1	0.00110	0.00120	0.00120	0.00120	0.00100	0.00110	0.00110	0.00110	0.00100	0.00100	0.00100	0.00130	0.00090	0.00090	0.00090	0.00120
L2	0.00300	0.00300	0.00300	0.00300	0.00290	0.00290	0.00290	0.00290	0.00300	0.00300	0.00310	0.00350	0.00290	0.00290	0.00300	0.00340
L3	0.00520	0.00520	0.00520	0.00520	0.00510	0.00510	0.00510	0.00510	0.00570	0.00590	0.00590	0.00590	0.00560	0.00580	0.00580	0.00580
L4	0.00800	0.00800	0.00810	0.00810	0.00790	0.00790	0.00800	0.00800	0.00820	0.00830	0.08500	0.00850	0.00810	0.00820	0.08490	0.00840
L5	0.01100	0.01120	0.01120	0.01120	0.01090	0.01110	0.01110	0.01110	0.01180	0.01190	0.01190	0.01190	0.01170	0.01180	0.01180	0.01180
L6	0.01420	0.01420	0.01420	0.01460	0.01410	0.01410	0.01410	0.01450	0.01500	0.01510	0.01510	0.01520	0.01490	0.01500	0.01500	0.01510
L7	0.01770	0.01780	0.01790	0.01800	0.01760	0.01770	0.01780	0.01790	0.01830	0.01840	0.01850	0.01870	0.01820	0.01830	0.01840	0.01860
L8	0.02120	0.02120	0.02120	0.02160	0.02110	0.02110	0.02110	0.02150	0.02190	0.02190	0.02200	0.02220	0.02180	0.02180	0.02190	0.02210
L9	0.02480	0.02500	0.02510	0.02520	0.02470	0.02490	0.02500	0.02510	0.02550	0.02570	0.02580	0.02590	0.02540	0.02560	0.02570	0.02580
L10	0.02820	0.02840	0.02860	0.02880	0.02810	0.02830	0.02850	0.02870	0.02900	0.02900	0.02910	0.02960	0.02890	0.02890	0.02900	0.02950
L11	0.03220	0.03220	0.03220	0.03240	0.03210	0.03210	0.03210	0.03230	0.03290	0.03300	0.03300	0.03330	0.03280	0.03290	0.03290	0.03320
L12	0.03600	0.03600	0.03620	0.03620	0.03590	0.03590	0.03610	0.03610	0.03690	0.03690	0.03700	0.03700	0.03680	0.03680	0.03690	0.03690
L13	0.03910	0.03920	0.03920	0.03920	0.03900	0.03910	0.03910	0.03910	0.04070	0.04070	0.04080	0.04080	0.04060	0.04060	0.04070	0.04070
L14	0.04220	0.04220	0.04230	0.04240	0.04210	0.04210	0.04220	0.04230	0.04350	0.04360	0.04360	0.04370	0.04340	0.04350	0.04350	0.04360
L15	0.04500	0.04500	0.04500	0.04480	0.04490	0.04490	0.04490	0.04470	0.04630	0.04640	0.04640	0.04650	0.04620	0.04630	0.04630	0.04640
L16	0.04790	0.04800	0.04810	0.04810	0.04780	0.04790	0.04800	0.04800	0.04980	0.04980	0.04990	0.04990	0.04970	0.04970	0.04980	0.04980
L17	0.04890	0.04830	0.04850	0.04850	0.04880	0.04820	0.04840	0.04840	0.05100	0.05090	0.05090	0.05100	0.05090	0.05080	0.05080	0.05090
U1				0.04680				0.04670				0.04970				0.04960
U2				0.04520				0.04510				0.04830				0.04820
U2A				0.04480				0.04470				0.04790				0.04780
U2B				0.04430				0.04420				0.04750				0.04740

Table E.18 continued

AUC 3 LOAD NUMBER	PILE COMPRESSION TT-1 & TT-2 AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP MOVEMENT AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP CREEP 1-4 MIN. (inches)	CREEP 2-4 MIN. (inches)
L0				0.0000				0.0000	0.0000	0.0000
L1	0.0010	0.0010	0.0010	0.0012	0.0010	0.0010	0.0010	0.0012	0.0001	0.0001
L2	0.0029	0.0029	0.0030	0.0032	0.0029	0.0029	0.0030	0.0032	0.0002	0.0002
L3	0.0054	0.0055	0.0055	0.0055	0.0054	0.0055	0.0055	0.0055	0.0000	0.0000
L4	0.0080	0.0081	0.0465	0.0082	0.0080	0.0081	0.0465	0.0082	0.0002	-0.0383
L5	0.0113	0.0115	0.0115	0.0115	0.0133	0.0135	0.0164	0.0164	0.0030	0.0000
L6	0.0145	0.0146	0.0146	0.0148	0.0195	0.0195	0.0195	0.0198	0.0003	0.0003
L7	0.0179	0.0180	0.0181	0.0183	0.0229	0.0230	0.0251	0.0252	0.0023	0.0002
L8	0.0215	0.0215	0.0215	0.0218	0.0315	0.0315	0.0315	0.0318	0.0004	0.0003
L9	0.0251	0.0253	0.0254	0.0255	0.0400	0.0402	0.0403	0.0404	0.0002	0.0001
L10	0.0285	0.0286	0.0288	0.0291	0.0465	0.0466	0.0488	0.0491	0.0025	0.0004
L11	0.0325	0.0325	0.0325	0.0328	0.0525	0.0525	0.0525	0.0528	0.0003	0.0003
L12	0.0364	0.0364	0.0365	0.0365	0.0564	0.0584	0.0605	0.0605	0.0021	0.0000
L13	0.0398	0.0399	0.0399	0.0399	0.0688	0.0699	0.0699	0.0749	0.0050	0.0050
L14	0.0428	0.0428	0.0429	0.0430	0.0817	0.0828	0.0829	0.0830	0.0001	0.0001
L15	0.0456	0.0456	0.0456	0.0456	0.0876	0.0886	0.0956	0.1005	0.0120	0.0050
L16	0.0488	0.0488	0.0489	0.0489	0.1187	0.1288	0.1489	0.1839	0.0551	0.0350
L17	0.0499	0.0495	0.0496	0.0497	0.2498	0.2795	0.3496	0.4896	0.2101	0.1401
U1				0.0482				0.5632		
U2				0.0467				0.5767		
U2A				0.0463				0.5783		
U2B				0.0458				0.5658		

Table E.18 continued

AUC 3 LOAD NUMBER	TOP OF PILE MOVEMENT - WIRELINE READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)	BSIGHT @0.5MIN. (inches)	TOP OF PILE MOVEMENT - SURVEY LEVEL READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)
L0				1.080				0.000	3.200				0.930			
L1	1.080	1.080	1.080	1.080	0.000	0.000	0.000	0.000		0.930	0.930	0.930	0.930	0.000	0.000	0.000
L2	1.080	1.080	1.080	1.080	0.000	0.000	0.000	0.000	3.200	0.930	0.930	0.930	0.930	0.000	0.000	0.000
L3	1.080	1.080	1.080	1.080	0.000	0.000	0.000	0.000		0.930	0.930	0.930	0.930	0.000	0.000	0.000
L4	1.080	1.080	1.080	1.080	0.000	0.000	0.000	0.000	3.200	0.930	0.930	0.930	0.930	0.000	0.000	0.000
L5	1.082	1.082	1.085	1.085	0.002	0.002	0.005	0.005		0.930	0.930	0.930	0.930	0.000	0.000	0.000
L6	1.085	1.085	1.085	1.085	0.005	0.005	0.005	0.005		0.930	0.930	0.930	0.930	0.000	0.000	0.000
L7	1.085	1.085	1.087	1.087	0.005	0.005	0.007	0.007	3.200	0.930	0.930	0.930	0.930	0.000	0.000	0.000
L8	1.090	1.090	1.090	1.090	0.010	0.010	0.010	0.010		0.940	0.940	0.940	0.940	0.010	0.010	0.010
L9	1.095	1.095	1.095	1.095	0.015	0.015	0.015	0.015		0.945	0.945	0.945	0.945	0.015	0.015	0.015
L10	1.098	1.098	1.100	1.100	0.018	0.018	0.020	0.020	3.200	0.945	0.945	0.945	0.950	0.015	0.015	0.015
L11	1.100	1.100	1.100	1.100	0.020	0.020	0.020	0.020		0.960	0.960	0.960	0.960	0.030	0.030	0.030
L12	1.100	1.102	1.104	1.104	0.020	0.022	0.024	0.024		0.960	0.960	0.960	0.960	0.030	0.030	0.030
L13	1.109	1.110	1.110	1.115	0.029	0.030	0.030	0.035	3.200	0.965	0.970	0.970	0.970	0.035	0.040	0.040
L14	1.119	1.120	1.120	1.120	0.039	0.040	0.040	0.040		0.970	0.975	0.975	0.975	0.040	0.045	0.045
L15	1.122	1.123	1.130	1.135	0.042	0.043	0.050	0.055	3.200	0.980	0.985	0.985	0.985	0.050	0.055	0.055
L16	1.150	1.160	1.180	1.215	0.070	0.080	0.100	0.135		1.000	1.010	1.025	1.065	0.070	0.080	0.095
L17	1.280	1.310	1.380	1.520	0.200	0.230	0.300	0.440		1.125	1.160	1.225	1.360	0.195	0.230	0.295
U1				1.595				0.515	3.200				1.445			
U2				1.610				0.530					1.460			
U2A				1.612				0.532					1.460			
U2B				1.600				0.520	3.200				1.460			

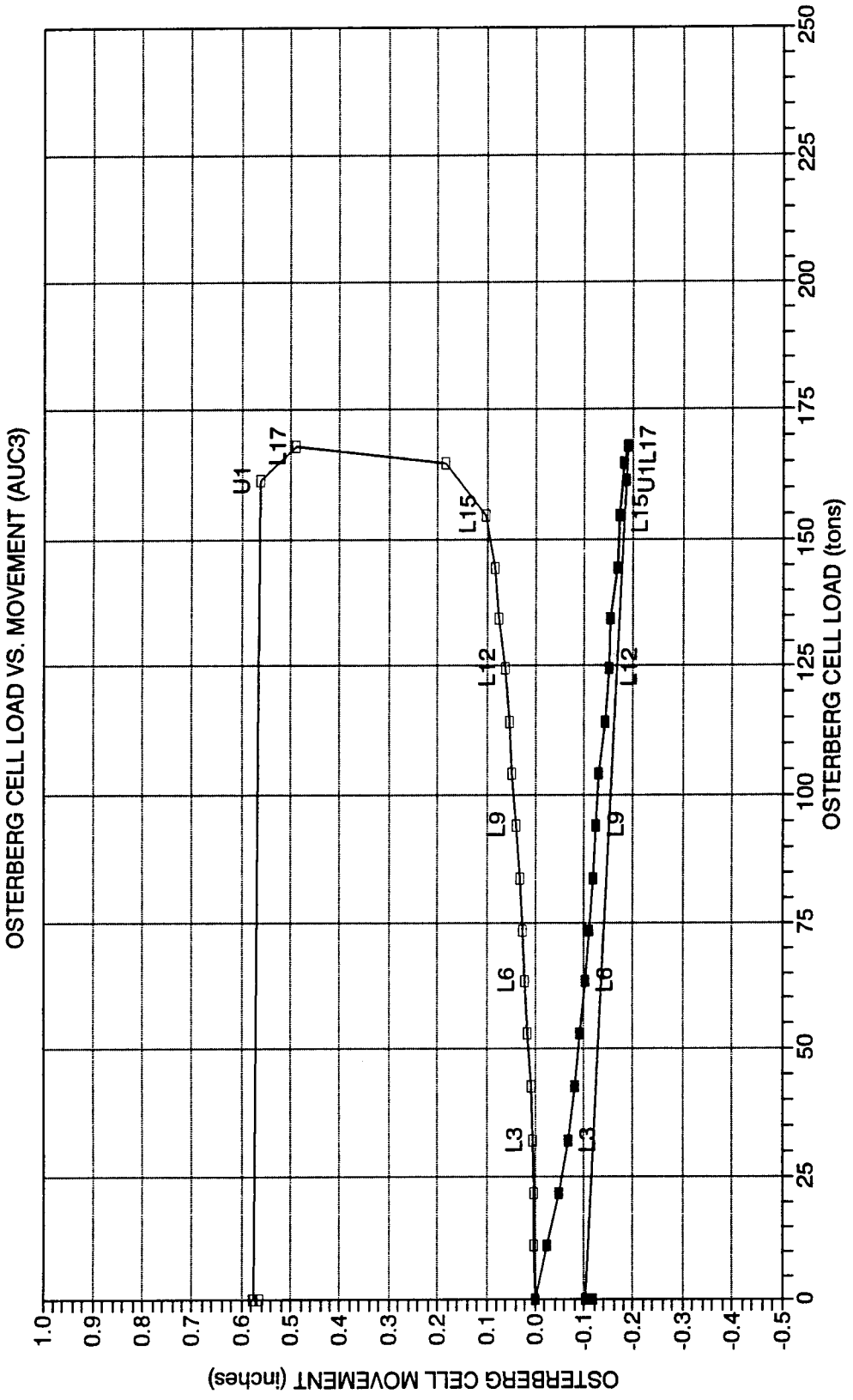


Figure E.44 Load Test 3 Movement: Aucilla

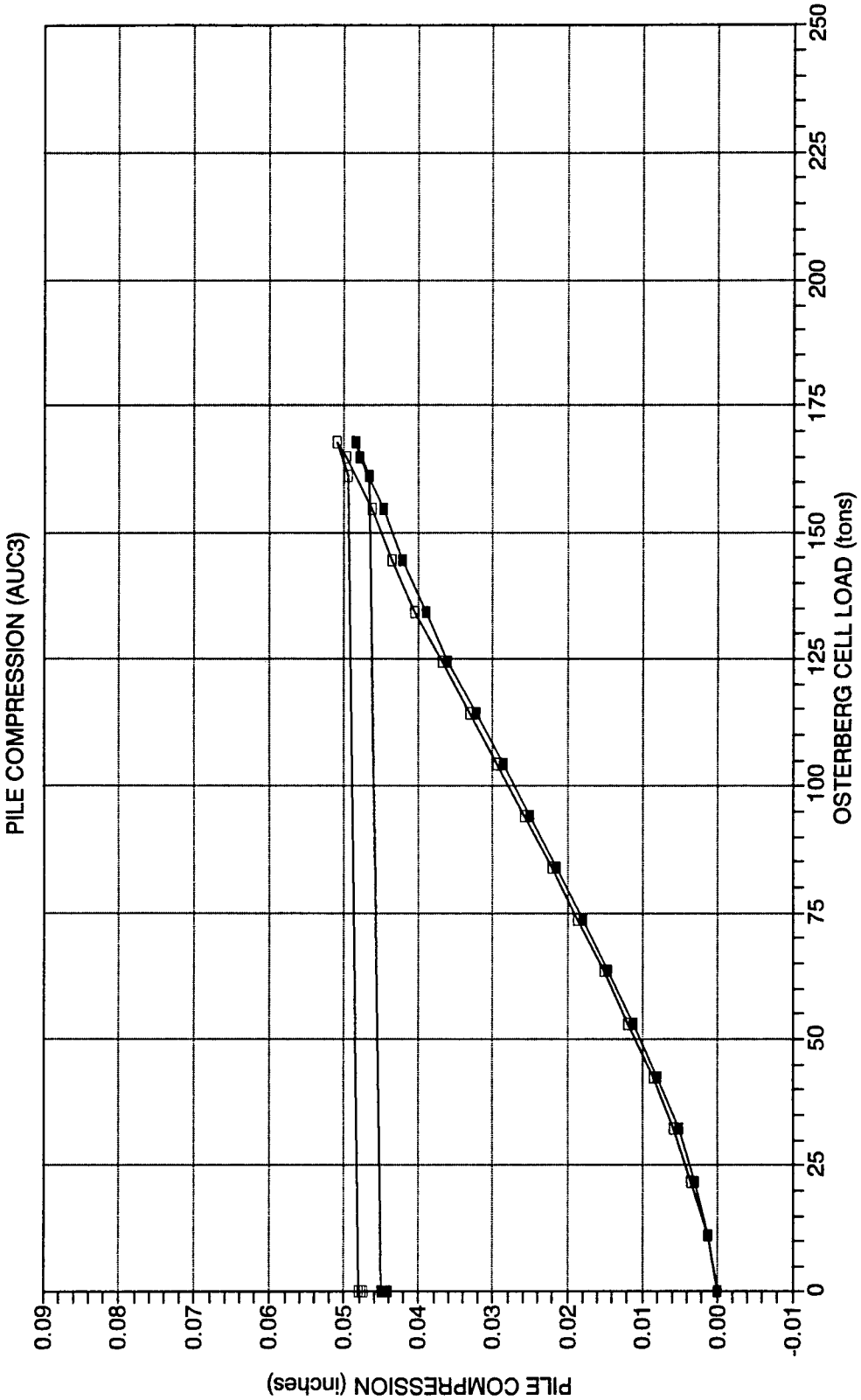


Figure E.45 Load Test 3 Compression: Aucilla

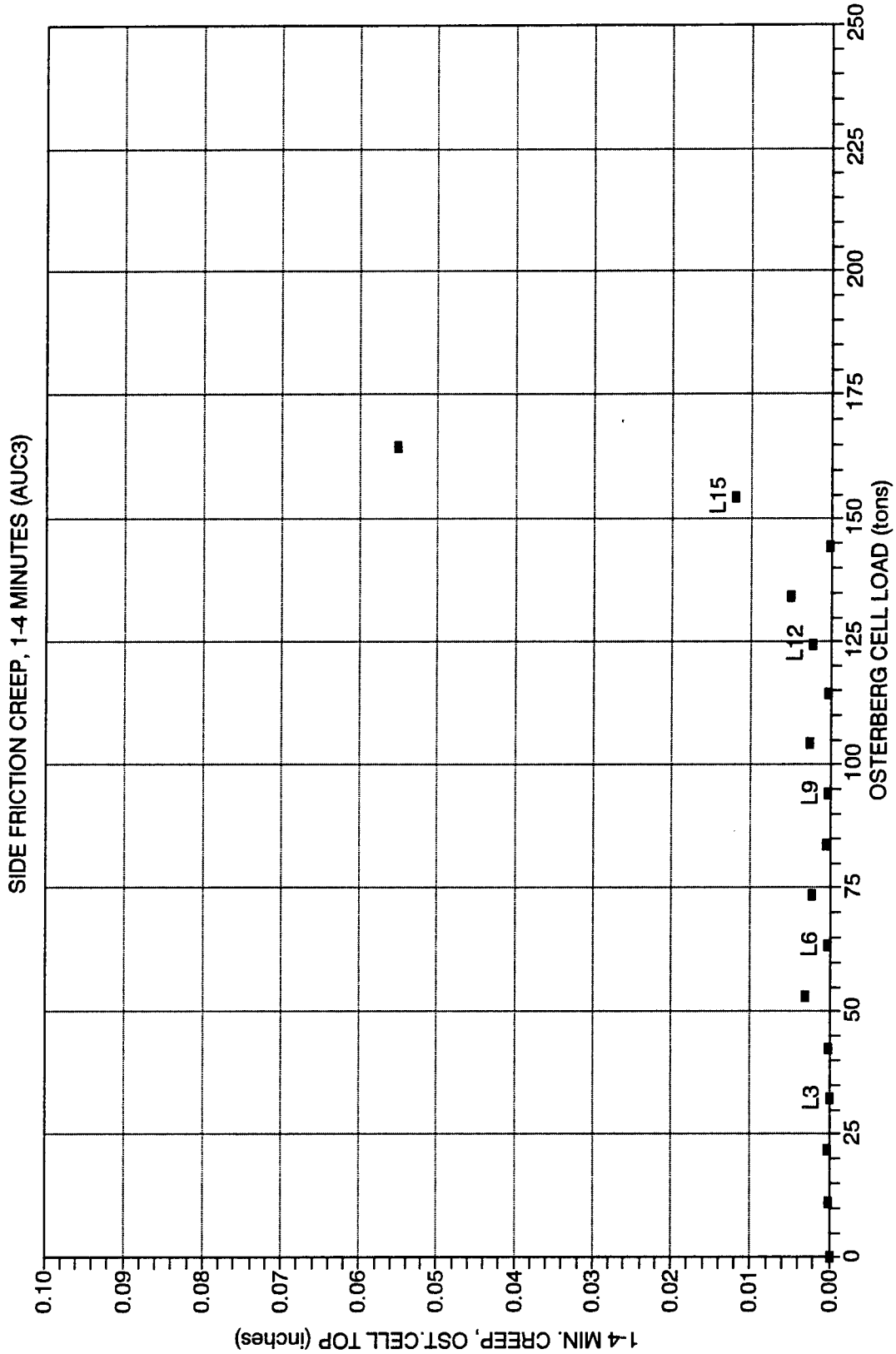


Figure E.46 Load Test 3 Creep: Aucilla

Table E.19 Data for Load Test 4: Aucilla

AUC 4 LOAD NUMBER	TIME INCR. (min)	OSTERBERG CELL LOAD: MEASURED PRESSURE (psi)	CORRECTED PRESSURE (psi)	VW TRANSDUCER READING (tons)	PRESSURE (psi)	EXTENSION @4 MIN. (inches)	LOAD (tons)	OSTERBERG CELL BOTTOM TELLTALE: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)	POISSON EFFECT ADJ. (inches)	OSTERBERG CELL BOTTOM MOVEMENT: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)
2L0		0	0	9130	0	2.193	0.0				0.3902	0.0000				0.0000
2L1	4	250	231	9018	355	2.228	11.2	0.4160	0.4162	0.4165	0.4169	0.0061	-0.0319	-0.0321	-0.0324	-0.0328
2L2	4	700	676	8907	696	2.256	21.7	0.4350	0.4354	0.4360	0.4367	0.0120	-0.0568	-0.0572	-0.0578	-0.0585
2L3	4	1010	982	8794	1039	2.277	32.3	0.4468	0.4475	0.4478	0.4488	0.0180	-0.0746	-0.0753	-0.0756	-0.0766
2L4	4	1400	1368	8682	1375	2.294	42.7	0.4551	0.4556	0.4565	0.4569	0.0238	-0.0887	-0.0892	-0.0901	-0.0905
2L5	4	1750	1713	8570	1710	2.308	53.1	0.4606	0.4612	0.4619	0.4626	0.0296	-0.1000	-0.1006	-0.1013	-0.1020
2L6	4	2100	2059	8456	2049	2.321	63.5	0.4650	0.4654	0.4660	0.4669	0.0354	-0.1052	-0.1056	-0.1062	-0.1071
2L7	4	2450	2405	8345	2377	2.333	73.7	0.4682	0.4682	0.4689	0.4700	0.0411	-0.1141	-0.1141	-0.1148	-0.1159
2L8	4	2800	2751	8232	2711	2.344	84.0	0.4702	0.4707	0.4715	0.4722	0.0469	-0.1219	-0.1224	-0.1232	-0.1239
2L9	4	3100	3047	8121	3037	2.355	94.1	0.4725	0.4727	0.4729	0.4736	0.0525	-0.1248	-0.1250	-0.1252	-0.1259
2L10	4	3490	3433	8007	3372	2.365	104.4	0.4736	0.4736	0.4744	0.4747	0.0583	-0.1317	-0.1317	-0.1325	-0.1328
2L11	4	3800	3739	7898	3691	2.375	114.3	0.4751	0.4751	0.4752	0.4759	0.0638	-0.1387	-0.1387	-0.1388	-0.1395
2L12	4	4100	4036	7783	4027	2.384	124.7	0.4762	0.4762	0.4764	0.4765	0.0696	-0.1456	-0.1456	-0.1458	-0.1459
2L13	4	4450	4381	7673	4348	2.396	134.6	0.4766	0.4768	0.4772	0.4789	0.0751	-0.1515	-0.1517	-0.1471	-0.1488
2L14	4	4775	4703	7562	4671	2.408	144.6	0.4796	0.4806	0.4818	0.4821	0.0807	-0.1521	-0.1511	-0.1523	-0.1526
2L15	4	5125	5048	7444	5013	2.427	155.2	0.4849	0.4863	0.4877	0.4908	0.0867	-0.1614	-0.1628	-0.1642	-0.1623
2L16	4	5425	5345	7335	5329	2.451	165.0	0.4952	0.4978	0.5005	0.5052	0.0921	-0.1671	-0.1647	-0.1624	-0.1671
2L17	4	5750	5666	7225	5648	2.509	174.8	0.5144	0.5217	0.5288	0.5549	0.0976	-0.1718	-0.1691	-0.1712	-0.1823
2L18	4	5800	5715	7200	5720	2.578	177.0	0.5631	0.5710	0.5872	0.6221	0.0989	-0.1718	-0.1697	-0.1759	-0.1758
2L19	4	5900	5814	7175	5793	2.712	179.3	0.6495	0.6655	0.6962	0.7535	0.1001	-0.1794	-0.1804	-0.1811	-0.1784
2L19A	4	5900	5814	7175	5793	2.815	179.3				0.8572	0.1001				-0.1771
2U1	3	5285	5207	7409	5115	2.834	158.4				0.8908	0.0884				-0.1790
2U2	3	4400	4332	7682	4321	2.821	133.8				0.8970	0.0747				-0.1715
2U3	3	3600	3542	7960	3510	2.803	108.7				0.9003	0.0607				-0.1408
2U4	3	3000	2949	8166	2905	2.788	90.0				0.9011	0.0502				-0.1311
2U5	3	2225	2183	8428	2132	2.766	66.1				0.9008	0.0368				-0.1224
2U6	3	1500	1466	8655	1456	2.748	45.2				0.9008	0.0252				-0.1158
2U7	3	650	627	8869	812	2.699	25.3				0.8721	0.0140				-0.0759
2U8	3	0	0	9130	0	2.596	0.0				0.7915	0.0000				0.0087
2U8A	3	0	0	9130	0	2.592	0.0				0.7882	0.0000				0.0120

NOTE: HYDRAULIC CONNECTION WAS BLOCKED DURING INITIAL LOADING (1L SERIES) AND THE OSTERBERG CELL WAS NOT PRESSURIZED.
1L SERIES MEASUREMENTS INDICATED NO MOVEMENTS AND ARE OMITTED.

Table E.19 continued

AUC 4 LOAD NUMBER	TOP OF OSTERBERG CELL TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	PILE COMPRESSION, TT-1 MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4 MIN. (inches)	TOP OF OSTERBERG CELL TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)	PILE COMPRESSION, TT-2 MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4 MIN. (inches)
2L0				0.01020				0.00000				0.02000				0.00000
2L1	0.01200	0.01200	0.01200	0.01210	0.00180	0.00180	0.00180	0.00190	0.02150	0.02150	0.02150	0.02180	0.00150	0.00150	0.00150	0.00180
2L2	0.01420	0.01420	0.01420	0.01420	0.00400	0.00400	0.00400	0.00400	0.02440	0.02440	0.02450	0.02450	0.00440	0.00440	0.00450	0.00450
2L3	0.01720	0.01720	0.01720	0.01720	0.00700	0.00700	0.00700	0.00700	0.02730	0.02730	0.02730	0.02730	0.00730	0.00730	0.00730	0.00730
2L4	0.02010	0.02020	0.02020	0.02020	0.00990	0.01000	0.01000	0.01000	0.03020	0.03040	0.03040	0.03040	0.01020	0.01040	0.01040	0.01040
2L5	0.02320	0.02320	0.02320	0.02320	0.01300	0.01300	0.01300	0.01300	0.03340	0.03340	0.03350	0.03350	0.01340	0.01340	0.01350	0.01350
2L6	0.02610	0.02620	0.02620	0.02620	0.01590	0.01600	0.01600	0.01600	0.03640	0.03650	0.03660	0.03660	0.01640	0.01650	0.01660	0.01660
2L7	0.02910	0.02920	0.02920	0.02930	0.01890	0.01900	0.01900	0.01910	0.03950	0.03960	0.04010	0.04010	0.01950	0.01960	0.02010	0.02010
2L8	0.03210	0.03220	0.03220	0.03220	0.02190	0.02200	0.02200	0.02200	0.04260	0.04280	0.04320	0.04320	0.02260	0.02280	0.02320	0.02320
2L9	0.03510	0.03510	0.03520	0.03510	0.02490	0.02490	0.02500	0.02490	0.04620	0.04620	0.04630	0.04650	0.02620	0.02620	0.02630	0.02650
2L10	0.03820	0.03820	0.03820	0.03830	0.02800	0.02800	0.02800	0.02810	0.04930	0.04950	0.04950	0.04950	0.02930	0.02950	0.02950	0.02950
2L11	0.04120	0.04120	0.04120	0.04210	0.03100	0.03100	0.03100	0.03190	0.05230	0.05230	0.05250	0.05260	0.03230	0.03230	0.03250	0.03260
2L12	0.04400	0.04420	0.04420	0.04420	0.03380	0.03400	0.03400	0.03400	0.05500	0.05540	0.05540	0.05550	0.03500	0.03540	0.03540	0.03550
2L13	0.04720	0.04720	0.04790	0.04820	0.03700	0.03700	0.03770	0.03800	0.05850	0.05960	0.05900	0.05940	0.03850	0.03960	0.03900	0.03940
2L14	0.05120	0.05120	0.05120	0.05180	0.04100	0.04100	0.04100	0.04160	0.06240	0.06260	0.06260	0.06290	0.04240	0.04260	0.04260	0.04290
2L15	0.05520	0.05540	0.05600	0.05610	0.04500	0.04520	0.04580	0.04590	0.06670	0.06680	0.06700	0.06730	0.04670	0.04680	0.04700	0.04730
2L16	0.05920	0.05920	0.05920	0.05960	0.04900	0.04900	0.04900	0.04940	0.07090	0.07110	0.07130	0.07140	0.05090	0.05110	0.05130	0.05140
2L17	0.06320	0.06320	0.06320	0.06300	0.05300	0.05300	0.05300	0.05280	0.07460	0.07460	0.07460	0.07470	0.05460	0.05460	0.05460	0.05470
2L18	0.06390	0.06390	0.06400	0.06400	0.05370	0.05370	0.05380	0.05380	0.07560	0.07560	0.07560	0.07560	0.05560	0.05560	0.05560	0.05560
2L19	0.06410	0.06410	0.06410	0.06410	0.05390	0.05390	0.05390	0.05390	0.07640	0.07640	0.07650	0.07650	0.05640	0.05640	0.05650	0.05650
2L19A				0.06410				0.05390				0.07650				0.05650
2U1				0.06030				0.05010				0.07310				0.05310
2U2				0.05510				0.04490				0.06770				0.04770
2U3				0.04870				0.03850				0.06070				0.04070
2U4				0.04320				0.03300				0.05530				0.03530
2U5				0.03520				0.02500				0.04710				0.02710
2U6				0.02820				0.01800				0.03970				0.01970
2U7				0.01910				0.00890				0.03060				0.01060
2U8				0.01150				0.00130				0.02220				0.00220
2U8A				0.01120				0.00100				0.02180				0.00180

Table E.19 continued

AUC 4 LOAD NUMBER	PILE COMPRESSION TT-1 & TT-2 AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP MOVEMENT AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP CREEP 1-4 MIN. (inches)	CREEP 2-4 MIN. (inches)
2L0				0.0000				0.0000	0.0000	0.0000
2L1	0.0016	0.0016	0.0016	0.0018	0.0016	0.0016	0.0016	0.0018	0.0002	0.0002
2L2	0.0042	0.0042	0.0043	0.0043	0.0042	0.0042	0.0043	0.0043	0.0000	0.0000
2L3	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0072	0.0000	0.0000
2L4	0.0101	0.0102	0.0102	0.0102	0.0101	0.0102	0.0102	0.0102	0.0000	0.0000
2L5	0.0132	0.0132	0.0133	0.0133	0.0132	0.0132	0.0133	0.0133	0.0001	0.0000
2L6	0.0162	0.0163	0.0163	0.0163	0.0212	0.0213	0.0213	0.0213	0.0001	0.0000
2L7	0.0192	0.0193	0.0196	0.0196	0.0242	0.0243	0.0246	0.0246	0.0003	0.0001
2L8	0.0223	0.0224	0.0226	0.0226	0.0273	0.0274	0.0276	0.0276	0.0002	0.0000
2L9	0.0255	0.0255	0.0257	0.0257	0.0356	0.0356	0.0357	0.0357	0.0002	0.0001
2L10	0.0286	0.0288	0.0288	0.0288	0.0387	0.0388	0.0388	0.0388	0.0001	0.0001
2L11	0.0317	0.0317	0.0318	0.0323	0.0417	0.0417	0.0418	0.0423	0.0006	0.0005
2L12	0.0344	0.0347	0.0347	0.0348	0.0444	0.0447	0.0447	0.0448	0.0001	0.0001
2L13	0.0378	0.0383	0.0384	0.0387	0.0478	0.0483	0.0533	0.0537	0.0054	0.0004
2L14	0.0417	0.0418	0.0418	0.0423	0.0597	0.0618	0.0618	0.0622	0.0004	0.0004
2L15	0.0459	0.0460	0.0464	0.0466	0.0658	0.0660	0.0664	0.0716	0.0056	0.0052
2L16	0.0500	0.0501	0.0502	0.0504	0.0799	0.0850	0.0901	0.0904	0.0054	0.0003
2L17	0.0538	0.0538	0.0538	0.0538	0.1038	0.1138	0.1188	0.1337	0.0200	0.0150
2L18	0.0547	0.0547	0.0547	0.0547	0.1547	0.1647	0.1747	0.2097	0.0450	0.0350
2L19	0.0552	0.0552	0.0552	0.0552	0.2351	0.2501	0.2802	0.3402	0.0901	0.0600
2L19A				0.0552				0.4452		
2U1				0.0516				0.4616		
2U2				0.0463				0.4563		
2U3				0.0396				0.4696		
2U4				0.0342				0.4642		
2U5				0.0261				0.4511		
2U6				0.0189				0.4388		
2U7				0.0097				0.4297		
2U8				0.0018				0.4117		
2U8A				0.0014				0.4114		

Table E.19 continued

AUC 4 LOAD NUMBER	TOP OF PILE MOVEMENT - WIRELINE READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)	BSIGHT @0.5MIN. (inches)	TOP OF PILE MOVEMENT - SURVEY LEVEL READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)
2L0				0.800				0.000	3.540				0.990				0.000
2L1	0.800	0.800	0.800	0.800	0.000	0.000	0.000	0.000	3.540	0.990	0.990	0.990	0.990	0.000	0.000	0.000	0.000
2L2	0.800	0.800	0.800	0.800	0.000	0.000	0.000	0.000	3.540	0.990	0.990	0.990	0.990	0.000	0.000	0.000	0.000
2L3	0.800	0.800	0.800	0.800	0.000	0.000	0.000	0.000	3.540	0.990	0.990	0.990	0.990	0.000	0.000	0.000	0.000
2L4	0.800	0.800	0.800	0.800	0.000	0.000	0.000	0.000	3.540	0.990	0.990	0.990	0.990	0.000	0.000	0.000	0.000
2L5	0.800	0.800	0.800	0.800	0.000	0.000	0.000	0.000	3.540	0.990	0.990	0.990	0.990	0.000	0.000	0.000	0.000
2L6	0.805	0.805	0.805	0.805	0.005	0.005	0.005	0.005	3.540	0.995	0.995	0.995	0.995	0.005	0.005	0.005	0.005
2L7	0.805	0.805	0.805	0.805	0.005	0.005	0.005	0.005	3.540	0.995	0.995	0.995	0.995	0.005	0.005	0.005	0.005
2L8	0.805	0.805	0.805	0.805	0.005	0.005	0.005	0.005	3.540	0.998	0.998	0.998	0.998	0.008	0.008	0.008	0.008
2L9	0.810	0.810	0.810	0.810	0.010	0.010	0.010	0.010	3.540	1.000	1.000	1.000	1.000	0.010	0.010	0.010	0.010
2L10	0.810	0.810	0.810	0.810	0.010	0.010	0.010	0.010	3.540	1.000	1.000	1.000	1.000	0.010	0.010	0.010	0.010
2L11	0.810	0.810	0.810	0.810	0.010	0.010	0.010	0.010	3.540	1.002	1.002	1.004	1.004	0.012	0.012	0.014	0.014
2L12	0.810	0.810	0.810	0.810	0.010	0.010	0.010	0.010	3.540	1.004	1.004	1.004	1.004	0.014	0.014	0.014	0.014
2L13	0.810	0.810	0.815	0.815	0.010	0.010	0.015	0.015	3.540	1.008	1.008	1.008	1.008	0.018	0.018	0.018	0.018
2L14	0.818	0.820	0.820	0.820	0.018	0.020	0.020	0.020	3.540	1.012	1.014	1.014	1.014	0.022	0.024	0.024	0.024
2L15	0.820	0.820	0.820	0.825	0.020	0.020	0.020	0.025	3.540	1.018	1.018	1.020	1.020	0.028	0.028	0.030	0.030
2L16	0.830	0.835	0.840	0.840	0.030	0.035	0.040	0.040	3.540	1.026	1.028	1.032	1.036	0.036	0.038	0.042	0.046
2L17	0.850	0.860	0.865	0.880	0.050	0.060	0.065	0.080	3.540	1.046	1.054	1.060	1.078	0.056	0.064	0.070	0.088
2L18	0.900	0.910	0.920	0.955	0.100	0.110	0.120	0.155	3.540	1.098	1.115	1.120	1.148	0.108	0.125	0.130	0.158
2L19	0.980	0.995	1.025	1.085	0.180	0.195	0.225	0.285	3.540	1.180	1.198	1.226	1.280	0.190	0.208	0.236	0.290
2L19A				1.190				0.390	3.540				1.386				0.396
2U1				1.210				0.410	3.540				1.410				0.420
2U2				1.210				0.410	3.540				1.410				0.420
2U3				1.230				0.430	3.540				1.406				0.416
2U4				1.230				0.430	3.540				1.402				0.412
2U5				1.225				0.425	3.540				1.400				0.410
2U6				1.220				0.420	3.540				1.396				0.406
2U7				1.220				0.420	3.540				1.386				0.396
2U8				1.210				0.410	3.540				1.378				0.388
2U8A				1.210				0.410	3.540				1.378				0.388

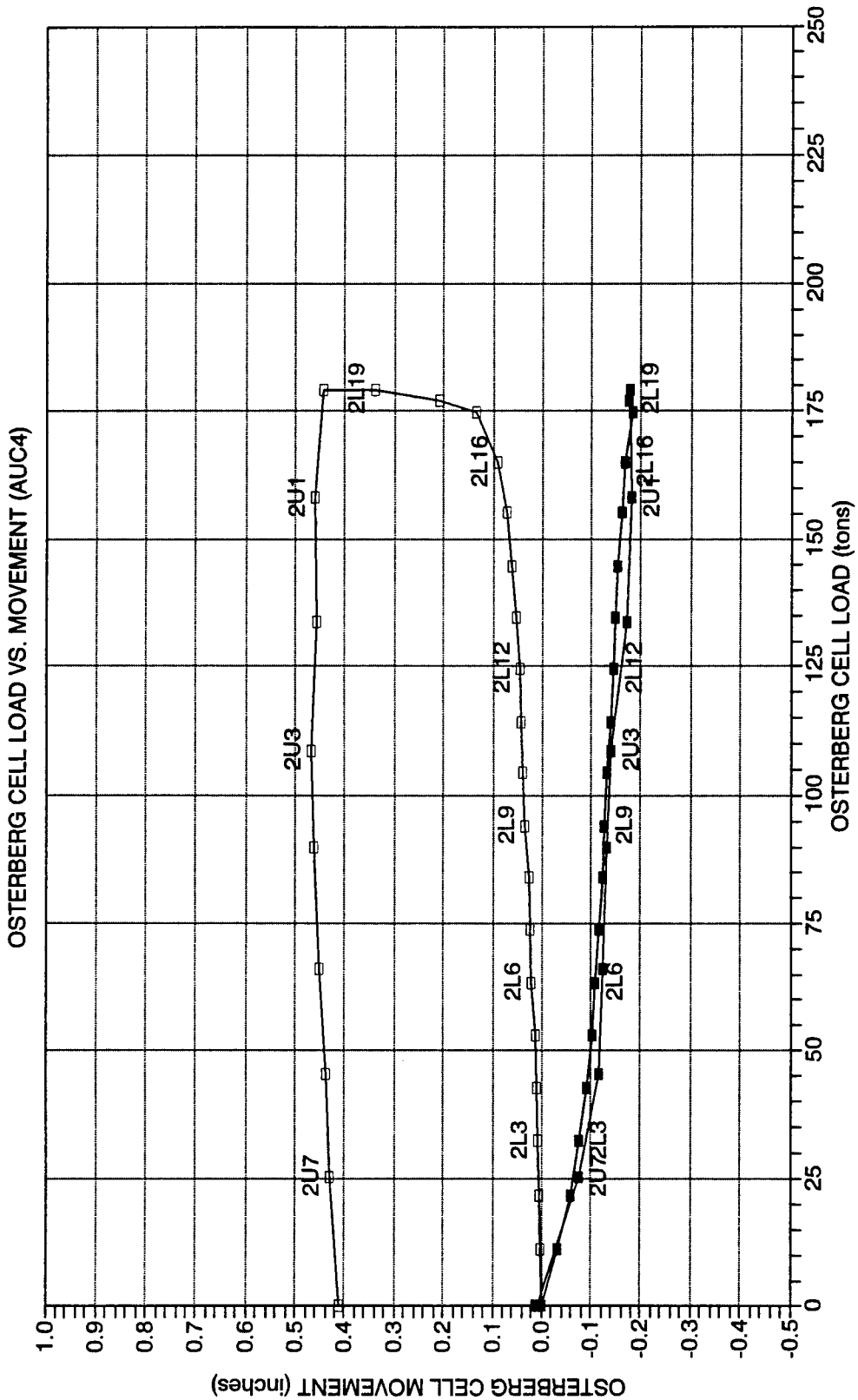


Figure E.47 Load Test 4 Movement: Aucilla

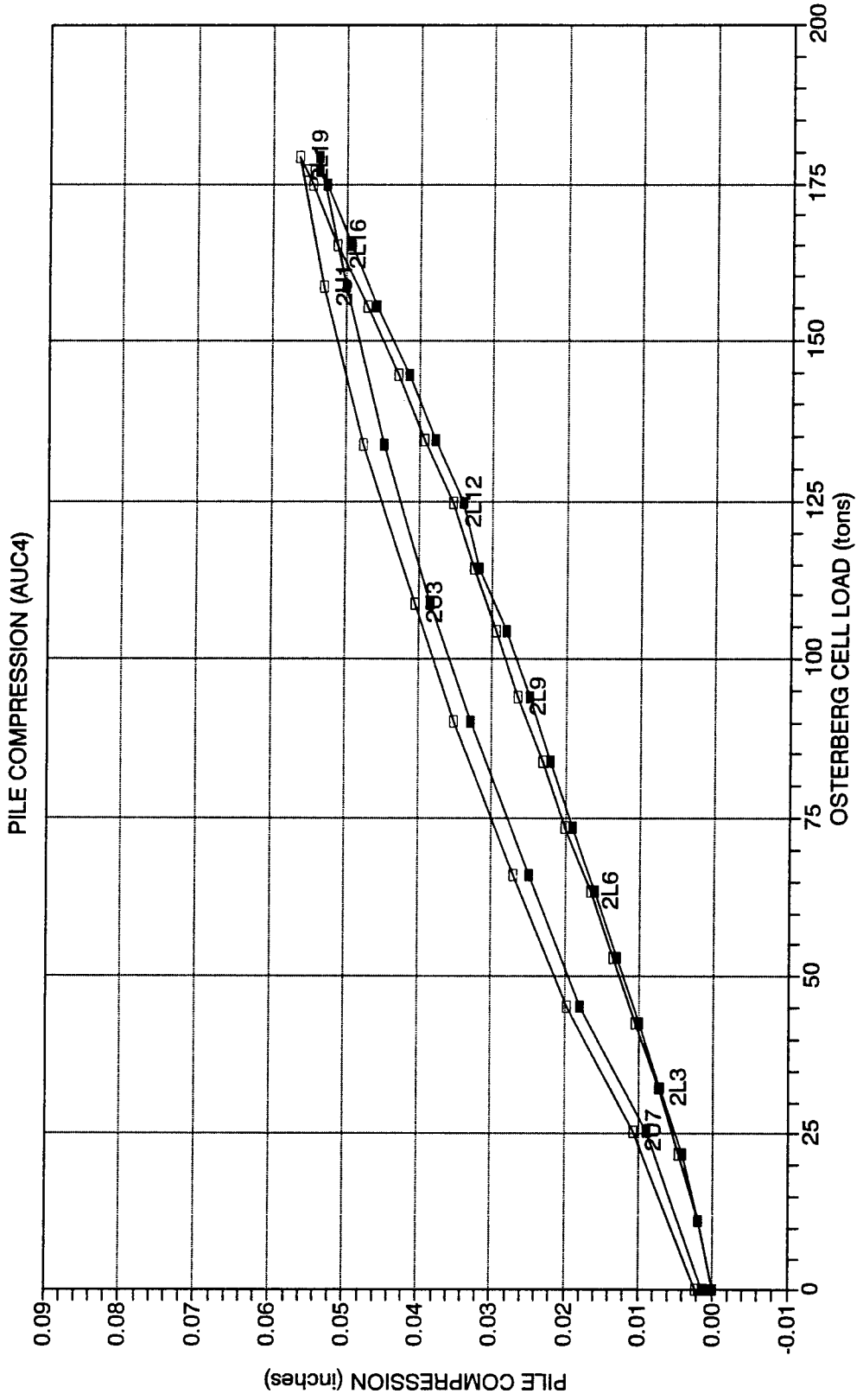


Figure E.48 Load Test 4 Compression: Aucilla

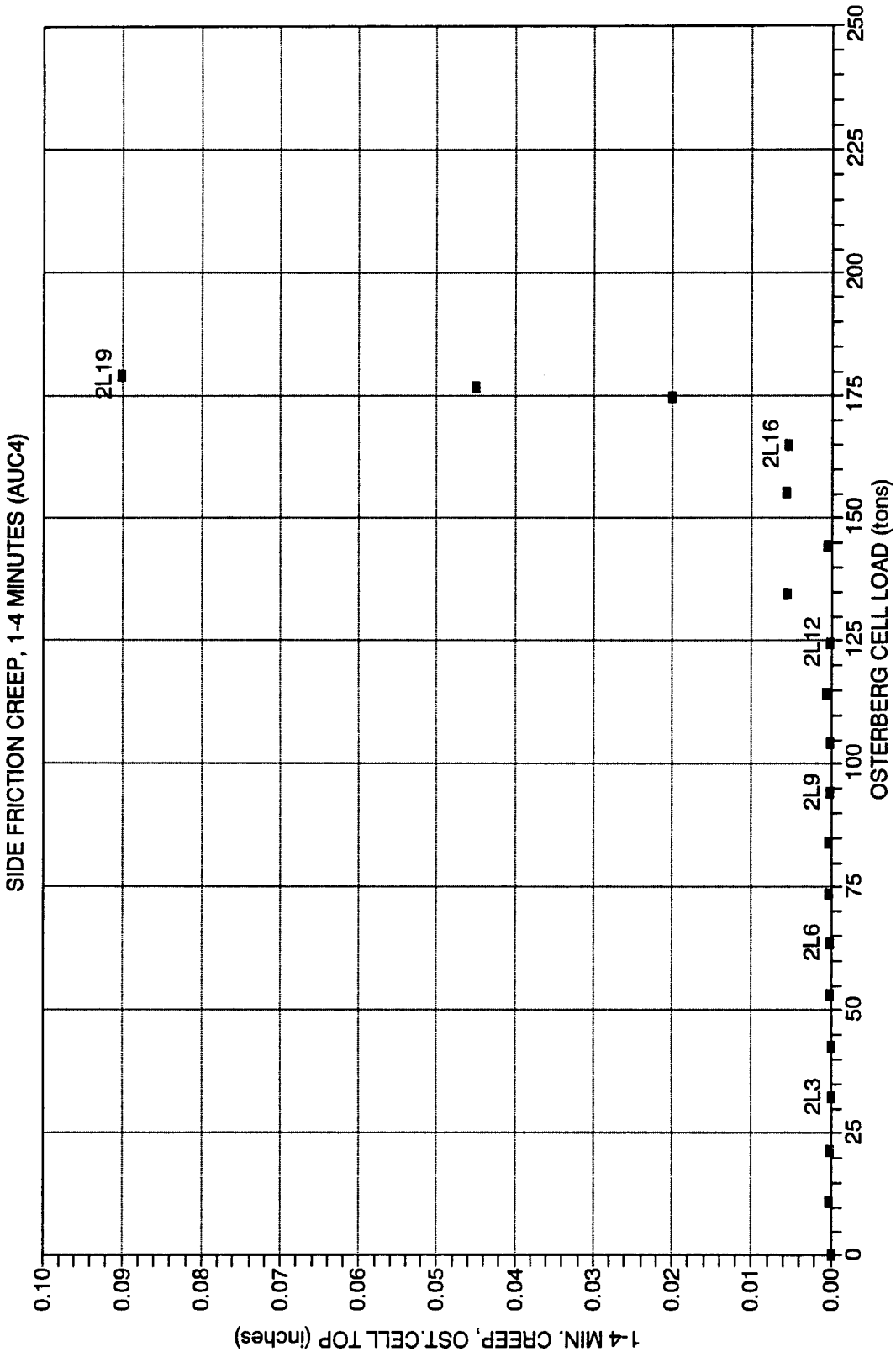


Figure E.49 Load Test 4 Creep: Aucilla

Table E.20 Data for Load Test 5: Aucilla

AUC 5 LOAD NUMBER	TIME INCR. (min)	OSTERBERG CELL LOAD: MEASURED PRESSURE (psi)	CORRECTED PRESSURE (psi)	VW TRANSDUCER READING (tons)	PRESSURE (psi)	EXTENSION @4 MIN. (inches)	LOAD (tons)	OSTERBERG CELL BOTTOM TELLTALE: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)	POISSON EFFECT ADJ. (inches)	OSTERBERG CELL BOTTOM TELLTALE: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)
L0		0	0	9123	0	2.592	0.0				0.1006	0.0000				0.0000
L1	4	330	310	9011	355	2.618	11.2	0.0056	0.1159	0.1171	0.1192	0.0061	0.0889	-0.0214	-0.0226	-0.0247
L2	4	670	646	8899	699	2.643	21.8	0.1331	0.1335	0.1341	0.1359	0.0121	-0.0446	-0.0450	-0.0456	-0.0474
L3	4	1030	1002	8787	1039	2.662	32.3	0.1443	0.1449	0.1459	0.1463	0.0180	-0.0617	-0.0623	-0.0633	-0.0637
L4	4	1380	1348	8675	1375	2.678	42.7	0.1519	0.1529	0.1533	0.1541	0.0238	-0.0701	-0.0711	-0.0715	-0.0723
L5	4	1740	1704	8563	1710	2.692	53.1	0.1572	0.1576	0.1589	0.1597	0.0296	-0.0812	-0.0816	-0.0829	-0.0837
L6	4	2100	2059	8450	2046	2.706	63.5	0.1618	0.1625	0.1632	0.1640	0.0354	-0.0916	-0.0923	-0.0930	-0.0888
L7	4	2430	2385	8338	2377	2.718	73.7	0.1652	0.1657	0.1665	0.1673	0.0411	-0.0957	-0.0962	-0.0970	-0.0978
L8	4	2770	2721	8226	2708	2.730	83.9	0.1680	0.1687	0.1695	0.1703	0.0468	-0.1042	-0.0999	-0.1007	-0.1015
L9	4	3100	3047	8114	3037	2.742	94.1	0.1708	0.1717	0.1722	0.1736	0.0525	-0.1077	-0.1086	-0.1091	-0.1105
L10	4	3420	3364	8002	3366	2.755	104.3	0.1740	0.1744	0.1753	0.1762	0.0582	-0.1166	-0.1120	-0.1129	-0.1138
L11	4	3760	3700	7890	3694	2.767	114.4	0.1769	0.1773	0.1782	0.1796	0.0639	-0.1202	-0.1206	-0.1215	-0.1229
L12	4	4080	4016	7778	4021	2.780	124.5	0.1799	0.1808	0.1811	0.1829	0.0695	-0.1288	-0.1297	-0.1300	-0.1318
L13	4	4420	4352	7666	4348	2.792	134.6	0.1830	0.1833	0.1845	0.1858	0.0751	-0.1325	-0.1328	-0.1340	-0.1353
L14	4	4740	4668	7554	4674	2.806	144.7	0.1870	0.1873	0.1888	0.1903	0.0808	-0.1372	-0.1375	-0.1390	-0.1405
L15	4	5060	4984	7442	4999	2.820	154.8	0.1913	0.1923	0.1940	0.1952	0.0864	-0.1471	-0.1481	-0.1448	-0.1460
L16	4	5380	5300	7330	5324	2.836	164.8	0.1970	0.1976	0.1993	0.2011	0.0920	-0.1484	-0.1490	-0.1507	-0.1525
L17	4	5700	5617	7218	5648	2.854	174.8	0.2035	0.2047	0.2068	0.2103	0.0976	-0.1605	-0.1617	-0.1588	-0.1573
L18	4	6020	5933	7105	5975	2.888	184.9	0.2159	0.2190	0.2245	0.2335	0.1033	-0.1586	-0.1617	-0.1672	-0.1712
L19	4	6380	6289	6993	6298	3.000	194.9	0.2640	0.2760	0.2960	0.3365	0.1089	-0.1723	-0.1743	-0.1743	-0.1748
L20	4	6530	6437	6937	6460	3.226	200.0	0.4000	0.4265	0.4745	0.5585	0.1117	-0.1711	-0.1676	-0.1906	-0.1796
U1	3	5830	5745	7181	5755	3.256	178.2				0.6045	0.0995				-0.1734
U2	3	5120	5043	7433	5025	3.246	155.6				0.6109	0.0869				-0.1772
U3	3	4470	4401	7655	4380	3.232	135.7				0.6139	0.0757				-0.1690
U4	3	3670	3611	7925	3592	3.214	111.3				0.6158	0.0621				-0.1573
U5	3	2850	2800	8193	2805	3.193	87.0				0.6163	0.0485				-0.1442
U6	3	2100	2059	8443	2067	3.172	64.2				0.6150	0.0357				-0.1301
U7	3	1370	1338	8676	1372	3.147	42.7				0.6087	0.0237				-0.1218
U8	3	380	360	8985	436	3.083	13.7				0.5713	0.0075				-0.0782
U9	3	0	0	9123	0	3.013	0.0				0.5148	0.0000				-0.0142
U9A	3	0	0	9126	0	3.013	0.0				0.5148	0.0000				-0.0142

Table E.20 continued

AUC 5 LOAD NUMBER	OSTERBERG CELL TOP TELLTALE TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	PILE COMPRESSION TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	OSTERBERG CELL TOP TELLTALE TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)	PILE COMPRESSION TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)
L0				0.02040				0.00000				0.02040				0.00000
L1	0.02140	0.02140	0.02145	0.02175	0.00100	0.00100	0.00105	0.00135	0.02150	0.02150	0.02155	0.02215	0.00110	0.00110	0.00115	0.00175
L2	0.02340	0.02340	0.02340	0.02375	0.00300	0.00300	0.00300	0.00335	0.02355	0.02355	0.02360	0.02445	0.00315	0.00315	0.00320	0.00405
L3	0.02595	0.02600	0.02615	0.02615	0.00555	0.00560	0.00575	0.00575	0.02625	0.02630	0.02640	0.02645	0.00585	0.00590	0.00600	0.00605
L4	0.02835	0.02880	0.02885	0.02885	0.00795	0.00840	0.00845	0.00845	0.02940	0.02950	0.02955	0.02955	0.00900	0.00910	0.00915	0.00915
L5	0.03140	0.03140	0.03180	0.03190	0.01100	0.01100	0.01140	0.01150	0.03210	0.03210	0.03240	0.03250	0.01170	0.01170	0.01200	0.01210
L6	0.03440	0.03475	0.03490	0.03515	0.01400	0.01435	0.01450	0.01475	0.03520	0.03545	0.35550	0.03595	0.01480	0.01505	0.33510	0.01555
L7	0.03740	0.03740	0.03800	0.03810	0.01700	0.01700	0.01760	0.01770	0.03815	0.03825	0.03870	0.03870	0.01775	0.01785	0.01830	0.01830
L8	0.04100	0.04130	0.04130	0.04140	0.02060	0.02090	0.02090	0.02100	0.04160	0.04175	0.04190	0.04220	0.02120	0.02135	0.02150	0.02180
L9	0.04420	0.04440	0.04440	0.04470	0.02380	0.02400	0.02400	0.02430	0.04515	0.04580	0.04580	0.04590	0.02475	0.02540	0.02540	0.02550
L10	0.04780	0.04780	0.04800	0.04840	0.02740	0.02740	0.02760	0.02800	0.04920	0.04920	0.04920	0.04990	0.02880	0.02880	0.02880	0.02950
L11	0.05135	0.05140	0.05150	0.05200	0.03095	0.03100	0.03110	0.03160	0.05250	0.05255	0.05275	0.05325	0.03210	0.03215	0.03235	0.03285
L12	0.05460	0.05530	0.05535	0.05545	0.03420	0.03490	0.03495	0.03505	0.05620	0.05670	0.05670	0.05675	0.03580	0.03630	0.03630	0.03635
L13	0.05835	0.05840	0.05895	0.05920	0.03795	0.03800	0.03855	0.03880	0.05965	0.06020	0.06050	0.06060	0.03925	0.03980	0.04010	0.04020
L14	0.06235	0.06240	0.06275	0.06330	0.04195	0.04200	0.04235	0.04290	0.06365	0.06380	0.06450	0.06510	0.04325	0.04340	0.04410	0.04470
L15	0.06640	0.06640	0.06650	0.06655	0.04600	0.04600	0.04610	0.04615	0.06780	0.06780	0.06850	0.06855	0.04740	0.04740	0.04810	0.04815
L16	0.07000	0.07020	0.07035	0.07040	0.04960	0.04980	0.04995	0.05000	0.07185	0.07195	0.07235	0.07250	0.05145	0.05155	0.05195	0.05210
L17	0.07345	0.07350	0.07375	0.07425	0.05305	0.05310	0.05335	0.05385	0.07565	0.07650	0.07655	0.07660	0.05525	0.05610	0.05615	0.05620
L18	0.07820	0.07840	0.07890	0.07920	0.05780	0.05800	0.05850	0.05880	0.08060	0.08065	0.08155	0.08160	0.06020	0.06025	0.06115	0.06120
L19	0.08265	0.08265	0.08270	0.08275	0.06225	0.06225	0.06230	0.06235	0.08510	0.08510	0.08510	0.08545	0.06470	0.06470	0.06470	0.06505
L20	0.08385	0.08385	0.08390	0.08390	0.06345	0.06345	0.06350	0.06350	0.08655	0.08655	0.08655	0.08655	0.06615	0.06615	0.06615	0.06615
U1				0.07930				0.05890				0.08255				0.06215
U2				0.07530				0.05490				0.07820				0.05780
U3				0.07040				0.05000				0.07320				0.05280
U4				0.06380				0.04340				0.06640				0.04600
U5				0.05640				0.03600				0.05865				0.03825
U6				0.04920				0.02880				0.05160				0.03120
U7				0.04220				0.02180				0.04420				0.02380
U8				0.03190				0.01150				0.03360				0.01320
U9				0.02660				0.00620				0.02815				0.00775
U9A				0.02640				0.00600				0.02720				0.00680

Table E.20 continued

AUC 5 LOAD NUMBER	PILE COMPRESSION TT-1 & TT-2 AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP MOVEMENT AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP CREEP 1-4 MIN. (inches)	CREEP 2-4 MIN. (inches)
L0				0.0000				0.0000	0.0000	0.0000
L1	0.0010	0.0010	0.0011	0.0015	0.0010	0.0010	0.0011	0.0015	0.0005	0.0004
L2	0.0031	0.0031	0.0031	0.0037	0.0031	0.0031	0.0031	0.0037	0.0006	0.0006
L3	0.0057	0.0057	0.0059	0.0059	0.0057	0.0057	0.0059	0.0059	0.0002	0.0000
L4	0.0085	0.0087	0.0088	0.0088	0.0135	0.0138	0.0138	0.0138	0.0001	0.0000
L5	0.0113	0.0113	0.0117	0.0118	0.0164	0.0164	0.0167	0.0168	0.0005	0.0001
L6	0.0144	0.0147	0.1748	0.0152	0.0194	0.0197	0.1798	0.0252	0.0055	-0.1547
L7	0.0174	0.0174	0.0180	0.0180	0.0274	0.0274	0.0280	0.0280	0.0006	0.0001
L8	0.0209	0.0211	0.0212	0.0214	0.0309	0.0361	0.0362	0.0364	0.0003	0.0002
L9	0.0243	0.0247	0.0247	0.0249	0.0393	0.0397	0.0397	0.0399	0.0002	0.0002
L10	0.0281	0.0281	0.0282	0.0288	0.0431	0.0481	0.0482	0.0488	0.0006	0.0005
L11	0.0315	0.0316	0.0317	0.0322	0.0515	0.0516	0.0517	0.0522	0.0006	0.0005
L12	0.0350	0.0356	0.0356	0.0357	0.0550	0.0556	0.0556	0.0557	0.0001	0.0001
L13	0.0386	0.0389	0.0393	0.0395	0.0636	0.0639	0.0643	0.0645	0.0006	0.0002
L14	0.0426	0.0427	0.0432	0.0438	0.0726	0.0727	0.0732	0.0738	0.0011	0.0006
L15	0.0467	0.0467	0.0471	0.0472	0.0767	0.0767	0.0821	0.0821	0.0055	0.0000
L16	0.0505	0.0507	0.0510	0.0511	0.0905	0.0907	0.0909	0.0910	0.0004	0.0001
L17	0.0542	0.0546	0.0548	0.0550	0.0941	0.0946	0.0997	0.1050	0.0104	0.0053
L18	0.0590	0.0591	0.0598	0.0600	0.1190	0.1191	0.1198	0.1250	0.0059	0.0052
L19	0.0635	0.0635	0.0635	0.0637	0.1635	0.1735	0.1935	0.2337	0.0602	0.0402
L20	0.0648	0.0648	0.0648	0.0648	0.3048	0.3348	0.3598	0.4548	0.1200	0.0950
U1				0.0605				0.4905		
U2				0.0564				0.4763		
U3				0.0514				0.4714		
U4				0.0447				0.4647		
U5				0.0371				0.4571		
U6				0.0300				0.4500		
U7				0.0228				0.4328		
U8				0.0123				0.4123		
U9				0.0070				0.4070		
U9A				0.0064				0.4064		

Table E.20 continued

AUC 5 LOAD NUMBER	TOP OF PILE MOVEMENT - WIRELINE READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)	BSIGHT @0.5MIN. (inches)	TOP OF PILE MOVEMENT - SURVEY LEVEL READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)
L0				0.540				0.000	1.000				0.990				0.000
L1	0.540	0.540	0.540	0.540	0.000	0.000	0.000	0.000		0.990	0.990	0.990	0.990	0.000	0.000	0.000	0.000
L2	0.540	0.540	0.540	0.540	0.000	0.000	0.000	0.000	1.000	0.990	0.990	0.990	0.990	0.000	0.000	0.000	0.000
L3	0.540	0.540	0.540	0.540	0.000	0.000	0.000	0.000		0.990	0.990	0.990	0.990	0.000	0.000	0.000	0.000
L4	0.545	0.545	0.545	0.545	0.005	0.005	0.005	0.005	1.000	0.995	0.995	0.995	0.995	0.005	0.005	0.005	0.005
L5	0.545	0.545	0.545	0.545	0.005	0.005	0.005	0.005		0.995	0.995	0.995	0.995	0.005	0.005	0.005	0.005
L6	0.545	0.545	0.545	0.550	0.005	0.005	0.005	0.010	1.000	0.995	0.995	0.995	0.995	0.005	0.005	0.005	0.005
L7	0.550	0.550	0.550	0.550	0.010	0.010	0.010	0.010		0.995	0.995	0.995	0.995	0.005	0.005	0.005	0.005
L8	0.550	0.555	0.555	0.555	0.010	0.015	0.015	0.015	1.000	0.998	0.998	0.998	0.998	0.008	0.008	0.008	0.008
L9	0.555	0.555	0.555	0.555	0.015	0.015	0.015	0.015		1.000	1.000	1.000	1.000	0.010	0.010	0.010	0.010
L10	0.555	0.560	0.560	0.560	0.015	0.020	0.020	0.020	1.000	1.000	1.000	1.000	1.000	0.010	0.010	0.010	0.010
L11	0.560	0.560	0.560	0.560	0.020	0.020	0.020	0.020		1.002	1.002	1.004	1.004	0.012	0.012	0.014	0.014
L12	0.560	0.560	0.560	0.560	0.020	0.020	0.020	0.020	1.000	1.004	1.004	1.004	1.004	0.014	0.014	0.014	0.014
L13	0.565	0.565	0.565	0.565	0.025	0.025	0.025	0.025		1.005	1.005	1.005	1.005	0.015	0.015	0.015	0.015
L14	0.570	0.570	0.570	0.570	0.030	0.030	0.030	0.030	1.000	1.010	1.010	1.010	1.010	0.020	0.020	0.020	0.020
L15	0.570	0.570	0.575	0.575	0.030	0.030	0.035	0.035		1.020	1.020	1.020	1.020	0.030	0.030	0.030	0.030
L16	0.580	0.580	0.580	0.580	0.040	0.040	0.040	0.040	1.000	1.025	1.025	1.025	1.030	0.035	0.035	0.035	0.040
L17	0.580	0.580	0.585	0.590	0.040	0.040	0.045	0.050		1.030	1.030	1.030	1.035	0.040	0.040	0.040	0.045
L18	0.600	0.600	0.600	0.605	0.060	0.060	0.060	0.065	1.000	1.040	1.050	1.050	1.055	0.050	0.060	0.060	0.065
L19	0.640	0.650	0.670	0.710	0.100	0.110	0.130	0.170		1.100	1.100	1.120	1.160	0.110	0.110	0.130	0.170
L20	0.780	0.810	0.835	0.930	0.240	0.270	0.295	0.390	1.000	1.220	1.250	1.300	1.380	0.230	0.260	0.310	0.390
U1				0.970				0.430					1.410				0.420
U2				0.960				0.420	1.000				1.400				0.410
U3				0.960				0.420					1.400				0.410
U4				0.960				0.420	1.000				1.402				0.412
U5				0.960				0.420					1.400				0.410
U6				0.960				0.420	1.000				1.396				0.406
U7				0.950				0.410					1.386				0.396
U8				0.940				0.400	1.000				1.378				0.388
U9				0.940				0.400					1.370				0.380
U9A				0.940				0.400	1.000				1.370				0.380

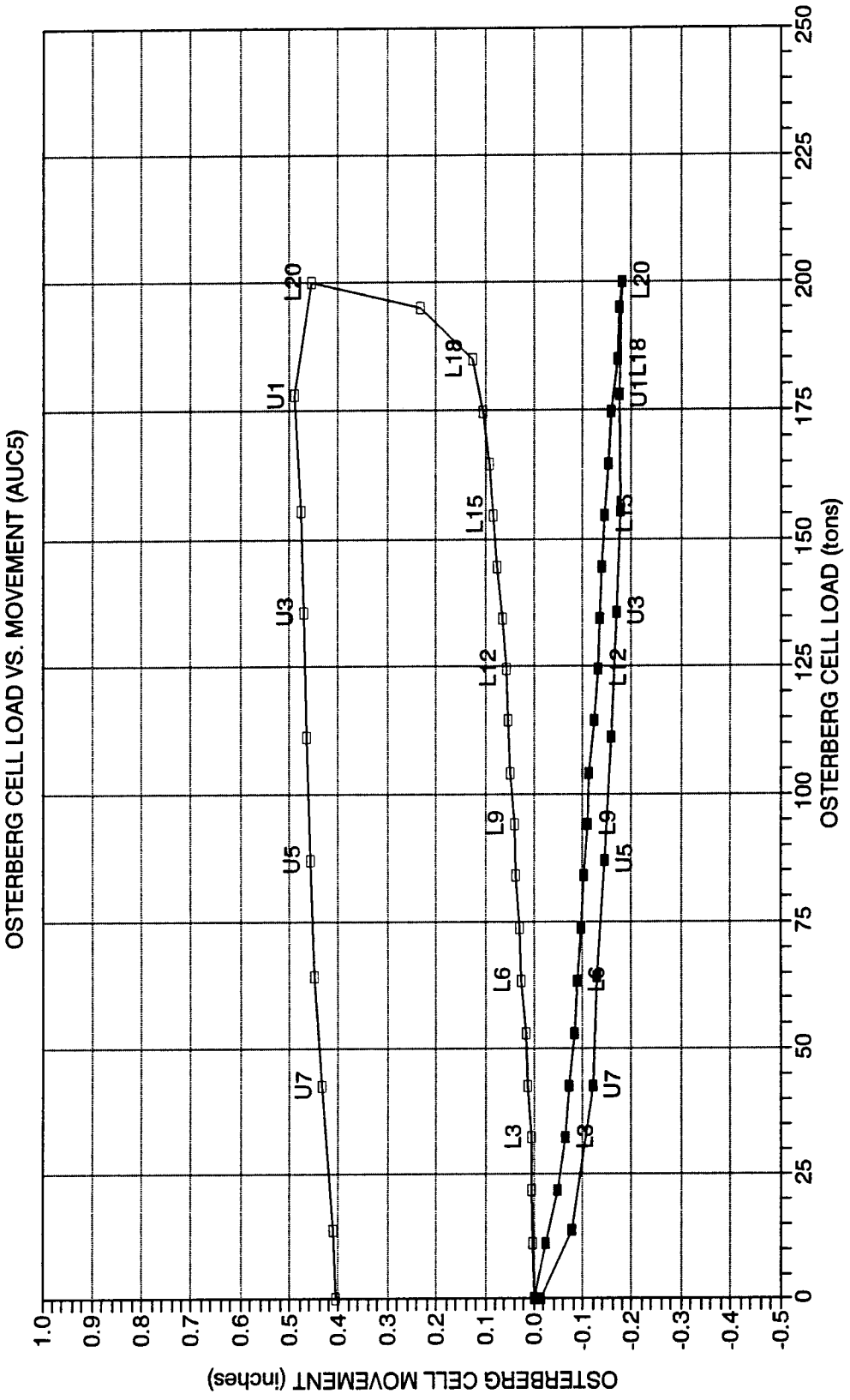


Figure E.50 Load Test 5 Movement: Aucilla

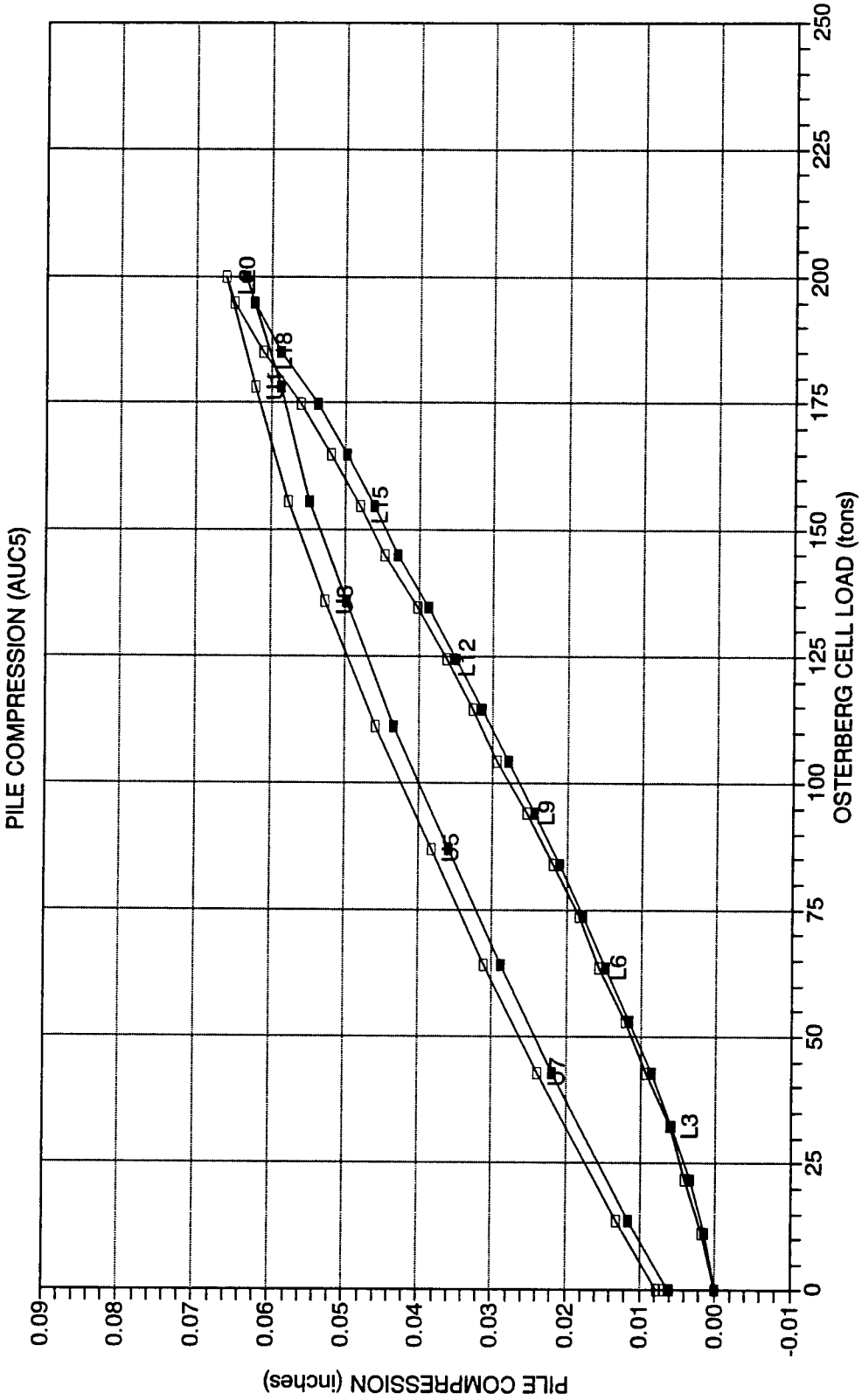


Figure E.51 Load Test 5 Compression: Aucilla

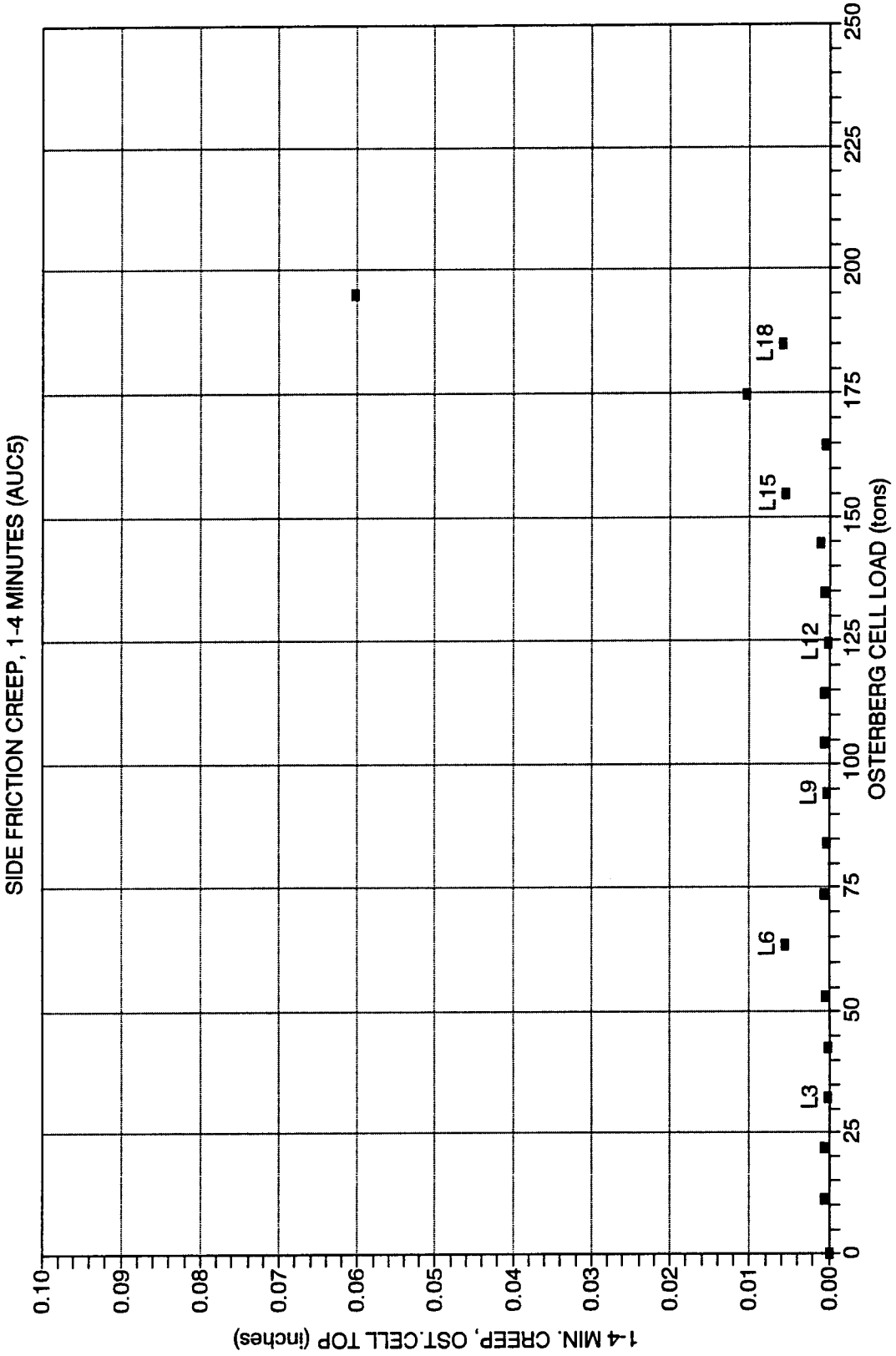


Figure E.52 Load Test 5 Creep: Aucilla

Table E.21 Data for Load Test 6: Aucilla

AUC 6 LOAD NUMBER	TIME INCR. (min)	OSTERBERG CELL LOAD: MEASURED PRESSURE (psi)	CORRECTED PRESSURE (psi)	VW TRANSDUCER READING (tons)	EXTENSION PRESSURE (psi)	@4 MIN. (inches)	LOAD (tons)	OSTERBERG CELL BOTTOM TELLTALE: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)	POISSON EFFECT ADJ. (inches)	OSTERBERG CELL BOTTOM TELLTALE: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)
L0		0	0	9130	0	3.013	0.0				0.1930	0.0000				0.0000
L1	4	450	450	8979	476	3.048	15.0	0.2160	0.2170	0.2180	0.2180	0.0082	-0.0312	-0.0322	-0.0332	-0.0332
L2	4	960	960	8819	963	3.081	30.0	0.2365	0.2370	0.2375	0.2390	0.0166	-0.0601	-0.0606	-0.0611	-0.0626
L3	4	1450	1450	8655	1456	3.105	45.3	0.2480	0.2490	0.2490	0.2510	0.0252	-0.0802	-0.0812	-0.0762	-0.0782
L4	4	1950	1950	8493	1939	3.124	60.2	0.2550	0.2555	0.2570	0.2575	0.0335	-0.0905	-0.0910	-0.0925	-0.0930
L5	4	2450	2450	8330	2422	3.142	75.1	0.2610	0.2620	0.2620	0.2630	0.0419	-0.1049	-0.1059	-0.1059	-0.1069
L6	4	2900	2900	8167	2902	3.159	90.0	0.2650	0.2665	0.2670	0.2680	0.0502	-0.1172	-0.1187	-0.1192	-0.1202
L7	4	3220	3220	8056	3228	3.170	100.1	0.2680	0.2690	0.2695	0.2700	0.0558	-0.1258	-0.1268	-0.1273	-0.1228
L8	4	3550	3550	7942	3562	3.182	110.4	0.2710	0.2710	0.2720	0.2730	0.0616	-0.1296	-0.1296	-0.1306	-0.1316
L9	4	3850	3850	7834	3878	3.193	120.2	0.2780	0.2730	0.2740	0.2750	0.0670	-0.1420	-0.1370	-0.1380	-0.1390
L10	4	4200	4200	7727	4190	3.203	129.8	0.2750	0.2750	0.2760	0.2770	0.0724	-0.1394	-0.1394	-0.1404	-0.1414
L11	4	4500	4500	7613	4522	3.215	140.1	0.2775	0.2775	0.2780	0.2790	0.0782	-0.1477	-0.1477	-0.1482	-0.1492
L12	4	4820	4820	7505	4836	3.227	149.8	0.2790	0.2790	0.2800	0.2820	0.0836	-0.1546	-0.1496	-0.1506	-0.1526
L13	4	5150	5150	7391	5167	3.240	160.0	0.2820	0.2830	0.2840	0.2860	0.0893	-0.1533	-0.1543	-0.1553	-0.1573
L14	4	5470	5470	7280	5489	3.253	169.9	0.2860	0.2865	0.2890	0.2900	0.0949	-0.1629	-0.1634	-0.1659	-0.1669
L15	4	5800	5800	7168	5813	3.267	180.0	0.2900	0.2910	0.2940	0.2950	0.1005	-0.1725	-0.1735	-0.1765	-0.1725
L16	4	6120	6120	7055	6139	3.284	190.1	0.2960	0.2970	0.2980	0.3020	0.1061	-0.1741	-0.1751	-0.1761	-0.1751
L17	4	6450	6450	6944	6460	3.301	200.0	0.3020	0.3050	0.3080	0.3110	0.1117	-0.1757	-0.1787	-0.1817	-0.1847
L18	4	6750	6750	6832	6783	3.328	209.9	0.3140	0.3170	0.3210	0.3290	0.1172	-0.1882	-0.1912	-0.1902	-0.1932
L19	4	7100	7100	6718	7111	3.390	220.1	0.3420	0.3500	0.3620	0.3820	0.1229	-0.1969	-0.1999	-0.2069	-0.2069
L20	4	7250	7250	6658	7283	3.489	225.4	0.4100	0.4210	0.4400	0.4770	0.1259	-0.2079	-0.2089	-0.2079	-0.2099
L21	4	7320	7320	6635	7350	3.603	227.5	0.5120	0.5230	0.5480	0.5890	0.1270	-0.2110	-0.2020	-0.2170	-0.2180
L22	4	7420	7420	6604	7439	3.762	230.3	0.6360	0.6560	0.6890	0.7460	0.1286	-0.2166	-0.2166	-0.2196	-0.2166
U1	3	7050	7050	6673	7240	3.798	224.1				0.7878	0.1251				-0.2249
U2	3	5850	5850	7155	5850	3.781	181.2				0.8020	0.1011				-0.2151
U3	3	4750	4750	7536	4746	3.759	147.0				0.8080	0.0820				-0.2020
U4	3	3750	3750	7880	3744	3.734	116.0				0.8090	0.0647				-0.1907
U5	3	2570	2570	8293	2531	3.700	78.6				0.8080	0.0437				-0.1737
U6	3	1450	1450	8683	1372	3.651	42.7				0.7910	0.0237				-0.1417
U7	3	0	0	9131	0	3.522	0.0				0.7010	0.0000				-0.0380
U7A	3	0	0	9131	0	3.519	0.0				0.6980	0.0000				-0.0350

Table E.21 continued

AUC 6 LOAD NUMBER	OSTERBERG CELL TOP TELLTALE TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	PILE COMPRESSION TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	OSTERBERG CELL TOP TELLTALE TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)	PILE COMPRESSION TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)
L0				0.01040				0.00000				0.01510				0.00000
L1	0.01190	0.01200	0.01210	0.01210	0.00150	0.00160	0.00170	0.00170	0.01670	0.01670	0.01670	0.01670	0.00160	0.00160	0.00160	0.00160
L2	0.01490	0.01490	0.01510	0.01520	0.00450	0.00450	0.00470	0.00480	0.01960	0.01960	0.01960	0.02010	0.00450	0.00450	0.00450	0.00500
L3	0.01860	0.01860	0.01870	0.01880	0.00820	0.00820	0.00830	0.00840	0.02360	0.02360	0.02370	0.02370	0.00850	0.00850	0.00860	0.00860
L4	0.02220	0.02270	0.02300	0.02300	0.01180	0.01230	0.01260	0.01260	0.02750	0.02760	0.02760	0.02760	0.01240	0.01250	0.01250	0.01250
L5	0.02650	0.02650	0.02660	0.02690	0.01610	0.01610	0.01620	0.01650	0.03160	0.03170	0.03200	0.03220	0.01650	0.01660	0.01690	0.01710
L6	0.03080	0.03090	0.03110	0.03130	0.02040	0.02050	0.02070	0.02090	0.03570	0.03620	0.03630	0.03650	0.02060	0.02110	0.02120	0.02140
L7	0.03370	0.03380	0.03400	0.03410	0.02330	0.02340	0.02360	0.02370	0.03860	0.03880	0.03900	0.03930	0.02350	0.02370	0.02390	0.02420
L8	0.03680	0.03710	0.03710	0.03750	0.02640	0.02670	0.02670	0.02710	0.04230	0.04260	0.04260	0.04270	0.02720	0.02750	0.02750	0.02760
L9	0.03990	0.04000	0.04050	0.04070	0.02950	0.02960	0.03010	0.03030	0.04560	0.04570	0.04590	0.04630	0.03050	0.03060	0.03080	0.03120
L10	0.04340	0.04360	0.04360	0.04380	0.03300	0.03320	0.03320	0.03340	0.04860	0.04900	0.04930	0.04950	0.03350	0.03390	0.03420	0.03440
L11	0.04680	0.04710	0.04720	0.04750	0.03640	0.03670	0.03680	0.03710	0.05250	0.05270	0.05270	0.05290	0.03740	0.03760	0.03760	0.03780
L12	0.05050	0.05060	0.05080	0.05110	0.04010	0.04020	0.04040	0.04070	0.05570	0.05620	0.05640	0.05670	0.04060	0.04110	0.04130	0.04160
L13	0.05380	0.05410	0.05450	0.05460	0.04340	0.04370	0.04410	0.04420	0.05960	0.05960	0.05990	0.06030	0.04450	0.04450	0.04480	0.04520
L14	0.05760	0.05770	0.05800	0.05830	0.04720	0.04730	0.04760	0.04790	0.06330	0.06350	0.06370	0.06390	0.04820	0.04840	0.04860	0.04880
L15	0.06110	0.06140	0.06180	0.06180	0.05070	0.05100	0.05140	0.05140	0.06670	0.06740	0.06760	0.06760	0.05160	0.05230	0.05250	0.05250
L16	0.06470	0.06480	0.06480	0.06550	0.05430	0.05440	0.05440	0.05510	0.07070	0.07070	0.07140	0.07170	0.05560	0.05560	0.05630	0.05660
L17	0.06790	0.06810	0.06820	0.06840	0.05750	0.05770	0.05780	0.05800	0.07450	0.07470	0.07470	0.07470	0.05940	0.05960	0.05960	0.05960
L18	0.07120	0.07140	0.07150	0.07170	0.06080	0.06100	0.06110	0.06130	0.07760	0.07760	0.07760	0.07800	0.06250	0.06250	0.06250	0.06290
L19	0.07480	0.07480	0.07480	0.07480	0.06440	0.06440	0.06440	0.06440	0.08170	0.08170	0.08170	0.08170	0.06660	0.06660	0.06660	0.06660
L20	0.07580	0.07580	0.07580	0.07580	0.06540	0.06540	0.06540	0.06540	0.08270	0.08270	0.08270	0.08270	0.06760	0.06760	0.06760	0.06760
L21	0.07630	0.07640	0.07640	0.07640	0.06590	0.06600	0.06600	0.06600	0.08350	0.08350	0.08350	0.08360	0.06840	0.06840	0.06840	0.06850
L22	0.07680	0.07680	0.07680	0.07680	0.06640	0.06640	0.06640	0.06640	0.08440	0.08440	0.08440	0.08450	0.06930	0.06930	0.06930	0.06940
U1				0.07430				0.06390				0.08220				0.06710
U2				0.06730				0.05690				0.07490				0.05980
U3				0.05850				0.04810				0.06590				0.05080
U4				0.04960				0.03920				0.05690				0.04180
U5				0.03770				0.02730				0.04500				0.02990
U6				0.02600				0.01560				0.03270				0.01760
U7				0.01050				0.00010				0.01680				0.00170
U7A				0.01030				-0.00010				0.01660				0.00150

Table E.21 continued

AUC 6 LOAD NUMBER	PILE COMPRESSION TT-1 & TT-2 AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP MOVEMENT AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP CREEP 1-4 MIN. (inches)	CREEP 2-4 MIN. (inches)
L0				0.0000				0.0000	0.0000	0.0000
L1	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0000	0.0000
L2	0.0045	0.0045	0.0046	0.0049	0.0045	0.0045	0.0046	0.0049	0.0004	0.0003
L3	0.0084	0.0084	0.0085	0.0085	0.0084	0.0084	0.0134	0.0135	0.0051	0.0001
L4	0.0121	0.0124	0.0126	0.0126	0.0171	0.0174	0.0175	0.0175	0.0001	0.0000
L5	0.0163	0.0164	0.0166	0.0168	0.0213	0.0213	0.0215	0.0218	0.0004	0.0003
L6	0.0205	0.0208	0.0210	0.0212	0.0255	0.0258	0.0259	0.0261	0.0003	0.0002
L7	0.0234	0.0236	0.0238	0.0240	0.0284	0.0285	0.0287	0.0340	0.0054	0.0052
L8	0.0268	0.0271	0.0271	0.0274	0.0368	0.0371	0.0371	0.0374	0.0003	0.0003
L9	0.0300	0.0301	0.0305	0.0308	0.0400	0.0401	0.0405	0.0408	0.0006	0.0003
L10	0.0333	0.0336	0.0337	0.0339	0.0482	0.0485	0.0487	0.0489	0.0003	0.0002
L11	0.0369	0.0372	0.0372	0.0375	0.0519	0.0521	0.0522	0.0524	0.0003	0.0003
L12	0.0404	0.0407	0.0409	0.0412	0.0553	0.0607	0.0609	0.0612	0.0005	0.0003
L13	0.0440	0.0441	0.0445	0.0447	0.0689	0.0691	0.0694	0.0697	0.0006	0.0003
L14	0.0477	0.0479	0.0481	0.0484	0.0727	0.0728	0.0731	0.0733	0.0005	0.0003
L15	0.0512	0.0517	0.0520	0.0520	0.0761	0.0766	0.0769	0.0820	0.0053	0.0050
L16	0.0550	0.0550	0.0554	0.0559	0.0899	0.0900	0.0903	0.0959	0.0059	0.0055
L17	0.0585	0.0587	0.0587	0.0588	0.1034	0.1036	0.1037	0.1038	0.0001	0.0001
L18	0.0617	0.0618	0.0618	0.0621	0.1117	0.1118	0.1168	0.1221	0.0104	0.0053
L19	0.0655	0.0655	0.0655	0.0655	0.1405	0.1455	0.1505	0.1705	0.0250	0.0200
L20	0.0665	0.0665	0.0665	0.0665	0.2015	0.2115	0.2315	0.2665	0.0550	0.0350
L21	0.0672	0.0672	0.0672	0.0673	0.3022	0.3222	0.3322	0.3722	0.0501	0.0401
L22	0.0679	0.0679	0.0679	0.0679	0.4229	0.4429	0.4729	0.5329	0.0901	0.0601
U1				0.0655				0.5605		
U2				0.0584				0.5534		
U3				0.0495				0.5444		
U4				0.0405				0.5305		
U5				0.0286				0.5136		
U6				0.0166				0.4966		
U7				0.0009				0.4709		
U7A				0.0007				0.4707		

Table E.21 continued

AUC 6 LOAD NUMBER	TOP OF PILE MOVEMENT - WIRELINE READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)	BSIGHT @0.5MIN. (inches)	TOP OF PILE MOVEMENT - SURVEY LEVEL READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)
L0				1.135				0.000	2.900				1.020				0.000
L1	1.135	1.135	1.135	1.135	0.000	0.000	0.000	0.000		1.020	1.020	1.020	1.020	0.000	0.000	0.000	0.000
L2	1.135	1.135	1.135	1.135	0.000	0.000	0.000	0.000		1.025	1.025	1.025	1.025	0.005	0.005	0.005	0.005
L3	1.135	1.135	1.140	1.140	0.000	0.000	0.005	0.005	2.900	1.025	1.025	1.025	1.025	0.005	0.005	0.005	0.005
L4	1.140	1.140	1.140	1.140	0.005	0.005	0.005	0.005		1.030	1.030	1.030	1.030	0.010	0.010	0.010	0.010
L5	1.140	1.140	1.140	1.140	0.005	0.005	0.005	0.005		1.030	1.030	1.030	1.030	0.010	0.010	0.010	0.010
L6	1.140	1.140	1.140	1.140	0.005	0.005	0.005	0.005	2.900	1.030	1.030	1.030	1.030	0.010	0.010	0.010	0.010
L7	1.140	1.140	1.140	1.145	0.005	0.005	0.005	0.010		1.035	1.035	1.035	1.035	0.015	0.015	0.015	0.015
L8	1.145	1.145	1.145	1.145	0.010	0.010	0.010	0.010		1.035	1.035	1.035	1.035	0.015	0.015	0.015	0.015
L9	1.145	1.145	1.145	1.145	0.010	0.010	0.010	0.010	2.900	1.040	1.040	1.040	1.040	0.020	0.020	0.020	0.020
L10	1.150	1.150	1.150	1.150	0.015	0.015	0.015	0.015		1.040	1.040	1.040	1.040	0.020	0.020	0.020	0.020
L11	1.150	1.150	1.150	1.150	0.015	0.015	0.015	0.015		1.040	1.040	1.040	1.040	0.020	0.020	0.020	0.020
L12	1.150	1.155	1.155	1.155	0.015	0.020	0.020	0.020	2.900	1.045	1.045	1.045	1.045	0.025	0.025	0.025	0.025
L13	1.160	1.160	1.160	1.160	0.025	0.025	0.025	0.025		1.045	1.045	1.045	1.045	0.025	0.025	0.025	0.025
L14	1.160	1.160	1.160	1.160	0.025	0.025	0.025	0.025		1.050	1.050	1.050	1.050	0.030	0.030	0.030	0.030
L15	1.160	1.160	1.160	1.165	0.025	0.025	0.025	0.030	2.900	1.055	1.055	1.055	1.055	0.035	0.035	0.035	0.035
L16	1.170	1.170	1.170	1.175	0.035	0.035	0.035	0.040		1.060	1.060	1.060	1.060	0.040	0.040	0.040	0.040
L17	1.180	1.180	1.180	1.180	0.045	0.045	0.045	0.045		1.070	1.070	1.070	1.070	0.050	0.050	0.050	0.050
L18	1.185	1.185	1.190	1.195	0.050	0.050	0.055	0.060		1.080	1.080	1.085	1.085	0.060	0.060	0.065	0.065
L19	1.210	1.215	1.220	1.240	0.075	0.080	0.085	0.105		1.100	1.110	1.120	1.140	0.080	0.090	0.100	0.120
L20	1.270	1.280	1.300	1.335	0.135	0.145	0.165	0.200		1.185	1.190	1.200	1.230	0.165	0.170	0.180	0.210
L21	1.370	1.390	1.400	1.440	0.235	0.255	0.265	0.305		1.260	1.280	1.300	1.340	0.240	0.260	0.280	0.320
L22	1.490	1.510	1.540	1.600	0.355	0.375	0.405	0.465		1.390	1.410	1.440	1.500	0.370	0.390	0.420	0.480
U1				1.630				0.495					1.530				0.510
U2				1.630				0.495					1.530				0.510
U3				1.630				0.495					1.530				0.510
U4				1.625				0.490					1.520				0.500
U5				1.620				0.485					1.510				0.490
U6				1.615				0.480					1.500				0.480
U7				1.605				0.470					1.490				0.470
U7A				1.605				0.470					1.490				0.470

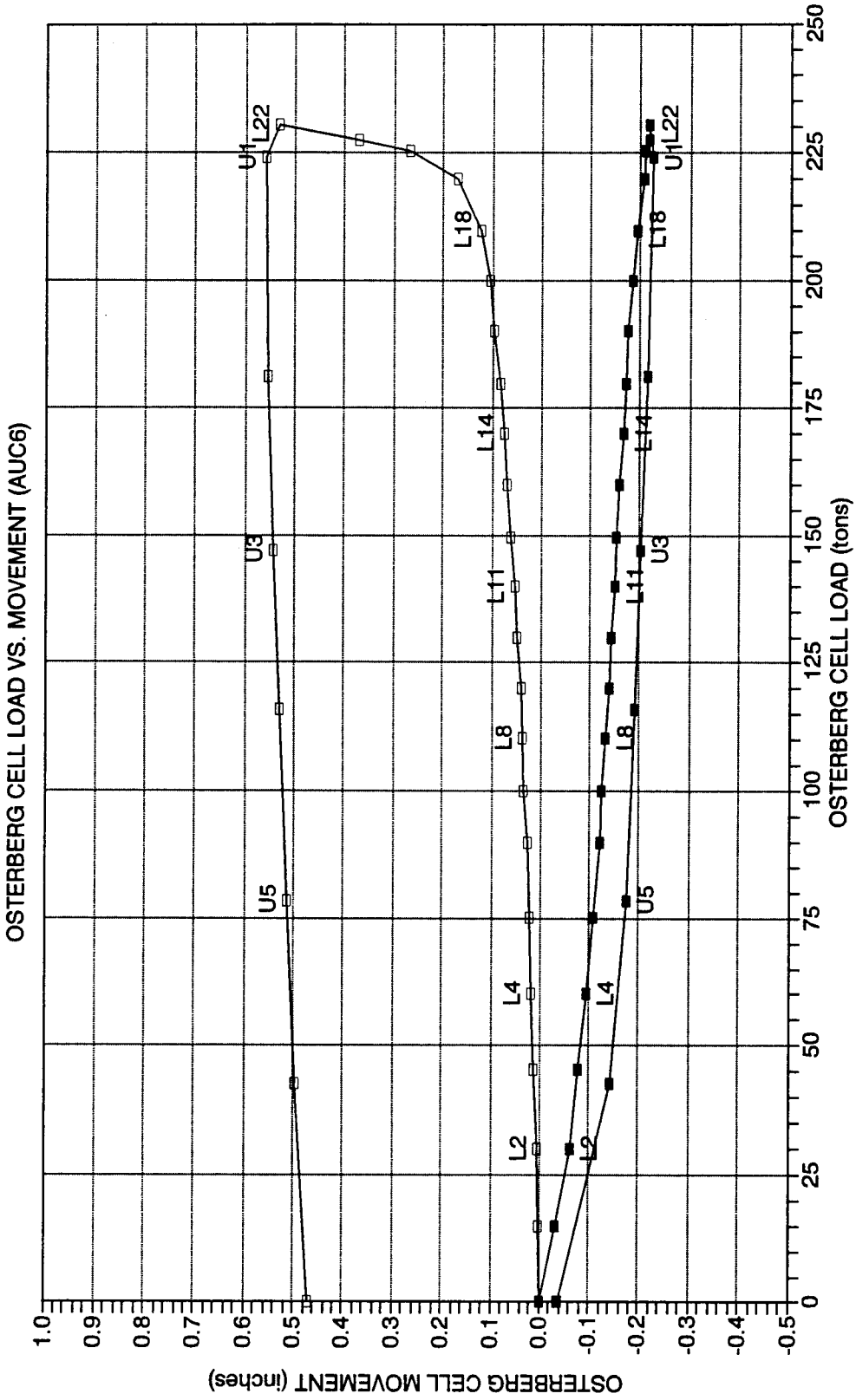


Figure E.53 Load Test 6 Movement: Aucilla

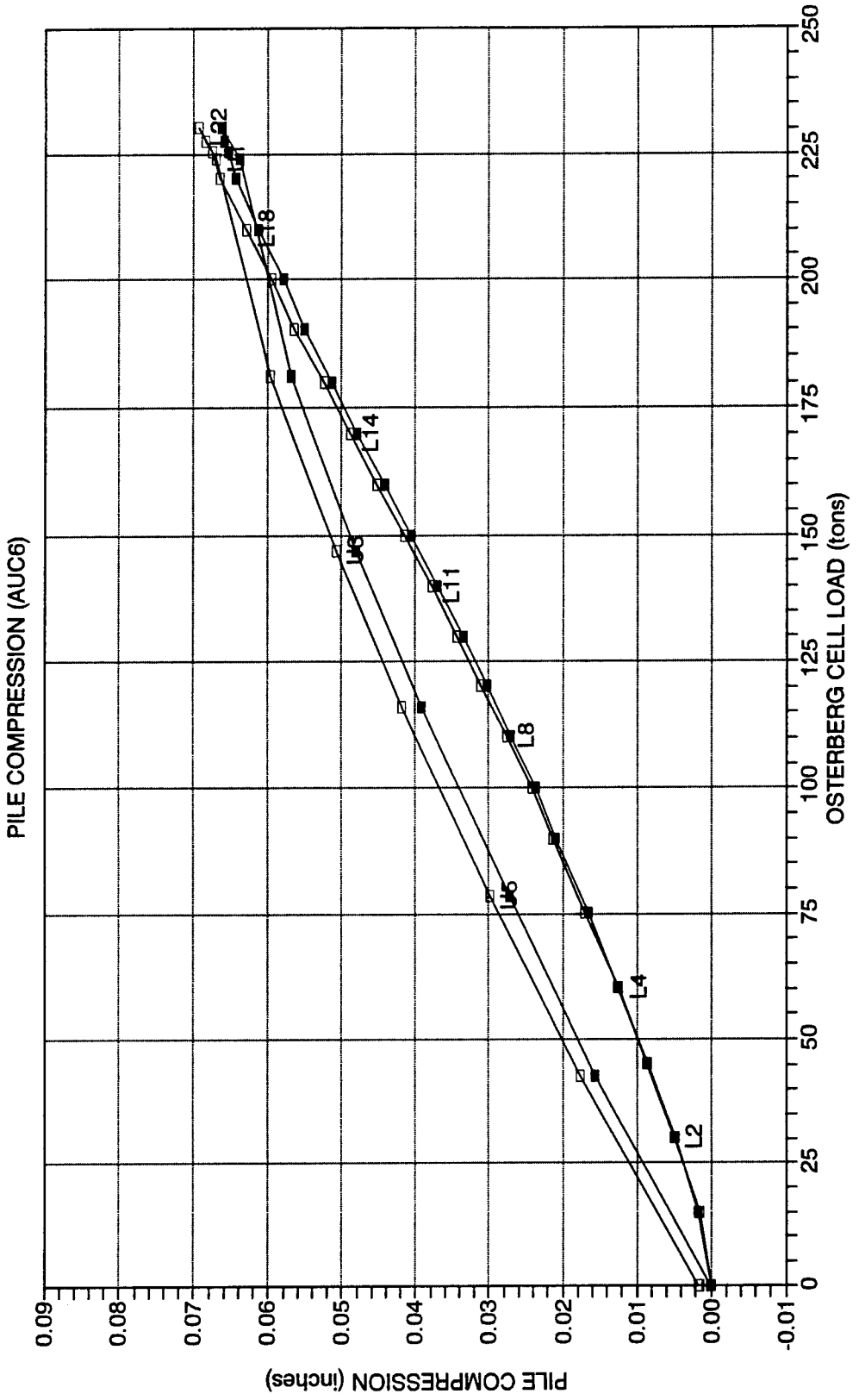


Figure E.54 Load Test 6 Compression: Aucilla

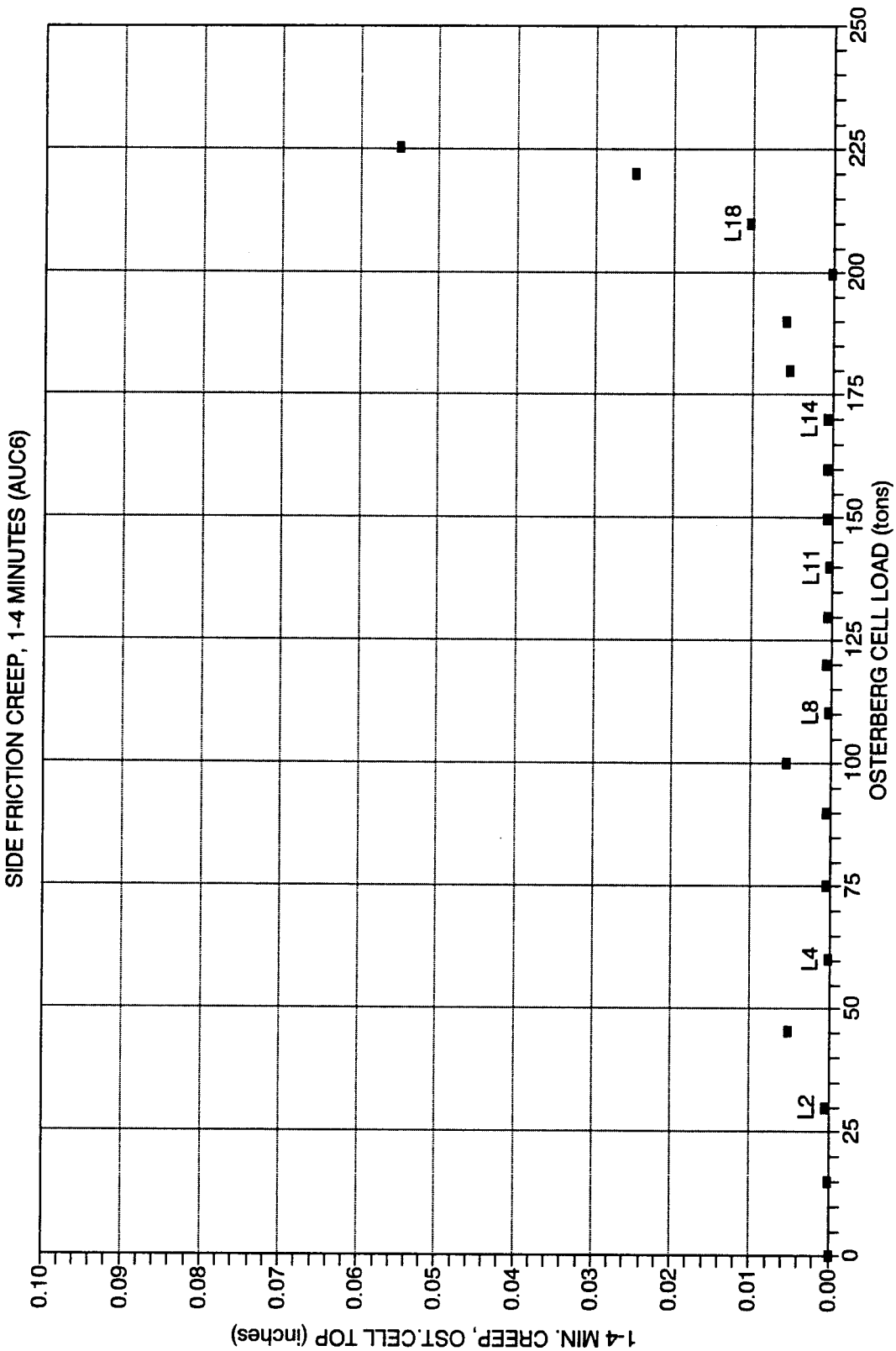


Figure E.55 Load Test 6 Creep: Aucilla

Table E.22 Data for Load Test 1: Vilano East

VLE 1 LOAD NUMBER	TIME INCR. (min)	OSTERBERG CELL LOAD: MEASURED PRESSURE (psi)	CORRECTED PRESSURE (psi)	VW TRANSDUCER READING (tons)	PRESSURE (psi)	EXTENSION @4 MIN. (inches)	LOAD (tons)	OSTERBERG CELL BOTTOM TELLTALE: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)	POISSON EFFECT ADJ. (inches)	OSTERBERG CELL BOTTOM MOVEMENT: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)
L0		0	0	9123	0	0.000	0.0				0.5000	0.0000				0.0000
L1	4	50	34	9107	53	0.001	1.7	0.5000	0.5000	0.5000	0.5000	0.0005	-0.0005	-0.0005	-0.0005	-0.0005
L2	4	200	182	9052	228	0.002	7.1	0.5001	0.5001	0.5001	0.5001	0.0022	-0.0023	-0.0023	-0.0023	-0.0023
L3	4	400	380	8986	433	0.004	13.4	0.5002	0.5002	0.5002	0.5002	0.0042	-0.0044	-0.0044	-0.0044	-0.0044
L4	4	550	528	8941	571	0.005	17.7	0.5002	0.5002	0.5002	0.5002	0.0055	-0.0057	-0.0057	-0.0057	-0.0057
L5	4	725	701	8884	745	0.004	23.1	0.5002	0.5002	0.4971	0.4971	0.0071	-0.0073	-0.0073	-0.0042	-0.0042
L6	4	900	874	8832	903	0.005	28.0	0.4971	0.4971	0.4971	0.4971	0.0087	-0.0058	-0.0058	-0.0058	-0.0058
L7	4	1090	1061	8773	1081	0.007	33.5	0.4971	0.4971	0.4971	0.4971	0.0104	-0.0075	-0.0075	-0.0075	-0.0075
L8	4	1275	1244	8718	1246	0.009	38.7	0.4971	0.4971	0.4971	0.4971	0.0120	-0.0091	-0.0091	-0.0091	-0.0091
L9	4	1425	1392	8663	1411	0.007	43.8	0.4971	0.4971	0.4940	0.4940	0.0135	-0.0106	-0.0106	-0.0075	-0.0075
L10	4	1600	1565	8606	1582	0.009	49.1	0.4940	0.4940	0.4940	0.4940	0.0152	-0.0092	-0.0092	-0.0092	-0.0092
L11	4	1800	1763	8552	1743	0.010	54.1	0.4940	0.4940	0.4940	0.4940	0.0167	-0.0107	-0.0107	-0.0107	-0.0107
L12	4	2000	1961	8496	1909	0.012	59.2	0.4940	0.4940	0.4940	0.4940	0.0183	-0.0123	-0.0123	-0.0123	-0.0123
L13	4	2150	2109	8441	2072	0.013	64.3	0.4940	0.4940	0.4940	0.4940	0.0199	-0.0139	-0.0139	-0.0139	-0.0139
L14	4	2300	2257	8384	2241	0.015	69.6	0.4940	0.4940	0.4940	0.4940	0.0215	-0.0155	-0.0155	-0.0155	-0.0155
L15	4	2490	2445	8331	2398	0.015	74.4	0.4929	0.4929	0.4929	0.4929	0.0230	-0.0159	-0.0159	-0.0159	-0.0159
L16	4	2650	2603	8273	2569	0.017	79.7	0.4929	0.4929	0.4930	0.4931	0.0246	-0.0075	-0.0075	-0.0076	-0.0077
L17	4	2800	2751	8219	2729	0.020	84.7	0.4933	0.4937	0.4938	0.4940	0.0262	-0.0095	-0.0099	-0.0100	-0.0102
L18	4	3000	2949	8163	2893	0.030	89.8	0.4990	0.4992	0.5004	0.5016	0.0278	-0.0118	-0.0120	-0.0132	-0.0144
L19	4	3150	3097	8107	3058	0.041	94.9	0.5070	0.5076	0.5090	0.5105	0.0293	-0.0163	-0.0169	-0.0183	-0.0198
L20	4	3300	3245	8053	3217	0.053	99.8	0.5162	0.5177	0.5190	0.5205	0.0309	-0.0271	-0.0286	-0.0299	-0.0314
L21	4	3490	3433	7995	3387	0.066	105.1	0.5275	0.5291	0.5309	0.5315	0.0325	-0.0400	-0.0416	-0.0434	-0.0440
L22	4	3550	3492	7969	3463	0.075	107.5	0.5362	0.5371	0.5381	0.5398	0.0332	-0.0394	-0.0403	-0.0413	-0.0380
L23	4	3625	3566	7941	3545	0.083	110.0	0.5431	0.5441	0.5452	0.5469	0.0340	-0.0421	-0.0431	-0.0442	-0.0459
L24	4	3700	3640	7913	3627	0.092	112.6	0.5501	0.5511	0.5525	0.5545	0.0348	-0.0449	-0.0459	-0.0473	-0.0493
L24A	1.5	3700	3640	7913	3627	0.093	112.6				0.5555	0.0348	0.4652	0.4652	0.4652	-0.0503
L25	4	3800	3739	7885	3709	0.102	115.1	0.5590	0.5601	0.5615	0.5634	0.0356	-0.0546	-0.0507	-0.0521	-0.0540
L26	4	3900	3838	7857	3790	0.110	117.6	0.5670	0.5682	0.5696	0.5710	0.0364	-0.0534	-0.0546	-0.0560	-0.0574
L27	4	3950	3887	7830	3869	0.120	120.1	0.5749	0.5760	0.5778	0.5801	0.0371	-0.0620	-0.0631	-0.0549	-0.0572
L28	4	4000	3937	7810	3928	0.128	121.9	0.5929	0.5839	0.5852	0.5871	0.0377	-0.0706	-0.0616	-0.0629	-0.0648
L29	4	4050	3986	7793	3977	0.136	123.4	0.5900	0.5909	0.5921	0.5941	0.0382	-0.0682	-0.0691	-0.0653	-0.0623
L30	4	4100	4036	7775	4030	0.143	125.1	0.5970	0.5984	0.5994	0.6012	0.0387	-0.0657	-0.0671	-0.0681	-0.0649
L31	4	4200	4134	7759	4077	0.152	126.5	0.6043	0.6055	0.6070	0.6092	0.0391	-0.0684	-0.0696	-0.0711	-0.0683
L32	4	4225	4159	7739	4135	0.160	128.3	0.6118	0.6134	0.6150	0.6171	0.0397	-0.0715	-0.0731	-0.0747	-0.0768
L33	4	4300	4233	7721	4187	0.171	130.0	0.6202	0.6219	0.6239	0.6272	0.0402	-0.0754	-0.0771	-0.0741	-0.0774
L34	4	4350	4283	7694	4266	0.202	132.4	0.6352	0.6391	0.6482	0.6568	0.0409	-0.0761	-0.0800	-0.0791	-0.0777
L35	4	4425	4357	7663	4356	0.230	135.2	0.6690	0.6729	0.6885	0.6838	0.0418	-0.0858	-0.0847	-0.0953	-0.0856
L36	4	4500	4431	7638	4429	0.265	137.5	0.6989	0.7054	0.7115	0.7177	0.0425	-0.0914	-0.0879	-0.0940	-0.0902
L37	1	4600	4530	7608	4516	0.309	140.2			0.7431	0.7605	0.0433			-0.1164	-0.0938
L37A	2			7699	4252	0.643	132.0			0.9255	1.0980	0.0408			-0.0863	-0.0988
L37B	3	2470	2425	8334	2389	0.769	74.3			1.2040	1.2450	0.0229			-0.0069	-0.0529
U1	3	1900	1862	8527	1817	0.709	56.5				1.1922	0.0174				0.0054
U2	3	1200	1170	8749	1153	0.649	35.9				1.1410	0.0111				0.0579
U3	3	550	528	8946	556	0.615	17.4				1.1139	0.0053				0.0808
U4	3	0	0	9123	0	0.594	0.0				1.0981	0.0000				0.1019
U4A	3	0	0	9123	0	0.591	0.0				1.0956	0.0000				0.1044

Table E.22 continued

VLE 1 LOAD NUMBER	OSTERBERG CELL TOP TELLTALE TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	PILE COMPRESSION TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	OSTERBERG CELL TOP TELLTALE TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)	PILE COMPRESSION TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)
L0				0.01000				0.00000				0.01000				0.00000
L1	0.01000	0.01000	0.01000	0.01000	0.00000	0.00000	0.00000	0.00000	0.01000	0.01000	0.01000	0.01000	0.00000	0.00000	0.00000	0.00000
L2	0.01000	0.01000	0.01000	0.00990	0.00000	0.00000	0.00000	-0.00010	0.01000	0.01000	0.01000	0.01000	0.00000	0.00000	0.00000	0.00000
L3	0.00990	0.00990	0.00990	0.00990	-0.00010	-0.00010	-0.00010	-0.00010	0.01000	0.01000	0.01000	0.00990	0.00000	0.00000	0.00000	-0.00010
L4	0.00990	0.00990	0.00990	0.00990	-0.00010	-0.00010	-0.00010	-0.00010	0.00990	0.00990	0.00930	0.00930	-0.00010	-0.00010	-0.00070	-0.00070
L5	0.00980	0.00980	0.00980	0.00980	-0.00020	-0.00020	-0.00020	-0.00020	0.00930	0.00930	0.00930	0.00930	-0.00070	-0.00070	-0.00070	-0.00070
L6	0.00980	0.00980	0.00980	0.00980	-0.00020	-0.00020	-0.00020	-0.00020	0.00930	0.00930	0.00930	0.00930	-0.00070	-0.00070	-0.00070	-0.00070
L7	0.00970	0.00970	0.00970	0.00970	-0.00030	-0.00030	-0.00030	-0.00030	0.00930	0.00930	0.00930	0.00920	-0.00070	-0.00070	-0.00070	-0.00080
L8	0.00970	0.00970	0.00970	0.00970	-0.00030	-0.00030	-0.00030	-0.00030	0.00920	0.00920	0.00920	0.00920	-0.00080	-0.00080	-0.00080	-0.00080
L9	0.00970	0.00970	0.00970	0.00960	-0.00030	-0.00030	-0.00030	-0.00040	0.00920	0.00920	0.00920	0.00920	-0.00080	-0.00080	-0.00080	-0.00080
L10	0.00960	0.00960	0.00960	0.00960	-0.00040	-0.00040	-0.00040	-0.00040	0.00920	0.00920	0.00920	0.00920	-0.00080	-0.00080	-0.00080	-0.00080
L11	0.00960	0.00960	0.00960	0.00960	-0.00040	-0.00040	-0.00040	-0.00040	0.00920	0.00920	0.00920	0.00920	-0.00080	-0.00080	-0.00080	-0.00080
L12	0.00960	0.00960	0.00960	0.00960	-0.00040	-0.00040	-0.00040	-0.00040	0.00920	0.00920	0.00920	0.00910	-0.00080	-0.00080	-0.00080	-0.00090
L13	0.00960	0.00960	0.00960	0.00960	-0.00040	-0.00040	-0.00040	-0.00040	0.00920	0.00920	0.00920	0.00920	-0.00080	-0.00080	-0.00080	-0.00080
L14	0.00960	0.00960	0.00960	0.00960	-0.00040	-0.00040	-0.00040	-0.00040	0.00920	0.00920	0.00930	0.00930	-0.00080	-0.00080	-0.00070	-0.00070
L15	0.00960	0.00960	0.00960	0.00960	-0.00040	-0.00040	-0.00040	-0.00040	0.00930	0.00930	0.00930	0.00930	-0.00070	-0.00070	-0.00070	-0.00070
L16	0.00970	0.00970	0.00980	0.00980	-0.00030	-0.00030	-0.00020	-0.00020	0.00940	0.00940	0.00940	0.00940	-0.00060	-0.00060	-0.00060	-0.00060
L17	0.01000	0.01010	0.01010	0.01010	0.00000	0.00010	0.00010	0.00010	0.00950	0.00960	0.00960	0.00960	-0.00050	-0.00040	-0.00040	-0.00040
L18	0.01040	0.01050	0.01060	0.01070	0.00040	0.00050	0.00060	0.00070	0.00990	0.01010	0.01000	0.01000	-0.00010	0.00010	0.00000	0.00000
L19	0.01110	0.01110	0.01110	0.01110	0.00110	0.00110	0.00110	0.00110	0.01050	0.01050	0.01050	0.01060	0.00050	0.00050	0.00050	0.00060
L20	0.01170	0.01170	0.01180	0.01180	0.00170	0.00170	0.00180	0.00180	0.01100	0.01100	0.01100	0.01100	0.00100	0.00100	0.00100	0.00100
L21	0.01210	0.01210	0.01210	0.01210	0.00210	0.00210	0.00210	0.00210	0.01140	0.01140	0.01140	0.01140	0.00140	0.00140	0.00140	0.00140
L22	0.01220	0.01220	0.01230	0.01230	0.00220	0.00220	0.00230	0.00230	0.01160	0.01170	0.01170	0.01170	0.00160	0.00170	0.00170	0.00170
L23	0.01250	0.01260	0.01260	0.01260	0.00250	0.00260	0.00260	0.00260	0.01180	0.01190	0.01190	0.01200	0.00180	0.00190	0.00190	0.00200
L24	0.01290	0.01290	0.01290	0.01300	0.00290	0.00290	0.00290	0.00300	0.01210	0.01210	0.01210	0.01210	0.00210	0.00210	0.00210	0.00210
L24A				0.01300				0.00300				0.01210				0.00210
L25	0.01310	0.01310	0.01310	0.01310	0.00310	0.00310	0.00310	0.00310	0.01230	0.01230	0.01230	0.01240	0.00230	0.00230	0.00230	0.00240
L26	0.01310	0.01310	0.01310	0.01310	0.00310	0.00310	0.00310	0.00310	0.01250	0.01250	0.01250	0.01260	0.00250	0.00250	0.00250	0.00260
L27	0.01360	0.01360	0.01360	0.01360	0.00360	0.00360	0.00360	0.00360	0.01270	0.01270	0.01280	0.01280	0.00270	0.00270	0.00280	0.00280
L28	0.01380	0.01380	0.01380	0.01390	0.00380	0.00380	0.00380	0.00390	0.01290	0.01290	0.01290	0.01290	0.00290	0.00290	0.00290	0.00290
L29	0.01390	0.01390	0.01390	0.01390	0.00390	0.00390	0.00390	0.00390	0.01300	0.01300	0.01300	0.01300	0.00300	0.00300	0.00300	0.00300
L30	0.01400	0.01410	0.01410	0.01410	0.00400	0.00410	0.00410	0.00410	0.01300	0.01310	0.01310	0.01310	0.00300	0.00310	0.00310	0.00310
L31	0.01410	0.01410	0.01410	0.01410	0.00410	0.00410	0.00410	0.00410	0.01310	0.01310	0.01310	0.01310	0.00310	0.00310	0.00310	0.00310
L32	0.01410	0.01410	0.01410	0.01410	0.00410	0.00410	0.00410	0.00410	0.01320	0.01320	0.01320	0.01320	0.00320	0.00320	0.00320	0.00320
L33	0.01420	0.01430	0.01430	0.01440	0.00420	0.00430	0.00430	0.00440	0.01340	0.01340	0.01340	0.01340	0.00340	0.00340	0.00340	0.00340
L34	0.01480	0.01480	0.01490	0.01490	0.00480	0.00480	0.00490	0.00490	0.01360	0.01360	0.01380	0.01380	0.00360	0.00360	0.00380	0.00380
L35	0.01510	0.01510	0.01510	0.01510	0.00510	0.00510	0.00510	0.00510	0.01400	0.01400	0.01400	0.01400	0.00400	0.00400	0.00400	0.00400
L36	0.01510	0.01510	0.01510	0.01510	0.00510	0.00510	0.00510	0.00510	0.01420	0.01420	0.01420	0.01420	0.00420	0.00420	0.00420	0.00420
L37			0.01550	0.01550			0.00550	0.00550			0.01450	0.01450			0.00450	0.00450
L37A			0.01470	0.01480			0.00470	0.00480			0.01400	0.01400			0.00400	0.00400
L37B			0.01180	0.01180			0.00180	0.00180			0.00940	0.00940			-0.00060	-0.00060
U1				0.01000				0.00000				0.00780				-0.00220
U2				0.00800				-0.00200				0.00590				-0.00410
U3				0.00710				-0.00290				0.00510				-0.00490
U4				0.00680				-0.00320				0.00480				-0.00520
U4A				0.00680				-0.00320				0.00480				-0.00520

Table E.22 continued

VLE 1 LOAD NUMBER	PILE COMPRESSION TT-1 & TT-2 AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP MOVEMENT AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP CREEP 1-4 MIN (inches)	CREEP 2-4 MIN (inches)
L0				0.0000				0.0000	0.0000	0.0000
L1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
L2	0.0000	0.0000	0.0000	-0.0000	0.0000	0.0000	0.0000	-0.0000	-0.0000	-0.0000
L3	-0.0000	-0.0000	-0.0000	-0.0001	-0.0000	-0.0000	-0.0000	-0.0001	-0.0000	-0.0000
L4	-0.0001	-0.0001	-0.0004	-0.0004	-0.0001	-0.0001	-0.0004	-0.0004	-0.0003	0.0000
L5	-0.0005	-0.0005	-0.0005	-0.0005	-0.0005	-0.0005	-0.0005	-0.0005	0.0000	0.0000
L6	-0.0005	-0.0005	-0.0005	-0.0005	-0.0005	-0.0005	-0.0005	-0.0005	0.0000	0.0000
L7	-0.0005	-0.0005	-0.0005	-0.0006	-0.0005	-0.0005	-0.0005	-0.0006	-0.0000	-0.0000
L8	-0.0006	-0.0006	-0.0006	-0.0006	-0.0006	-0.0006	-0.0006	-0.0006	0.0000	0.0000
L9	-0.0006	-0.0006	-0.0006	-0.0006	-0.0006	-0.0006	-0.0006	-0.0006	-0.0001	-0.0001
L10	-0.0006	-0.0006	-0.0006	-0.0006	-0.0006	-0.0006	-0.0006	-0.0006	0.0000	0.0000
L11	-0.0006	-0.0006	-0.0006	-0.0006	-0.0006	-0.0006	-0.0006	-0.0006	0.0000	0.0000
L12	-0.0006	-0.0006	-0.0006	-0.0007	-0.0006	-0.0006	-0.0006	-0.0007	-0.0000	-0.0000
L13	-0.0006	-0.0006	-0.0006	-0.0006	-0.0006	-0.0006	-0.0006	-0.0006	0.0000	0.0000
L14	-0.0006	-0.0006	-0.0006	-0.0006	-0.0006	-0.0006	-0.0006	-0.0006	0.0000	0.0000
L15	-0.0006	-0.0006	-0.0006	-0.0006	-0.0006	-0.0006	-0.0006	-0.0006	0.0000	0.0000
L16	-0.0004	-0.0004	-0.0004	-0.0004	0.0096	0.0096	0.0096	0.0096	0.0000	0.0000
L17	-0.0003	-0.0002	-0.0002	-0.0002	0.0098	0.0099	0.0099	0.0099	0.0000	0.0000
L18	0.0001	0.0003	0.0003	0.0003	0.0152	0.0153	0.0153	0.0154	0.0000	0.0000
L19	0.0008	0.0008	0.0008	0.0009	0.0208	0.0208	0.0208	0.0209	0.0000	0.0000
L20	0.0013	0.0013	0.0014	0.0014	0.0214	0.0214	0.0214	0.0214	0.0000	0.0000
L21	0.0018	0.0018	0.0018	0.0018	0.0218	0.0218	0.0218	0.0218	0.0000	0.0000
L22	0.0019	0.0020	0.0020	0.0020	0.0319	0.0319	0.0320	0.0370	0.0051	0.0050
L23	0.0022	0.0023	0.0023	0.0023	0.0371	0.0372	0.0372	0.0373	0.0000	0.0000
L24	0.0025	0.0025	0.0025	0.0025	0.0425	0.0425	0.0425	0.0425	0.0000	0.0000
L24A				0.0025	0.0000	0.0000	0.0000	0.0425		
L25	0.0027	0.0027	0.0027	0.0028	0.0427	0.0477	0.0477	0.0477	0.0001	0.0001
L26	0.0028	0.0028	0.0028	0.0029	0.0528	0.0528	0.0528	0.0528	0.0001	0.0001
L27	0.0031	0.0031	0.0032	0.0032	0.0531	0.0531	0.0632	0.0632	0.0101	0.0000
L28	0.0034	0.0034	0.0034	0.0034	0.0634	0.0634	0.0634	0.0634	0.0000	0.0000
L29	0.0034	0.0034	0.0034	0.0034	0.0635	0.0635	0.0685	0.0735	0.0100	0.0050
L30	0.0035	0.0036	0.0036	0.0036	0.0735	0.0736	0.0736	0.0786	0.0050	0.0050
L31	0.0036	0.0036	0.0036	0.0036	0.0786	0.0786	0.0786	0.0836	0.0050	0.0050
L32	0.0037	0.0037	0.0037	0.0037	0.0837	0.0837	0.0837	0.0837	0.0000	0.0000
L33	0.0038	0.0039	0.0039	0.0039	0.0888	0.0889	0.0938	0.0939	0.0050	0.0000
L34	0.0042	0.0042	0.0044	0.0044	0.1042	0.1042	0.1143	0.1244	0.0202	0.0100
L35	0.0046	0.0046	0.0046	0.0046	0.1296	0.1346	0.1396	0.1446	0.0100	0.0050
L36	0.0047	0.0047	0.0047	0.0047	0.1547	0.1647	0.1647	0.1747	0.0100	0.0100
L37			0.0050	0.0050			0.1750	0.2150		
L37A			0.0044	0.0044			0.3844	0.5444		
L37B			0.0006	0.0006			0.7206	0.7156		
U1				-0.0011				0.7139		
U2				-0.0031				0.7070		
U3				-0.0039				0.6961		
U4				-0.0042				0.6958		
U4A				-0.0042				0.6958		

Table E.22 continued

VLE 1 LOAD NUMBER	TOP OF PILE MOVEMENT - WIRELINE READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)	BSIGHT @0.5MIN. (inches)	TOP OF PILE MOVEMENT - SURVEY LEVEL READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)
L0				0.380				0.000	2.960				1.030				0.000
L1	0.380	0.380	0.380	0.380	0.000	0.000	0.000	0.000		1.030	1.030	1.030	1.030	0.000	0.000	0.000	0.000
L2	0.380	0.380	0.380	0.380	0.000	0.000	0.000	0.000	2.960	1.030	1.030	1.030	1.030	0.000	0.000	0.000	0.000
L3	0.380	0.380	0.380	0.380	0.000	0.000	0.000	0.000		1.030	1.030	1.030	1.030	0.000	0.000	0.000	0.000
L4	0.380	0.380	0.380	0.380	0.000	0.000	0.000	0.000	2.960	1.030	1.030	1.030	1.030	0.000	0.000	0.000	0.000
L5	0.380	0.380	0.380	0.380	0.000	0.000	0.000	0.000		1.030	1.030	1.030	1.030	0.000	0.000	0.000	0.000
L6	0.380	0.380	0.380	0.380	0.000	0.000	0.000	0.000	2.960	1.030	1.030	1.030	1.030	0.000	0.000	0.000	0.000
L7	0.380	0.380	0.380	0.380	0.000	0.000	0.000	0.000		1.030	1.030	1.030	1.030	0.000	0.000	0.000	0.000
L8	0.380	0.380	0.380	0.380	0.000	0.000	0.000	0.000	2.960	1.030	1.030	1.030	1.030	0.000	0.000	0.000	0.000
L9	0.380	0.380	Q.380	0.380	0.000	0.000	0.000	0.000		1.030	1.030	1.030	1.030	0.000	0.000	0.000	0.000
L10	0.380	0.380	0.380	0.380	0.000	0.000	0.000	0.000	2.960	1.030	1.030	1.030	1.030	0.000	0.000	0.000	0.000
L11	0.380	0.380	0.380	0.380	0.000	0.000	0.000	0.000		1.030	1.030	1.030	1.030	0.000	0.000	0.000	0.000
L12	0.380	0.380	0.380	0.380	0.000	0.000	0.000	0.000	2.960	1.030	1.030	1.030	1.030	0.000	0.000	0.000	0.000
L13	0.380	0.380	0.380	0.380	0.000	0.000	0.000	0.000		1.030	1.030	1.030	1.030	0.000	0.000	0.000	0.000
L14	0.380	0.380	0.380	0.380	0.000	0.000	0.000	0.000	2.960	1.030	1.030	1.030	1.030	0.000	0.000	0.000	0.000
L15	0.380	0.380	0.380	0.380	0.000	0.000	0.000	0.000		1.030	1.030	1.030	1.030	0.000	0.000	0.000	0.000
L16	0.390	0.390	0.390	0.390	0.010	0.010	0.010	0.010	2.960	1.030	1.030	1.030	1.030	0.000	0.000	0.000	0.000
L17	0.390	0.390	0.390	0.390	0.010	0.010	0.010	0.010		1.030	1.030	1.030	1.030	0.000	0.000	0.000	0.000
L18	0.395	0.395	0.395	0.395	0.015	0.015	0.015	0.015	2.960	1.030	1.030	1.030	1.030	0.000	0.000	0.000	0.000
L19	0.400	0.400	0.400	0.400	0.020	0.020	0.020	0.020		1.040	1.040	1.040	1.040	0.010	0.010	0.010	0.010
L20	0.400	0.400	0.400	0.400	0.020	0.020	0.020	0.020	2.960	1.040	1.040	1.040	1.040	0.010	0.010	0.010	0.010
L21	0.400	0.400	0.400	0.400	0.020	0.020	0.020	0.020		1.050	1.050	1.050	1.050	0.020	0.020	0.020	0.020
L22	0.410	0.410	0.410	0.415	0.030	0.030	0.030	0.035	2.960	1.050	1.050	1.050	1.050	0.020	0.020	0.020	0.020
L23	0.415	0.415	0.415	0.415	0.035	0.035	0.035	0.035		1.060	1.060	1.060	1.060	0.030	0.030	0.030	0.030
L24	0.420	0.420	0.420	0.420	0.040	0.040	0.040	0.040	2.960	1.060	1.060	1.060	1.060	0.030	0.030	0.030	0.030
L24A				0.420				0.040					1.070				0.040
L25	0.420	0.425	0.425	0.425	0.040	0.045	0.045	0.045	2.960	1.070	1.070	1.070	1.070	0.040	0.040	0.040	0.040
L26	0.430	0.430	0.430	0.430	0.050	0.050	0.050	0.050		1.080	1.080	1.080	1.080	0.050	0.050	0.050	0.050
L27	0.430	0.430	0.440	0.440	0.050	0.050	0.060	0.060	2.960	1.090	1.090	1.090	1.090	0.060	0.060	0.060	0.060
L28	0.440	0.440	0.440	0.440	0.060	0.060	0.060	0.060		1.090	1.090	1.090	1.090	0.060	0.060	0.060	0.060
L29	0.440	0.440	0.445	0.450	0.060	0.060	0.065	0.070	2.960	1.100	1.100	1.100	1.100	0.070	0.070	0.070	0.070
L30	0.450	0.450	0.450	0.455	0.070	0.070	0.070	0.075		1.100	1.100	1.100	1.100	0.070	0.070	0.070	0.070
L31	0.455	0.455	0.455	0.460	0.075	0.075	0.075	0.080	2.960	1.100	1.100	1.100	1.100	0.070	0.070	0.070	0.070
L32	0.460	0.460	0.460	0.460	0.080	0.080	0.080	0.080		1.100	1.100	1.100	1.100	0.070	0.070	0.070	0.070
L33	0.465	0.465	0.470	0.470	0.085	0.085	0.090	0.090	2.960	1.100	1.100	1.100	1.100	0.070	0.070	0.070	0.070
L34	0.480	0.480	0.490	0.500	0.100	0.100	0.110	0.120		1.110	1.120	1.120	1.120	0.080	0.090	0.090	0.090
L35	0.505	0.510	0.515	0.520	0.125	0.130	0.135	0.140	2.960	1.140	1.150	1.160	1.160	0.110	0.120	0.130	0.130
L36	0.530	0.540	0.540	0.550	0.150	0.160	0.160	0.170		1.180	1.190	1.190	1.200	0.150	0.160	0.160	0.170
L37			0.550	0.590			0.170	0.210	2.960			1.210	1.220			0.180	0.190
L37A			0.760	0.920			0.380	0.540				1.400	1.570			0.370	0.540
L37B			1.100	1.095			0.720	0.715	2.960			1.730	1.730			0.700	0.700
U1				1.095				0.715					1.720				0.690
U2				1.090				0.710	2.960				1.720				0.690
U3				1.080				0.700					1.720				0.690
U4				1.080				0.700	2.960				1.710				0.680
U4A				1.080				0.700	2.960				1.710				0.680

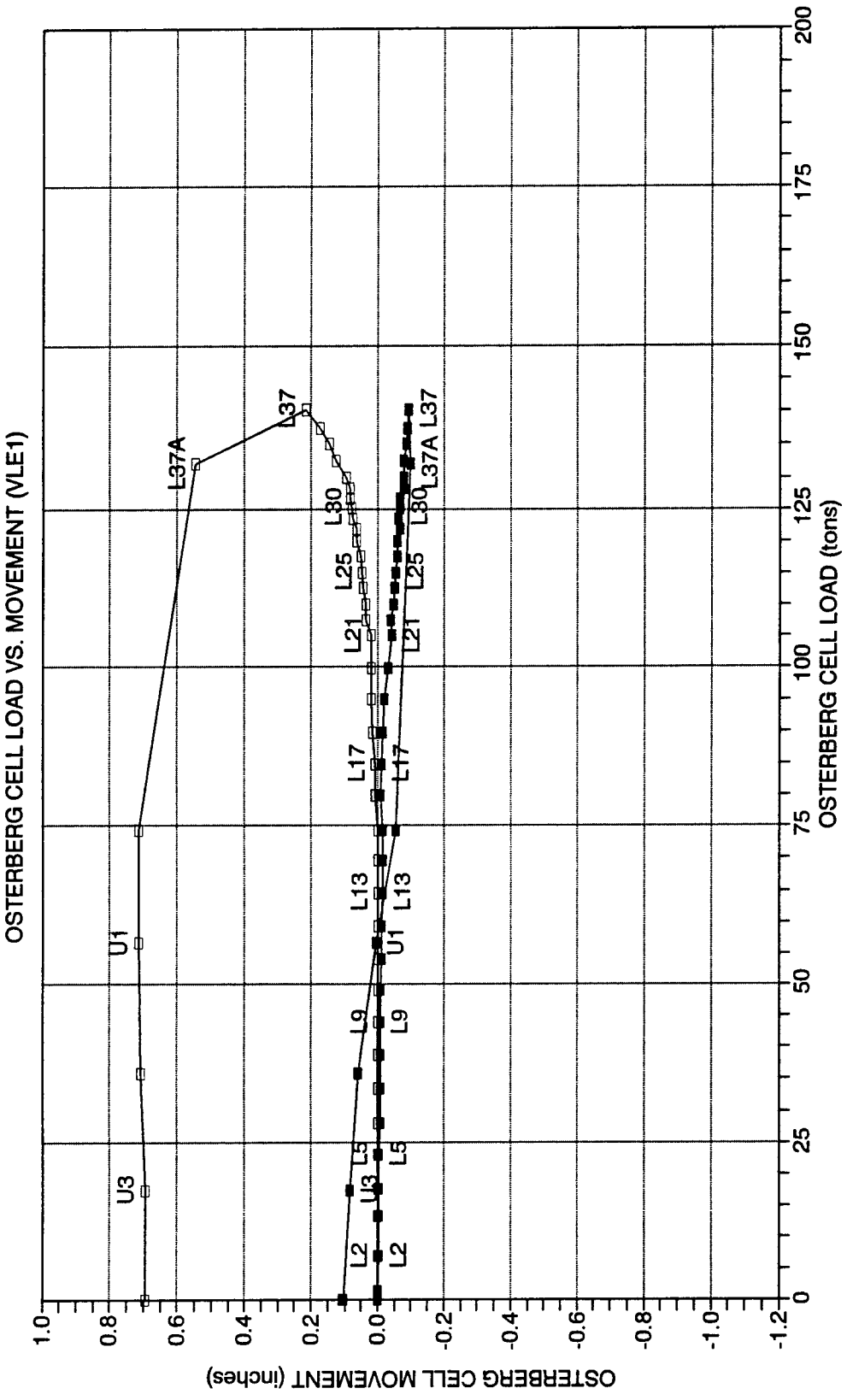


Figure E.56 Load Test 1 Movement: Vilano East

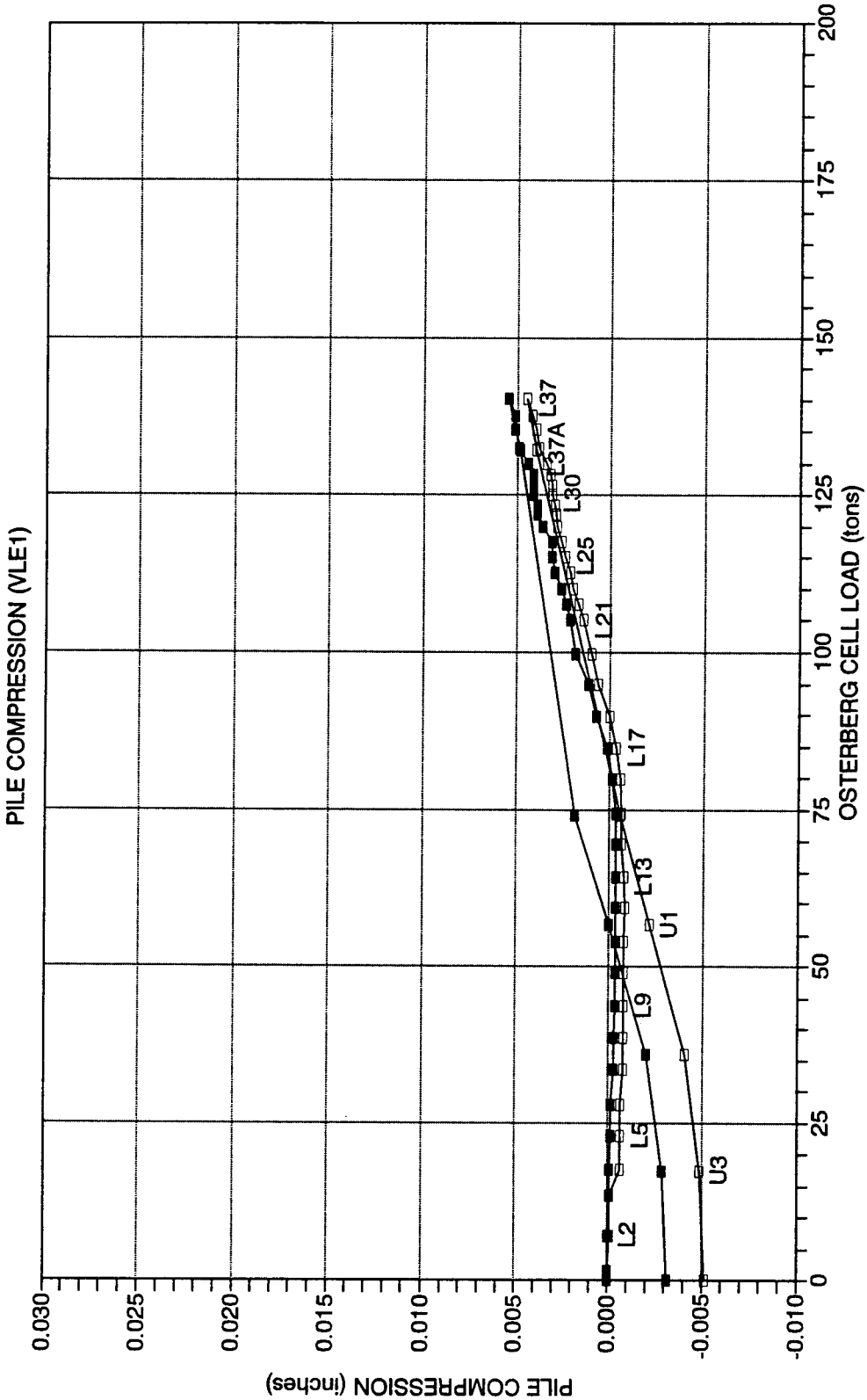


Figure E.57 Load Test 1 Compression: Vilano East

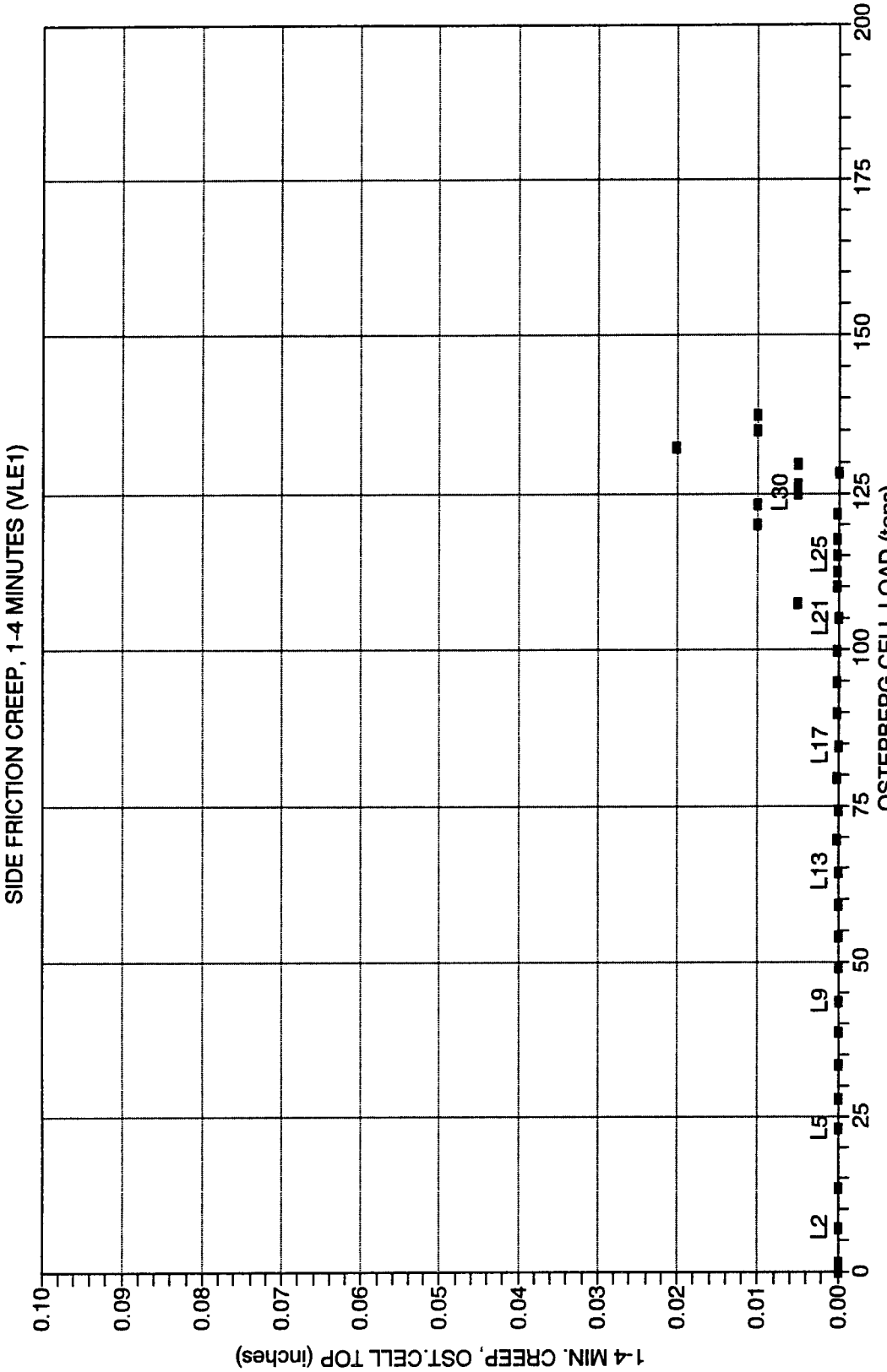


Figure E.58 Load Test 1 Creep: Vilano East

Table E.23 Data for Load Test 2: Vilano East

VLE 2 LOAD NUMBER	TIME INCR. (min)	OSTERBERG CELL LOAD: MEASURED PRESSURE (psi)	CORRECTED PRESSURE (psi)	VW TRANSDUCER READING (tons)	EXTENSION PRESSURE (psi)	@4 MIN. (inches)	LOAD (tons)	OSTERBERG CELL BOTTOM TELLTALE: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)	POISSON EFFECT ADJ. (inches)	OSTERBERG CELL BOTTOM MOVEMENT: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)
L0		0	0	9127	0	0.591	0.0				0.5008	0.0000				0.0000
L1	4	480	459	8969	497	0.596	15.5	0.5008	0.5008	0.5008	0.5008	0.0048	-0.0048	-0.0048	-0.0048	-0.0048
L2	4	710	686	8889	742	0.599	23.1	0.5009	0.5009	0.5009	0.5009	0.0071	-0.0072	-0.0072	-0.0072	-0.0072
L3	4	1050	1022	8778	1078	0.603	33.6	0.5009	0.5009	0.5009	0.5013	0.0103	-0.0104	-0.0104	-0.0104	-0.0108
L4	4	1460	1427	8668	1408	0.614	43.8	0.5078	0.5082	0.5082	0.5086	0.0135	-0.0205	-0.0159	-0.0159	-0.0163
L5	4	1790	1753	8556	1743	0.632	54.2	0.5213	0.5218	0.5222	0.5225	0.0167	-0.0322	-0.0327	-0.0331	-0.0284
L6	4	2140	2099	8445	2072	0.653	64.4	0.5385	0.5390	0.5393	0.5398	0.0199	-0.0476	-0.0481	-0.0484	-0.0439
L7	4	2480	2435	8335	2398	0.675	74.5	0.5558	0.5568	0.5572	0.5581	0.0230	-0.0630	-0.0640	-0.0644	-0.0603
L8	4	2800	2751	8224	2726	0.700	84.7	0.5759	0.5762	0.5774	0.5782	0.0261	-0.0812	-0.0815	-0.0827	-0.0835
L9	4	3130	3077	8111	3058	0.726	95.0	0.5967	0.5980	0.5991	0.6003	0.0293	-0.1052	-0.1065	-0.1076	-0.1088
L10	4	3450	3393	8000	3384	0.755	105.1	0.6210	0.6224	0.6240	0.6260	0.0325	-0.1327	-0.1341	-0.1357	-0.1377
L11	4	3620	3561	7945	3545	0.772	110.1	0.6352	0.6372	0.6387	0.6408	0.0340	-0.1434	-0.1454	-0.1469	-0.1490
L12	4	3800	3739	7890	3706	0.791	115.1	0.6512	0.6530	0.6547	0.6573	0.0356	-0.1560	-0.1578	-0.1595	-0.1621
L13	4	3970	3907	7835	3866	0.811	120.1	0.6674	0.6695	0.6720	0.6755	0.0371	-0.1687	-0.1708	-0.1733	-0.1768
L14	4	4140	4075	7778	4033	0.836	125.3	0.6891	0.6910	0.6949	0.6980	0.0387	-0.1870	-0.1889	-0.1928	-0.1959
L15	4	4300	4233	7723	4193	0.863	130.3	0.7125	0.7150	0.7185	0.7231	0.0402	-0.2119	-0.2144	-0.2179	-0.2225
L16	4	4450	4381	7667	4356	0.895	135.4	0.7396	0.7432	0.7476	0.7530	0.0418	-0.2356	-0.2392	-0.2436	-0.2440
L17	4	4625	4554	7611	4519	0.933	140.4	0.7733	0.7761	0.7818	0.7885	0.0434	-0.2609	-0.2637	-0.2694	-0.2711
L18	4	4710	4638	7582	4604	0.956	143.0	0.7972	0.8002	0.8048	0.8105	0.0442	-0.2806	-0.2836	-0.2882	-0.2939
L19	4	4800	4727	7556	4679	0.979	145.4	0.8190	0.8218	0.8262	0.8325	0.0449	-0.3031	-0.3059	-0.3103	-0.3066
L20	4	4880	4806	7528	4761	1.003	147.9	0.8413	0.8460	0.8492	0.8558	0.0457	-0.3162	-0.3209	-0.3241	-0.3257
L21	4	4940	4866	7501	4839	1.030	150.4	m	0.8680	0.8735	0.8815	0.0464	m	-0.3336	-0.3391	-0.3471
L22	4	5115	5039	7445	5002	1.114	155.4	0.9125	0.9238	0.9442	0.9635	0.0480	-0.3697	-0.3710	-0.3914	-0.3907
L23	4			7630	4464	1.461	138.8	1.0470	1.1450	1.2750	1.3178	0.0428	-0.3890	-0.3870	-0.3970	-0.3948
L23A	4			7665	4362	1.465	135.6				1.3220	0.0418				-0.3980
U1	3			7871	3761	1.453	117.0				1.3183	0.0361				-0.3886
U2	3			8140	2973	1.415	92.5				1.2905	0.0285				-0.3582
U3	3			8262	2614	1.391	81.4				1.2708	0.0251				-0.3351
U4	3			8458	2034	1.350	63.4				1.2372	0.0195				-0.3009
U5	3			8604	1599	1.307	49.9				1.2001	0.0153				-0.2646
U6	3			8846	872	1.247	27.3				1.1492	0.0084				-0.2168
U7	3			9058	222	1.105	7.1				1.0150	0.0021				-0.0813
U8	3			9128	0	1.096	0.0				1.0088	0.0000				-0.0780
U8A	3			9128	0	1.093	0.0				1.0058	0.0000				-0.0750

Table E.23 continued

VLE 2 LOAD NUMBER	OSTERBERG CELL TOP TELLTALE TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	PILE COMPRESSION TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	OSTERBERG CELL TOP TELLTALE TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)	PILE COMPRESSION TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)
L0				0.01004				0.00000				0.01005				0.00000
L1	0.01050	0.01050	0.01050	0.01050	0.00046	0.00046	0.00046	0.00046	0.01025	0.01025	0.01030	0.01030	0.00020	0.00020	0.00025	0.00025
L2	0.01065	0.01065	0.01070	0.01070	0.00061	0.00061	0.00066	0.00066	0.01050	0.01050	0.01050	0.01050	0.00045	0.00045	0.00045	0.00045
L3	0.01105	0.01105	0.01105	0.01115	0.00101	0.00101	0.00101	0.00111	0.01080	0.01080	0.01080	0.01085	0.00075	0.00075	0.00075	0.00080
L4	0.01150	0.01150	0.01150	0.01150	0.00146	0.00146	0.00146	0.00146	0.01115	0.01120	0.01120	0.01120	0.00110	0.00115	0.00115	0.00115
L5	0.01240	0.01240	0.01240	0.01240	0.00236	0.00236	0.00236	0.00236	0.01200	0.01200	0.01200	0.01200	0.00195	0.00195	0.00195	0.00195
L6	0.01340	0.01340	0.01340	0.01340	0.00336	0.00336	0.00336	0.00336	0.01300	0.01300	0.01300	0.01300	0.00295	0.00295	0.00295	0.00295
L7	0.01435	0.01435	0.01435	0.01435	0.00431	0.00431	0.00431	0.00431	0.01365	0.01365	0.01365	0.01365	0.00360	0.00360	0.00360	0.00360
L8	0.01535	0.01535	0.01535	0.01535	0.00531	0.00531	0.00531	0.00531	0.01470	0.01470	0.01470	0.01475	0.00465	0.00465	0.00465	0.00470
L9	0.01630	0.01630	0.01630	0.01630	0.00626	0.00626	0.00626	0.00626	0.01565	0.01565	0.01565	0.01565	0.00560	0.00560	0.00560	0.00560
L10	0.01720	0.01720	0.01720	0.01720	0.00716	0.00716	0.00716	0.00716	0.01655	0.01655	0.01655	0.01655	0.00650	0.00650	0.00650	0.00650
L11	0.01745	0.01745	0.01745	0.01745	0.00741	0.00741	0.00741	0.00741	0.01700	0.01700	0.01700	0.01700	0.00695	0.00695	0.00695	0.00695
L12	0.01795	0.01795	0.01795	0.01800	0.00791	0.00791	0.00791	0.00796	0.01750	0.01750	0.01750	0.01755	0.00745	0.00745	0.00745	0.00750
L13	0.01845	0.01845	0.01845	0.01845	0.00841	0.00841	0.00841	0.00841	0.01800	0.01800	0.01800	0.01820	0.00795	0.00795	0.00795	0.00815
L14	0.01920	0.01920	0.01920	0.01920	0.00916	0.00916	0.00916	0.00916	0.01870	0.01870	0.01875	0.01875	0.00865	0.00865	0.00870	0.00870
L15	0.01945	0.01945	0.01945	0.01945	0.00941	0.00941	0.00941	0.00941	0.01910	0.01910	0.01910	0.01910	0.00905	0.00905	0.00905	0.00905
L16	0.02020	0.02020	0.02025	0.02030	0.01016	0.01016	0.01021	0.01026	0.01975	0.01975	0.01975	0.01985	0.00970	0.00970	0.00970	0.00980
L17	0.02050	0.02050	0.02080	0.02085	0.01046	0.01046	0.01076	0.01081	0.02010	0.02010	0.02025	0.02035	0.01005	0.01005	0.01020	0.01030
L18	0.02110	0.02110	0.02110	0.02115	0.01106	0.01106	0.01106	0.01111	0.02060	0.02065	0.02065	0.02070	0.01055	0.01060	0.01060	0.01065
L19	0.02135	0.02140	0.02140	0.02145	0.01131	0.01136	0.01136	0.01141	0.02090	0.02095	0.02095	0.02095	0.01085	0.01090	0.01090	0.01090
L20	0.02150	0.02155	0.02165	0.02165	0.01146	0.01151	0.01161	0.01161	0.02110	0.02110	0.02120	0.02120	0.01105	0.01105	0.01115	0.01115
L21	0.02200	0.02200	0.02200	0.02205	0.01196	0.01196	0.01196	0.01201	0.02155	0.02155	0.02160	0.02165	0.01150	0.01150	0.01155	0.01160
L22	0.02250	0.02250	0.02280	0.02280	0.01246	0.01246	0.01276	0.01276	0.02210	0.02210	0.02210	0.02210	0.01205	0.01205	0.01205	0.01205
L23	0.02210	0.02150	0.02145	0.02125	0.01206	0.01146	0.01141	0.01121	0.02130	0.02045	0.02030	0.02015	0.01125	0.01040	0.01025	0.01010
L23A				0.02125				0.01121				0.02005				0.01000
U1				0.01925				0.00921				0.01820				0.00815
U2				0.01640				0.00636				0.01535				0.00530
U3				0.01520				0.00516				0.01400				0.00395
U4				0.01320				0.00316				0.01210				0.00205
U5				0.01150				0.00146				0.01045				0.00040
U6				0.00995				-0.00009				0.00880				-0.00125
U7				0.00845				-0.00159				0.00735				-0.00270
U8				0.00810				-0.00194				0.00695				-0.00310
U8A				0.00805				-0.00199				0.00690				-0.00315

Table E.23 continued

VLE 2 LOAD NUMBER	PILE COMPRESSION TT-1 & TT-2 AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP MOVEMENT AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP CREEP 1-4 MIN (inches)	CREEP 2-4 MIN (inches)
L0				0.0000				0.0000	0.0000	0.0000
L1	0.0003	0.0003	0.0004	0.0004	0.0003	0.0003	0.0004	0.0004	0.0000	0.0000
L2	0.0005	0.0005	0.0006	0.0006	0.0005	0.0005	0.0006	0.0006	0.0000	0.0000
L3	0.0009	0.0009	0.0009	0.0010	0.0009	0.0009	0.0009	0.0010	0.0001	0.0001
L4	0.0013	0.0013	0.0013	0.0013	0.0013	0.0063	0.0063	0.0063	0.0000	0.0000
L5	0.0022	0.0022	0.0022	0.0022	0.0072	0.0072	0.0072	0.0122	0.0050	0.0050
L6	0.0032	0.0032	0.0032	0.0032	0.0132	0.0132	0.0132	0.0182	0.0050	0.0050
L7	0.0040	0.0040	0.0040	0.0040	0.0190	0.0190	0.0190	0.0240	0.0050	0.0050
L8	0.0050	0.0050	0.0050	0.0050	0.0250	0.0250	0.0250	0.0250	0.0000	0.0000
L9	0.0059	0.0059	0.0059	0.0059	0.0259	0.0259	0.0259	0.0259	0.0000	0.0000
L10	0.0068	0.0068	0.0068	0.0068	0.0268	0.0268	0.0268	0.0268	0.0000	0.0000
L11	0.0072	0.0072	0.0072	0.0072	0.0322	0.0322	0.0322	0.0322	0.0000	0.0000
L12	0.0077	0.0077	0.0077	0.0077	0.0377	0.0377	0.0377	0.0377	0.0001	0.0001
L13	0.0082	0.0082	0.0082	0.0083	0.0432	0.0432	0.0432	0.0433	0.0001	0.0001
L14	0.0089	0.0089	0.0089	0.0089	0.0489	0.0489	0.0489	0.0489	0.0000	0.0000
L15	0.0092	0.0092	0.0092	0.0092	0.0492	0.0492	0.0492	0.0492	0.0000	0.0000
L16	0.0099	0.0099	0.0100	0.0100	0.0549	0.0549	0.0550	0.0600	0.0051	0.0051
L17	0.0103	0.0103	0.0105	0.0106	0.0653	0.0653	0.0655	0.0706	0.0053	0.0051
L18	0.0108	0.0108	0.0108	0.0109	0.0708	0.0708	0.0708	0.0709	0.0000	0.0000
L19	0.0111	0.0111	0.0111	0.0112	0.0711	0.0711	0.0711	0.0812	0.0100	0.0100
L20	0.0113	0.0113	0.0114	0.0114	0.0813	0.0813	0.0814	0.0864	0.0051	0.0050
L21	0.0117	0.0117	0.0118	0.0118	0.0917	0.0917	0.0918	0.0918	0.0001	0.0000
L22	0.0123	0.0123	0.0124	0.0124	0.1023	0.1123	0.1124	0.1324	0.0202	0.0200
L23	0.0117	0.0109	0.0108	0.0107	0.2117	0.3109	0.4308	0.4757	0.1647	0.0448
L23A				0.0106				0.4756		
U1				0.0087				0.4737		
U2				0.0058				0.4658		
U3				0.0046				0.4646		
U4				0.0026				0.4576		
U5				0.0009				0.4509		
U6				-0.0007				0.4393		
U7				-0.0021				0.4329		
U8				-0.0025				0.4275		
U8A				-0.0026				0.4274		

Table E.23 continued

VLE 2 LOAD NUMBER	TOP OF PILE MOVEMENT - WIRELINE READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)	BSIGHT @0.5MIN. (inches)	TOP OF PILE MOVEMENT - SURVEY LEVEL READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)
L0				1.040				0.000	1.040				1.000				0.000
L1	1.040	1.040	1.040	1.040	0.000	0.000	0.000	0.000		1.000	1.000	1.000	1.000	0.000	0.000	0.000	0.000
L2	1.040	1.040	1.040	1.040	0.000	0.000	0.000	0.000	1.040	1.000	1.000	1.000	1.000	0.000	0.000	0.000	0.000
L3	1.040	1.040	1.040	1.040	0.000	0.000	0.000	0.000		1.000	1.000	1.000	1.000	0.000	0.000	0.000	0.000
L4	1.040	1.045	1.045	1.045	0.000	0.005	0.005	0.005	1.040	1.000	1.000	1.000	1.000	0.000	0.000	0.000	0.000
L5	1.045	1.045	1.045	1.050	0.005	0.005	0.005	0.010		1.000	1.000	1.000	1.000	0.000	0.000	0.000	0.000
L6	1.050	1.050	1.050	1.055	0.010	0.010	0.010	0.015	1.040	1.000	1.000	1.000	1.000	0.000	0.000	0.000	0.000
L7	1.055	1.055	1.055	1.060	0.015	0.015	0.015	0.020		1.000	1.000	1.000	1.000	0.000	0.000	0.000	0.000
L8	1.060	1.060	1.060	1.060	0.020	0.020	0.020	0.020	1.040	1.000	1.000	1.000	1.000	0.000	0.000	0.000	0.000
L9	1.060	1.060	1.060	1.060	0.020	0.020	0.020	0.020		1.000	1.000	1.000	1.000	0.000	0.000	0.000	0.000
L10	1.060	1.060	1.060	1.060	0.020	0.020	0.020	0.020	1.040	1.010	1.010	1.010	1.010	0.010	0.010	0.010	0.010
L11	1.065	1.065	1.065	1.065	0.025	0.025	0.025	0.025		1.010	1.010	1.010	1.010	0.010	0.010	0.010	0.010
L12	1.070	1.070	1.070	1.070	0.030	0.030	0.030	0.030	1.040	1.020	1.020	1.020	1.020	0.020	0.020	0.020	0.020
L13	1.075	1.075	1.075	1.075	0.035	0.035	0.035	0.035		1.020	1.020	1.020	1.020	0.020	0.020	0.020	0.020
L14	1.080	1.080	1.080	1.080	0.040	0.040	0.040	0.040	1.040	1.030	1.030	1.030	1.030	0.030	0.030	0.030	0.030
L15	1.080	1.080	1.080	1.080	0.040	0.040	0.040	0.040		1.030	1.030	1.030	1.030	0.030	0.030	0.030	0.030
L16	1.085	1.085	1.085	1.090	0.045	0.045	0.045	0.050	1.040	1.040	1.040	1.040	1.040	0.040	0.040	0.040	0.040
L17	1.095	1.095	1.095	1.100	0.055	0.055	0.055	0.060		1.050	1.050	1.050	1.050	0.050	0.050	0.050	0.050
L18	1.100	1.100	1.100	1.100	0.060	0.060	0.060	0.060	1.040	1.060	1.060	1.060	1.060	0.060	0.060	0.060	0.060
L19	1.100	1.100	1.100	1.110	0.060	0.060	0.060	0.070		1.060	1.060	1.060	1.060	0.060	0.060	0.060	0.060
L20	1.110	1.110	1.110	1.115	0.070	0.070	0.070	0.075	1.040	1.070	1.070	1.070	1.070	0.070	0.070	0.070	0.070
L21	1.120	1.120	1.120	1.120	0.080	0.080	0.080	0.080		1.080	1.080	1.080	1.090	0.080	0.080	0.080	0.090
L22	1.130	1.140	1.140	1.160	0.090	0.100	0.100	0.120	1.040	1.100	1.100	1.110	1.110	0.100	0.100	0.110	0.110
L23	1.240	1.340	1.460	1.505	0.200	0.300	0.420	0.465		1.190	1.300	1.410	1.470	0.190	0.300	0.410	0.470
L23A				1.505				0.465	1.040				1.470				0.470
U1				1.505				0.465					1.470				0.470
U2				1.500				0.460	1.040				1.470				0.470
U3				1.500				0.460					1.460				0.460
U4				1.495				0.455	1.040				1.460				0.460
U5				1.490				0.450					1.450				0.450
U6				1.480				0.440	1.040				1.440				0.440
U7				1.475				0.435					1.430				0.430
U8				1.470				0.430	1.040				1.430				0.430
U8A				1.470				0.430					1.430				0.430

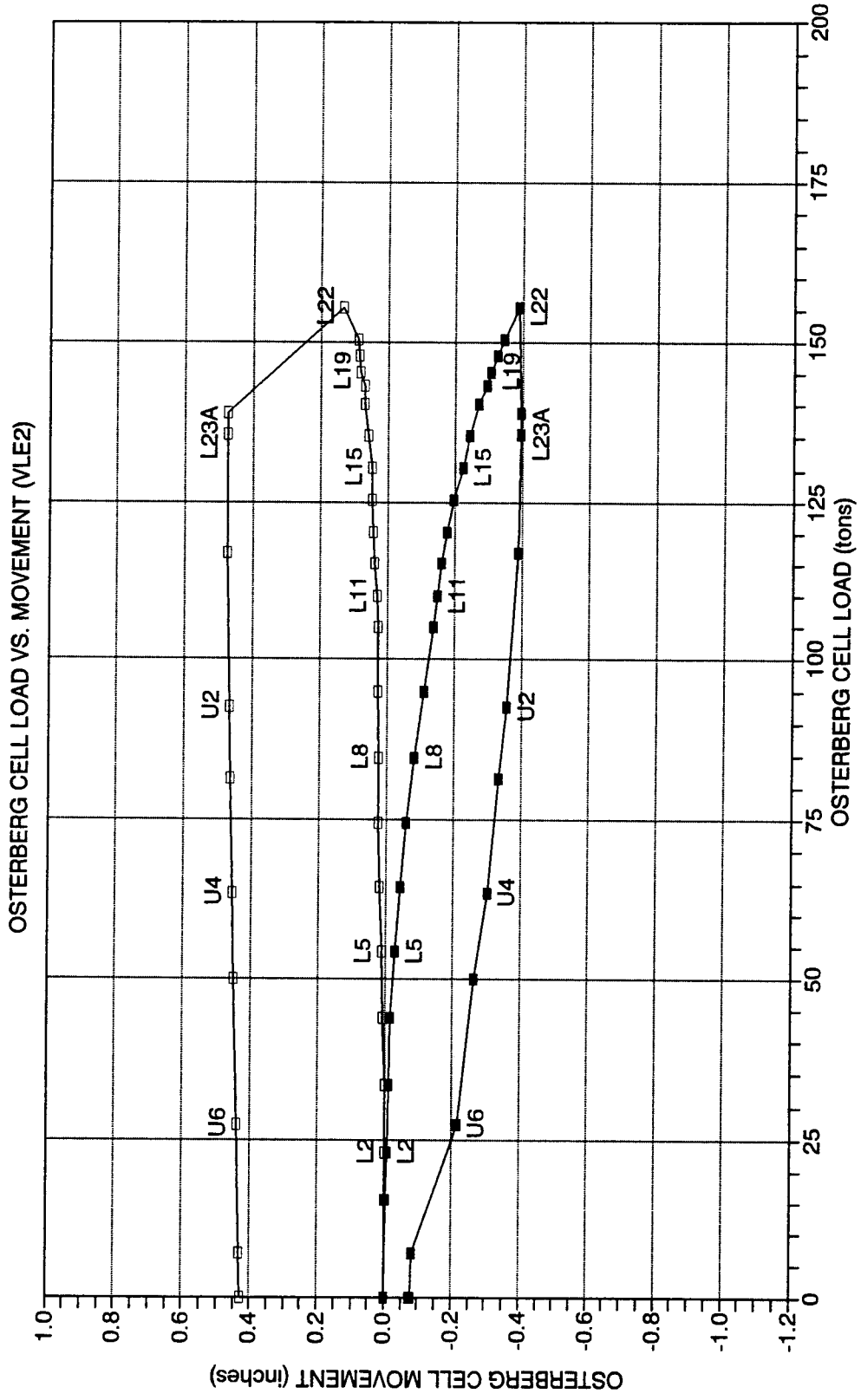


Figure E.59 Load Test 2 Movement: Vilano East

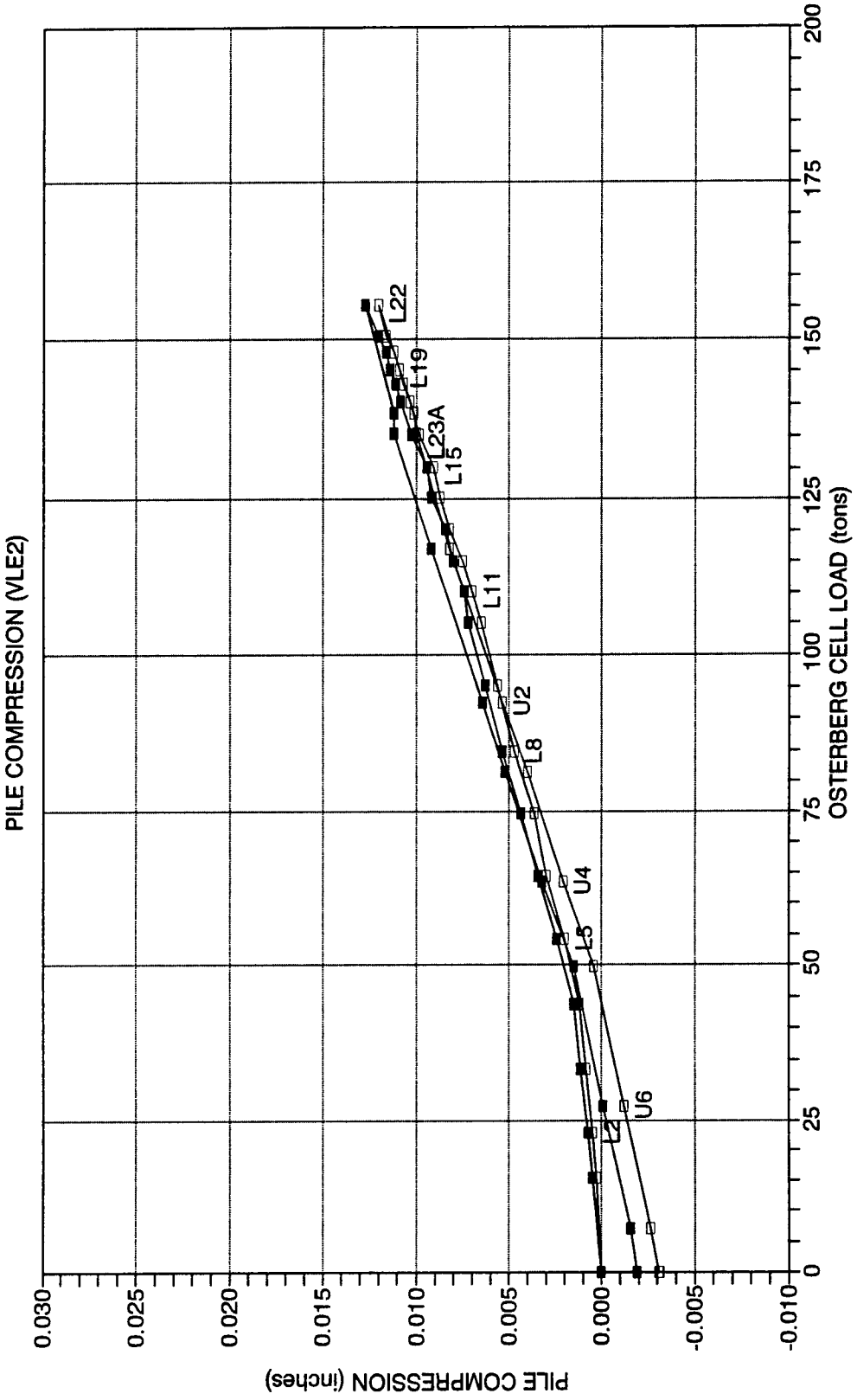


Figure E.60 Load Test 2 Compression: Vilano East

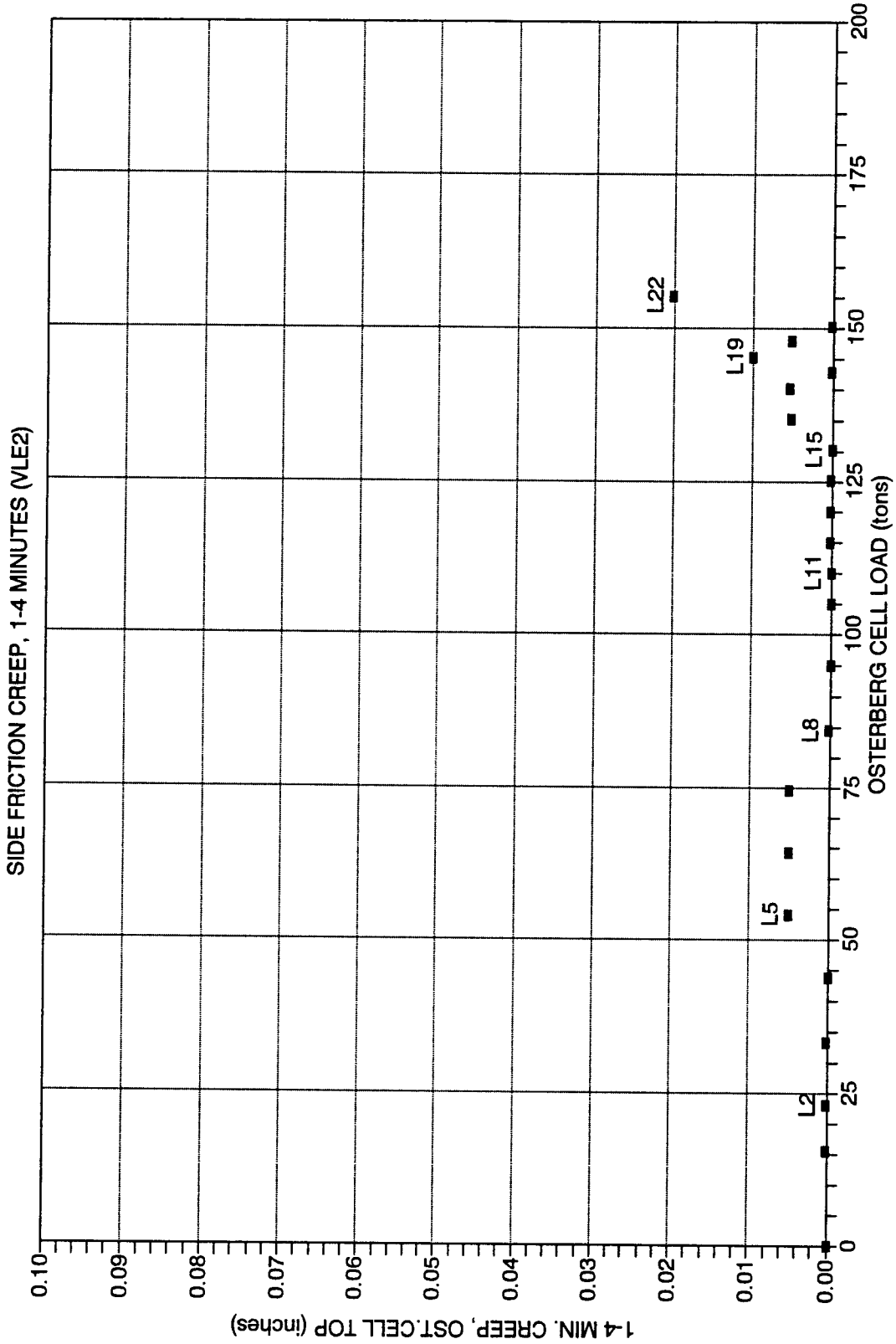


Figure E.61 Load Test 2 Creep: Vilano East

Table E.24 Data for Load Test 3: Vilano East

VLE 3 LOAD NUMBER	TIME INCR. (min)	OSTERBERG CELL LOAD: MEASURED PRESSURE (psi)	CORRECTED PRESSURE (psi)	VW TRANSDUCER READING (tons)	EXTENSION PRESSURE (psi)	@4 MIN. (inches)	LOAD (tons)	OSTERBERG CELL BOTTOM TELLTALE: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)	POISSON EFFECT ADJ. (inches)	OSTERBERG CELL BOTTOM MOVEMENT: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)
L0		-20	0	9128	0	1.093	0.0				0.2001	0.0000				0.0000
L1	4	380	360	9001	402	1.101	12.7	0.2032	0.2033	0.2034	0.2038	0.0039	-0.0070	-0.0071	-0.0072	-0.0076
L2	4	710	686	8890	742	1.122	23.2	0.2201	0.2203	0.2209	0.2210	0.0071	-0.0271	-0.0273	-0.0279	-0.0280
L3	4	1090	1061	8779	1078	1.153	33.7	0.2468	0.2471	0.2476	0.2480	0.0103	-0.0570	-0.0573	-0.0578	-0.0582
L4	4	1450	1417	8668	1411	1.184	44.0	0.2733	0.2741	0.2747	0.2751	0.0135	-0.0817	-0.0825	-0.0831	-0.0785
L5	4	1800	1763	8557	1743	1.216	54.3	0.2995	0.3005	0.3013	0.3023	0.0167	-0.1061	-0.1071	-0.1079	-0.1089
L6	4	2150	2109	8446	2072	1.249	64.5	0.3272	0.3285	0.3295	0.3308	0.0199	-0.1320	-0.1333	-0.1343	-0.1356
L7	4	2500	2455	8334	2404	1.281	74.8	0.3555	0.3565	0.3578	0.3592	0.0231	-0.1635	-0.1645	-0.1658	-0.1672
L8	4	2820	2771	8224	2729	1.315	84.9	0.3840	0.3855	0.3869	0.3888	0.0262	-0.1951	-0.1966	-0.1980	-0.1999
L9	4	3160	3107	8112	3058	1.353	95.2	0.4159	0.4176	0.4198	0.4223	0.0293	-0.2251	-0.2268	-0.2290	-0.2315
L10	4	3490	3433	8001	3384	1.400	105.3	0.4562	0.4590	0.4621	0.4653	0.0325	-0.2636	-0.2664	-0.2695	-0.2727
L11	4	3820	3759	7890	3709	1.459	115.4	0.5065	0.5111	0.5147	0.5198	0.0356	-0.3120	-0.3166	-0.3152	-0.3203
L12	4	4150	4085	7779	4033	1.533	125.4	0.5727	0.5780	0.5831	0.5899	0.0387	-0.3763	-0.3816	-0.3867	-0.3935
L13	4	4490	4421	7666	4362	1.628	135.7	0.6391	0.6440	0.6721	0.6807	0.0418	-0.4408	-0.4457	-0.4738	-0.4774
L14	4	4800	4727	7557	4679	1.757	145.5	0.7700	0.7803	0.7915	0.8059	0.0449	-0.5598	-0.5701	-0.5813	-0.5957
L15	4	4980	4905	7501	4842	1.836	150.6	0.8438	0.8547	0.8675	0.8821	0.0465	-0.6352	-0.6461	-0.6589	-0.6735
L16	4	5110	5034	7446	5002	1.931	155.6	0.9280	0.9400	0.9553	0.9759	0.0480	-0.7159	-0.7229	-0.7382	-0.7538
L17	4	5270	5192	7391	5161	2.064	160.6	1.0400	1.0565	1.0769	1.1059	0.0495	-0.8144	-0.8309	-0.8513	-0.8803
L18	4	5440	5360	7333	5329	2.257	165.8	1.1814	1.2063	1.2426	1.2973	0.0511	-0.9524	-0.9723	-1.0036	-1.0533
L19	1	5520	5439	7299	5428	2.440	168.9			1.4280	1.4795	0.0521			-1.1650	-1.1765
L19A	3	4820	4747	7539	4732	2.713	147.3				1.7610	0.0454				-1.2263
L19B	4	4820	4747	7552	4694	2.729	146.2				1.7765	0.0450				-1.2414
U1	3	4175	4110	7776	4042	2.715	125.9				1.7715	0.0388				-1.2302
U2	3	3715	3655	7924	3609	2.693	112.5				1.7549	0.0346				-1.2144
U3	3	2815	2766	8224	2729	2.639	85.2				1.7130	0.0262				-1.1641
U4	3	2370	2326	8367	2306	2.609	72.1				1.6886	0.0221				-1.1406
U5	3	1900	1862	8523	1844	2.571	57.7				1.6556	0.0177				-1.1082
U6	3	1225	1195	8736	1207	2.506	37.9				1.5987	0.0116				-1.0552
U7	3	635	612	8922	644	2.419	20.5				1.5187	0.0062				-0.9798
U8	3	0	0	9128	0	2.164	0.0				1.2720	0.0000				-0.7369
U8A	3	0	0	9128	0	2.153	0.0				1.2613	0.0000				-0.7262
U8B	4	0	0	9128	0	2.148	0.0				1.2563	0.0000				-0.7212

Table E.24 continued

VLE 3 LOAD NUMBER	OSTERBERG CELL TOP TELLTALE TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	PILE COMPRESSION TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	OSTERBERG CELL TOP TELLTALE TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)	PILE COMPRESSION TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)
L0				0.01000				0.00000				0.01000				0.00000
L1	0.01035	0.01035	0.01035	0.01040	0.00035	0.00035	0.00035	0.00040	0.01020	0.01020	0.01020	0.01020	0.00020	0.00020	0.00020	0.00020
L2	0.01095	0.01095	0.01100	0.01100	0.00095	0.00095	0.00100	0.00100	0.01085	0.01085	0.01090	0.01090	0.00085	0.00085	0.00090	0.00090
L3	0.01195	0.01205	0.01205	0.01210	0.00195	0.00205	0.00205	0.00210	0.01190	0.01190	0.01190	0.01195	0.00190	0.00190	0.00190	0.00195
L4	0.01305	0.01305	0.01305	0.01305	0.00305	0.00305	0.00305	0.00305	0.01285	0.01285	0.01285	0.01285	0.00285	0.00285	0.00285	0.00285
L5	0.01395	0.01395	0.01395	0.01395	0.00395	0.00395	0.00395	0.00395	0.01395	0.01400	0.01400	0.01400	0.00395	0.00400	0.00400	0.00400
L6	0.01480	0.01480	0.01480	0.01480	0.00480	0.00480	0.00480	0.00480	0.01510	0.01510	0.01510	0.01510	0.00510	0.00510	0.00510	0.00510
L7	0.01605	0.01605	0.01605	0.01605	0.00605	0.00605	0.00605	0.00605	0.01620	0.01620	0.01620	0.01620	0.00620	0.00620	0.00620	0.00620
L8	0.01715	0.01715	0.01715	0.01720	0.00715	0.00715	0.00715	0.00720	0.01725	0.01725	0.01725	0.01725	0.00725	0.00725	0.00725	0.00725
L9	0.01825	0.01825	0.01825	0.01830	0.00825	0.00825	0.00825	0.00830	0.01825	0.01825	0.01825	0.01825	0.00825	0.00825	0.00825	0.00825
L10	0.01935	0.01935	0.01935	0.01935	0.00935	0.00935	0.00935	0.00935	0.01925	0.01925	0.01925	0.01925	0.00925	0.00925	0.00925	0.00925
L11	0.02045	0.02045	0.02045	0.02045	0.01045	0.01045	0.01045	0.01045	0.02035	0.02035	0.02035	0.02035	0.01035	0.01035	0.01035	0.01035
L12	0.02160	0.02165	0.02165	0.02165	0.01160	0.01165	0.01165	0.01165	0.02155	0.02155	0.02155	0.02155	0.01155	0.01155	0.01155	0.01155
L13	0.02260	0.02260	0.02260	0.02260	0.01260	0.01260	0.01260	0.01260	0.02270	0.02270	0.02270	0.02275	0.01270	0.01270	0.01270	0.01275
L14	0.02360	0.02360	0.02360	0.02360	0.01360	0.01360	0.01360	0.01360	0.02375	0.02375	0.02375	0.02375	0.01375	0.01375	0.01375	0.01375
L15	0.02425	0.02425	0.02425	0.02430	0.01425	0.01425	0.01425	0.01430	0.02415	0.02415	0.02415	0.02415	0.01415	0.01415	0.01415	0.01415
L16	0.02465	0.02465	0.02465	0.02465	0.01465	0.01465	0.01465	0.01465	0.02440	0.02440	0.02440	0.02440	0.01440	0.01440	0.01440	0.01440
L17	0.02550	0.02550	0.02550	0.02550	0.01550	0.01550	0.01550	0.01550	0.02495	0.02495	0.02495	0.02495	0.01495	0.01495	0.01495	0.01495
L18	0.02575	0.02575	0.02580	0.02580	0.01575	0.01575	0.01580	0.01580	0.02520	0.02520	0.02515	0.02500	0.01520	0.01520	0.01515	0.01500
L19			0.02570	0.02570			0.01570	0.01570			0.02500	0.02500			0.01500	0.01500
L19A				0.02450				0.01450				0.02375				0.01375
L19B				0.02450				0.01450				0.02375				0.01375
U1				0.02245				0.01245				0.02170				0.01170
U2				0.02085				0.01085				0.02020				0.01020
U3				0.01755				0.00755				0.01695				0.00695
U4				0.01620				0.00620				0.01550				0.00550
U5				0.01460				0.00460				0.01405				0.00405
U6				0.01275				0.00275				0.01215				0.00215
U7				0.01130				0.00130				0.01040				0.00040
U8				0.00955				-0.00045				0.00865				-0.00135
U8A				0.00955				-0.00045				0.00855				-0.00145
U8B				0.00955				-0.00045				0.00855				-0.00145

Table E.24 continued

VLE 3 LOAD NUMBER	PILE COMPRESSION TT-1 & TT-2 AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP MOVEMENT AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP CREEP 1-4 MIN (inches)	CREEP 2-4 MIN (inches)
L0				0.0000				0.0000	0.0000	0.0000
L1	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0000	0.0000
L2	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0009	0.0000	0.0000
L3	0.0019	0.0020	0.0020	0.0020	0.0019	0.0020	0.0020	0.0020	0.0000	0.0000
L4	0.0030	0.0030	0.0030	0.0030	0.0080	0.0080	0.0080	0.0130	0.0050	0.0050
L5	0.0040	0.0040	0.0040	0.0040	0.0140	0.0140	0.0140	0.0140	0.0000	0.0000
L6	0.0050	0.0050	0.0050	0.0050	0.0200	0.0200	0.0200	0.0200	0.0000	0.0000
L7	0.0061	0.0061	0.0061	0.0061	0.0211	0.0211	0.0211	0.0211	0.0000	0.0000
L8	0.0072	0.0072	0.0072	0.0072	0.0222	0.0222	0.0222	0.0222	0.0000	0.0000
L9	0.0083	0.0083	0.0083	0.0083	0.0283	0.0283	0.0283	0.0283	0.0000	0.0000
L10	0.0093	0.0093	0.0093	0.0093	0.0343	0.0343	0.0343	0.0343	0.0000	0.0000
L11	0.0104	0.0104	0.0104	0.0104	0.0404	0.0404	0.0454	0.0454	0.0050	0.0000
L12	0.0116	0.0116	0.0116	0.0116	0.0466	0.0466	0.0466	0.0466	0.0000	0.0000
L13	0.0127	0.0127	0.0127	0.0127	0.0527	0.0527	0.0527	0.0577	0.0050	0.0050
L14	0.0137	0.0137	0.0137	0.0137	0.0687	0.0687	0.0687	0.0687	0.0000	0.0000
L15	0.0142	0.0142	0.0142	0.0142	0.0692	0.0692	0.0692	0.0692	0.0000	0.0000
L16	0.0145	0.0145	0.0145	0.0145	0.0745	0.0795	0.0795	0.0845	0.0050	0.0050
L17	0.0152	0.0152	0.0152	0.0152	0.0902	0.0902	0.0902	0.0902	0.0000	0.0000
L18	0.0155	0.0155	0.0155	0.0154	0.0955	0.1005	0.1055	0.1104	0.0099	0.0049
L19			0.0154	0.0154			0.1304	0.1704		
L19A				0.0141				0.3941		
L19B				0.0141				0.3941		
U1				0.0121				0.3921		
U2				0.0105				0.3855		
U3				0.0073				0.3823		
U4				0.0059				0.3759		
U5				0.0043				0.3693		
U6				0.0024				0.3575		
U7				0.0008				0.3459		
U8				-0.0009				0.3341		
U8A				-0.0010				0.3341		
U8B				-0.0010				0.3341		

Table E.24 continued

VLE 3 LOAD NUMBER	TOP OF PILE MOVEMENT - WIRELINE READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)	BSIGHT @0.5MIN. (inches)	TOP OF PILE MOVEMENT - SURVEY LEVEL READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)
L0				1.005				0.000	1.501				1.005				0.000
L1	1.005	1.005	1.005	1.005	0.000	0.000	0.000	0.000		1.005	1.005	1.005	1.005	0.000	0.000	0.000	0.000
L2	1.005	1.005	1.005	1.005	0.000	0.000	0.000	0.000	1.501	1.005	1.005	1.005	1.010	0.000	0.000	0.000	0.005
L3	1.005	1.005	1.005	1.005	0.000	0.000	0.000	0.000		1.010	1.015	1.015	1.015	0.005	0.010	0.010	0.010
L4	1.010	1.010	1.010	1.015	0.005	0.005	0.005	0.010	1.501	1.020	1.020	1.020	1.020	0.015	0.015	0.015	0.015
L5	1.015	1.015	1.015	1.015	0.010	0.010	0.010	0.010		1.020	1.020	1.020	1.020	0.015	0.015	0.015	0.015
L6	1.020	1.020	1.020	1.020	0.015	0.015	0.015	0.015	1.501	1.020	1.020	1.020	1.020	0.015	0.015	0.015	0.015
L7	1.020	1.020	1.020	1.020	0.015	0.015	0.015	0.015		1.025	1.025	1.025	1.025	0.020	0.020	0.020	0.020
L8	1.020	1.020	1.020	1.020	0.015	0.015	0.015	0.015	1.501	1.025	1.030	1.030	1.030	0.020	0.025	0.025	0.025
L9	1.025	1.025	1.025	1.025	0.020	0.020	0.020	0.020		1.035	1.035	1.035	1.035	0.030	0.030	0.030	0.030
L10	1.030	1.030	1.030	1.030	0.025	0.025	0.025	0.025	1.501	1.035	1.035	1.040	1.040	0.030	0.030	0.035	0.035
L11	1.035	1.035	1.040	1.040	0.030	0.030	0.035	0.035		1.040	1.040	1.040	1.040	0.035	0.035	0.035	0.035
L12	1.040	1.040	1.040	1.040	0.035	0.035	0.035	0.035	1.501	1.050	1.050	1.050	1.050	0.045	0.045	0.045	0.045
L13	1.045	1.045	1.045	1.050	0.040	0.040	0.040	0.045		1.055	1.055	1.055	1.055	0.050	0.050	0.050	0.050
L14	1.060	1.060	1.060	1.060	0.055	0.055	0.055	0.055	1.501	1.060	1.060	1.060	1.065	0.055	0.055	0.055	0.060
L15	1.060	1.060	1.060	1.060	0.055	0.055	0.055	0.055		1.070	1.070	1.070	1.070	0.065	0.065	0.065	0.065
L16	1.065	1.070	1.070	1.075	0.060	0.065	0.065	0.070	1.501	1.080	1.080	1.080	1.080	0.075	0.075	0.075	0.075
L17	1.080	1.080	1.080	1.080	0.075	0.075	0.075	0.075		1.085	1.085	1.090	1.095	0.080	0.080	0.085	0.090
L18	1.085	1.090	1.095	1.100	0.080	0.085	0.090	0.095	1.501	1.100	1.100	1.105	1.115	0.095	0.095	0.100	0.110
L19			1.120	1.160			0.115	0.155				1.130	1.140			0.125	0.135
L19A				1.385				0.380					1.400				0.395
L19B				1.385				0.380					1.400				0.395
U1				1.385				0.380	1.501				1.395				0.390
U2				1.380				0.375					1.390				0.385
U3				1.380				0.375	1.501				1.380				0.375
U4				1.375				0.370					1.380				0.375
U5				1.370				0.365	1.501				1.370				0.365
U6				1.360				0.355					1.360				0.355
U7				1.350				0.345	1.501				1.345				0.340
U8				1.340				0.335					1.345				0.340
U8A				1.340				0.335					1.345				0.340
U8B				1.340				0.335					1.345				0.340

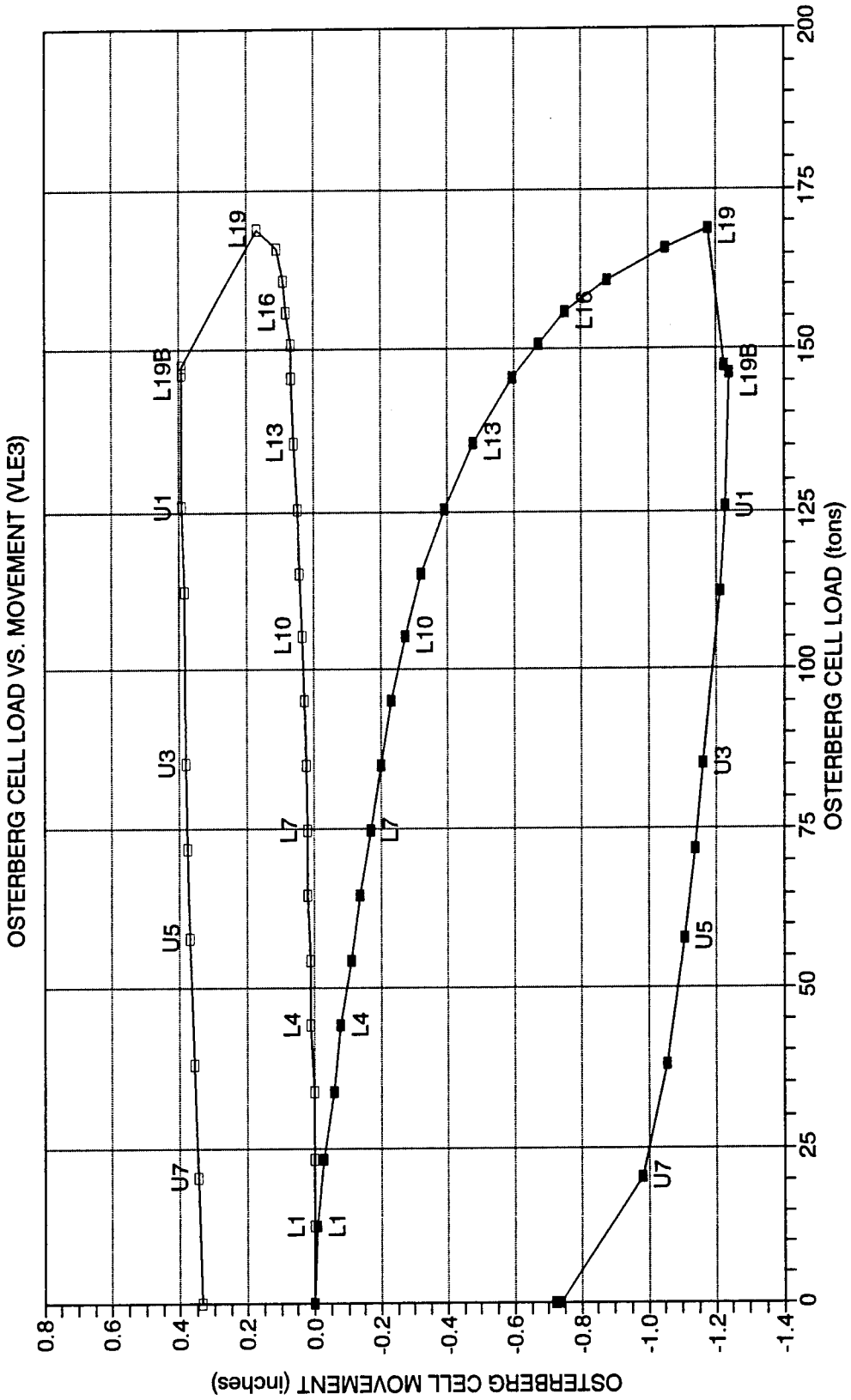


Figure E.62 Load Test 3 Movement: Vilano East

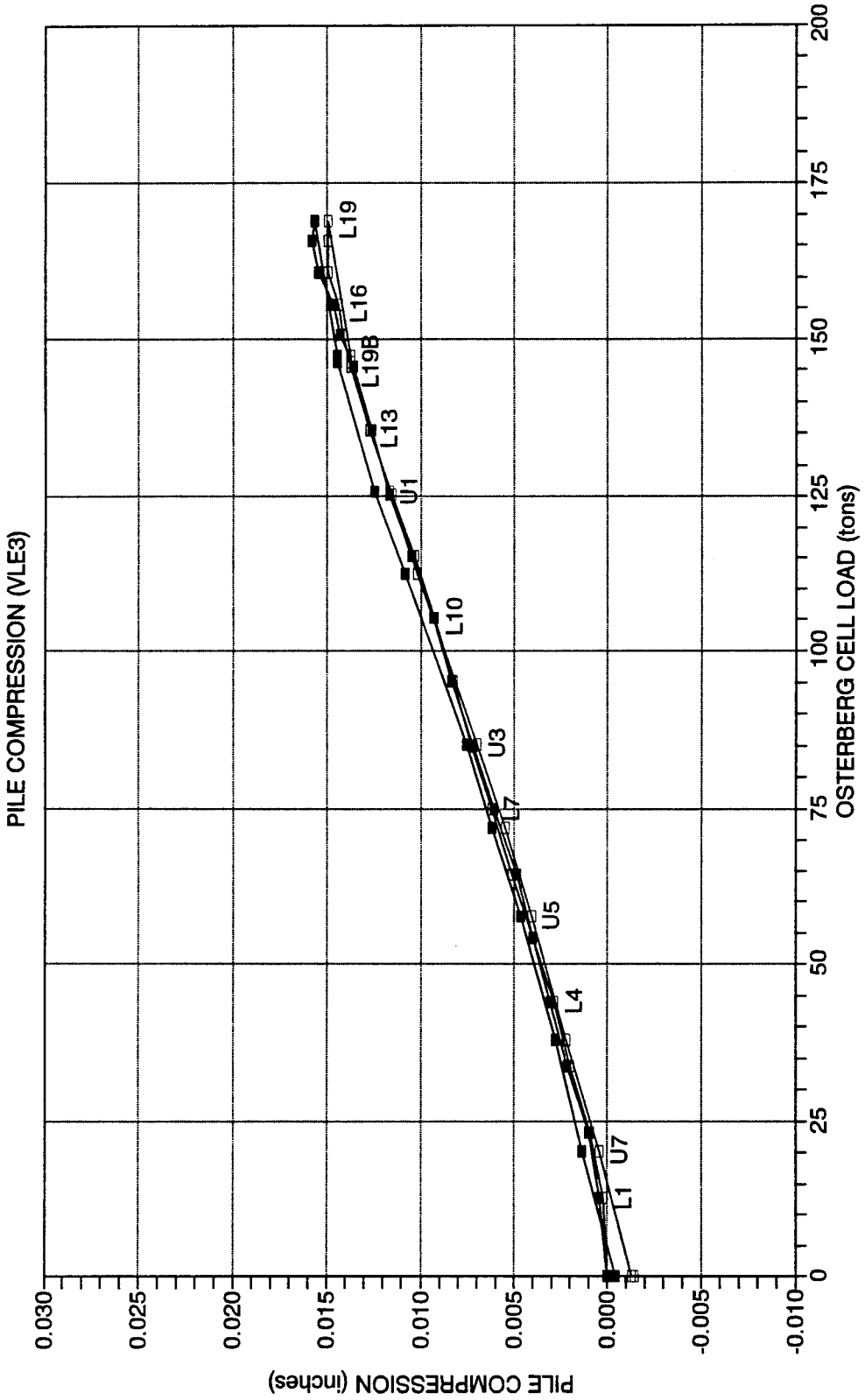


Figure E.63 Load Test 3 Compression: Vilano East

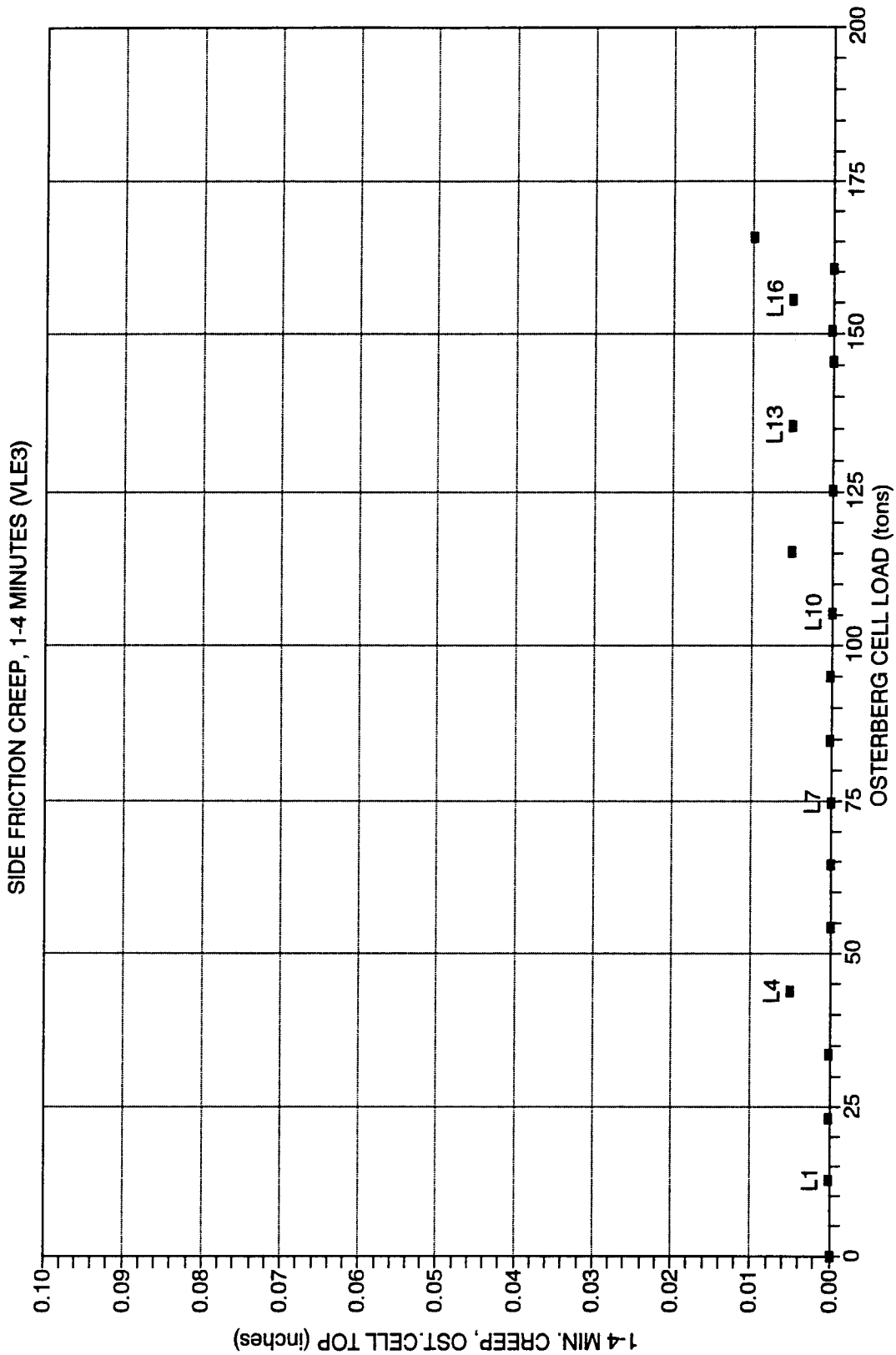


Figure E.64 Load Test 3 Creep: Vilano East

Table E.25 Data for Load Test 4: Vilano East

VLE 4 LOAD NUMBER	TIME INCR. (min)	OSTERBERG CELL LOAD: MEASURED PRESSURE (psi)	CORRECTED PRESSURE (psi)	VW TRANSDUCER READING (tons)	EXTENSION PRESSURE (psi)	@4 MIN. (inches)	LOAD (tons)	OSTERBERG CELL BOTTOM TELLTALE: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)	POISSON EFFECT ADJ. (inches)	OSTERBERG CELL BOTTOM MOVEMENT: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)
L0		-20	0	9131	0	2.148	0.0				0.2001	0.0000				0.0000
L1	4	350	330	9004	402	2.213	12.9	0.2580	0.2586	0.2593	0.2604	0.0039	-0.0618	-0.0624	-0.0631	-0.0642
L2	4	710	686	8892	745	2.297	23.6	0.3345	0.3360	0.3381	0.3403	0.0071	-0.1415	-0.1430	-0.1451	-0.1473
L3	4	1090	1061	8782	1078	2.383	33.9	0.4110	0.4140	0.4173	0.4210	0.0103	-0.2212	-0.2192	-0.2225	-0.2262
L4	4	1450	1417	8671	1411	2.471	44.3	0.4910	0.4945	0.5010	0.5045	0.0135	-0.2994	-0.3029	-0.3094	-0.3129
L5	4	1800	1763	8560	1743	2.568	54.6	0.5780	0.5825	0.5900	0.5980	0.0167	-0.3846	-0.3891	-0.3916	-0.3996
L6	4	2150	2109	8450	2070	2.694	64.7	0.6881	0.6956	0.7087	0.7190	0.0199	-0.4929	-0.5004	-0.5135	-0.5238
L7	4	2450	2405	8339	2398	2.875	75.0	0.8515	0.8634	0.8780	0.8964	0.0230	-0.6594	-0.6713	-0.6859	-0.7043
L8	4	2800	2751	8228	2726	3.121	85.2	1.0700	1.0880	1.1100	1.1375	0.0261	-0.8810	-0.8990	-0.9210	-0.9485
L9	4	3150	3097	8114	3061	3.491	95.7	1.3888	1.4191	1.4530	1.5035	0.0294	-1.1931	-1.2234	-1.2573	-1.3078
L10	4	3450	3393	8005	3381	4.154	105.7	1.9270	1.9645	2.0260	2.1619	0.0324	-1.7293	-1.7668	-1.8283	-1.9642
U1	3			8303	2504	4.106	78.5				2.1245	0.0240				-1.9234
U2	3			8477	1989	4.071	62.5				2.0964	0.0191				-1.8904
U3	3	1700	1664	8584	1671	4.046	52.6				2.0757	0.0160				-1.8716
U4	3	1200	1170	8754	1162	4.000	36.8				2.0369	0.0111				-1.8279
U5	3	740	715	8891	748	3.943	24.0				1.9849	0.0072				-1.7770
U6	3	260	241	9032	315	3.850	10.5				1.8976	0.0030				-1.6855
U7	3	0	0	9128	0	3.659	0				1.7109	0.0000				-1.4958
U7A	6	0	0	9130	0	3.656	0				1.7079	0.0000				-1.4928
U7B	11	0	0	9131	0	3.644	0				1.6961	0.0000				-1.4860

Table E.25 continued

VLE 4 LOAD NUMBER	OSTERBERG CELL TOP TELLTALE TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	PILE COMPRESSION TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	OSTERBERG CELL TOP TELLTALE TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)	PILE COMPRESSION TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)
L0				0.01080				0.00000				0.01065				0.00000
L1	0.01160	0.01162	0.01162	0.01163	0.00080	0.00082	0.00082	0.00083	0.01155	0.01156	0.01156	0.01156	0.00090	0.00091	0.00091	0.00091
L2	0.01260	0.01260	0.01260	0.01262	0.00180	0.00180	0.00180	0.00182	0.01272	0.01272	0.01272	0.01275	0.00207	0.00207	0.00207	0.00210
L3	0.01398	0.01399	0.01400	0.01400	0.00318	0.00319	0.00320	0.00320	0.01396	0.01397	0.01399	0.01400	0.00331	0.00332	0.00334	0.00335
L4	0.01509	0.01509	0.01543	0.01543	0.00429	0.00429	0.00463	0.00463	0.01515	0.01517	0.01525	0.01526	0.00450	0.00452	0.00460	0.00461
L5	0.01647	0.01648	0.01649	0.01649	0.00567	0.00568	0.00569	0.00569	0.01622	0.01622	0.01622	0.01622	0.00557	0.00557	0.00557	0.00557
L6	0.01768	0.01768	0.01768	0.01769	0.00688	0.00688	0.00688	0.00689	0.01744	0.01746	0.01746	0.01748	0.00679	0.00681	0.00681	0.00683
L7	0.01902	0.01902	0.01902	0.01902	0.00822	0.00822	0.00822	0.00822	0.01870	0.01870	0.01870	0.01870	0.00805	0.00805	0.00805	0.00805
L8	0.02018	0.02018	0.02018	0.02019	0.00938	0.00938	0.00938	0.00939	0.02008	0.02008	0.02008	0.02008	0.00943	0.00943	0.00943	0.00943
L9	0.02146	0.02148	0.02150	0.02150	0.01066	0.01068	0.01070	0.01070	0.02125	0.02125	0.02125	0.02125	0.01060	0.01060	0.01060	0.01060
L10	0.02262	0.02262	0.02270	0.02266	0.01182	0.01182	0.01190	0.01186	0.02248	0.02248	0.02242	0.02251	0.01183	0.01183	0.01177	0.01186
U1				0.02003				0.00923				0.01977				0.00912
U2				0.01791				0.00711				0.01780				0.00715
U3				0.01691				0.00611				0.01667				0.00602
U4				0.01524				0.00444				0.01508				0.00443
U5				0.01372				0.00292				0.01350				0.00285
U6				0.01209				0.00129				0.01210				0.00145
U7				0.01100				0.00020				0.01096				0.00031
U7A				0.01100				0.00020				0.01094				0.00029
U7B				0.01097				0.00017				0.01090				0.00025

Table E.25 continued

VLE 4 LOAD NUMBER	PILE COMPRESSION TT-1 & TT-2 AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP MOVEMENT AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP CREEP 1-4 MIN (inches)	CREEP 2-4 MIN (inches)	OSTERBERG CELL BOTTOM CREEP 1-4 MIN (inches)	CREEP 2-4 MIN (inches)
L0				0.0000				0.0000	0.0000	0.0000	0.0000	0.0000
L1	0.0008	0.0009	0.0009	0.0009	0.0008	0.0009	0.0009	0.0009	0.0000	0.0000	0.0018	0.0011
L2	0.0019	0.0019	0.0019	0.0020	0.0019	0.0019	0.0019	0.0020	0.0000	0.0000	0.0043	0.0022
L3	0.0032	0.0033	0.0033	0.0033	0.0032	0.0083	0.0083	0.0083	0.0000	0.0000	0.0070	0.0037
L4	0.0044	0.0044	0.0046	0.0046	0.0094	0.0094	0.0096	0.0096	0.0002	0.0000	0.0100	0.0035
L5	0.0056	0.0056	0.0056	0.0056	0.0156	0.0156	0.0206	0.0206	0.0050	0.0000	0.0105	0.0080
L6	0.0068	0.0068	0.0068	0.0069	0.0218	0.0218	0.0218	0.0219	0.0000	0.0000	0.0234	0.0103
L7	0.0081	0.0081	0.0081	0.0081	0.0231	0.0231	0.0231	0.0231	0.0000	0.0000	0.0330	0.0184
L8	0.0094	0.0094	0.0094	0.0094	0.0244	0.0244	0.0244	0.0244	0.0000	0.0000	0.0495	0.0275
L9	0.0106	0.0106	0.0107	0.0107	0.0356	0.0356	0.0357	0.0357	0.0000	0.0000	0.0844	0.0505
L10	0.0118	0.0118	0.0118	0.0119	0.0418	0.0418	0.0418	0.0419	0.0000	0.0000	0.1974	0.1359
U1				0.0092				0.0342				
U2				0.0071				0.0321				
U3				0.0061				0.0261				
U4				0.0044				0.0244				
U5				0.0029				0.0179				
U6				0.0014				0.0164				
U7				0.0003				0.0153				
U7A				0.0002				0.0152				
U7B				0.0002				0.0102				

Table E.25 continued

VLE 4 LOAD NUMBER	TOP OF PILE MOVEMENT - WIRELINE READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)	BSIGHT @0.5MIN. (inches)	TOP OF PILE MOVEMENT - SURVEY LEVEL READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)
L0				0.945				0.000	1.000				1.020				0.000
L1	0.945	0.945	0.945	0.945	0.000	0.000	0.000	0.000		1.020	1.020	1.020	1.020	0.000	0.000	0.000	0.000
L2	0.945	0.945	0.945	0.945	0.000	0.000	0.000	0.000	1.000	1.020	1.020	1.020	1.020	0.000	0.000	0.000	0.000
L3	0.945	0.950	0.950	0.950	0.000	0.005	0.005	0.005		1.020	1.020	1.020	1.020	0.000	0.000	0.000	0.000
L4	0.950	0.950	0.950	0.950	0.005	0.005	0.005	0.005	1.000	1.020	1.020	1.020	1.030	0.000	0.000	0.000	0.010
L5	0.955	0.955	0.960	0.960	0.010	0.010	0.015	0.015		1.030	1.030	1.030	1.030	0.010	0.010	0.010	0.010
L6	0.960	0.960	0.960	0.960	0.015	0.015	0.015	0.015	1.000	1.040	1.040	1.040	1.040	0.020	0.020	0.020	0.020
L7	0.960	0.960	0.960	0.960	0.015	0.015	0.015	0.015		1.040	1.040	1.050	1.050	0.020	0.020	0.030	0.030
L8	0.960	0.960	0.960	0.960	0.015	0.015	0.015	0.015	1.000	1.050	1.050	1.050	1.050	0.030	0.030	0.030	0.030
L9	0.970	0.970	0.970	0.970	0.025	0.025	0.025	0.025		1.060	1.060	1.060	1.060	0.040	0.040	0.040	0.040
L10	0.975	0.975	0.975	0.975	0.030	0.030	0.030	0.030	1.000	1.060	1.060	1.060	1.060	0.040	0.040	0.040	0.040
U1				0.970				0.025					1.060				0.040
U2				0.970				0.025	1.000				1.050				0.030
U3				0.965				0.020					1.050				0.030
U4				0.965				0.020	1.040				1.050				0.030
U5				0.960				0.015					1.040				0.020
U6				0.960				0.015	1.040				1.040				0.020
U7				0.960				0.015					1.030				0.010
U7A				0.960				0.015	1.040				1.030				0.010
U7B				0.955				0.010					1.030				0.010

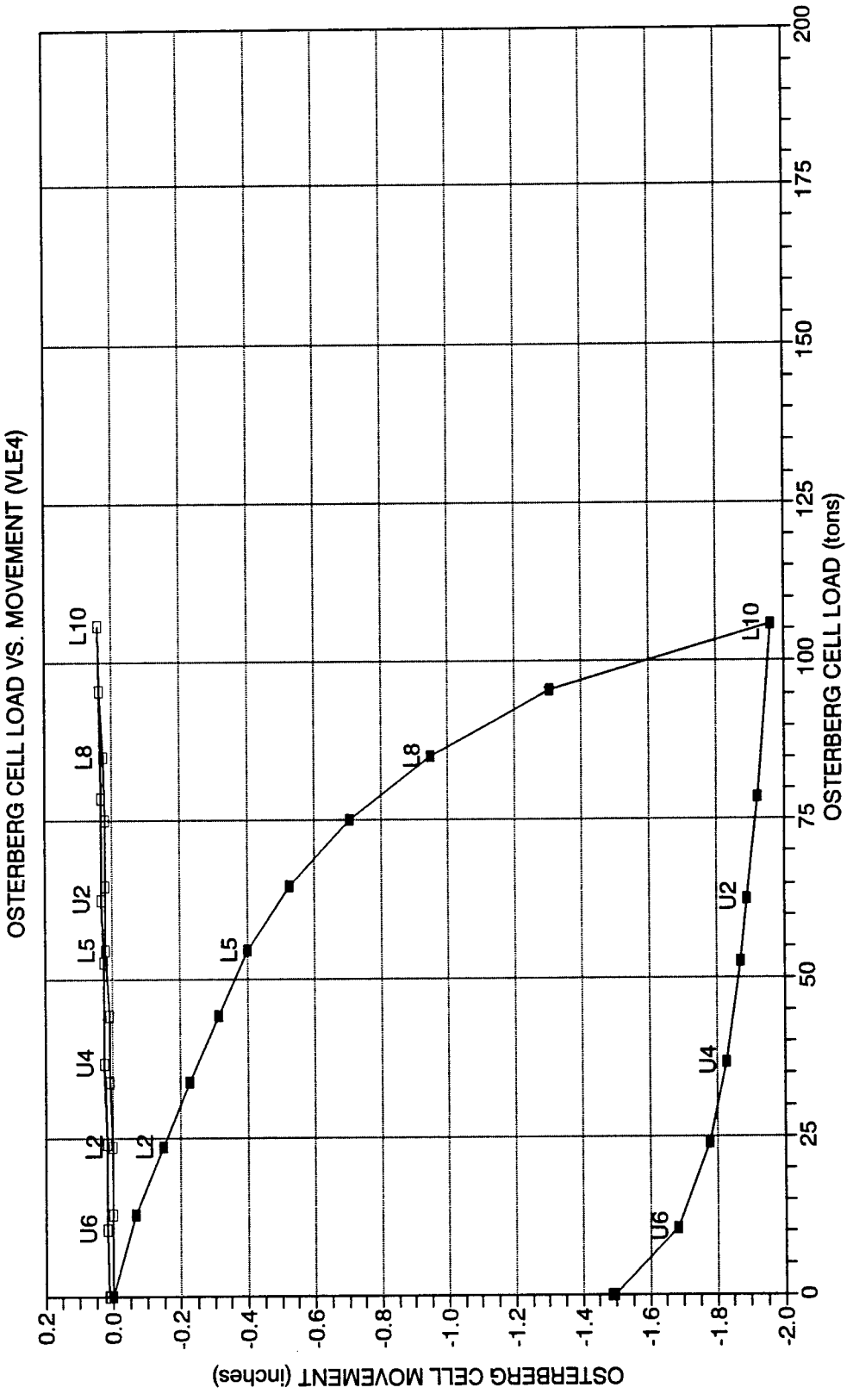


Figure E.65 Load Test 4 Movement: Vilano East

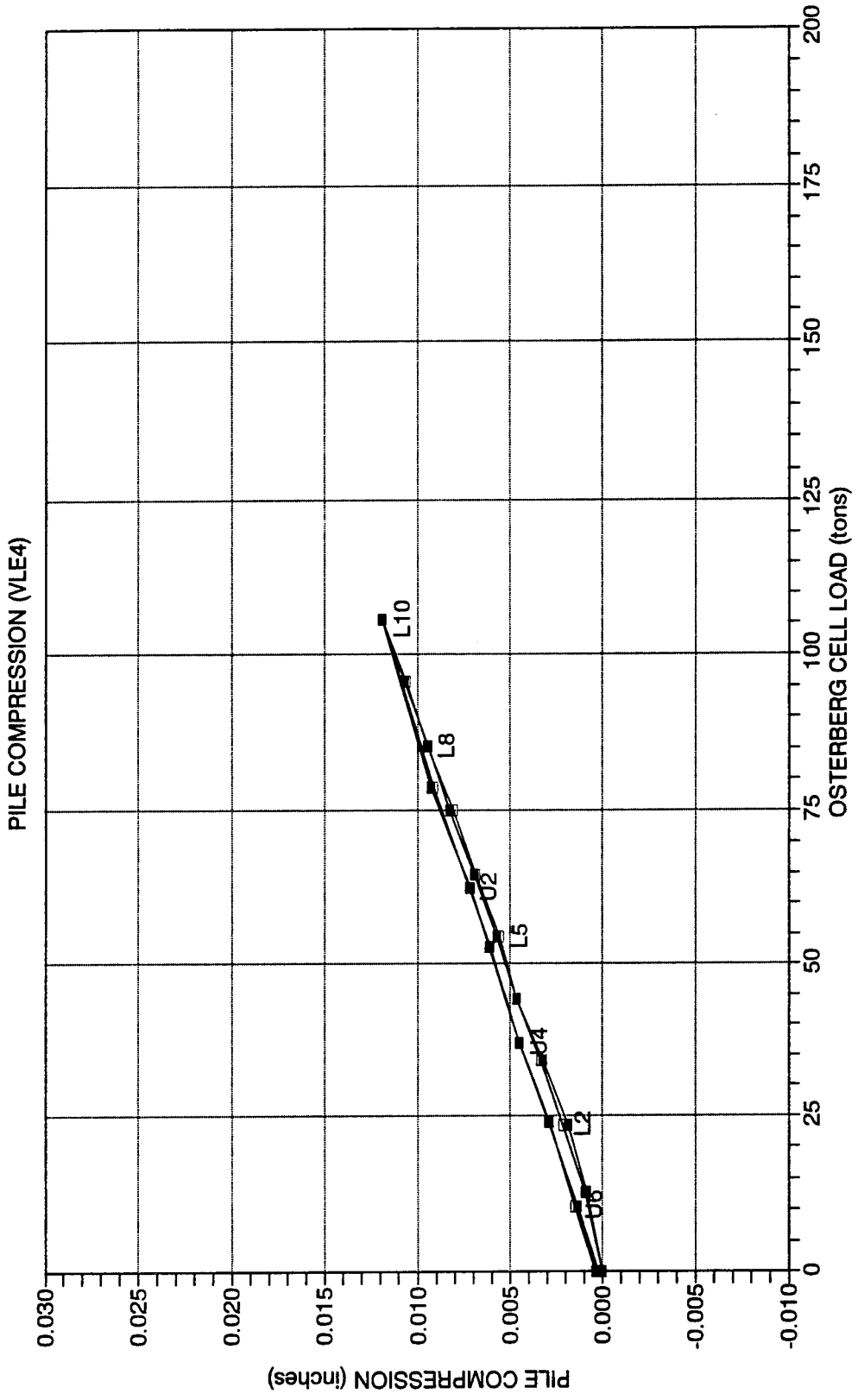


Figure E.66 Load Test 4 Compression: Vilano East

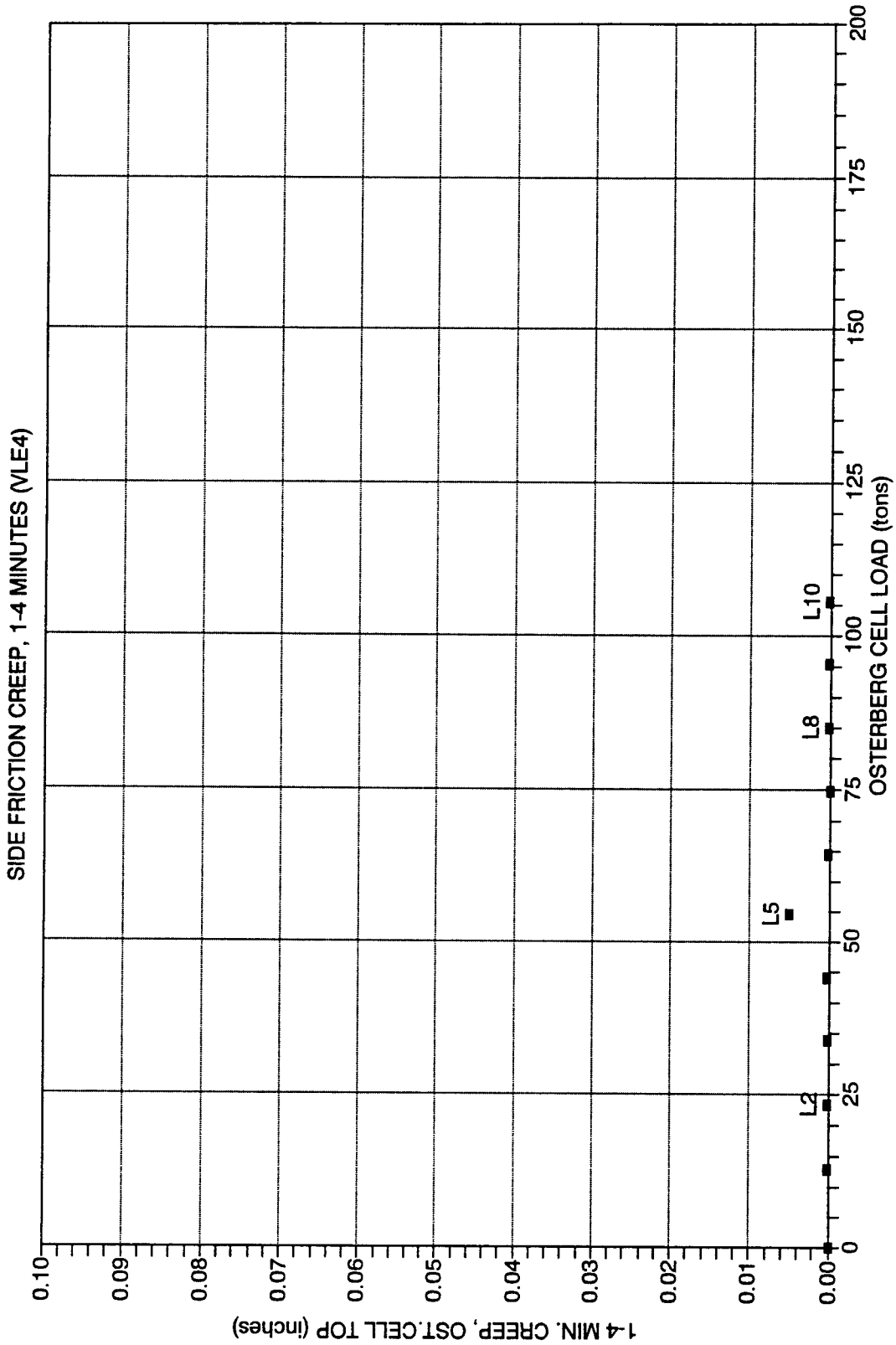


Figure E.67 Load Test 4 Creep: Vilano East

Table E.26 Data for Load Test 1: Vilano West

VLW 1 LOAD NUMBER	TIME INCR. (min)	OSTERBERG CELL LOAD: MEASURED PRESSURE (psi)	CORRECTED PRESSURE (psi)	VW TRANSDUCER READING (tons)	PRESSURE (psi)	EXTENSION @4 MIN. (inches)	LOAD (tons)	OSTERBERG CELL BOTTOM TELLTALE: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)	POISSON EFFECT ADJ. (inches)	OSTERBERG CELL BOTTOM MOVEMENT: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)
L0		0	0	9127	0	0.000	0.0				0.1959	0.0000				0.0000
L1	4	100	83	9085	136	0.002	4.3	0.1959	0.1959	0.1959	0.1959	0.0022	-0.0022	-0.0022	-0.0022	-0.0022
L2	4	220	202	9048	253	0.003	7.9	0.1951	0.1951	0.1951	0.1951	0.0041	-0.0033	-0.0033	-0.0033	-0.0033
L3	4	380	360	9003	393	0.004	12.3	0.1935	0.1935	0.1935	0.1935	0.0063	-0.0039	-0.0039	-0.0039	-0.0039
L4	4	510	488	8959	528	0.005	16.5	0.1929	0.1928	0.1928	0.1928	0.0085	-0.0055	-0.0054	-0.0054	-0.0054
L5	4	650	627	8914	666	0.007	20.8	0.1923	0.1923	0.1922	0.1923	0.0108	-0.0072	-0.0072	-0.0071	-0.0072
L6	4	790	765	8870	799	0.009	25.0	0.1919	0.1919	0.1919	0.1919	0.0129	-0.0089	-0.0089	-0.0089	-0.0089
L7	4	920	893	8826	933	0.011	29.1	0.1919	0.1919	0.1919	0.1919	0.0151	-0.0111	-0.0111	-0.0011	-0.0011
L8	4	1080	1051	8782	1066	0.013	33.3	0.1919	0.1919	0.1919	0.1919	0.0172	-0.0032	-0.0032	-0.0032	-0.0032
L9	4	1210	1180	8738	1198	0.016	37.4	0.1919	0.1920	0.1924	0.1930	0.0194	-0.0054	-0.0055	-0.0059	-0.0065
L10	4	1370	1338	8692	1336	0.034	41.7	0.1953	0.2001	0.2049	0.2080	0.0216	-0.0110	-0.0158	-0.0206	-0.0137
L11	4	1500	1466	8648	1468	0.139	45.9	0.2380	0.2610	0.2830	0.3080	0.0237	-0.0258	-0.0288	-0.0308	-0.0358
L11A	5	1500	1466	8648	1468	0.162	45.9				0.3318	0.0237				-0.0296
L12	4	1590	1555	8624	1540	0.193	48.1	0.3450	0.3485	0.3525	0.3605	0.0249	-0.0440	-0.0375	-0.0415	-0.0395
L13	4	1650	1615	8600	1611	0.228	50.4	0.3705	0.3745	0.3837	0.3945	0.0261	-0.0507	-0.0447	-0.0439	-0.0447
L14	4	1750	1713	8575	1686	0.316	52.7	0.4135	0.4275	0.4432	0.4809	0.0273	-0.0549	-0.0489	-0.0546	-0.0623
L15	2	1815	1778	8553	1752	0.553	54.8		0.5455	0.5970	0.7150	0.0283		-0.0579	-0.0594	-0.0474
L15A	1			8600	1611	0.798	50.5				0.9620	0.0261				-0.0722
L15B	1			8650	1462	0.888	45.9				1.0550	0.0236				-0.0627
U1	3			8680	1372	0.937	43.1				1.1050	0.0222				-0.0713
U2	3	1020	992	8799	1014	0.930	31.9				1.1053	0.0164				-0.0658
U3	3	760	735	8879	772	0.925	24.4				1.1049	0.0125				-0.0715
U4	3	620	597	8923	638	0.919	20.2				1.1020	0.0103				-0.0664
U5	3	500	478	8966	507	0.907	16.1				1.0935	0.0082				-0.0658
U6	3	270	251	9035	293	0.881	9.4				1.0722	0.0047				-0.0610
U7	3	0	0	9127	0	0.823	0.0				1.0210	0.0000				-0.0351
U7A	3	0	0	9128	0	0.819	0.0				1.0170	0.0000				-0.0311

L11A WAS TAKEN AT 9 MINUTES, LOAD HELD DURING RAIN TO COVER INSTRUMENTS
L15 READINGS WERE TAKEN AT 0.5, 1 & 2 MINUTES
L15A LOAD WAS HELD 1 MINUTE
L15B LOAD WAS HELD 1 MINUTE

Table E.26 continued

VLW 1 LOAD NUMBER	OSTERBERG CELL TOP TELLTALE TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	PILE COMPRESSION TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	OSTERBERG CELL TOP TELLTALE TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)	PILE COMPRESSION TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)
L0				0.02000				0.00000				0.02000				0.00000
L1	0.02000	0.02000	0.02000	0.02000	0.00000	0.00000	0.00000	0.00000	0.02000	0.02000	0.02000	0.02000	0.00000	0.00000	0.00000	0.00000
L2	0.01990	0.01990	0.01990	0.01990	-0.00010	-0.00010	-0.00010	-0.00010	0.02000	0.02000	0.02000	0.02000	0.00000	0.00000	0.00000	0.00000
L3	0.01990	0.01990	0.01990	0.01990	-0.00010	-0.00010	-0.00010	-0.00010	0.02000	0.02000	0.02000	0.02000	0.00000	0.00000	0.00000	0.00000
L4	0.01980	0.01980	0.01980	0.01980	-0.00020	-0.00020	-0.00020	-0.00020	0.01990	0.01990	0.01990	0.01990	-0.00010	-0.00010	-0.00010	-0.00010
L5	0.01980	0.01980	0.01980	0.01980	-0.00020	-0.00020	-0.00020	-0.00020	0.01990	0.01990	0.01990	0.01990	-0.00010	-0.00010	-0.00010	-0.00010
L6	0.01980	0.01980	0.01980	0.01980	-0.00020	-0.00020	-0.00020	-0.00020	0.01990	0.01990	0.01990	0.01990	-0.00010	-0.00010	-0.00010	-0.00010
L7	0.01980	0.01980	0.01980	0.01980	-0.00020	-0.00020	-0.00020	-0.00020	0.01980	0.01980	0.01980	0.01980	-0.00020	-0.00020	-0.00020	-0.00020
L8	0.01990	0.01990	0.01990	0.01990	-0.00010	-0.00010	-0.00010	-0.00010	0.01980	0.01980	0.01980	0.01980	-0.00020	-0.00020	-0.00020	-0.00020
L9	0.02000	0.02000	0.02000	0.02000	0.00000	0.00000	0.00000	0.00000	0.01990	0.01990	0.01990	0.01990	-0.00010	-0.00010	-0.00010	-0.00010
L10	0.02020	0.02060	0.02060	0.02060	0.00020	0.00060	0.00060	0.00060	0.02000	0.02040	0.02040	0.02050	0.00000	0.00040	0.00040	0.00050
L11	0.02210	0.02260	0.02280	0.02300	0.00210	0.00260	0.00280	0.00300	0.02140	0.02210	0.02210	0.02250	0.00140	0.00210	0.00210	0.00250
L11A				0.02310				0.00310				0.02260				0.00260
L12	0.02350	0.02350	0.02350	0.02370	0.00350	0.00350	0.00350	0.00370	0.02290	0.02290	0.02290	0.02290	0.00290	0.00290	0.00290	0.00290
L13	0.02390	0.02390	0.02390	0.02390	0.00390	0.00390	0.00390	0.00390	0.02300	0.02300	0.02300	0.02300	0.00300	0.00300	0.00300	0.00300
L14	0.02420	0.02430	0.02430	0.02450	0.00420	0.00430	0.00430	0.00450	0.02330	0.02340	0.02360	0.02390	0.00330	0.00340	0.00360	0.00390
L15		0.02490	0.02500	0.02540		0.00490	0.00500	0.00540		0.02410	0.02470	0.02500		0.00410	0.00470	0.00500
L15A				0.02580				0.00580				0.02540				0.00540
L15B				0.02580				0.00580				0.02540				0.00540
U1				0.02550				0.00550				0.02500				0.00500
U2				0.02500				0.00500				0.02420				0.00420
U3				0.02400				0.00400				0.02300				0.00300
U4				0.02310				0.00310				0.02220				0.00220
U5				0.02220				0.00220				0.02120				0.00120
U6				0.02060				0.00060				0.01970				-0.00030
U7				0.01880				-0.00120				0.01790				-0.00210
U7A				0.01820				-0.00180				0.01790				-0.00210

Table E.26 continued

VLW 1 LOAD NUMBER	PILE COMPRESSION TT-1 & TT-2 AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP MOVEMENT AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP CREEP 1-4 MIN (inches)	CREEP 2-4 MIN (inches)
L0				0.0000				0.0000	0.0000	0.0000
L1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
L2	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	0.0000	0.0000
L3	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	0.0000	0.0000
L4	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	0.0000	0.0000
L5	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	0.0000	0.0000
L6	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	0.0000	0.0000
L7	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	0.0098	0.0098	0.0100	0.0000
L8	-0.0001	-0.0001	-0.0001	-0.0001	0.0099	0.0099	0.0099	0.0099	0.0000	0.0000
L9	-0.0000	-0.0000	-0.0000	-0.0000	0.0100	0.0100	0.0100	0.0100	0.0000	0.0000
L10	0.0001	0.0005	0.0005	0.0006	0.0101	0.0105	0.0105	0.0206	0.0101	0.0101
L11	0.0018	0.0024	0.0025	0.0027	0.0418	0.0624	0.0824	0.1027	0.0404	0.0203
L11A				0.0028				0.1328		
L12	0.0032	0.0032	0.0032	0.0033	0.1332	0.1432	0.1432	0.1533	0.0101	0.0101
L13	0.0035	0.0035	0.0035	0.0035	0.1534	0.1634	0.1734	0.1834	0.0200	0.0100
L14	0.0038	0.0038	0.0039	0.0042	0.1937	0.2138	0.2240	0.2542	0.0404	0.0303
L15		0.0045	0.0049	0.0052		0.3245	0.3748	0.5052		
L15A				0.0056				0.7256		
L15B				0.0056				0.8256		
U1				0.0053				0.8652		
U2				0.0046				0.8646		
U3				0.0035				0.8535		
U4				0.0027				0.8527		
U5				0.0017				0.8417		
U6				0.0001				0.8202		
U7				-0.0017				0.7884		
U7A				-0.0020				0.7881		

Table E.26 continued

VLW 1 LOAD NUMBER	TOP OF PILE MOVEMENT - WIRELINE READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)	BSIGHT (inches)	TOP OF PILE MOVEMENT - SURVEY LEVEL READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)
L0				1.050				0.000	1.96				1.960				0.000
L1	1.050	1.050	1.050	1.050	0.000	0.000	0.000	0.000	1.96	1.960	1.960	1.960	1.960	0.000	0.000	0.000	0.000
L2	1.050	1.050	1.050	1.050	0.000	0.000	0.000	0.000		1.960	1.960	1.960	1.960	0.000	0.000	0.000	0.000
L3	1.050	1.050	1.050	1.050	0.000	0.000	0.000	0.000		1.960	1.960	1.960	1.960	0.000	0.000	0.000	0.000
L4	1.050	1.050	1.050	1.050	0.000	0.000	0.000	0.000		1.960	1.960	1.960	1.960	0.000	0.000	0.000	0.000
L5	1.050	1.050	1.050	1.050	0.000	0.000	0.000	0.000	1.96	1.960	1.960	1.960	1.960	0.000	0.000	0.000	0.000
L6	1.050	1.050	1.050	1.050	0.000	0.000	0.000	0.000		1.960	1.960	1.960	1.960	0.000	0.000	0.000	0.000
L7	1.050	1.050	1.060	1.060	0.000	0.000	0.010	0.010		1.960	1.960	1.960	1.960	0.000	0.000	0.000	0.000
L8	1.060	1.060	1.060	1.060	0.010	0.010	0.010	0.010	1.96	1.960	1.960	1.960	1.960	0.000	0.000	0.000	0.000
L9	1.060	1.060	1.060	1.060	0.010	0.010	0.010	0.010		1.960	1.960	1.960	1.960	0.000	0.000	0.000	0.000
L10	1.060	1.060	1.060	1.070	0.010	0.010	0.010	0.020		1.950	1.950	1.950	1.950	0.010	0.010	0.010	0.010
L11	1.090	1.110	1.130	1.150	0.040	0.060	0.080	0.100	1.96	1.910	1.900	1.890	1.870	0.050	0.060	0.070	0.090
L11A				1.180				0.130					1.840				0.120
L12	1.180	1.190	1.190	1.200	0.130	0.140	0.140	0.150	1.96	1.820	1.820	1.810	1.810	0.140	0.140	0.150	0.150
L13	1.200	1.210	1.220	1.230	0.150	0.160	0.170	0.180		1.800	1.800	1.800	1.800	0.160	0.160	0.160	0.160
L14	1.240	1.260	1.270	1.300	0.190	0.210	0.220	0.250		1.780	1.770	1.750	1.700	0.180	0.190	0.210	0.260
L15		1.370	1.420	1.550		0.320	0.370	0.500	1.96		1.650	1.600	1.480		0.310	0.360	0.480
L15A				1.770				0.720					1.250				0.710
L15B				1.870				0.820					1.120				0.840
U1				1.910				0.860					1.110				0.850
U2				1.910				0.860					1.110				0.850
U3				1.900				0.850					1.110				0.850
U4				1.900				0.850					1.120				0.840
U5				1.890				0.840					1.130				0.830
U6				1.870				0.820	1.96				1.150				0.810
U7				1.840				0.790					1.190				0.770
U7A				1.840				0.790					1.190				0.770

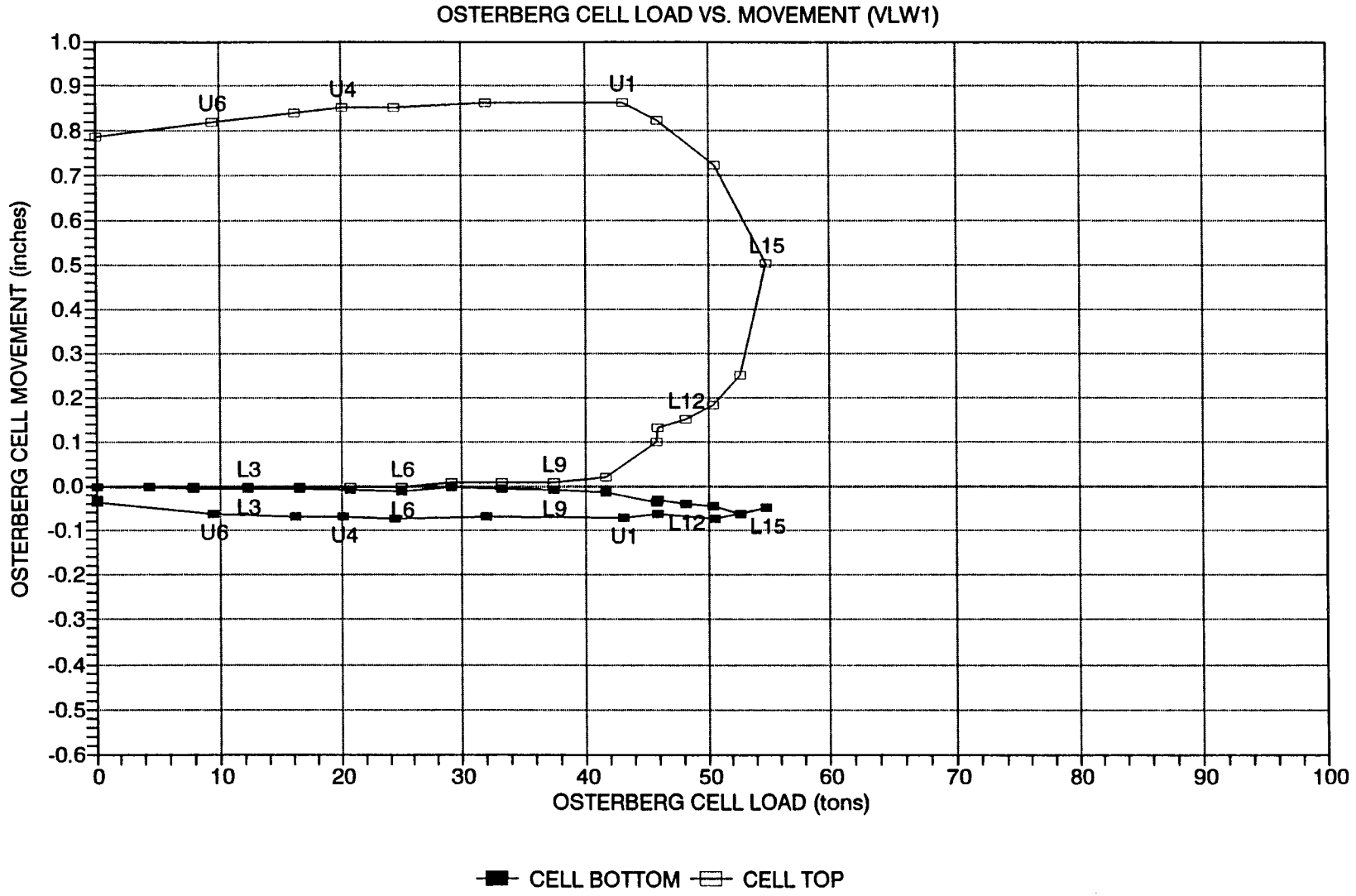


Figure E.68 Load Test 1 Movement: Vilano West

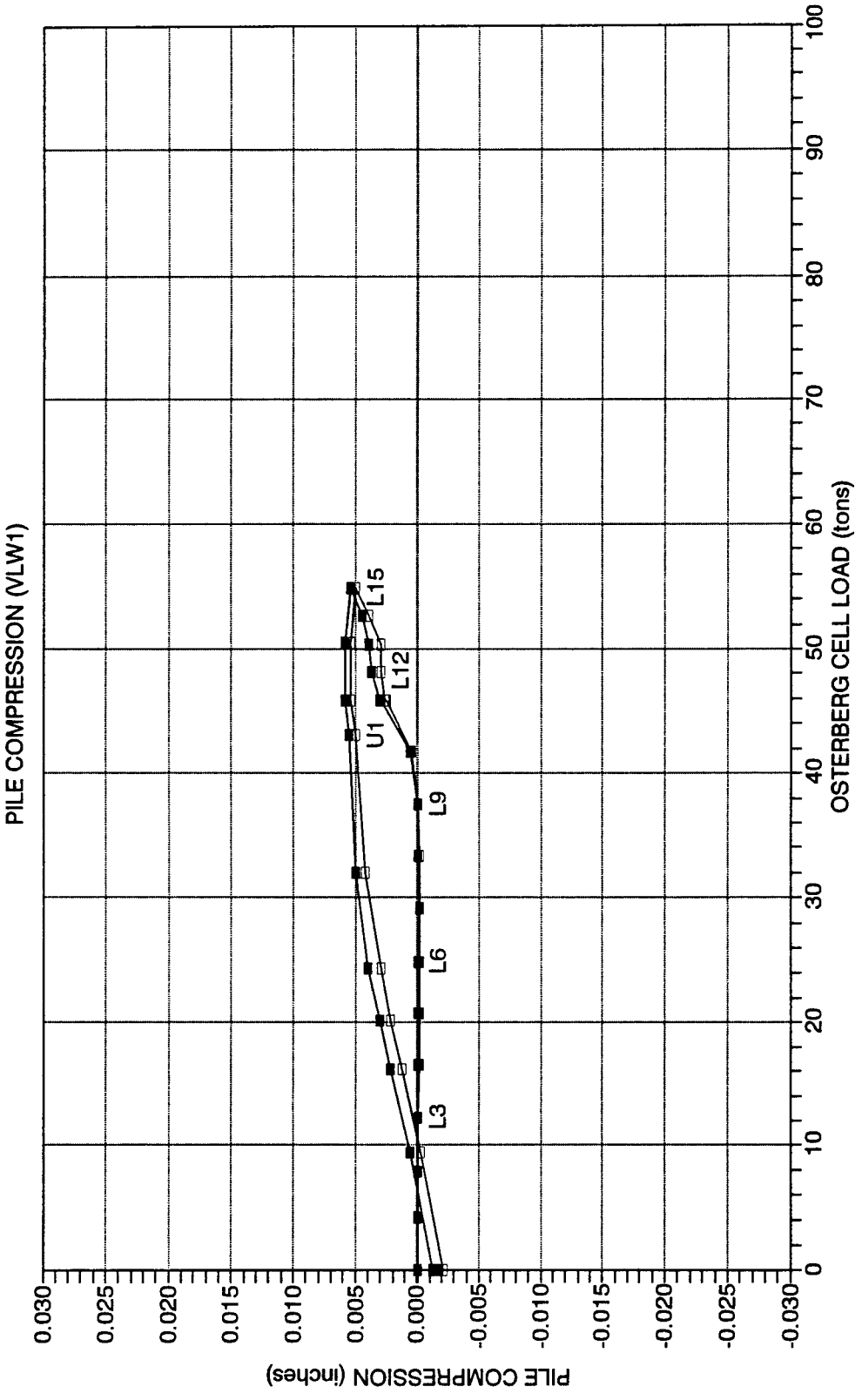


Figure E.69 Load Test 1 Compression: Vilano West

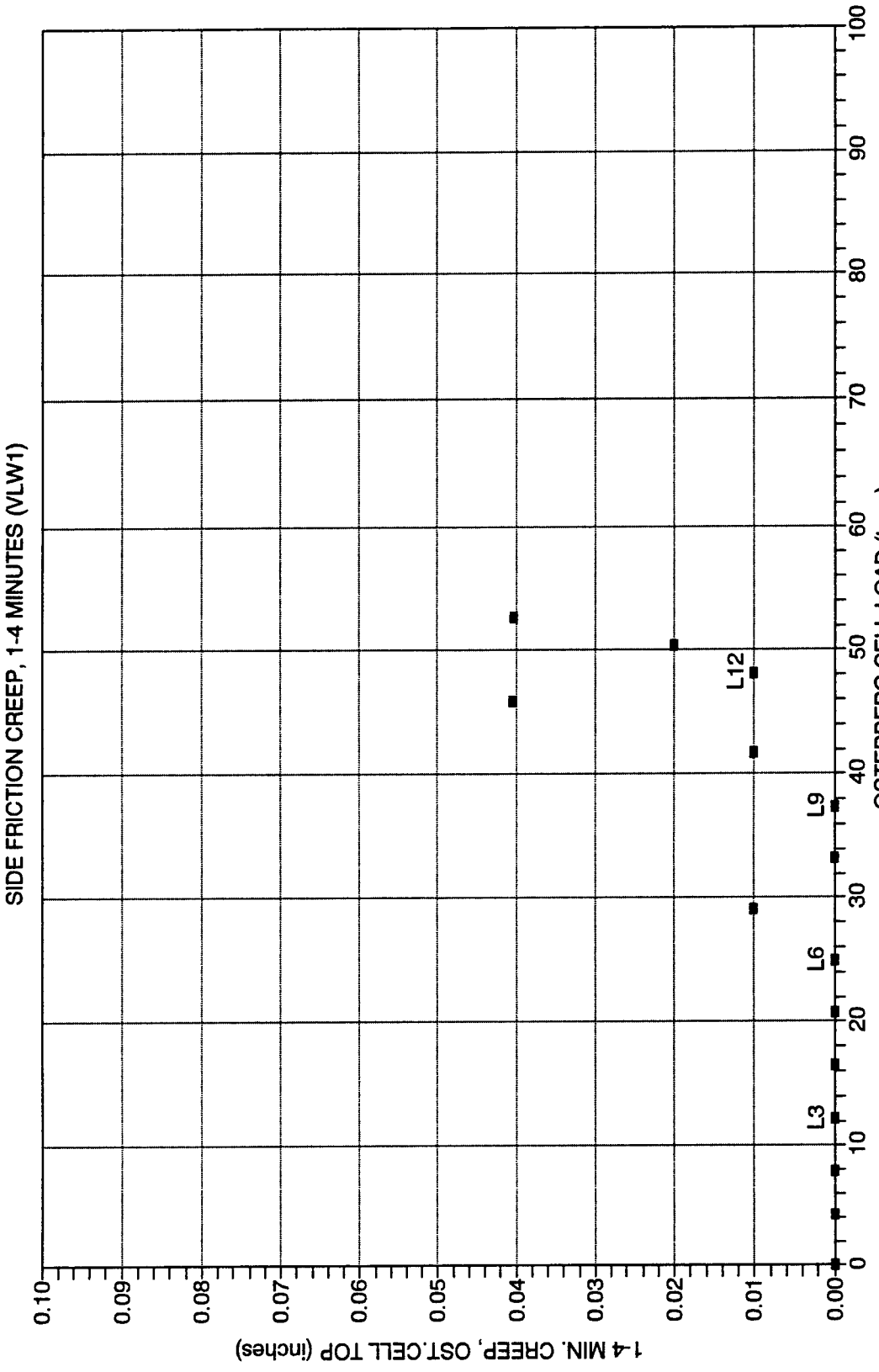


Figure E.70 Load Test 1 Creep: Vilano West

Table E.27 Data for Load Test 2: Vilano West

VLW 2 LOAD NUMBER	TIME INCR. (min)	OSTERBERG CELL LOAD: MEASURED PRESSURE (psi)	CORRECTED PRESSURE (psi)	VW TRANSDUCER READING (tons)	PRESSURE (psi)	EXTENSION @4 MIN. (inches)	LOAD (tons)	OSTERBERG CELL BOTTOM TELLTALE: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)	POISSON EFFECT ADJ. (inches)	OSTERBERG CELL BOTTOM MOVEMENT: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)
L0		0	0	9132	0	0.819	0.0				0.1982	0.0000				0.0000
L1	4	120	103	9086	149	0.821	4.9	0.1979	0.1979	0.1979	0.1979	0.0024	-0.0021	-0.0021	-0.0021	-0.0021
L2	4	310	291	9030	324	0.822	10.4	0.1959	0.1959	0.1959	0.1959	0.0052	-0.0029	-0.0029	-0.0029	-0.0029
L3	4	480	459	8975	494	0.825	15.7	0.1959	0.1959	0.1959	0.1959	0.0080	-0.0057	-0.0057	-0.0057	-0.0057
L4	4	670	646	8919	666	0.829	21.0	0.1960	0.1960	0.1960	0.1960	0.0108	-0.0036	-0.0036	-0.0036	-0.0036
L5	4	830	804	8864	833	0.838	26.2	0.1999	0.2002	0.2008	0.2011	0.0135	-0.0052	-0.0055	-0.0061	-0.0064
L6	4	1010	982	8808	1002	0.853	31.5	0.2102	0.2110	0.2115	0.2121	0.0162	-0.0132	-0.0140	-0.0145	-0.0151
L7	4	1190	1160	8753	1168	0.867	36.7	0.2211	0.2215	0.2219	0.2221	0.0189	-0.0218	-0.0222	-0.0226	-0.0228
L8	4	1380	1348	8697	1336	0.890	42.0	0.2366	0.2380	0.2398	0.2418	0.0216	-0.0300	-0.0314	-0.0332	-0.0352
L9	4	1470	1437	8670	1417	0.903	44.5	0.2480	0.2495	0.2505	0.2530	0.0229	-0.0377	-0.0392	-0.0402	-0.0427
L10	4	1550	1516	8642	1501	0.918	47.1	0.2600	0.2612	0.2635	0.2660	0.0243	-0.0461	-0.0473	-0.0496	-0.0471
L11	4	1640	1605	8614	1585	0.935	49.7	0.2739	0.2753	0.2780	0.2812	0.0256	-0.0513	-0.0527	-0.0554	-0.0536
L12	4	1720	1684	8586	1668	0.957	52.3	0.2905	0.2930	0.2960	0.3003	0.0270	-0.0643	-0.0618	-0.0648	-0.0641
L13	4	1810	1773	8559	1749	0.980	54.9	0.3100	0.3125	0.3165	0.3223	0.0283	-0.0701	-0.0726	-0.0716	-0.0774
L14	4	1900	1862	8531	1832	1.012	57.5	0.3345	0.3385	0.3438	0.3515	0.0296	-0.0809	-0.0849	-0.0852	-0.0929
L15	4	2000	1961	8503	1915	1.051	60.1	0.3650	0.3700	0.3780	0.3895	0.0310	-0.0978	-0.0978	-0.1008	-0.1073
L16	4			8475	1998	1.113	62.7	0.4090	0.4155	0.4303	0.4490	0.0323	-0.1131	-0.1146	-0.1194	-0.1281
L17	4			8448	2078	1.303	65.3	0.4785	0.4975	0.5290	0.6370	0.0336	-0.1339	-0.1379	-0.1394	-0.1424
L17A	2			8449	2075	1.603	65.3				0.9370	0.0336				-0.1474
U1	3			8520	1865	1.700	58.7				1.0380	0.0302				-0.1400
U2	3	1640	1605	8621	1564	1.702	49.3				1.0450	0.0253				-0.1371
U3	3	1330	1298	8715	1282	1.697	40.5				1.0455	0.0207				-0.1380
U4	3	1050	1022	8806	1008	1.688	32.0				1.0435	0.0163				-0.1366
U5	3	730	706	8899	727	1.670	23.2				1.0312	0.0117				-0.1297
U6	3	420	399	9001	414	1.633	13.4				1.0015	0.0067				-0.1150
U7	3	0	0	9134	0	1.549	0.0				0.9263	0.0000				-0.0731
U7A	3	0	0	9133	0	1.545	0.0				0.9225	0.0000				-0.0693

Table E.27 continued

VLW 2 LOAD NUMBER	OSTERBERG CELL TOP TELLTALE TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	PILE COMPRESSION TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	OSTERBERG CELL TOP TELLTALE TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)	PILE COMPRESSION TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)
L0				0.01000				0.00000				0.01000				0.00000
L1	0.01000	0.01000	0.01000	0.01010	0.00000	0.00000	0.00000	0.00010	0.01000	0.01000	0.01000	0.01000	0.00000	0.00000	0.00000	0.00000
L2	0.01020	0.01020	0.01020	0.01020	0.00020	0.00020	0.00020	0.00020	0.01000	0.01000	0.01000	0.01000	0.00000	0.00000	0.00000	0.00000
L3	0.01060	0.01060	0.01060	0.01060	0.00060	0.00060	0.00060	0.00060	0.01090	0.01090	0.01090	0.01090	0.00090	0.00090	0.00090	0.00090
L4	0.01160	0.01160	0.01160	0.01170	0.00160	0.00160	0.00160	0.00170	0.01190	0.01190	0.01190	0.01190	0.00190	0.00190	0.00190	0.00190
L5	0.01270	0.01270	0.01270	0.01280	0.00270	0.00270	0.00270	0.00280	0.01290	0.01290	0.01300	0.01300	0.00290	0.00290	0.00300	0.00300
L6	0.01370	0.01370	0.01370	0.01380	0.00370	0.00370	0.00370	0.00380	0.01400	0.01400	0.01400	0.01400	0.00400	0.00400	0.00400	0.00400
L7	0.01480	0.01480	0.01490	0.01500	0.00480	0.00480	0.00490	0.00500	0.01500	0.01500	0.01500	0.01500	0.00500	0.00500	0.00500	0.00500
L8	0.01600	0.01600	0.01610	0.01610	0.00600	0.00600	0.00610	0.00610	0.01600	0.01600	0.01600	0.01620	0.00600	0.00600	0.00600	0.00620
L9	0.01640	0.01640	0.01640	0.01650	0.00640	0.00640	0.00640	0.00650	0.01680	0.01690	0.01690	0.01690	0.00680	0.00690	0.00690	0.00690
L10	0.01710	0.01710	0.01720	0.01720	0.00710	0.00710	0.00720	0.00720	0.01730	0.01730	0.01730	0.01730	0.00730	0.00730	0.00730	0.00730
L11	0.01750	0.01750	0.01750	0.01750	0.00750	0.00750	0.00750	0.00750	0.01790	0.01790	0.01800	0.01800	0.00790	0.00790	0.00800	0.00800
L12	0.01810	0.01820	0.01820	0.01820	0.00810	0.00820	0.00820	0.00820	0.01850	0.01860	0.01860	0.01870	0.00850	0.00860	0.00860	0.00870
L13	0.01840	0.01840	0.01840	0.01840	0.00840	0.00840	0.00840	0.00840	0.01900	0.01900	0.01900	0.01900	0.00900	0.00900	0.00900	0.00900
L14	0.01910	0.01920	0.01920	0.01920	0.00910	0.00920	0.00920	0.00920	0.02030	0.02030	0.02030	0.02030	0.01030	0.01030	0.01030	0.01030
L15	0.01960	0.01960	0.01970	0.01970	0.00960	0.00960	0.00970	0.00970	0.02020	0.02020	0.02030	0.02040	0.01020	0.01020	0.01030	0.01040
L16	0.02020	0.02020	0.02020	0.02020	0.01020	0.01020	0.01020	0.01020	0.02090	0.02100	0.02100	0.02100	0.01090	0.01100	0.01100	0.01100
L17	0.02090	0.02090	0.02090	0.02090	0.01090	0.01090	0.01090	0.01090	0.02150	0.02150	0.02150	0.02160	0.01150	0.01150	0.01150	0.01160
L17A				0.02090				0.01090				0.02160				0.01160
U1				0.02050				0.01050				0.02100				0.01100
U2				0.02020				0.01020				0.02080				0.01080
U3				0.01950				0.00950				0.01960				0.00960
U4				0.01790				0.00790				0.01780				0.00780
U5				0.01610				0.00610				0.01600				0.00600
U6				0.01380				0.00380				0.01400				0.00400
U7				0.01110				0.00110				0.01170				0.00170
U7A				0.01110				0.00110				0.01160				0.00160

Table E.27 continued

VLW 2 LOAD NUMBER	PILE COMPRESSION TT-1 & TT-2 AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP MOVEMENT AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP CREEP 1-4 MIN (inches)	CREEP 2-4 MIN (inches)
L0				0.0000				0.0000	0.0000	0.0000
L1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
L2	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0000	0.0000
L3	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0000	0.0000
L4	0.0018	0.0018	0.0018	0.0018	0.0067	0.0067	0.0067	0.0068	0.0001	0.0001
L5	0.0028	0.0028	0.0028	0.0029	0.0128	0.0128	0.0129	0.0129	0.0001	0.0001
L6	0.0039	0.0039	0.0039	0.0039	0.0188	0.0188	0.0188	0.0189	0.0001	0.0001
L7	0.0049	0.0049	0.0050	0.0050	0.0249	0.0249	0.0250	0.0250	0.0001	0.0000
L8	0.0060	0.0060	0.0061	0.0062	0.0360	0.0360	0.0361	0.0362	0.0002	0.0001
L9	0.0066	0.0067	0.0067	0.0067	0.0416	0.0416	0.0416	0.0417	0.0000	0.0000
L10	0.0072	0.0072	0.0073	0.0073	0.0472	0.0472	0.0473	0.0522	0.0050	0.0050
L11	0.0077	0.0077	0.0078	0.0078	0.0577	0.0577	0.0578	0.0627	0.0050	0.0050
L12	0.0083	0.0084	0.0084	0.0085	0.0633	0.0684	0.0684	0.0734	0.0050	0.0050
L13	0.0087	0.0087	0.0087	0.0087	0.0787	0.0787	0.0837	0.0837	0.0050	0.0000
L14	0.0097	0.0097	0.0097	0.0097	0.0947	0.0947	0.0998	0.0998	0.0050	0.0000
L15	0.0099	0.0099	0.0100	0.0101	0.1099	0.1149	0.1200	0.1251	0.0102	0.0050
L16	0.0106	0.0106	0.0106	0.0106	0.1406	0.1456	0.1556	0.1656	0.0200	0.0100
L17	0.0112	0.0112	0.0112	0.0113	0.1912	0.2062	0.2362	0.3412	0.1350	0.1050
L17A				0.0113				0.6362		
U1				0.0108				0.7407		
U2				0.0105				0.7455		
U3				0.0096				0.7395		
U4				0.0079				0.7329		
U5				0.0061				0.7211		
U6				0.0039				0.6989		
U7				0.0014				0.6564		
U7A				0.0013				0.6564		

Table E.27 continued

VLW 2 LOAD NUMBER	TOP OF PILE MOVEMENT - WIRELINE READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)	BSIGHT @0.5MIN. (inches)	TOP OF PILE MOVEMENT - SURVEY LEVEL READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)
L0				1.945				0.000	3.000				0.990				0.000
L1	1.945	1.945	1.945	1.945	0.000	0.000	0.000	0.000	3.000	0.990	0.990	0.990	0.990	0.000	0.000	0.000	0.000
L2	1.945	1.945	1.945	1.945	0.000	0.000	0.000	0.000	3.000	0.990	0.990	0.990	0.990	0.000	0.000	0.000	0.000
L3	1.945	1.945	1.945	1.945	0.000	0.000	0.000	0.000	3.000	0.990	0.990	0.990	0.990	0.000	0.000	0.000	0.000
L4	1.950	1.950	1.950	1.950	0.005	0.005	0.005	0.005	3.000	0.995	0.995	0.995	0.995	0.005	0.005	0.005	0.005
L5	1.955	1.955	1.955	1.955	0.010	0.010	0.010	0.010	3.000	1.000	1.000	1.000	1.000	0.010	0.010	0.010	0.010
L6	1.960	1.960	1.960	1.960	0.015	0.015	0.015	0.015	3.000	1.000	1.000	1.000	1.000	0.010	0.010	0.010	0.010
L7	1.965	1.965	1.965	1.965	0.020	0.020	0.020	0.020	3.000	1.005	1.005	1.005	1.005	0.015	0.015	0.015	0.015
L8	1.975	1.975	1.975	1.975	0.030	0.030	0.030	0.030	3.000	1.010	1.015	1.020	1.020	0.020	0.025	0.030	0.030
L9	1.980	1.980	1.980	1.980	0.035	0.035	0.035	0.035	3.000	1.020	1.020	1.020	1.020	0.030	0.030	0.030	0.030
L10	1.985	1.985	1.985	1.990	0.040	0.040	0.040	0.045	3.000	1.025	1.030	1.030	1.030	0.035	0.040	0.040	0.040
L11	1.995	1.995	1.995	2.000	0.050	0.050	0.050	0.055	3.000	1.035	1.035	1.040	1.040	0.045	0.045	0.050	0.050
L12	2.000	2.005	2.005	2.010	0.055	0.060	0.060	0.065	3.000	1.040	1.040	1.045	1.045	0.050	0.050	0.055	0.055
L13	2.015	2.015	2.020	2.020	0.070	0.070	0.075	0.075	3.000	1.055	1.060	1.060	1.060	0.065	0.070	0.070	0.070
L14	2.030	2.030	2.035	2.035	0.085	0.085	0.090	0.090	3.000	1.065	1.065	1.070	1.080	0.075	0.075	0.080	0.090
L15	2.045	2.050	2.055	2.060	0.100	0.105	0.110	0.115	3.000	1.080	1.085	1.090	1.100	0.090	0.095	0.100	0.110
L16	2.075	2.080	2.090	2.100	0.130	0.135	0.145	0.155	3.000	1.110	1.120	1.130	1.140	0.120	0.130	0.140	0.150
L17	2.125	2.140	2.170	2.275	0.180	0.195	0.225	0.330	3.000	1.165	1.180	1.210	1.320	0.175	0.190	0.220	0.330
L17A				2.570				0.625	3.000				1.620				0.630
U1				2.675				0.730	3.000				1.710				0.720
U2				2.680				0.735	3.000				1.710				0.720
U3				2.675				0.730	3.000				1.710				0.720
U4				2.670				0.725	3.000				1.700				0.710
U5				2.660				0.715	3.000				1.690				0.700
U6				2.640				0.695	3.000				1.675				0.685
U7				2.600				0.655	3.000				1.630				0.640
U7A				2.600				0.655	3.000				1.630				0.640

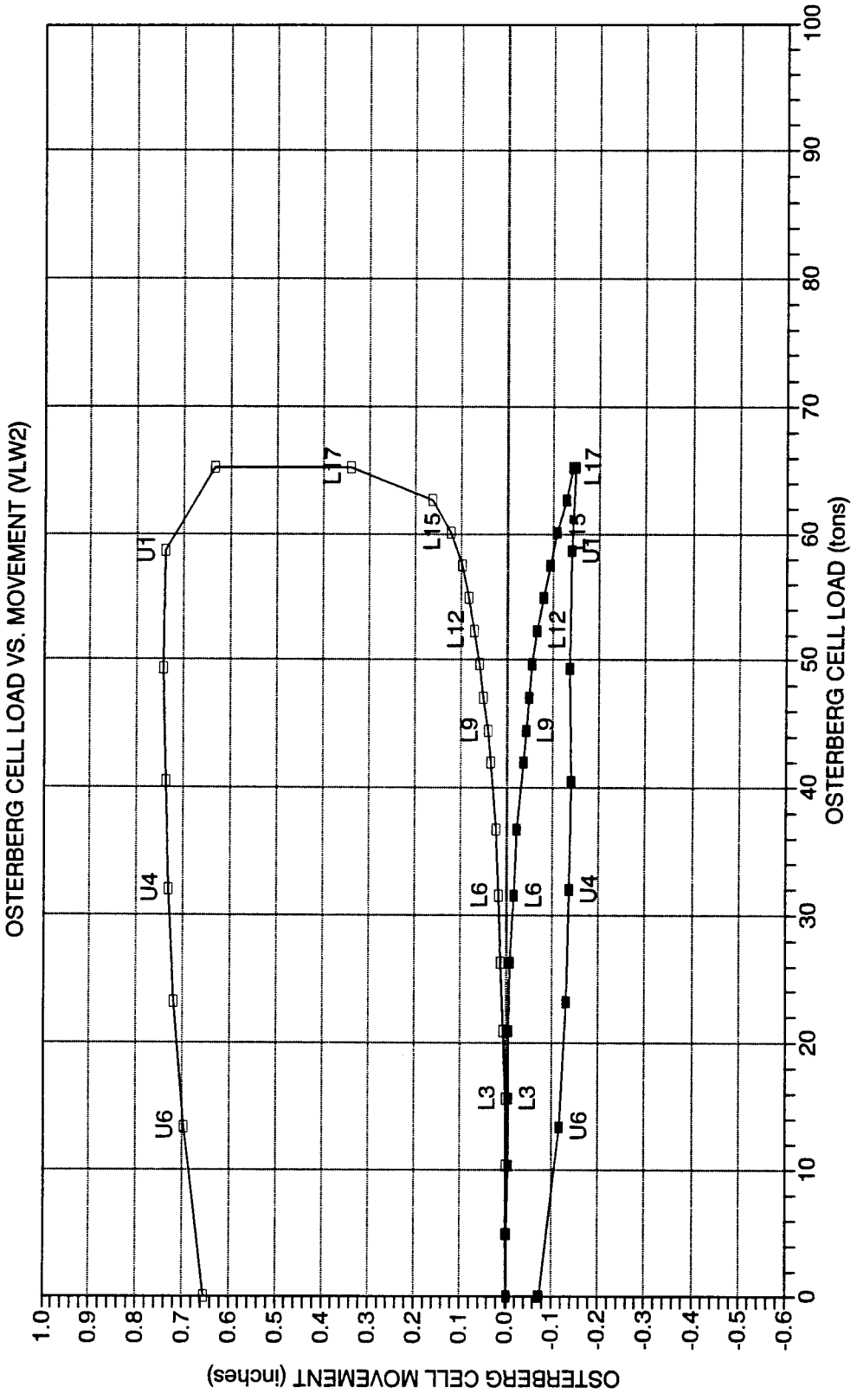


Figure E.71 Load Test 2 Movement: Vilano West

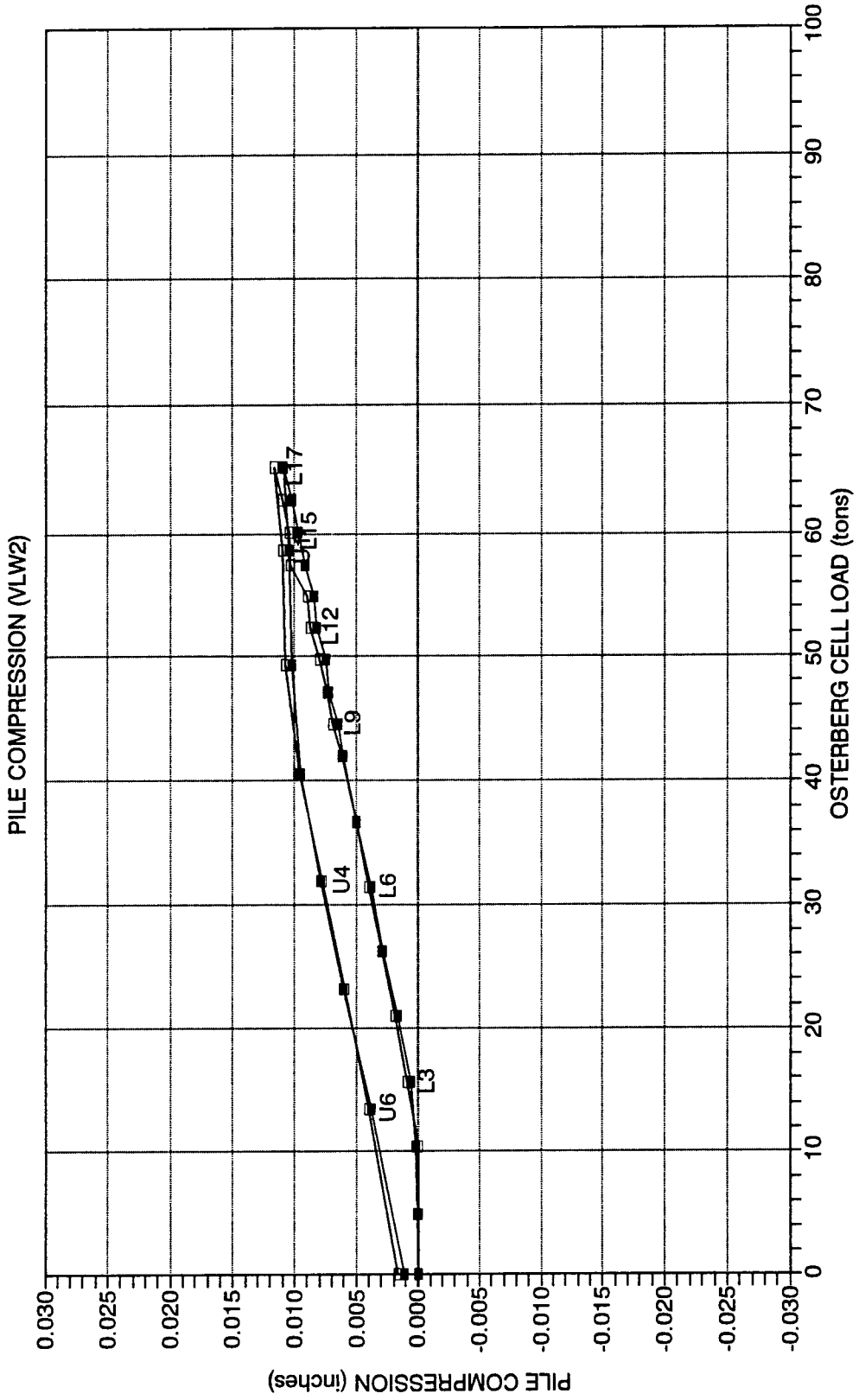


Figure E.72 Load Test 2 Compression: Vilano West

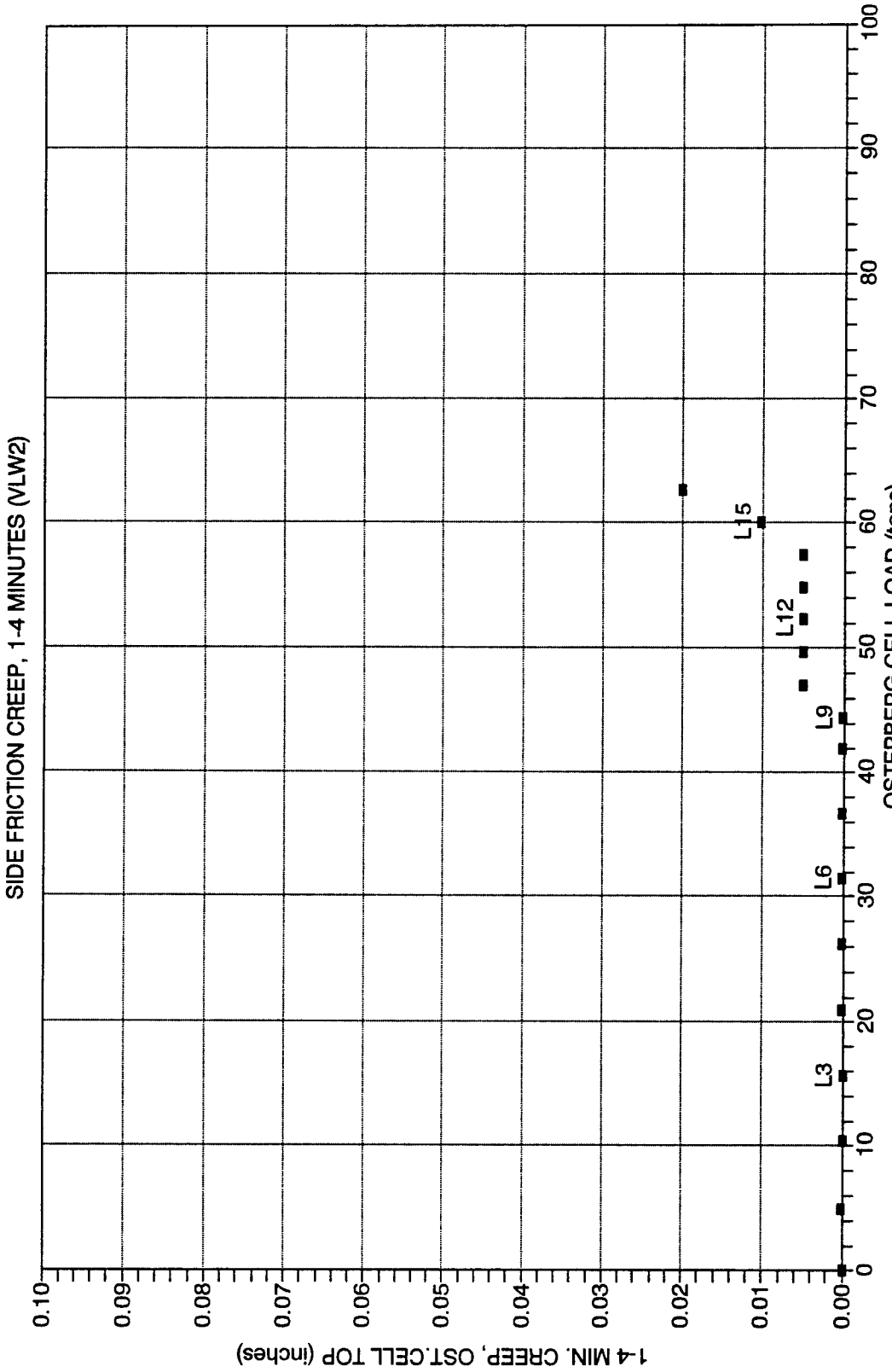


Figure E.73 Load Test 2 Creep: Vilano West

Table E.28 Data for Load Test 3: Vilano West

VLW 3 LOAD NUMBER	TIME INCR. (min)	OSTERBERG CELL LOAD: MEASURED PRESSURE (psi)	CORRECTED PRESSURE (psi)	VW TRANSDUCER READING (tons)	PRESSURE (psi)	EXTENSION @4 MIN. (inches)	LOAD (tons)	OSTERBERG CELL BOTTOM TELLTALE: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)	POISSON EFFECT ADJ. (inches)	OSTERBERG CELL BOTTOM MOVEMENT: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)
L0		0	0	9131	0	1.545	0.0				0.1997	0.0000				0.0000
L1	4	190	172	9064	215	1.547	7.2	0.1983	0.1981	0.1981	0.1980	0.0035	-0.0021	-0.0019	0.0031	0.0032
L2	4	300	281	9029	324	1.548	10.6	0.1979	0.1979	0.1979	0.1972	0.0052	0.0016	0.0016	0.0016	0.0023
L3	4	470	449	8974	494	1.551	15.9	0.1971	0.1971	0.1971	0.1971	0.0080	0.0046	0.0046	0.0046	-0.0004
L4	4	660	636	8919	663	1.557	21.1	0.1990	0.1991	0.1992	0.1997	0.0107	-0.0050	-0.0001	-0.0002	-0.0007
L5	4	830	804	8863	833	1.568	26.5	0.2055	0.2058	0.2060	0.2062	0.0135	-0.0093	-0.0096	-0.0048	-0.0050
L6	4	1010	982	8807	1002	1.580	31.8	0.2132	0.2139	0.2140	0.2145	0.0162	-0.0147	-0.0154	-0.0155	-0.0160
L7	4	1180	1150	8753	1165	1.593	36.8	0.2220	0.2225	0.2230	0.2238	0.0188	-0.0211	-0.0216	-0.0221	-0.0229
L8	4	1370	1338	8696	1336	1.607	42.2	0.2315	0.2322	0.2330	0.2340	0.0216	-0.0334	-0.0341	-0.0349	-0.0359
L9	4	1540	1506	8641	1501	1.623	47.3	0.2435	0.2441	0.2452	0.2465	0.0243	-0.0431	-0.0437	-0.0448	-0.0411
L10	4	1630	1595	8613	1585	1.632	49.9	0.2510	0.2517	0.2529	0.2538	0.0256	-0.0469	-0.0476	-0.0488	-0.0447
L11	4	1720	1684	8585	1668	1.642	52.6	0.2585	0.2595	0.2602	0.2615	0.0270	-0.0508	-0.0518	-0.0525	-0.0488
L12	4	1800	1763	8558	1749	1.652	55.1	0.2670	0.2678	0.2689	0.2703	0.0283	-0.0556	-0.0564	-0.0575	-0.0589
L13	4	1900	1862	8531	1829	1.664	57.6	0.2760	0.2790	0.2801	0.2809	0.0296	-0.0659	-0.0689	-0.0700	-0.0708
L14	4	1990	1951	8502	1915	1.678	60.3	0.2870	0.2881	0.2900	0.2925	0.0310	-0.0733	-0.0744	-0.0763	-0.0788
L15	4	2070	2030	8474	1998	1.694	62.9	0.3000	0.3013	0.3035	0.3068	0.0323	-0.0826	-0.0839	-0.0861	-0.0844
L16	4	2160	2119	8447	2078	1.714	65.4	0.3140	0.3168	0.3202	0.3250	0.0336	-0.0879	-0.0907	-0.0941	-0.0989
L17	4	2230	2188	8419	2161	1.740	68.0	0.3350	0.3378	0.3421	0.3492	0.0350	-0.1053	-0.1081	-0.1124	-0.1195
L18	4	2320	2277	8391	2244	1.779	70.6	0.3625	0.3675	0.3745	0.3865	0.0363	-0.1291	-0.1341	-0.1411	-0.1481
L19	4	2390	2346	8363	2327	1.851	73.2	0.4053	0.4135	0.4285	0.4560	0.0376	-0.1682	-0.1714	-0.1864	-0.2139
L20	4	2495	2450	8335	2410	2.028	75.8	0.4950	0.5110	0.5520	0.6315	0.0390	-0.2493	-0.2603	-0.3013	-0.3758
L21	4	2600	2553	8308	2490	2.460	78.4	0.7240	0.7730	0.8730	1.0610	0.0403	-0.4646	-0.5086	-0.5986	-0.7716
L22	2			8282	2566	2.867	81.0		1.2130	1.2910	1.4660	0.0415		-0.8998	-0.9578	-1.0678
L22A	0.5			8375	2292	2.972	72.4				1.5770	0.0371				-1.1094
L22B	1.5			8372	2301	2.988	72.7				1.5930	0.0372				-1.1205
U1	3			8505	1906	3.007	60.4				1.6185	0.0308				-1.1346
U2	3	1850	1812	8545	1787	3.006	56.7				1.6205	0.0289				-1.1347
U3	3	1540	1506	8640	1504	3.000	47.8				1.6203	0.0243				-1.1349
U4	3	1240	1210	8731	1231	2.990	39.3				1.6162	0.0199				-1.1314
U5	3	970	943	8816	975	2.970	31.3				1.6023	0.0158				-1.1234
U6	3	590	567	8930	629	2.934	20.5				1.5740	0.0102				-1.1095
U7	3	330	310	9024	340	2.888	0.0				1.5350	0.0055				-1.0858
U8	3	0	0	9132	0	2.800	0.0				1.4545	0.0000				-1.0148
U8A	4.5	0	0	9132	0	2.796	0.0				1.4500	0.0000				-1.0203

L22 READINGS WERE TAKEN AT 0.5, 1 & 2 MINUTES
L22A LOAD WAS HELD 0.5 MINUTES
L22B LOAD WAS HELD 1.5 MINUTES

Table E.28 continued

VLW 3 LOAD NUMBER	OSTERBERG CELL TOP TELLTALE TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	PILE COMPRESSION TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	OSTERBERG CELL TOP TELLTALE TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)	PILE COMPRESSION TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)
L0				0.01000				0.00000				0.01000				0.00000
L1	0.01000	0.01000	0.01000	0.01000	0.00000	0.00000	0.00000	0.00000	0.01000	0.01000	0.01000	0.01000	0.00000	0.00000	0.00000	0.00000
L2	0.01000	0.01000	0.01000	0.01000	0.00000	0.00000	0.00000	0.00000	0.01020	0.01020	0.01020	0.01020	0.00020	0.00020	0.00020	0.00020
L3	0.01050	0.01050	0.01050	0.01050	0.00050	0.00050	0.00050	0.00050	0.01080	0.01080	0.01080	0.01080	0.00080	0.00080	0.00080	0.00080
L4	0.01150	0.01150	0.01150	0.01150	0.00150	0.00150	0.00150	0.00150	0.01180	0.01180	0.01180	0.01180	0.00180	0.00180	0.00180	0.00180
L5	0.01250	0.01250	0.01250	0.01250	0.00250	0.00250	0.00250	0.00250	0.01280	0.01280	0.01280	0.01280	0.00280	0.00280	0.00280	0.00280
L6	0.01350	0.01360	0.01360	0.01360	0.00350	0.00360	0.00360	0.00360	0.01380	0.01380	0.01380	0.01380	0.00380	0.00380	0.00380	0.00380
L7	0.01450	0.01450	0.01450	0.01450	0.00450	0.00450	0.00450	0.00450	0.01480	0.01480	0.01520	0.01520	0.00480	0.00480	0.00520	0.00520
L8	0.01560	0.01560	0.01560	0.01560	0.00560	0.00560	0.00560	0.00560	0.01590	0.01580	0.01580	0.01580	0.00590	0.00580	0.00580	0.00580
L9	0.01660	0.01650	0.01650	0.01650	0.00660	0.00650	0.00650	0.00650	0.01680	0.01680	0.01700	0.01700	0.00680	0.00680	0.00700	0.00700
L10	0.01730	0.01730	0.01740	0.01740	0.00730	0.00730	0.00740	0.00740	0.01750	0.01750	0.01760	0.01760	0.00750	0.00750	0.00760	0.00760
L11	0.01760	0.01760	0.01760	0.01770	0.00760	0.00760	0.00760	0.00770	0.01780	0.01780	0.01780	0.01780	0.00780	0.00780	0.00780	0.00780
L12	0.01830	0.01830	0.01830	0.01830	0.00830	0.00830	0.00830	0.00830	0.01840	0.01840	0.01840	0.01840	0.00840	0.00840	0.00840	0.00840
L13	0.01850	0.01850	0.01850	0.01850	0.00850	0.00850	0.00850	0.00850	0.01870	0.01870	0.01870	0.01870	0.00870	0.00870	0.00870	0.00870
L14	0.01920	0.01920	0.01940	0.01940	0.00920	0.00920	0.00940	0.00940	0.01940	0.01940	0.01950	0.01950	0.00940	0.00940	0.00950	0.00950
L15	0.01950	0.01960	0.01960	0.01960	0.00950	0.00960	0.00960	0.00960	0.01980	0.01980	0.01980	0.01980	0.00980	0.00980	0.00980	0.00980
L16	0.02030	0.02040	0.02040	0.02040	0.01030	0.01040	0.01040	0.01040	0.02030	0.02040	0.02050	0.02050	0.01030	0.01040	0.01050	0.01050
L17	0.02060	0.02060	0.02060	0.02060	0.01060	0.01060	0.01060	0.01060	0.02070	0.02080	0.02080	0.02080	0.01070	0.01080	0.01080	0.01080
L18	0.02140	0.02150	0.02150	0.02150	0.01140	0.01150	0.01150	0.01150	0.02130	0.02140	0.02130	0.02130	0.01130	0.01140	0.01130	0.01130
L19	0.02180	0.02180	0.02180	0.02180	0.01180	0.01180	0.01180	0.01180	0.02170	0.02170	0.02170	0.02170	0.01170	0.01170	0.01170	0.01170
L20	0.02250	0.02250	0.02250	0.02260	0.01250	0.01250	0.01250	0.01260	0.02220	0.02220	0.02220	0.02220	0.01220	0.01220	0.01220	0.01220
L21	0.02320	0.02330	0.02340	0.02350	0.01320	0.01330	0.01340	0.01350	0.02270	0.02280	0.02280	0.02300	0.01270	0.01280	0.01280	0.01300
L22		0.02370	0.02390	0.02390		0.01370	0.01390	0.01390		0.02360	0.02360	0.02370		0.01360	0.01360	0.01370
L22A				0.02320				0.01320				0.02290				0.01290
L22B				0.02290				0.01290				0.02270				0.01270
U1				0.02210				0.01210				0.02180				0.01180
U2				0.02170				0.01170				0.02160				0.01160
U3				0.02060				0.01060				0.01990				0.00990
U4				0.01850				0.00850				0.01790				0.00790
U5				0.01690				0.00690				0.01620				0.00620
U6				0.01450				0.00450				0.01390				0.00390
U7				0.01260				0.00260				0.01200				0.00200
U8				0.01080				0.00080				0.01000				0.00000
U8A				0.01070				0.00070				0.01000				0.00000

Table E.28 continued

VLW 3 LOAD NUMBER	PILE COMPRESSION TT-1 & TT-2 AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP MOVEMENT AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP CREEP 1-4 MIN (inches)	OSTERBERG CELL TOP CREEP 2-4 MIN (inches)
L0				0.0000				0.0000	0.0000	0.0000
L1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0050	0.0050	0.0050	0.0000
L2	0.0001	0.0001	0.0001	0.0001	0.0051	0.0051	0.0051	0.0051	0.0000	0.0000
L3	0.0007	0.0007	0.0007	0.0007	0.0107	0.0107	0.0107	0.0057	-0.0050	-0.0050
L4	0.0016	0.0016	0.0016	0.0016	0.0067	0.0117	0.0117	0.0117	0.0000	0.0000
L5	0.0027	0.0027	0.0027	0.0027	0.0127	0.0127	0.0177	0.0177	0.0050	0.0000
L6	0.0037	0.0037	0.0037	0.0037	0.0187	0.0187	0.0187	0.0187	0.0000	0.0000
L7	0.0047	0.0047	0.0049	0.0049	0.0247	0.0247	0.0249	0.0249	0.0002	0.0000
L8	0.0058	0.0057	0.0057	0.0057	0.0258	0.0257	0.0257	0.0257	0.0000	0.0000
L9	0.0067	0.0067	0.0068	0.0068	0.0317	0.0317	0.0318	0.0368	0.0051	0.0050
L10	0.0074	0.0074	0.0075	0.0075	0.0374	0.0374	0.0375	0.0425	0.0051	0.0050
L11	0.0077	0.0077	0.0077	0.0078	0.0427	0.0427	0.0427	0.0478	0.0050	0.0050
L12	0.0084	0.0084	0.0084	0.0084	0.0484	0.0484	0.0484	0.0484	0.0000	0.0000
L13	0.0086	0.0086	0.0086	0.0086	0.0486	0.0486	0.0486	0.0486	0.0000	0.0000
L14	0.0093	0.0093	0.0095	0.0095	0.0543	0.0543	0.0545	0.0545	0.0001	0.0000
L15	0.0097	0.0097	0.0097	0.0097	0.0597	0.0597	0.0597	0.0647	0.0050	0.0050
L16	0.0103	0.0104	0.0105	0.0105	0.0703	0.0704	0.0705	0.0705	0.0000	0.0000
L17	0.0107	0.0107	0.0107	0.0107	0.0757	0.0757	0.0757	0.0757	0.0000	0.0000
L18	0.0114	0.0115	0.0114	0.0114	0.0814	0.0815	0.0814	0.0864	0.0049	0.0050
L19	0.0118	0.0118	0.0118	0.0118	0.0868	0.0918	0.0918	0.0918	0.0000	0.0000
L20	0.0124	0.0124	0.0124	0.0124	0.0974	0.1024	0.1024	0.1074	0.0050	0.0050
L21	0.0130	0.0131	0.0131	0.0133	0.1130	0.1181	0.1281	0.1433	0.0252	0.0152
L22		0.0137	0.0138	0.0138		0.1687	0.1888	0.2538	0.0851	0.0650
L22A				0.0131				0.3181		
L22B				0.0128				0.3228		
U1				0.0120				0.3269		
U2				0.0117				0.3266		
U3				0.0103				0.3202		
U4				0.0082				0.3132		
U5				0.0065				0.3015		
U6				0.0042				0.2792		
U7				0.0023				0.2573		
U8				0.0004				0.2404		
U8A				0.0003				0.2304		

Table E.28 continued

VLW 3 LOAD NUMBER	TOP OF PILE MOVEMENT - WIRELINE READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)	BSIGHT @0.5MIN. (inches)	TOP OF PILE MOVEMENT - SURVEY LEVEL READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)
L0				0.000				0.000	0.402				4.020				0.000
L1	0.000	0.000	0.005	0.005	0.000	0.000	0.005	0.005		4.020	4.020	4.020	4.020	0.000	0.000	0.000	0.000
L2	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	4.040	4.020	4.020	4.020	4.020	0.000	0.000	0.000	0.000
L3	0.010	0.010	0.010	0.005	0.010	0.010	0.010	0.005		4.020	4.020	4.020	4.020	0.000	0.000	0.000	0.000
L4	0.005	0.010	0.010	0.010	0.005	0.010	0.010	0.010	4.040	4.020	4.020	4.015	4.015	0.000	0.000	0.005	0.005
L5	0.010	0.010	0.015	0.015	0.010	0.010	0.015	0.015		4.010	4.010	4.005	4.005	0.010	0.010	0.015	0.015
L6	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	4.040	4.000	4.000	4.000	4.000	0.020	0.020	0.020	0.020
L7	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020		4.000	4.000	4.000	4.000	0.020	0.020	0.020	0.020
L8	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	4.040	4.000	4.000	4.000	4.000	0.020	0.020	0.020	0.020
L9	0.025	0.025	0.025	0.030	0.025	0.025	0.025	0.030		3.990	3.990	3.990	3.990	0.030	0.030	0.030	0.030
L10	0.030	0.030	0.030	0.035	0.030	0.030	0.030	0.035	4.040	3.990	3.990	3.990	3.990	0.030	0.030	0.030	0.030
L11	0.035	0.035	0.035	0.040	0.035	0.035	0.035	0.040		3.985	3.985	3.985	3.985	0.035	0.035	0.035	0.035
L12	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	4.040	3.980	3.980	3.980	3.980	0.040	0.040	0.040	0.040
L13	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040		3.980	3.980	3.980	3.980	0.040	0.040	0.040	0.040
L14	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	4.040	3.975	3.975	3.975	3.975	0.045	0.045	0.045	0.045
L15	0.050	0.050	0.050	0.055	0.050	0.050	0.050	0.055		3.970	3.970	3.970	3.970	0.050	0.050	0.050	0.050
L16	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	4.040	3.965	3.965	3.965	3.965	0.055	0.055	0.055	0.055
L17	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.065		3.960	3.960	3.960	3.960	0.060	0.060	0.060	0.060
L18	0.070	0.070	0.070	0.075	0.070	0.070	0.070	0.075	4.040	3.950	3.950	3.950	3.950	0.070	0.070	0.070	0.070
L19	0.075	0.080	0.080	0.080	0.075	0.080	0.080	0.080		3.940	3.940	3.935	3.935	0.080	0.080	0.085	0.085
L20	0.085	0.090	0.090	0.095	0.085	0.090	0.090	0.095	4.040	3.930	3.930	3.925	3.920	0.090	0.090	0.095	0.100
L21	0.100	0.105	0.115	0.130	0.100	0.105	0.115	0.130		3.910	3.905	3.900	3.890	0.110	0.115	0.120	0.130
L22		0.155	0.175	0.240		0.155	0.175	0.240	4.040		3.870	3.850	3.790		0.150	0.170	0.230
L22A				0.305				0.305					3.710				0.310
L22B				0.310				0.310	4.040				3.705				0.315
U1				0.315				0.315					3.700				0.320
U2				0.315				0.315	4.040				3.700				0.320
U3				0.310				0.310					3.705				0.315
U4				0.305				0.305	4.040				3.710				0.310
U5				0.295				0.295					3.720				0.300
U6				0.275				0.275	4.040				3.740				0.280
U7				0.255				0.255					3.760				0.260
U8				0.240				0.240	4.040				3.790				0.230
U8A				0.230				0.230					3.790				0.230

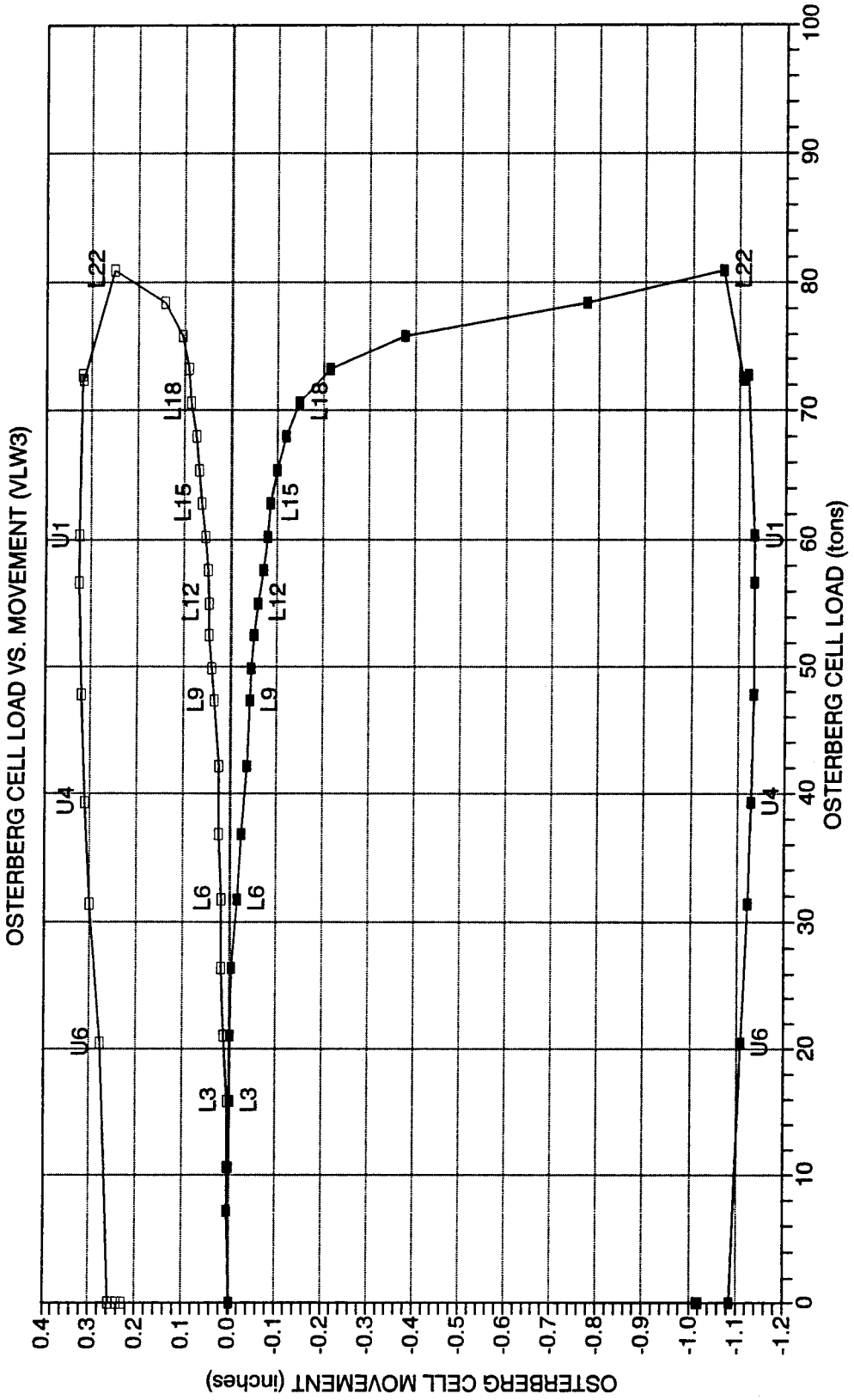


Figure E.74 Load Test 3 Movement: Vilano West

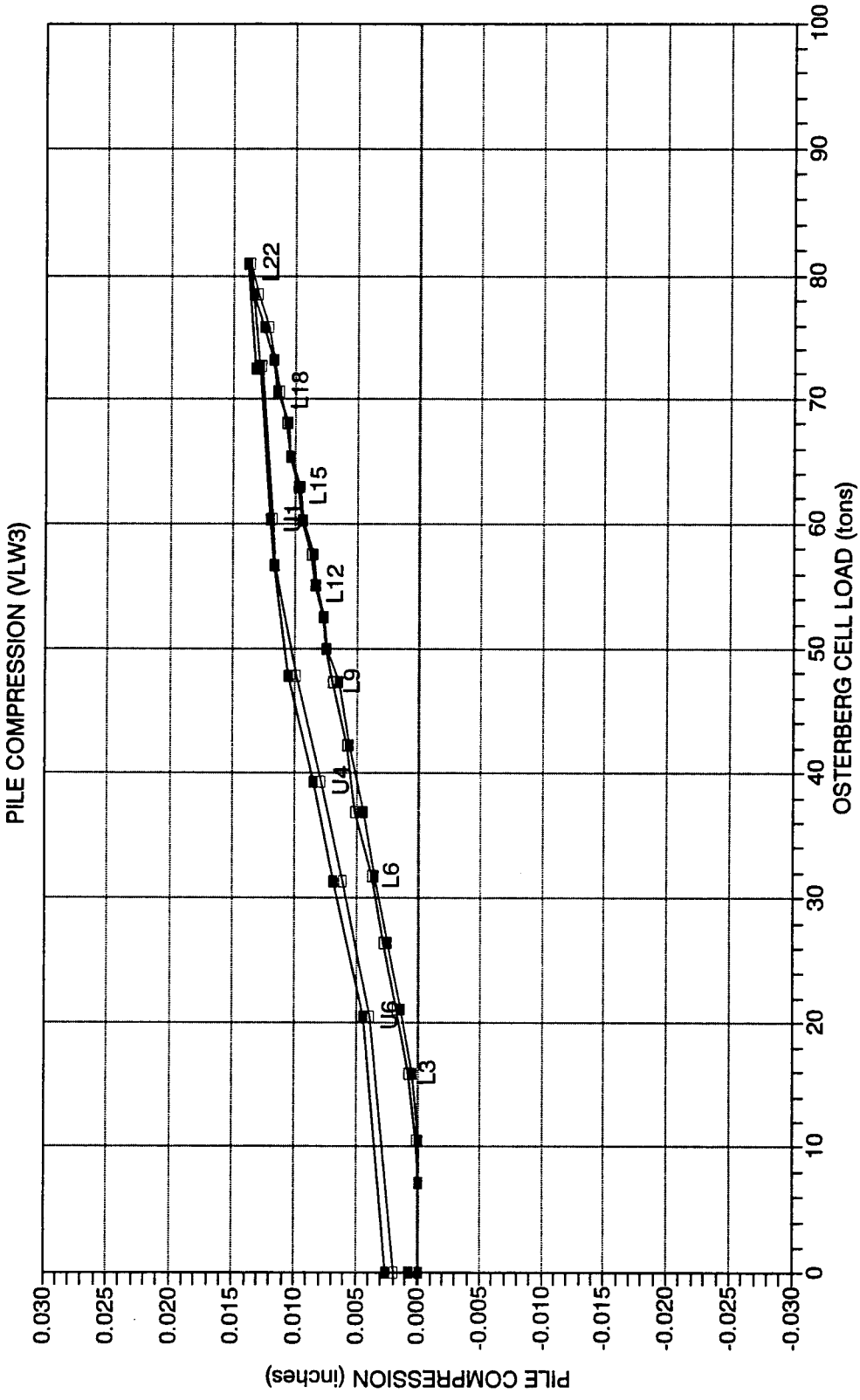


Figure E.75 Load Test 3 Compression: Vilano West

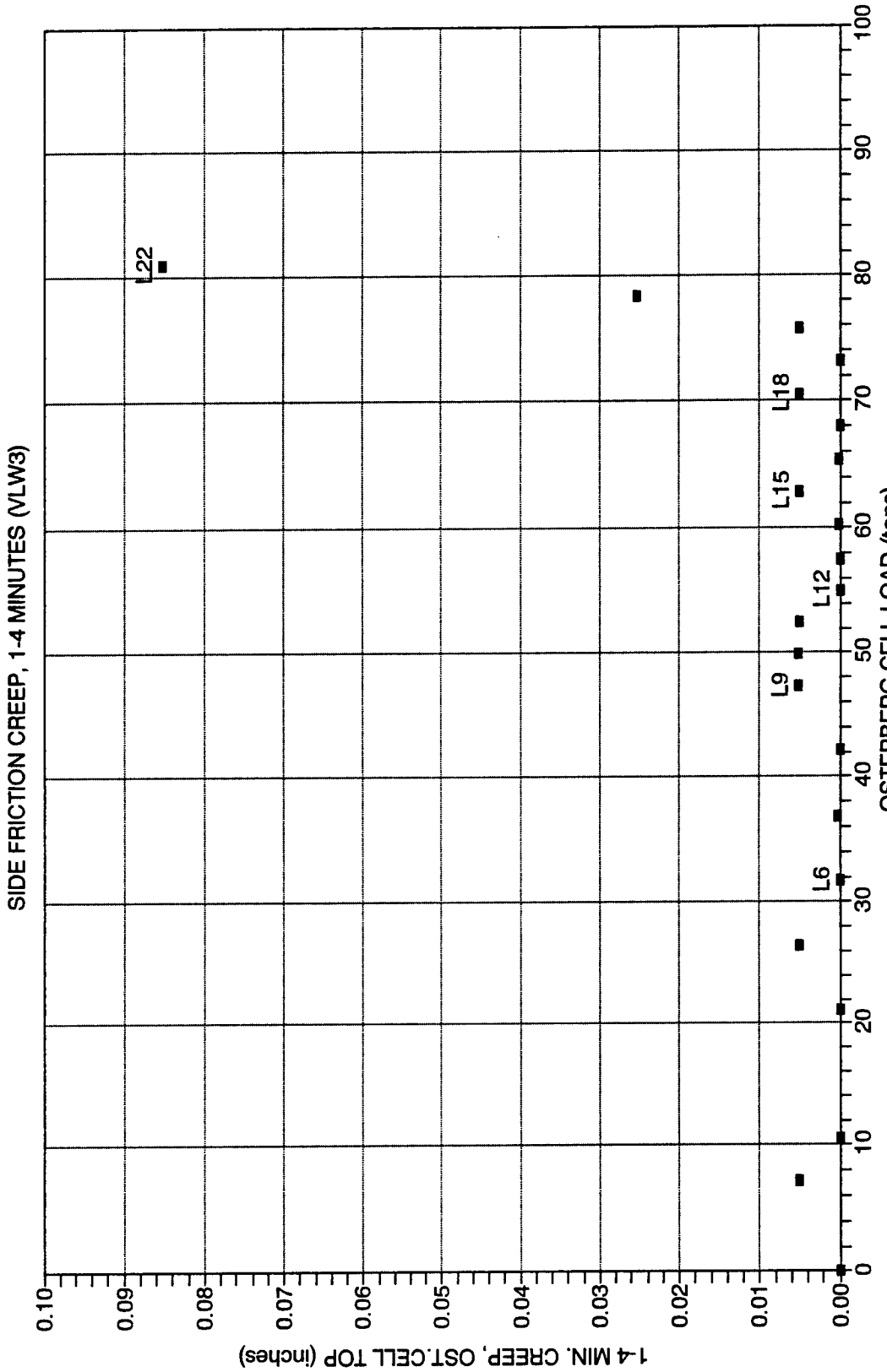


Figure E.76 Load Test 3 Creep: Vilano West

Table E.29 Data for Load Test 4: Vilano West

VLW 4 LOAD NUMBER	TIME INCR. (min)	OSTERBERG CELL LOAD: MEASURED PRESSURE (psi)	CORRECTED PRESSURE (psi)	VW TRANSDUCER READING (tons)	PRESSURE (psi)	EXTENSION @4 MIN. (inches)	LOAD (tons)	TOP LOAD @ 4 MIN.: MEASURED PRESSURE (psi)	LOAD CELL READING (MV)	LOAD (tons)	TOTAL LOAD (tons)
2L0		0	0	9127	0	2.796	0.0	0	0.02	0.0	0.0
2L1	4	0	0	9127	0	2.792	0.0	1150	1.19	7.1	7.1
2L2	4	0	0	9127	0	2.791	0.0	1550	1.63	9.7	9.7
2L3	4	0	0	9128	0	2.791	0.0	2700	2.91	17.3	17.3
2L4	4	0	0	9127	0	2.789	0.0	3350	3.66	21.8	21.8
2L5	4	0	0	9127	0	2.790	0.0	4100	4.50	26.8	26.8
2L6	4	250	231	9041	275	2.799	9.4	4100	4.50	26.8	36.2
2L7	4	300	281	9026	321	2.803	10.9	4100	4.50	26.8	37.7
2L8	4	500	478	8971	491	2.816	16.2	4150	4.50	26.8	43.0
2L9	4	800	775	8860	830	2.844	26.8	4150	4.50	26.8	53.6
2L10	4	1200	1170	8749	1165	2.876	37.2	4150	4.50	26.8	64.0
2L11	4	1500	1466	8638	1498	2.918	47.6	4150	4.50	26.8	74.4
2L12	4	1900	1862	8527	1829	2.975	58.0	4150	4.50	26.8	84.8
2L13	4	2200	2158	8417	2155	3.162	68.2	4150	4.50	26.8	95.0
2L13A	2	2100	2059	8454	2046	3.435	64.9	4200	4.50	26.8	91.7
2L13B	2.5	1850	1812	8550	1760	3.564	56.0	3575	4.51	26.9	82.9
2U1	1.5	1800	1763	8550	1760	3.574	56.0	0	4.50	26.8	82.8
2U2	4	1800	1763	8550	1760	3.583	56.0	0	3.99	23.8	79.8
2U3	4	1800	1763	8550	1760	3.590	56.0	0	1.72	10.2	66.3
2U4	4	1800	1763	8549	1763	3.593	56.1	0	0.02	0.0	56.1
2U5	4	1100	1071	8772	1096	3.563	35.3	0	0.01	0.0	35.3
2U6	4	875	849	8848	866	3.544	28.1	0	0.01	0.0	28.1
2U7	2	575	552	8949	559	3.513	18.5	0	0.00	0.0	18.5
2U8	0.5	275	256	9048	253	3.469	8.9	0	-0.03	0.0	8.9
2U9	1.5	0	0	9128	0	3.409	0.0	0	-0.03	0.0	0.0
2U9A	3	0	0	9128	0	3.408	0.0	0	-0.03	0.0	0.0

NOTE: INITIAL LOAD CYCLE (SEATING LOAD ONLY = 2L1) WAS ABORTED TO ADJUST CRANE CONNECTION TO PILE

Table E.29 continued

VLW 4 LOAD NUMBER	OSTERBERG CELL BOTTOM TELLTALE TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)	POISSON EFFECT ADJ. (inches)	OSTERBERG CELL BOTTOM MOVEMENT TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)
2L0				0.3000	0.0000				0.0000
2L1	0.2990	0.2990	0.2990	0.2990	0.0000	0.0110	0.0120	0.0130	0.0130
2L2	0.2990	0.2990	0.2990	0.2990	0.0000	0.0150	0.0150	0.0150	0.0150
2L3	0.3010	0.3010	0.3020	0.3020	0.0000	0.0140	0.0190	0.0180	0.0180
2L4	0.3030	0.3030	0.3030	0.3030	0.0000	0.0170	0.0170	0.0190	0.0190
2L5	0.3060	0.3060	0.3060	0.3060	0.0000	0.0190	0.0190	0.0190	0.0190
2L6	0.3110	0.3110	0.3110	0.3110	0.0044	0.0096	0.0146	0.0146	0.0146
2L7	0.3120	0.3130	0.3130	0.3140	0.0052	0.0128	0.0118	0.0118	0.0108
2L8	0.3210	0.3220	0.3230	0.3230	0.0079	0.0061	0.0051	0.0041	0.0041
2L9	0.3410	0.3430	0.3430	0.3440	0.0134	-0.0144	-0.0164	-0.0164	-0.0174
2L10	0.3650	0.3660	0.3670	0.3690	0.0188	-0.0388	-0.0398	-0.0408	-0.0428
2L11	0.3950	0.3970	0.4000	0.4040	0.0242	-0.0492	-0.0502	-0.0532	-0.0532
2L12	0.4380	0.4430	0.4480	0.4550	0.0296	-0.0726	-0.0776	-0.0776	-0.0796
2L13	0.5100	0.5250	0.5600	0.6350	0.0349	-0.0999	-0.1049	-0.1099	-0.1149
2L13A				0.9100	0.0331				-0.0981
2L13B				1.0450	0.0285				-0.0985
2U1				1.0550	0.0285				-0.1035
2U2				1.0630	0.0285				-0.1065
2U3				1.0630	0.0285				-0.1165
2U4				1.0610	0.0285				-0.1195
2U5				1.0450	0.0177				-0.1077
2U6				1.0310	0.0140				-0.1000
2U7				1.0070	0.0090				-0.0860
2U8				0.9700	0.0041				-0.0591
2U9				0.9160	0.0000				-0.0210
2U9A				0.9150	0.0000				-0.0200

Table E.29 continued

VLW 4 LOAD NUMBER	OSTERBERG CELL TOP TELLTALE TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	PILE COMPRESSION TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	OSTERBERG CELL TOP TELLTALE TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)	PILE COMPRESSION TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)
2L0				0.00020				0.00000				0.00050				0.00000
2L1	-0.00230	-0.00230	-0.00230	-0.00230	-0.00250	-0.00250	-0.00250	-0.00250	-0.00240	-0.00240	-0.00240	-0.00240	-0.00290	-0.00290	-0.00290	-0.00290
2L2	-0.00330	-0.00330	-0.00330	-0.00330	-0.00350	-0.00350	-0.00350	-0.00350	-0.00330	-0.00330	-0.00330	-0.00330	-0.00380	-0.00380	-0.00380	-0.00380
2L3	-0.00700	-0.00700	-0.00700	-0.00710	-0.00720	-0.00720	-0.00720	-0.00730	-0.00680	-0.00680	-0.00680	-0.00680	-0.00730	-0.00730	-0.00730	-0.00730
2L4	-0.00910	-0.00910	-0.00920	-0.00920	-0.00930	-0.00930	-0.00940	-0.00940	-0.00950	-0.00950	-0.00950	-0.00950	-0.01000	-0.01000	-0.01000	-0.01000
2L5	-0.01140	-0.01140	-0.01140	-0.01140	-0.01160	-0.01160	-0.01160	-0.01160	-0.01240	-0.01240	-0.01240	-0.01240	-0.01290	-0.01290	-0.01290	-0.01290
2L6	-0.01140	-0.01140	-0.01140	-0.01140	-0.01160	-0.01160	-0.01160	-0.01160	-0.01190	-0.01190	-0.01190	-0.01190	-0.01240	-0.01240	-0.01240	-0.01240
2L7	-0.01140	-0.01140	-0.01140	-0.01140	-0.01160	-0.01160	-0.01160	-0.01160	-0.01180	-0.01180	-0.01180	-0.01170	-0.01230	-0.01230	-0.01230	-0.01220
2L8	-0.01100	-0.01100	-0.01100	-0.01100	-0.01120	-0.01120	-0.01120	-0.01120	-0.01080	-0.01080	-0.01080	-0.01080	-0.01130	-0.01130	-0.01130	-0.01130
2L9	-0.00950	-0.00950	-0.00950	-0.00950	-0.00970	-0.00970	-0.00970	-0.00970	-0.00930	-0.00930	-0.00930	-0.00930	-0.00980	-0.00980	-0.00980	-0.00980
2L10	-0.00810	-0.00810	-0.00810	-0.00810	-0.00830	-0.00830	-0.00830	-0.00830	-0.00750	-0.00750	-0.00750	-0.00750	-0.00800	-0.00800	-0.00800	-0.00800
2L11	-0.00660	-0.00660	-0.00660	-0.00660	-0.00680	-0.00680	-0.00680	-0.00680	-0.00600	-0.00600	-0.00600	-0.00600	-0.00650	-0.00650	-0.00650	-0.00650
2L12	-0.00520	-0.00520	-0.00520	-0.00520	-0.00540	-0.00540	-0.00540	-0.00540	-0.00450	-0.00450	-0.00450	-0.00450	-0.00500	-0.00500	-0.00500	-0.00500
2L13	-0.00400	-0.00400	-0.00400	-0.00400	-0.00420	-0.00420	-0.00420	-0.00420	-0.00360	-0.00360	-0.00360	-0.00360	-0.00410	-0.00410	-0.00410	-0.00410
2L13A				-0.00400				-0.00420				-0.00360				-0.00410
2L13B				-0.00500				-0.00520				-0.00510				-0.00560
2U1				-0.00500				-0.00520				-0.00510				-0.00560
2U2				-0.00360				-0.00380				-0.00450				-0.00500
2U3				0.00230				0.00210				0.00250				0.00200
2U4				0.00780				0.00760				0.00810				0.00760
2U5				0.00490				0.00470				0.00450				0.00400
2U6				0.00350				0.00330				0.00290				0.00240
2U7				0.00140				0.00120				0.00060				0.00010
2U8				-0.00060				-0.00080				-0.00140				-0.00190
2U9				-0.00220				-0.00240				-0.00290				-0.00340
2U9A				-0.00220				-0.00240				-0.00290				-0.00340

Table E.29 continued

VLW 4 LOAD NUMBER	PILE COMPRESSION AVG. TT-1 & TT-2 @0.5MIN. (inches)	@1MIN. (inches)	@2MIN. (inches)	@4 MIN. (inches)	TOP OF OSTERBERG CELL MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4 MIN. (inches)	OSTERBERG CELL TOP CREEP 1-4 MIN (inches)	CREEP 2-4 MIN (inches)
2L0				0.0000				0.0000	0.0000	0.0000
2L1	-0.0027	-0.0027	-0.0027	-0.0027	0.0073	0.0083	0.0093	0.0093	0.0010	0.0000
2L2	-0.0037	-0.0037	-0.0037	-0.0037	0.0104	0.0104	0.0104	0.0104	0.0000	0.0000
2L3	-0.0073	-0.0073	-0.0073	-0.0073	0.0078	0.0128	0.0128	0.0127	-0.0001	-0.0001
2L4	-0.0097	-0.0097	-0.0097	-0.0097	0.0104	0.0104	0.0123	0.0123	0.0019	0.0000
2L5	-0.0123	-0.0123	-0.0123	-0.0123	0.0128	0.0128	0.0128	0.0128	0.0000	0.0000
2L6	-0.0120	-0.0120	-0.0120	-0.0120	0.0130	0.0180	0.0180	0.0180	0.0000	0.0000
2L7	-0.0120	-0.0120	-0.0120	-0.0119	0.0181	0.0181	0.0181	0.0181	0.0001	0.0001
2L8	-0.0113	-0.0113	-0.0113	-0.0113	0.0238	0.0238	0.0238	0.0238	0.0000	0.0000
2L9	-0.0098	-0.0098	-0.0098	-0.0098	0.0303	0.0303	0.0303	0.0303	0.0000	0.0000
2L10	-0.0082	-0.0082	-0.0082	-0.0082	0.0368	0.0368	0.0368	0.0368	0.0000	0.0000
2L11	-0.0067	-0.0067	-0.0067	-0.0067	0.0634	0.0644	0.0644	0.0684	0.0040	0.0040
2L12	-0.0052	-0.0052	-0.0052	-0.0052	0.0898	0.0898	0.0948	0.0998	0.0100	0.0050
2L13	-0.0042	-0.0042	-0.0042	-0.0042	0.1409	0.1509	0.1809	0.2509	0.1000	0.0700
2L13A				-0.0042				0.5409		
2L13B				-0.0054				0.6696		
2U1				-0.0054				0.6746		
2U2				-0.0044				0.6806		
2U3				0.0021				0.6771		
2U4				0.0076				0.6776		
2U5				0.0044				0.6594		
2U6				0.0029				0.6479		
2U7				0.0007				0.6307		
2U8				-0.0014				0.6137		
2U9				-0.0029				0.5921		
2U9A				-0.0029				0.5921		

Table E.29 continued

VLW 4 LOAD NUMBER	TOP OF PILE MOVEMENT - WIRELINE READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)	BSIGHT @0.5MIN. (inches)	TOP OF PILE MOVEMENT - SURVEY LEVEL READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)
2L0				4.155				0.000					1.096				0.000
2L1	4.145	4.144	4.143	4.143	0.010	0.011	0.012	0.012	2.958	1.096	1.096	1.098	1.099	0.000	0.000	0.002	0.003
2L2	4.141	4.141	4.141	4.141	0.014	0.014	0.014	0.014		1.100	1.100	1.100	1.100	0.004	0.004	0.004	0.004
2L3	4.140	4.135	4.135	4.135	0.015	0.020	0.020	0.020	2.958	1.105	1.105	1.105	1.105	0.009	0.009	0.009	0.009
2L4	4.135	4.135	4.133	4.133	0.020	0.020	0.022	0.022		1.116	1.118	1.119	1.120	0.020	0.022	0.023	0.024
2L5	4.130	4.130	4.130	4.130	0.025	0.025	0.025	0.025	2.958	1.120	1.120	1.120	1.120	0.024	0.024	0.024	0.024
2L6	4.130	4.125	4.125	4.125	0.025	0.030	0.030	0.030		1.122	1.122	1.122	1.122	0.026	0.026	0.026	0.026
2L7	4.125	4.125	4.125	4.125	0.030	0.030	0.030	0.030	2.958	1.122	1.122	1.123	1.123	0.026	0.026	0.027	0.027
2L8	4.120	4.120	4.120	4.120	0.035	0.035	0.035	0.035		1.123	1.123	1.123	1.123	0.027	0.027	0.027	0.027
2L9	4.115	4.115	4.115	4.115	0.040	0.040	0.040	0.040	2.958	1.130	1.132	1.133	1.135	0.034	0.036	0.037	0.039
2L10	4.110	4.110	4.110	4.110	0.045	0.045	0.045	0.045		1.140	1.141	1.142	1.143	0.044	0.045	0.046	0.047
2L11	4.085	4.084	4.084	4.080	0.070	0.071	0.071	0.075	2.958	1.159	1.160	1.161	1.162	0.063	0.064	0.065	0.066
2L12	4.060	4.060	4.055	4.050	0.095	0.095	0.100	0.105		1.182	1.183	1.190	1.198	0.086	0.087	0.094	0.102
2L13	4.010	4.000	3.970	3.900	0.145	0.155	0.185	0.255	2.958	1.239	1.241	1.280	1.343	0.143	0.145	0.184	0.247
2L13A				3.610				0.545					1.640				0.544
2L13B				3.480				0.675	2.958				1.762				0.666
2U1				3.475				0.680					1.778				0.682
2U2				3.470				0.685					1.780				0.684
2U3				3.480				0.675	2.958				1.768				0.672
2U4				3.485				0.670					1.760				0.664
2U5				3.500				0.655	2.958				1.745				0.649
2U6				3.510				0.645					1.738				0.642
2U7				3.525				0.630	2.958				1.721				0.625
2U8				3.540				0.615					1.700				0.604
2U9				3.560				0.595					1.680				0.584
2U9A				3.560				0.595					0.000				-1.096

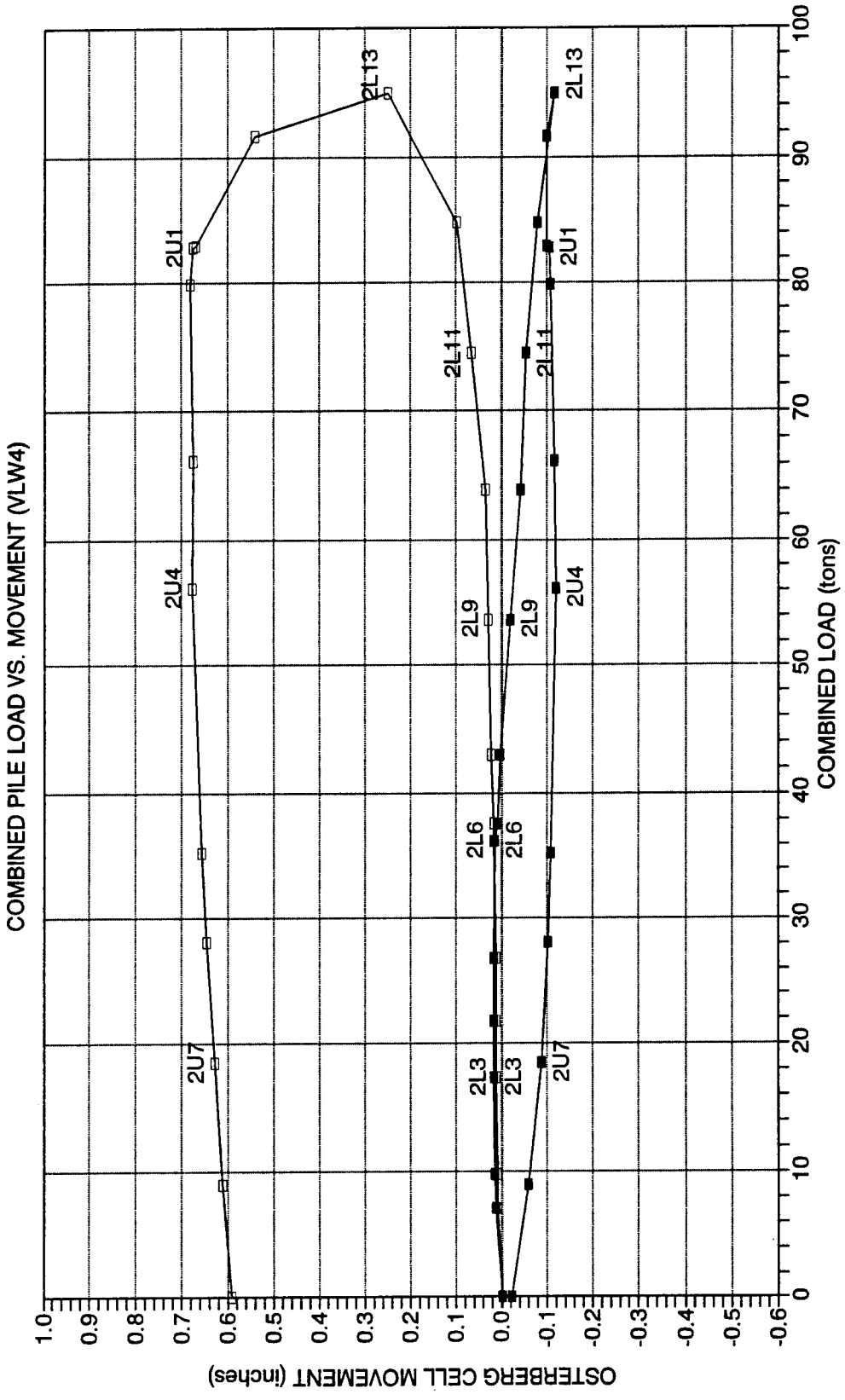


Figure E.77 Load Test 4 Movement: Vilano West

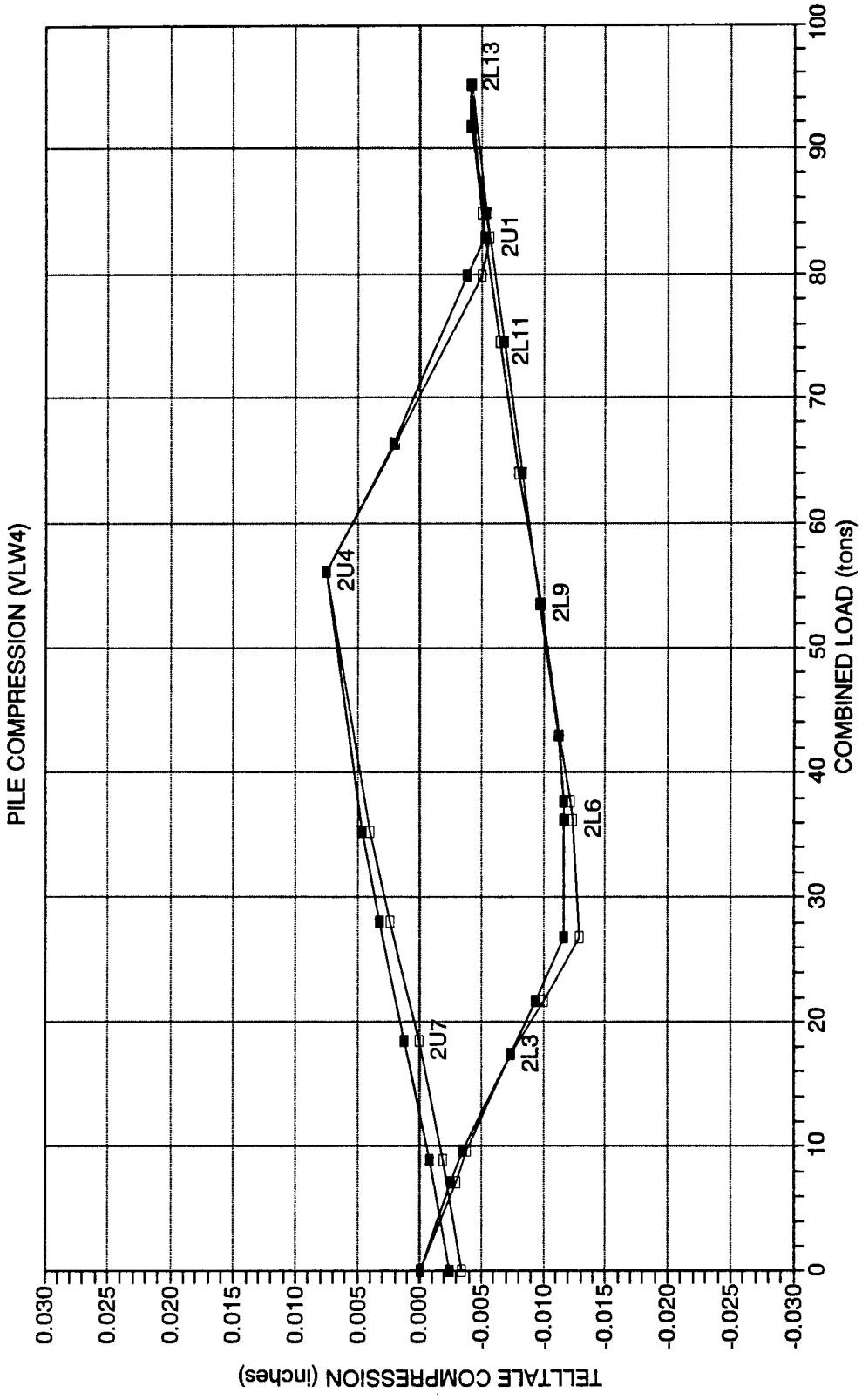


Figure E.78 Load Test 4 Compression: Vilano West

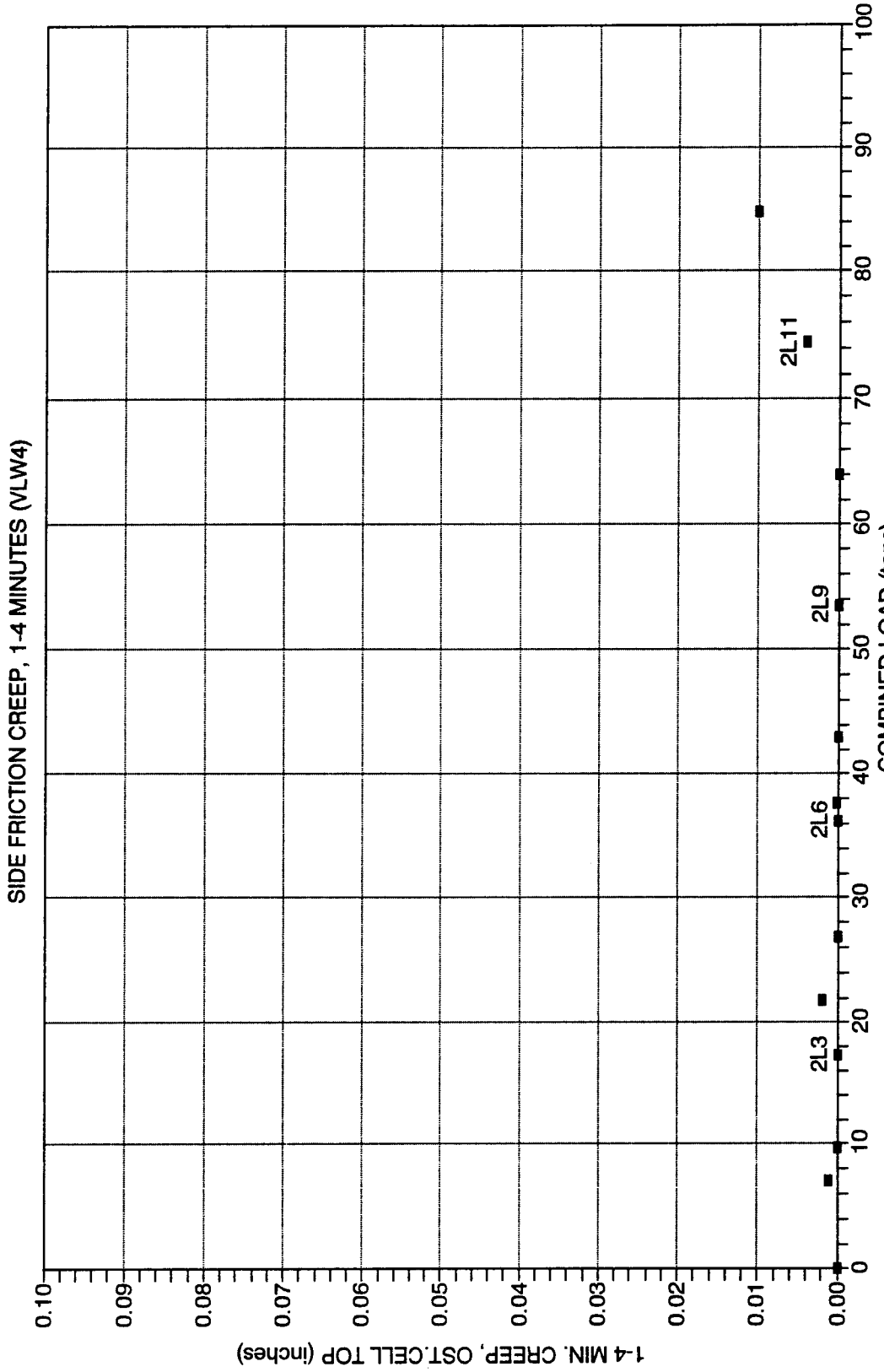


Figure E.79 Load Test 4 Creep: Vilano West

Table E.30 Data for Load Test 1: Seabreeze

SBZ 1 LOAD NUMBER	TIME INCR. (min)	OSTERBERG CELL LOAD: MEASURED PRESSURE (psi)	CORRECTED PRESSURE (psi)	VW TRANSDUCER READING (tons)	EXTENSION PRESSURE (psi)	@4 MIN. (inches)	LOAD (tons)	OSTERBERG CELL BOTTOM TELLTALE: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)	POISSON EFFECT ADJ. (inches)	OSTERBERG CELL BOTTOM MOVEMENT: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)
L0		300	0	9125	0	0.000	0.0				0.3000	0.0000				0.0000
L1	4	300	300	9027	312	0.008	9.8	0.3010	0.3010	0.3010	0.3010	0.0067	-0.0077	-0.0077	-0.0077	-0.0077
L2	4	650	650	8924	629	0.007	19.8	0.2930	0.2930	0.2930	0.2930	0.0135	-0.0065	-0.0065	-0.0065	-0.0065
L3	4	975	975	8819	948	0.008	29.8	0.2870	0.2870	0.2870	0.2870	0.0204	-0.0074	-0.0074	-0.0074	-0.0074
L4	4	1300	1300	8713	1267	0.008	39.9	0.2840	0.2810	0.2810	0.2810	0.0272	-0.0112	-0.0082	-0.0082	-0.0082
L5	4	1600	1600	8607	1585	0.009	49.8	0.2770	0.2770	0.2770	0.2750	0.0341	-0.0111	-0.0111	-0.0111	-0.0091
L6	4	1900	1900	8500	1903	0.013	59.9	0.2720	0.2720	0.2720	0.2720	0.0409	-0.0129	-0.0129	-0.0129	-0.0129
L7	4	2225	2225	8393	2221	0.013	69.8	0.2650	0.2650	0.2650	0.2650	0.0478	-0.0128	-0.0128	-0.0128	-0.0128
L8	4	2550	2550	8286	2537	0.017	79.8	0.2620	0.2610	0.2610	0.2610	0.0546	-0.0166	-0.0156	-0.0156	-0.0156
L9	4	2850	2850	8178	2855	0.023	89.8	0.2590	0.2590	0.2590	0.2590	0.0614	-0.0204	-0.0204	-0.0204	-0.0204
L10	4	3175	3175	8069	3176	0.030	99.9	0.2580	0.2580	0.2580	0.2580	0.0683	-0.0263	-0.0263	-0.0263	-0.0263
L11	4	3500	3500	7961	3492	0.038	109.8	0.2580	0.2580	0.2580	0.2580	0.0751	-0.0331	-0.0331	-0.0331	-0.0281
L12	4	3800	3800	7852	3811	0.047	119.8	0.2580	0.2580	0.2580	0.2580	0.0819	-0.0349	-0.0349	-0.0349	-0.0299
L13	4	4100	4100	7743	4129	0.056	129.8	0.2580	0.2580	0.2580	0.2580	0.0888	-0.0368	-0.0318	-0.0318	-0.0268
L14	4	4400	4400	7634	4447	0.066	139.8	0.2580	0.2580	0.2580	0.2590	0.0956	-0.0286	-0.0286	-0.0236	-0.0246
L15	4	4750	4750	7525	4764	0.090	149.8	0.2630	0.2650	0.2680	0.2750	0.1024	-0.0354	-0.0324	-0.0304	-0.0324
L16	4	5050	5050	7415	5083	0.132	159.8	0.2890	0.2930	0.2990	0.3080	0.1093	-0.0483	-0.0473	-0.0433	-0.0473
L17	4	5375	5375	7306	5399	0.219	169.8	0.3370	0.3450	0.3610	0.3860	0.1161	-0.0581	-0.0511	-0.0571	-0.0571
L18	4	5500	5500	7251	5558	0.435	174.7	0.4170	0.4550	0.5140	0.5970	0.1195	-0.0615	-0.0645	-0.0635	-0.0665
L19	1	M	M	7256	5544	0.657	174.2				0.8180	0.1192				-0.0672
U1	3	5300	5300	7325	5344	0.697	167.9				0.8630	0.1149				-0.0629
U2	3	M	M	8080	3143	0.667	98.7				0.8910	0.0676				-0.0486
U3	3	M	M	8259	2617	0.653	82.2				0.8920	0.0563				-0.0383
U4	3	M	M	8770	1096	0.609	34.3				0.8930	0.0236				-0.0166
U5	3	300	300	9124	0	0.536	0.0				0.8520	0.0000				0.0380
U5A	3	300	300	9124	0	0.534	0.0				0.8500	0.0000				0.0400

Table E.30 continued

SBZ 1 LOAD NUMBER	OSTERBERG CELL TOP TELLTALE TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	PILE COMPRESSION TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	OSTERBERG CELL TOP TELLTALE TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)	PILE COMPRESSION TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)
L0				0.02070				0.00000				0.02110				0.00000
L1	0.02080	0.02080	0.02080	0.02080	0.00010	0.00010	0.00010	0.00010	0.02110	0.02110	0.02110	0.02110	0.00000	0.00000	0.00000	0.00000
L2	0.02090	0.02090	0.02090	0.02090	0.00020	0.00020	0.00020	0.00020	0.02110	0.02110	0.02110	0.02110	0.00000	0.00000	0.00000	0.00000
L3	0.02110	0.02110	0.02110	0.02110	0.00040	0.00040	0.00040	0.00040	0.02110	0.02110	0.02110	0.02110	0.00000	0.00000	0.00000	0.00000
L4	0.02120	0.02120	0.02120	0.02120	0.00050	0.00050	0.00050	0.00050	0.02110	0.02110	0.02110	0.02110	0.00000	0.00000	0.00000	0.00000
L5	0.02130	0.02130	0.02130	0.02130	0.00060	0.00060	0.00060	0.00060	0.02120	0.02120	0.02120	0.02120	0.00010	0.00010	0.00010	0.00010
L6	0.02140	0.02140	0.02140	0.02150	0.00070	0.00070	0.00070	0.00080	0.02130	0.02130	0.02130	0.02130	0.00020	0.00020	0.00020	0.00020
L7	0.02160	0.02160	0.02160	0.02160	0.00090	0.00090	0.00090	0.00090	0.02150	0.02150	0.02150	0.02150	0.00040	0.00040	0.00040	0.00040
L8	0.02190	0.02190	0.02190	0.02200	0.00120	0.00120	0.00120	0.00130	0.02200	0.02200	0.02200	0.02200	0.00090	0.00090	0.00090	0.00090
L9	0.02300	0.02300	0.02300	0.02310	0.00230	0.00230	0.00230	0.00240	0.02300	0.02300	0.02300	0.02310	0.00190	0.00190	0.00190	0.00200
L10	0.02460	0.02460	0.02470	0.02480	0.00390	0.00390	0.00400	0.00410	0.02440	0.02440	0.02460	0.02460	0.00330	0.00330	0.00350	0.00350
L11	0.02650	0.02650	0.02650	0.02650	0.00580	0.00580	0.00580	0.00580	0.02610	0.02610	0.02610	0.02610	0.00500	0.00500	0.00500	0.00500
L12	0.02820	0.02820	0.02820	0.02820	0.00750	0.00750	0.00750	0.00750	0.02770	0.02770	0.02770	0.02780	0.00660	0.00660	0.00660	0.00670
L13	0.03020	0.03020	0.03020	0.03020	0.00950	0.00950	0.00950	0.00950	0.02960	0.02960	0.02960	0.02960	0.00850	0.00850	0.00850	0.00850
L14	0.03200	0.03230	0.03240	0.03220	0.01130	0.01160	0.01170	0.01150	0.03150	0.03150	0.03150	0.03150	0.01040	0.01040	0.01040	0.01040
L15	0.03420	0.03430	0.03430	0.03430	0.01350	0.01360	0.01360	0.01360	0.03310	0.03310	0.03310	0.03310	0.01200	0.01200	0.01200	0.01200
L16	0.03630	0.03630	0.03630	0.03630	0.01560	0.01560	0.01560	0.01560	0.03480	0.03480	0.03480	0.03480	0.01370	0.01370	0.01370	0.01370
L17	0.03820	0.03840	0.03850	0.03870	0.01750	0.01770	0.01780	0.01800	0.03650	0.03660	0.03660	0.03690	0.01540	0.01550	0.01550	0.01580
L18	0.03960	0.04020	0.04050	0.04070	0.01890	0.01950	0.01980	0.02000	0.03770	0.03800	0.03820	0.03850	0.01660	0.01690	0.01710	0.01740
L19				0.04150				0.02080				0.03930				0.01820
U1				0.04140				0.02070				0.03900				0.01790
U2				0.03060				0.00990				0.02870				0.00760
U3				0.02640				0.00570				0.02480				0.00370
U4				0.01320				-0.00750				0.01260				-0.00850
U5				0.00380				-0.01690				0.00510				-0.01600
U5A				0.00380				-0.01690				0.00500				-0.01610

Table E.30 continued

SBZ 1 LOAD NUMBER	PILE COMPRESSION TT-1 & TT-2 AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP MOVEMENT AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP CREEP 1-4 MIN (inches)	CREEP 2-4 MIN (inches)
L0				0.0000				0.0000	0.0000	0.0000
L1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
L2	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0000	0.0000
L3	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0000	0.0000
L4	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0000	0.0000
L5	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0000	0.0000
L6	0.0004	0.0004	0.0004	0.0005	0.0004	0.0004	0.0004	0.0005	0.0000	0.0000
L7	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0000	0.0000
L8	0.0010	0.0010	0.0010	0.0011	0.0010	0.0010	0.0010	0.0011	0.0000	0.0000
L9	0.0021	0.0021	0.0021	0.0022	0.0021	0.0021	0.0021	0.0022	0.0001	0.0001
L10	0.0036	0.0036	0.0038	0.0038	0.0036	0.0036	0.0038	0.0038	0.0002	0.0000
L11	0.0054	0.0054	0.0054	0.0054	0.0054	0.0054	0.0054	0.0104	0.0050	0.0050
L12	0.0070	0.0070	0.0070	0.0071	0.0121	0.0121	0.0121	0.0171	0.0051	0.0051
L13	0.0090	0.0090	0.0090	0.0090	0.0190	0.0240	0.0240	0.0290	0.0050	0.0050
L14	0.0109	0.0110	0.0111	0.0110	0.0359	0.0360	0.0411	0.0410	0.0050	-0.0001
L15	0.0128	0.0128	0.0128	0.0128	0.0428	0.0478	0.0528	0.0578	0.0100	0.0050
L16	0.0146	0.0146	0.0146	0.0146	0.0647	0.0696	0.0796	0.0847	0.0150	0.0050
L17	0.0165	0.0166	0.0167	0.0169	0.1114	0.1266	0.1367	0.1619	0.0353	0.0252
L18	0.0178	0.0182	0.0185	0.0187	0.1928	0.2282	0.2885	0.3687	0.1405	0.0803
L19				0.0195				0.5895		
U1				0.0193				0.6343		
U2				0.0088				0.6188		
U3				0.0047				0.6147		
U4				-0.0080				0.5920		
U5				-0.0165				0.5736		
U5A				-0.0165				0.5735		

Table E.30 continued

SBZ 1 LOAD NUMBER	TOP OF PILE MOVEMENT - WIRELINE READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)	BSIGHT @0.5MIN. (inches)	TOP OF PILE MOVEMENT - SURVEY LEVEL READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)
L0				0.970				0.000	3.000				1.000				0.000
L1	0.970	0.970	0.970	0.970	0.000	0.000	0.000	0.000		1.000	1.000	1.000	1.000	0.000	0.000	0.000	0.000
L2	0.970	0.970	0.970	0.970	0.000	0.000	0.000	0.000	2.990	1.000	1.000	1.000	1.000	0.000	0.000	0.000	0.000
L3	0.970	0.970	0.970	0.970	0.000	0.000	0.000	0.000		1.000	1.000	1.000	1.000	0.000	0.000	0.000	0.000
L4	0.970	0.970	0.970	0.970	0.000	0.000	0.000	0.000	2.985	1.000	1.000	1.000	1.000	0.000	0.000	0.000	0.000
L5	0.970	0.970	0.970	0.970	0.000	0.000	0.000	0.000		1.000	1.000	1.000	1.000	0.000	0.000	0.000	0.000
L6	0.970	0.970	0.970	0.970	0.000	0.000	0.000	0.000	2.985	1.000	1.000	1.000	1.000	0.000	0.000	0.000	0.000
L7	0.970	0.970	0.970	0.970	0.000	0.000	0.000	0.000		1.000	1.000	1.000	1.000	0.000	0.000	0.000	0.000
L8	0.970	0.970	0.970	0.970	0.000	0.000	0.000	0.000	2.985	1.000	1.000	1.000	1.000	0.000	0.000	0.000	0.000
L9	0.970	0.970	0.970	0.970	0.000	0.000	0.000	0.000		1.000	1.000	1.000	1.000	0.000	0.000	0.000	0.000
L10	0.970	0.970	0.970	0.970	0.000	0.000	0.000	0.000	2.985	1.000	1.005	1.005	1.005	0.000	0.005	0.005	0.005
L11	0.970	0.970	0.970	0.975	0.000	0.000	0.000	0.005		1.005	1.005	1.005	1.005	0.005	0.005	0.005	0.005
L12	0.975	0.975	0.975	0.980	0.005	0.005	0.005	0.010	2.980	1.010	1.015	1.015	1.015	0.010	0.015	0.015	0.015
L13	0.980	0.985	0.985	0.990	0.010	0.015	0.015	0.020		1.025	1.025	1.025	1.025	0.025	0.025	0.025	0.025
L14	0.995	0.995	1.000	1.000	0.025	0.025	0.030	0.030	2.980	1.030	1.030	1.035	1.040	0.030	0.030	0.035	0.040
L15	1.000	1.005	1.010	1.015	0.030	0.035	0.040	0.045		1.040	1.045	1.045	1.045	0.040	0.045	0.045	0.045
L16	1.020	1.025	1.035	1.040	0.050	0.055	0.065	0.070	2.980	1.055	1.060	1.070	1.075	0.055	0.060	0.070	0.075
L17	1.065	1.080	1.090	1.115	0.095	0.110	0.120	0.145		1.100	1.110	1.125	1.150	0.100	0.110	0.125	0.150
L18	1.145	1.180	1.240	1.320	0.175	0.210	0.270	0.350	2.980	1.195	1.220	1.270	1.355	0.195	0.220	0.270	0.355
L19				1.540				0.570					1.580				0.580
U1				1.585				0.615	2.980				1.620				0.620
U2				1.580				0.610					1.615				0.615
U3				1.580				0.610	2.980				1.610				0.610
U4				1.570				0.600					1.600				0.600
U5				1.560				0.590	2.980				1.590				0.590
U5A				1.560				0.590					1.585				0.585

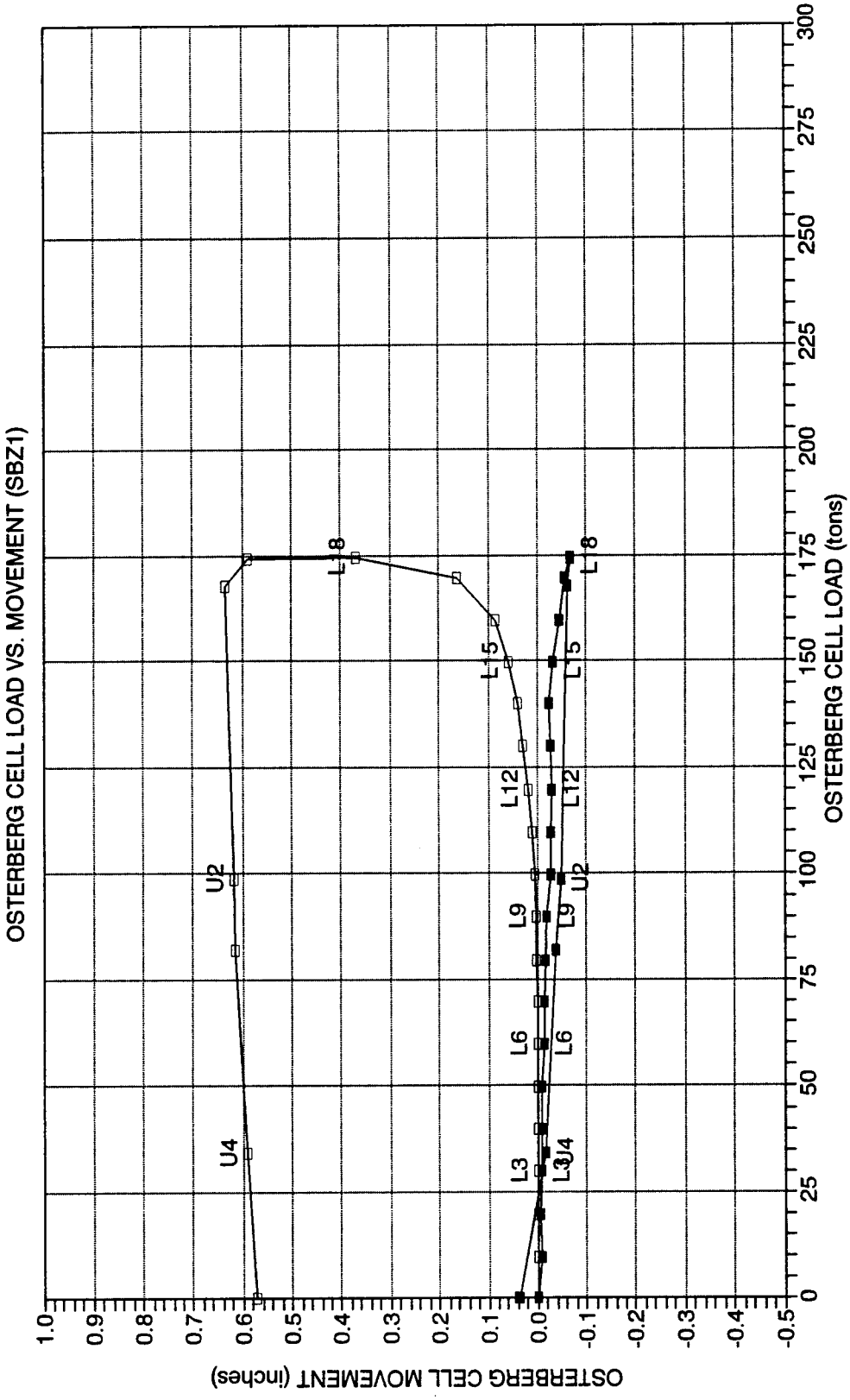


Figure E.80 Load Test 1 Movement: Seabreeze

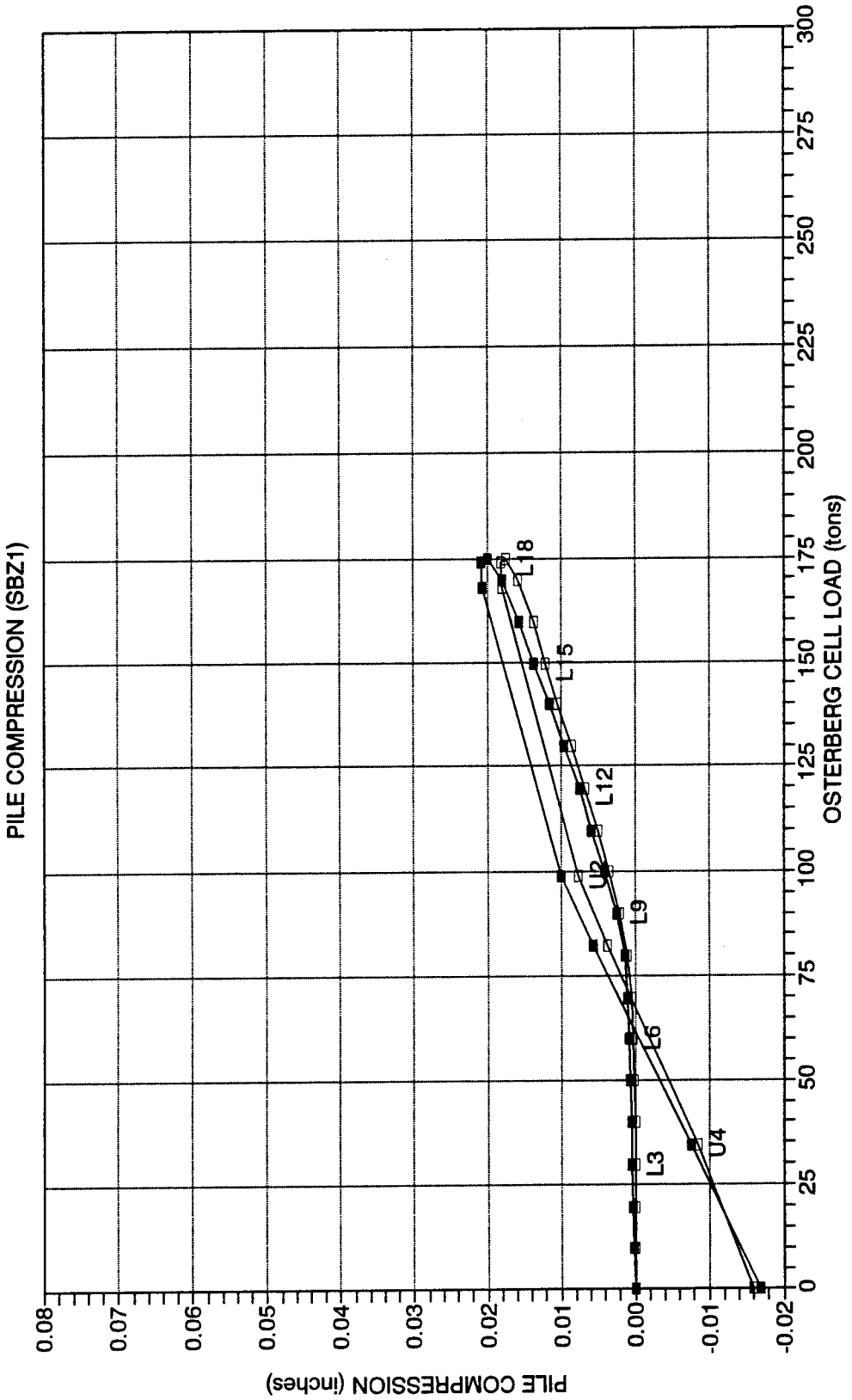


Figure E.81 Load Test 1 Compression: Seabreeze

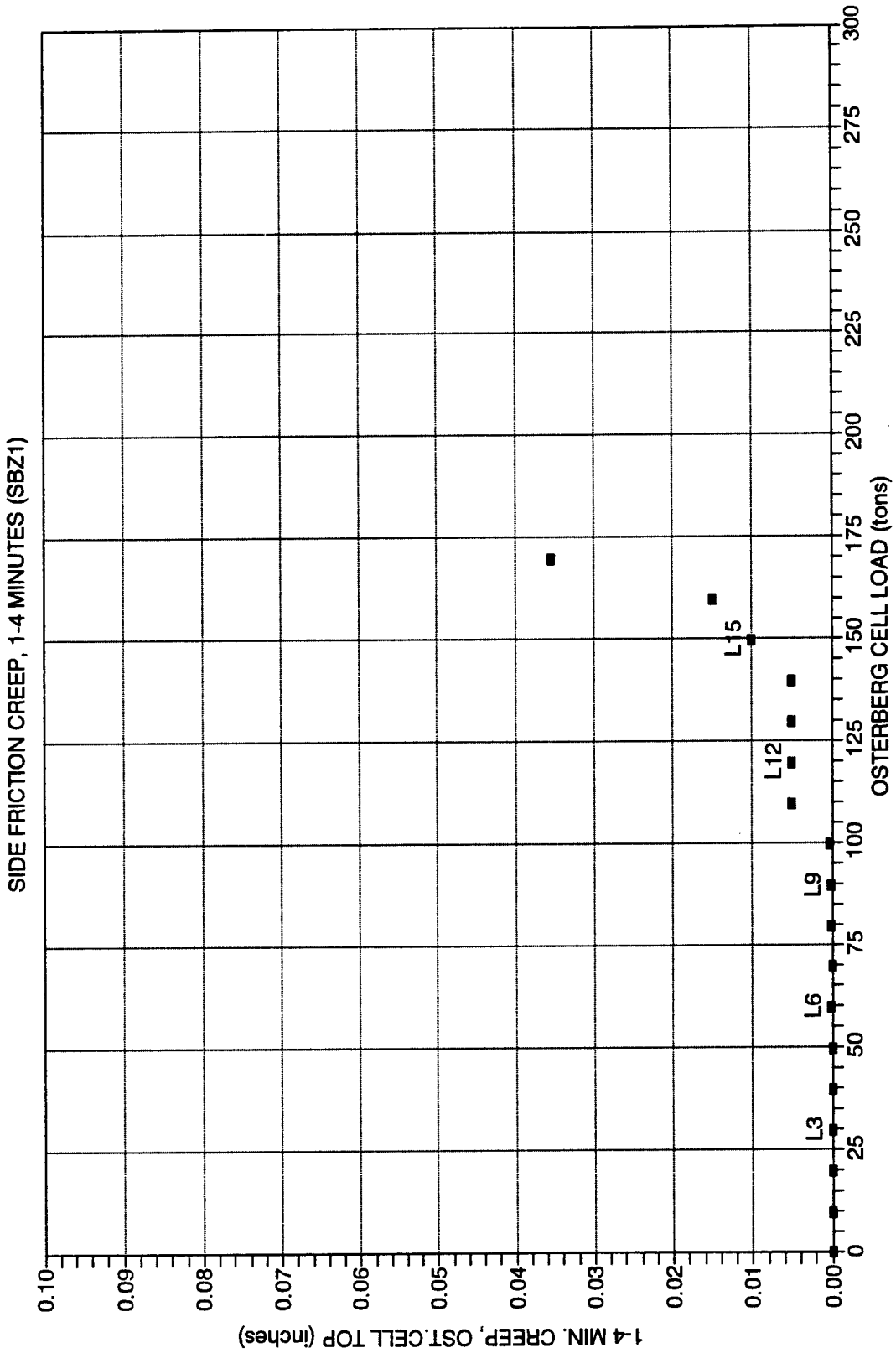


Figure E.82 Load Test 1 Creep: Seabreeze

Table E.31 Data for Load Test 2: Seabreeze

SBZ 2 LOAD NUMBER	TIME INCR. (min)	OSTERBERG CELL LOAD: MEASURED PRESSURE (psi)	CORRECTED PRESSURE (psi)	VW TRANSDUCER READING (tons)	EXTENSION PRESSURE (psi)	@4 MIN. (inches)	LOAD (tons)	OSTERBERG CELL BOTTOM TELLTALE: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)	POISSON EFFECT ADJ. (inches)	OSTERBERG CELL BOTTOM MOVEMENT: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)
L0		300	0	9127	0	0.534	0.0				0.2940	0.0000				0.0000
L1	4	600	600	8924	635	0.542	19.9	0.2882	0.2880	0.2880	0.2880	0.0137	-0.0079	-0.0077	-0.0077	-0.0077
L2	4	1300	1300	8713	1273	0.557	39.9	0.2859	0.2859	0.2859	0.2859	0.0274	-0.0193	-0.0193	-0.0193	-0.0193
L3	4	1900	1900	8500	1909	0.575	59.9	0.2859	0.2859	0.2859	0.2859	0.0411	-0.0330	-0.0330	-0.0330	-0.0330
L4	4	2500	2500	8286	2543	0.593	79.9	0.2859	0.2859	0.2858	0.2858	0.0547	-0.0466	-0.0416	-0.0415	-0.0415
L5	4	3200	3200	8069	3181	0.611	99.9	0.2856	0.2856	0.2856	0.2855	0.0684	-0.0550	-0.0550	-0.0550	-0.0549
L6	4	3800	3800	7852	3817	0.632	119.9	0.2855	0.2855	0.2853	0.2877	0.0821	-0.0636	-0.0636	-0.0634	-0.0658
L7	4	4100	4100	7743	4135	0.649	129.9	0.2880	0.2907	0.2929	0.2950	0.0889	-0.0679	-0.0706	-0.0728	-0.0749
L8	4	4400	4400	7634	4452	0.665	139.9	0.2962	0.2980	0.3000	0.3022	0.0957	-0.0829	-0.0847	-0.0867	-0.0889
L9	4	4700	4700	7525	4769	0.681	149.9	0.3042	0.3051	0.3069	0.3091	0.1026	-0.0928	-0.0937	-0.0955	-0.0977
L10	4	5000	5000	7415	5089	0.699	159.9	0.3100	0.3121	0.3142	0.3170	0.1094	-0.1054	-0.1025	-0.1046	-0.1074
L11	4	5350	5350	7306	5405	0.716	169.8	0.3180	0.3202	0.3222	0.3251	0.1162	-0.1152	-0.1174	-0.1144	-0.1173
L12	4	5700	5700	7196	5723	0.736	179.9	0.3275	0.3296	0.3320	0.3360	0.1231	-0.1266	-0.1287	-0.1261	-0.1301
L13	4	6050	6050	7088	6035	0.758	189.7	0.3380	0.3403	0.3441	0.3490	0.1298	-0.1338	-0.1361	-0.1399	-0.1398
L14	4	6400	6400	6955	6419	0.793	201.7	0.3565	0.3600	0.3655	0.3734	0.1380	-0.1505	-0.1540	-0.1545	-0.1574
L15	4	6650	6650	6865	6679	0.828	209.9	0.3805	0.3850	0.3915	0.4020	0.1436	-0.1601	-0.1596	-0.1611	-0.1666
L16	4	6975	6975	6755	6996	0.894	219.8	0.4170	0.4240	0.4365	0.4610	0.1504	-0.1734	-0.1704	-0.1729	-0.1674
L17	4	7100	7100	6700	7154	0.995	224.8	0.4880	0.4970	0.5160	0.5580	0.1538	-0.1828	-0.1818	-0.1858	-0.1828
L17A	2.5	7100	7100	6700	7154	1.058	224.8				0.6210	0.1538				-0.1858
U1	4	5000	5000	6900	6578	1.073	206.7				0.6500	0.1414				-0.1824
U2	3	4750	4750	7494	4860	1.051	152.6				0.6735	0.1045				-0.1690
U3	3	3800	3800	7943	3551	1.020	111.5				0.6820	0.0763				-0.1543
U4	3	2600	2600	8271	2587	0.991	81.2				0.6822	0.0556				-0.1388
U5	3	1575	1575	8647	1471	0.957	46.1				0.6818	0.0316				-0.1244
U6	3	300	0	9125	0	0.846	0.0				0.6150	0.0000				-0.0510
U6A	3	300	0	9125	0	0.842	0.0				0.6120	0.0000				-0.0480

Table E.31 continued

SBZ 2 LOAD NUMBER	OSTERBERG CELL TOP TELLTALE TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	PILE COMPRESSION TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	OSTERBERG CELL TOP TELLTALE TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)	PILE COMPRESSION TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)
L0				0.01950				0.00000				0.01960				0.00000
L1	0.20000	0.02010	0.02010	0.02010	0.18050	0.00060	0.00060	0.00060	0.01990	0.01990	0.01990	0.01990	0.00030	0.00030	0.00030	0.00030
L2	0.02290	0.02310	0.02330	0.02350	0.00340	0.00360	0.00380	0.00400	0.02290	0.02300	0.02320	0.02330	0.00330	0.00340	0.00360	0.00370
L3	0.02690	0.02720	0.02750	0.02760	0.00740	0.00770	0.00800	0.00810	0.02670	0.02680	0.02700	0.02730	0.00710	0.00720	0.00740	0.00770
L4	0.03160	0.03170	0.03220	0.03250	0.01210	0.01220	0.01270	0.01300	0.03090	0.03110	0.03150	0.03170	0.01130	0.01150	0.01190	0.01210
L5	0.03660	0.03660	0.03720	0.03750	0.01710	0.01710	0.01770	0.01800	0.03540	0.03570	0.03590	0.03620	0.01580	0.01610	0.01630	0.01660
L6	0.04120	0.04210	0.04250	0.04260	0.02170	0.02260	0.02300	0.02310	0.03990	0.04030	0.04060	0.04080	0.02030	0.02070	0.02100	0.02120
L7	0.04460	0.04480	0.04520	0.04540	0.02510	0.02530	0.02570	0.02590	0.04270	0.04280	0.04290	0.04310	0.02310	0.02320	0.02330	0.02350
L8	0.04730	0.04750	0.04760	0.04790	0.02780	0.02800	0.02810	0.02840	0.04520	0.04540	0.04550	0.04570	0.02560	0.02580	0.02590	0.02610
L9	0.05010	0.05030	0.05050	0.05060	0.03060	0.03080	0.03100	0.03110	0.04770	0.04780	0.04790	0.04790	0.02810	0.02820	0.02830	0.02830
L10	0.05260	0.05280	0.05310	0.05340	0.03310	0.03330	0.03360	0.03390	0.05020	0.05040	0.05060	0.05070	0.03060	0.03080	0.03100	0.03110
L11	0.05550	0.05560	0.05560	0.05600	0.03600	0.03610	0.03610	0.03650	0.05270	0.05270	0.05290	0.05300	0.03310	0.03310	0.03330	0.03340
L12	0.05800	0.05810	0.05840	0.05840	0.03850	0.03860	0.03890	0.03890	0.05500	0.05510	0.05520	0.05540	0.03540	0.03550	0.03560	0.03580
L13	0.06050	0.06060	0.06060	0.06060	0.04100	0.04110	0.04110	0.04110	0.05700	0.05720	0.05720	0.05720	0.03740	0.03760	0.03760	0.03760
L14	0.06250	0.06250	0.06250	0.06250	0.04300	0.04300	0.04300	0.04300	0.05890	0.05890	0.05890	0.05890	0.03930	0.03930	0.03930	0.03930
L15	0.06340	0.06340	0.06340	0.06340	0.04390	0.04390	0.04390	0.04390	0.05970	0.05970	0.05970	0.05970	0.04010	0.04010	0.04010	0.04010
L16	0.06450	0.06450	0.06450	0.06450	0.04500	0.04500	0.04500	0.04500	0.06050	0.06050	0.06050	0.06050	0.04090	0.04090	0.04090	0.04090
L17	0.06460	0.06460	0.06460	0.06460	0.04510	0.04510	0.04510	0.04510	0.06070	0.06070	0.06070	0.06070	0.04110	0.04110	0.04110	0.04110
L17A				0.06460				0.04510				0.06070				0.04110
U1				0.06360				0.04410				0.05940				0.03980
U2				0.05420				0.03470				0.05010				0.03050
U3				0.04350				0.02400				0.03950				0.01990
U4				0.03460				0.01510				0.03130				0.01170
U5				0.02410				0.00460				0.02140				0.00180
U6				0.01080				-0.00870				0.00950				-0.01010
U6A				0.01000				-0.00950				0.00920				-0.01040

Table E.31 continued

SBZ 2 LOAD NUMBER	PILE COMPRESSION TT-1 & TT-2 AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP MOVEMENT AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP CREEP 1-4 MIN (inches)	OSTERBERG CELL TOP CREEP 2-4 MIN (inches)
L0				0.0000				0.0000		
L1	0.0904	0.0005	0.0005	0.0005	0.0904	0.0005	0.0005	0.0005	0.0000	0.0000
L2	0.0034	0.0035	0.0037	0.0039	0.0034	0.0035	0.0037	0.0039	0.0000	0.0000
L3	0.0073	0.0075	0.0077	0.0079	0.0073	0.0075	0.0077	0.0079	0.0004	0.0002
L4	0.0117	0.0119	0.0123	0.0126	0.0117	0.0168	0.0173	0.0175	0.0005	0.0002
L5	0.0165	0.0166	0.0170	0.0173	0.0214	0.0216	0.0220	0.0223	0.0007	0.0003
L6	0.0210	0.0217	0.0220	0.0222	0.0310	0.0317	0.0320	0.0322	0.0007	0.0003
L7	0.0241	0.0243	0.0245	0.0247	0.0391	0.0392	0.0395	0.0397	0.0005	0.0002
L8	0.0267	0.0269	0.0270	0.0272	0.0417	0.0419	0.0420	0.0422	0.0004	0.0002
L9	0.0294	0.0295	0.0297	0.0297	0.0494	0.0495	0.0497	0.0497	0.0003	0.0002
L10	0.0319	0.0321	0.0323	0.0325	0.0519	0.0570	0.0573	0.0575	0.0002	0.0000
L11	0.0346	0.0346	0.0347	0.0350	0.0595	0.0596	0.0647	0.0650	0.0004	0.0002
L12	0.0370	0.0371	0.0373	0.0374	0.0670	0.0671	0.0722	0.0723	0.0054	0.0003
L13	0.0392	0.0394	0.0394	0.0394	0.0792	0.0794	0.0794	0.0843	0.0053	0.0001
L14	0.0412	0.0412	0.0412	0.0412	0.0912	0.0912	0.0961	0.1012	0.0050	0.0050
L15	0.0420	0.0420	0.0420	0.0420	0.1120	0.1170	0.1220	0.1270	0.0100	0.0050
L16	0.0430	0.0430	0.0430	0.0430	0.1430	0.1530	0.1629	0.1929	0.0100	0.0050
L17	0.0431	0.0431	0.0431	0.0431	0.2081	0.2181	0.2331	0.2781	0.0400	0.0300
L17A				0.0431				0.3381	0.0600	0.0450
U1				0.0420				0.3569		
U2				0.0326				0.3476		
U3				0.0220				0.3320		
U4				0.0134				0.3184		
U5				0.0032				0.2982		
U6				-0.0094				0.2606		
U6A				-0.0100				0.2601		

Table E.31 continued

SBZ 2 LOAD NUMBER	TOP OF PILE MOVEMENT - WIRELINE READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)	BSIGHT @0.5MIN. (inches)	TOP OF PILE MOVEMENT - SURVEY LEVEL READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)
L0				1.010				0.000	3.380				1.020				0.000
L1	1.010	1.010	1.010	1.010	0.000	0.000	0.000	0.000		1.020	1.020	1.020	1.020	0.000	0.000	0.000	0.000
L2	1.010	1.010	1.010	1.010	0.000	0.000	0.000	0.000	3.380	1.020	1.020	1.020	1.020	0.000	0.000	0.000	0.000
L3	1.010	1.010	1.010	1.010	0.000	0.000	0.000	0.000		1.020	1.020	1.020	1.020	0.000	0.000	0.000	0.000
L4	1.010	1.015	1.015	1.015	0.000	0.005	0.005	0.005	3.380	1.020	1.020	1.020	1.020	0.000	0.000	0.000	0.000
L5	1.015	1.015	1.015	1.015	0.005	0.005	0.005	0.005		1.025	1.025	1.025	1.025	0.005	0.005	0.005	0.005
L6	1.020	1.020	1.020	1.020	0.010	0.010	0.010	0.010	3.380	1.030	1.030	1.030	1.030	0.010	0.010	0.010	0.010
L7	1.025	1.025	1.025	1.025	0.015	0.015	0.015	0.015		1.035	1.035	1.035	1.035	0.015	0.015	0.015	0.015
L8	1.025	1.025	1.025	1.025	0.015	0.015	0.015	0.015	3.380	1.040	1.040	1.040	1.040	0.020	0.020	0.020	0.020
L9	1.030	1.030	1.030	1.030	0.020	0.020	0.020	0.020		1.040	1.040	1.040	1.040	0.020	0.020	0.020	0.020
L10	1.030	1.035	1.035	1.035	0.020	0.025	0.025	0.025	3.380	1.045	1.045	1.045	1.045	0.025	0.025	0.025	0.025
L11	1.035	1.035	1.040	1.040	0.025	0.025	0.030	0.030		1.050	1.050	1.050	1.050	0.030	0.030	0.030	0.030
L12	1.040	1.040	1.045	1.045	0.030	0.030	0.035	0.035	3.380	1.055	1.055	1.055	1.058	0.035	0.035	0.035	0.038
L13	1.050	1.050	1.050	1.055	0.040	0.040	0.040	0.045		1.060	1.060	1.065	1.065	0.040	0.040	0.045	0.045
L14	1.060	1.060	1.065	1.070	0.050	0.050	0.055	0.060	3.380	1.075	1.078	1.080	1.085	0.055	0.058	0.060	0.065
L15	1.080	1.085	1.090	1.095	0.070	0.075	0.080	0.085		1.095	1.098	1.100	1.105	0.075	0.078	0.080	0.085
L16	1.110	1.120	1.130	1.160	0.100	0.110	0.120	0.150	3.380	1.120	1.130	1.140	1.160	0.100	0.110	0.120	0.140
L17	1.175	1.185	1.200	1.245	0.165	0.175	0.190	0.235		1.190	1.200	1.220	1.250	0.170	0.180	0.200	0.230
L17A				1.305				0.295	3.380				1.320				0.300
U1				1.325				0.315					1.340				0.320
U2				1.325				0.315	3.380				1.340				0.320
U3				1.320				0.310					1.330				0.310
U4				1.315				0.305	3.380				1.325				0.305
U5				1.305				0.295					1.315				0.295
U6				1.280				0.270	3.380				1.300				0.280
U6A				1.280				0.270	3.380				1.298				0.278

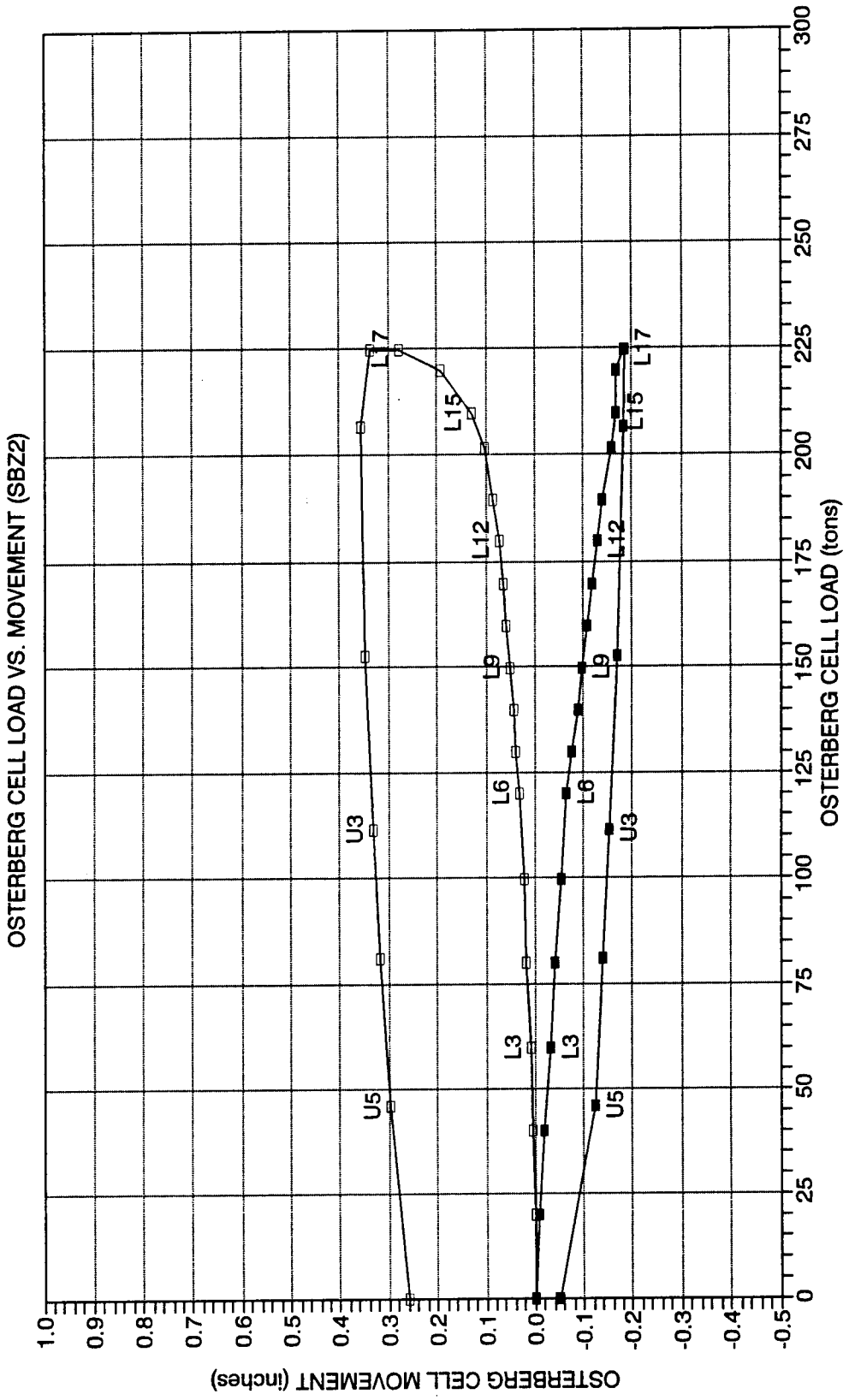


Figure E.83 Load Test 2 Movement: Seabreeze

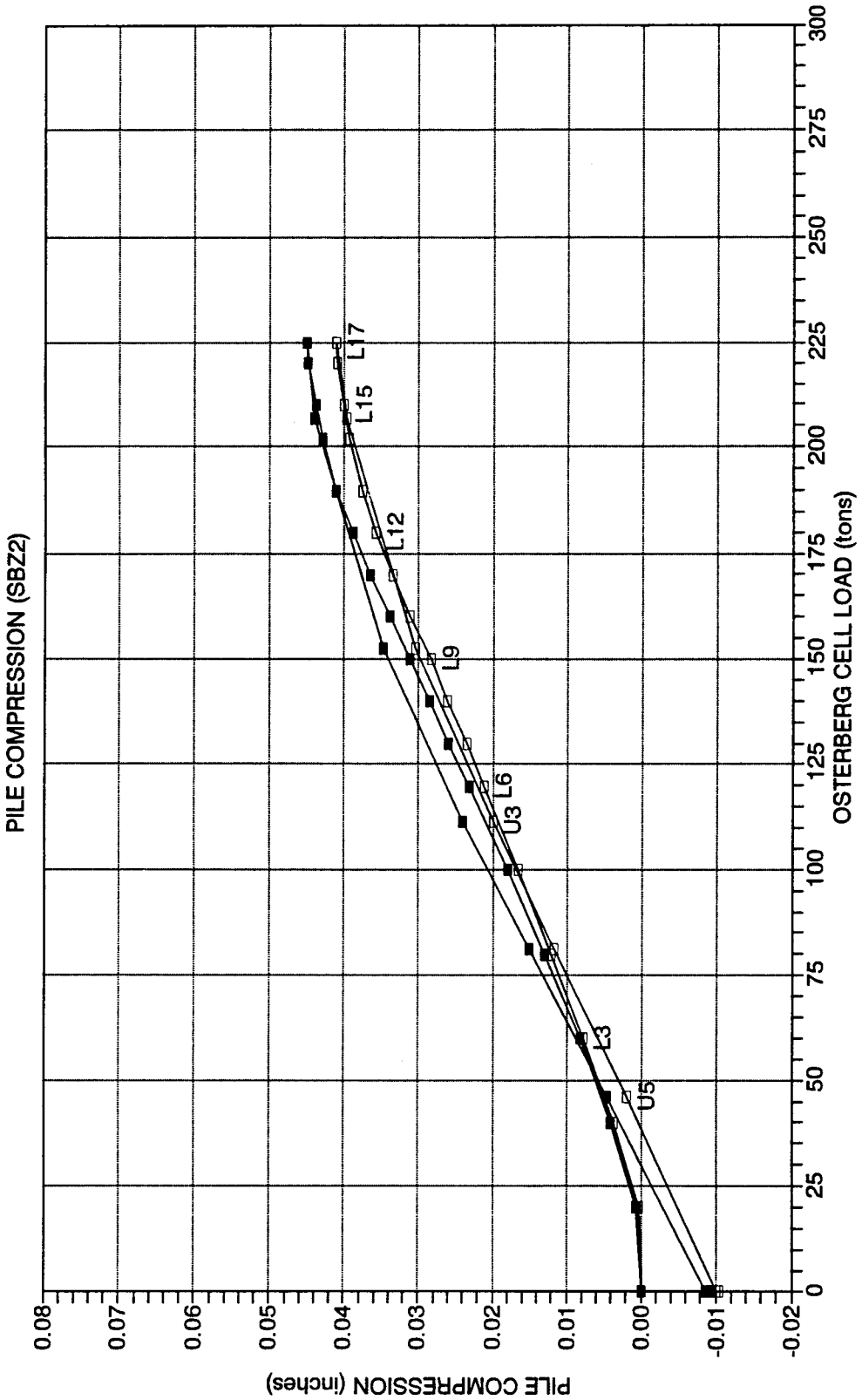


Figure E.84 Load Test 2 Compression: Seabreeze

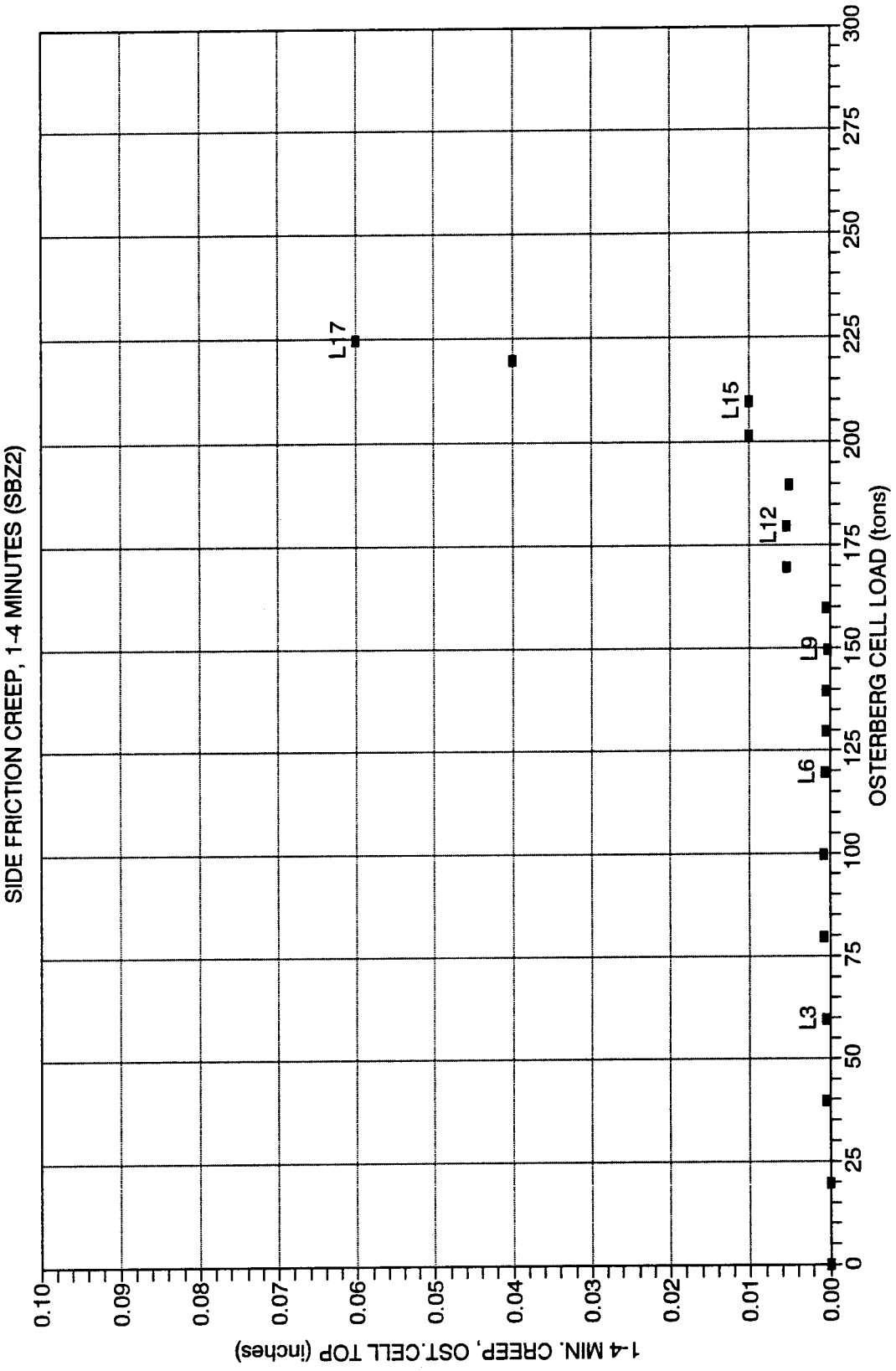


Figure E.85 Load Test 2 Creep: Seabreeze

Table E.32 Data for Load Test 3: Seabreeze

SBZ 3 LOAD NUMBER	TIME INCR. (min)	OSTERBERG CELL LOAD: MEASURED PRESSURE (psi)	CORRECTED PRESSURE (psi)	VW TRANSDUCER READING (tons)	EXTENSION PRESSURE (psi)	@4 MIN. (inches)	LOAD (tons)	OSTERBERG CELL BOTTOM TELLTALE: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)	POISSON EFFECT ADJ. (inches)	OSTERBERG CELL BOTTOM MOVEMENT: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)
L0		300	0	9126	0	0.842	0.0				0.3020	0.0000				0.0000
L1	4	800	800	8871	793	0.855	24.8	0.2965	0.2964	0.2964	0.2963	0.0171	-0.0116	-0.0115	-0.0115	-0.0114
L2	4	1600	1600	8607	1588	0.876	49.8	0.2955	0.2955	0.2955	0.2956	0.0341	-0.0276	-0.0276	-0.0276	-0.0277
L3	4	2400	2400	8339	2383	0.899	74.8	0.2955	0.2956	0.2957	0.2957	0.0512	-0.0347	-0.0348	-0.0349	-0.0349
L4	4	3200	3200	8069	3178	0.925	99.8	0.2957	0.2958	0.2962	0.2973	0.0683	-0.0520	-0.0521	-0.0525	-0.0536
L5	4	4000	4000	7798	3972	0.963	124.7	0.0307	0.3086	0.3100	0.3125	0.0854	0.2009	-0.0770	-0.0784	-0.0759
L6	4	4750	4750	7525	4767	1.001	149.7	0.3200	0.3225	0.3250	0.3270	0.1025	-0.1005	-0.1030	-0.1055	-0.1025
L7	4	5550	5550	7251	5561	1.041	174.7	0.3350	0.3370	0.3400	0.3430	0.1196	-0.1226	-0.1246	-0.1276	-0.1256
L8	4	6350	6350	6975	6359	1.085	199.8	0.3515	0.3550	0.3585	0.3630	0.1367	-0.1412	-0.1447	-0.1482	-0.1477
L9	4	6700	6700	6865	6676	1.107	209.7	0.3670	0.3690	0.3715	0.3750	0.1436	-0.1586	-0.1556	-0.1581	-0.1616
L10	4	7000	7000	6755	6993	1.131	219.7	0.3780	0.3810	0.3840	0.3890	0.1504	-0.1664	-0.1644	-0.1674	-0.1674
L11	4	7300	7300	6644	7312	1.163	229.7	0.3940	0.3970	0.4030	0.4120	0.1572	-0.1742	-0.1772	-0.1832	-0.1822
L12	4	7600	7600	6534	7628	1.221	239.7	0.4230	0.4290	0.4430	0.4620	0.1640	-0.1900	-0.1910	-0.1950	-0.1990
L13	4	8000	8000	6423	7947	1.428	249.7	0.5000	0.5200	0.5620	0.6610	0.1709	-0.1989	-0.1989	-0.2009	-0.2099
U1	3	7400	7400	6600	7439	1.535	233.6				0.7800	0.1600				-0.1980
U2	3	4500	4500	7627	4470	1.502	140.3				0.8290	0.0961				-0.1781
U3	3	2900	2900	8172	2876	1.454	90.2				0.8300	0.0618				-0.1548
U4	3	1650	1650	8618	1555	1.403	48.6				0.8200	0.0334				-0.1264
U5	3	300	0	9123	0	1.274	-0.3				0.7370	0.0000				-0.0450
U5A	3	300	0	9123	0	1.270	-0.2				0.7330	0.0000				-0.0410

Table E.32 continued

SBZ 3	OSTERBERG CELL TOP TELLTALE				PILE COMPRESSION				OSTERBERG CELL TOP TELLTALE				PILE COMPRESSION			
LOAD	TT-1	TT-1	TT-1	TT-1	TT-1	TT-1	TT-1	TT-1	TT-2	TT-2	TT-2	TT-2	TT-2	TT-2	TT-2	TT-2
NUMBER	@0.5MIN. (inches)	@1MIN. (inches)	@2MIN. (inches)	@4 MIN. (inches)	@0.5MIN. (inches)	@1MIN. (inches)	@2MIN. (inches)	@4 MIN. (inches)	@0.5MIN. (inches)	@1MIN. (inches)	@2MIN. (inches)	@4 MIN. (inches)	@0.5MIN. (inches)	@1MIN. (inches)	@2MIN. (inches)	@4 MIN. (inches)
L0				0.02090				0.00000				0.02020				0.00000
L1	0.02240	0.02250	0.02250	0.02260	0.00150	0.00160	0.00160	0.00170	0.02130	0.02130	0.02140	0.02140	0.00110	0.00110	0.00120	0.00120
L2	0.02740	0.02740	0.02750	0.02760	0.00650	0.00650	0.00660	0.00670	0.02590	0.02590	0.02610	0.02620	0.00570	0.00570	0.00590	0.00600
L3	0.03350	0.03350	0.03350	0.03390	0.01260	0.01260	0.01260	0.01300	0.03170	0.03190	0.03200	0.03220	0.01150	0.01170	0.01180	0.01200
L4	0.04020	0.04030	0.04050	0.04060	0.01930	0.01940	0.01960	0.01970	0.03810	0.03830	0.03830	0.03840	0.01790	0.01810	0.01810	0.01820
L5	0.04650	0.04660	0.04660	0.04710	0.02560	0.02570	0.02570	0.02620	0.04410	0.04420	0.04440	0.04480	0.02390	0.02400	0.02420	0.02460
L6	0.05260	0.05280	0.05300	0.05340	0.03170	0.03190	0.03210	0.03250	0.05010	0.05020	0.05030	0.05050	0.02990	0.03000	0.03010	0.03030
L7	0.05940	0.05950	0.05980	0.06030	0.03850	0.03860	0.03890	0.03940	0.05620	0.05640	0.05640	0.05710	0.03600	0.03620	0.03620	0.03690
L8	0.06660	0.06680	0.06730	0.06760	0.04570	0.04590	0.04640	0.04670	0.06320	0.06340	0.06370	0.06420	0.04300	0.04320	0.04350	0.04400
L9	0.07040	0.07050	0.07060	0.07090	0.04950	0.04960	0.04970	0.05000	0.06660	0.06710	0.06710	0.06730	0.04640	0.04690	0.04690	0.04710
L10	0.07340	0.07340	0.07350	0.07350	0.05250	0.05250	0.05260	0.05260	0.06950	0.06960	0.06970	0.06990	0.04930	0.04940	0.04950	0.04970
L11	0.07610	0.07610	0.07610	0.07620	0.05520	0.05520	0.05520	0.05530	0.07220	0.07220	0.07220	0.07220	0.05200	0.05200	0.05200	0.05200
L12	0.07810	0.07810	0.07820	0.07810	0.05720	0.05720	0.05730	0.05720	0.07390	0.07390	0.07390	0.07390	0.05370	0.05370	0.05370	0.05370
L13	0.07950	0.07950	0.07950	0.07930	0.05860	0.05860	0.05860	0.05840	0.07530	0.07530	0.07530	0.07500	0.05510	0.05510	0.05510	0.05480
U1				0.07740				0.05650				0.07350				0.05330
U2				0.05900				0.03810				0.05610				0.03590
U3				0.04380				0.02290				0.04210				0.02190
U4				0.03100				0.01010				0.02990				0.00970
U5				0.01730				-0.00360				0.01770				-0.00250
U5A				0.01710				-0.00380				0.01740				-0.00280

Table E.32 continued

SBZ 3 LOAD NUMBER	PILE COMPRESSION TT-1 & TT-2 AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP MOVEMENT AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP CREEP 1-4 MIN (inches)	CREEP 2-4 MIN (inches)
L0				0.0000				0.0000	0.0000	0.0000
L1	0.0013	0.0014	0.0014	0.0015	0.0013	0.0014	0.0014	0.0015	0.0001	0.0000
L2	0.0061	0.0061	0.0063	0.0064	0.0061	0.0061	0.0063	0.0064	0.0003	0.0001
L3	0.0121	0.0122	0.0122	0.0125	0.0221	0.0222	0.0222	0.0225	0.0003	0.0003
L4	0.0186	0.0188	0.0189	0.0190	0.0286	0.0288	0.0289	0.0290	0.0002	0.0001
L5	0.0248	0.0249	0.0250	0.0254	0.0398	0.0399	0.0400	0.0454	0.0056	0.0055
L6	0.0308	0.0310	0.0311	0.0314	0.0508	0.0510	0.0511	0.0564	0.0054	0.0053
L7	0.0373	0.0374	0.0376	0.0382	0.0673	0.0674	0.0676	0.0732	0.0058	0.0056
L8	0.0444	0.0446	0.0450	0.0454	0.0894	0.0896	0.0900	0.0954	0.0058	0.0054
L9	0.0480	0.0483	0.0483	0.0486	0.0980	0.1033	0.1033	0.1036	0.0003	0.0003
L10	0.0509	0.0510	0.0511	0.0512	0.1109	0.1160	0.1161	0.1212	0.0052	0.0051
L11	0.0536	0.0536	0.0536	0.0537	0.1286	0.1286	0.1286	0.1387	0.0101	0.0101
L12	0.0555	0.0555	0.0555	0.0555	0.1505	0.1555	0.1655	0.1805	0.0250	0.0149
L13	0.0569	0.0569	0.0569	0.0566	0.2269	0.2469	0.2869	0.3766	0.1297	0.0897
U1				0.0549				0.4949		
U2				0.0370				0.4820		
U3				0.0224				0.4574		
U4				0.0099				0.4349		
U5				-0.0030				0.3870		
U5A				-0.0033				0.3867		

Table E.32 continued

SBZ 3 LOAD NUMBER	TOP OF PILE MOVEMENT - WIRELINE READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)	BSIGHT @0.5MIN. (inches)	TOP OF PILE MOVEMENT - SURVEY LEVEL READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)
L0				0.030				0.000	4.140				3.290				0.000
L1	0.030	0.030	0.030	0.030	0.000	0.000	0.000	0.000		3.290	3.290	3.290	3.290	0.000	0.000	0.000	0.000
L2	0.030	0.030	0.030	0.030	0.000	0.000	0.000	0.000	4.140	3.290	3.290	3.290	3.290	0.000	0.000	0.000	0.000
L3	0.040	0.040	0.040	0.040	0.010	0.010	0.010	0.010		3.290	3.290	3.290	3.290	0.000	0.000	0.000	0.000
L4	0.040	0.040	0.040	0.040	0.010	0.010	0.010	0.010	4.140	3.295	3.295	3.295	3.295	0.005	0.005	0.005	0.005
L5	0.045	0.045	0.045	0.050	0.015	0.015	0.015	0.020		3.300	3.300	3.300	3.300	0.010	0.010	0.010	0.010
L6	0.050	0.050	0.050	0.055	0.020	0.020	0.020	0.025	4.140	3.305	3.305	3.305	3.310	0.015	0.015	0.015	0.020
L7	0.060	0.060	0.060	0.065	0.030	0.030	0.030	0.035		3.320	3.320	3.320	3.320	0.030	0.030	0.030	0.030
L8	0.075	0.075	0.075	0.080	0.045	0.045	0.045	0.050	4.140	3.335	3.335	3.335	3.340	0.045	0.045	0.045	0.050
L9	0.080	0.085	0.085	0.085	0.050	0.055	0.055	0.055		3.345	3.345	3.345	3.345	0.055	0.055	0.055	0.055
L10	0.090	0.095	0.095	0.100	0.060	0.065	0.065	0.070	4.140	3.350	3.350	3.355	3.360	0.060	0.060	0.065	0.070
L11	0.105	0.105	0.105	0.115	0.075	0.075	0.075	0.085		3.370	3.370	3.370	3.375	0.080	0.080	0.080	0.085
L12	0.125	0.130	0.140	0.155	0.095	0.100	0.110	0.125	4.140	3.390	3.395	3.400	3.405	0.100	0.105	0.110	0.115
L13	0.200	0.220	0.260	0.350	0.170	0.190	0.230	0.320		3.450	3.480	3.500	3.600	0.160	0.190	0.210	0.310
U1				0.470				0.440	4.140				3.720				0.430
U2				0.475				0.445					3.730				0.440
U3				0.465				0.435	4.140				3.720				0.430
U4				0.455				0.425					3.700				0.410
U5				0.420				0.390	4.140				3.680				0.390
U5A				0.420				0.390					3.675				0.385

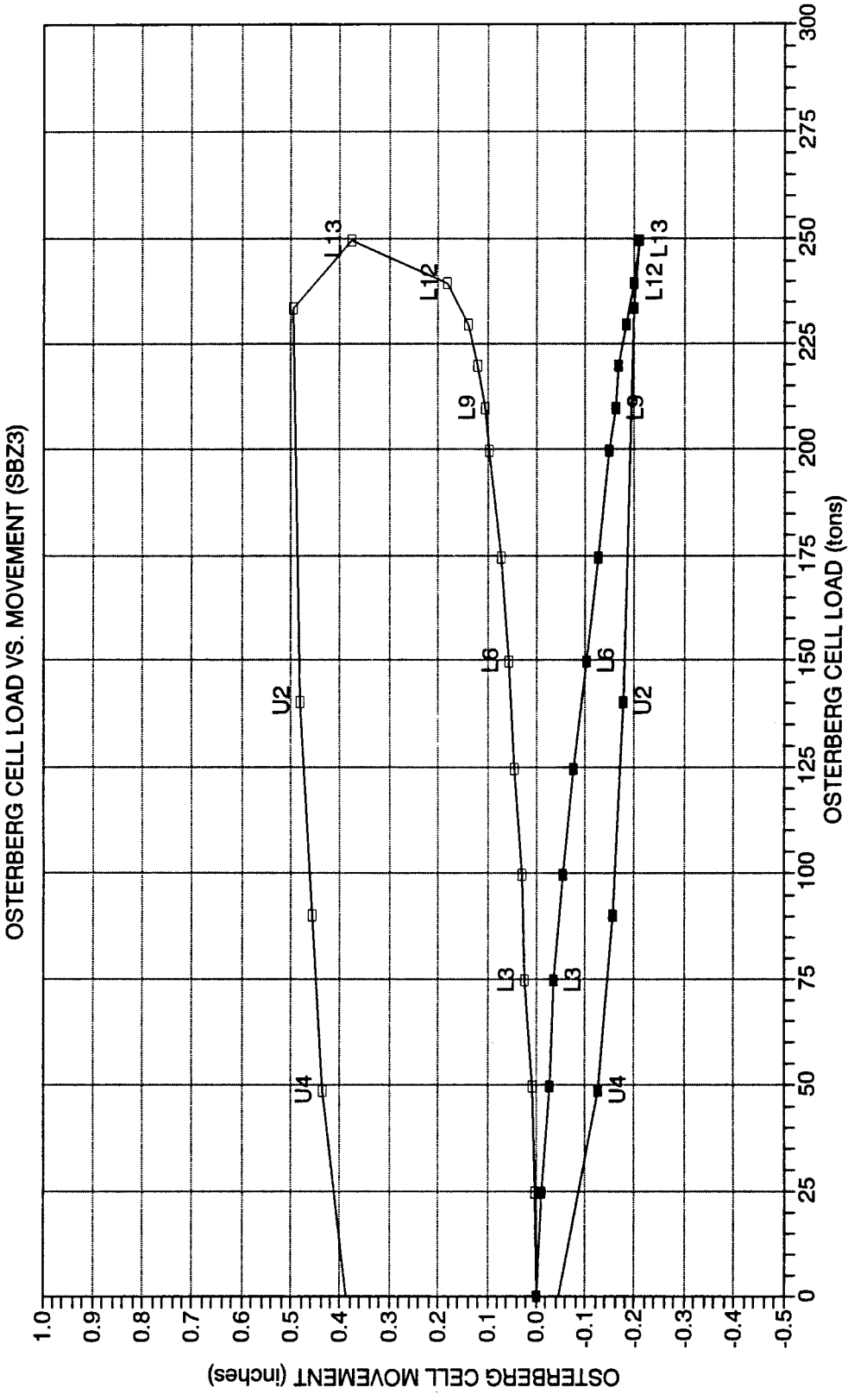


Figure E.86 Load Test 3 Movement: Seabreeze

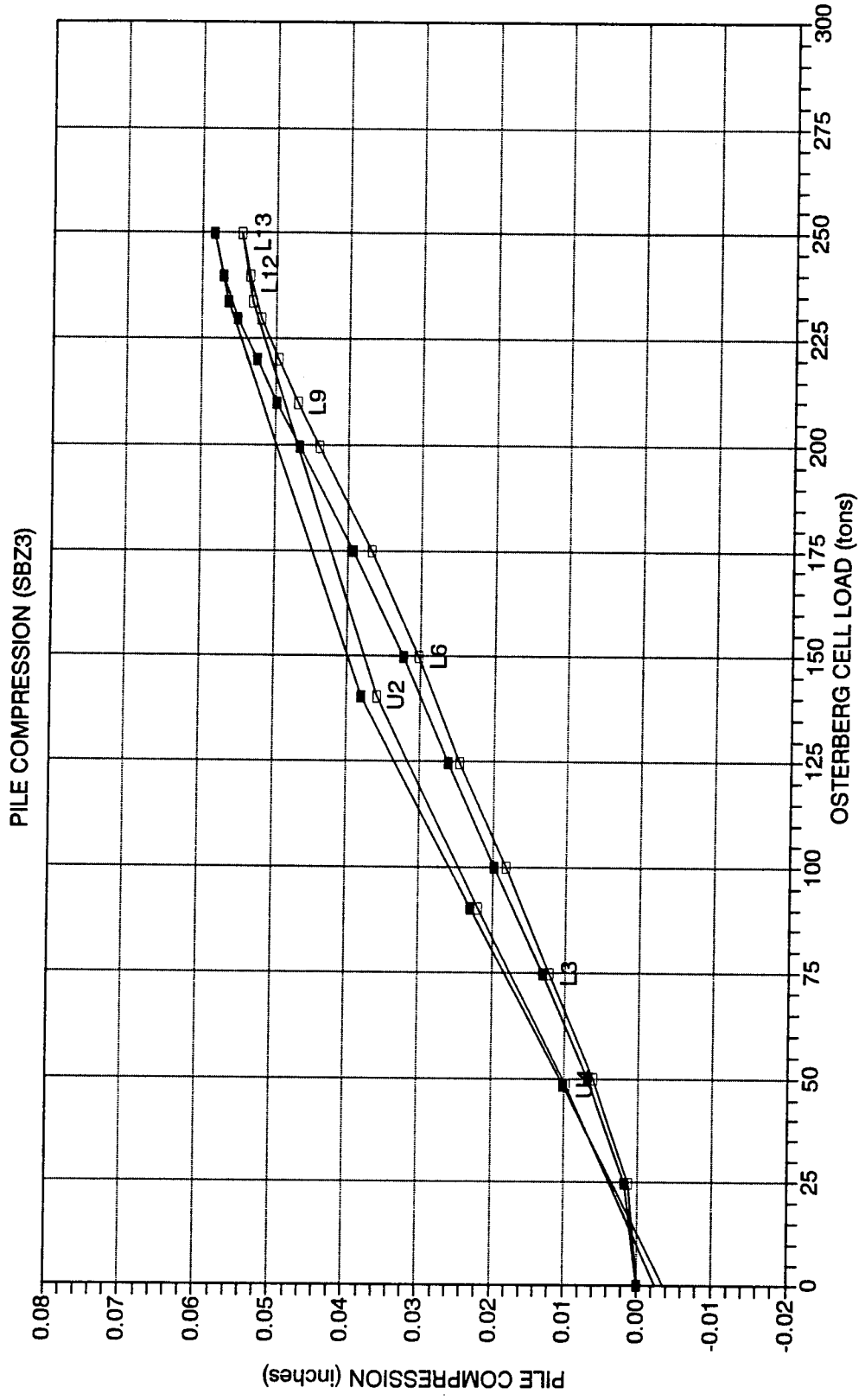


Figure E.87 Load Test 3 Compression: Seabreeze

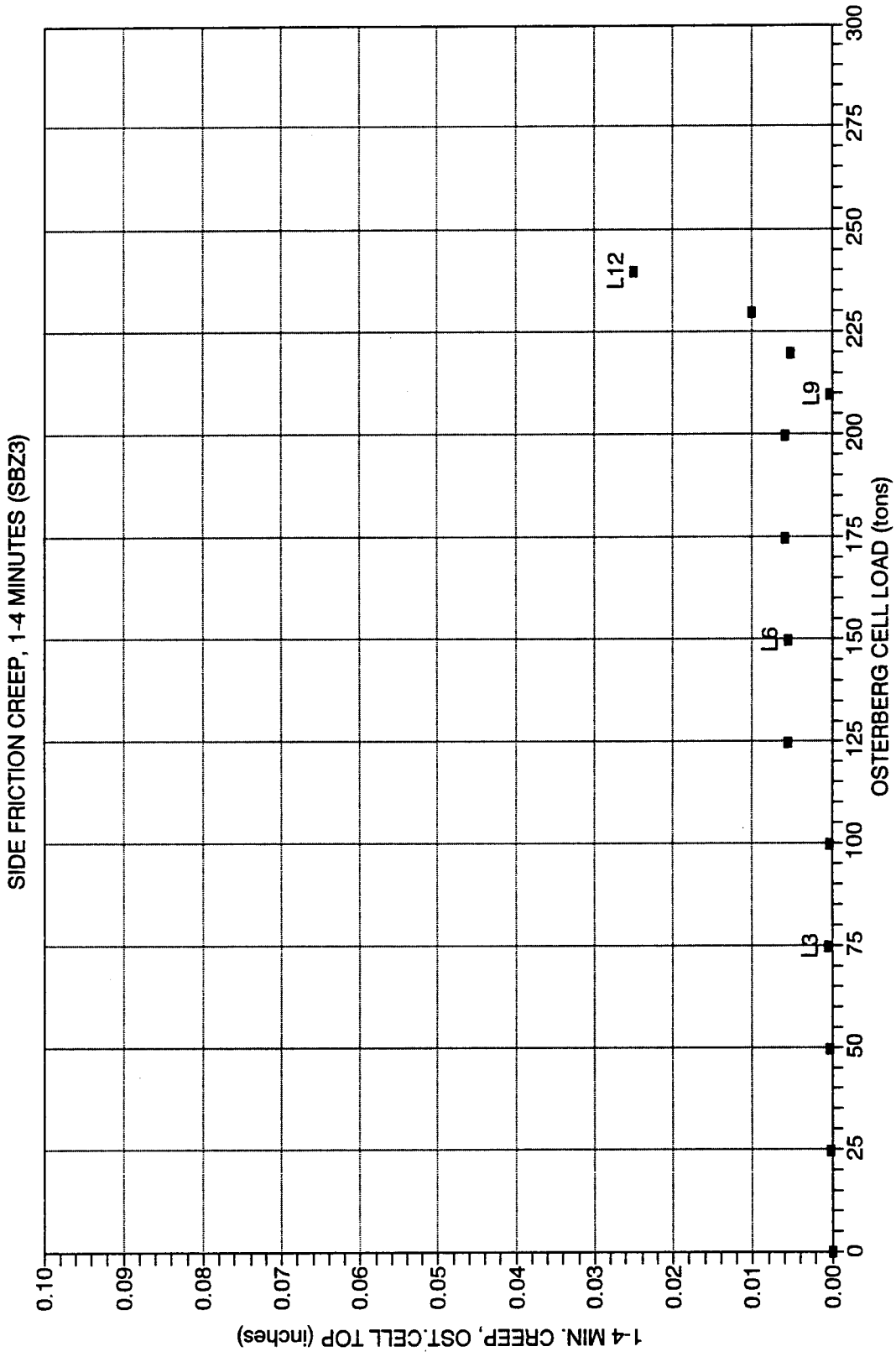


Figure E.88 Load Test 3 Creep: Seabreeze

Table E.33 Data for Load Test 4: Seabreeze

SBZ 4 LOAD NUMBER	TIME INCR. (min)	OSTERBERG CELL LOAD: MEASURED PRESSURE (psi)	CORRECTED PRESSURE (psi)	VW TRANSDUCER READING (tons)	PRESSURE (psi)	EXTENSION @4 MIN. (inches)	LOAD (tons)	OSTERBERG CELL BOTTOM TELLTALE: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)	POISSON EFFECT ADJ. (inches)	OSTERBERG CELL BOTTOM MOVEMENT: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)
L0		300	0	9131	0	1.270	0.0				0.3000	0.0000				0.0000
L1	4	600	600	8923	650	1.277	20.2	0.2925	0.2925	0.2925	0.2922	0.0140	-0.0065	-0.0045	-0.0045	-0.0032
L2	4	1300	1300	8713	1285	1.294	40.2	0.2910	0.2910	0.2910	0.2910	0.0276	-0.0136	-0.0136	-0.0136	-0.0136
L3	4	1900	1900	8502	1915	1.312	60.0	0.2908	0.2908	0.2908	0.2908	0.0412	-0.0270	-0.0270	-0.0270	-0.0270
L4	4	2600	2600	8286	2555	1.331	80.1	0.2909	0.2909	0.2909	0.2912	0.0549	-0.0408	-0.0408	-0.0408	-0.0411
L5	4	3200	3200	8070	3190	1.358	100.1	0.2958	0.2970	0.2995	0.3000	0.0686	-0.0594	-0.0556	-0.0581	-0.0636
L6	4	3800	3800	7852	3828	1.390	120.1	0.3100	0.3106	0.3120	0.3122	0.0823	-0.0773	-0.0779	-0.0793	-0.0795
L7	4	4400	4400	7635	4461	1.421	140.0	0.3210	0.3220	0.3230	0.3249	0.0959	-0.0969	-0.0979	-0.0989	-0.1008
L8	4	5100	5100	7415	5100	1.453	160.1	0.3330	0.3350	0.3360	0.3390	0.1097	-0.1177	-0.1197	-0.1207	-0.1237
L9	4	5700	5700	7197	5732	1.484	180.0	0.3455	0.3471	0.3492	0.3508	0.1233	-0.1388	-0.1354	-0.1375	-0.1391
L10	4	6300	6300	6974	6376	1.520	200.2	0.3590	0.3612	0.3640	0.3670	0.1371	-0.1511	-0.1533	-0.1561	-0.1591
L11	4	6700	6700	6866	6688	1.539	210.0	0.3700	0.3720	0.3743	0.3765	0.1438	-0.1638	-0.1658	-0.1631	-0.1653
L12	4	7000	7000	6752	7016	1.558	220.3	0.3790	0.3807	0.3840	0.3855	0.1509	-0.1699	-0.1716	-0.1699	-0.1714
L13	4	7400	7400	6645	7324	1.580	230.0	0.3890	0.3912	0.3935	0.3975	0.1575	-0.1815	-0.1787	-0.1810	-0.1800
L14	4	7600	7600	6533	7645	1.607	240.1	0.4010	0.4040	0.4080	0.4140	0.1644	-0.1854	-0.1834	-0.1874	-0.1934
L15	4	8000	8000	6424	7958	1.646	250.0	0.4210	0.4250	0.4320	0.4440	0.1711	-0.2021	-0.1911	-0.1981	-0.2001
L16	2	8200	8200	6340	8199	1.704	257.5		0.4660	0.4750	0.4960	0.1763		-0.2073	-0.2013	-0.2073
L16A	2	8100	8100	6420	7970	1.726	250.3				0.5230	0.1714				-0.2044
U1	3	7000	7000	6769	6967	1.740	218.8				0.5620	0.1498				-0.2018
U2	3	5500	5500	7294	5451	1.714	171.1				0.5790	0.1172				-0.1862
U3	3	4500	4500	7631	4473	1.689	140.3				0.5835	0.0962				-0.1747
U4	3	3000	3000	8127	3023	1.646	94.7				0.5865	0.0650				-0.1515
U5	3	2500	2500	8320	2454	1.629	76.9				0.5863	0.0528				-0.1441
U6	3	1000	1000	8796	1036	1.548	32.3				0.5480	0.0223				-0.0953
U7	3	300	0	9129	0	1.461	-0.3				0.4910	0.0000				-0.0310
U7A	3	300	0	9130	0	1.457	-0.3				0.4875	0.0000				-0.0325

Table E.33 continued

SBZ 4 LOAD NUMBER	OSTERBERG CELL TOP TELLTALE TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	PILE COMPRESSION TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	OSTERBERG CELL TOP TELLTALE TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)	PILE COMPRESSION TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)
L0				0.02010				0.00000				0.02140				0.00000
L1	0.02110	0.02110	0.02110	0.02110	0.00100	0.00100	0.00100	0.00100	0.02250	0.02250	0.02250	0.02250	0.00110	0.00110	0.00110	0.00110
L2	0.02490	0.02500	0.02510	0.02510	0.00480	0.00490	0.00500	0.00500	0.02620	0.02630	0.02640	0.02640	0.00480	0.00490	0.00500	0.00500
L3	0.02980	0.02980	0.02980	0.02990	0.00970	0.00970	0.00970	0.00980	0.03060	0.03060	0.03060	0.03080	0.00920	0.00920	0.00920	0.00940
L4	0.03480	0.03490	0.03510	0.03520	0.01470	0.01480	0.01500	0.01510	0.03550	0.03550	0.03560	0.03560	0.01410	0.01410	0.01420	0.01420
L5	0.04020	0.04020	0.04040	0.04070	0.02010	0.02010	0.02030	0.02060	0.04050	0.04050	0.04060	0.04060	0.01910	0.01910	0.01920	0.01920
L6	0.04580	0.04590	0.04590	0.04610	0.02570	0.02580	0.02580	0.02600	0.04540	0.04540	0.04540	0.04560	0.02400	0.02400	0.02400	0.02420
L7	0.05090	0.05100	0.05110	0.05120	0.03080	0.03090	0.03100	0.03110	0.04970	0.04980	0.05000	0.05030	0.02830	0.02840	0.02860	0.02890
L8	0.05610	0.05610	0.05620	0.05630	0.03600	0.03600	0.03610	0.03620	0.05450	0.05460	0.05460	0.05470	0.03310	0.03320	0.03320	0.03330
L9	0.06120	0.06140	0.06160	0.06190	0.04110	0.04130	0.04150	0.04180	0.05940	0.05950	0.05950	0.05970	0.03800	0.03810	0.03810	0.03830
L10	0.06710	0.06720	0.06730	0.06760	0.04700	0.04710	0.04720	0.04750	0.06450	0.06460	0.06460	0.06530	0.04310	0.04320	0.04320	0.04390
L11	0.07060	0.07080	0.07090	0.07110	0.05050	0.05070	0.05080	0.05100	0.06760	0.06790	0.06800	0.06830	0.04620	0.04650	0.04660	0.04690
L12	0.07380	0.07400	0.07410	0.07430	0.05370	0.05390	0.05400	0.05420	0.07060	0.07100	0.07110	0.07140	0.04920	0.04960	0.04970	0.05000
L13	0.07710	0.07730	0.07750	0.07760	0.05700	0.05720	0.05740	0.05750	0.07360	0.07410	0.07420	0.07440	0.05220	0.05270	0.05280	0.05300
L14	0.08020	0.08020	0.08040	0.08070	0.06010	0.06010	0.06030	0.06060	0.07660	0.07680	0.07700	0.07730	0.05520	0.05540	0.05560	0.05590
L15	0.08310	0.08310	0.08310	0.08310	0.06300	0.06300	0.06300	0.06300	0.07950	0.07950	0.07950	0.07950	0.05810	0.05810	0.05810	0.05810
L16		0.08460	0.08460	0.08420		0.06450	0.06450	0.06410		0.08060	0.08060	0.08040		0.05920	0.05920	0.05900
L16A				0.08400				0.06390				0.08010				0.05870
U1				0.08140				0.06130				0.07710				0.05570
U2				0.07090				0.05080				0.06670				0.04530
U3				0.06210				0.04200				0.05850				0.03710
U4				0.04700				0.02690				0.04440				0.02300
U5				0.04150				0.02140				0.03940				0.01800
U6				0.02880				0.00870				0.02750				0.00610
U7				0.02060				0.00050				0.02050				-0.00090
U7A				0.02040				0.00030				0.02030				-0.00110

Table E.33 continued

SBZ 4 LOAD NUMBER	PILE COMPRESSION TT-1 & TT-2 AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP MOVEMENT AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP CREEP 1-4 MIN (inches)	CREEP 2-4 MIN (inches)
L0				0.0000				0.0000	0.0000	0.0000
L1	0.0011	0.0011	0.0011	0.0011	0.0011	0.0031	0.0031	0.0041	0.0010	0.0010
L2	0.0048	0.0049	0.0050	0.0050	0.0098	0.0099	0.0100	0.0100	0.0001	0.0000
L3	0.0095	0.0095	0.0095	0.0096	0.0145	0.0145	0.0145	0.0146	0.0002	0.0002
L4	0.0144	0.0145	0.0146	0.0147	0.0194	0.0195	0.0196	0.0197	0.0002	0.0001
L5	0.0196	0.0196	0.0198	0.0199	0.0246	0.0296	0.0298	0.0249	-0.0047	-0.0048
L6	0.0249	0.0249	0.0249	0.0251	0.0399	0.0399	0.0399	0.0401	0.0002	0.0002
L7	0.0296	0.0296	0.0298	0.0300	0.0496	0.0497	0.0498	0.0500	0.0004	0.0002
L8	0.0346	0.0346	0.0347	0.0348	0.0596	0.0596	0.0597	0.0598	0.0002	0.0001
L9	0.0396	0.0397	0.0398	0.0401	0.0696	0.0747	0.0748	0.0751	0.0004	0.0003
L10	0.0451	0.0452	0.0452	0.0457	0.0901	0.0902	0.0902	0.0907	0.0005	0.0005
L11	0.0484	0.0486	0.0487	0.0490	0.0984	0.0986	0.1037	0.1040	0.0054	0.0002
L12	0.0515	0.0518	0.0519	0.0521	0.1115	0.1118	0.1169	0.1171	0.0054	0.0003
L13	0.0546	0.0550	0.0551	0.0553	0.1196	0.1250	0.1251	0.1303	0.0053	0.0052
L14	0.0577	0.0578	0.0580	0.0583	0.1377	0.1428	0.1430	0.1433	0.0005	0.0003
L15	0.0606	0.0606	0.0606	0.0606	0.1506	0.1656	0.1656	0.1756	0.0100	0.0100
L16		0.0619	0.0619	0.0616		0.1969	0.2119	0.2266	0.0545	0.0248
L16A				0.0613				0.2513		
U1				0.0585				0.2685		
U2				0.0481				0.2581		
U3				0.0396				0.2446		
U4				0.0250				0.2250		
U5				0.0197				0.2147		
U6				0.0074				0.1824		
U7				-0.0002				0.1598		
U7A				-0.0004				0.1546		

Table E.33 continued

SBZ 4 LOAD NUMBER	TOP OF PILE MOVEMENT - WIRELINE READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)	BSIGHT @0.5MIN. (inches)	TOP OF PILE MOVEMENT - SURVEY LEVEL READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)
L0				1.015				0.000	4.865				1.030				0.000
L1	1.015	1.017	1.017	1.018	0.000	0.002	0.002	0.003		1.030	1.030	1.030	1.030	0.000	0.000	0.000	0.000
L2	1.020	1.020	1.020	1.020	0.005	0.005	0.005	0.005	4.865	1.030	1.030	1.030	1.030	0.000	0.000	0.000	0.000
L3	1.020	1.020	1.020	1.020	0.005	0.005	0.005	0.005		1.030	1.030	1.030	1.030	0.000	0.000	0.000	0.000
L4	1.020	1.020	1.020	1.020	0.005	0.005	0.005	0.005	4.865	1.035	1.035	1.035	1.035	0.005	0.005	0.005	0.005
L5	1.020	1.025	1.025	1.020	0.005	0.010	0.010	0.005		1.040	1.040	1.040	1.040	0.010	0.010	0.010	0.010
L6	1.030	1.030	1.030	1.030	0.015	0.015	0.015	0.015	4.865	1.040	1.040	1.040	1.040	0.010	0.010	0.010	0.010
L7	1.035	1.035	1.035	1.035	0.020	0.020	0.020	0.020		1.045	1.045	1.045	1.045	0.015	0.015	0.015	0.015
L8	1.040	1.040	1.040	1.040	0.025	0.025	0.025	0.025	4.865	1.050	1.055	1.055	1.055	0.020	0.025	0.025	0.025
L9	1.045	1.050	1.050	1.050	0.030	0.035	0.035	0.035		1.060	1.060	1.065	1.065	0.030	0.030	0.035	0.035
L10	1.060	1.060	1.060	1.060	0.045	0.045	0.045	0.045	4.865	1.070	1.075	1.075	1.075	0.040	0.045	0.045	0.045
L11	1.065	1.065	1.070	1.070	0.050	0.050	0.055	0.055		1.080	1.080	1.080	1.080	0.050	0.050	0.050	0.050
L12	1.075	1.075	1.080	1.080	0.060	0.060	0.065	0.065	4.865	1.085	1.085	1.090	1.090	0.055	0.055	0.060	0.060
L13	1.080	1.085	1.085	1.090	0.065	0.070	0.070	0.075		1.095	1.095	1.095	1.095	0.065	0.065	0.065	0.065
L14	1.095	1.100	1.100	1.100	0.080	0.085	0.085	0.085	4.865	1.100	1.100	1.105	1.105	0.070	0.070	0.075	0.075
L15	1.105	1.120	1.120	1.130	0.090	0.105	0.105	0.115		1.110	1.120	1.125	1.140	0.080	0.090	0.095	0.110
L16		1.150	1.165	1.180		0.135	0.150	0.165	4.865		1.165	1.180	1.190		0.135	0.150	0.160
L16A				1.205				0.190	4.865				1.205				0.175
U1				1.225				0.210					1.240				0.210
U2				1.225				0.210					1.235				0.205
U3				1.220				0.205	4.865				1.230				0.200
U4				1.215				0.200					1.220				0.190
U5				1.210				0.195					1.215				0.185
U6				1.190				0.175					1.195				0.165
U7				1.175				0.160	4.865				1.190				0.160
U7A				1.170				0.155					1.190				0.160

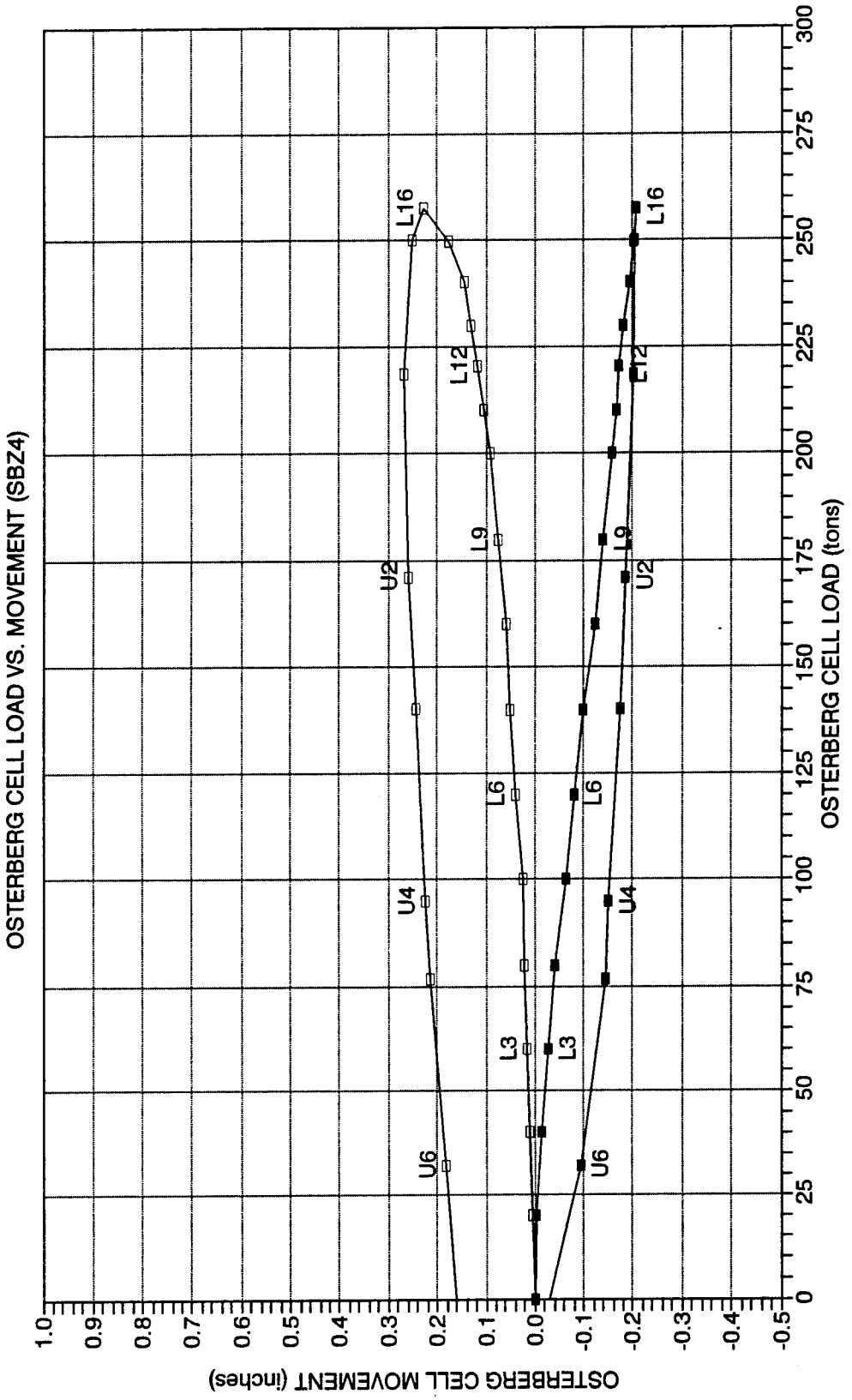


Figure E.89 Load Test 4 Movement: Seabreeze

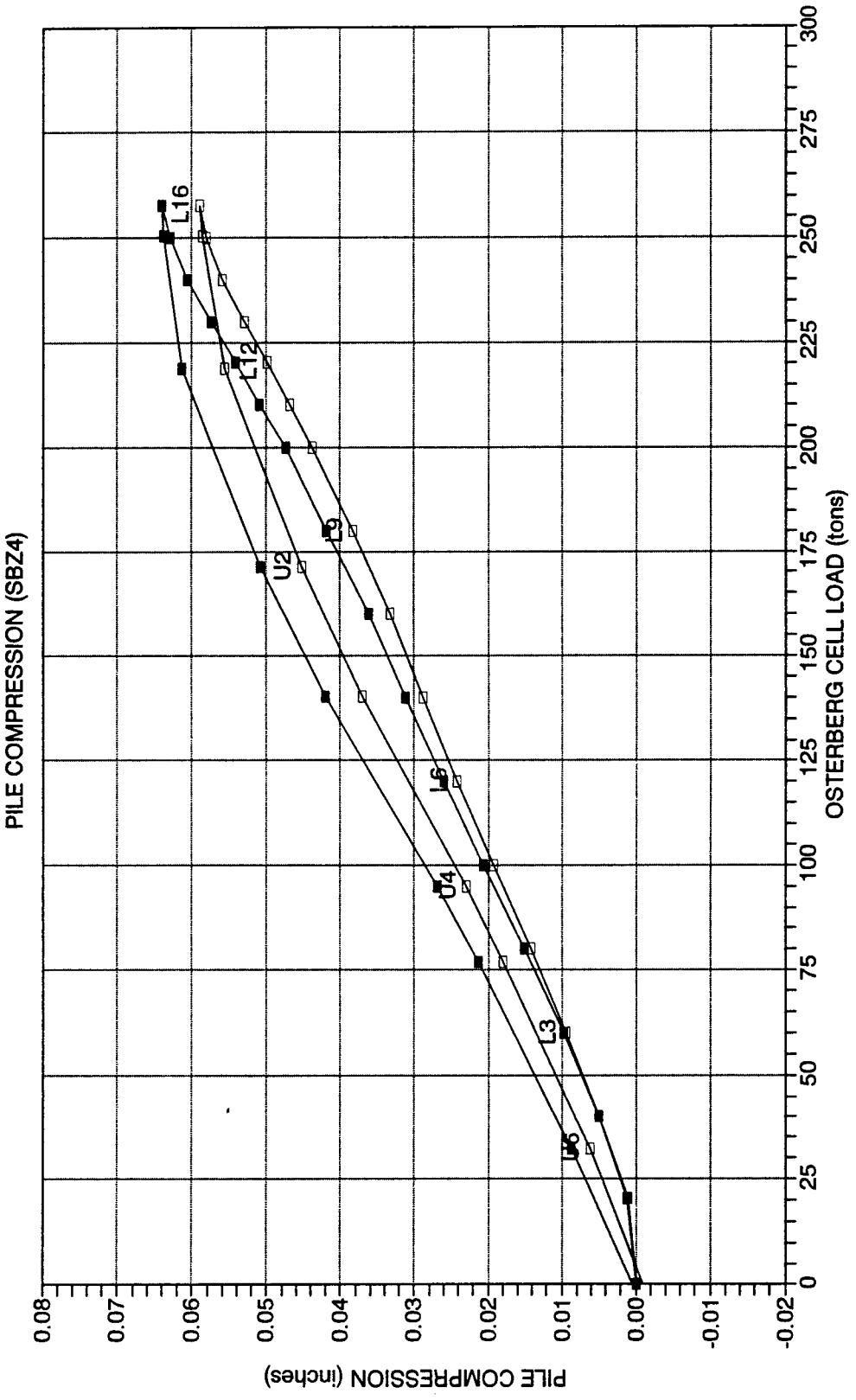


Figure E.90 Load Test 4 Compression: Seabreeze

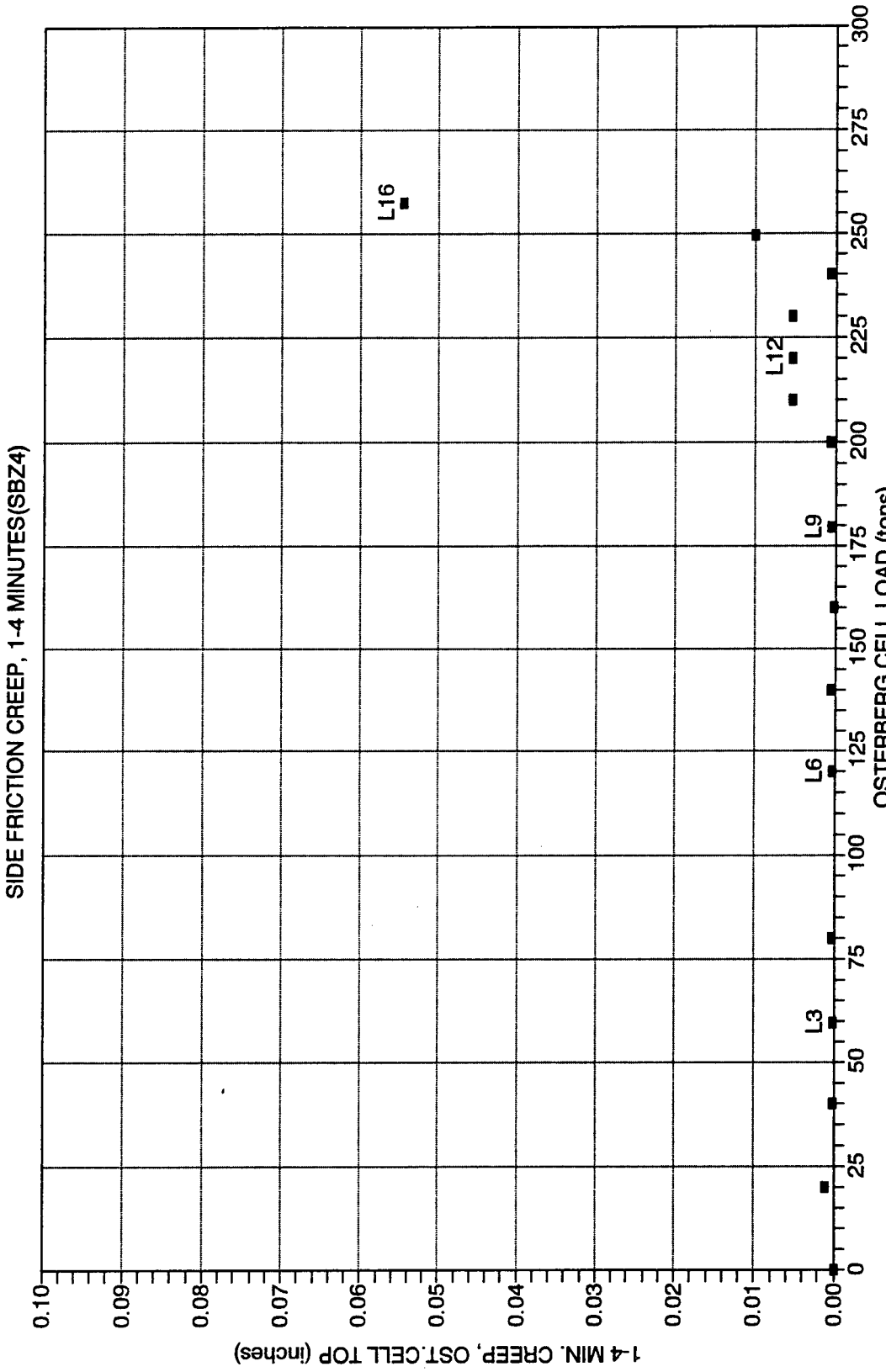


Figure E.91 Load Test 4 Creep: Seabreeze

Table E.34 Data for Load Test 5: Seabreeze

SBZ 5 LOAD NUMBER	TIME INCR. (min)	OSTERBERG CELL LOAD: MEASURED PRESSURE (psi)	CORRECTED PRESSURE (psi)	VW TRANSDUCER READING (tons)	PRESSURE (psi)	EXTENSION @4 MIN. (inches)	LOAD (tons)	OSTERBERG CELL BOTTOM TELLTALE: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)	POISSON EFFECT ADJ. (inches)	OSTERBERG CELL BOTTOM MOVEMENT: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)
L0		300	0	9133	0	1.457	0.0				0.1010	0.0000				0.0000
L1	4	650	650	8923	656	1.472	20.4	0.1000	0.1000	0.1000	0.1000	0.0141	-0.0131	-0.0131	-0.0131	-0.0131
L2	4	1300	1300	8713	1291	1.490	40.3	0.1000	0.1000	0.1000	0.1000	0.0278	-0.0218	-0.0218	-0.0218	-0.0218
L3	4	1925	1925	8500	1927	1.508	60.3	0.1000	0.1000	0.1000	0.1000	0.0414	-0.0354	-0.0354	-0.0354	-0.0354
L4	4	2550	2550	8285	2563	1.535	80.3	0.1040	0.1050	0.1060	0.1075	0.0551	-0.0481	-0.0491	-0.0501	-0.0516
L5	4	3200	3200	8069	3199	1.567	100.3	0.1160	0.1175	0.1190	0.1200	0.0688	-0.0738	-0.0753	-0.0768	-0.0778
L6	4	3800	3800	7852	3834	1.598	120.3	0.1270	0.1280	0.1300	0.1320	0.0824	-0.0984	-0.0994	-0.1014	-0.1034
L7	4	4400	4400	7634	4470	1.628	140.3	0.1380	0.1390	0.1410	0.1430	0.0961	-0.1181	-0.1191	-0.1161	-0.1181
L8	4	5100	5100	7415	5106	1.657	160.3	0.1480	0.1500	0.1520	0.1540	0.1098	-0.1368	-0.1338	-0.1358	-0.1378
L9	4	5700	5700	7196	5741	1.688	180.2	0.1590	0.1610	0.1630	0.1660	0.1234	-0.1514	-0.1534	-0.1604	-0.1584
L10	4	6350	6350	6975	6379	1.720	200.3	0.1710	0.1725	0.1750	0.1780	0.1372	-0.1722	-0.1687	-0.1712	-0.1742
L11	4	7000	7000	6755	7013	1.753	220.2	0.1840	0.1860	0.1890	0.1920	0.1508	-0.1888	-0.1858	-0.1888	-0.1918
L12	4	7300	7300	6644	7332	1.773	230.3	0.1950	0.1965	0.1990	0.2020	0.1577	-0.1967	-0.1982	-0.2007	-0.1987
L12A	4	7300	7300	6644	7332	1.779	230.3				0.2070	0.1577				-0.2037
L13	4	7700	7700	6535	7645	1.796	240.1	0.2080	0.2090	0.2110	0.2140	0.1644	-0.2064	-0.2074	-0.2094	-0.2124
L14	4	8000	8000	6420	7976	1.817	250.5	0.2160	0.2185	0.2210	0.2250	0.1715	-0.2165	-0.2140	-0.2165	-0.2205
L15	4	8300	8300	6310	8291	1.844	260.4	0.2290	0.2320	0.2360	0.2420	0.1783	-0.2263	-0.2293	-0.2283	-0.2293
L16	4	8595	8595	6200	8606	1.884	270.3	0.2490	0.2530	0.2600	0.2720	0.1851	-0.2381	-0.2371	-0.2441	-0.2411
L17	4	8690	8690	6145	8764	1.975	275.2	0.2900	0.2980	0.3140	0.3580	0.1884	-0.2474	-0.2504	-0.2514	-0.2604
L18	3.5	8920	8920	6110	8864	2.381	278.3	0.4350	0.4700	0.5650	0.7600	0.1906	-0.2846	-0.2246	-0.2496	-0.2746
U0	1.5			6377	8099	2.454	254.2				0.8520	0.1742				-0.2502
U1	3	7700	7700	6518	7694	2.452	241.5				0.8610	0.1655				-0.2455
U2	3.5	4900	4900	7496	4871	2.406	152.7				0.8960	0.1047				-0.2247
U3	3	3600	3600	7932	3600	2.367	112.8				0.8960	0.0774				-0.2024
U4	3	2700	2700	8242	2690	2.338	84.2				0.8960	0.0578				-0.1878
U5	3	1350	1350	8729	1243	2.267	38.7				0.8700	0.0267				-0.1457
U6	3	300	0	9124	0	2.143	0.0				0.7840	0.0000				-0.0580
U6A	3	300	0	9129	0	2.139	0.0				0.7800	0.0000				-0.0540

Table E.34 continued

SBZ 5 LOAD NUMBER	OSTERBERG CELL TOP TELLTALE TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	PILE COMPRESSION TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	OSTERBERG CELL TOP TELLTALE TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)	PILE COMPRESSION TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)
L0				0.01020				0.00000				0.01000				0.00000
L1	0.01170	0.01170	0.01180	0.01180	0.00150	0.00150	0.00160	0.00160	0.01120	0.01130	0.01130	0.01130	0.00120	0.00130	0.00130	0.00130
L2	0.01610	0.01620	0.01620	0.01630	0.00590	0.00600	0.00600	0.00610	0.01560	0.01570	0.01570	0.01580	0.00560	0.00570	0.00570	0.00580
L3	0.02090	0.02090	0.02100	0.02120	0.01070	0.01070	0.01080	0.01100	0.02080	0.02080	0.02090	0.02090	0.01080	0.01080	0.01090	0.01090
L4	0.02610	0.02620	0.02630	0.02650	0.01590	0.01600	0.01610	0.01630	0.02630	0.02640	0.02650	0.02670	0.01630	0.01640	0.01650	0.01670
L5	0.03140	0.03140	0.03150	0.03170	0.02120	0.02120	0.02130	0.02150	0.03200	0.03200	0.03220	0.03240	0.02200	0.02200	0.02220	0.02240
L6	0.03640	0.03650	0.03660	0.03670	0.02620	0.02630	0.02640	0.02650	0.03770	0.03780	0.03790	0.03790	0.02770	0.02780	0.02790	0.02790
L7	0.04130	0.04140	0.04160	0.04170	0.03110	0.03120	0.03140	0.03150	0.04300	0.04310	0.04340	0.04370	0.03300	0.03310	0.03340	0.03370
L8	0.04640	0.04650	0.04660	0.04670	0.03620	0.03630	0.03640	0.03650	0.04860	0.04870	0.04880	0.04890	0.03860	0.03870	0.03880	0.03890
L9	0.05140	0.05150	0.05160	0.05160	0.04120	0.04130	0.04140	0.04140	0.05390	0.05390	0.05410	0.05440	0.04390	0.04390	0.04410	0.04440
L10	0.05670	0.05680	0.05680	0.05710	0.04650	0.04660	0.04660	0.04690	0.05970	0.05990	0.05990	0.06020	0.04970	0.04990	0.04990	0.05020
L11	0.06220	0.06240	0.06260	0.06280	0.05200	0.05220	0.05240	0.05260	0.06590	0.06590	0.06630	0.06660	0.05590	0.05590	0.05630	0.05660
L12	0.06550	0.06550	0.06560	0.06580	0.05530	0.05530	0.05540	0.05560	0.06950	0.06950	0.06980	0.06990	0.05950	0.05950	0.05980	0.05990
L12A				0.06610				0.05590				0.07000				0.06000
L13	0.06880	0.06890	0.06890	0.06930	0.05860	0.05870	0.05870	0.05910	0.07290	0.07300	0.07310	0.07350	0.06290	0.06300	0.06310	0.06350
L14	0.07200	0.07210	0.07230	0.07260	0.06180	0.06190	0.06210	0.06240	0.07600	0.07640	0.07650	0.07690	0.06600	0.06640	0.06650	0.06690
L15	0.07520	0.07520	0.07550	0.07560	0.06500	0.06500	0.06530	0.06540	0.07960	0.07960	0.07980	0.07990	0.06960	0.06960	0.06980	0.06990
L16	0.07820	0.07820	0.07820	0.07840	0.06800	0.06800	0.06800	0.06820	0.08290	0.08290	0.08290	0.08320	0.07290	0.07290	0.07290	0.07320
L17	0.07950	0.07950	0.07960	0.07980	0.06930	0.06930	0.06940	0.06960	0.08480	0.08480	0.08490	0.08550	0.07480	0.07480	0.07490	0.07550
L18	0.08130	0.08130	0.08130	0.08160	0.07110	0.07110	0.07110	0.07140	0.08730	0.08770	0.08780	0.08830	0.07730	0.07770	0.07780	0.07830
U0				0.07840				0.06820				0.08460				0.07460
U1				0.07680				0.06660				0.08300				0.07300
U2				0.05700				0.04680				0.06240				0.05240
U3				0.04510				0.03490				0.04950				0.03950
U4				0.03610				0.02590				0.03980				0.02980
U5				0.02340				0.01320				0.02540				0.01540
U6				0.01270				0.00250				0.01310				0.00310
U6A				0.01260				0.00240				0.01290				0.00290

Table E.34 continued

SBZ 5 LOAD NUMBER	PILE COMPRESSION TT-1 & TT-2 AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP MOVEMENT AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP CREEP 1-4 MIN (inches)	CREEP 2-4 MIN (inches)
L0				0.0000				0.0000	0.0000	0.0000
L1	0.0013	0.0014	0.0014	0.0014	0.0013	0.0014	0.0014	0.0014	0.0000	0.0000
L2	0.0057	0.0058	0.0058	0.0060	0.0108	0.0109	0.0109	0.0110	0.0001	0.0001
L3	0.0108	0.0108	0.0109	0.0109	0.0158	0.0158	0.0159	0.0160	0.0002	0.0001
L4	0.0161	0.0162	0.0163	0.0165	0.0261	0.0262	0.0263	0.0265	0.0003	0.0002
L5	0.0216	0.0216	0.0218	0.0220	0.0316	0.0316	0.0318	0.0320	0.0004	0.0002
L6	0.0270	0.0271	0.0272	0.0272	0.0370	0.0371	0.0372	0.0372	0.0002	0.0001
L7	0.0321	0.0322	0.0324	0.0326	0.0471	0.0472	0.0524	0.0526	0.0054	0.0002
L8	0.0374	0.0375	0.0376	0.0377	0.0574	0.0625	0.0626	0.0627	0.0002	0.0001
L9	0.0426	0.0426	0,0428	0.0429	0.0725	0.0726	0.0678	0.0729	0.0003	0.0051
L10	0.0481	0.0483	0.0483	0.0486	0.0831	0.0882	0.0882	0.0885	0.0003	0.0003
L11	0.0540	0.0541	0.0544	0.0546	0.0990	0.1040	0.1043	0.1046	0.0006	0.0003
L12	0.0574	0.0574	0.0576	0.0578	0.1124	0.1124	0.1126	0.1177	0.0053	0.0051
L12A				0.0580				0.1179		
L13	0.0608	0.0609	0.0609	0.0613	0.1258	0.1259	0.1259	0.1263	0.0004	0.0004
L14	0.0639	0.0642	0.0643	0.0647	0.1339	0.1392	0.1393	0.1397	0.0005	0.0003
L15	0.0673	0.0673	0.0676	0.0677	0.1473	0.1473	0.1526	0.1576	0.0103	0.0051
L16	0.0705	0.0705	0.0705	0.0707	0.1655	0.1705	0.1705	0.1857	0.0153	0.0153
L17	0.0721	0.0721	0.0722	0.0726	0.2021	0.2071	0.2222	0.2576	0.0505	0.0354
L18	0.0742	0.0744	0.0745	0.0749	0.3142	0.4094	0.4794	0.6499	0.2404	0.1704
U0				0.0714				0.7464		
U1				0.0698				0.7498		
U2				0.0496				0.7246		
U3				0.0372				0.7072		
U4				0.0279				0.6929		
U5				0.0143				0.6643		
U6				0.0028				0.6278		
U6A				0.0027				0.6277		

Table E.34 continued

SBZ 5 LOAD NUMBER	TOP OF PILE MOVEMENT - WIRELINE									TOP OF PILE MOVEMENT - SURVEY LEVEL							
	READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)	BSIGHT @0.5MIN. (inches)	READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)
L0				0.985				0.000	2.010				2.015				0.000
L1	0.985	0.985	0.985	0.985	0.000	0.000	0.000	0.000		2.015	2.015	2.015	2.015	0.000	0.000	0.000	0.000
L2	0.990	0.990	0.990	0.990	0.005	0.005	0.005	0.005		2.020	2.020	2.020	2.020	0.005	0.005	0.005	0.005
L3	0.990	0.990	0.990	0.990	0.005	0.005	0.005	0.005	2.010	2.020	2.020	2.020	2.020	0.005	0.005	0.005	0.005
L4	0.995	0.995	0.995	0.995	0.010	0.010	0.010	0.010		2.025	2.025	2.025	2.025	0.010	0.010	0.010	0.010
L5	0.995	0.995	0.995	0.995	0.010	0.010	0.010	0.010	2.010	2.025	2.025	2.025	2.030	0.010	0.010	0.010	0.015
L6	0.995	0.995	0.995	0.995	0.010	0.010	0.010	0.010		2.030	2.030	2.030	2.030	0.015	0.015	0.015	0.015
L7	1.000	1.000	1.005	1.005	0.015	0.015	0.020	0.020	2.010	2.035	2.035	2.035	2.035	0.020	0.020	0.020	0.020
L8	1.005	1.010	1.010	1.010	0.020	0.025	0.025	0.025		2.040	2.040	2.040	2.045	0.025	0.025	0.025	0.030
L9	1.015	1.015	1.010	1.015	0.030	0.030	0.025	0.030	2.010	2.045	2.050	2.050	2.050	0.030	0.035	0.035	0.035
L10	1.020	1.025	1.025	1.025	0.035	0.040	0.040	0.040		2.055	2.055	2.060	2.060	0.040	0.040	0.045	0.045
L11	1.030	1.035	1.035	1.035	0.045	0.050	0.050	0.050	2.010	2.065	2.065	2.070	2.070	0.050	0.050	0.055	0.055
L12	1.040	1.040	1.040	1.045	0.055	0.055	0.055	0.060		2.070	2.075	2.075	2.075	0.055	0.060	0.060	0.060
L12A				1.045				0.060					2.080				0.065
L13	1.050	1.050	1.050	1.050	0.065	0.065	0.065	0.065	2.010	2.085	2.085	2.090	2.090	0.070	0.070	0.075	0.075
L14	1.055	1.060	1.060	1.060	0.070	0.075	0.075	0.075		2.095	2.100	2.100	2.100	0.080	0.085	0.085	0.085
L15	1.065	1.065	1.070	1.075	0.080	0.080	0.085	0.090	2.010	2.105	2.105	2.110	2.110	0.090	0.090	0.095	0.095
L16	1.080	1.085	1.085	1.100	0.095	0.100	0.100	0.115	2.010	2.120	2.120	2.125	2.135	0.105	0.105	0.110	0.120
L17	1.115	1.120	1.135	1.170	0.130	0.135	0.150	0.185		2.155	2.160	2.175	2.210	0.140	0.145	0.160	0.195
L18	1.225	1.320	1.390	1.560	0.240	0.335	0.405	0.575	2.010	2.295	2.330	2.430	2.595	0.280	0.315	0.415	0.580
U0				1.660				0.675					2.700				0.685
U1				1.665				0.680					2.700				0.685
U2				1.660				0.675					2.695				0.680
U3				1.655				0.670					2.695				0.680
U4				1.650				0.665					2.685				0.670
U5				1.635				0.650					2.670				0.655
U6				1.610				0.625					2.650				0.635
U6A				1.610				0.625					2.640				0.625

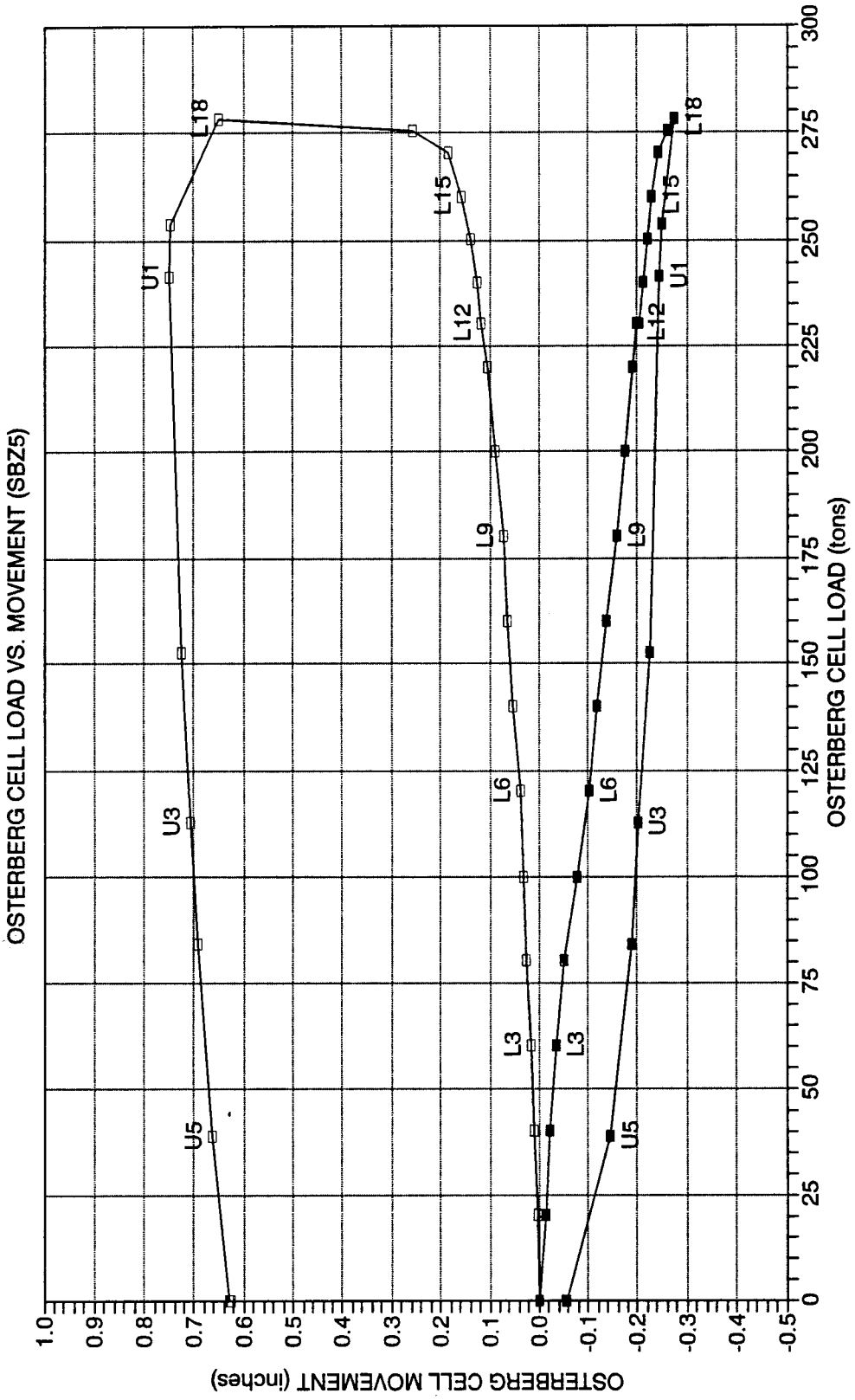


Figure E.92 Load Test 5 Movement: Seabreeze

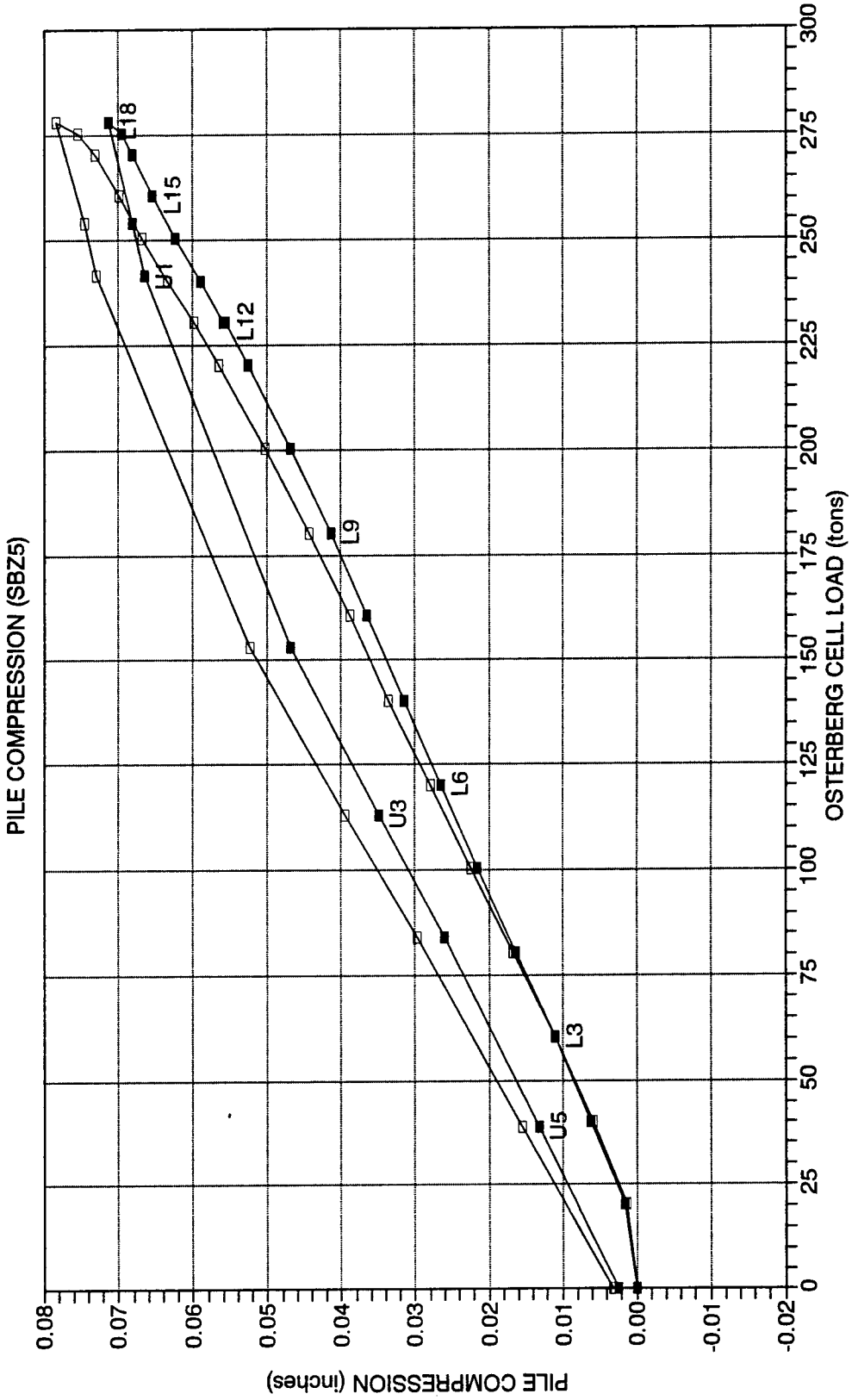


Figure E.93 Load Test 5 Compression: Seabreeze

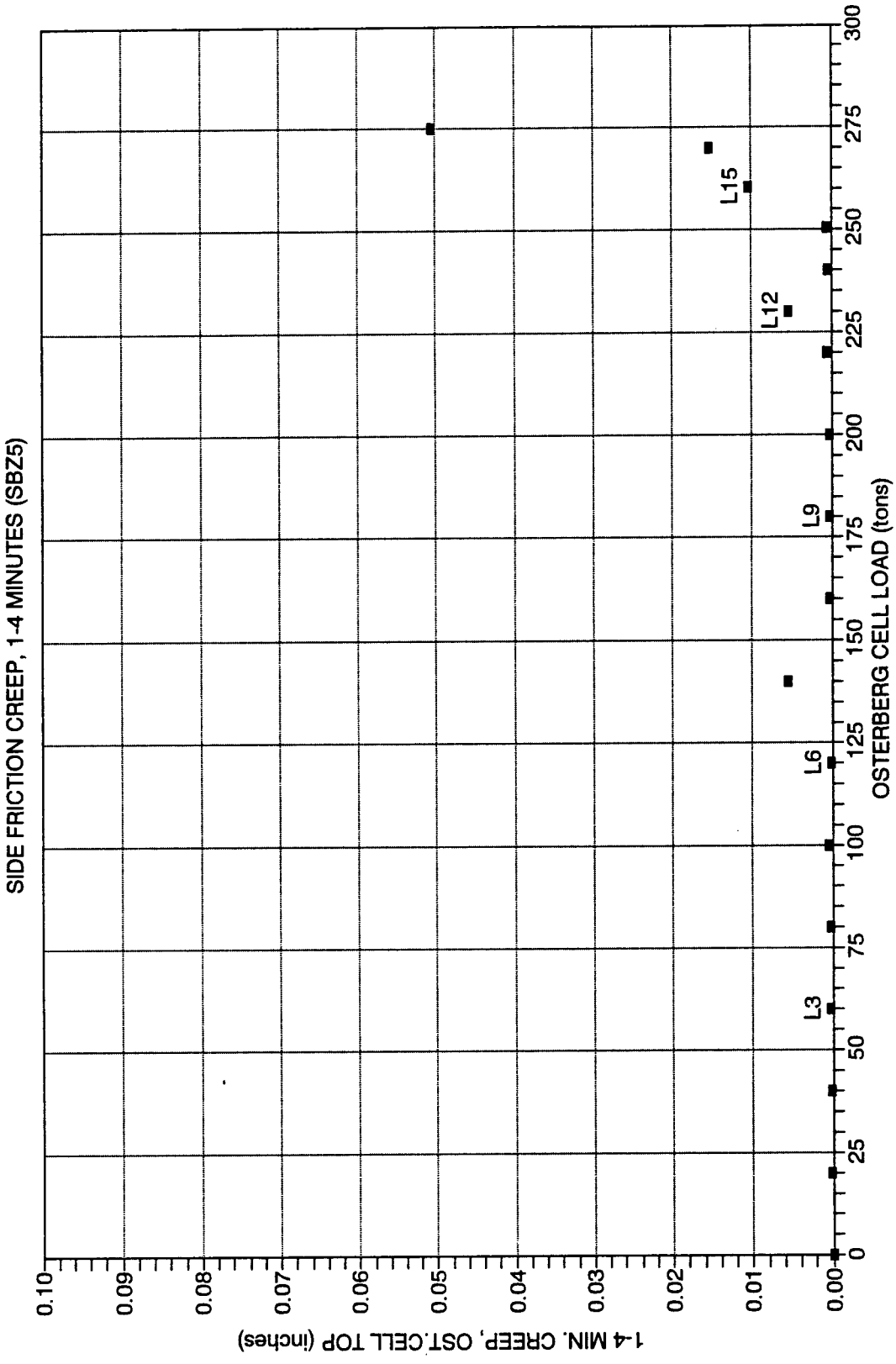


Figure E.94 Load Test 5 Creep: Seabreeze

Table E.35 Data for Load Test 6: Seabreeze

SBZ 6 LOAD NUMBER	TIME INCR. (min)	OSTERBERG CELL LOAD: MEASURED PRESSURE (psi)	CORRECTED PRESSURE (psi)	VW TRANSDUCER READING (tons)	EXTENSION PRESSURE (psi)	@4 MIN. (inches)	LOAD (tons)	OSTERBERG CELL BOTTOM TELLTALE: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)	GRAPH TT-3 @4 MIN. (inches)	POISSON EFFECT ADJ. (inches)	OSTERBERG CELL BOTTOM MOVEMENT: TT-3 @0.5MIN. (inches)	TT-3 @1MIN. (inches)	TT-3 @2MIN. (inches)	TT-3 @4 MIN. (inches)
L0		0	0	9133	0	2.139	0.0				0.1870	-0.1870	0.0000				-0.0540
L1	4	700	700	8913	687	2.208	21.2	0.1870	0.1870	0.1870	0.1870	-0.1870	0.0148	-0.0198	-0.0198	-0.0198	-0.0738
L2	4	1000	1000	8807	1008	2.218	31.3	0.1870	0.1870	0.1870	0.1870	-0.1870	0.0217	-0.0267	-0.0267	-0.0267	-0.0807
L3	4	1450	1450	-8658	1456	2.231	45.4	0.1870	0.1870	0.1870	0.1870	-0.1870	0.0313	-0.0363	-0.0363	-0.0363	-0.0903
L4	4	1950	1950	8497	1936	2.245	60.4	0.1870	0.1870	0.1870	0.1870	-0.1870	0.0416	-0.0466	-0.0466	-0.0466	-0.0956
L5	4	2400	2400	8338	2407	2.264	75.3	0.1885	0.1890	0.1900	0.1915	-0.1915	0.0518	-0.0533	-0.0538	-0.0548	-0.1103
L6	4	2880	2880	8175	2888	2.289	90.4	0.1995	0.2005	0.2010	0.2020	-0.2020	0.0621	-0.0746	-0.0756	-0.0761	-0.1311
L7	4	3350	3350	8015	3357	2.313	105.1	0.2085	0.2100	0.2106	0.2120	-0.2120	0.0722	-0.0937	-0.0952	-0.0958	-0.1512
L8	4	3850	3850	7851	3837	2.337	120.2	0.2175	0.2182	0.2195	0.2210	-0.2210	0.0825	-0.1130	-0.1087	-0.1100	-0.1655
L9	4	4300	4300	7687	4316	2.360	135.3	0.2260	0.2270	0.2285	0.2300	-0.2300	0.0928	-0.1218	-0.1228	-0.1243	-0.1798
L10	4	4780	4780	7524	4790	2.384	150.2	0.2345	0.2356	0.2370	0.2390	-0.2390	0.1030	-0.1405	-0.1416	-0.1430	-0.1940
L11	4	5250	5250	7358	5272	2.409	165.3	0.2420	0.2430	0.2455	0.2500	-0.2500	0.1134	-0.1534	-0.1544	-0.1519	-0.2104
L12	4	5750	5750	7197	5738	2.434	180.0	0.2540	0.2555	0.2575	0.2600	-0.2600	0.1234	-0.1704	-0.1719	-0.1739	-0.2304
L13	4	6200	6200	7032	6214	2.458	195.0	0.2645	0.2660	0.2680	0.2700	-0.2700	0.1336	-0.1861	-0.1876	-0.1896	-0.2456
L14	4	6670	6670	6868	6688	2.484	209.8	0.2730	0.2750	0.2770	0.2806	-0.2806	0.1438	-0.1998	-0.2018	-0.2038	-0.2614
L15	4	7150	7150	6704	7160	2.511	224.7	0.2840	0.2865	0.2885	0.2920	-0.2920	0.1540	-0.2160	-0.2135	-0.2155	-0.2730
L16	4	7620	7620	6533	7651	2.542	240.1	0.2970	0.2950	0.3020	0.3070	-0.3070	0.1645	-0.2295	-0.2275	-0.2345	-0.2885
L16A	4	7620	7620	6531	7657	2.548	240.3				0.3120	-0.3120	0.1646				-0.2836
L17	4	8100	8100	6366	8131	2.585	255.2	0.3170	0.3210	0.3250	0.3330	-0.3330	0.1748	-0.2448	-0.2488	-0.2478	-0.3048
L18	4	8590	8590	6201	8603	2.677	270.1	0.3510	0.3600	0.3740	0.4070	-0.4070	0.1850	-0.2590	-0.2630	-0.2670	-0.3290
L19	4	8770	8770	6146	8761	3.126	274.9	0.4815	0.5160	0.5920	0.8510	-0.8510	0.1884	-0.2629	-0.2674	-0.2634	-0.3564
U1	3	8100	8100	6293	8340	3.169	261.7				0.9070	-0.9070	0.1793				-0.3333
U2	3	6600	6600	6888	6630	3.132	207.9				0.9140	-0.9140	0.1426				-0.3036
U3	3	5200	5200	7378	5214	3.098	163.4				0.9220	-0.9220	0.1121				-0.2811
U4	3	3650	3650	7901	3691	3.052	115.5				0.9240	-0.9240	0.0794				-0.2554
U5	3	1925	1925	8582	1683	2.986	52.3				0.9230	-0.9230	0.0362				-0.2212
U6	3	0	0	9129	0	2.841	0.0				0.8320	-0.8320	0.0000				-0.1190
U6A	3	0	0	9128	0	2.839	0.0				0.8300	-0.8300	0.0000				-0.1170

NOTE: L16A LOAD WAS A HOLD FOR BATTERY CHANGE IN COMPUTER

Table E.35 continued

SB2 6	OSTERBERG CELL TOP TELLTALE					PILE COMPRESSION			OSTERBERG CELL TOP TELLTALE					PILE COMPRESSION		
LOAD NUMBER	TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	TT-1 @0.5MIN. (inches)	TT-1 @1MIN. (inches)	TT-1 @2MIN. (inches)	TT-1 @4 MIN. (inches)	TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)	TT-2 @0.5MIN. (inches)	TT-2 @1MIN. (inches)	TT-2 @2MIN. (inches)	TT-2 @4 MIN. (inches)
L0				0.01790				0.00000				0.01240				0.00000
L1	0.01790	0.01790	0.01790	0.01820	0.00000	0.00000	0.00000	0.00030	0.01240	0.01250	0.01250	0.01270	0.00000	0.00010	0.00010	0.00030
L2	0.02020	0.02025	0.02060	0.02110	0.00230	0.00235	0.00270	0.00320	0.01480	0.01485	0.01510	0.01560	0.00240	0.00245	0.00270	0.00320
L3	0.02400	0.02400	0.02410	0.02425	0.00610	0.00610	0.00620	0.00635	0.01880	0.01880	0.01880	0.01880	0.00640	0.00640	0.00640	0.00640
L4	0.02790	0.02790	0.02790	0.02800	0.01000	0.01000	0.01000	0.01010	0.02280	0.02285	0.02290	0.02300	0.01040	0.01045	0.01050	0.01060
L5	0.03190	0.03200	0.03210	0.03220	0.01400	0.01410	0.01420	0.01430	0.02710	0.02710	0.02720	0.02740	0.01470	0.01470	0.01480	0.01500
L6	0.03590	0.03600	0.03610	0.03630	0.01800	0.01810	0.01820	0.01840	0.03160	0.03170	0.03180	0.03180	0.01920	0.01930	0.01940	0.01940
L7	0.04000	0.04010	0.04020	0.04030	0.02210	0.02220	0.02230	0.02240	0.03590	0.03610	0.03610	0.03630	0.02350	0.02370	0.02370	0.02390
L8	0.04410	0.04410	0.04420	0.04440	0.02620	0.02620	0.02630	0.02650	0.04050	0.04060	0.04060	0.04070	0.02810	0.02820	0.02820	0.02830
L9	0.04810	0.04810	0.04820	0.04840	0.03020	0.03020	0.03030	0.03050	0.04480	0.04480	0.04480	0.04500	0.03240	0.03240	0.03240	0.03260
L10	0.05220	0.05220	0.05220	0.05240	0.03430	0.03430	0.03430	0.03450	0.04910	0.04920	0.04930	0.04950	0.03670	0.03680	0.03690	0.03710
L11	0.05610	0.05620	0.05630	0.05640	0.03820	0.03830	0.03840	0.03850	0.05360	0.05370	0.05370	0.05370	0.04120	0.04130	0.04130	0.04130
L12	0.06030	0.06040	0.06050	0.06060	0.04240	0.04250	0.04260	0.04270	0.05800	0.05810	0.05820	0.05850	0.04560	0.04570	0.04580	0.04610
L13	0.06460	0.06470	0.06470	0.06480	0.04670	0.04680	0.04680	0.04690	0.06280	0.06300	0.06300	0.06320	0.05040	0.05060	0.05060	0.05080
L14	0.06910	0.06920	0.06950	0.06950	0.05120	0.05130	0.05160	0.05160	0.06770	0.06770	0.06810	0.06810	0.05530	0.05530	0.05570	0.05570
L15	0.07390	0.07390	0.07440	0.07460	0.05600	0.05600	0.05650	0.05670	0.07300	0.07310	0.07350	0.07370	0.06060	0.06070	0.06110	0.06130
L16	0.07920	0.07950	0.07980	0.08030	0.06130	0.06160	0.06190	0.06240	0.07860	0.07870	0.07930	0.07970	0.06620	0.06630	0.06690	0.06730
L16A				0.08090				0.06300				0.08060				0.06820
L17	0.08570	0.08580	0.08650	0.08690	0.06780	0.06790	0.06860	0.06900	0.08550	0.08570	0.08630	0.08670	0.07310	0.07330	0.07390	0.07430
L18	0.09290	0.09320	0.09370	0.09430	0.07500	0.07530	0.07580	0.07640	0.09280	0.09320	0.09370	0.09370	0.08040	0.08080	0.08130	0.08130
L19	0.09540	0.09540	0.09520	0.09520	0.07750	0.07750	0.07730	0.07730	0.09540	0.09540	0.09540	0.09540	0.08300	0.08300	0.08300	0.08300
U1				0.09110				0.07320				0.09160				0.07920
U2				0.08420				0.06630				0.08480				0.07240
U3				0.07280				0.05490				0.07310				0.06070
U4				0.05810				0.04020				0.05760				0.04520
U5				0.03700				0.01910				0.03490				0.02250
U6				0.02050				0.00260				0.01650				0.00410
U6A				0.02020				0.00230				0.01620				0.00380

Table E.35 continued

SBZ 6 LOAD NUMBER	PILE COMPRESSION TT-1 & TT-2 AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP MOVEMENT AVG. @0.5MIN. (inches)	AVG. @1MIN. (inches)	AVG. @2MIN. (inches)	AVG. @4 MIN. (inches)	OSTERBERG CELL TOP CREEP 1-4 MIN. (inches)	CREEP 2-4 MIN. (inches)
L0				0.0000				0.0000	0.0000	0.0000
L1	0.0000	0.0001	0.0001	0.0003	-0.0050	-0.0050	-0.0050	-0.0047	0.0003	0.0003
L2	0.0024	0.0024	0.0027	0.0032	-0.0027	-0.0026	-0.0023	-0.0018	0.0008	0.0005
L3	0.0063	0.0063	0.0063	0.0064	0.0012	0.0012	0.0013	0.0014	0.0001	0.0001
L4	0.0102	0.0102	0.0103	0.0104	0.0052	0.0052	0.0052	0.0104	0.0051	0.0051
L5	0.0143	0.0144	0.0145	0.0147	0.0143	0.0144	0.0145	0.0147	0.0003	0.0002
L6	0.0186	0.0187	0.0188	0.0189	0.0186	0.0187	0.0188	0.0189	0.0002	0.0001
L7	0.0228	0.0230	0.0230	0.0232	0.0228	0.0230	0.0230	0.0232	0.0002	0.0002
L8	0.0272	0.0272	0.0273	0.0274	0.0272	0.0322	0.0323	0.0324	0.0002	0.0002
L9	0.0313	0.0313	0.0314	0.0316	0.0413	0.0413	0.0414	0.0416	0.0003	0.0002
L10	0.0355	0.0356	0.0356	0.0358	0.0455	0.0456	0.0456	0.0508	0.0053	0.0052
L11	0.0397	0.0398	0.0399	0.0399	0.0547	0.0548	0.0599	0.0599	0.0051	0.0000
L12	0.0440	0.0441	0.0442	0.0444	0.0640	0.0641	0.0642	0.0644	0.0003	0.0002
L13	0.0486	0.0487	0.0487	0.0489	0.0736	0.0737	0.0737	0.0739	0.0002	0.0002
L14	0.0533	0.0533	0.0537	0.0537	0.0833	0.0833	0.0837	0.0837	0.0004	0.0000
L15	0.0583	0.0584	0.0588	0.0590	0.0933	0.0984	0.0988	0.0990	0.0006	0.0002
L16	0.0638	0.0640	0.0644	0.0649	0.1088	0.1090	0.1094	0.1149	0.0059	0.0054
L16A				0.0656				0.1256		
L17	0.0705	0.0706	0.0713	0.0717	0.1304	0.1306	0.1362	0.1416	0.0111	0.0054
L18	0.0777	0.0781	0.0786	0.0789	0.1677	0.1731	0.1836	0.2089	0.0358	0.0253
L19	0.0803	0.0803	0.0802	0.0802	0.3003	0.3303	0.4102	0.6302	0.2999	0.2200
U1				0.0762				0.6962		
U2				0.0694				0.6894		
U3				0.0578				0.6778		
U4				0.0427				0.6577		
U5				0.0208				0.6258		
U6				0.0034				0.5834		
U6A				0.0031				0.5831		

Table E.35 continued

SBZ 6 LOAD NUMBER	TOP OF PILE MOVEMENT - WIRELINE READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)	BSIGHT @0.5MIN. (inches)	TOP OF PILE MOVEMENT - SURVEY LEVEL READING @0.5MIN. (inches)	READING @1MIN. (inches)	READING @2MIN. (inches)	READING @4MIN. (inches)	MOVEMENT @0.5MIN. (inches)	MOVEMENT @1MIN. (inches)	MOVEMENT @2MIN. (inches)	MOVEMENT @4MIN. (inches)
L0				0.760				0.000	3.050				1.000				0.000
L1	0.755	0.755	0.755	0.755	-0.005	-0.005	-0.005	-0.005		1.000	1.000	1.000	1.000	0.000	0.000	0.000	0.000
L2	0.755	0.755	0.755	0.755	-0.005	-0.005	-0.005	-0.005	3.500	1.010	1.010	1.010	1.010	0.010	0.010	0.010	0.010
L3	0.755	0.755	0.755	0.755	-0.005	-0.005	-0.005	-0.005		1.010	1.010	1.010	1.010	0.010	0.010	0.010	0.010
L4	0.755	0.755	0.755	0.760	-0.005	-0.005	-0.005	0.000	3.050	1.020	1.020	1.020	1.020	0.020	0.020	0.020	0.020
L5	0.760	0.760	0.760	0.760	0.000	0.000	0.000	0.000		1.020	1.020	1.020	1.020	0.020	0.020	0.020	0.020
L6	0.760	0.760	0.760	0.760	0.000	0.000	0.000	0.000	3.050	1.020	1.020	1.020	1.020	0.020	0.020	0.020	0.020
L7	0.760	0.760	0.760	0.760	0.000	0.000	0.000	0.000		1.025	1.025	1.025	1.025	0.025	0.025	0.025	0.025
L8	0.760	0.765	0.765	0.765	0.000	0.005	0.005	0.005	3.050	1.030	1.030	1.030	1.030	0.030	0.030	0.030	0.030
L9	0.770	0.770	0.770	0.770	0.010	0.010	0.010	0.010		1.035	1.035	1.035	1.035	0.035	0.035	0.035	0.035
L10	0.770	0.770	0.770	0.775	0.010	0.010	0.010	0.015	3.050	1.040	1.040	1.040	1.040	0.040	0.040	0.040	0.040
L11	0.775	0.775	0.780	0.780	0.015	0.015	0.020	0.020		1.045	1.045	1.045	1.045	0.045	0.045	0.045	0.045
L12	0.780	0.780	0.780	0.780	0.020	0.020	0.020	0.020	3.050	1.050	1.050	1.050	1.050	0.050	0.050	0.050	0.050
L13	0.785	0.785	0.785	0.785	0.025	0.025	0.025	0.025		1.055	1.055	1.055	1.055	0.055	0.055	0.055	0.055
L14	0.790	0.790	0.790	0.790	0.030	0.030	0.030	0.030		1.060	1.060	1.060	1.060	0.060	0.060	0.060	0.060
L15	0.795	0.800	0.800	0.800	0.035	0.040	0.040	0.040		1.065	1.065	1.065	1.065	0.065	0.065	0.065	0.065
L16	0.805	0.805	0.805	0.810	0.045	0.045	0.045	0.050		1.070	1.070	1.070	1.070	0.070	0.070	0.070	0.070
L16A				0.820				0.060					1.080				0.080
L17	0.820	0.820	0.825	0.830	0.060	0.060	0.065	0.070		1.085	1.085	1.095	1.095	0.085	0.085	0.095	0.095
L18	0.850	0.855	0.865	0.890	0.090	0.095	0.105	0.130		1.110	1.110	1.120	1.160	0.110	0.110	0.120	0.160
L19	0.980	1.010	1.090	1.310	0.220	0.250	0.330	0.550		1.240	1.280	1.360	1.580	0.240	0.280	0.360	0.580
U1				1.380				0.620					1.640				0.640
U2				1.380				0.620					1.620				0.620
U3				1.380				0.620					1.620				0.620
U4				1.375				0.615					1.620				0.620
U5				1.365				0.605					1.620				0.620
U6				1.340				0.580					1.600				0.600
U6A				1.340				0.580					1.600				0.600

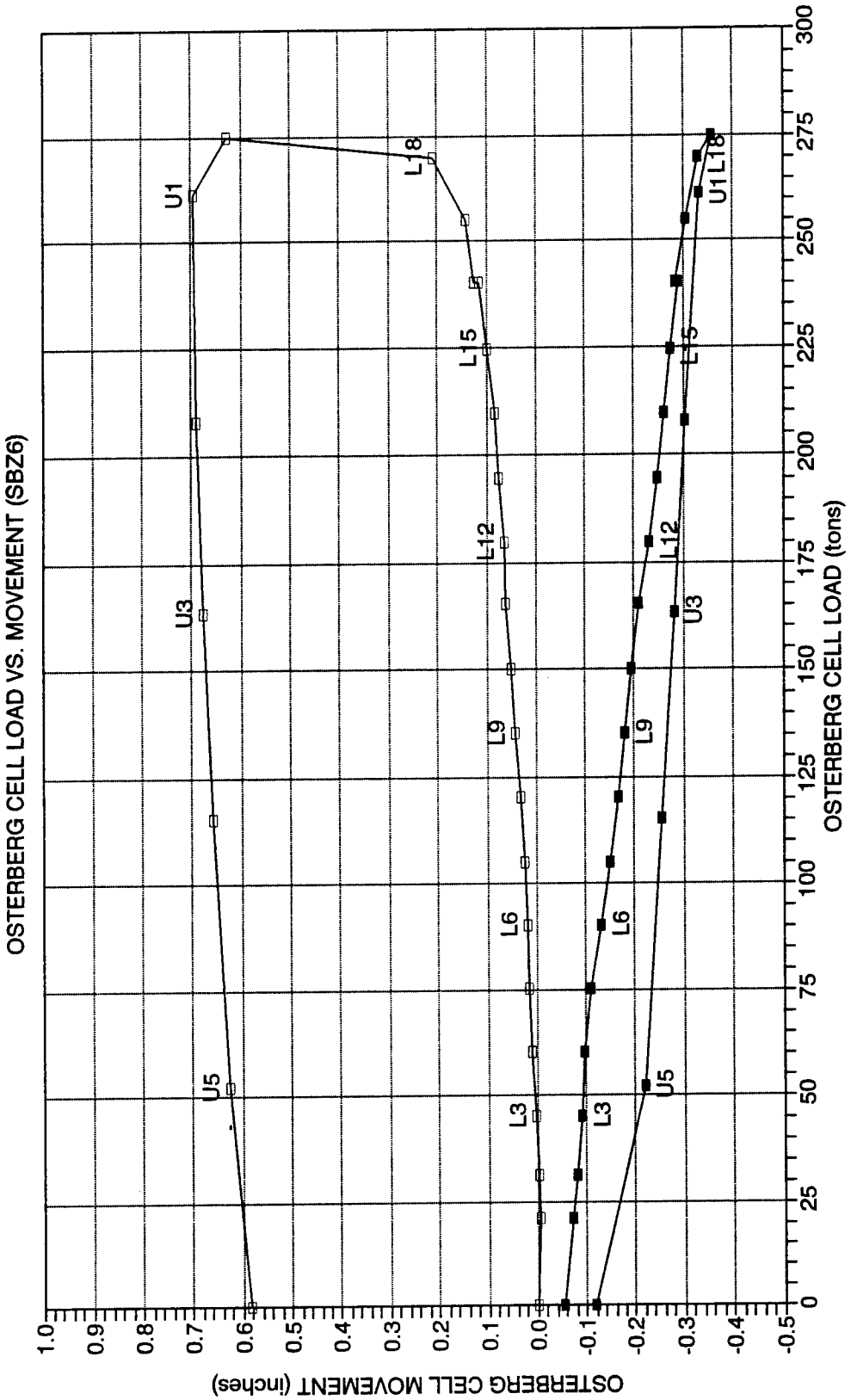


Figure E.95 Load Test 6 Movement: Seabreeze

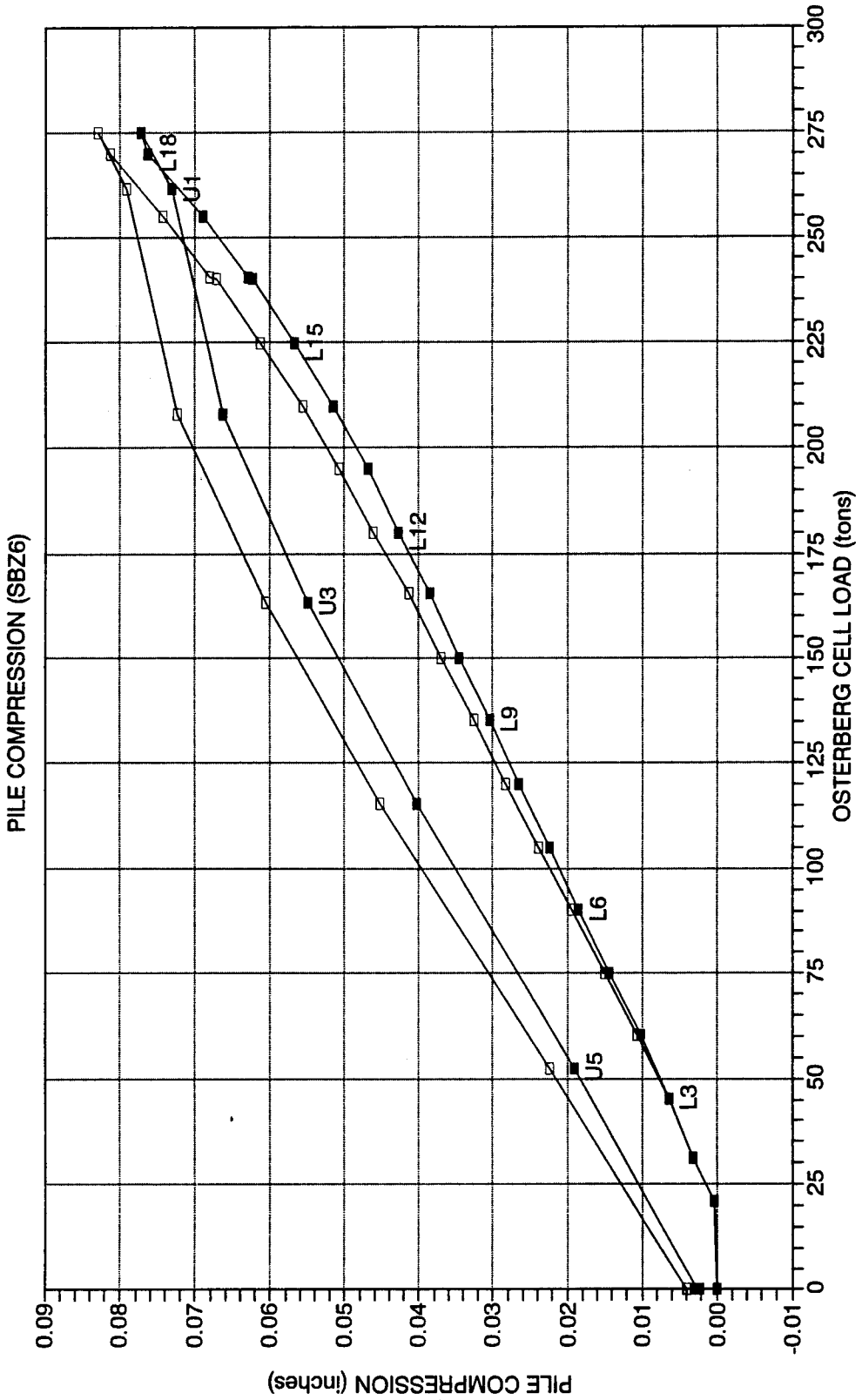


Figure E.96 Load Test 6 Compression: Seabreeze

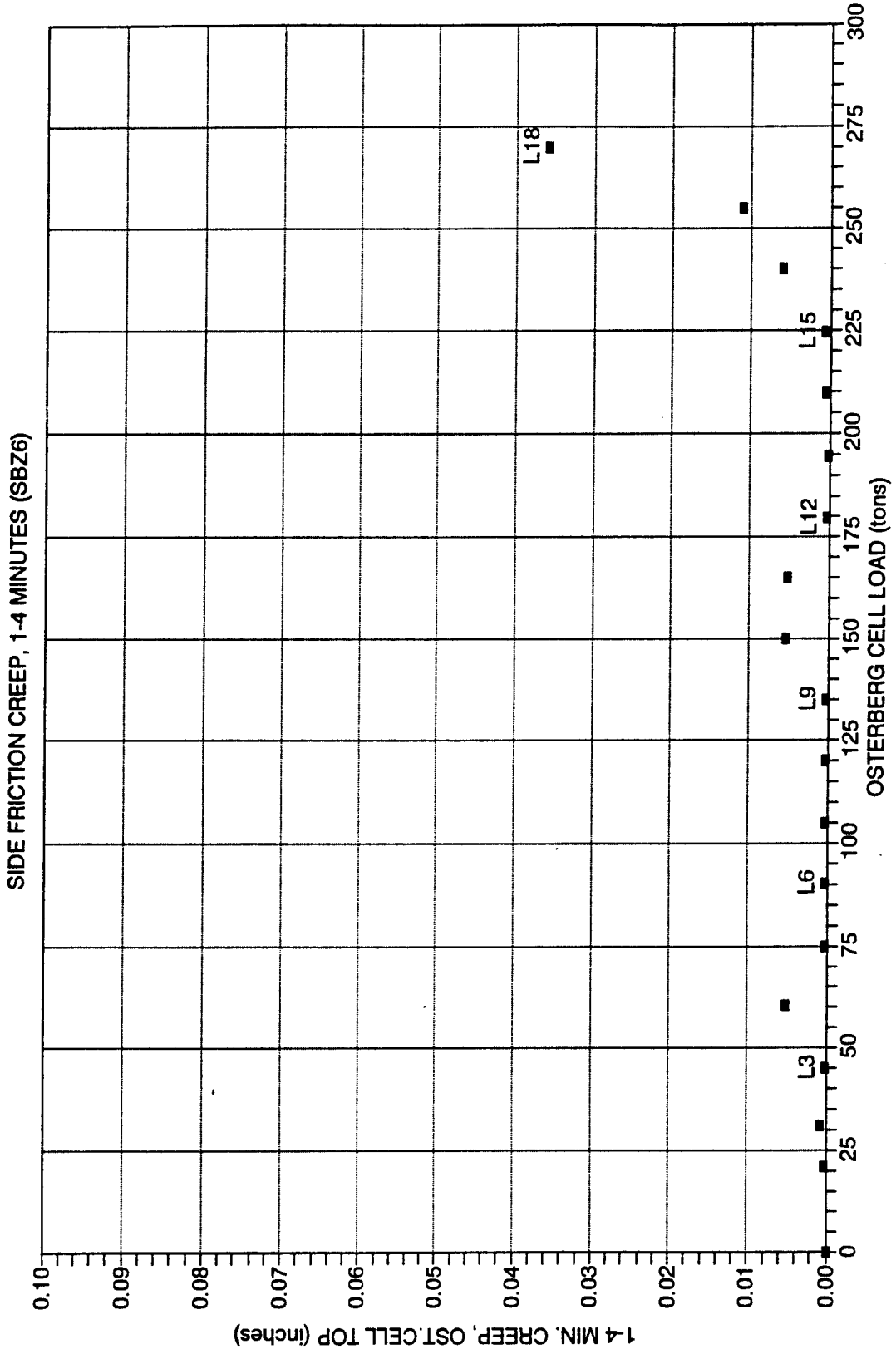


Figure E.97 Load Test 6 Creep: Seabreeze