# BEHAVIOR OF MICROPILES IN BRIDGE BENT APPLICATIONS

FINAL REPORT

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16. Abstract


This project concerned the behavior of micropiles under lateral loads. The North Carolina Department of Transportation was specifically interested in the use of micropiles to support bridge bents. In this configuration micropiles would be subjected to lateral loads. Thus there was a need to evaluate the behavior of micropiles as bridge bent foundations with respect to joints between micropile sections and embedment or plunge in rock.

The objectives of this study were to demonstrate the lateral performance of micropiles in single and group configurations, determine the effect of casing plunge on lateral resistance of micropiles, determine the effect of casing joints on the lateral resistance of micropiles, determine the behavior of jointed micropile sections, evaluate the durability of micropile casings and jointed sections, and disseminate the experimental findings to NCDOT.

These objectives were investigated using a three pronged approach of numerical modeling, full scale field lateral load tests, and laboratory testing. Sixteen sacrificial micropiles were installed in order to perform six lateral load tests. Rock plunge depths of 1, 2, 5 and 10 feet were investigated. 14 of the 16 piles were two or three sections or more. A cap was cast around four of the piles to create a bent that was load tested against a group of reaction piles. In addition, nine jointed micropile specimens were fabricated and tested in the laboratory under four point flexure. Numerical models were developed to first predict the behavior of the load tests. The results of the field and lab tests were subsequently used to calibrate the model for DOT use. A long term study of the impact of corrosion on micropile sections is submitted for future implementation.

Findings of this study include:

a) The casing joint has a large impact on the lateral capacity of micropiles. In cases where the micropiles were sufficiently embedded in rock, rather than yielding, there was an abrupt failure at the casing joint. This was observed in the load tests.
b) Two feet of embedment for micropiles in this study was sufficient to carry lateral loads upward of 30 kips. Embedment at 5 and 10 feet produced similar results to 2 feet. One foot of embedment does not appear to be sufficient based upon results of the field tests and numerical models.
c) The strength of the micropiles with respect to the joints from field and laboratory tests was around 140 k*ft.
d) Micropiles of this size can carry significant lateral load with little deflection. However, the failure mode is brittle, as the piles tested failed abruptly with little lateral displacement.
e) Reduction of the section area at threaded joint by 60% to 70% results in a reasonably accurate model for the behavior of the casing joint in FB-Multipier.


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Skyline Steel, LB Foster, C&M Manufacturing, CEMEX, and Nicholson Construction graciously donated materials and assistance to the project.

# SUMMARY

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d) Micropiles of this size can carry significant lateral load with little deflection. However, the failure mode is brittle, as the piles tested failed abruptly with little lateral displacement.

e) Reduction of the section area at threaded joint by 60% to 70% results in a reasonably accurate model for the behavior of the casing joint in FB-Multipier.

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# CHAPTER 1
# INTRODUCTION

## 1.1 Introduction

In highway construction, deep foundations are often utilized to support bridges. This could be to carry excessive loads to more competent soils beneath the ground, to transfer foundation loads to strata below the scour depth, or to sufficiently withstand lateral loads. In general terms, deep foundations are relatively long and slender structural members that are driven vertically into soil, in the case of a pile, or cast in place as a drilled shaft. A pile is often driven until it rests on a hard, impenetrable layer of soil or rock, or to a specified depth. Drilled shafts are installed by excavating a vertical hole in the soil and or rock, then backfilling it the hole with reinforced concrete. End bearing foundations, where the load of the structure is transmitted primarily axially through the foundation to the impenetrable layer are common in the western part of North Carolina. When the foundation cannot be extended to a hard stratum of soil or rock due to its depth, the load of the structure is borne primarily by side friction between the pile or shaft and soil. Such a deep foundation carries its load through skin friction which is common in eastern North Carolina.

Analysis of the lateral loading resistance of a deep foundation is a soil-structure interaction problem, where the foundation deflection depends on the soil response and soil response depends on foundation deflection (Reese and Wang 1993). Deep foundations that support signs, light-posts, tall buildings, bridge bents, bridge piers, or offshore infrastructure are subjected to significant lateral loads (such as braking, wind, impact, and wave loads). Accordingly, deep foundations must be designed to carry these lateral loads. Therefore the lateral load capacity is determined by considering three

failure mechanisms: (1) structural failure of pile due to yielding of pile material 2) shear failure of the confining soil due to yielding of soil, and (3) pile becoming dysfunctional due to excessive lateral deflection.

Micropiles are a relatively new deep foundation technology in the United States. As an alternative to other deep foundations, micropiles can provide substantial support while minimizing cost, environmental impact, and harmful construction vibrations. Micropiles, first used in Italy in the 1950s, are constructed by removing a column of soil using an auger and filling the hole to create structural column, insitu. Micropiles are smaller diameter members (usually 12 inches or less) filled with high strength grout and reinforced with an high strength casing a single large diameter rebar, or a combination of the two. They are often installed in segments that are connected together by threaded joints in the casing. Since micropiles are smaller, the size and amount of equipment needed for their installation is commensurately less than for typical deep foundations. This research focused on the lateral capacity of micropiles.

**1.2 Problem Statement**

Building on the success with retrofit projects, NCDOT is proposing the use of micropiles for bridge replacements and new construction. Although literature and experience exists on micropile applications, there are aspects of micropile behavior that need to be developed to provide confidence for NCDOT engineers. While the axial behavior is well documented, in order that the NCDOT utilize micropiles for new construction, the lateral load response of micropiles must be evaluated.

## 1.3 Research Objective

The goal of this project was to provide NCDOT with information sufficient to allow micropiles to be used for interior pile bents where shallow rock is present. Since micropiles are often installed using casing sections assembled with threaded joints, the question remains how these joints appear to impact the lateral load response of micropiles. In addition, whether by design or specification, the depth micropile casing is extended into rock may be overly conservative. Thus, the objectives of the project are the following:

1) Demonstrate the lateral performance of micropiles in single and group configurations.
2) Determine the effect of casing plunge on lateral resistance of micropiles.
3) Determine the effect of casing joints on the lateral resistance of micropiles.
4) Determine the behavior of jointed micropile sections.
5) Evaluate the durability of micropile casings and jointed sections.
6) Disseminate the experimental findings to NCDOT.

## 1.4 Scope of Work

The following tasks were completed in order to meet the objectives of the research:

<u>A. Literature review and data collection</u>

A literature review was completed in the preparation of the original proposal. Further literature was gathered including documenting field load and laboratory tests on micropile materials conducted by different agencies. Case histories of micropile lateral load tests were included as well.

B. Numerical Simulation

Numerical studies were completed using FB-Multipier for both test validation and model development. Preliminary models were developed to simulate the field load tests that are proposed for this study. These models were used to quantify loads, boundary conditions, and general pile behavior. The results were be used to refine the field testing programs. Initial models for micropiles and micropile joints in FB-Multipier were developed.

C. Field test strategy and setup

The PI developed the load testing program with the North Carolina Department of Transportation Western Regional Geotechnical Office. The goals of the field tests are to demonstrate and document micropile behavior under realistic boundary conditions and the true soil-structure interface. The field test program included lateral load tests on micropiles constructed specifically for this project. A sacrificial group of 16 micropiles was constructed using IBRD funds in conjunction with a bridge replacement in Western North Carolina. These piles were load tested as individual piles as well as a group.

D. Single pile field lateral load tests

Lateral load tests were performed within ASTM D3966 and micropile specific guidelines from Sabatini et al. (2005). Tests were performed by pulling together pairs of micropiles using all thread bars and center-hole jacks. The displacements of the pile tops were monitored using potentiometers. Piles were instrumented with either inclinometer casings or rebar cages with sister bar vibrating wire strain

gages to measure displacement and strain concurrent with load and displacement. Top load was determined using load cells.

E. Pile group test

Four piles were load tested together as a bent. The piles were spaced more than ten diameters center-to-center and cast together in a concrete cap. The displacements of the pile cap was monitored using potentiometers. Piles were instrumented with both inclinometer casings and rebar cages with vibrating wire strain gages to measure displacement and strain concurrent with load and displacement. The load was applied to the pile cap using prestressing cables and two center-hole jacks.

F. Laboratory micropile fabrication, preparation, and testing

Two segment micropiles were fabricated for laboratory testing. Skyline Steel Corporation, CEMEX, and Nicholson Construction donated materials and construction support for the research. 54 linear feet micropiles were fabricated in the lab. Micropiles cast in the lab were grouted with standard Portland Type I cement, mixed with high hear mixer, and tested after a 28 day cure. Selected micropiles were instrumented with strain gages similar to those used in the field load tests. Potentiometers were used to monitor vertical displacement. 9 bending tests were conducted for the research.

G. Corrosion testing

The corrosion study was developed as a task of this project, but had not begun by the preparation of this report. Micropile casings will be placed in secure field locations that can be accessed by NCDOT and UNCC personnel for many years.

Periodically, specimen mass and thickness will be measured to assess the impact of weathering on the steel sections.

H. Implementation of results and calibration of models

The results of Tasks D, E, and F were used to demonstrate the the behavior of 10.75 in. diameter and 0.5 in. thick micropiles. The field and lab results were reduced to develop performance based models for micropile analysis and design. The findings were used to calibrate the FB-Multipier models created in task B.

Task 7: Research product preparation and submission

Interim reports in the form of emails or meetings were provided to the Western Regional Geotechnical Group at the completion of each phase or load test. This final report contains the experimental data, analysis outcomes and recommendations. As a subset of the primary report, the models are submitted as part of the implementation plan.

# CHAPTER 2
# BACKGROUND AND LITERATURE REVIEW

## 2.1 Background

Micropiles are thick steel casings that are often drilled and grouted into place forming end bearing foundations. Micropiles are a relatively new deep foundation technology in the United States. Micropiles, first used in Italy in the 1950s, are similar to drilled shafts in that an auger is used to remove a column of soil that will be backfilled to create a structural column. In contrast, micropiles are smaller diameter members (usually 12 inches or less) filled with grout and reinforced with an external casing, a single large diameter rebar, or a combination of the two. Since micropiles are smaller, the size and amount of equipment needed for their installation is commensurately less than for typical drilled shafts. Following recent developments in the United States, micropiles have evolved into high-capacity load bearing elements. Presently, some micropiles are designed for ultimate load carrying capacities exceeding 500 tons (Armour et al. 2000). Figure 2.1 shows a typical high capacity micropile. Micropiles are generally used for structural support and in-situ reinforcement.

Micropiles have specific advantages compared to more conventional support systems. In general, micropiles may be feasible under the following project-specific constraints (Sabatini et al. 2005):

- Project has restricted access or is located in remote area;
- High load capacity in both tension and compression;
- Ability to install where elevated groundwater or caving soil conditions are present;
- Tested to verify load carrying capacity;

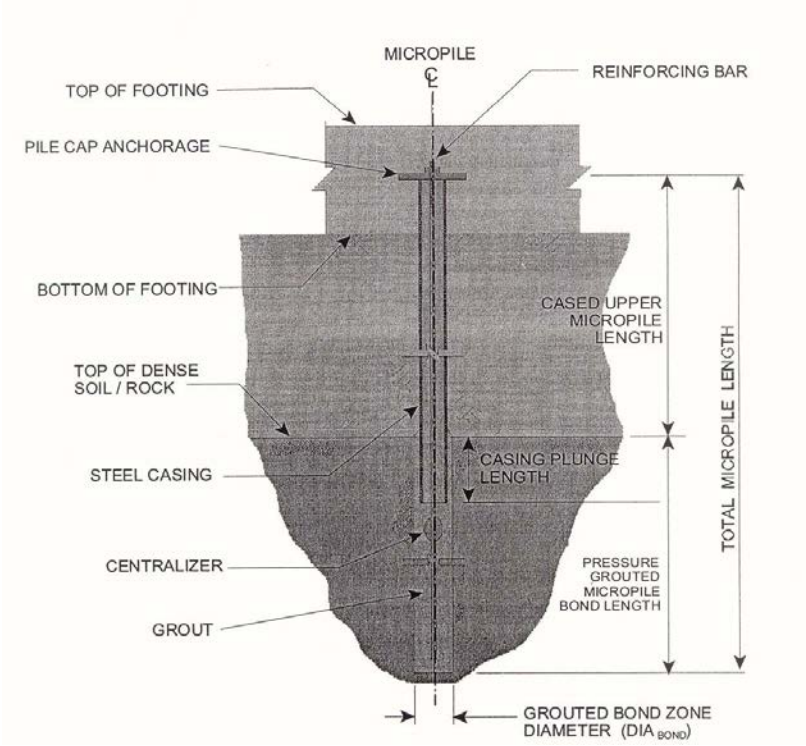



Figure 2.1 Detail of a typical high capacity micropile (Bruce and Cadden 2005)

- Required support system needs to be in closed pile proximity to existing structures;
- Ground and drilling conditions are difficult;
- Pile driving would result in soil liquefaction;
- Vibration or noise needs to be minimized;
- Hazardous or contaminated spoil material will be generated during construction and
- Adaptation of support system to existing structures is required.

The modern micropile installation process begins with drilling through soil into the bedrock using a specialized drill rig. The micropile drill is removed, leaving micropiles in the rock socket, and reinforcement bars are lowered into the micropile steel casings. Grout is pumped or pressure-fed into the casings, and the piles are lifted to the

mouth of the sockets to allow bonding. Finally, the micropile tops are cut to elevation and capped for foundation rebar. Micropiles may be load tested subsequently to prove the design. Micropiles can be installed in areas of particularly difficult, variable, or unpredictable geologic conditions such as ground with cobbles and boulders, fills with buried utilities and miscellaneous debris, and irregular lenses of competent and weak materials. Soft clays, running sands and high groundwater not conducive to conventional drilled shaft systems cause minimal impacts to micropile installation. It is important to assess the cost of using micropiles based on the physical, environmental and subsurface factors. For example, micropiles are commonly the preferred foundation choice in the challenging urban areas that feature mixed fills, nearby buildings and difficult access. Figure 2.2 shows typical a micropile under construction.

Figure 2.2 Typical micropile construction

Micropile classification is based primarily on the method of placement and pressure under which grouting are performed during micropiles construction. The classifications are shown schematically in Figures 2.3.

Type A: Grout flows under gravity. These are non-pressurized and use sand-cement "mortars" or neat cement grouts.

Type B: Grout is injected as temporary drill casing or auger is withdrawn. Pressurized once at low pressure (44-145 psi).

Type C: Grout is gravity placed, allowed to set for 15-25 min, and then a second batch of grout is injected at moderate pressure through a sleeved grout pipe.

Type D: Grout is gravity placed and allowed to harden. When primary grout has hardened, more grout is injected through a sleeved port grout pipe. A movable packer is used so that specific horizon may be treated several times if necessary. High pressure is used (290 -1160psi).

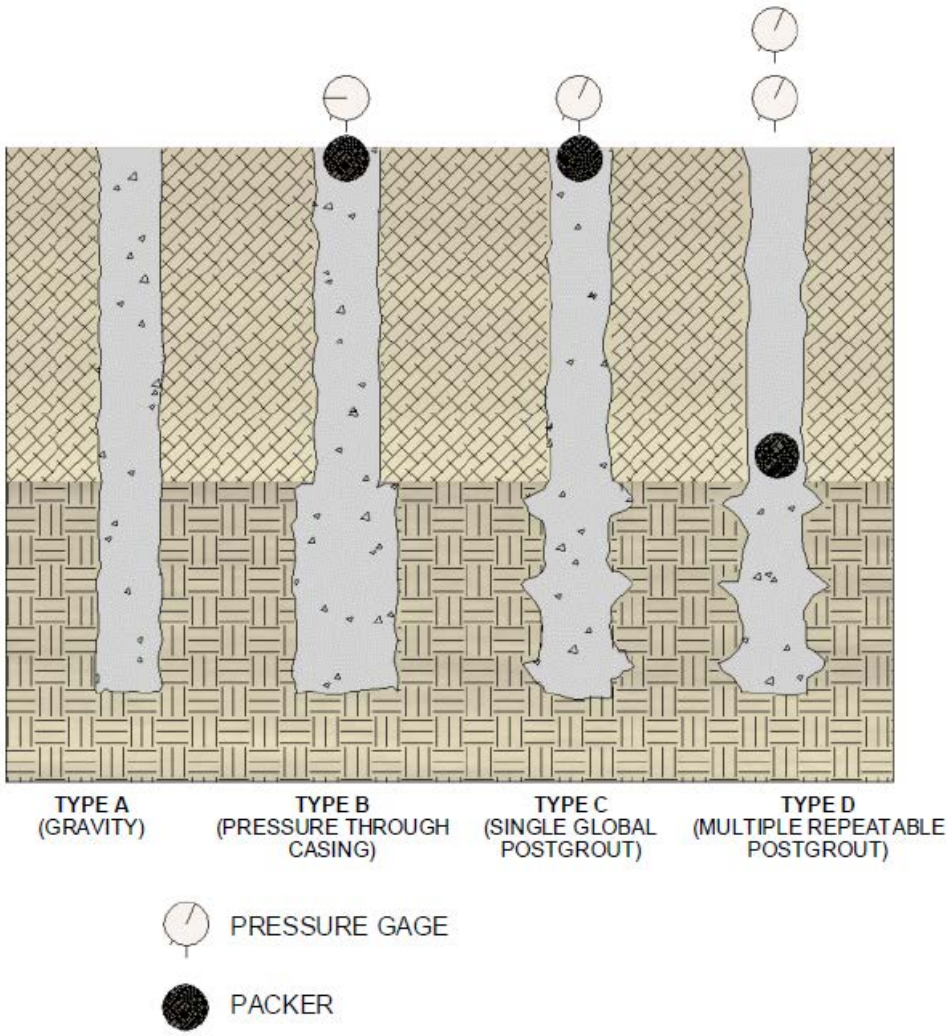



Figure 2.3 Micropiles classification system based on type of grouting (Sabatini et al. 2005)

## 2.2 Theoretical Behavior of Laterally Loaded Deep Foundations

The design of piles against lateral loads is usually governed by the maximum tolerable deflection (Poulos and Davis 1980). Lateral deflections of single piles depend on the lateral load, bending stiffness (EI) of the pile, and the soil resistance to lateral movement, which is characterized by soil strength and stiffness. Since the lateral loading of a single deep foundation is a soil-structure interaction problem, the deflection of the pile depends on the reaction in the soil and the reaction in the soil depends on the deflection of the pile (Reese and Wang 1993). Of most practical interest to the engineer

is knowledge of the deflection and bending moment in the deep foundation. The bending moment is required in the sizing of the foundation, and the deflection is important with regard to the serviceability of the supported structure. Figure 2.4 shows diagrams of lateral deflection, slope, moment and shear in a long foundation, and the lateral soil reaction, all as a function of depth. The applied shear and/or moment loads produce a lateral deflection at the top of the foundation. The changes in each of these parameters with depth are defined by the principles of structural mechanics.

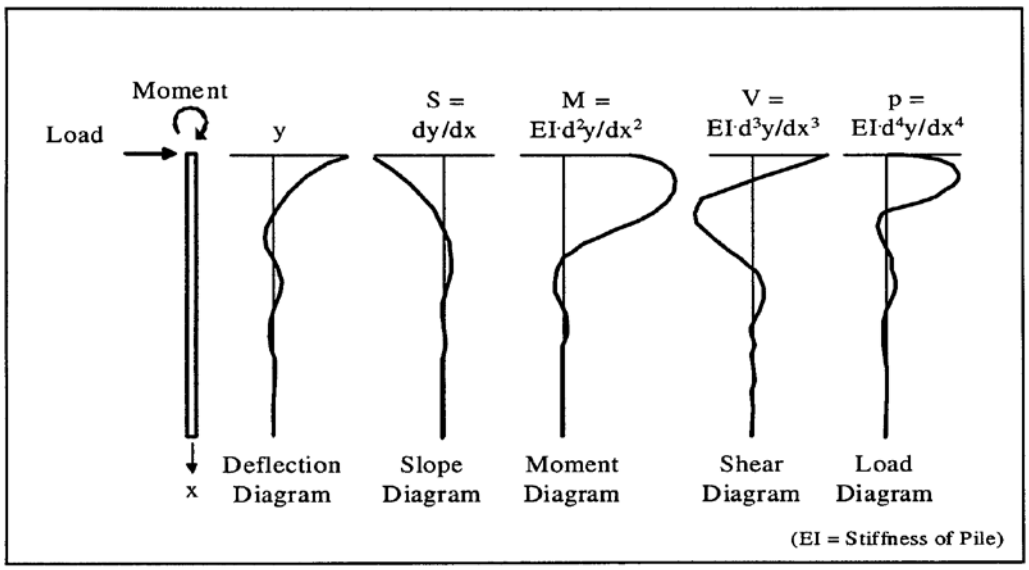



Figure 2.4 Deflections and Forces in a long foundation subjected to lateral loads (Matlock and Reese, 1960)

## 2.3 Solutions

There are several approaches available for modeling the interaction of deep foundations subjected to external loading. Specifically, when considering lateral loads, there are four categories, semi empirical, beam on and elastic foundation, elastic theory, and finite element.

### 2.3.1 Broms Semi-Empirical Method

Broms (1964a, 1964b and 1965) separated the lateral analysis of a loaded piles embedded in cohesive soils and in cohesionless soils. This method was presented in three papers published in 1964 and 1965. The ultimate lateral load on a pile can be computed by use of simple equations or graphs. The method is based upon the assumptions that failure occurs in short piles by unlimited rotation of the pile or unlimited movement through the soil, and failure occurs in long piles or piles of intermediate length by the development of one or more plastic hinges in the pile section  In the three papers, he shows the procedures for the prediction of laterally loaded piles under working loads and the ultimate lateral resistance.  Broms method is easily implemented by hand solution, but its limitations make the use of a more sophisticated solution more attractive.

### 2.3.2 Theory of Elasticity

Poulos (1971a) presented the first systematic approach for analyzing the behavior of laterally loaded piles and pile groups using the theory of elasticity. Soil is represented as an elastic continuum, the method is applicable for analyzing batter piles, pile groups of any shape and dimension, layered systems and system in which soil modulus varies with depth. Poulos (1971b) method assumed soil to be an ideal, homogeneous, isotropic, semi-infinite elastic material, having a Young's modulus $E_s$ and Poisson's ratio $\upsilon_s$, which are not affected by the presence of the pile. Poulos assumed the pile to be a thin rectangular vertical strip of width d, length L, and also constant flexibility $E_pI_p$. In the case of a circular pile, the width d, is taken as the diameter of the circular pile. The pile is divided into n+1 elements and each element is acted upon by a uniform horizontal stress p which is assumed constant across the width or diameter of the pile. Poulos found that the

accuracy of the solution depends on the number of elements into which the pile is divided. The horizontal displacements of the soil and the pile are equal along the pile if elastic conditions prevail. The soil displacements for all the points along the pile are expressed as:

$$\{y\} = \frac{d}{E_s}[I]\{p\} \tag{2.1}$$

Where {y}is the column vector of horizontal soil displacements, {p} is the column vector of horizontal loading between soil and pile and [I] is the n+1 by n+1 matrix of soil-displacement-influence factors determine by integrating Mindlin's equation using boundary element analysis (Poulos, 1971b).

Poulos (1971b) considered both an unrestrained and restrained pile head. The major variables influencing pile behavior were the length-to-diameter ratio and the pile-flexibility factor $K_R$ which were defined as:

$$K_R = \frac{E_p I_p}{E_s L^4} \tag{2.2}$$

where $K_R$ is a dimensionless measure of the flexibility of the pile relative to the soil with a limiting value of $\infty$ for an infinitely rigid pile and zero for an infinitely long pile, "$E_p$" is Young's Modulus of the pile, "$I_p$" is the moment of inertia of pile section, "$E_s$" is the Young's Modulus of the soil and "L" is the embedded pile length.

For unrestrained piles, the horizontal displacement is evaluated as:

$$y_o = I_h \frac{P}{E_s L} + I_m \frac{M}{E_s L^2} \tag{2.3}$$

where $I_h$ is the displacement influence factor for horizontal load only acting, at the ground surface, $I_m$ is the displacement influence factor for moment only, acting at the

ground surface, P is the applied horizontal load, M is applied moment, $E_s$ is Young Modulus of the soil and L is the embedded pile length.

In the case of a restrained pile, the horizontal displacement is evaluated as:

$$y_o = I_f \frac{P}{E_s L} \tag{2.4}$$

where $I_f$ is the displacement influence factor for a restrained pile subjected to horizontal load. The assumption that soil modulus $E_s$ remains constant with depth is not realistic in the case of piles in sand. The variations in deflection and bending moment along the piles were not considered. The piles must be of constant cross-section, and the pile-head restraints must be either fully-fixed (no rotation) or full free (no bending moment). The soil must be assumed to be elastic, and have constant and uniform properties with depth.

### 2.3.3 Beam on an Elastic Foundation (p-y) Method

This approach, also called the Winkler approach, is the oldest method of predicting pile deflections and bending moments in deep foundations. The approach characterizes the soil as a series of unconnected linearly-elastic springs with stiffness $E_s$, expressed in unit of force per length squared ($FL^{-2}$) .The pressure p and the deflection y at a point are related through a stiffness $E_s$, the modulus of soil reaction defined as:

$$E_s = \frac{-p}{y} \tag{2.5}$$

Where p is the lateral soil reaction per unit length of the pile, and y is the lateral deflection of the pile (Matlock and Reese, 1960). The negative sign in the equation above shows the direction of soil reaction is opposite to pile deflection. Another term is the modulus or coefficient of horizontal subgrade reaction, $k_h$ has the units of force/length$^3$ (Terzaghi 1955). The previous equation can be rewritten as:

$$E_s = k_h d \tag{2.6}$$

Where d is the width or diameter of the pile and $k_h$ is the horizontal subgrade reaction modulus. In cohesionless soils and normally consolidated clays, the modulus of horizontal subgrade reaction increases linearly with depth. For over consolidated clays, the horizontal subgrade reaction is usually assumed to remain constant with increasing depth. The determination of the soil modulus $E_s$ is generally carried out by full scale lateral load testing, plate load testing, or empirical correlation with other soil properties.

The Winkler beam/spring model is based on the assumption that the soil supporting the beam acts as a system of discrete springs. The beam is a function of springs and the applied load. The collective constant is referred to as the subgrade reaction modulus. The governing equation for the deflection of a laterally loaded pile using the subgrade reaction theory is expressed as:

$$E_p\ I_p\ \frac{d^4 y}{dx^4} + k_h dy = 0 \tag{2.7}$$

Where $E_p$ is the modulus of elasticity of the pile, $I_p$ is the moment of inertia of the pile section, y is pile deflection, x is the depth in the soil, d is width or diameter of pile and $k_h$ is the subgrade reaction modulus. McClelland and Focht (1958) used the same beam/spring model in the design of laterally loaded deep foundations as shown in Figure 2.5. The method is known as the p-y method. The primary shortcomings to the original subgrade reaction approach are:

1. The axial load effect on the foundation is ignored,

2. The soil model used in the technique is discontinuous,

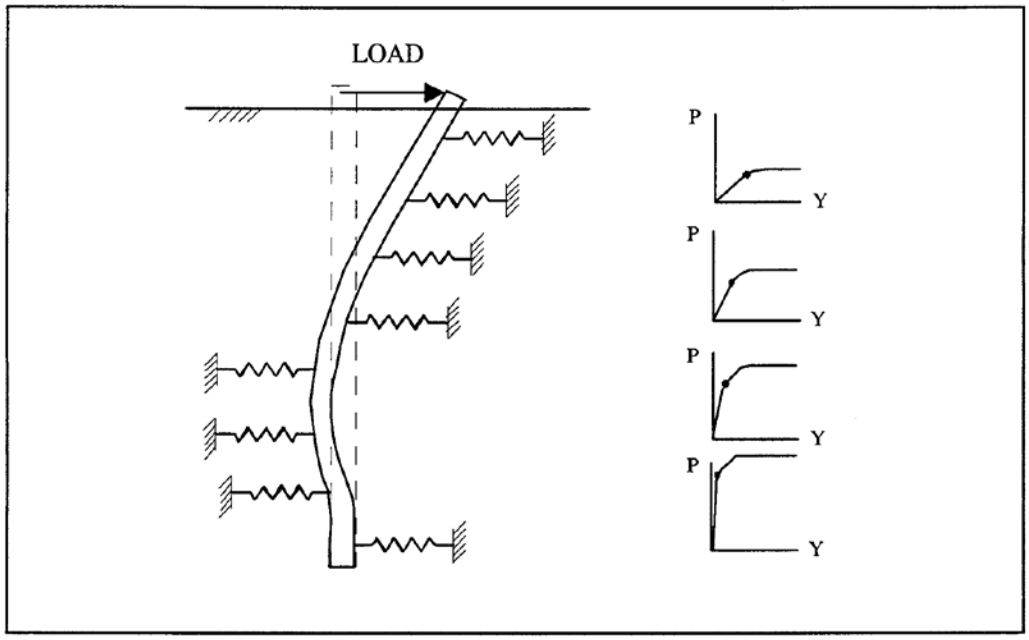



Figure 2.5 Beam/Spring model applied to deep foundations

3. The modulus of subgrade reaction is not a unique property of the soil, but depends on pile characteristics and the magnitude of deflection, and

4. The subgrade reaction method is semi-empirical in nature.

For real soils, the relationship between soil pressure p and deflection y is nonlinear, with the soil pressure reaching a limiting value when the deflection is sufficiently large. Several approaches have been developed to account for this nonlinearity. Reese and Matlock (1956) argue that the adoption of a linearly increasing modulus of subgrade reaction with depth takes some account of soil yield and nonlinearity, as values of the secant modulus near the top of the pile are likely to be very small, but will increase with depth because of both a higher soil strength and lower levels of deflection.

Broms analysis dealt with the pile lateral behavior under two loading conditions; service loads (i.e. up to one third to one half of the ultimate load) and the ultimate loads (i.e. ultimate lateral capacity). A method is needed to account for the different observed pile behavior under lateral loads and enable the prediction of its deflection at the nonlinear load-deflection zone. To address this issue, nonlinear elasticity methods were developed in which application of elastic solutions for equivalent soil properties were used in an iterative procedure, ending when displacement compatibility between soil and piles was achieved. The method is referred to as the "p-y curves", where p is the soil pressure per unit length of pile and y is the pile deflection.

The p-y curve method is the most versatile tool currently available. This method was developed by Reese and Matlock at the University of Texas at Austin. The p-y curve represents the soil resistance at a particular depth and is defined in terms of soil resistance per unit length versus deflection. The p-y method uses a series of nonlinear springs to model the soil-structure interaction. It models the foundation using a two-dimensional finite difference analysis. The soil resistance will typically rise quickly under small deformations to a maximum where it remains constant or decreases with further deformation. The physical definition of the soil resistance p is given in Figure 2.6. Figure 2.6a shows a profile of a pile that has been installed. The assumption is that the pile has been installed without bending so that the initial soil stresses at the depth $X_i$ are uniformly distributed as shown in Figure 2.6b. If the pile is loaded laterally so that a pile deflection, $Y_i$ occurs at the depth, $X_i$ the soil stresses will become unbalanced as shown in Figure 3.3c. The three factors that have the most influence on p-y curve are the soil

properties, the pile diameter and the nature of loading (Reese and Wang, 2006). The p-y curves are strongly responsive to the nature of loading.

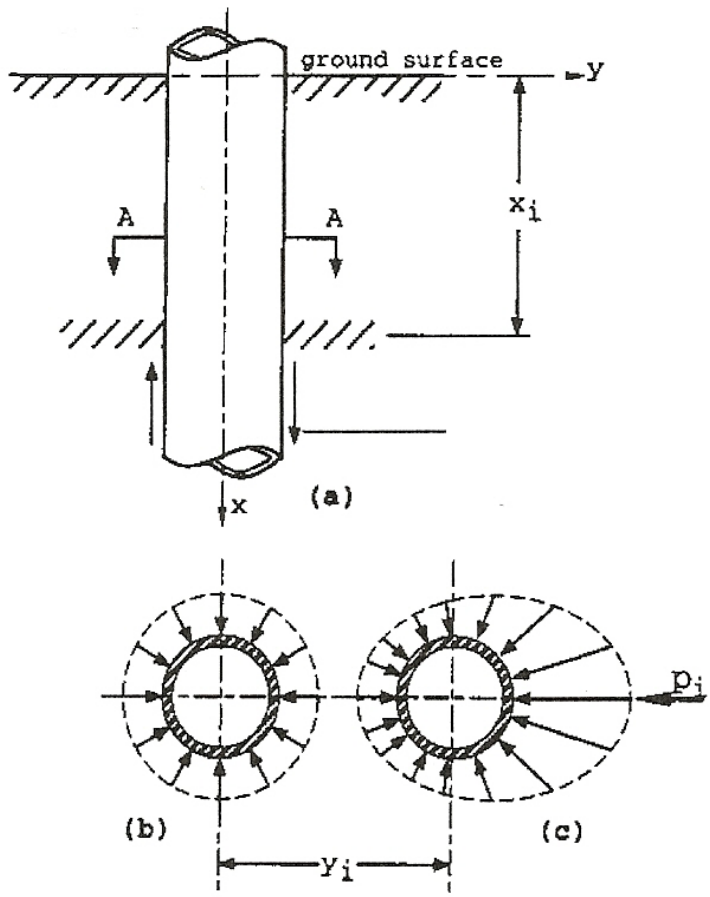



Figure 2.6 Definition of p and y as related to the response of a pile to lateral loading (Reese and Wang 1993)

Equation 2.8 defines the p-y method. The mechanisms shown to represent the soil depict the soil as a nonlinear material. The deformation of an elastic member under axial and lateral loading can be found by solving the equation below, which the standard beam-column equation is given by Hetenyi (1946).

$$\frac{d^2}{dx^2}\left(E_p I_p \frac{d^2 y}{dx^2}\right) + Q\left(\frac{d^2 y}{dx^2}\right) - p - W = 0 \qquad (2.8)$$

Where

Q = axial load on the pile

y = lateral deflection of the pile at a point x along the length of the pile.

p = horizontal soil reaction per unit length

$E_pI_p$ = flexural rigidity of the pile and

W = distributed load along the length of the pile.

Other beam formulas given by Hetenyi (1946) that are needed in analyzing piles under lateral loads are:

$$EI\frac{d^3y}{dx^3}+Q\frac{dy}{dx}=V \tag{2.9}$$

$$EI\frac{d^2y}{dx^2}=M \tag{2.10}$$

$$\frac{dy}{dx}=S \tag{2.11}$$

Where

V = Shear in the pile,

M = bending moment in the pile, and

S = slope of the elastic curve defined by the axis of the pile.

## 2.4 Software Implementation

The p-y approach has been implemented in two separate computer programs that are commonly used by highway departments throughout the United States. Both packages are supported by the Federal Highway Administration.

### 2.4.1 LPILE/COM624P

The computer program LPILE (Ensoft Inc., 2007), formerly COM624P (Reese and Wang, 1993), models a single foundation under lateral loads. LPILE divides the

member into a maximum of 300 segments and solves the differential equation suggested previously by the finite differences method. The soil is modeled by a maximum of nine layers using one or more of these models: Sand, Liquefiable Sand, Silt ($\phi - c$), Soft Clay Below the Water Table, Stiff Clay Below the Water Table with free water, Stiff Clay Above the Water Table without free water, Strong Rock, or Weak Rock.

COM624P treats the deep foundation as a linear elastic member. The latest release of LPILE (v 6.0) is capable of nonlinear behavior. If using COM624P or earlier versions of LPILE, there is no provision for prestressed or reinforced sections, thus the user must calculate the cracking moments by hand and compare them to those generated during loading in order to determine if a nonlinear failure has occurred.

COM624 imposes the loading conditions at the top of the pile and assumes the pile length is such that the boundary conditions of zero shear and moment exist at the tip. The differential equation is solved for the displacements along the pile. Since the soil is considered non-linear, an iterative approach is taken where the soil modulus is varied. When the displacements calculated between two iterations are within a specified tolerance, the program terminates and calcualtes the displacements, moments, and shears for that load case.

### 2.4.2 FB-Multipier

FB-MultiPier is a non-linear, hybrid finite element soil-structure interaction program under continual development at the University of Florida by the Florida Bridge Software Institute (2010). The program is a complete bridge foundation and pier analysis program. FB-MultiPier can analyze many types of structures including prestressed concrete piles, drilled shafts, H-piles, pipe piles, and various concrete sections, reinforced

and/or prestressed, generally used for bridges. The possible types of loading on these structures include combined axial, lateral, and torsion components on the piles/shafts, pile cap, and pier. The structural model includes both linear and non-linear (concrete cracking, steel yielding) capabilities, as well as biaxial interaction diagrams for all sections. FB-MultiPier models a single pile as sixteen 2-node finite elements and each element has 6 degrees of freedom per node.

FB-MultiPier uses an iterative solution method to find the stiffness of the soil and pile for a computed set of displacements. The program uses a secant approach which assembles a stiffness matrix and solves for sets of displacements. Convergence is achieved when the system is in static equilibrium and is determined by comparison of the magnitude of the highest out-of-balance nodal force and the tolerance defined in the input file. The system is in static equilibrium and the program terminates when the highest out-of-balance force is lower than the tolerance.

FB-Multipier models a single pile as sixteen 2-node finite elements. The free standing length of the pile, from the top to the ground surface, is the first element with 15 equally spaced elements for the remainder of the pile. Each element has 6 degrees of freedom per node that behave much like a universal joint.

FB-Multipier uses axial (t-z, Q-z), lateral (p-y), and torsional (T-θ) pile-soil interaction. There are several models for sands, clays, and limestone. The experienced user has the option of entering a customized set of 10 p–y curve points if none of the default curves are suitable.

The axial model consists of two parts; the first is the skin friction portion. The available skin friction models are driven piles, and drilled shafts in sand, clay,

intermediate geomaterials, and limestone. As with the lateral model, the user can also enter a set of 10 t-z curve points if the default models are not sufficient. The remaining piece of the axial soil model is the end bearing. The program supplies four tip models driven pile, drilled shaft in sand, clay, and intermediate geomaterials. The user can also input a set of 10 q-z curve points to model the tip if the above models are insufficient. Currently, the hyperbolic model is the only torsional model available. The user has the option of entering a custom set of T-θ curve points.

**2.5 Micropile Lateral Load Testing**

Since micropiles are almost exclusively used in bearing applications, the literature is limited on the subject of micropile lateral load tests. Long et al. (2004), at the University of Illinois, conducted research on field micropile response. Tests were conducted on micropiles with a diameter of 9.625 inches, wall thickness of 0.545 in, length approximately 50 linear feet, and yield strength of the steel casing of 147 ksi. The tests site was located along Interstate 57 about four miles north of the Illinois-Missouri state line. The primary reasons of the tests were to investigate the lateral load behavior of micropiles, to compare the measured lateral behavior with behavior predicted using LPILE and to determine the structural behavior of the grouted micropile sections.

The subsurface investigation consisted of sampling, visual classification, standard penetration testing (SPT), water content determination, and unconfined compressive strength testing. The soil profile consistently shows medium clay overlaying sand. The compressive strength for the soil varied from 0.7 tsf near the ground surface to about 1.1 tsf at around 11 ft below the ground surface. The strength then decreased to 0.4 tsf at the

bottom of the clay layer. The standard penetration tests (SPT) for the sand layer, increases with depth from 8 to 35 blows per foot.

Twelve micropiles were installed at the test site. The deflection of each pile was measured with two dial gauges, one mounted above the other along the length of each pile head. Seven strain gages were used to measure the bending moments along each pile. The lateral load was applied by pulling two piles together. Most of the tests were limited by the travel of the loading jacks.

In the case of the structural test, a 10 ft long section of micropile was filled with grout and allowed to cure at the site for 28 days before testing in the lab. The pile showed linear behavior up to 212.5 kips applied load. The modulus of rigidity of 5.0 x $10^6$ $in^2$-kip was obtained from the linear part of the plot. The moment versus curvature relationship for the linear part of the loading curve yields a modulus of rigidity of 5.28 x $10^6$ $in^2$-kip.

The load-displacement relationships measured in the field were in general agreement with load-displacement relationship predicted using LPILE. When differences occurred, Long (2004) gave the following reasons: soil strength in the field was lower than strength used in LPILE, bending stiffness/strength in the field was lower than assumed in LPILE, and the p-y curves for micropiles may need to be adjusted. Moreover, two tests terminated prematurely due to rotation of the threaded joints.

Richards and Rothbauer (2004) reported the results of lateral load tests on eight projects that utilized 9.6 in. diameter micropiles. The paper compared the lateral test results to predictions using LPILE, NAVFAC, and the Characteristic Load Method (CLM). The intent was to demonstrate that micropiles and micropile groups can be

designed to support lateral loads. Their conclusions show micropiles show less deflection than predicted due to typical conservatism in assigned soil parameters or neglecting passive surcharge due to the top of the pile being below ground surface and that the analysis of micropiles for lateral load is sensitive to the soil properties in the upper 10 to 20 feet of micropile.

CHAPTER 3
PRELIMINARIES

This chapter covers information and analysis that sets the stage for the research load testing.

### 3.1 Coordinating NCDOT Bridge Replacement Project

As stated previously, the research was conducted in conjunction with a bridge replacement project in northwestern North Carolina. There were originally several bridge replacement projects considering micropile foundation alternatives. It turned out that B4012 in Ashe County was the candidate project with the best overall timing. The vicinity map is shown in Figure 3.1.

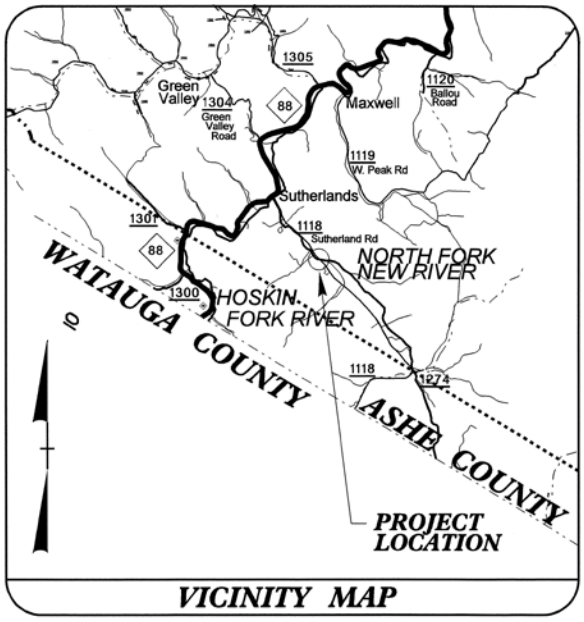


Figure 3.1 Map showing general location of B4012

Bridge 117, shown in Figure 3.2, crossed the North Fork of the New River on SR 1118 (Sutherland Road). The original bridge was single span, i.e. no piers, and the end bents were founded on timber piles. The replacement bridge would be longer due to a much larger hydraulic opening based on scour and would require two interior bents along

with two end bents. Foundations considered for the replacement bridge included drilled shafts, pile excavation, and micropiles. The decision to proceed with micropiles was made by the NCDOT based upon cost.

Figure 3.2 Photographs of bridge 117 on SR 1118

The pile sections chosen for the bridge design were 10.75" OD casings. The wall thickness was 0.5". The contractor chose to use duplex drilling for installation. The micropile design followed the current NCDOT specification of 10 feet of casing penetration, plunge, into rock with an additional 5 feet of bond into the rock. The contractor chose to not use a central bar and instead extended the casing the full length of the pile.

### 3.2 Site Conditions

Ashe County is located near the North Carolina – Tennessee Border just northwest of Boone, NC. The site is situated adjacent to the new bridge where the elevation is roughly 3200 ft. The soil profile of the test area is approximately 5 ft. of roadway fill over another 5 ft of residual soil. Below the residual is weathered biotite gneiss transitioning to crystalline biotite gneiss with depth. The soil profile is shown in Figure 3.3.

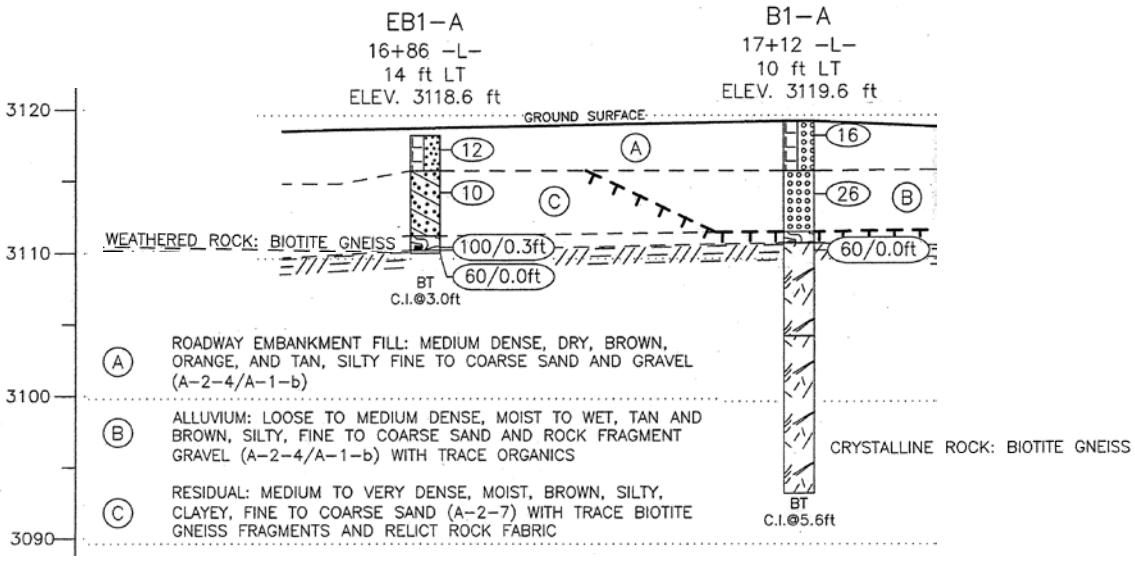


Figure 3.3 Soil profile at the load test location

### 3.3 Preliminary Numerical Models and Other Calculations

A starting point with the research was to develop preliminary models of field and laboratory tests such that the loads testing methods could be better defined and the proper instrumentation procured. This complements limitation imposed on the work by construction methods, time constraints, and financial limits.

#### 3.3.1 Preliminary Numerical Micropile Load Test Models

It was necessary to know the load-moment-deflection behavior of the field micropiles. FB-Multipier (BSI, 2010) was used to simulate representative load configurations to predict the needed capacity of load frames, displacement sensors, load cells, and hydraulic jacks. This included the different scenarios of micropile length and rock plunge. Soil and rock property correlations and estimates were based upon borings made at the site and estimated rock parameters. There was between 5 and 10 feet of overburden soil with an average estimated friction angle = 35 degrees, unit weight = 110 pcf and modulus of subgrade reaction = 25 pci. The rock had an estimated unconfined strength of 29 ksi based on RQD and experience in similar rock. The p-y curves by

Reese et al. (1974) were used for the overburden soil, while curves developed by McVay and Niraula (2004) were used for the rock. Multiple section micropile models accounted for the impact of the threaded joints. Soil and rock property correlations and estimates were based upon borings made at the site and estimated rock parameters. Key to these simulations was the feature in FB-Multipier to model deep foundations as segments. In this case, the micropiles were represented by one of two models. The first model was for the 6.3 ft. unmachined portion of the micropile casing. The second model represented the casing joint which includes the 0.2 ft portion of the adjoining piles that are machine threaded. The estimated properties of the micropile materials were $f'_c$ = 4 ksi and $E_c$ = 2000 ksi for the grout and $f_y$ = 80 ksi and $E_s$ = 30000 ksi for the casings. In order to initially account for the impact of the casing joint, the thickness of the steel was reduced in the joint segments to 0.2 in. A simple model was devised with three casing sections and two joints. The soil profile was 10 ft of general soil underlain by hard rock with the top of the micropile 2 ft above the ground surface. Results of this model show that the upper joint begins to fail at a lateral load of approximately 26.6 kips. Additional lateral loading causes the model to become unstable.

The analysis was extended to a micropile bent. The bent was composed of 4 micropiles with the same material properties and dimensions as the single pile analyzed previously. The micropiles were spaced at 10 feet center to center. The cap was modeled as a solid concrete member that 408” x 33” x 30”. The tops of the micropiles were assumed to be at the center of the pile cap. In order to prevent rotation and simulate the likely field load testing setup, the loads were applied at two locations. Figure 3.4 shows

the micropile and micropile bent models and loading. The load deflection, pile head and bending moment profiles are shown in Figures 3.5 and 3.6.

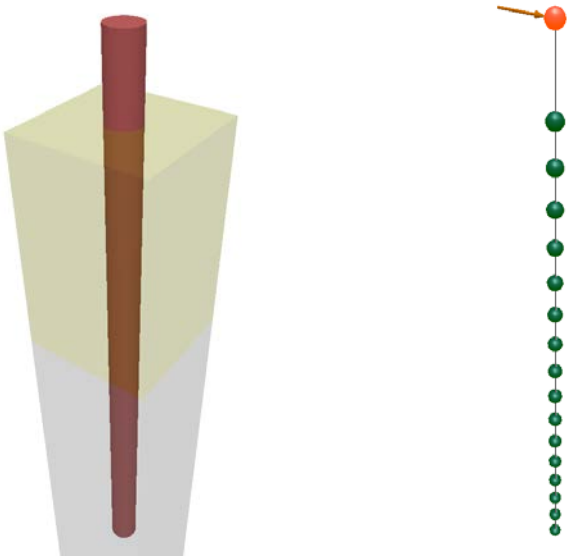


Figure 3.4 FB Multipier model for single micropile

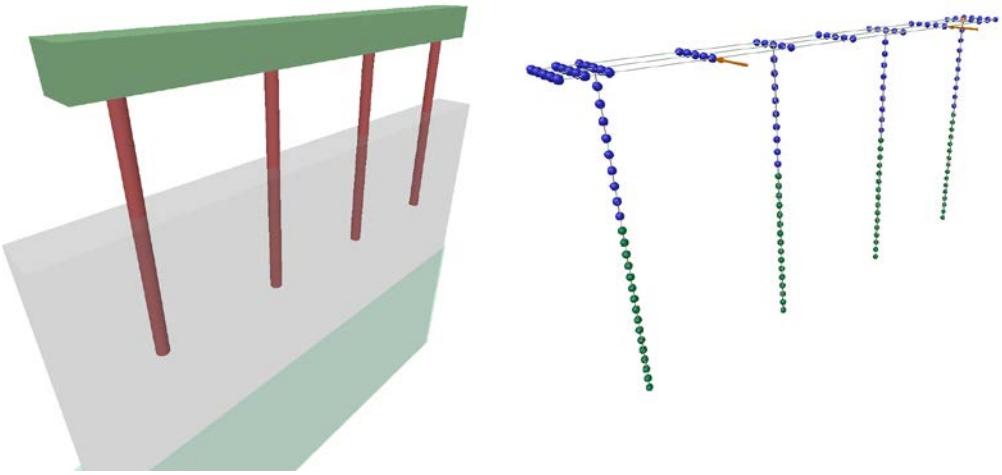


Figure 3.4 FB Multipier models for individual micropile and micropile bent

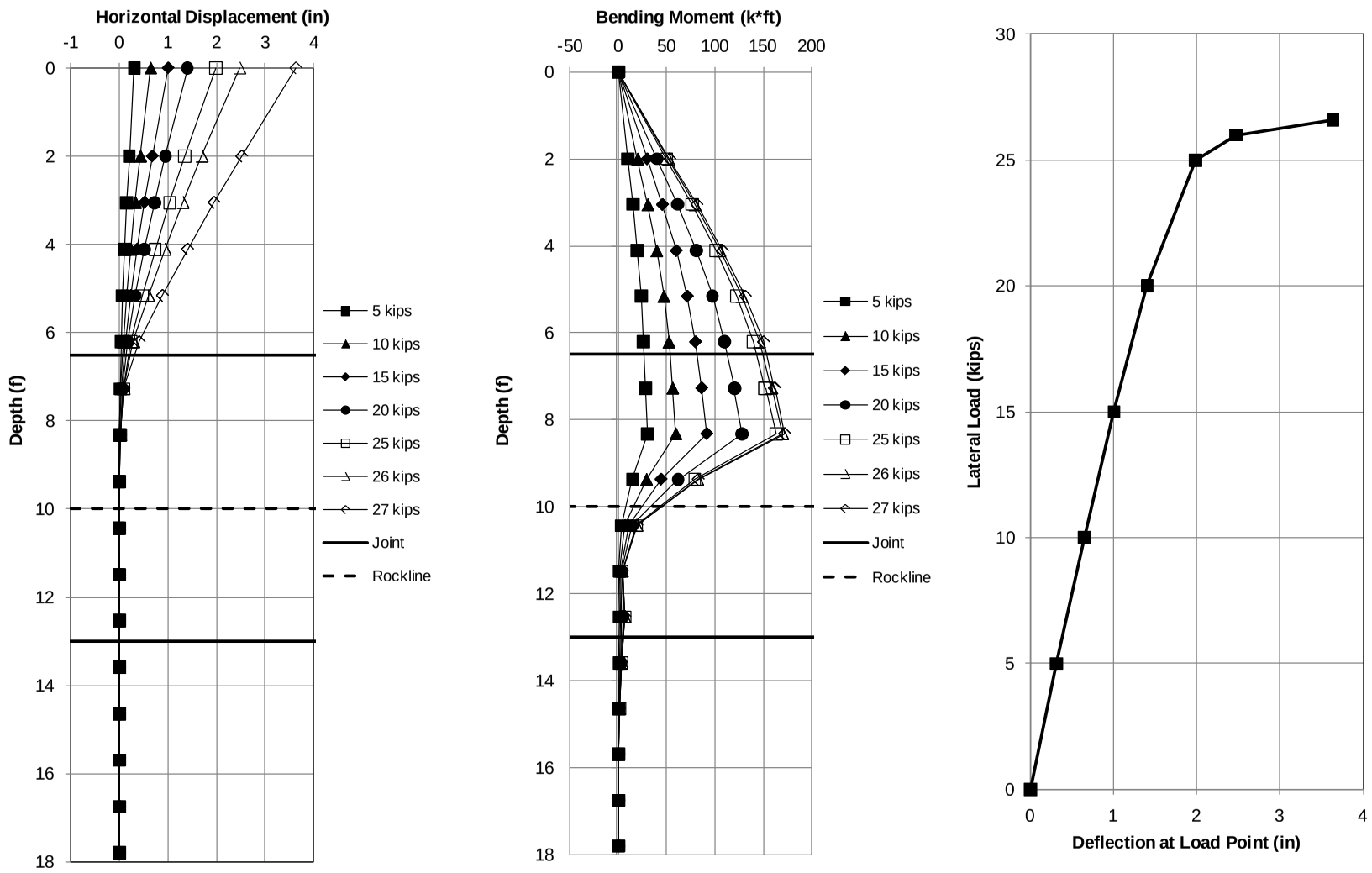
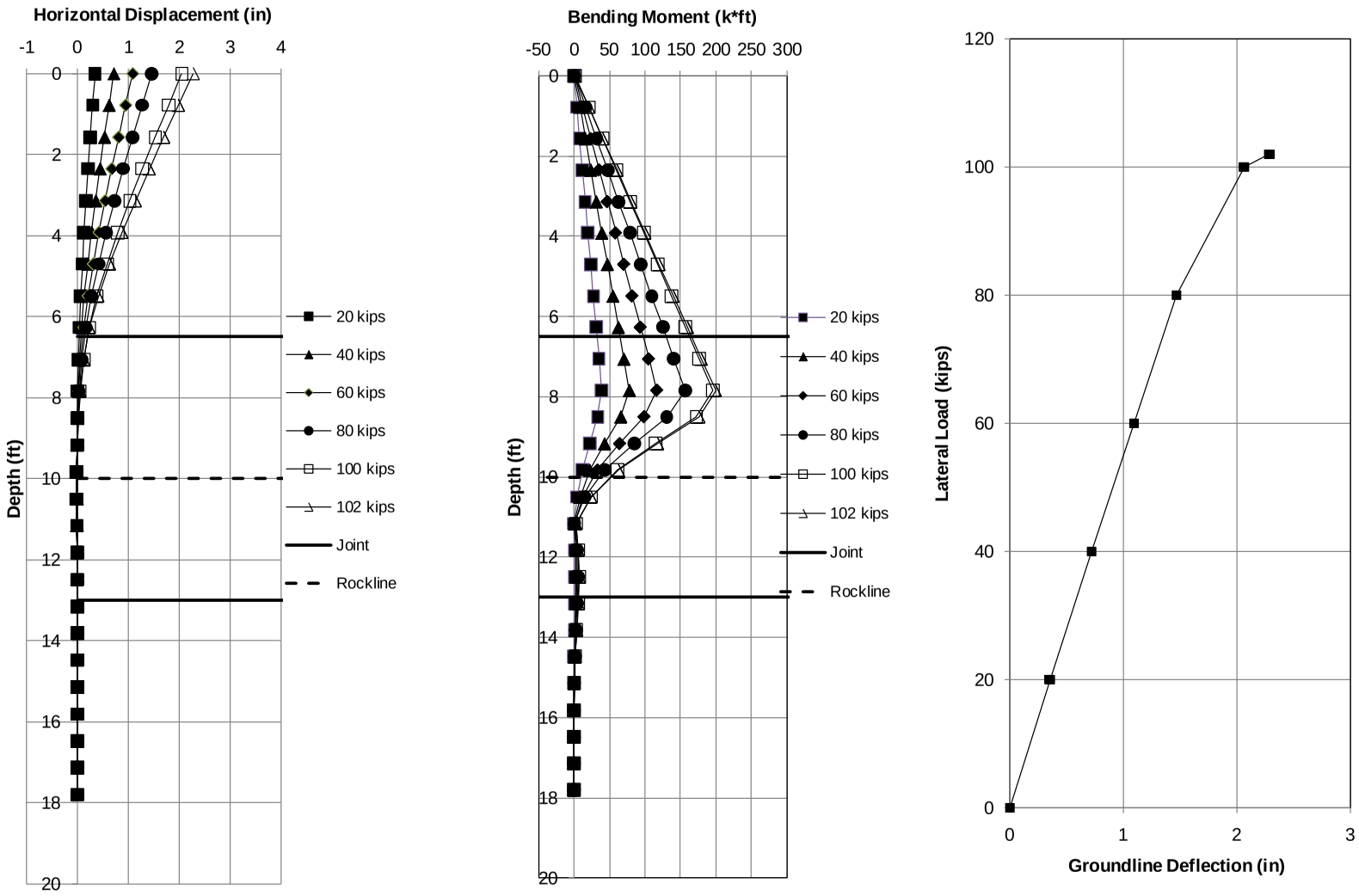



Figure 3.5 The Preliminary displacement-depth, bending moment-depth, and top displacement of a typical micropile section




F Figure 3.6 Preliminary displacement-depth, bending moment-depth, and top displacement of a typical micropile from a 4 pile bent

### 3.3.2 Laboratory Preliminary Load Tests Models

Similar to the field testing program, prediction of the laboratory test behavior was a necessary step in planning and executing the research program. The optimum load configuration utilizing the existing equipment in the laboratory was four point bending. This all allowed for a constant bending moment to be applied across a centrally located joint. In this case, the bending was modeled using simple linear elastic theory. This means that any loss of stiffness due to the joint was not modeled. The configuration is shown in Figure 3.7.

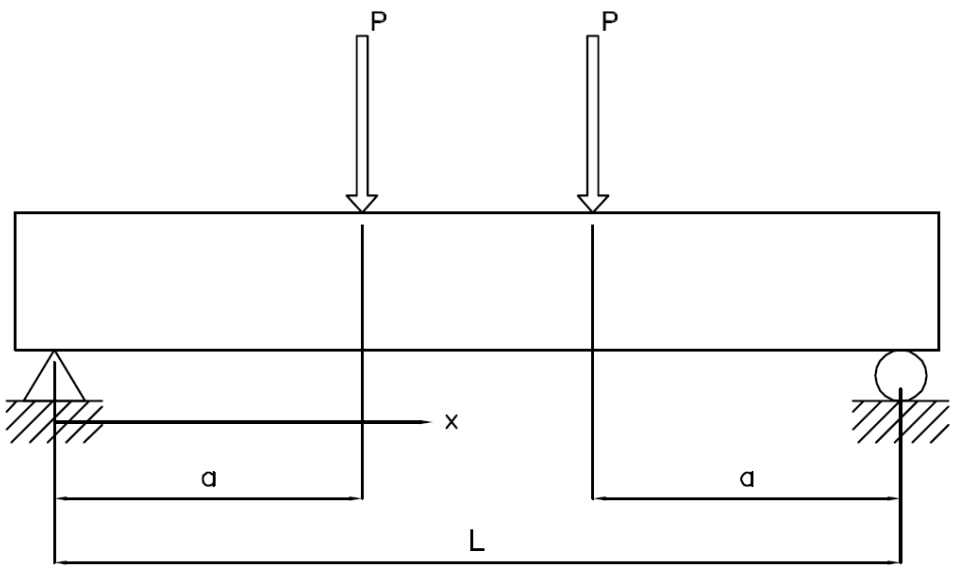



Figure 3.7 Idealized four point loading diagram.

For the case of a simply supported beam with two equal concentrated loads symmetrically placed, four point flexure, the displacements of the section are expressed as:

$$\Delta = \frac{Px(3La - 3a^2 - x^2)}{6EI} \qquad \text{for } 0 \leq x \leq a \qquad (3.1)$$

$$\Delta(x) = \frac{Pa(3xL - 3x^2 - a^2)}{6EI} \quad \text{for } a \leq x \leq (L-a) \tag{3.2}$$

$$\Delta(x) = \frac{P(L-x)(3a^2 - 3La + L^2 + x^2 - 2Lx)}{6EI}$$

$$\text{for } (L-a) \leq x \leq L \tag{3.3}$$

$$\Delta\,(\max) = \frac{Pa(3L^2 - 4a^2)}{24EI} \quad \text{at center } (L/2) \tag{3.4}$$

The moments of the section are expressed as:

$$M_{(max)} = P*a \quad \text{(between the loads)} \tag{3.5}$$

$$M_x = P*x \quad \text{for } 0 \leq x \leq a \tag{3.6}$$

$$M_x = P*a \quad \text{for } a \leq x \leq (L-a) \tag{3.7}$$

$$M_x = P*(L-x) \quad \text{for } (L-a) \leq x \leq L \tag{3.8}$$

The maximum stress for the section is expressed as:

$$\sigma_{max} = |M_{(max)}| \frac{C}{I} = |\frac{Pa}{Z}| \tag{3.9}$$

Where

$\Delta$ = the deflection in inches,

P = point load in kips,

L = length of the pile in feet,

x = location of the moment or deflection, in feet

a = location of the loads

M = moment at any location

$\sigma$ = Stress of the beam section

EI = flexural rigidity of the micropile and grout section.

The properties of the micropile section that were used in the preliminary analysis of the field sections were substituted Figure 3.8 shows the bending moments and deflections for arbitrary loads. The results shown would be for an integral section, thus are an upper bound approximation.

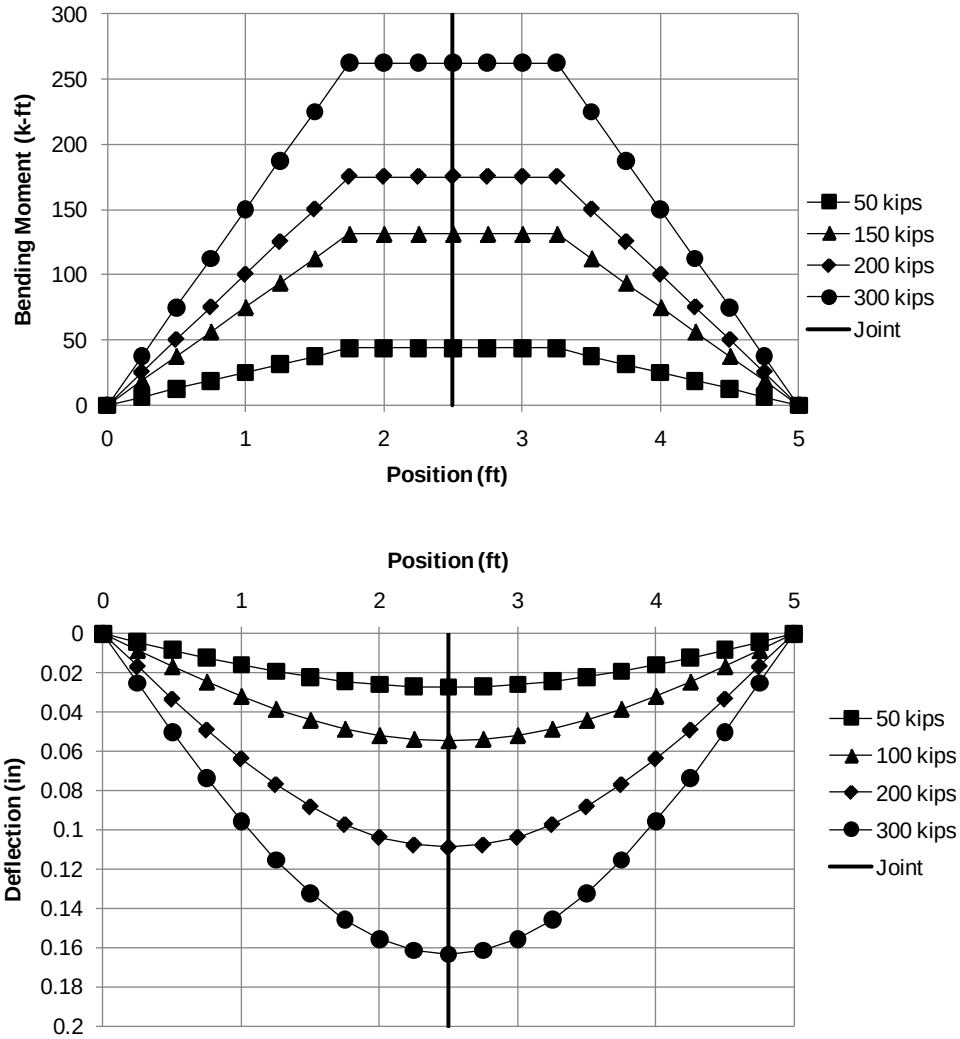



Figure 3.9 Theoretical four point bending behavior for an integral section

# CHAPTER 4
# FIELD LATERAL LOAD TESTING PROGRAM

## 4.1 Background

NCDOT secured funding for the use of micropiles on new bridge foundations through the FHWA Innovative Bridge Research and Deployment Program (IBRD). The funding was used to install micropiles specifically for lateral load testing. When the project was envisioned, and the corresponding bridge project was let, a schedule of micropiles was proposed. The testing arrangement was designed after careful consideration of previous research, existing conditions, available funds, and research objectives. The general strategy for the test setup was to provide a means to apply concentrated load at the top of the pile while measuring force, deflection, and bending moment. Sixteen micropiles would be constructed to perform 9 lateral load tests including a group load test with a cast concrete cap. The original drawing from the bridge plans is Figure 4.1 and the corresponding load test plan is Figure 4.2.

When construction began in August of 2009, several impediments to constructing the piles in the proposed configuration appeared. The three primary obstacles were the position of the new bridge and other infrastructure, the proximity of right of way to the new construction, and overhead utilities. The original 4x4 plan was eventually split into three groups: 2x2, 2x2, and 4x2. An as built mock plan of the load test groupings is shown in Figure 4.3. This change necessitated the reconfiguration of most and elimination of three of the proposed load tests. For simplicity, the pile numbering was kept the same. As construction method was up to the contractor, full depth casing was used rather than central bars for all piles installed at the site. The amended load test plan is shown in Figure 4.4.

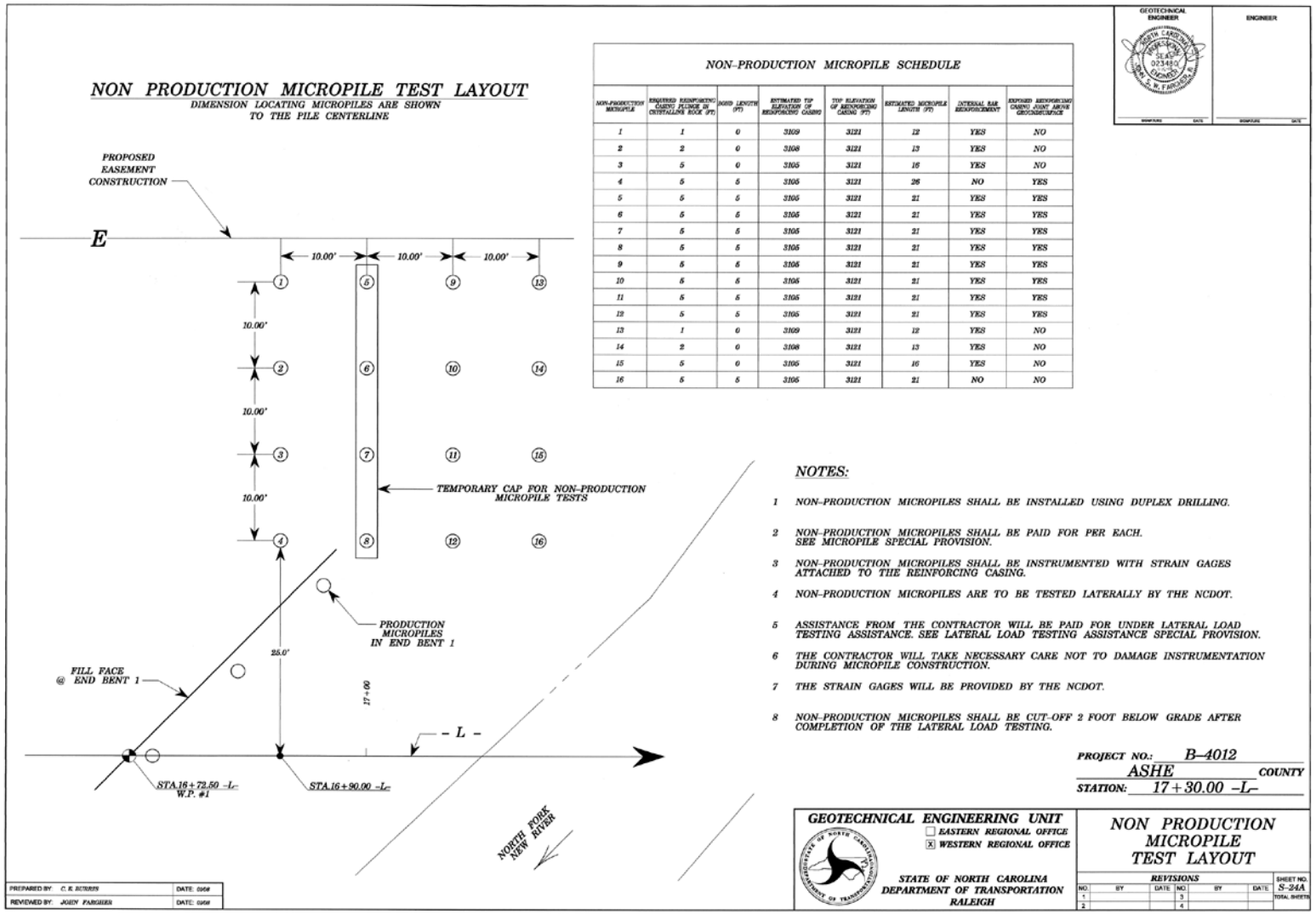
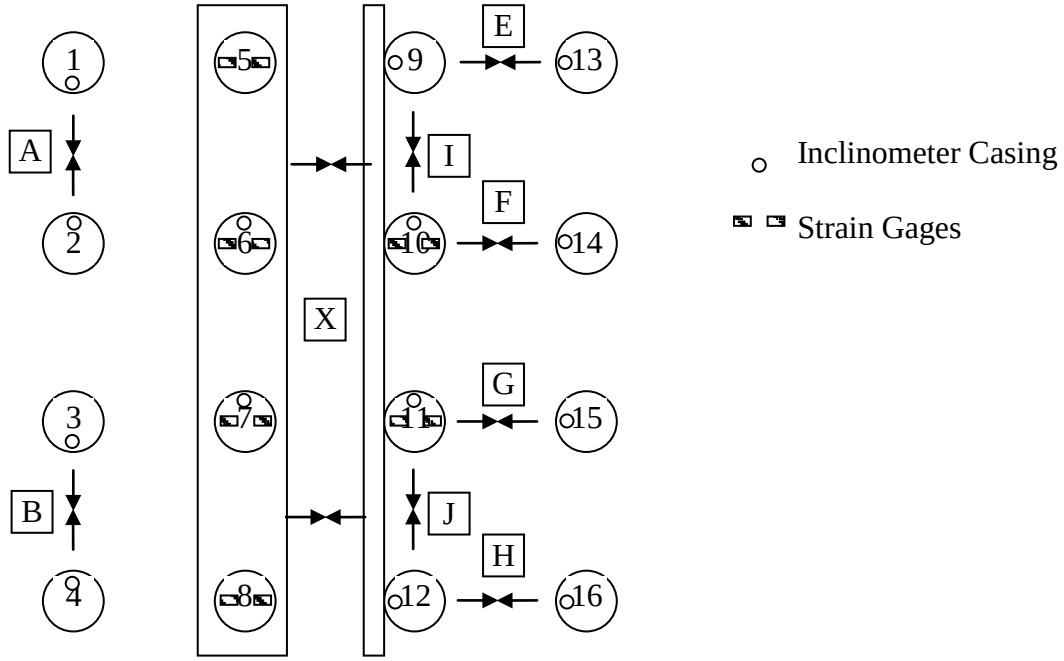



Figure 4.1 Proposed layout




| Micropile | Description |
|---|---|
| 1* | 2’ Stickup, Casing plunge 1ft |
| 2* | 2’ Stickup, Casing plunge 2 ft |
| 3* | 2’ Stickup, Casing plunge 5 ft |
| 4† | 2’ Stickup, Spec pile, no rebar |
| 5 – 8† | Spec micropile, one casing section above ground, joint exposed, formed cap |
| 9 - 12† | Spec micropile, one casing section above ground, joint exposed |
| 13* | 2’ Stickup, Casing plunge 1 ft |
| 14* | 2’ Stickup, Casing plunge 2 ft |
| 15* | 2’ Stickup, Casing plunge 5 ft |
| 16 | 2’ Stickup, Spec pile, no rebar |

*no bond length below casing
†5 ‘ bond length below casing

| Load Test | Description |
|---|---|
| A | Pull 1’ plunge against 2’ plunge |
| B | Pull 5’ plunge against nobar |
| E | Pull 1’ plunge against spec |
| F | Pull 2’ plunge against spec |
| G, | Pull 5’ plunge against spec |
| H | Pull no bar against spec |
| I, J | Pull two spec piles above joint, not to failure |
| X | Pull group with cap against frame (A cap will be cast around 5-8 to create a “bent.” Soil will be excavated around 5-8 to simulate scour condition) |

Figure 4.2 Proposed micropile load test layout

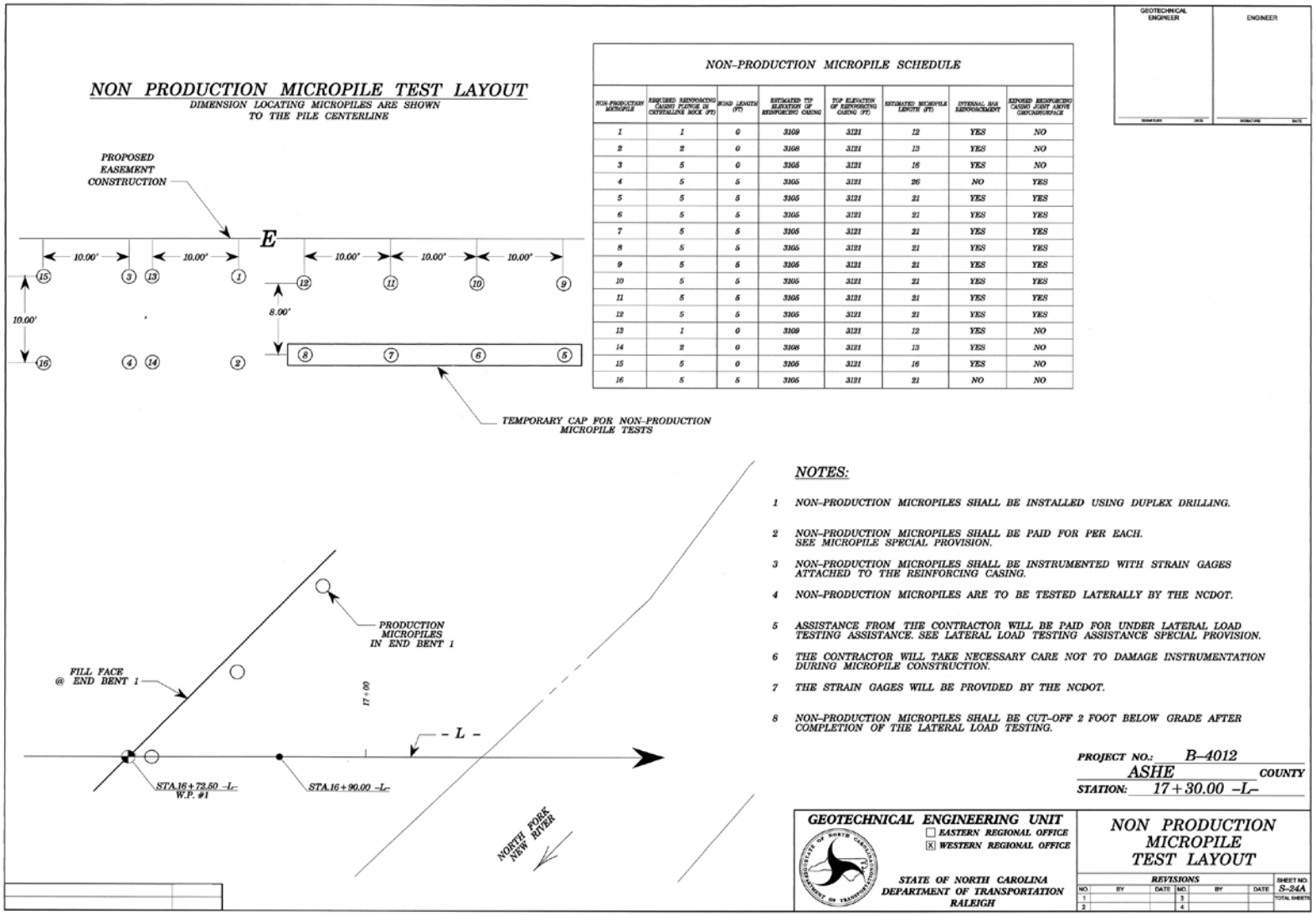
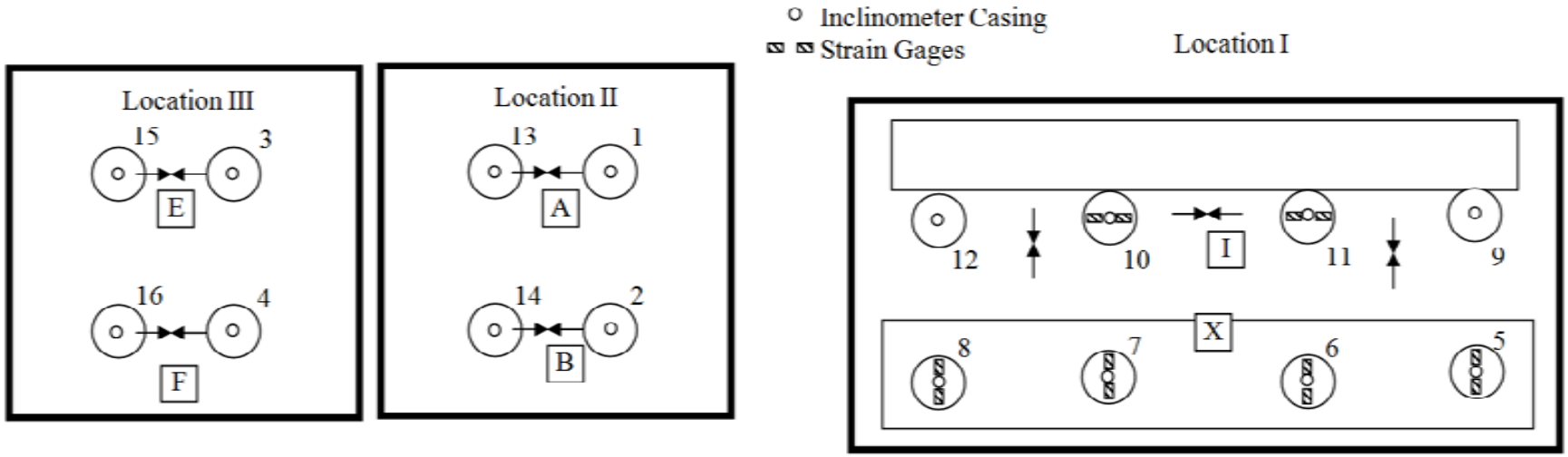



Figure 4.3 As-built layout




| Micropile | Description* |
|---|---|
| 1 | Casing plunge 1ft |
| 2 | Casing plunge 2 ft |
| 3 | Casing plunge 5 ft |
| 4 | Casing plunge 10 ft |
| 5 – 8 | Spec micropile, one casing section above ground, joint exposed, formed cap |
| 9 - 12 | Spec micropile , one casing section above ground, joint exposed |
| 13 | Casing plunge 1 ft |
| 14 | Casing plunge 2 ft |
| 15 | Casing plunge 5 ft |
| 16 | Casing plunge 10 ft |

| Load Test | Description |
|---|---|
| A | Pull 1’ plunge against 1’ plunge |
| B | Pull 2’ plunge against 2’ plunge |
| E | Pull 5’ plunge against 5’ plunge |
| F | Pull 10’ plunge against 10’ plunge |
| I | Pull 10’ plunge piles not to failure |
| X | Pull group with cap against frame (A cap will be cast around 5-8 to create a “bent.” Soil will be excavated around 5-8 to simulate scour condition) |

*all piles no bond length below casing and center rebar

Figure 4.4 Actual micropile load test layout

## 4.2 Test Micropiles

The micropiles were installed by Wurster Engineering using a duplex drilling rig manufactured by Klemm. The contractor was allowed to choose the design to meet the performance specification. Therefore, in order to simplify the construction, a full depth casing was used in lieu of a central reinforcing bar in all piles installed for the bridge and load tests.

Installing piles to prescribed depths accounting for the rock was somewhat of a challenge. The contractor was instructed to socket the piles into rock based upon the plan and schedule shown in Figures 4.3 and 4.4, respectively. Therefore even though the pile load tests were between two piles with the same socket depth, the pile load points may vary by as much as a foot, due to the perceived rock depth.

All micropiles were composed of 6.5 ft. segments, 10.75 in. diameter, and 0.5 in. wall thickness. Since casing plunge into rock was a specification, and the rock layer was inconsistent, the number of casings needed to construct the piles was variable. However, every effort to make the new test pairs as similar as possible was made. Table 4.1 lists the piles and their general attributes.

## 4.3 Instrumentation and Apparatus

The behavior of the micropiles was measured by creating boundary conditions that could either be controlled or measured. This included devising load systems and instrumentation to measure load, strain, and displacement in a similar fashion to the systems used by Long et al. (2004), Rollins and Sparks (2002), and Rollins et al. (2005) following ASTM D3966.

**TABLE 4.1 Schedule of Lateral Pull Tests on Identical Micropiles**

| Pile | Number of Casings | Total Length (ft) | Plunge in Rock (ft) | Pile Top Above Ground Surface (ft ) | Pile Top Above Load Point (ft) | Top of Inclinometer Casing Above Pile Top (ft) |
|---|---|---|---|---|---|---|
| 1 | 1 | 6.5 | 1 | 2.9 | 2.7 | 0.0 |
| 2 | 2 | 13 | 2 | 4.4 | 2.1 | 2.0 |
| 3 | 2 | 13 | 5 | 3.8 | 1.8 | 1.8 |
| 4 | 3 | 19.5 | 10 | 2.7 | 1.7 | 0.5 |
| 5 | 3 | 19.5 | 10 | 1.7 | 0.4 | 0.5 |
| 6 | 3 | 19.5 | 10 | 2.3 | 1.0 | 0.5 |
| 7 | 3 | 19.5 | 10 | 2.4 | 1.2 | 0.5 |
| 8 | 3 | 19.5 | 10 | 2.2 | 0.9 | 0.5 |
| 9 | 3 | 19.5 | 10 | -- | -- | -- |
| 10 | 3 | 19.5 | 10 | 1.5 | 1.7 | 0.3 |
| 11 | 3 | 19.5 | 10 | 1.8 | 1.3 | 0.7 |
| 12 | 3 | 19.5 | 10 | -- | -- | -- |
| 13 | 1 | 6.5 | 1 | 1.6 | 1.4 | 0.0 |
| 14 | 2 | 13 | 2 | 4.5 | 2.0 | 2.0 |
| 15 | 2 | 13 | 5 | 4.0 | 1.8 | 2.0 |
| 16 | 3 | 19.5 | 10 | 3.7 | 2.4 | 0.7 |

### 4.3.1 Loading Frame

A simple load frame was constructed to simultaneously load two single piles by pulling them together. Two key aspects of the design of this frame were economy and portability. The initial design was based heavily upon that presented by Long et al (2004). Load tests A and B were conducted using the first version of the frame. Problems with the frame resulted in failure of the frame before the completion of load test B. The load frame was then returned to the shop for redesign. The final reaction system consisted of two steel channels that were pulled together using high strength steel all-thread bars. Two “jaws” were manufactured to centralize the load on the pile tops. These jaws had a small amount of articulation against the channels to allow pile top rotation during large deflections. Figure 4.5 displays a drawing and photograph of the load frame used for loading the single piles.

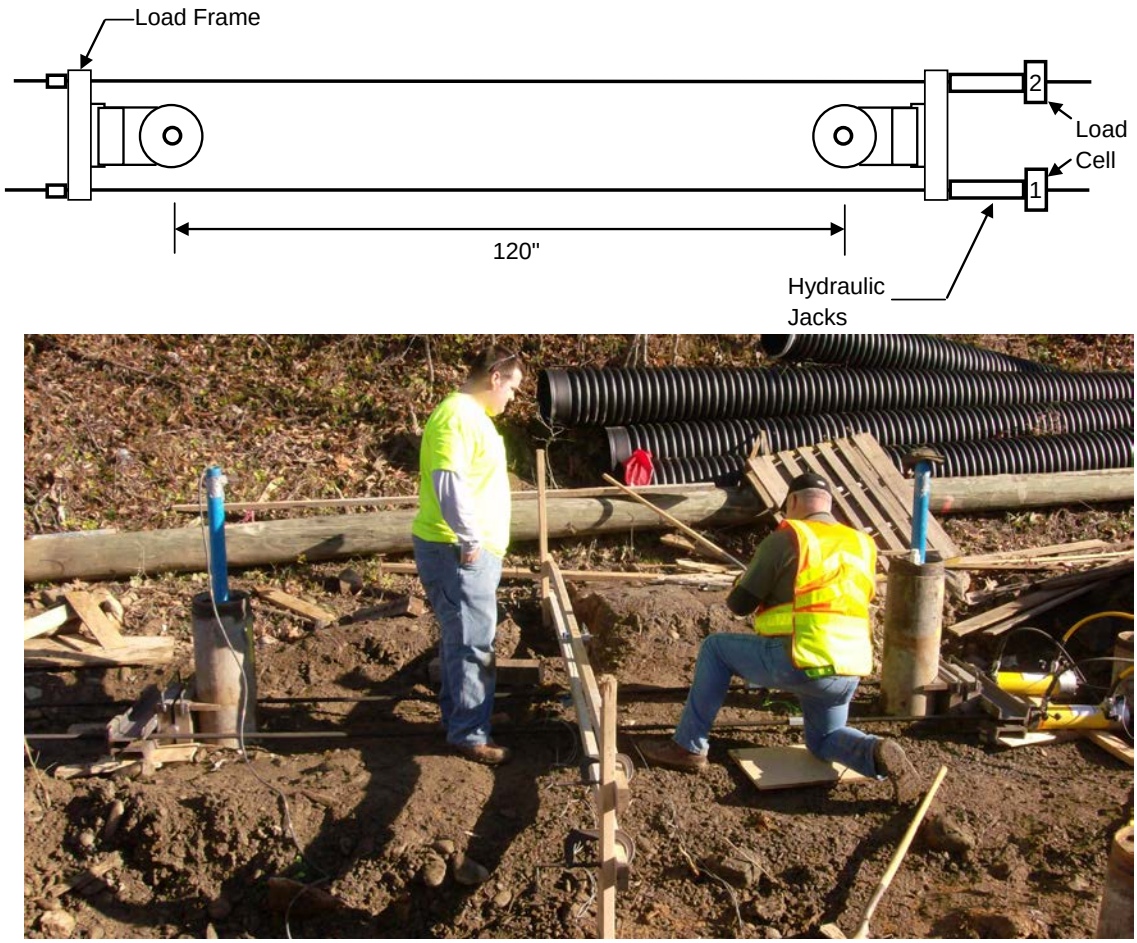


Figure 4.5 Load testing frame

Instead of a loading frame, the group test was performed by pulling a four micropile group with a cast concrete cap against a four micropile group with a steel reaction beam. The same actuators and instrumentation that was used in the single pile tests was used for the group.

### 4.3.2 Jacks and Hydraulic Pump

Preliminary analysis predicted up to five inches of deflection at the pile tops before failure. The capacity required to perform the group load test was on the order of 50 kips at two locations (100 kips total). In addition, an early decision was made to perform the load tests by pulling, not pushing, so center-hole double acting jacks were

required. Therefore, two identical Enerpac #RRH-301060 kip long stroke hydraulic center-hole jacks were used pull the all thread bars. The jacks were connected to an Enerpac ZU4 Class ZU4408JB pump fitted with a manifold and valves to provide equal pressure to both jacks. The center-hole jacks and hydraulic pump are shown in Figure 4.6.

Figure 4.6 Enerpac jacks and pump

### 4.3.3 Load Cells and Pressure Gauge

Load cells were used to measure the force applied to the single pile load frame as well as the pile bent at the cap. The predicted capacity required was just above 50 kips for each load cell. Due to cost limitations and delivery issues, 50 kip load cells were selected with the assumption there would be some overload capacity available. Two Omega LCHD-50K load cells used for the testing. A redundant measurement for the load cells was made using a pressure transducer in line with the hydraulic jacks. The pressure transducer was manufactured by Entran model number EPO W31 10KP with a maximum capacity of 10,000 psi. The load cell and pressure transducer are shown in Figure 4.7.

Figure 4.7 Omega load cell and Entran pressure transducer

### 4.3.4 Potentiometers

Displacements of the pile heads were monitored using Celesco SP1-25 string potentiometers, like the photos shown in Figure 4.8. The body or reel housings were attached to a fixed wood reference frame that was erected between the test piles during each load test. A pair of threaded eyes was attached by drilling and tapping each pile at the measurement locations. Filament was used to connect the threaded eyes to the potentiometer strings. Examination of the potentiometer data for load tests B, E, and F revealed some interference that was not anticipated. These measurements have been considered suspect for those tests and discarded. The potentiometer results for Tests I and X did not show the same interference.

Figure 4.8 SP1 string potentiometer by Celsco

### 4.3.5 Inclinometer

Inclinometer measurements were used to determine pile deflection and rotation with depth for selected load increments for all micropiles except 9 and 12. In addition, the inclinometer provided a redundant measurement with the potentiometers at the pile heads. Inclinometer casings were installed in all micropiles. The inclinometer casings were placed in the micropiles after pressure grouting. A centralizer made from a slotted PVC pipe that was heated and deformed into a Chinese lantern shape was used to position the inclinometer casings in the center of the micropiles. The inclinometer casing was filled water prior to grouting to overcome buoyancy so the casing did not float out of the pile. The primary measuring axis of the inclinometer casings was aligned with the direction of the load and pile movement.

The inclinometer probe used in this study was a model 6000 manufactured by Geokon. Measurements were made across the A-A axis and doubled for precision. The casings were model QC manufactured by Slope Indicator. Data for each survey was stored using a GK 603 readout box. Reduction of the inclinometer data was handled using a spreadsheet developed by the PI. The inclinometer, readout, and casing used for the test are shown in Figure 4.9.

Figure 4.9 Geokon 6000 probe with 603 readout box and QC casing by Slope Indicator

Bending moments were computed based upon the inclinometer measurements. Bear in mind that this required a double derivative of the displacement. The bending moment (M) in each of the micropile was computed from the inclinometer data based on the method published by Ooi and Ramsey (2003). Changes in incremental deviations ($\Delta$) from the initial values are written as:

$$\Delta_A = ID_A - ID_{Ai} \tag{4.1}$$

$$\Delta_B = ID_B - ID_{Bi} \tag{4.2}$$

$$\Delta_C = ID_C - ID_{Ci} \tag{4.3}$$

$$\text{Deflection} = (0.0003 * \Delta * L) \tag{4.4}$$

$$\text{Curvature } (\kappa) = \frac{\psi_A - (2 * \psi_B) + \psi_C}{L^2} \tag{4.5}$$

$$\psi_A = \Delta_A, \tag{4.6}$$

$$\psi_B = \psi_A + \Delta_B \tag{4.7}$$

$$\psi_C = \psi_B + \Delta_C \tag{4.8}$$

$$\text{Bending Moment (M)} = EI * \kappa \tag{4.9}$$

$$EI = (EI)_{\text{micropile section}} + (EI)_{\text{grout}} \tag{4.10}$$

Where: $\Delta$ = change in inclinometer reading

i = initial value

$\kappa$ = curvature ($ft^{-1}$)

$\psi$ = cumulative deviations

L = distance between readings (2ft)

E = Young's modulus of the specified material and

I = moment of inertia of the specified material.

### 4.3.6 Strain Gauges

Installing strain gauges in a micropile section that installed using duplex drilling was virtually impossible without hindering construction and losing most of the instrumentation. It was not possible to install the gauges on the piles themselves. Therefore, the micropiles were instrumented much like a drilled shaft using sister bars. The micropiles for test I and the micropiles in the bent were outfitted with Geokon model 4911 vibrating wire sister bar strain gauges, shown in Figure 4.10, at 2.5 ft intervals of depth to measure strain concurrent with load and displacement. These rebar strain meters were embedded in concrete or in this case grout.

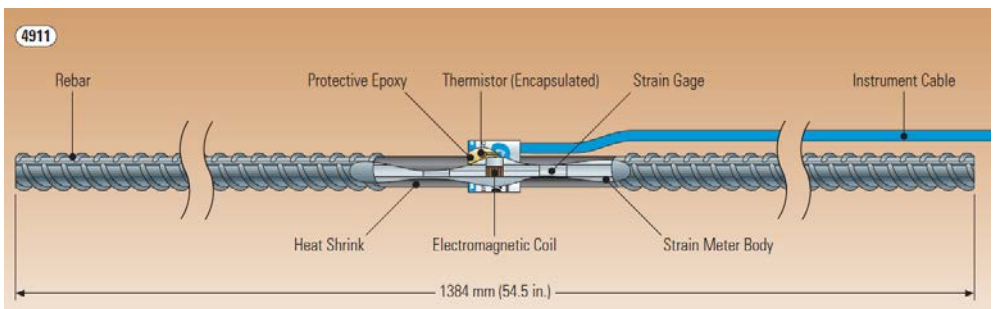



Figure 4.10 Geokon model 4911 sister bar strain meter

The strain gauges, measured both tensile strain (+) and compressive strain (-) as the load is applied. The output of the strain gauges reading was frequency which was converted to strain using the following equations.

$$\text{Digit} = 0.001*(\text{frequency})^2 \tag{4.11}$$

$$\text{Raw Strain} = 4.062*\text{digit} \tag{4.12}$$

$$\text{Apparent Strain} = \text{Raw Strain}*\text{Gauge Factor} \tag{4.13}$$

The difference in the tensile and compression strains divided by the distance between the strain gauges is the curvature.

$$\kappa = \frac{(\varepsilon_T - \varepsilon_C)}{h} \tag{4.14}$$

The curvature was then used to calculate the bending moment versus depth curves based on the formula:

$$M = \frac{EI(\varepsilon_T - \varepsilon_C)}{h} = \kappa EI \qquad (4.15)$$

Where $\varepsilon_T$ = tensile strain (+)

$\varepsilon_C$ = compressive strain (-)

h = horizontal distance between gauges spaced at equal but opposite distances from the neutral axis

$EI = (EI)_{\text{micropile section}} + (EI)_{\text{grout infill}}$

GF = the gauge factor for each of the strain gauge,

E = Young's modulus of the specified material and

I = moment of inertia of the specified material.

The rebar strain meters were overlapped and tied together with wire ties to make a continuous string of seven gauges spaced at 2.5 foot intervals. The resulting strings were 20 feet long. These gauge strings were wire tied to the centralizers that were attached to the inclinometer casings. The intent was to push the strain gauges to the grout/casing interface, such that bending moments measured would be close to those in the casing. Photographs of an assembled cage are shown in Figure 4.11. The cages were placed inside the micropiles after pressure grouting. The winch on the drill rig was used to raise the casing vertical. The tight fit of the centralizers made it necessary for two people to push the cage into the piles. Friction between the centralizers and the casings along with the weight of the gauges held them in place. The gauge strings were oriented with the direction of loading/pile movement.

Figure 4.11 Instrumentation cages

### 4.3.7 Data Acquisition

Data for the load test was acquired and stored using a Campbell Scientific CR1000 Datalogger. The CR1000 Datalogger is a self-contained data acquisition system that contains a microprocessor and storage such that is can function without being connected to a computer. The CR1000 has 16 channels (8 differential) that can measure a maximum of ± 5 volts, but can be expanded using multiplexers. There is 4MB of data storage onboard that can be expanded using a compact flash card to capacities on the order of gigabytes.

The load cells, potentiometers, and pressure sensor were all analog sensors connected directly to the CR1000. All sensors were powered using external power supplies. The load cells and pressure cell were excited at 10 volts. The potentiometers were powered at 5 volts. The vibrating wire strain gauges were connected to a through a 16 channel multiplexer model AM16/32 to a module that provided the vibrating wire frequency, AVW200. The AVW200 sent the vibrating wire signal, determined, the resonant frequency, and controlled the multiplexer. Thus, the output was a data stream that was connected to the CR1000 through one of two RS232 type COM ports.

During the single pile load tests, a single Datalogger was used to record output from the load cells, potentiometer, and backup pressure gauge. During load tests I and X two synchronized Dataloggers were used to read the analog and vibrating wire measurements, respectively.

## 4.4 Single Micropile Load Tests

Presented in this section is the summary of the results and plots of the single micropile lateral load tests. Table 4.2 contains the schedule followed for the load tests.

TABLE 4.2 Schedule of field load tests

| Date | Load Test | Piles | Number of Casings | Rock Plunge (ft) | Strain Gauges |
|---|---|---|---|---|---|
| 11/16/09 | A | 1 & 13 | 1 | 1 | No |
| 11/24/09 | B | 2 & 14 | 2 | 2 | No |
| 11/24/09 | E | 3 & 15 | 2 | 5 | No |
| 11/24/09 | F | 4 & 16 | 3 | 10 | No |
| 11/25/09 | I | 10 & 11 | 3 | 10 | Yes |
| 12/10/09 | X | 5, 6, 7, 8 | 3 | 10 | Yes |

### 4.4.1 Test "A" Pull 1.0 ft Embedment Against 1.0 ft Embedment

When these test piles were installed, the result was a single 6.5 ft casing that was embedded about 1.0 ft into what was thought to be rock at the time as shown in Figure 4.12 There were also issues with the initial load test that required a retest of these piles. Regardless, these piles immediately rotated in the socket and failed progressively, unable to maintain load for any amount of time. No graphical results were reported.

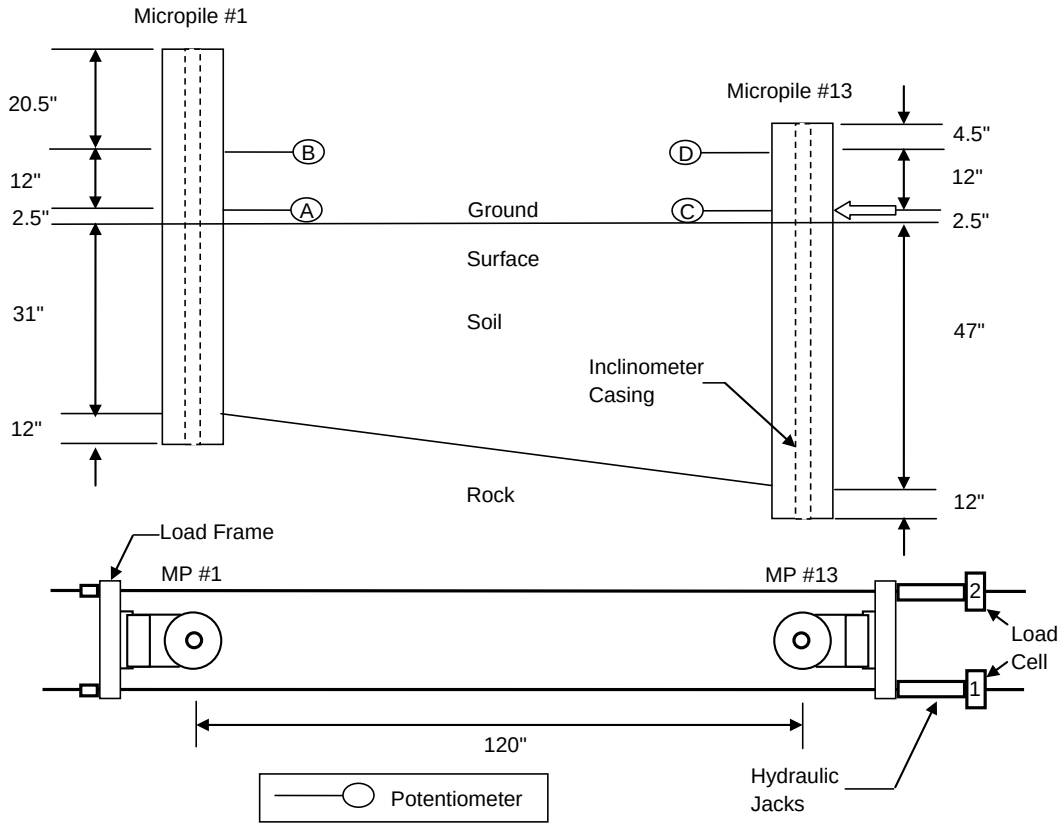


Figure 4.12 Load test A micropiles 1 and 13

### 4.4.2 Test "B" Pull 2.0 ft Embedment Against 2.0 ft Embedment

These test piles consisted of two 6.5 ft micropile casings. The tips of these piles were embedded 2.0 ft into the underlying rock. These piles were initially tested, but problems with the load frame prevented load to failure. A sketch of the test configuration is shown in Figure 4.13. This test was repeated after reconfiguring the load frame. Figures 4.14 and 4.15 show the load displacement response with depth and at the top of both piles. There was excessive lateral displacement of pile 14 until structural failure around 30 kips. Figure 4.16 shows photographs of the failure pile 14.

### 4.4.3 Test "E" Pull 5.0 ft Embedment Against 5.0 ft Embedment

Pile for test E consisted of two 6.5 ft micropile casings. The tips of these piles were embedded 5 ft into the underlying rock, as shown in Figure 4.17. The load test was conducted without incident. The load deflection response is shown in Figures 4.18 and 4.19. The load test ended with an abrupt failure of pile 15. Figure 4.20 contains photographs of pile 15 after the test was completed.

### 4.4.4 Test "F" Pull 10.0 ft Embedment Against 10.0 ft Embedment

Three 6.5 ft casing sections were used to construct test piles for load test F. The tips of these piles were embedded 10 ft into the underlying rock. The test setup is shown in Figure 4.21. The load test ended with an abrupt failure of pile 16. This is evidenced in Figures 4.22 and 4.23 that show the load deflection response. Pile 16 was exhumed post test to verify failure at the joint as shown in Figure 4.24.

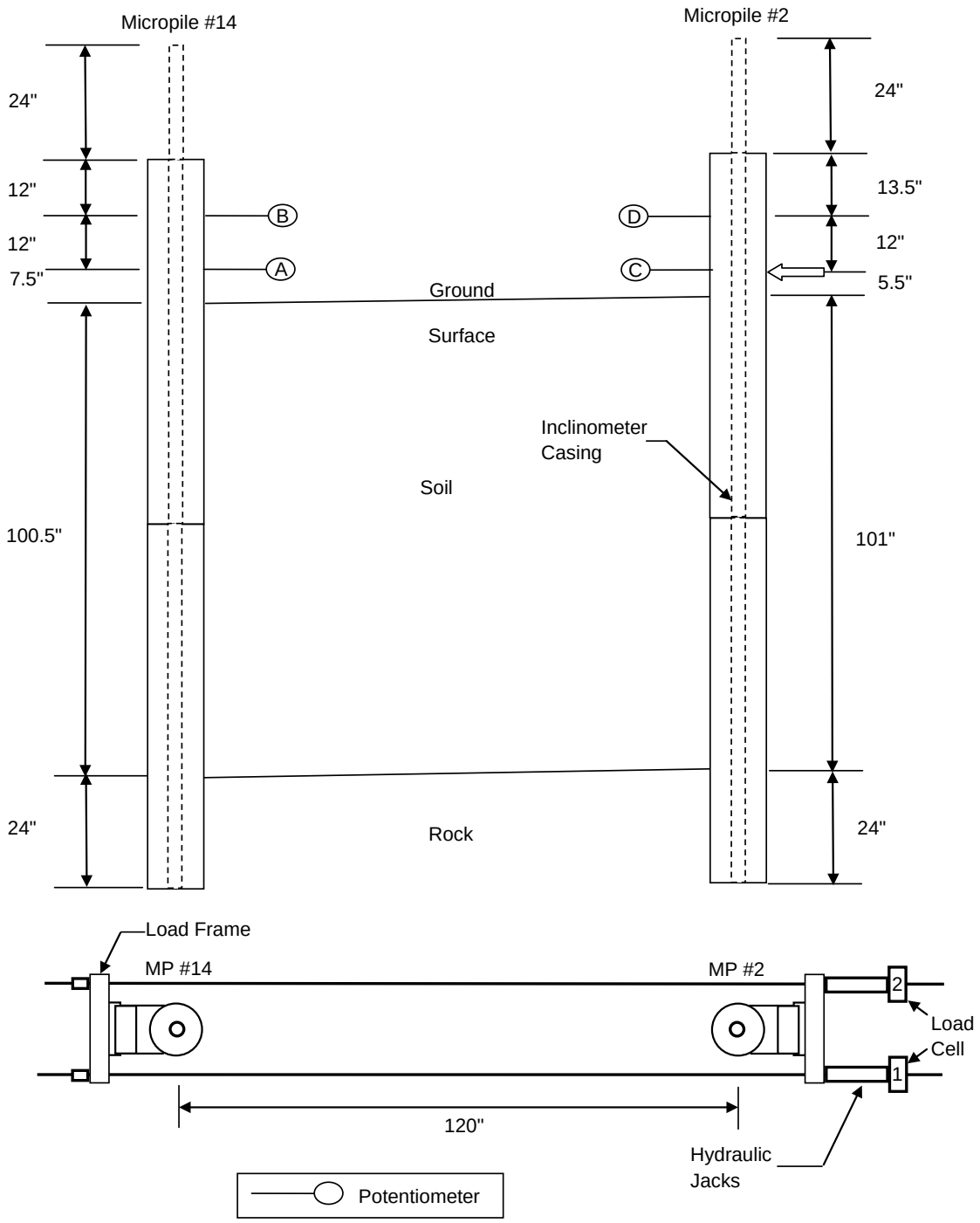



Figure 4.13 Load test B micropiles 2 and 14

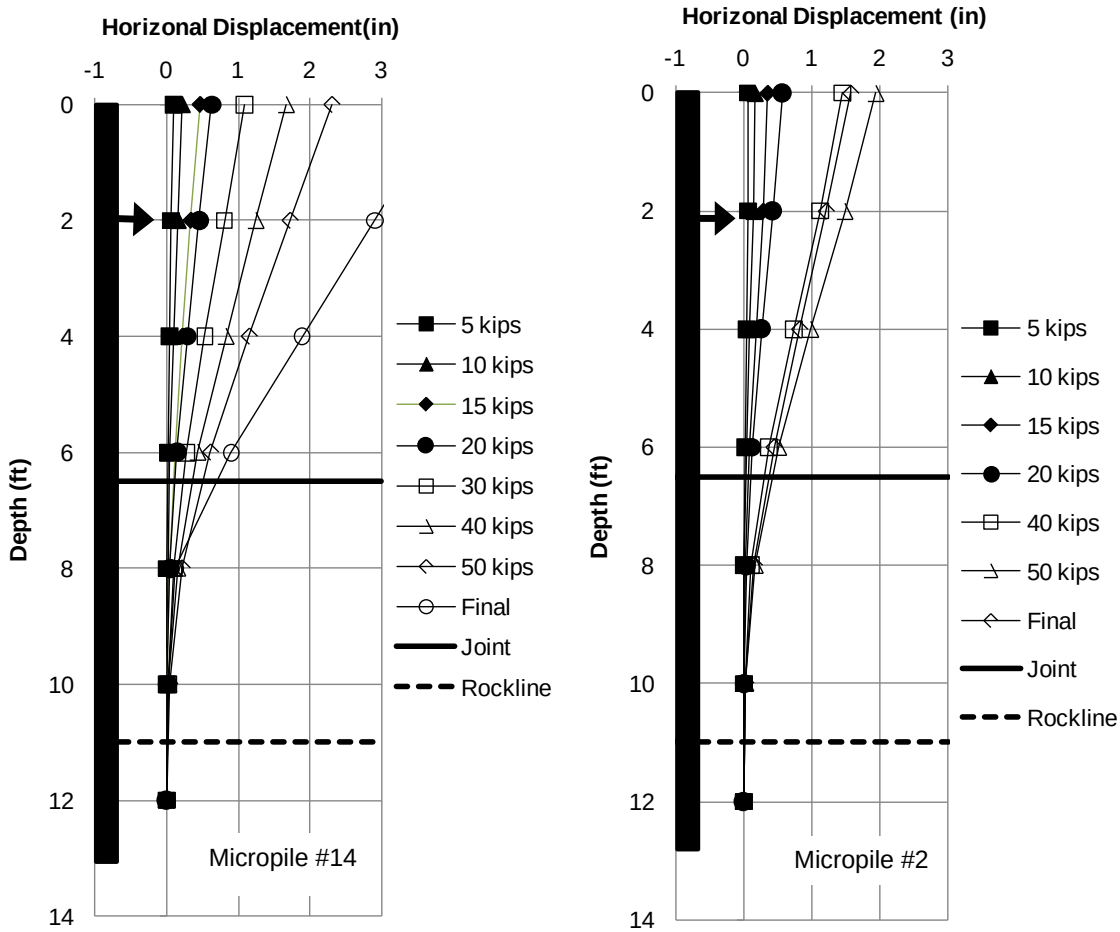



Figure 4.14 Inclinometer deflection for load test B.

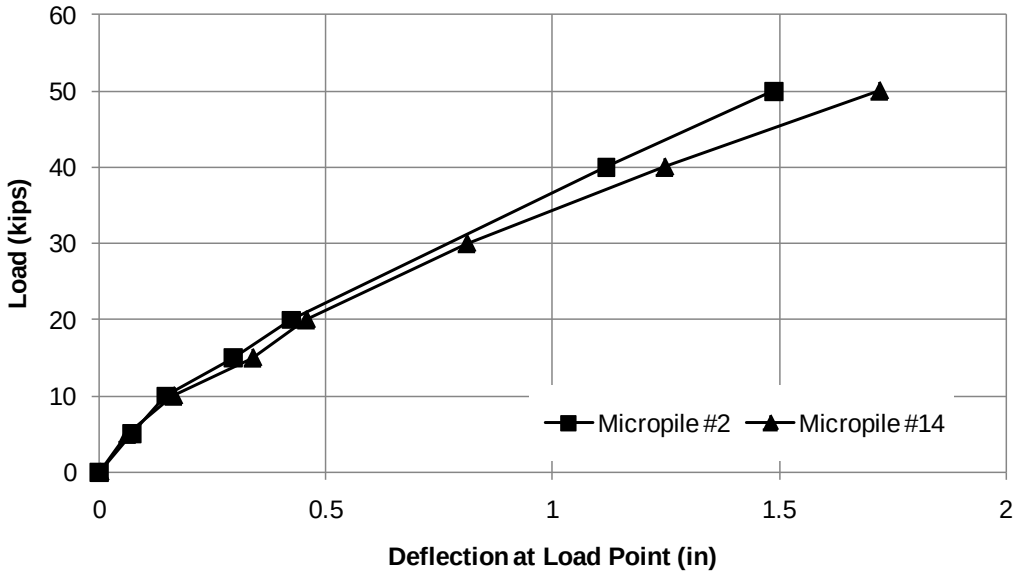



Figure 4.15 Top load deflections for load test B.

(a)

(b)

Figure 4.16 Failure of pile 14

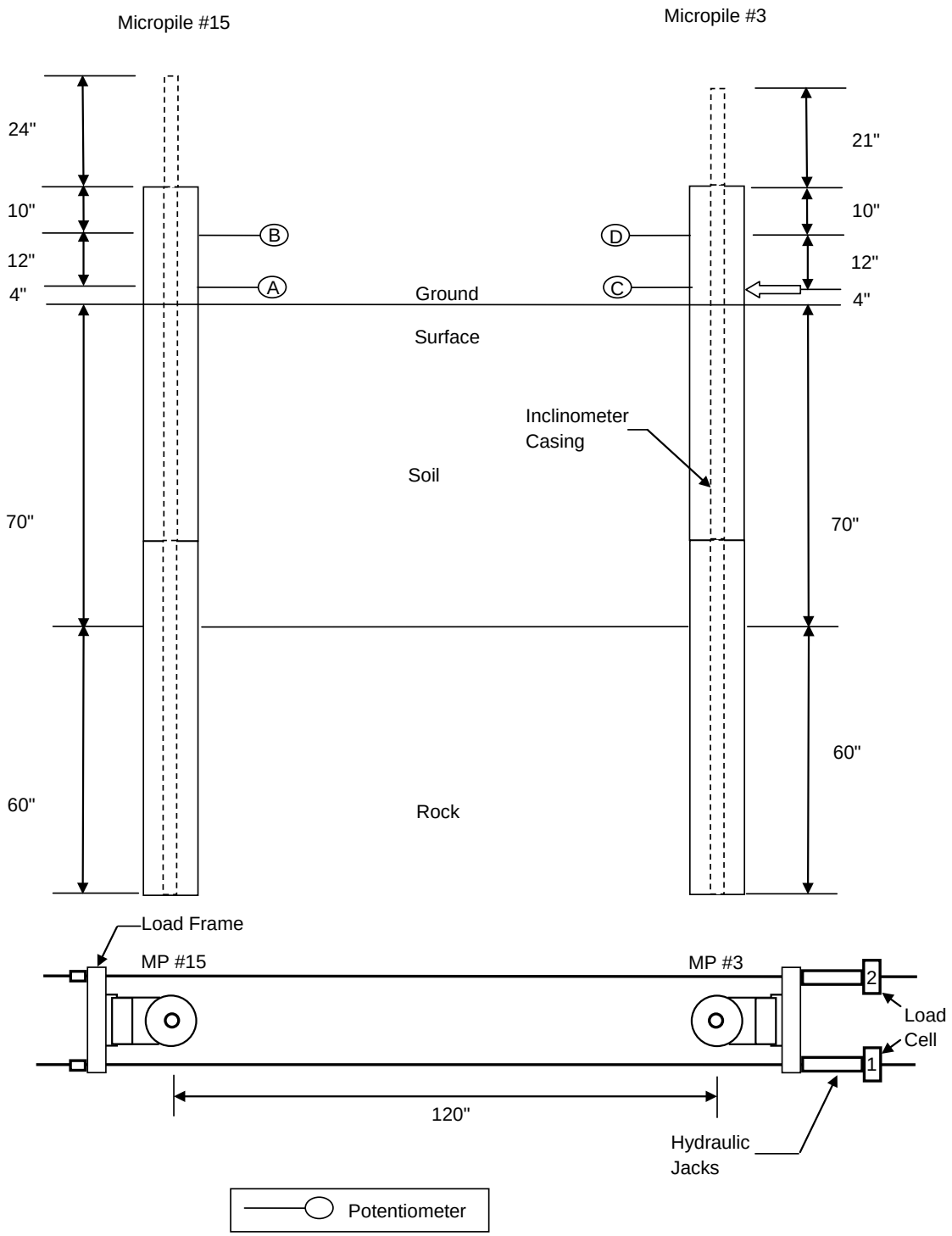



Figure 4.17 Load test E micropiles 3 and 15

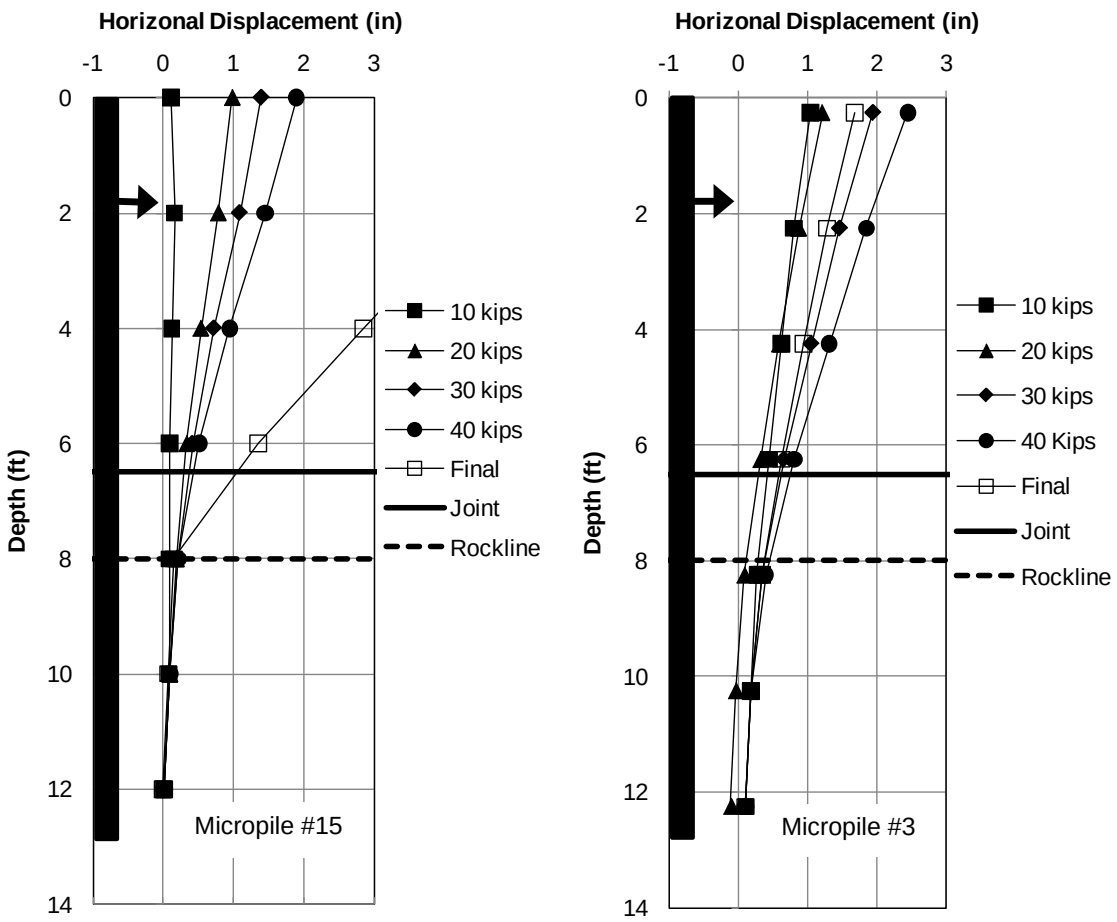



Figure 4.18 Inclinometer deflection for load test E.

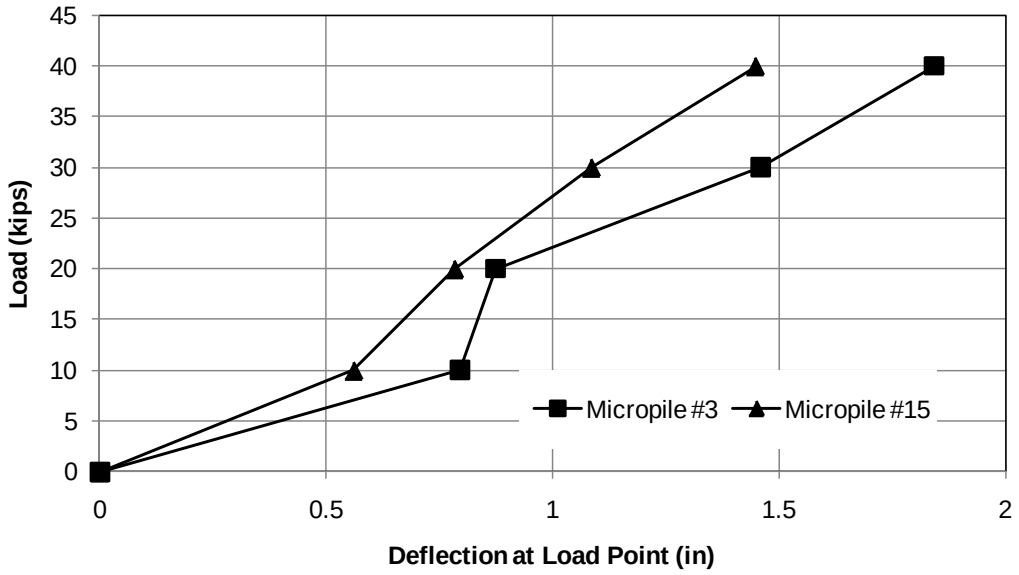



Figure 4.19 Top load deflections for load test E.

(a)

(b)

Figure 4.20 Failure of pile 15

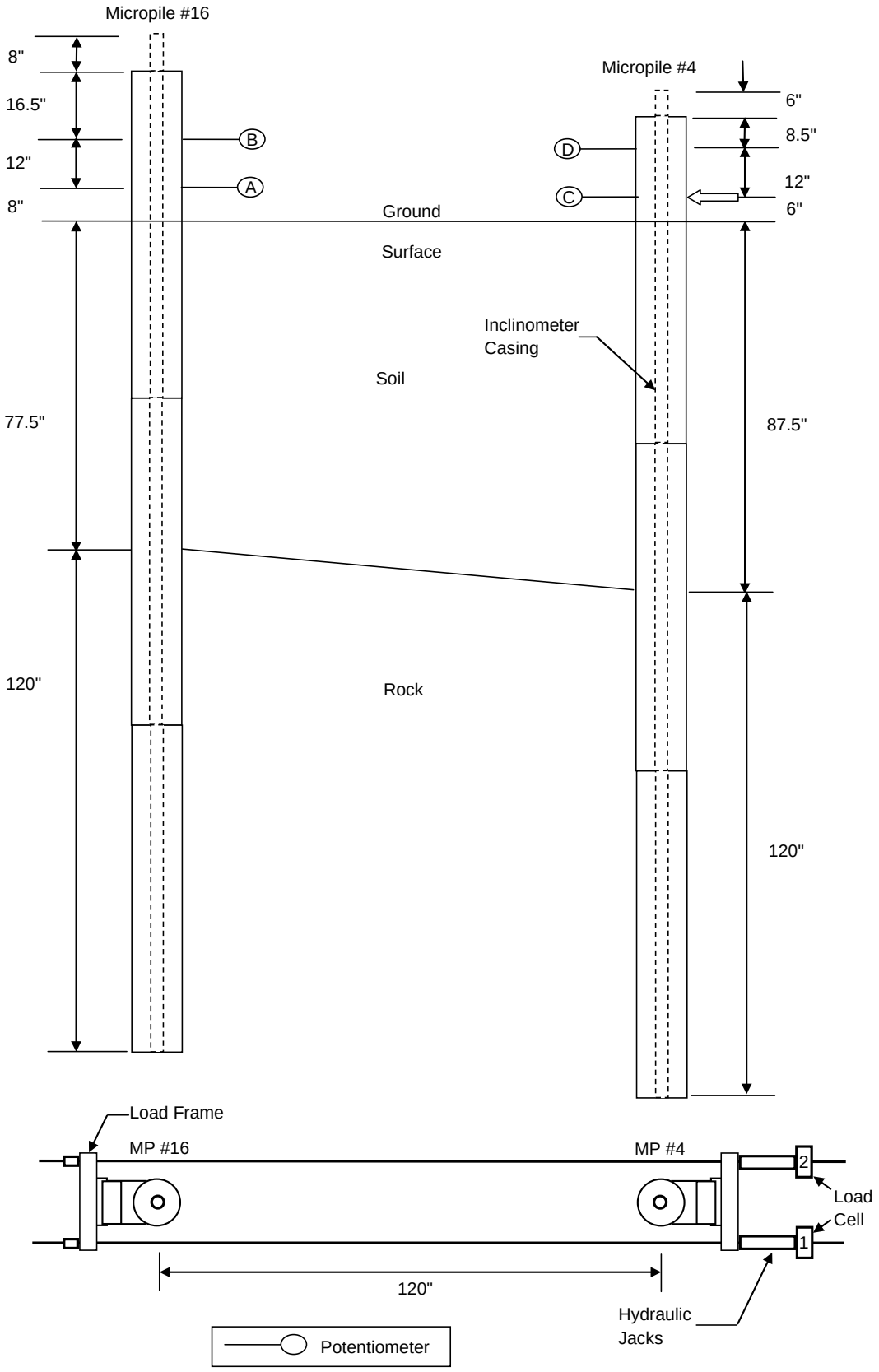



Figure 4.21 Load test F micropiles 4 and 16

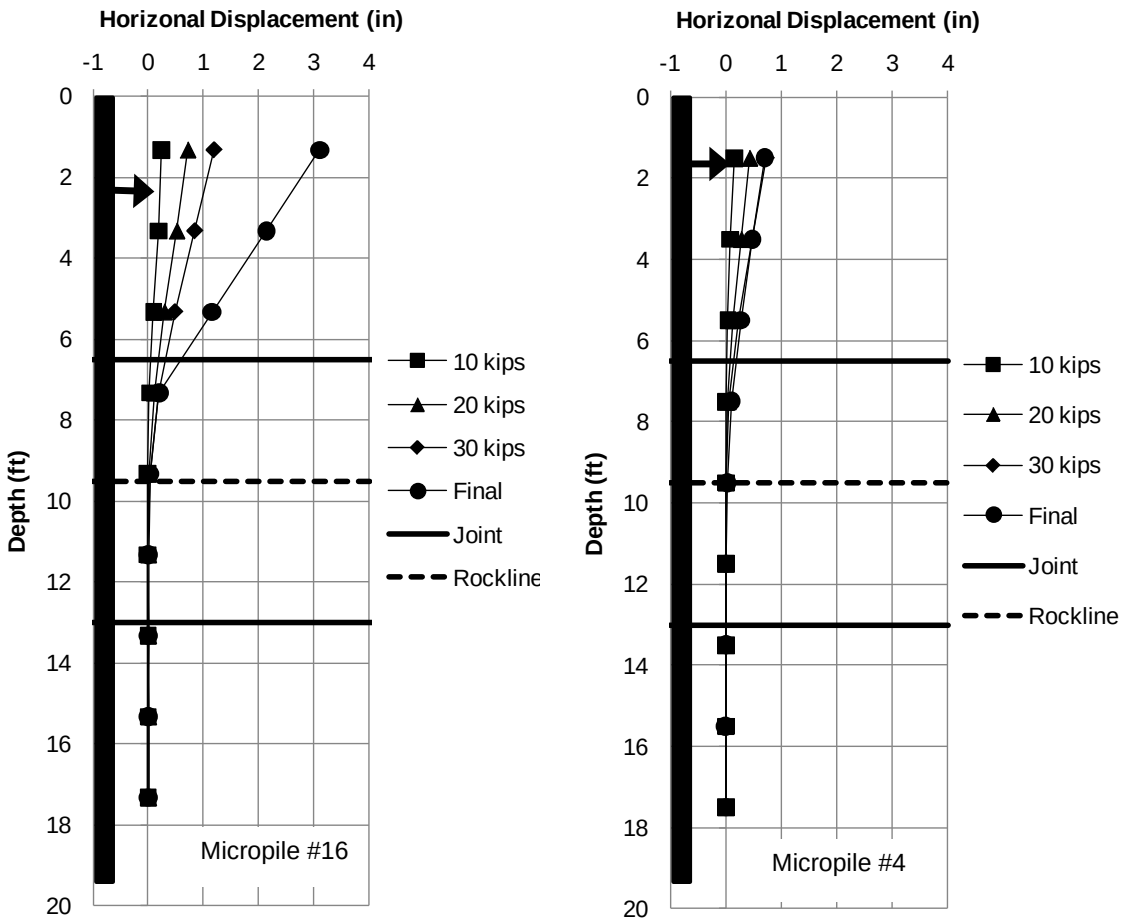



Figure 4.22 Inclinometer deflection for load test F.

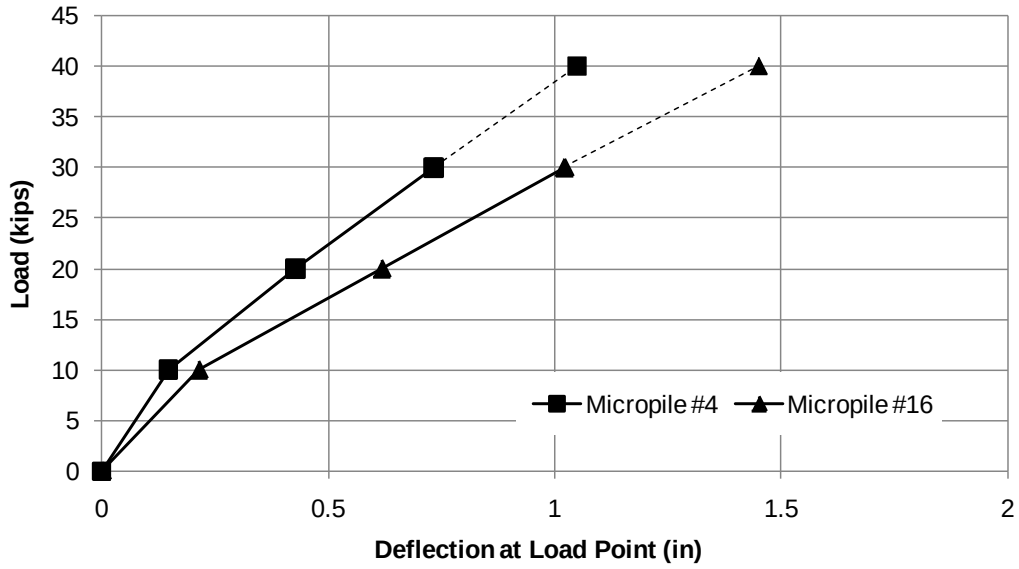



Figure 4.23 Top load deflections for load test F.

(a)

(b)

Figure 4.24 Failure of pile 16

### 4.4.5 Test "I" Pull 10.0 ft Embedment Against 10.0 ft Embedment Not to Failure

These test piles consisted of three 6.5 ft micropile casings. The tips of these piles were embedded 10.0 ft into the underlying rock. Figure 4.25 shows plan and elevation views of the load test. The piles were not tested to failure by design, such that they could be used for reaction piles for the group test. The response is similar to the initial loads of test F. The goal was to document the load moment response of single micropiles using the sister bar strain gauges instead of welding strain gauges to the pile segments. The load deflection response along with the measured bending moments are shown in Figures 4.26 and 4.27. The measured moment response shown in Figure 4.28 looked reasonable when compared to the profile and magnitude determined from the FB-Multipier simulations.

## 4.5 Micropile Group Lateral Load Test

The initial lateral load test on the micropile bent began on 12/1/2009 at about 3:30 pm after five hours of preparation. As documented previously in Figures 4.3 and 4.4, micropiles number 9-12 are the reaction piles and 5-8 are the test micropiles. The overburden soil on the north side of the pile bent was removed down to the rockline to simulate scour for the interior bent of a typical bridge. The lateral force was applied at the center of the cap using two prestressing cables that were passed through pvc pipes cast through the pile cap. A stiffened beam was placed behind the reaction micropiles and anchor plates were used to distribute the reaction force at prestressing chucks placed on the cables. On the pile cap side, jacks pushed against the load cells with prestressing chucks. About two hours into the test, at a load of 40 kips, 5:25 pm, the reaction system began to fail. Testing was stopped in order to address the problem.

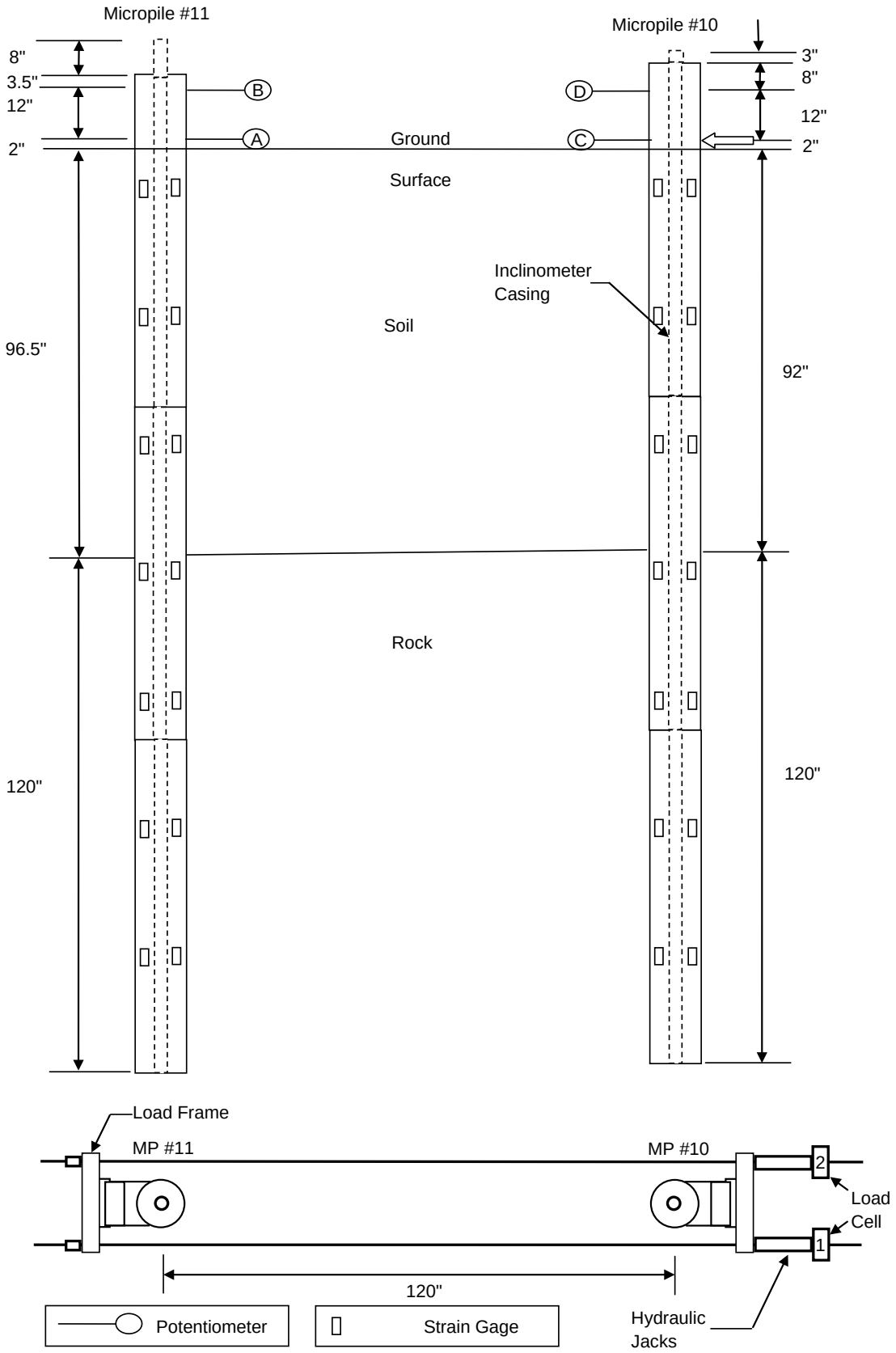



Figure 4.25 Load test I micropiles 10 and 11

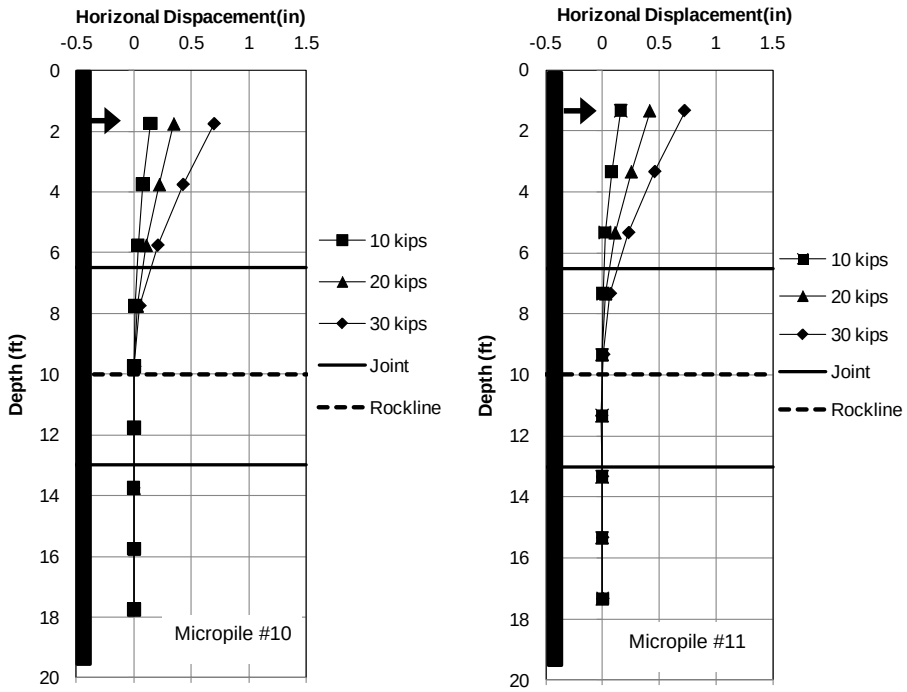
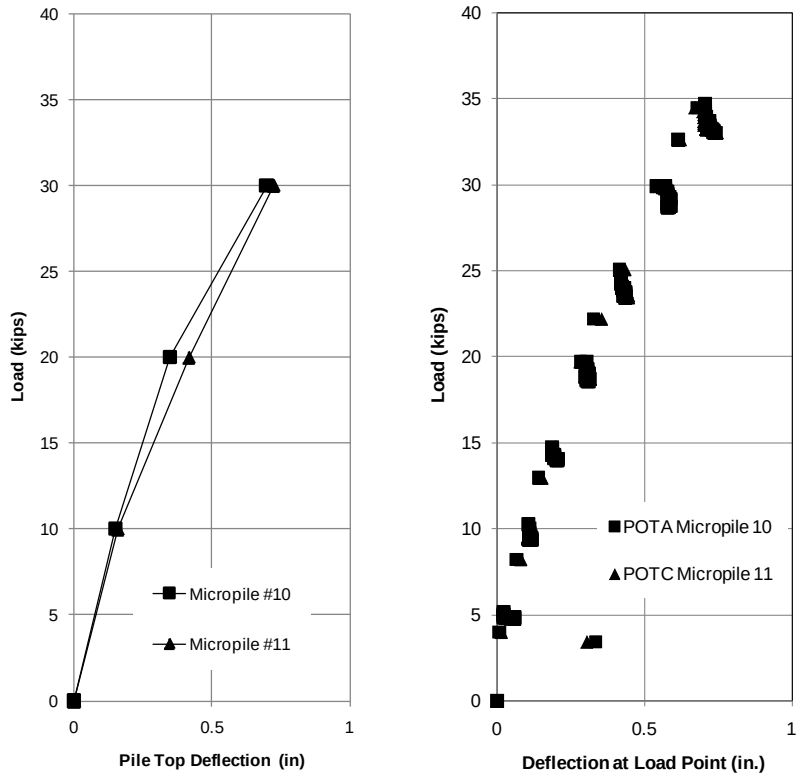



Figure 4.26 Inclinometer deflection for load test I.




a) b)

Figure 4.27 Top load deflections for load test I based on a) inclinometer and b) potentiometer measurements.

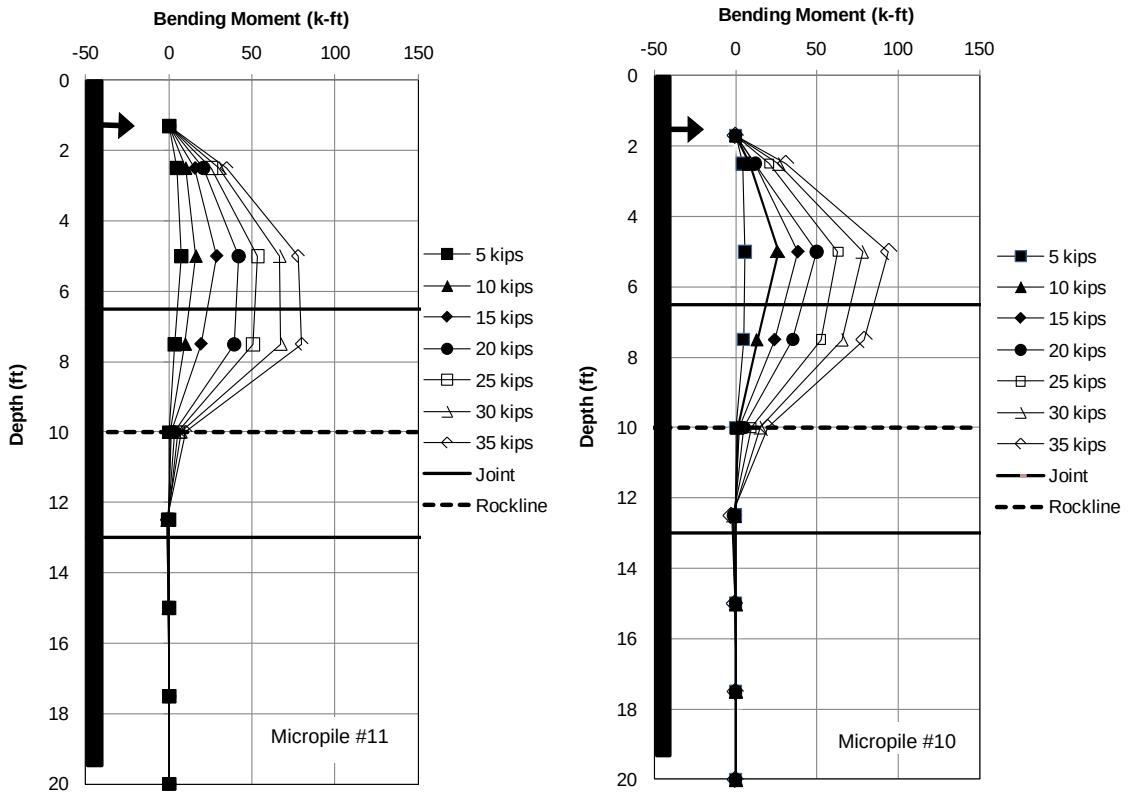



Figure 4.28 Bending moment profiles from stain gauges for test I.

A week later, a pair of deep beams was supplied by the general contractor to provide additional reaction. Two 2 ft long micropiles sections were also acquired to stub up piles 10 and 11.The second attempt at the group test began on 12/10/2009 at about 12:45 pm. The load was applied in 10 kip increments and maintained for a period of about 10 minutes for each load increment to allow for creep. Inclinometer tests for each of the piles in the group were performed at 2 ft intervals for every other loading increment. Figures 4.29 through 4.34 show drawings of the pile and instrumentation setup for the group load test. The test was stopped when the reaction micropiles and prestressing cable yielded, therefore exceeding the stroke of the loading hydraulic jacks.

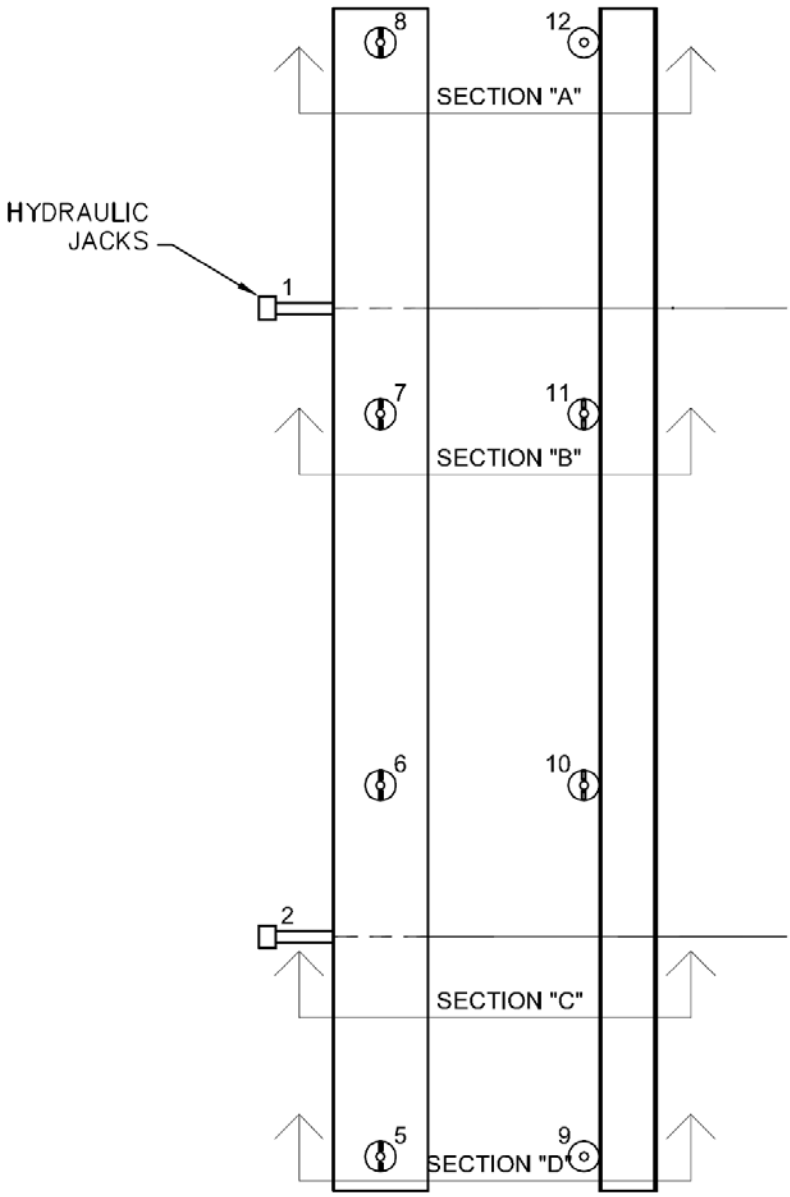



Figure 4.29 Plan view cap group

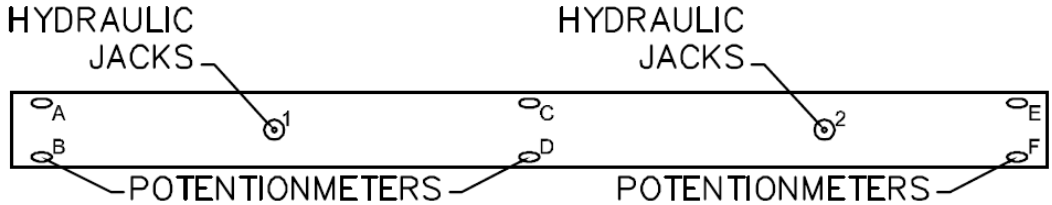



Figure 4.30 Elevation view of cap showing placement of potentiometers

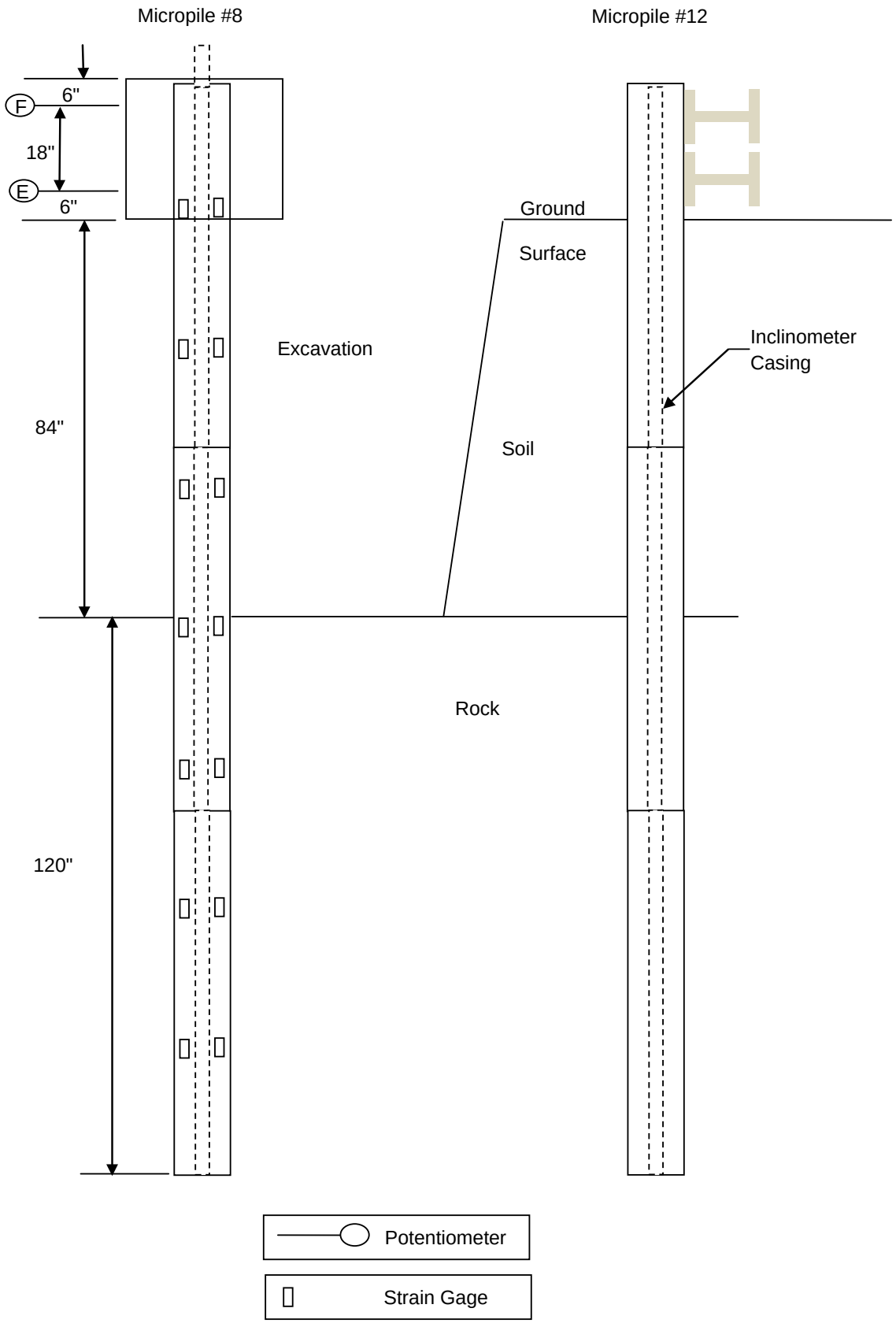



Figure 4.31 section A showing micropile #8

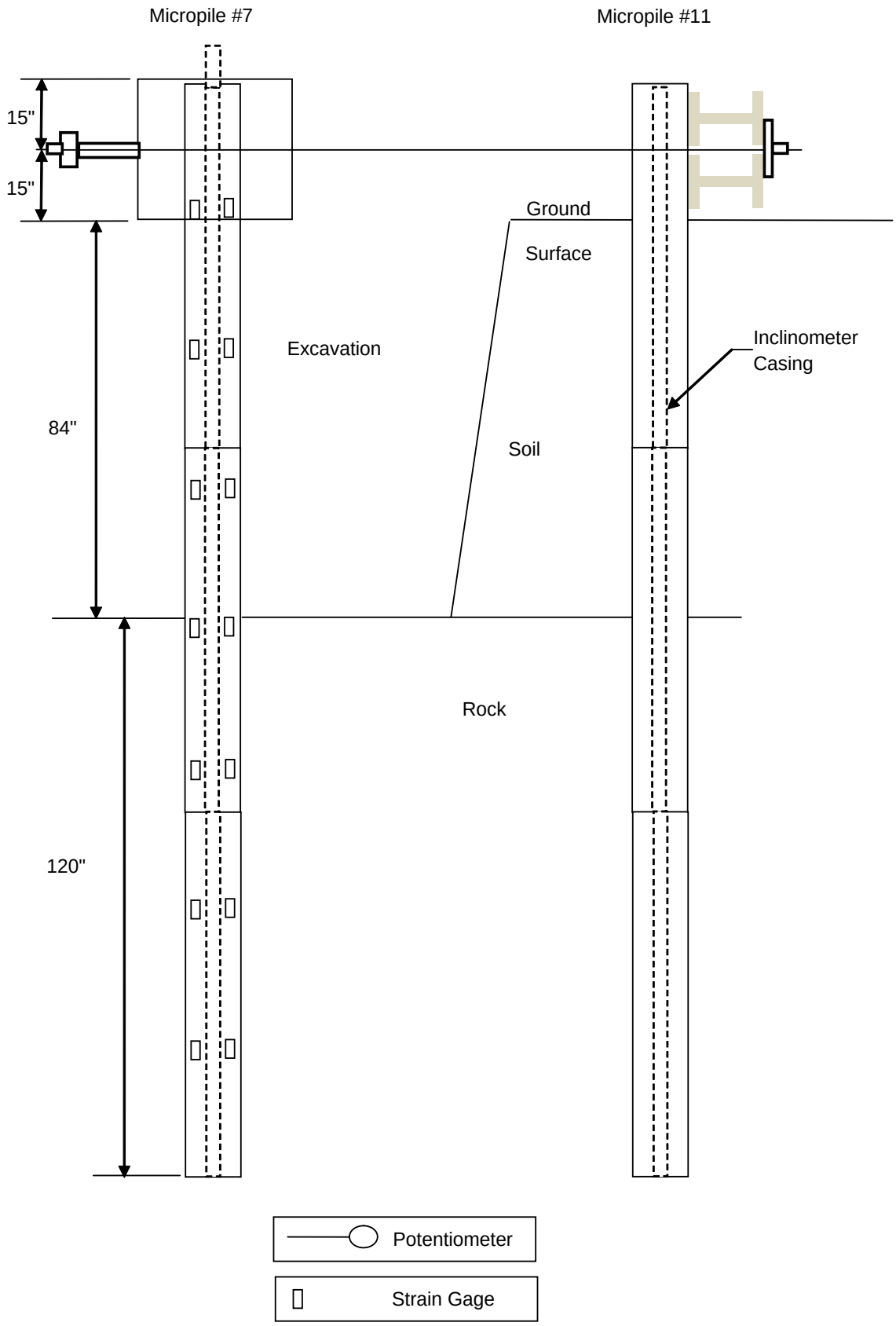



Figure 4.32 section B showing micropile #7

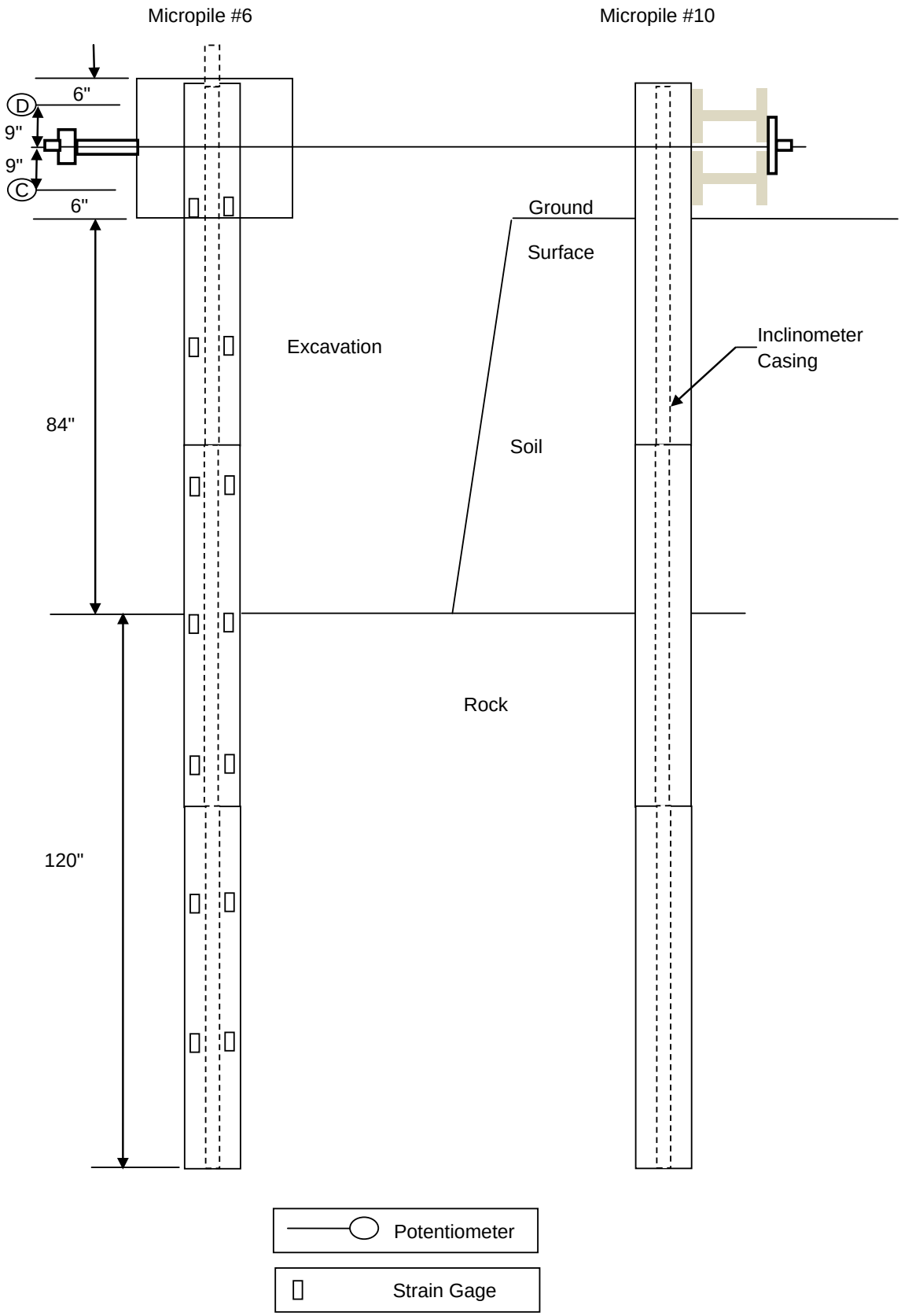



Figure 4.33 Section C showing micropile #6

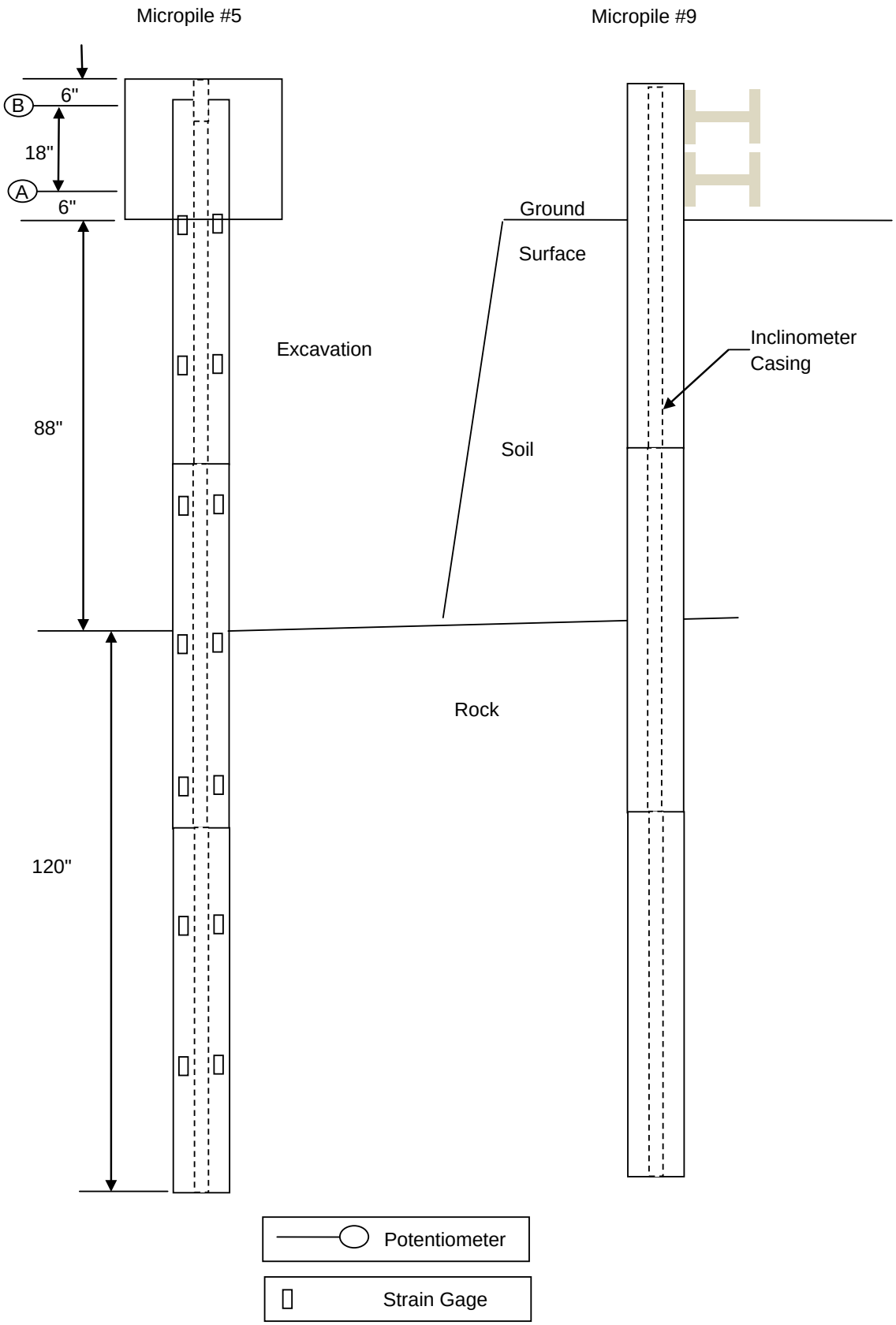



Figure 4.34 Section D showing micropile #5

Figure 4.35 shows horizontal displacement versus depth (below top of pile) curves for the micropiles in the bent calculated from the inclinometer measurements. Figure 4.36 shows the deflection near the load point at the centerline of the cap based on both inclinometer and potentiometer measurements. Pile 5 was not included since the first inclinometer point was below the below the pile cap due to a construction defect. The bending moment profiles for several load steps are shown in Figure 4.37.

**4.6 Discussion of Load Test Results**

By design, tests B, E, and F were carried out to failure of the micropile section. In terms of load and deflection and response, most of the displacement appeared to occur above the casing joint. The rockline was only a factor for test A, where the pile rotated in the socket. The top load deflection response tracked with the inclinometers showed fairly linear response. The unfortunate consequence of the poor potentiometer data was that there exact displacement at failure was not available. However, in tests B and E, the final inclinometer test was conducted just before the failure load was applied. In test F, the response was extrapolated to get a linear approximation of the failure load and deflection. These tests all ended with an abrupt failure of the upper casing joint. When comparing these load tests to the original FB-Multipier model, the tests failed in a rather brittle fashion, while the FB-Multipier model showed more ductile behavior, yielding before failure. The failure loads and top deflections are summarized in Table 4.2.

Load test I was similar to load test F except the piles were instrumented with strain gauges, and the test was not conducted to failure, as the piles would be part of the reaction for the group load test. The test was halted at about 35 kips since the others failed at around 40 kips. The peak bending moment measured in piles 10 and 11 was

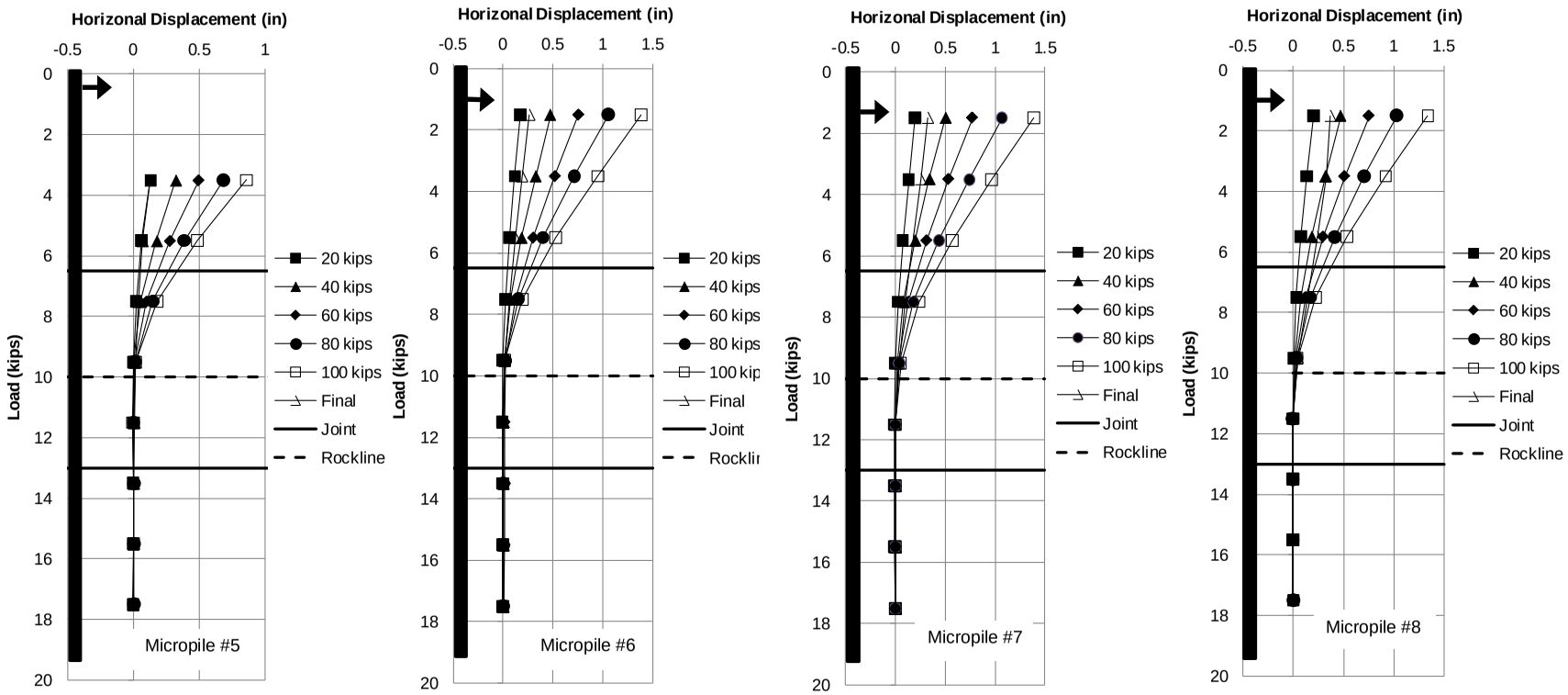
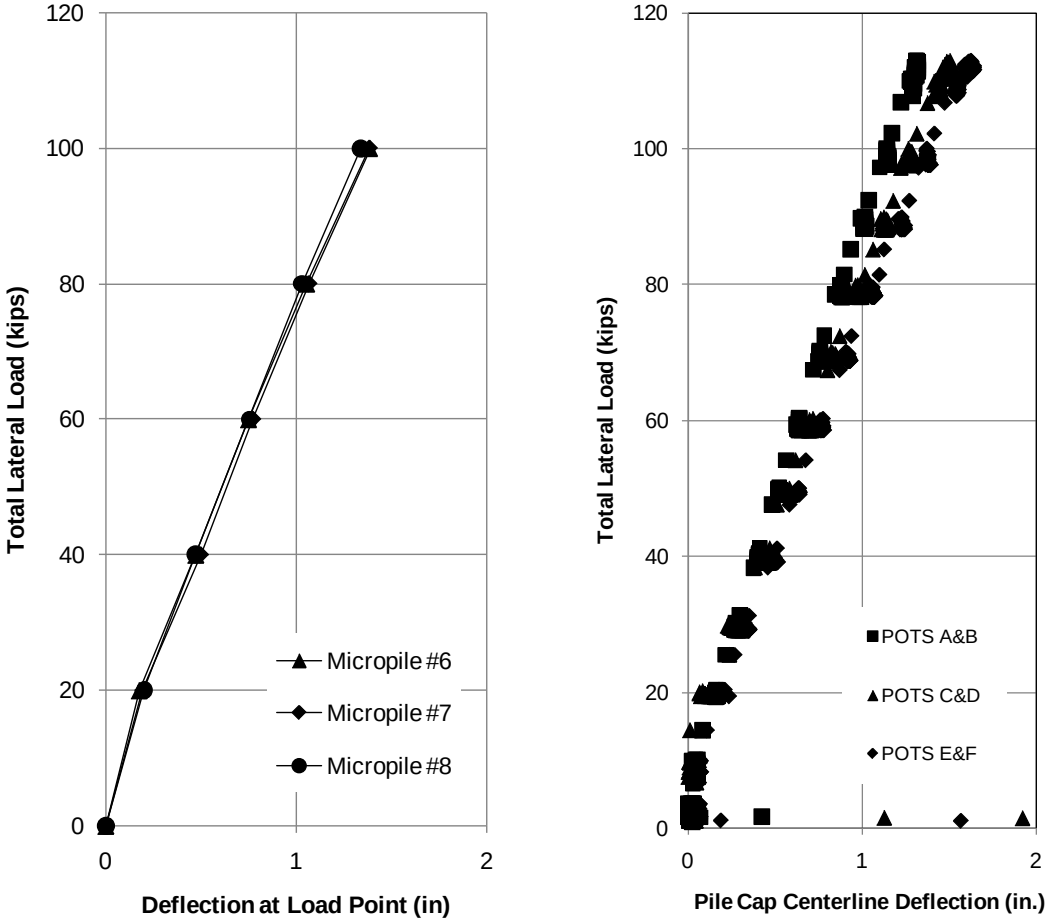



Figure 4.35 Lateral deflection versus depth curves for each of the micropile in the group




a) b)

Figure 4.36 Pile top and cap centerline displacements based on a) inclinometer and b) potentiometer measurements

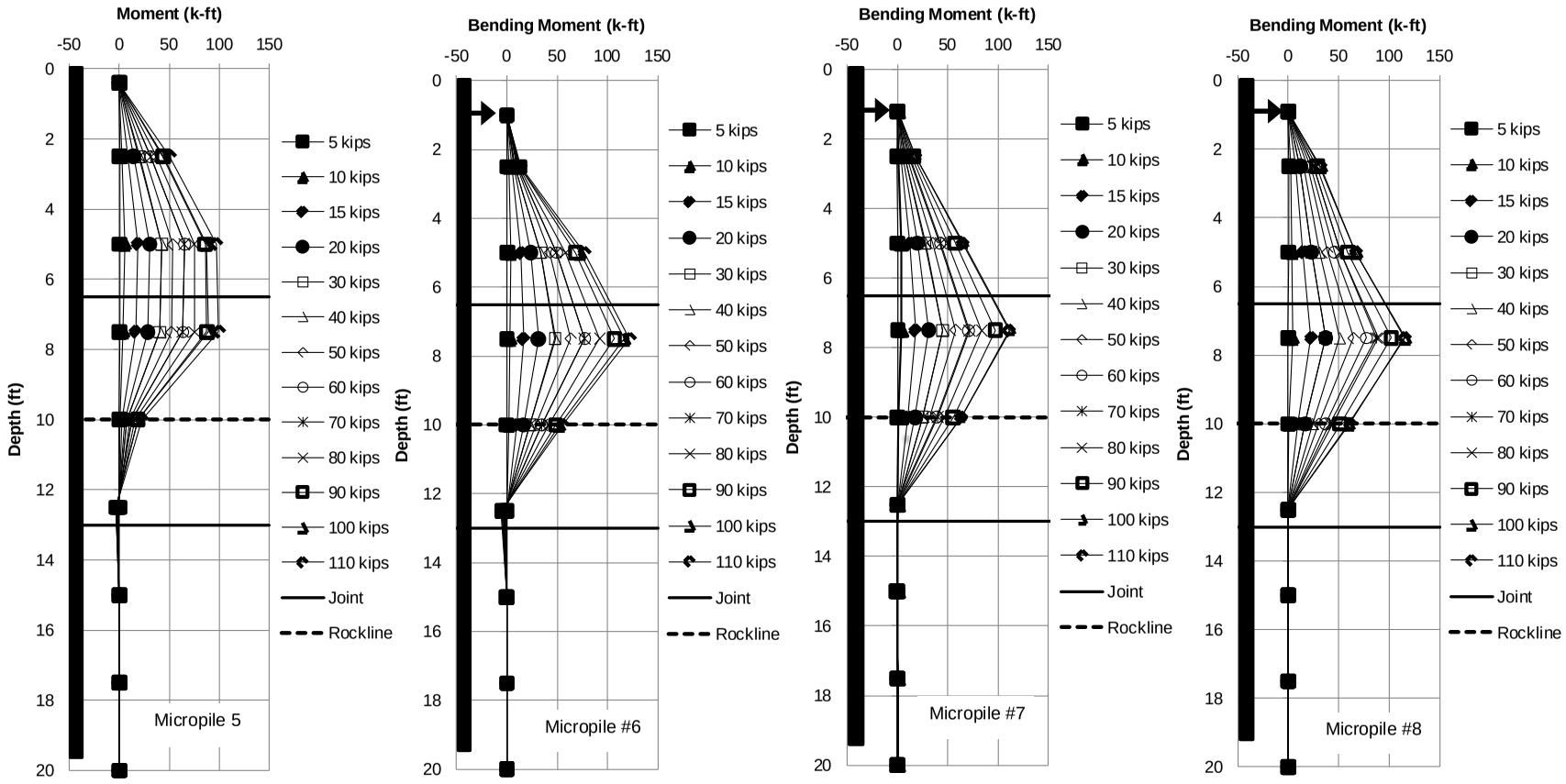



Figure 4.37 Bending moment versus depth (below ground surface) curves

**TABLE 4.2 Results of single pile tests to failure**

| Pile | Load Test | Pile Length (ft) | Rock Plunge (ft) | Peak Load (kips) | Deflection at Peak Load (in) |
|---|---|---|---|---|---|
| 2 | B | 13 | 2' | 50 | 1.5 |
| 14 | B | 13 | 2' | 50 | 1.7 |
| 3 | E | 13 | 5' | 40 | 1.45 |
| 15 | E | 13 | 5' | 40 | 1.85 |
| 4 | F | 19.5 | 10' | 40 | 1.1 |
| 16 | F | 19.5 | 10' | 40 | 1.45 |

about 80 and 95 k-ft respectively. The original FB-Multipier predictions failed at right around 27 kips, and even then the bending moment in the piles was nearly 170 k-ft with a top displacement nearly 4 inches.

To further compare the results of the single pile models, the inclinometer measurements were used to calculate bending moment profiles. The solution had limitations, however, this provides a way to assess the bending moment in the sections that had no strain gauges. Figure 4.38 establishes the relationship by comparing the calculated bending moment profiles to those measured with strain gauges for test I. The comparison appears reasonable at lower load levels but may not predict well at higher loads. As well, the point of maximum bending moment is forced deeper in the pile, looking somewhat like the results from the original FB-Multipier models.

In terms of the group performance, the piles moved as a unit almost identically. In all likelihood, the piles were nearing the point of yielding. What does not show is the results is that the reaction system was also yielding at around 117 kips of lateral load.

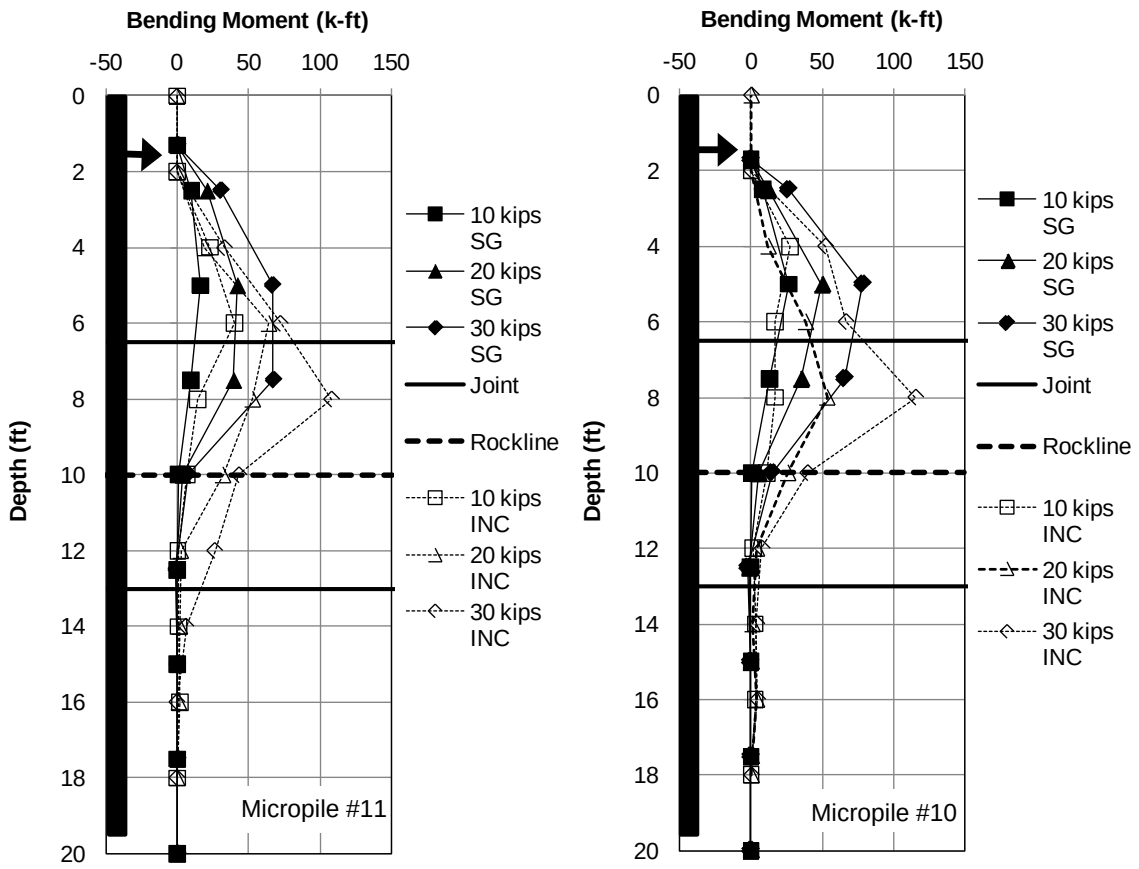



Figure 4.38 Calculated and measured bending moment profiles for load test I

# CHAPTER 5
# LABORATORY TEST PROGRAM

Presented in this chapter are the laboratory test layouts, instrumentation, procedures, and observations of the load tests for grouted micropile specimens.

## 5.1 Purpose of Laboratory Tests

The goals of the laboratory tests were to complement or fill in the voids that were missing in the field load tests and to document the material/system behavior of micropiles in a controlled environment. The advantage of the laboratory tests is that they were designed and performed after the results of the field load tests were know. One issue is the unknown behavior of the joint in the field test as the piles were embedded in overburden. In addition, several of the key load tests were not performed to failure, therefore quantifying the bending moment at failure would complement the load test results.

Along with the strength tests, a program of corrosion tests was commenced. Since the long term performance of micropiles is impacted by the durability of the steel casings, the program will be a long term study on the environmental impacts on casing integrity.

## 5.2 Structural Testing

The testing program was designed after consideration of previous research, safety, available funds and materials, and the remaining research objectives. The initial design was based heavily upon that presented by Long and Carroll (2005). The micropile casings were loaded as beams in four-point flexure. During the tests, strain, deflection and load were monitored along with visual documentation of casing twist. The test piles were 6.0 ft. micropiles, consisting of two 3 ft. segments joined with a threaded joint. A drawing of

the test plan is shown in Figure 5.1. The piles were filled with grout that was mixed with a high shear mixer and cured in the lab for 28 days. The cross section of the micropile steel casings was the same as the field piles: 10.75 in. external diameter and wall thickness of 0.50 in. The yield strength of the micropile steel casing was 80 ksi and the ultimate strength of grout after 28 days was 4000 psi. Nine simply supported composite micropiles, designated as 1 through 9 were load tested.

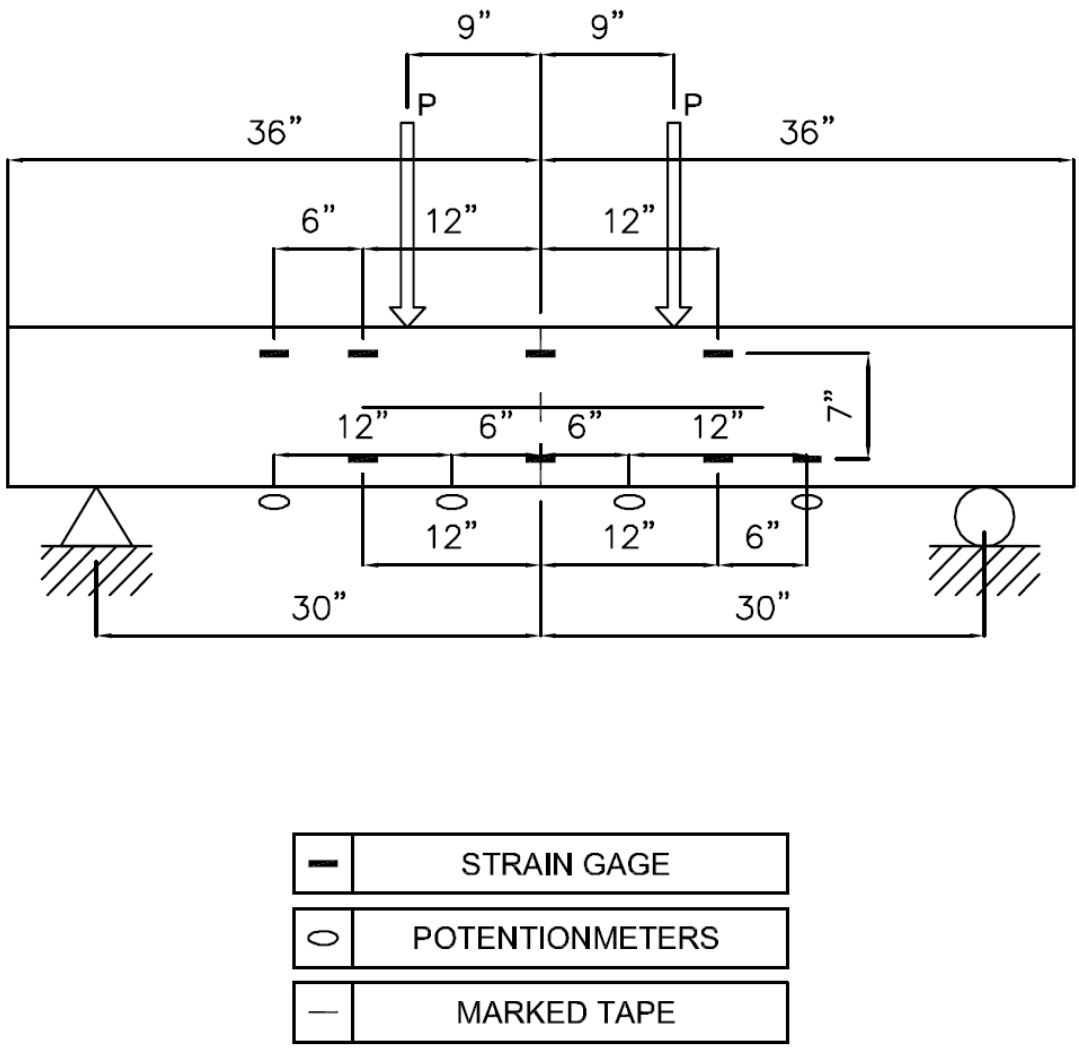



Figure 5.1 Dimensions and setup for Structural Micropile testing

### 5.2.1 Micropile Section Fabrication

Skyline Steel donated 96 linear feet of micropile casing for the research. The casing was shipped in 1, 2, or 3 foot sections with one or both ends threaded. While a variety of sizes were available, it was decided to use 18 of the 3 ft. sections to make 9 micropiles with a joint in the center (about half of the steel supplied). The remaining sections would be used for the corrosion study, as they were shorter and thus lighter and easier to handle. The micropile sections were joined in the laboratory by threading them together and tightening them using a large set of chain tongs. All 9 casings were stood vertical and strain gauges were placed in the appropriate piles in preparation for grouting. CEMEX donated a pallet of Type I cement for grouting the piles. A high shear mixer was supplied by Nicholson Construction to insure that the grout in the lab tests was similar to the grout in the field tests. The micropiles were allowed to cure for 28 days before load testing. Figure 5.2 shows the micropile specimens being grouted.

Figure 5.2 Grouting micropile specimens

### 5.2.2 Instrumentation and Apparatus

The behavior of the micropiles was measured by creating boundary conditions that could either be controlled or measured. This included devising load systems and instrumentation to measure load, strain, and displacement in a similar fashion to the systems used by Long et al. (2004) and following ASTM E290-09. All micropiles were instrumented to measure load and deflection. Vibrating wire strain gauges were installed in select piles to determine bending moment.

#### 5.2.2.1 Load Frame and Hydraulic Jack

A load frame was erected in the UNC Charlotte structures lab in order to load the micropiles as simply supported members in four point flexure. The vertical load was applied at the third points using a single 250 ton jack, RSS2503 by Powerteam. A 609163S model pump was used to supply hydraulic pressure. Force was measured using a pressure transducer manufactured by Entran, model number EPO W31 10KP. The measured hydraulic pressure was multiplied by the jack plunger area. The jack, load frame, and hydraulic pump with pressure transducer are shown in Figure 5.3.

#### 5.2.2.2 Potentiometers

As with the field load tests, cable extension potentiometers were used to monitor pile deflection. The potentiometers used in the laboratory were PT100 series manufactured by Celesco. For test 1 only, the potentiometers were located at the joint and then 12 in. on either side. For tests 2-9, the potentiometers were located 6 inches and 18 inches on either side of the joint. Figure 5.4 shows the four potentiometers arrangement used in the majority of the tests.

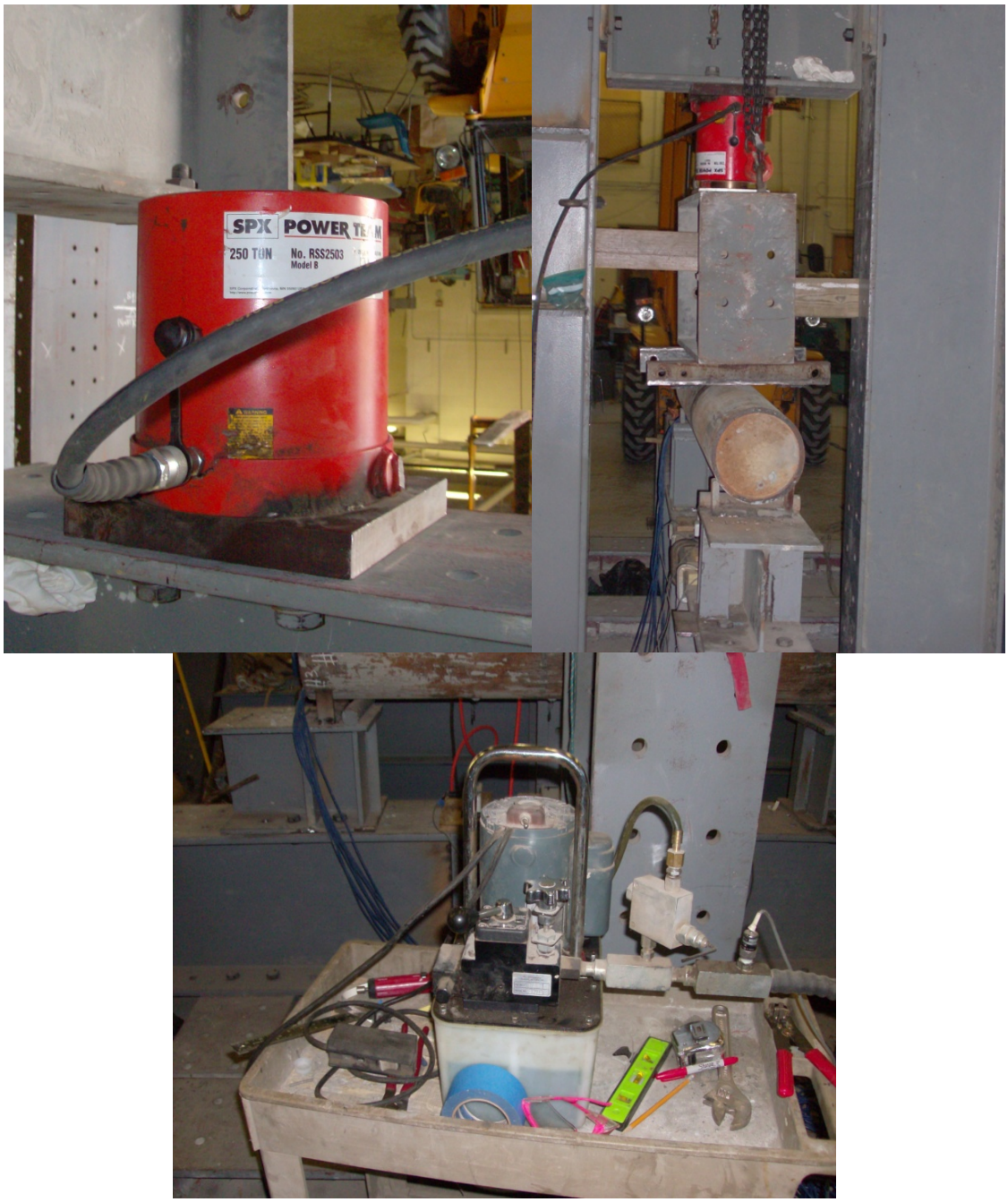



Figure 5.3 Loading head, testing setup, and jack with pressure transducer

### 5.2.2.3 Scale Tape

Since one of the questions raised was whether or not the micropile casings would twist or “unscrew” during loading, tape scales were attached to the mating edges of the casing joints. This is shown in Figure 5.5.

Figure 5.4 Photograph of the potentiometer location

Figure 5.5 Measuring casing twist using scale tape

#### 5.2.2.4 Strain Gauges

The same vibrating wire strain gauges that were used for the field tests were installed in the micropiles for flexure testing. Figure 5.6 shows the strain gauge assembly before and after insertion into the micropile casing. Due to the limited quantity of gauges, five of the micropiles were instrumented with eight strain gauges each. The remaining four micropiles were considered for redundant testing and received no gauges. Micropiles designated 1-5 have gauges while 6-9 are ungauged.

#### 5.2.2.5 Data Acquisition

Two separate data acquisition systems were used to monitor the strain gauges and analog sensors. To operate the strain gauges, the same Campbell Scientific CR1000 datalogger that was used. The analog sensors were connected to a National Instruments data acquisition card. The sensors were powered using external power supplies.

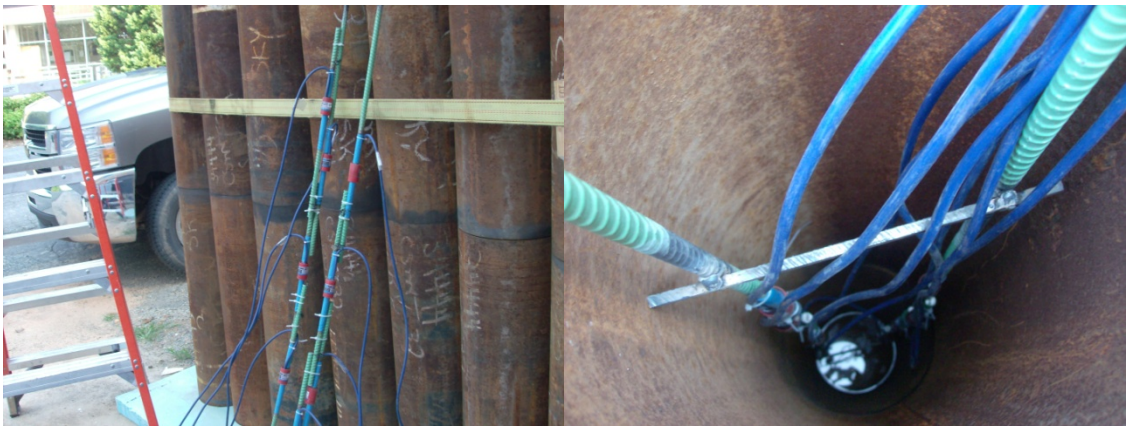


Figure 5.6 Typical strain gauge setup

### 5.3 Bending Tests on Grouted Micropiles

All load tests were conducted in a similar fashion. The only deviations were for test 1 that included position of the potentiometers as well as the use of an end restraint. In addition, there was some question concerning the synchronicity of the two data acquisition systems. Results of individual tests in the form of bending moment and deflection profiles follow in Figures 5.7 through 5.20.

### 5.4 Discussion of Bending Test Results

The primary results of the laboratory tests are shown in table 5.1. The average failure bending moment, if you throw out the two extreme tests out of the five strain instrumented tests, was 136 k-ft. This result compares against the field load tests where the failure bending moment was more than 150 k-ft. There was no significant casing rotation beyond 0.12 inches for all of the piles tested.

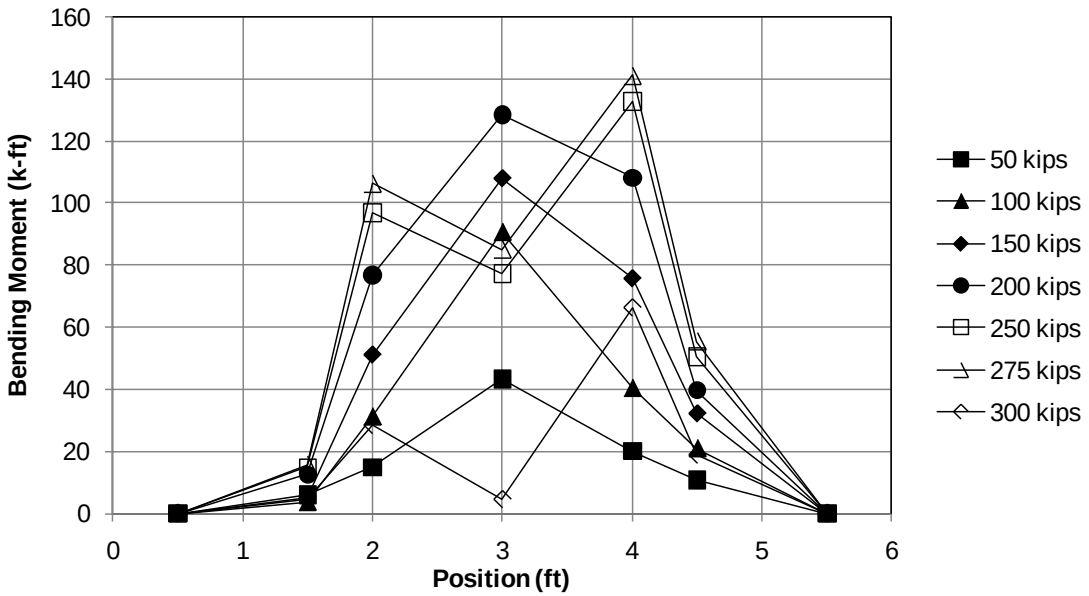



Figure 5.7 Pile 1 bending moment profile

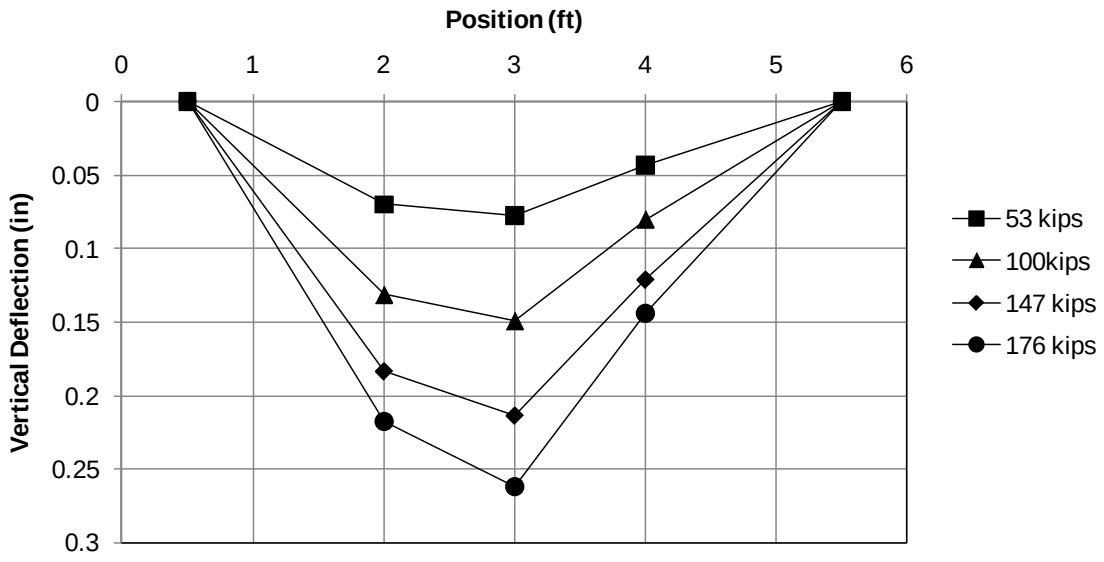



Figure 5.8 Pile 1 deflection profile

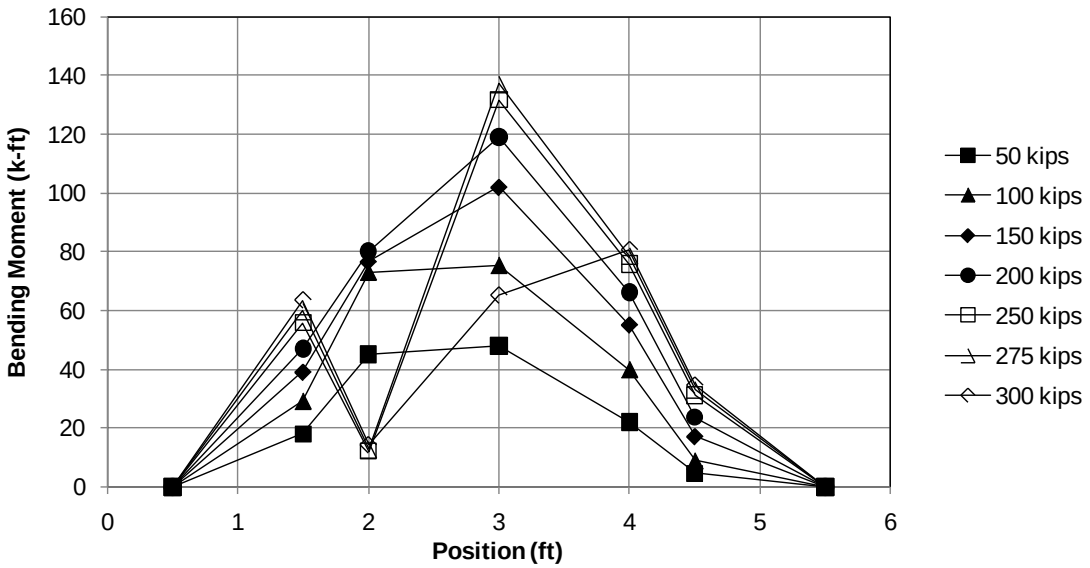



Figure 5.9 Pile 2 bending moment profile

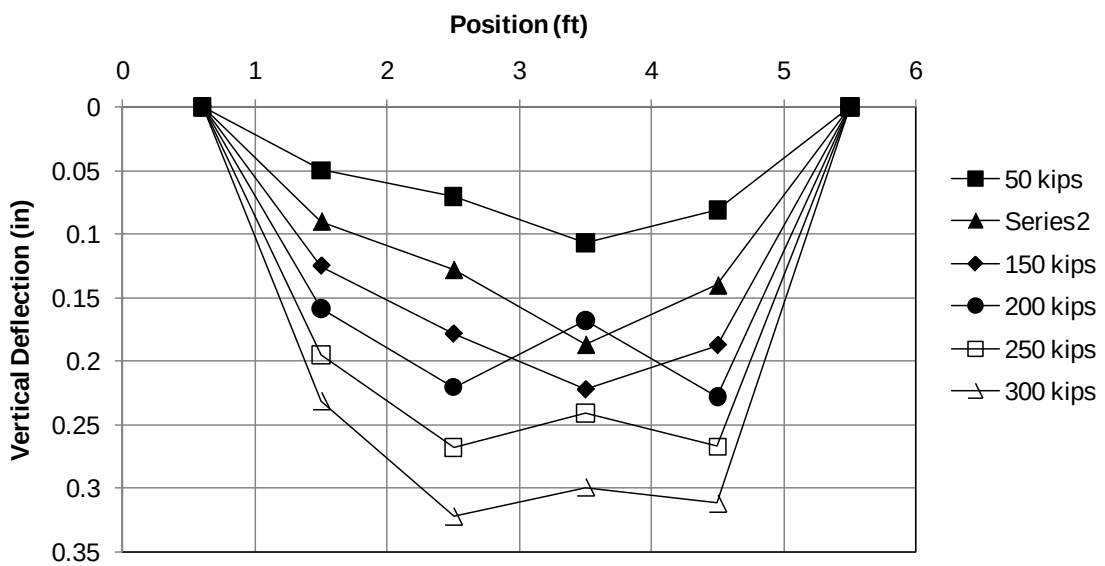



Figure 5.10 Pile 2 deflection profile

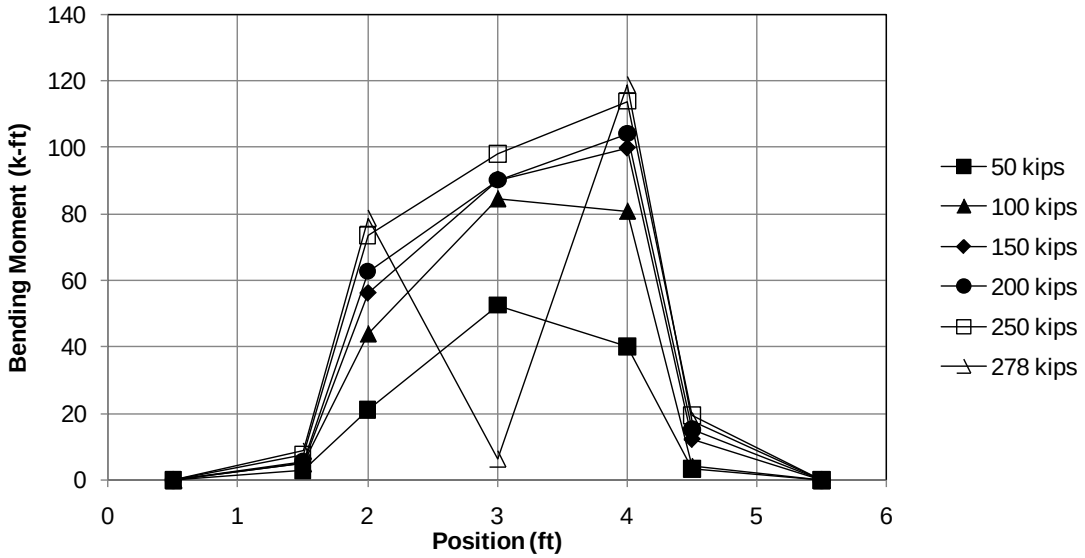



Figure 5.11 Pile 3 bending moment profile

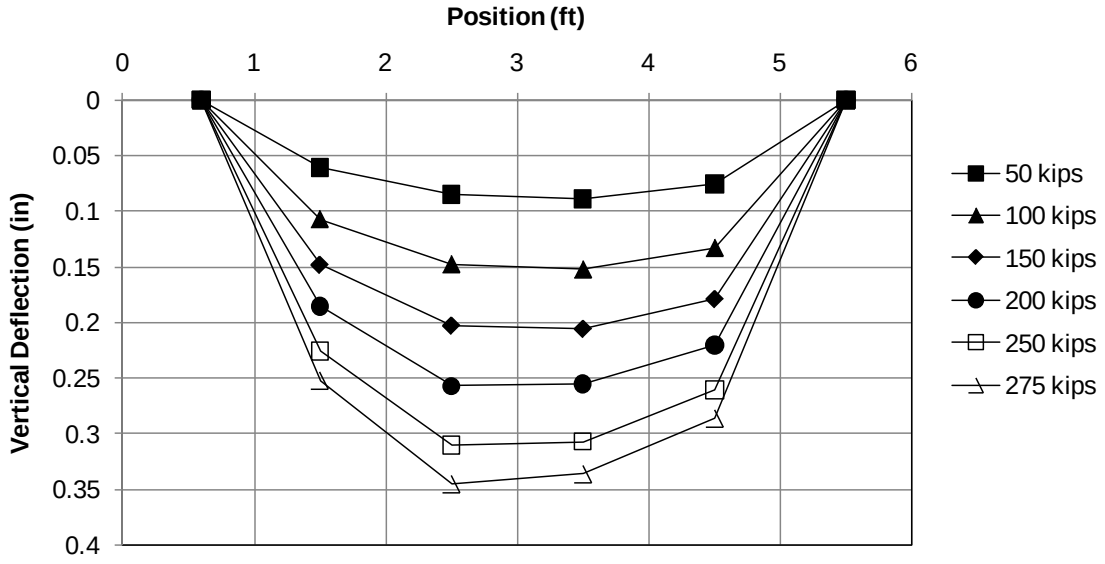



Figure 5.12 Pile 3 deflection profile

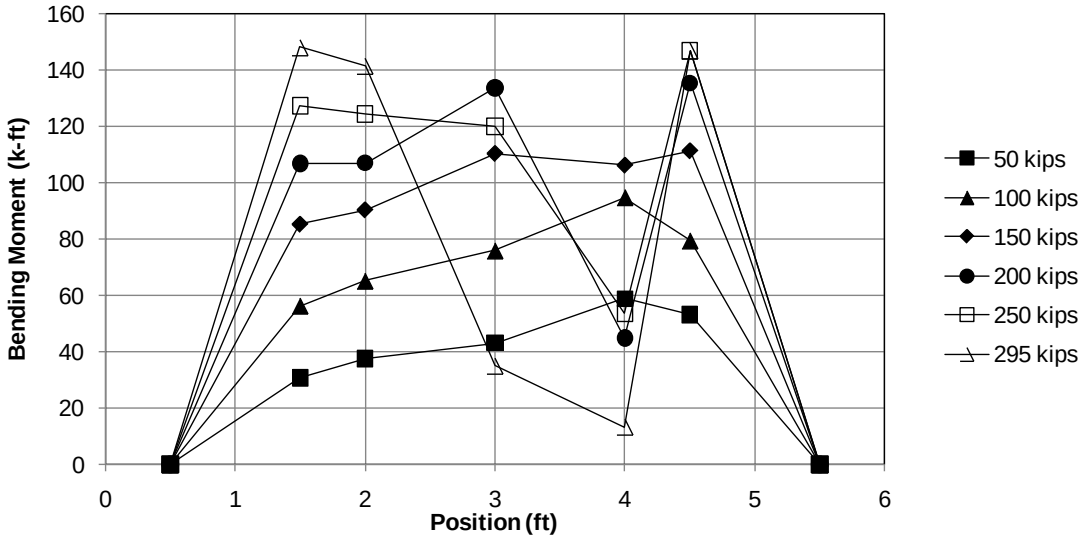



Figure 5.13 Pile 4 bending moment profile

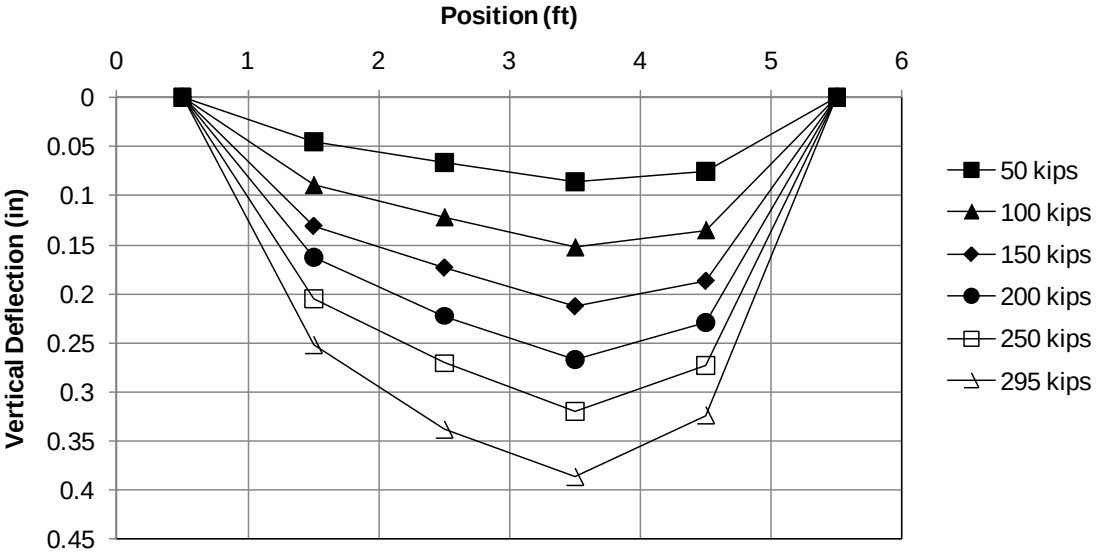



Figure 5.14 Pile 4 deflection profile

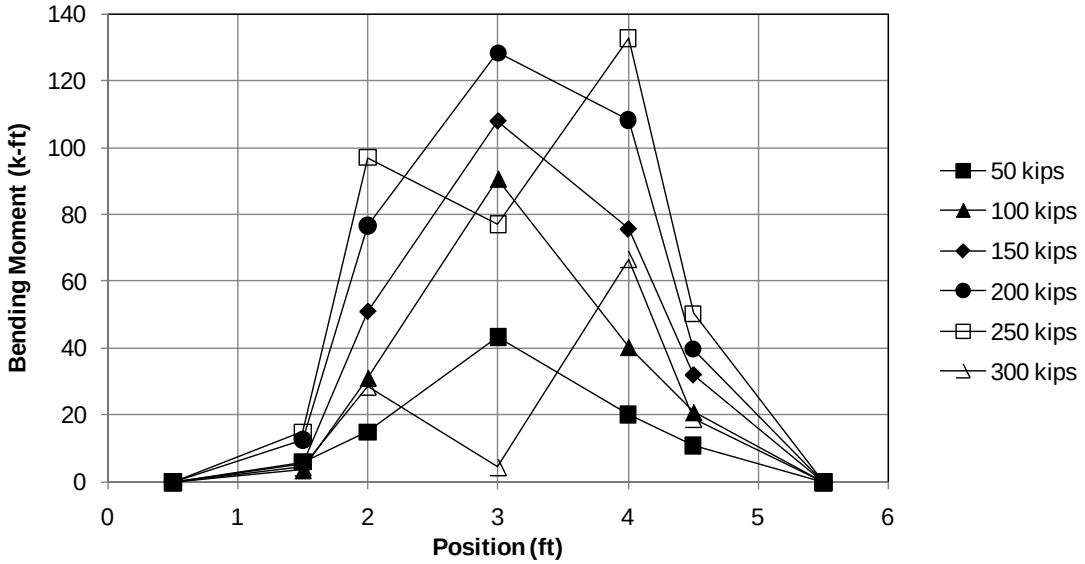



Figure 5.15 Pile 5 bending moment profile

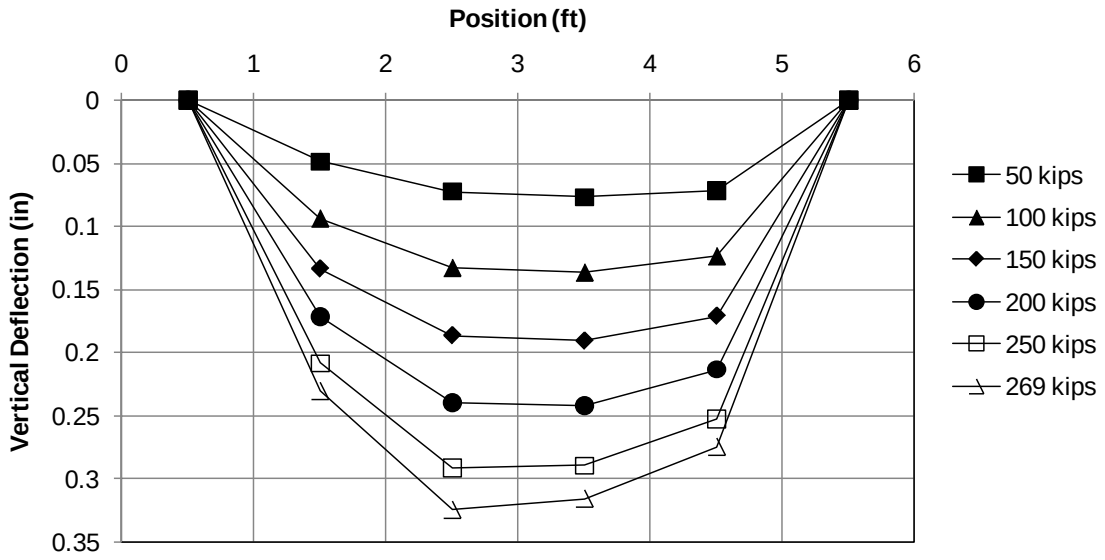



Figure 5.16 Pile 5 deflection profile

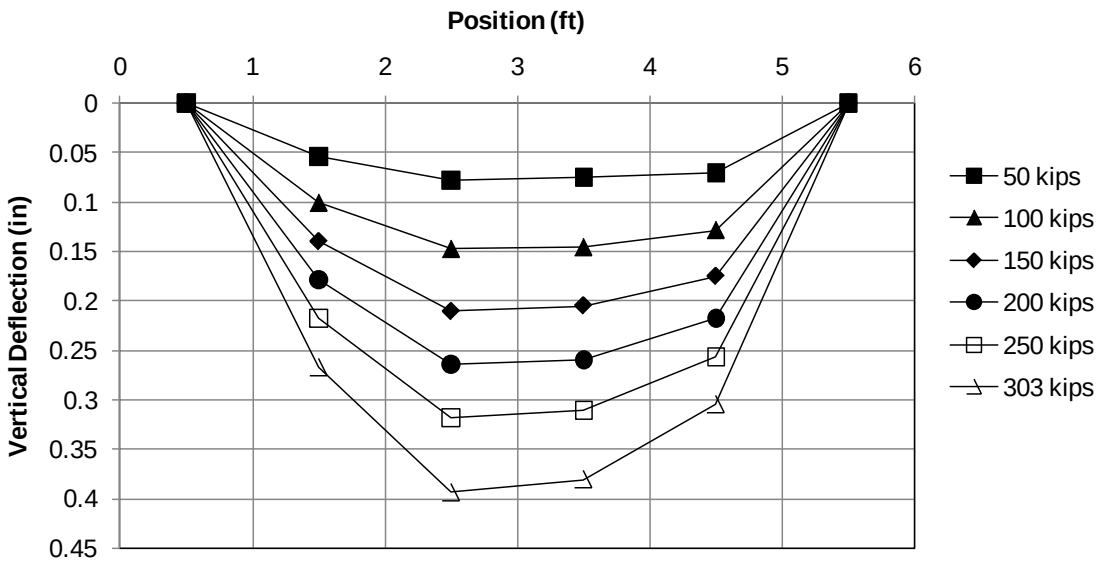



Figure 5.17 Pile 6 deflection profile

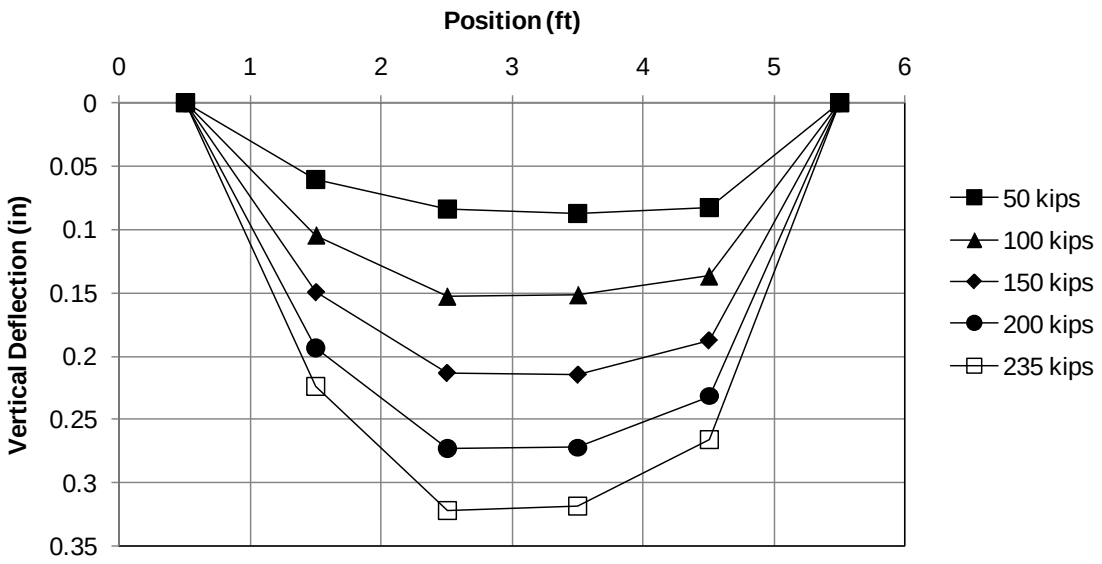



Figure 5.18 Pile 7 deflection profile

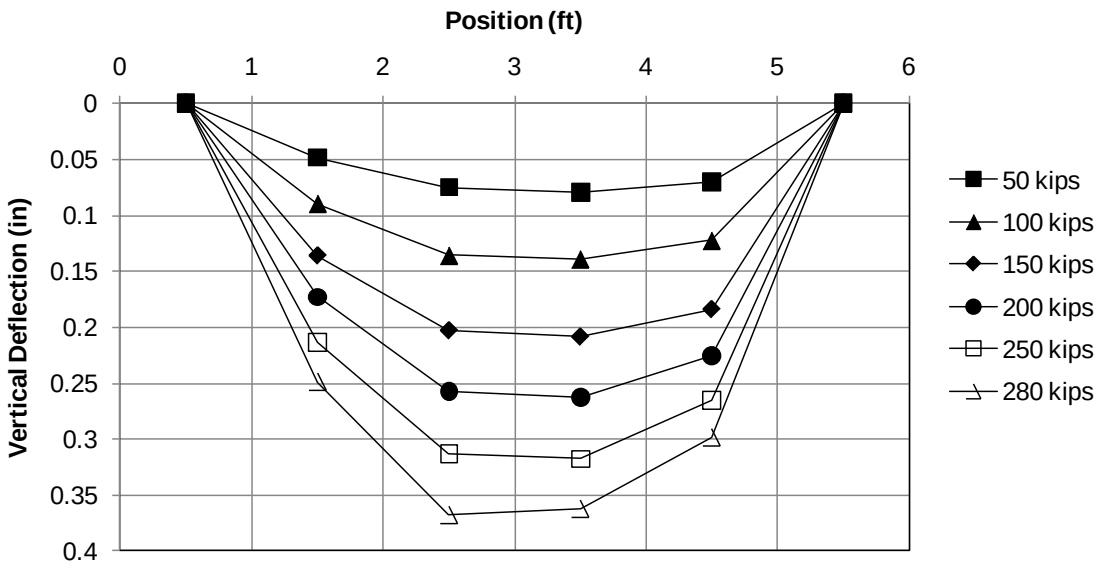



Figure 5.19 Pile 8 deflection profile

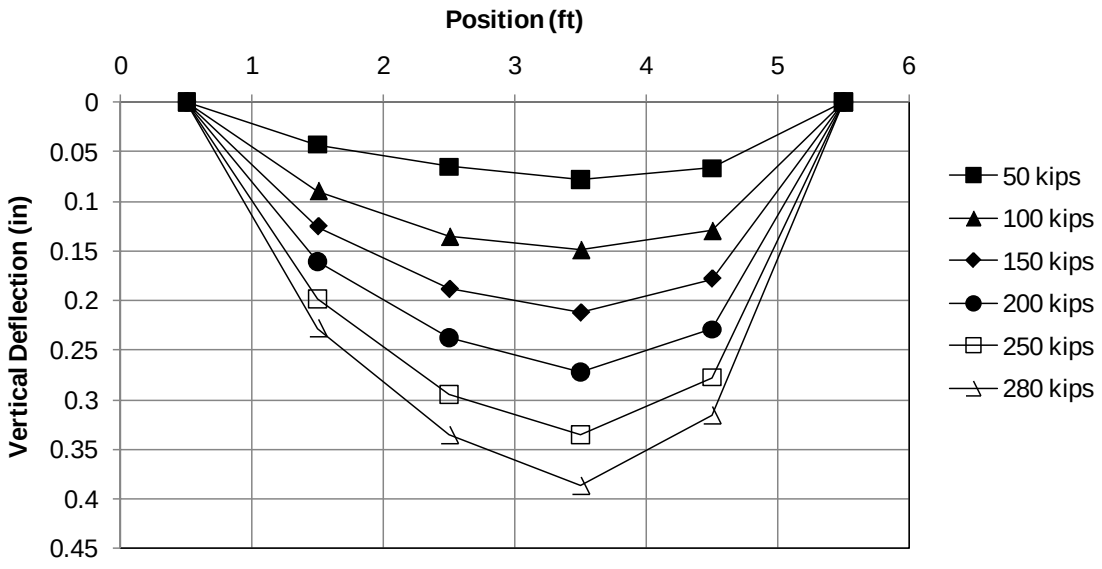



Figure 5.20 Pile 9 deflection profile

TABLE 5.1 Summary of bending test results

| Date | Pile | Number of Casings | Strain Gauges | Casing Unscrew at Failure (in) | Deflection at Maximum Load (in) | Maximum Applied Force (kips) | Maximum Measured Bending Moment (k-ft) |
|---|---|---|---|---|---|---|---|
| 9/10/10 | 1 | 2 | Yes | 0.12 | 0.458 | 300 | 135.5 |
| 9/14/10 | 2 | 2 | Yes | 0.12 | 0.33 | 303 | 137.1 |
| 9/14/10 | 3 | 2 | Yes | 0.12 | 0.34 | 270 | 98.13 |
| 9/15/10 | 4 | 2 | Yes | 0.12 | 0.387 | 295 | 141.65 |
| 9/10/10 | 5 | 2 | Yes | 0.12 | 0.325 | 269 | 135.5 |
| 9/16/10 | 6 | 2 | No | 0.12 | 0.39 | 302 | - |
| 9/16/10 | 7 | 2 | No | 0.12 | 0.32 | 235 | - |
| 9/16/10 | 8 | 2 | No | 0.12 | 0.368 | 280 | - |
| 9/15/10 | 9 | 2 | No | 0.12 | 0.387 | 280 | - |

### 5.5 Corrosion Testing Plan

In addition to the structural tests, durability testing was commenced to determine the performance of the micropiles in typical environments. Due to the long term nature of the corrosion tests, this report documents only the strategy of the tests. The corrosion study will continue well beyond the duration of this research project.

Marked and labeled micropile casings have been and will be placed in secure field locations that accessible to by NCDOT, UNCC, and Auburn University personnel for many years). Periodically, specimen mass and thickness will be measured. The primary corrosion tests will be carried out for period of three years. At an interval of approximately three months the micropiles with be measured to determine any changes in the cross-sectional area.

In addition to non destructive measurements, structural tests will be conducted on weathering specimens. The first three micropiles will be tested after one year, the second set after two years, and the final trio will be tested at the end of the third year. The results will be compared to determine any loss in structural strength due to corrosion. The final

corrosion result will be published separately. Table 5.2 shows the location, number and baseline properties of the micropile. Table 5.3 contains the schedule for corrosion testing.

TABLE 5.2 Baseline properties of the micropile

| Number | Location | Properties |
|---|---|---|
| 3 | Auburn University NGES | diameter = 10.75”, wall thickness 0.5”, length ≈ 1 ft. fy = 80 ksi |
| 3 | Mountain location where subject to deicing salt | |
| 3 | Piedmont location, typical climate | |

TABLE 5.3 Summary of Durability and Material Tests

| Durability Tests | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mass and thickness measurement | First Year (Three months interval) | | | | Second Year (Three months interval) | | | | Third Year(Three months interval) | | | |
| | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th |
| Material | | | | | | | | | | | | |
| Micropile Testing | First test after 12 months | | | | Second test after 12 months | | | | Third test after 12 months | | | |

# CHAPTER 6
# MODEL CALIBRATION

One of the objectives of the research program was to develop a model with the ability to predict the behavior of micropiles under lateral load. The best software available for modeling bridge substructures was FB-Multipier. The focus of this section is the calibration of the FB-Multipier model.

## 6.1 Models

### 6.1.1 Load Test "I"

Load test I was the starting point for model calibration. Since the strain profile was measured along the length of the pile, it serves as the best case to initiate the calibration. Piles 10 and 11 were almost nearly identically installed, therefore a single model was used.

The original model in Chapter 3 used soil parameters that were based on SPT tests and idealized parameters for the micropile sections. For the calibration, the actual section properties were used. The strengths and Young's Modulus of both the steel ($f_y$ = 115 ksi, $E_s$ = 30,000 ksi) and grout ($f'_c$ 4 ksi, $E_g$ = 2000 ksi) were known. When comparing the results of the field tests to the predictions, it was evident that the soil resistance was under predicted by a fair amount. Recall that while the micropile sections were 10.75 inches in diameter with a wall thickness of 0.5 in. In order to model the joint, the thickness was reduced to 0.2 in for a 0.2 ft section of pile between two full sections. Based on the shape of the measured bending moment curves compared to the predictions from Chapter 3, there appears to be more soil resistance to carry the bending moment. Thus, the logical place to adjust the parameters for a better match was the soil, specifically the p-y curve parameters. The rock compressive strength was held constant at 29 ksi using the McVay

and Niraula (2004) model. The overburden soil was adjusted. The three parameters required for the Reese et al. (1974) sand model were friction angle, unit weight, and subgrade modulus. Since the unit weight doesn't have a large impact, the two parameters that were adjusted were the friction angle, $\phi$, and subgrade modulus, k. The parameters were increased progressively until the model load test matched the deflection and bending moment profiles along with the displacement at the load point from the field load test. After multiple iterations, the final soil parameters were increased to $\phi = 50^o$, $\gamma = 110$ pcf, and k = 350 pci. The matching results are shown in Figure 6.1.

### 6.1.2 Load Test F

The piles in load test F were almost identical to those in Load test I, except there were no strain gauges. Load test F was carried out until failure of pile #16. Thus, the soil model developed for load test I was used in the model if load test F to failure. Use of the soil model for load test I produced a very good match for the initial loading of the piles, but did not capture the failure mode well. There was some evidence that suggests the upper joint in pile 16 was weaker than the others. Thus, the joint model was adjusted slightly to improve the match. The casing thickness was adjusted down to 0.14 in. The resulting model is shown in Figure 6.2.

### 6.1.3 Load Test E

Load test E was simulated using the soil, pile, and joint models now fully developed. The match was not great, but this was likely due to the reloading of these piles due to issues with the load frame. The resulting model for this load test is shown in Figure 6.3.

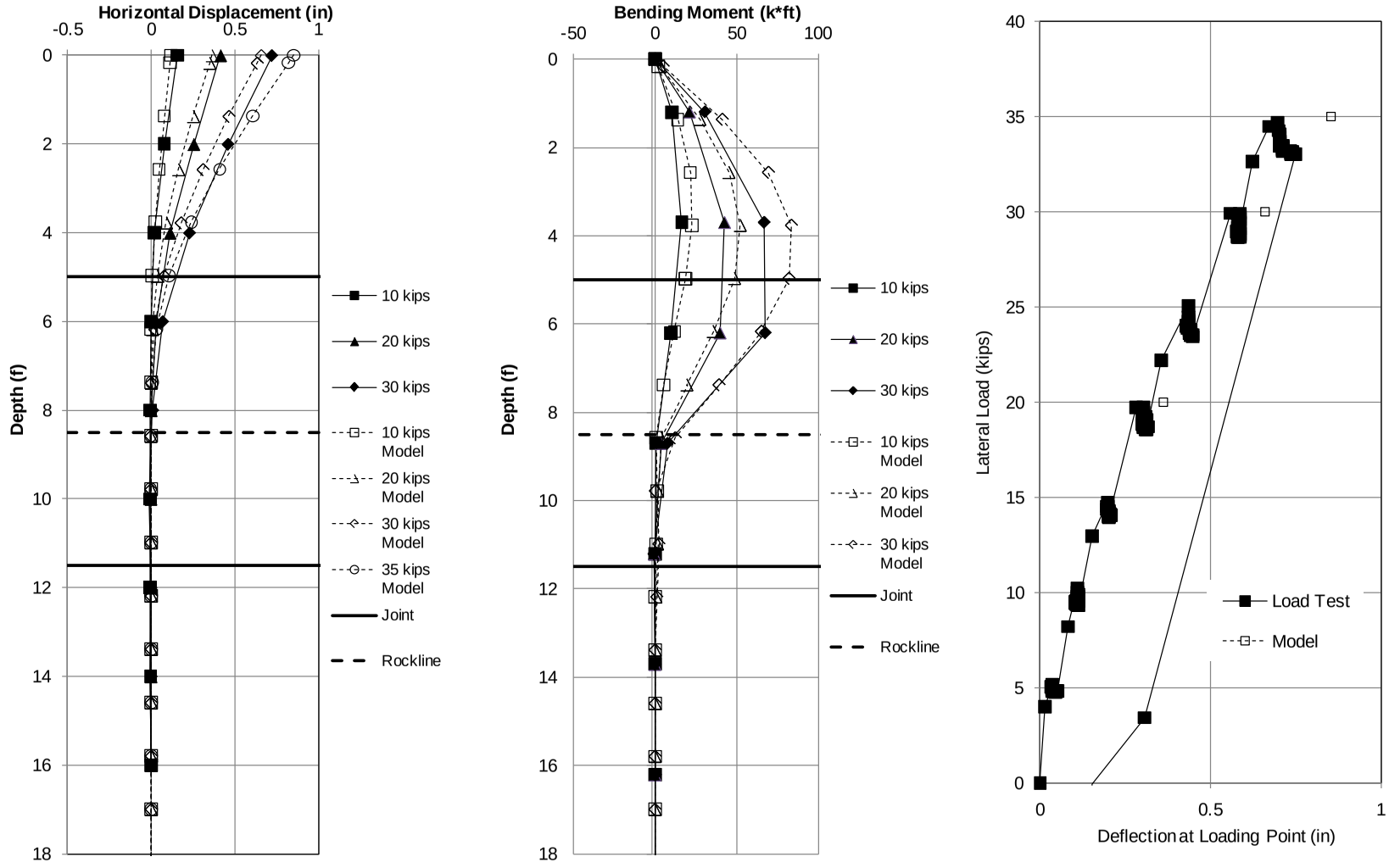



Figure 6.1 Calibrated model for load test I piles 10 and 11

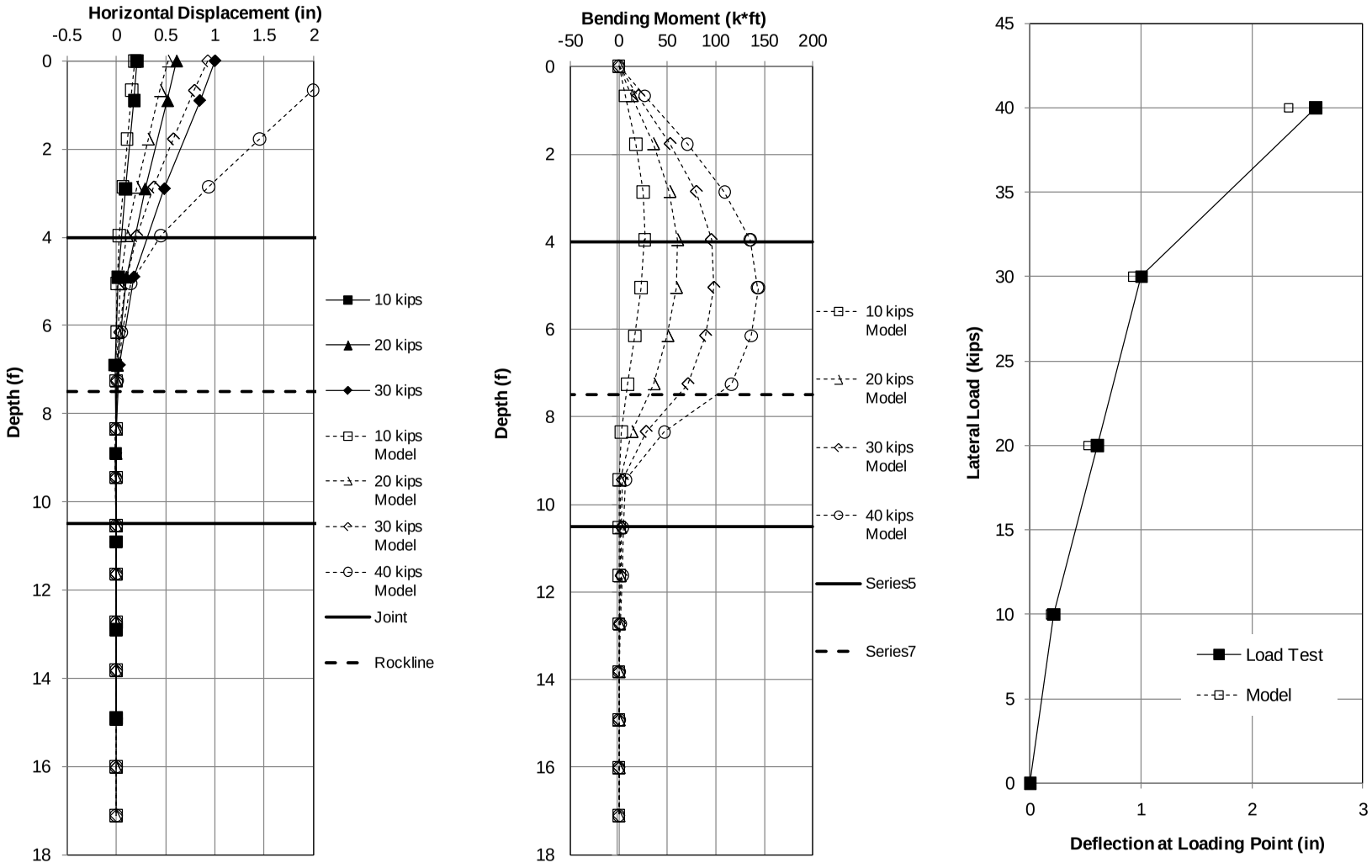



Figure 6.2 Calibrated model for load test F pile 16

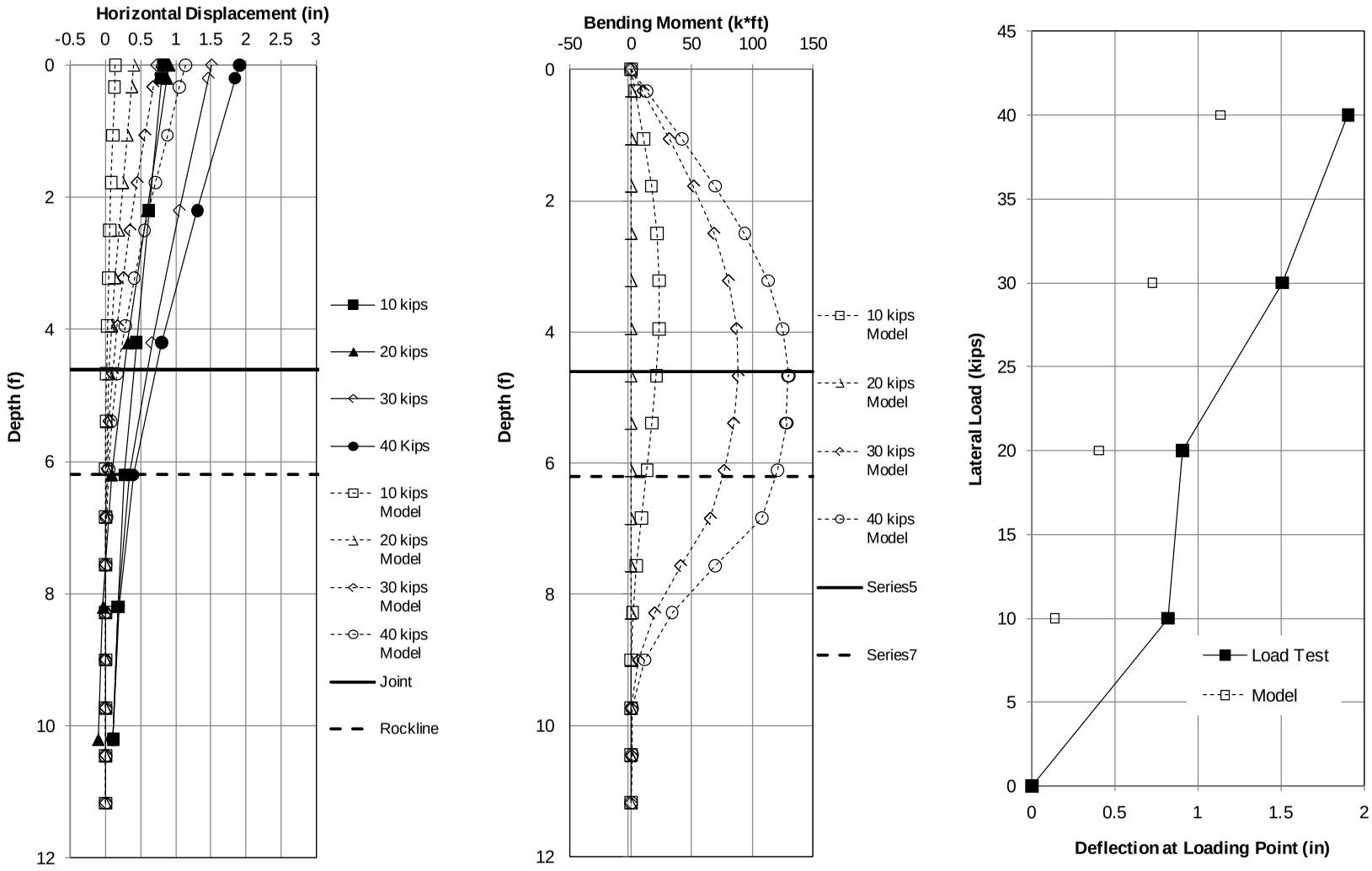



Figure 6.3 Calibrated model for load test E piles 3 and 15

### 6.1.4 Load Test B

Again, using the fully developed model with the full 0.2 in joint, load test B was simulated. The model matches exactly. The results are shown in Figure 6.4.

### 6.1.5 Load Test A

An attempt was made to simulate load test A. Since there was no measurable data, the goal was to determine if the one foot embedment was truly the reason of such poor performance. The model pile carries upwards of 40 kips of lateral force, but it also appears that the pile rotates in the rock socket monolithically, which was the behavior noted in the field. For comparison, the result of this model is shown in Figure 6.5

### 6.1.6 Load Test X

With the structural model developed, a model for the group load test that was created for Chapter 3 was modified to match the true field conditions. Of course in this case, the soil was removed in front of the piles prior to load testing to simulate scour. The prediction is shown in Figure 6.6.

The response of the group appears to be much stiffer than the prediction shows. There could be several explanations, but likely the closest would be the residual effects of soil around the piles above the rockline. Limited access brought on by right of way and construction issues made the excavation of the soil difficult at best. The contractor was able to remove the soil in front of the piles, but not around them. Furthermore, there was still grout around several of the piles after the excavation.

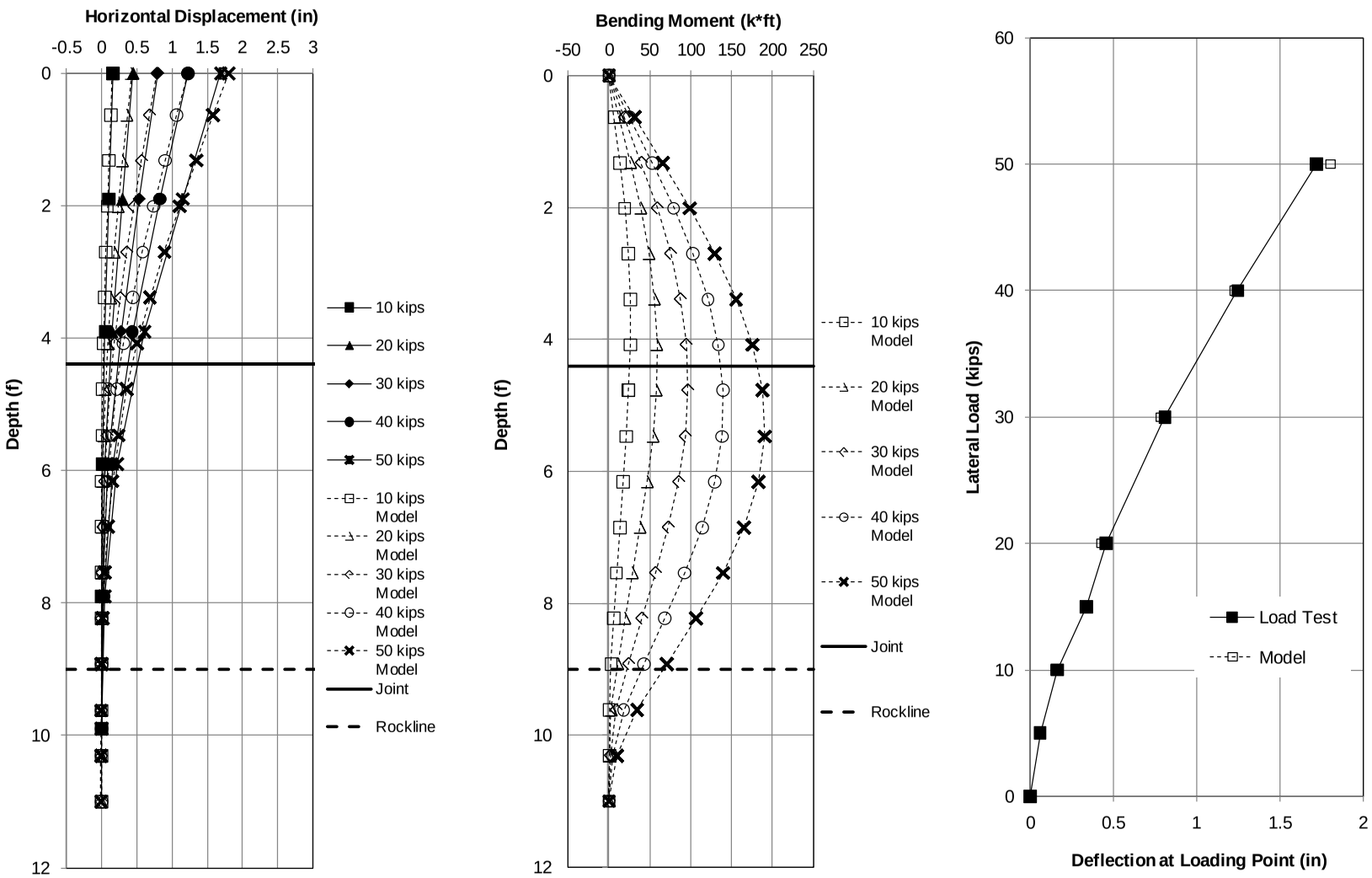



Figure 6.4 Calibrated model for load test B piles 2 and 14

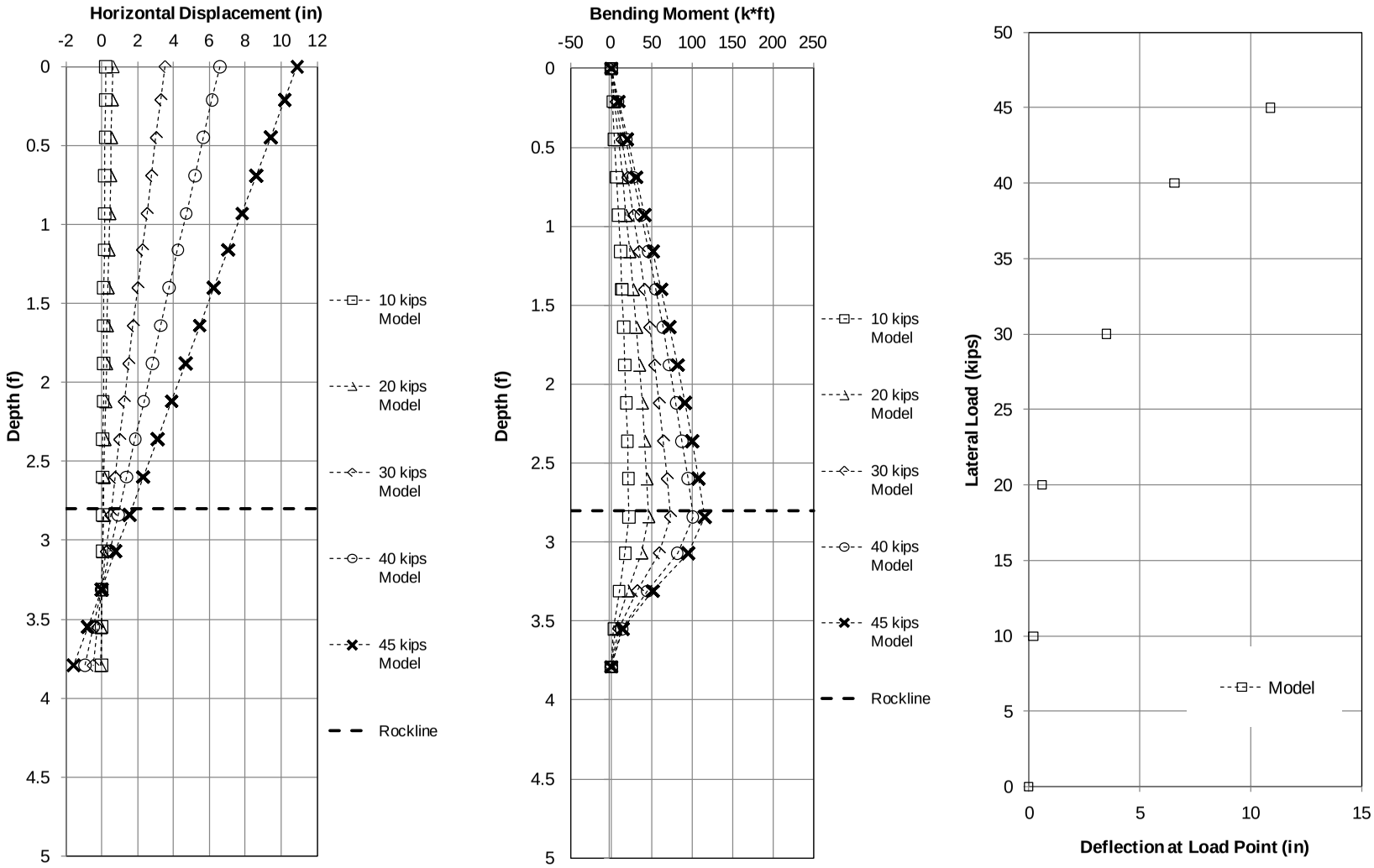



Figure 6.5 Calibrated model for load test A pile 1

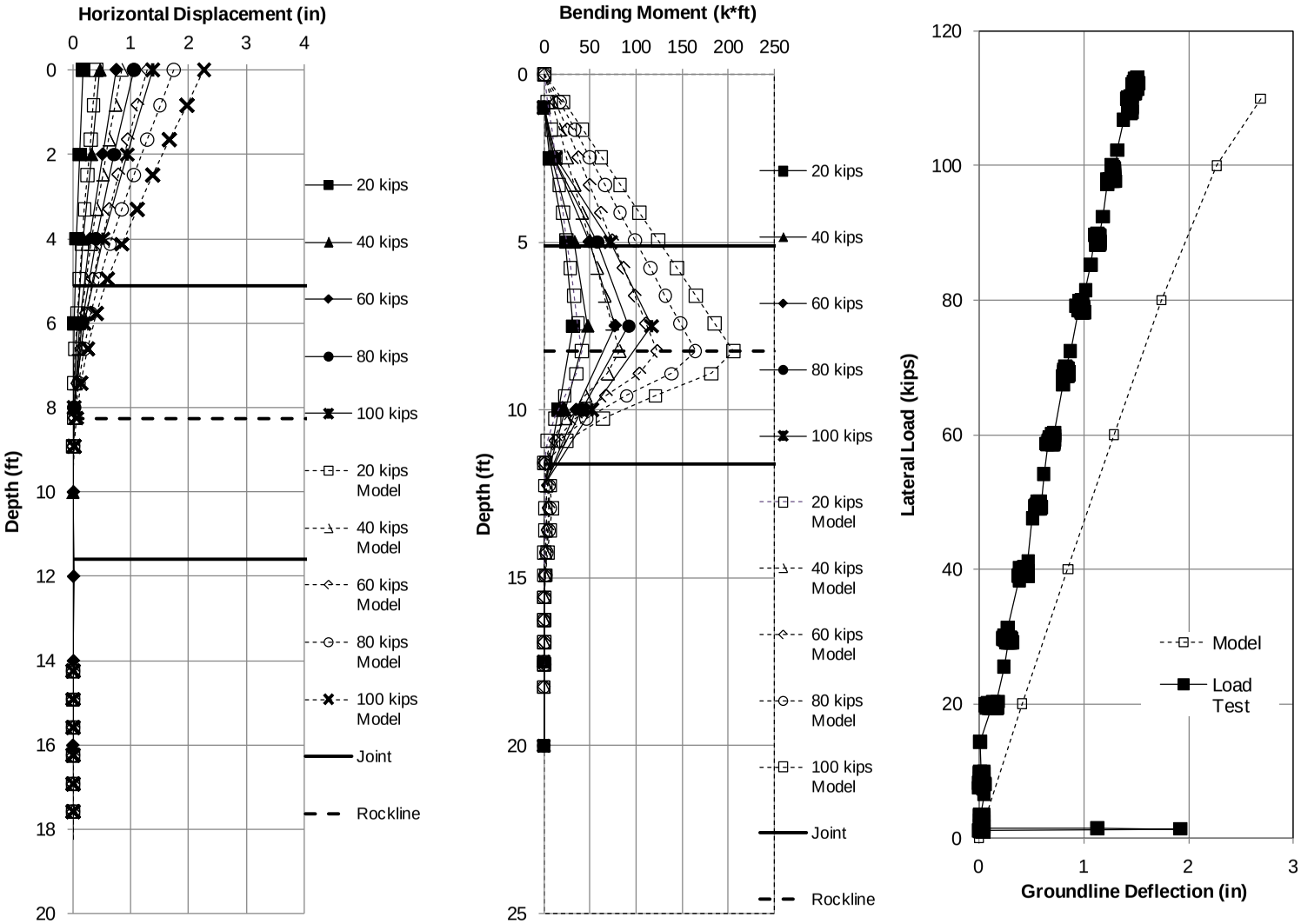



Figure 6.6 Calibrated model for load test X, piles 5, 6, 7, and 8

## 6.2 Discussion

The model was remarkably easy to calibrate. Using the measured parameters for the section and the amended soil model provided a good match in many of the load tests. The question might be raised concerning the magnitude of the soil properties used to affect the match. One possible explanation is the impact of grout on the surrounding soils. Since grout return is used as a mechanism to verify grouting the socket, the soil is more or less improved around the pile. There is a possibility that this could have been the source of the high fiction angle and subgrade modulus. On the other hand, the SPT characterization may have been less than ideal for these soil types. Anderson and Townsend (2001) show the poor reliability of SPT parameters for lateral loading analysis.

# CHAPTER 7
# CONCLUSION

## 7.1 Research Summary

A research program was conducted in order to gain insight on the behavior of micropiles for bridge bent applications. Of interest was how micropiles behave with respect to joints. The program consisted of preliminary simulations and predictions, extensive field lateral load and laboratory testing programs, and calibration of a numerical model.

## 7.2 Conclusions

The following conclusions are suggested based upon the results of this study:

1) The casing joint has a large impact on the lateral capacity of micropiles. In cases where the micropiles were sufficiently embedded in rock, rather than yielding, there was an abrupt failure at the casing joint. This was observed in the load tests.
2) Two feet of embedment for micropiles in this study was sufficient to carry lateral load. Embedment at 5 and 10 feet produced similar results to 2 feet. One foot of embedment does not appear to be sufficient based upon results of the field tests and numerical models.
3) The strength of the micropiles with respect to the joints from field and laboratory tests was around 140 k*ft.
4) Micropiles of this size can carry significant lateral load with little deflection. However, the failure mode is brittle, as the piles tested failed abruptly with little lateral displacement.

5) Reduction of the section area at threaded joint by 60% to 70% results in a reasonably accurate model for the behavior of the casing joint in FB-Multipier.

### 7.3 Limitations

Research studies on deep foundations are often qualified by limitation imposed due to financial limitations of the project. It is not cost effective to construct multiple sections (size and length) to assess all possibilities. In addition, most projects such as this one must be coupled with construction activities and are constrained by the budgets of those projects.

This study focused on 10.75 in diameter 0.5 in. thick micropiles. No other sizes were used in any part of this work. While the PI believes the results can be adapted to other micropile sizes, the user is cautioned to verify material properties and behaviors before applying these results directly.

### 7.4 Recommendations .

The results of this work prove micropiles are economically feasible foundations that can carry significant lateral loads when properly embedded. As mentioned before, the study focused on a single pile size. If NCDOT intends to allow other micropile sizes, it would be beneficial at the least, to perform a lateral load test with the other sizes to verify or recalibrate the models. Equipment that was purchased for this research is available for that purpose.

# CHAPTER 8
# IMPLEMENTATION PLAN

## 8.1 Background

The direct implementation of the research is through the use of the micropile section model in the program FB-Multipier. The current version of the software contains the option for modeling deep foundations as segments. What this means is that cross section changes can be incorporated into the numerical model. For example, a change in the amount of reinforcing bars in a drilled shaft with depth, or the use of an H-Pile stinger on a square concrete pile can be simulated. There are several sections that are installed by default in FB-Multipier and they can be used as pile segment models. In addition, a custom section can be created by the user that can be stored named and stored in a database that can be recalled for future use. The products of this study are typical 10.75" micropile and joint sections for use in FB-Multipier.

## 8.2 FB-Multipier Sections

Since the FB-Multipier interface merely creates an ASCII text input file that is read and processed by the analysis engine, the foundation entry section is standard and can be transferred to different input files. Therefore this can be handled in two ways which are documented herein. First, the two text blocks below can be cut and placed into an FB-Multipier file to implement the micropile or joint.

Pile:

| | |
|---|---|
| Diameter: | 10.75 in |
| Thickness: | 0.5 in |
| Length: | 6.36 in |
| Unit weight | 490 ksi |

Casing:

| | |
|---|---|
| E | 30000 ksi |
| fy | 115 ksi |

Grout:

| | |
|---|---|
| E | 2000 ksi |
| f'c | 4 ksi |

Mild steel (if rebar is present):

| | |
|---|---|
| E | 29000 ksi |
| fy | 50 ksi |

```
C Custom
C T=2 D=2 U=0 : Drilled Shaft - nonlinear
K= 1 L= 6.36 M= 1 C= 4 , 2000 \
S= 50,0,0,115,29000,0,0,30000
NL= 1 NG= 0 D= 10.75 V= 0 S= 490 TH= 0.5 IC= 0 T= 1 HPI= 0 \
BM= 0 X= 0 Z= -1 : (round)
0 1 D= 0 A= 0 : prest, # bars, diam, area
```

The joint is modeled as a segment that is 0.2 ft long with a thickness of 0.2 in. The other parameters are the same.

```
C Custom
C T=2 D=2 U=0 : Drilled Shaft - nonlinear
K= 1 L= 0.2 M= 1 C= 2 , 2000 \
S= 50,0,0,100,29000,0,0,30000
NL= 1 NG= 0 D= 10.75 V= 0 S= 490 TH= 0.14 IC= 0 T= 1 HPI= 0 \
BM= 0 X= 0 Z= -1 : (round)
0 0 D= 0 A= 0 : prest, # bars, diam, area
```

Alternately, the model can be entered by hand. The following screens show how to create the micropile section. First, in the main FB-Multipier window, select "Pile" under "Pier Data." This brings up the window shown in Figure 8.1. In the "Pile" window, choose "Full Cross Section" then click the "Edit" button below. The "Full Cross-Section Pile Properties" window is displayed as in Figure 8.2. In the top left corner of the window, there is a list of segments. That list should reflect the number of segments desired to define the pile. In this case, there are 5 segments (3 pile and 2 joint). The section type is "circular." The section geometry is then entered at right: diameter,

unit weight, and segment length. Next, the user selects "Edit Section Contents." The "Circluar Section Properties" window, like the one shown in Figure 8.3 is displayed. In

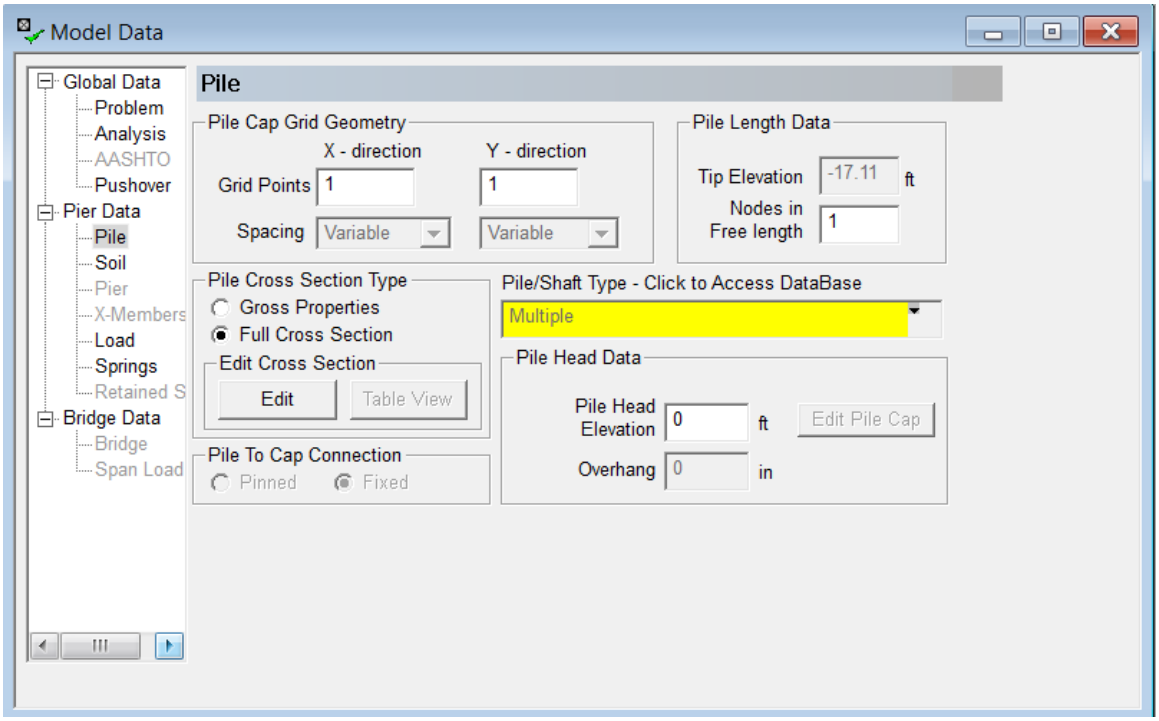


Figure 8.1 "Pile" window

that window, the only entry is the thickness of the section, which in this case is 0.5 in. For the casing joint, enter 0.2 in. Select "Ok" to go back to the "Full Cross-section pile properties" window. The last entry is for the pile material properties. The user selects "Edit Properties" in the lower right corner of the window. The "Default stress/strain curves" window appears as in Figure 8.4. Use the check boxes on the left to activate entry for the different materials. In this case, the steel casing has $f_y$ = 115 ksi and E = 30000 ksi, the grout has f'c = 4 ksi and E = 2000 ksi. For mild steel reinforcing use fy = 50 ksi and E = 29000 ksi. There is no prestressing steel used. Select "OK" to close the open windows. Repeat these steps as necessary to create the desired number of pile segments.

Finally, these sections can be saved in the FB-Multipier Database for future use. Figure 8.5 shows the sections currently saved in the author's database. If desired, choose "Add to database" to save the section in the user's database.

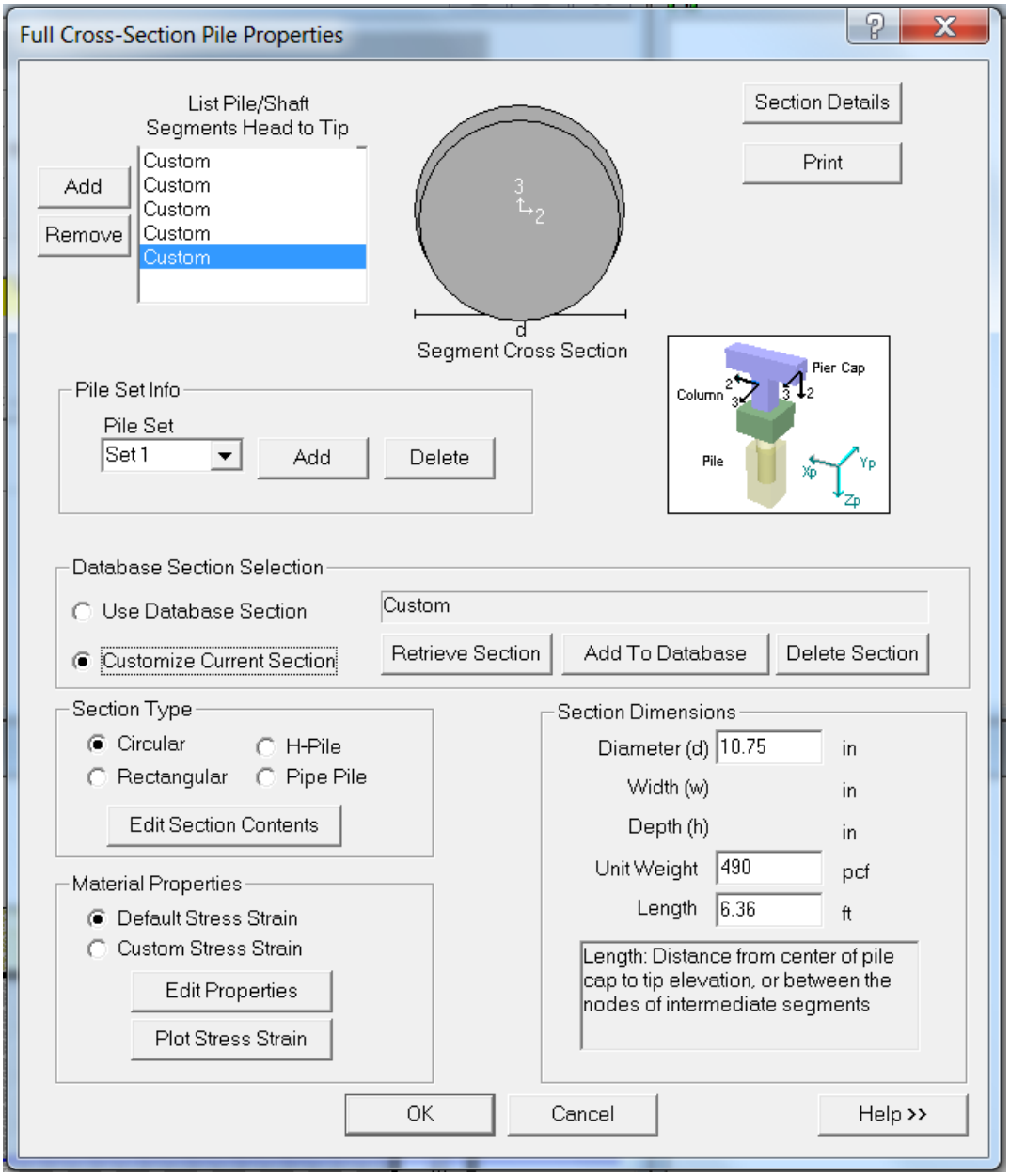


Figure 8.2 "Full Cross-section pile properties" window

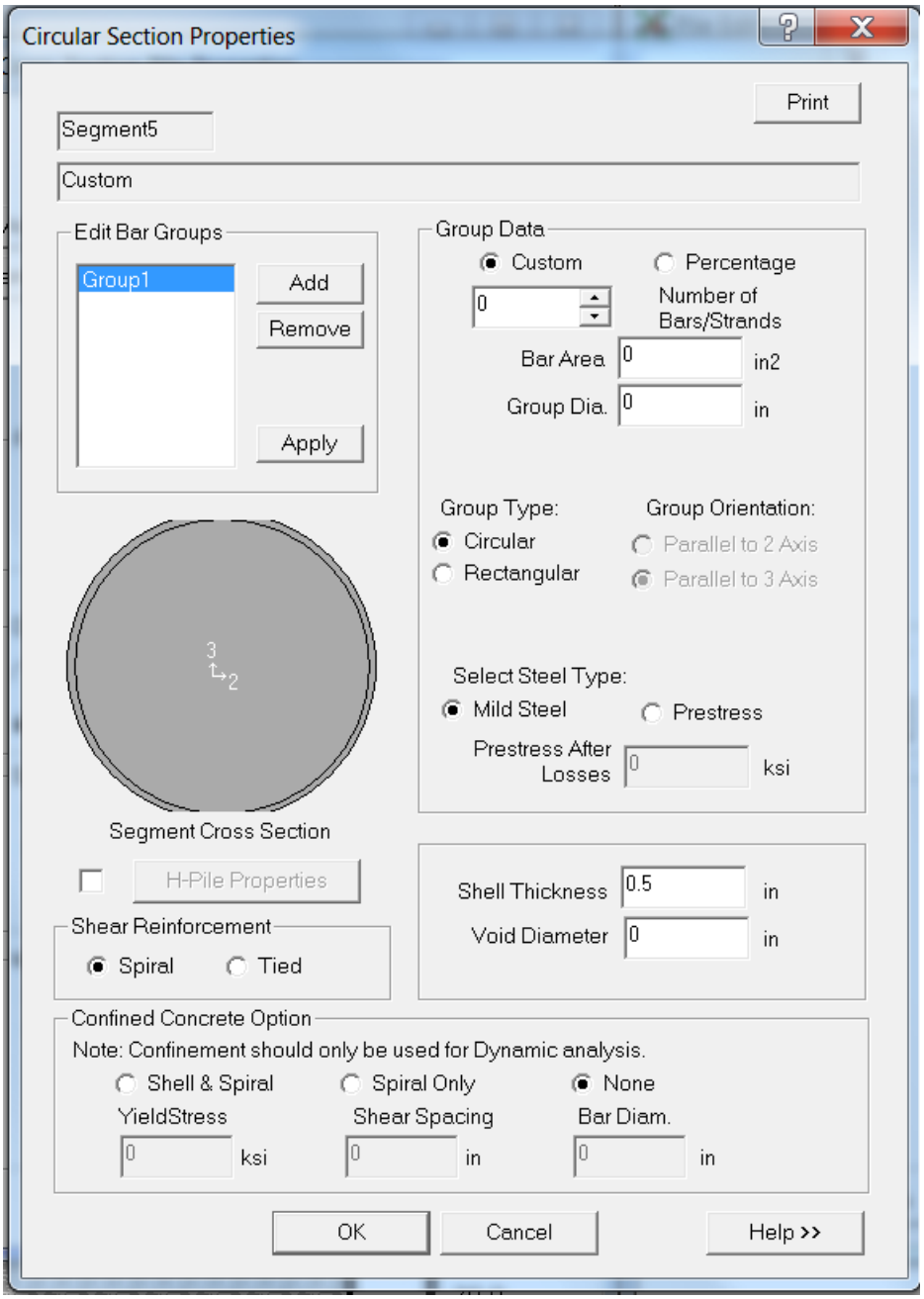


Figure 8.3 "Circular section properties" window

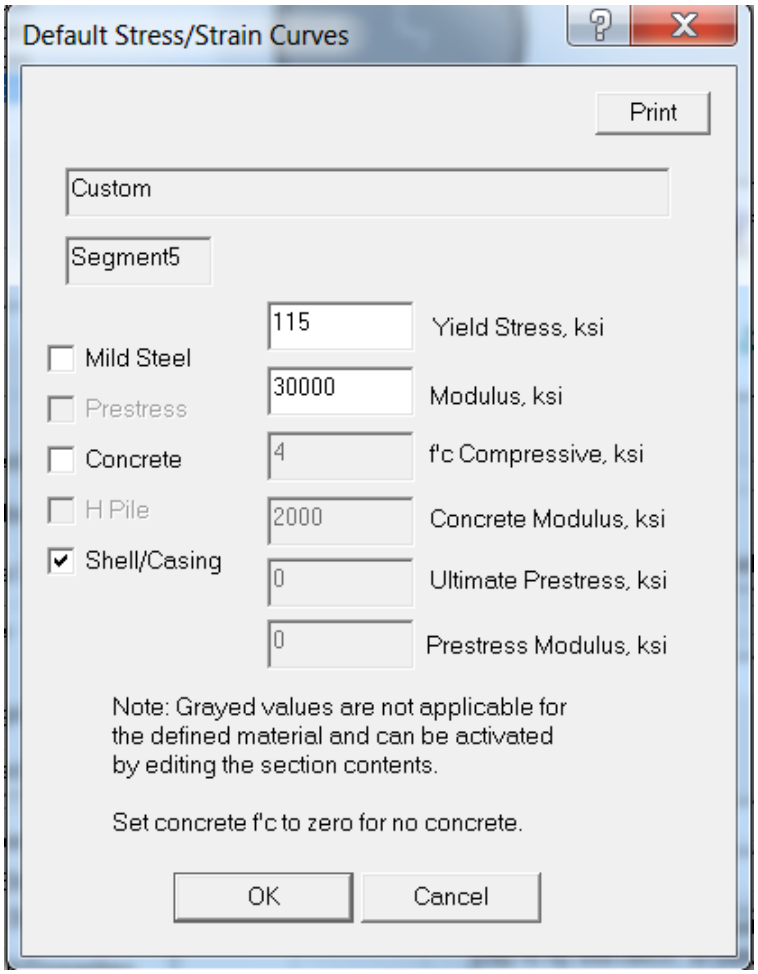


Figure 8.4 "Default stress/strain curves" window

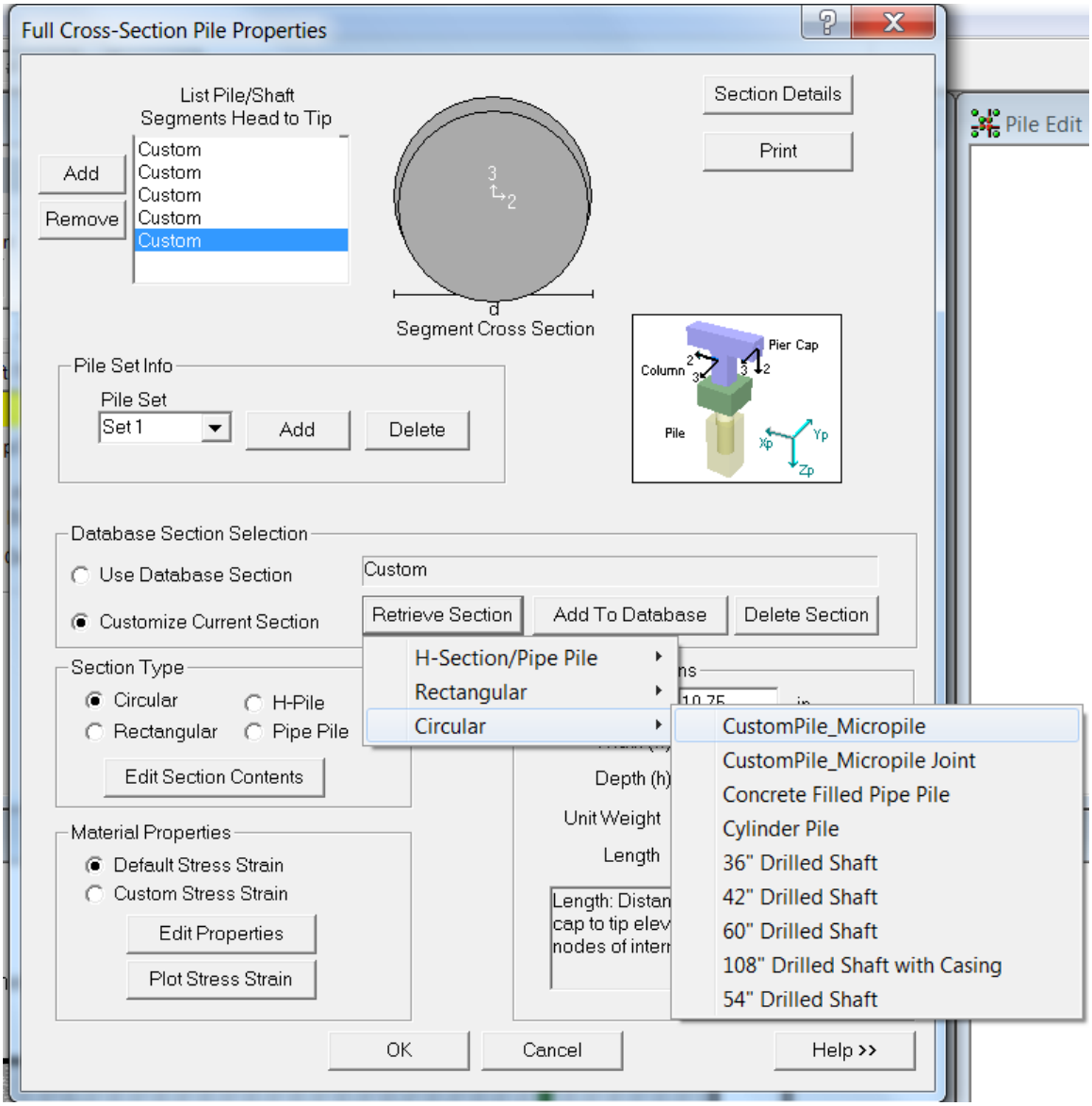


Figure 8.5 Section database

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# APPENDIX A
# LATERAL LOAD TEST B

TABLE A.1 Inclinometer measurements for pile 2

PROJECT:ASHE MICROPILE LATERAL LOAD TESTING
MICROPILE NO: 2
DATE: 11/24/09
TIME:

| | Baseline | | |
|---|---|---|---|
| Depth (ft) | A+ | A- | Diff. (A) |
| 14 | -258 | 176 | -434 |
| 12 | -208 | 165 | -373 |
| 10 | -209 | 169 | -378 |
| 8 | -200 | 163 | -363 |
| 6 | -188 | 146 | -334 |
| 4 | -146 | 111 | -257 |
| 2 | -139 | 32 | -171 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 5 kips | | | | | | |
| 14 | -257 | 175 | -432 | 2 | 0.0012 | 0.0012 |
| 12 | -203 | 166 | -369 | 4 | 0.0024 | 0.0036 |
| 10 | -206 | 166 | -372 | 6 | 0.0036 | 0.0072 |
| 8 | -183 | 152 | -335 | 28 | 0.0168 | 0.024 |
| 6 | -170 | 128 | -298 | 36 | 0.0216 | 0.0456 |
| 4 | -125 | 90 | -215 | 42 | 0.0252 | 0.0708 |
| 2 | -111 | 83 | -194 | -23 | -0.0138 | 0.057 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 10 kips | | | | | | |
| 14 | -258 | 175 | -433 | 1 | 0.0006 | 0.0006 |
| 12 | -206 | 165 | -371 | 2 | 0.0012 | 0.0018 |
| 10 | -200 | 161 | -361 | 17 | 0.0102 | 0.012 |
| 8 | -176 | 136 | -312 | 51 | 0.0306 | 0.0426 |
| 6 | -148 | 105 | -253 | 81 | 0.0486 | 0.0912 |
| 4 | -100 | 65 | -165 | 92 | 0.0552 | 0.1464 |
| 2 | -83 | 63 | -146 | 25 | 0.015 | 0.1614 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 15 kips | | | | | | |
| 14 | -258 | 175 | -433 | 1 | 0.0006 | 0.0006 |
| 12 | -204 | 164 | -368 | 5 | 0.003 | 0.0036 |
| 10 | -189 | 151 | -340 | 38 | 0.0228 | 0.0264 |
| 8 | -147 | 109 | -256 | 107 | 0.0642 | 0.0906 |
| 6 | -108 | 65 | -173 | 161 | 0.0966 | 0.1872 |
| 4 | -57 | 21 | -78 | 179 | 0.1074 | 0.2946 |
| 2 | -59 | 2 | -61 | 110 | 0.066 | 0.3606 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 20 kips | | | | | | |
| 14 | -259 | 175 | -434 | 0 | 0 | 0 |
| 12 | -203 | 162 | -365 | 8 | 0.0048 | 0.0048 |
| 10 | -181 | 141 | -322 | 56 | 0.0336 | 0.0384 |
| 8 | -127 | 88 | -215 | 148 | 0.0888 | 0.1272 |
| 6 | -76 | 35 | -111 | 223 | 0.1338 | 0.261 |
| 4 | -18 | -31 | 13 | 270 | 0.162 | 0.423 |
| 2 | 43 | -31 | 74 | 245 | 0.147 | 0.57 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 40 kips | | | | | | |
| 14 | -259 | 176 | -435 | -1 | -0.0006 | -0.0006 |
| 12 | -190 | 151 | -341 | 32 | 0.0192 | 0.0186 |
| 10 | -127 | 89 | -216 | 162 | 0.0972 | 0.1158 |
| 8 | 14 | -53 | 67 | 430 | 0.258 | 0.3738 |
| 6 | 112 | -154 | 266 | 600 | 0.36 | 0.7338 |
| 4 | 175 | -210 | 385 | 642 | 0.3852 | 1.119 |
| 2 | 169 | -215 | 384 | 555 | 0.333 | 1.452 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 50 kips | | | | | | |
| 14 | -260 | 176 | -436 | -2 | -0.0012 | -0.0012 |
| 12 | -181 | 141 | -322 | 51 | 0.0306 | 0.0294 |
| 10 | -94 | 53 | -147 | 231 | 0.1386 | 0.168 |
| 8 | 87 | -124 | 211 | 574 | 0.3444 | 0.5124 |
| 6 | 205 | -247 | 452 | 786 | 0.4716 | 0.984 |
| 4 | 273 | -309 | 582 | 839 | 0.5034 | 1.4874 |
| 2 | 276 | -312 | 588 | 759 | 0.4554 | 1.9428 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| Final | | | | | | |
| 14 | -259 | 175 | -434 | 0 | 0 | 0 |
| 12 | -180 | 139 | -319 | 54 | 0.0324 | 0.0324 |
| 10 | -104 | 65 | -169 | 209 | 0.1254 | 0.1578 |
| 8 | 39 | -79 | 118 | 481 | 0.2886 | 0.4464 |
| 6 | 126 | -166 | 292 | 626 | 0.3756 | 0.822 |
| 4 | 180 | -214 | 394 | 651 | 0.3906 | 1.2126 |
| 2 | 187 | -241 | 428 | 599 | 0.3594 | 1.572 |

TABLE A.2 Inclinometer measurements for pile 14

PROJECT:ASHE MICROPILE LATERAL LOAD TESTING
MICROPILE NO: 14
DATE: 11/24/09
TIME:

| | Baseline data | | |
|---|---|---|---|
| Depth (ft) | A+ | A- | Diff. (A) |
| 14 | 207 | -292 | 499 |
| 12 | 247 | -287 | 534 |
| 10 | 216 | -258 | 474 |
| 8 | 209 | -247 | 456 |
| 6 | 267 | -317 | 584 |
| 4 | 405 | -436 | 841 |
| 2 | 435 | -465 | 900 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 5 kips | | | | | | |
| 14 | 210 | -292 | 502 | 3 | 0.0018 | 0.0018 |
| 12 | 249 | -288 | 537 | 3 | 0.0018 | 0.0036 |
| 10 | 220 | -252 | 472 | -2 | -0.0012 | 0.0024 |
| 8 | 217 | -256 | 473 | 17 | 0.0102 | 0.0126 |
| 6 | 287 | -335 | 622 | 38 | 0.0228 | 0.0354 |
| 4 | 427 | -456 | 883 | 42 | 0.0252 | 0.0606 |
| 2 | 459 | -504 | 963 | 63 | 0.0378 | 0.0984 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 10 kips | | | | | | |
| 14 | 205 | -292 | 497 | -2 | -0.0012 | -0.0012 |
| 12 | 251 | -289 | 540 | 6 | 0.0036 | 0.0024 |
| 10 | 229 | -268 | 497 | 23 | 0.0138 | 0.0162 |
| 8 | 239 | -274 | 513 | 57 | 0.0342 | 0.0504 |
| 6 | 312 | -360 | 672 | 88 | 0.0528 | 0.1032 |
| 4 | 456 | -484 | 940 | 99 | 0.0594 | 0.1626 |
| 2 | 476 | -519 | 995 | 95 | 0.057 | 0.2196 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 15 kips | | | | | | |
| 14 | 205 | -292 | 497 | -2 | -0.0012 | -0.0012 |
| 12 | 257 | -293 | 550 | 16 | 0.0096 | 0.0084 |
| 10 | 245 | -279 | 524 | 50 | 0.03 | 0.0384 |
| 8 | 270 | -307 | 577 | 121 | 0.0726 | 0.111 |
| 6 | 360 | -406 | 766 | 182 | 0.1092 | 0.2202 |
| 4 | 503 | -533 | 1036 | 195 | 0.117 | 0.3372 |
| 2 | 536 | -576 | 1112 | 212 | 0.1272 | 0.4644 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 20 kips | | | | | | |
| 14 | 205 | -291 | 496 | -3 | -0.0018 | -0.0018 |
| 12 | 254 | -295 | 549 | 15 | 0.009 | 0.0072 |
| 10 | 248 | -289 | 537 | 63 | 0.0378 | 0.045 |
| 8 | 293 | -331 | 624 | 168 | 0.1008 | 0.1458 |
| 6 | 392 | -440 | 832 | 248 | 0.1488 | 0.2946 |
| 4 | 539 | -570 | 1109 | 268 | 0.1608 | 0.4554 |
| 2 | 573 | -613 | 1186 | 286 | 0.1716 | 0.627 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 30 kips | | | | | | |
| 14 | 209 | -291 | 500 | 1 | 0.0006 | 0.0006 |
| 12 | 263 | -303 | 566 | 32 | 0.0192 | 0.0198 |
| 10 | 279 | -320 | 599 | 125 | 0.075 | 0.0948 |
| 8 | 360 | -397 | 757 | 301 | 0.1806 | 0.2754 |
| 6 | 481 | -532 | 1013 | 429 | 0.2574 | 0.5328 |
| 4 | 637 | -665 | 1302 | 461 | 0.2766 | 0.8094 |
| 2 | 670 | -684 | 1354 | 454 | 0.2724 | 1.0818 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 40 kips | | | | | | |
| 14 | 209 | -292 | 501 | 2 | 0.0012 | 0.0012 |
| 12 | 273 | -312 | 585 | 51 | 0.0306 | 0.0318 |
| 10 | 320 | -360 | 680 | 206 | 0.1236 | 0.1554 |
| 8 | 444 | -481 | 925 | 469 | 0.2814 | 0.4368 |
| 6 | 595 | -643 | 1238 | 654 | 0.3924 | 0.8292 |
| 4 | 754 | -782 | 1536 | 695 | 0.417 | 1.2462 |
| 2 | 788 | -816 | 1604 | 704 | 0.4224 | 1.6686 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 50 kips | | | | | | |
| 14 | 204 | -291 | 495 | -4 | -0.0024 | -0.0024 |
| 12 | 285 | -325 | 610 | 76 | 0.0456 | 0.0432 |
| 10 | 361 | -402 | 763 | 289 | 0.1734 | 0.2166 |
| 8 | 543 | -572 | 1115 | 659 | 0.3954 | 0.612 |
| 6 | 718 | -765 | 1483 | 899 | 0.5394 | 1.1514 |
| 4 | 881 | -908 | 1789 | 948 | 0.5688 | 1.7202 |
| 2 | 908 | -963 | 1871 | 971 | 0.5826 | 2.3028 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| Final | | | | | | |
| 14 | 204 | -292 | 496 | -3 | -0.0018 | -0.0018 |
| 12 | 274 | -314 | 588 | 54 | 0.0324 | 0.0306 |
| 10 | 296 | -324 | 620 | 146 | 0.0876 | 0.1182 |
| 8 | 860 | -899 | 1759 | 1303 | 0.7818 | 0.9 |
| 6 | 1095 | -1142 | 2237 | 1653 | 0.9918 | 1.8918 |
| 4 | 1246 | -1280 | 2526 | 1685 | 1.011 | 2.9028 |
| 2 | 1251 | -1290 | 2541 | 1641 | 0.9846 | 3.8874 |

TABLE A.3 Load measurements for load test B

| TIMESTAMP | RECORD # | LoadA lbs | LoadB lbs | Total lbs |
|---|---|---|---|---|
| 11/24/2009 18:01 | 0 | 278.4 | 168.1 | 446.5 |
| 11/24/2009 18:02 | 1 | 278.4 | 224.1 | 502.5 |
| 11/24/2009 18:02 | 2 | 278.4 | 168.1 | 446.5 |
| 11/24/2009 18:03 | 3 | 278.4 | 168.1 | 446.5 |
| 11/24/2009 18:03 | 4 | 1286.2 | 1176.6 | 2462.8 |
| 11/24/2009 18:04 | 5 | 1230.2 | 1176.6 | 2406.8 |
| 11/24/2009 18:04 | 6 | 1174.2 | 1176.6 | 2350.8 |
| 11/24/2009 18:05 | 7 | 1174.2 | 1176.6 | 2350.8 |
| 11/24/2009 18:05 | 8 | 1174.2 | 1120.6 | 2294.8 |
| 11/24/2009 18:06 | 9 | 1174.2 | 1120.6 | 2294.8 |
| 11/24/2009 18:06 | 10 | 1174.2 | 1120.6 | 2294.8 |
| 11/24/2009 18:07 | 11 | 1174.2 | 1120.6 | 2294.8 |
| 11/24/2009 18:07 | 12 | 1174.2 | 1120.6 | 2294.8 |
| 11/24/2009 18:08 | 13 | 1174.2 | 1120.6 | 2294.8 |
| 11/24/2009 18:08 | 14 | 1118.2 | 1120.6 | 2238.8 |
| 11/24/2009 18:09 | 15 | 1118.2 | 1176.6 | 2294.8 |
| 11/24/2009 18:09 | 16 | 1118.2 | 1176.6 | 2294.8 |
| 11/24/2009 18:10 | 17 | 1118.2 | 1176.6 | 2294.8 |
| 11/24/2009 18:10 | 18 | 1118.2 | 1176.6 | 2294.8 |
| 11/24/2009 18:11 | 19 | 1118.2 | 1120.6 | 2238.8 |
| 11/24/2009 18:11 | 20 | 1118.2 | 1120.6 | 2238.8 |
| 11/24/2009 18:12 | 21 | 1118.2 | 1120.6 | 2238.8 |
| 11/24/2009 18:12 | 22 | 1118.2 | 1120.6 | 2238.8 |
| 11/24/2009 18:13 | 23 | 1118.2 | 1120.6 | 2238.8 |
| 11/24/2009 18:13 | 24 | 1118.2 | 1120.6 | 2238.8 |
| 11/24/2009 18:14 | 25 | 2741.9 | 2633.4 | 5375.3 |
| 11/24/2009 18:14 | 26 | 2685.9 | 2633.4 | 5319.3 |
| 11/24/2009 18:15 | 27 | 2629.9 | 2577.4 | 5207.3 |
| 11/24/2009 18:15 | 28 | 2629.9 | 2521.3 | 5151.3 |
| 11/24/2009 18:16 | 29 | 2629.9 | 2521.3 | 5151.3 |
| 11/24/2009 18:16 | 30 | 2573.9 | 2521.3 | 5095.3 |
| 11/24/2009 18:17 | 31 | 2573.9 | 2465.3 | 5039.2 |
| 11/24/2009 18:17 | 32 | 2517.9 | 2465.3 | 4983.2 |
| 11/24/2009 18:18 | 33 | 2517.9 | 2465.3 | 4983.2 |
| 11/24/2009 18:18 | 34 | 2517.9 | 2465.3 | 4983.2 |
| 11/24/2009 18:19 | 35 | 2517.9 | 2465.3 | 4983.2 |
| 11/24/2009 18:19 | 36 | 2517.9 | 2409.3 | 4927.2 |
| 11/24/2009 18:20 | 37 | 2517.9 | 2409.3 | 4927.2 |
| 11/24/2009 18:20 | 38 | 2517.9 | 2409.3 | 4927.2 |
| 11/24/2009 18:21 | 39 | 2517.9 | 2409.3 | 4927.2 |
| 11/24/2009 18:21 | 40 | 2517.9 | 2409.3 | 4927.2 |
| 11/24/2009 18:22 | 41 | 2517.9 | 2409.3 | 4927.2 |
| 11/24/2009 18:22 | 42 | 2517.9 | 2409.3 | 4927.2 |
| 11/24/2009 18:23 | 43 | 2517.9 | 2409.3 | 4927.2 |
| 11/24/2009 18:23 | 44 | 2517.9 | 2409.3 | 4927.2 |

| TIMESTAMP | RECORD # | LoadA lbs | LoadB lbs | TotalLoad lbs |
|---|---|---|---|---|
| 11/24/2009 18:24 | 45 | 2462.0 | 2409.3 | 4871.2 |
| 11/24/2009 18:24 | 46 | 4533.5 | 4426.3 | 8959.9 |
| 11/24/2009 18:25 | 47 | 4925.5 | 4762.5 | 9688.0 |
| 11/24/2009 18:25 | 48 | 4813.5 | 4650.5 | 9463.9 |
| 11/24/2009 18:26 | 49 | 4757.5 | 4650.5 | 9407.9 |
| 11/24/2009 18:26 | 50 | 4757.5 | 4538.4 | 9295.9 |
| 11/24/2009 18:27 | 51 | 4701.5 | 4538.4 | 9239.9 |
| 11/24/2009 18:27 | 52 | 4701.5 | 4538.4 | 9239.9 |
| 11/24/2009 18:28 | 53 | 4701.5 | 4538.4 | 9239.9 |
| 11/24/2009 18:28 | 54 | 4645.5 | 4538.4 | 9183.9 |
| 11/24/2009 18:29 | 55 | 4645.5 | 4538.4 | 9183.9 |
| 11/24/2009 18:29 | 56 | 4645.5 | 4482.4 | 9127.9 |
| 11/24/2009 18:30 | 57 | 4645.5 | 4482.4 | 9127.9 |
| 11/24/2009 18:30 | 58 | 4645.5 | 4482.4 | 9127.9 |
| 11/24/2009 18:31 | 59 | 4589.5 | 4482.4 | 9071.9 |
| 11/24/2009 18:31 | 60 | 4533.5 | 4482.4 | 9015.9 |
| 11/24/2009 18:32 | 61 | 4533.5 | 4482.4 | 9015.9 |
| 11/24/2009 18:32 | 62 | 4533.5 | 4426.3 | 8959.9 |
| 11/24/2009 18:33 | 63 | 4533.5 | 4426.3 | 8959.9 |
| 11/24/2009 18:33 | 64 | 4533.5 | 4426.3 | 8959.9 |
| 11/24/2009 18:34 | 65 | 4533.5 | 4426.3 | 8959.9 |
| 11/24/2009 18:34 | 66 | 4533.5 | 4426.3 | 8959.9 |
| 11/24/2009 18:35 | 67 | 6269.2 | 6219.3 | 12488.5 |
| 11/24/2009 18:35 | 68 | 6101.2 | 6051.2 | 12152.4 |
| 11/24/2009 18:36 | 69 | 6101.2 | 5995.2 | 12096.4 |
| 11/24/2009 18:36 | 70 | 6101.2 | 5939.1 | 12040.4 |
| 11/24/2009 18:37 | 71 | 5989.2 | 5939.1 | 11928.4 |
| 11/24/2009 18:37 | 72 | 5989.2 | 5939.1 | 11928.4 |
| 11/24/2009 18:38 | 73 | 5989.2 | 5883.1 | 11872.3 |
| 11/24/2009 18:38 | 74 | 5989.2 | 5883.1 | 11872.3 |
| 11/24/2009 18:39 | 75 | 5989.2 | 5883.1 | 11872.3 |
| 11/24/2009 18:39 | 76 | 5989.2 | 5827.1 | 11816.3 |
| 11/24/2009 18:40 | 77 | 5989.2 | 5827.1 | 11816.3 |
| 11/24/2009 18:40 | 78 | 5989.2 | 5827.1 | 11816.3 |
| 11/24/2009 18:41 | 79 | 5933.3 | 5827.1 | 11760.3 |
| 11/24/2009 18:41 | 80 | 5989.2 | 5827.1 | 11816.3 |
| 11/24/2009 18:42 | 81 | 5989.2 | 5827.1 | 11816.3 |
| 11/24/2009 18:42 | 82 | 5989.2 | 5827.1 | 11816.3 |
| 11/24/2009 18:43 | 83 | 5989.2 | 5827.1 | 11816.3 |
| 11/24/2009 18:43 | 84 | 5989.2 | 5827.1 | 11816.3 |
| 11/24/2009 18:44 | 85 | 5933.3 | 5827.1 | 11760.3 |
| 11/24/2009 18:44 | 86 | 5933.3 | 5827.1 | 11760.3 |
| 11/24/2009 18:45 | 87 | 8004.8 | 7900.2 | 15905.0 |
| 11/24/2009 18:45 | 88 | 7836.9 | 7732.1 | 15568.9 |
| 11/24/2009 18:46 | 89 | 7724.9 | 7620.0 | 15344.9 |

| TIMESTAMP | RECORD # | LoadA lbs | LoadB lbs | TotalLoad lbs |
|---|---|---|---|---|
| 11/24/2009 18:46 | 90 | 7724.9 | 7620.0 | 15344.9 |
| 11/24/2009 18:47 | 91 | 7668.9 | 7620.0 | 15288.9 |
| 11/24/2009 18:47 | 92 | 7668.9 | 7564.0 | 15232.9 |
| 11/24/2009 18:48 | 93 | 7668.9 | 7564.0 | 15232.9 |
| 11/24/2009 18:48 | 94 | 7612.9 | 7564.0 | 15176.9 |
| 11/24/2009 18:49 | 95 | 7556.9 | 7507.9 | 15064.9 |
| 11/24/2009 18:49 | 96 | 7556.9 | 7507.9 | 15064.9 |
| 11/24/2009 18:50 | 97 | 7612.9 | 7507.9 | 15120.9 |
| 11/24/2009 18:50 | 98 | 7556.9 | 7507.9 | 15064.9 |
| 11/24/2009 18:51 | 99 | 7556.9 | 7507.9 | 15064.9 |
| 11/24/2009 18:51 | 100 | 7556.9 | 7507.9 | 15064.9 |
| 11/24/2009 18:52 | 101 | 7556.9 | 7507.9 | 15064.9 |
| 11/24/2009 18:52 | 102 | 7556.9 | 7507.9 | 15064.9 |
| 11/24/2009 18:53 | 103 | 7556.9 | 7507.9 | 15064.9 |
| 11/24/2009 18:53 | 104 | 7556.9 | 7451.9 | 15008.8 |
| 11/24/2009 18:54 | 105 | 7556.9 | 7451.9 | 15008.8 |
| 11/24/2009 18:54 | 106 | 7556.9 | 7451.9 | 15008.8 |
| 11/24/2009 18:55 | 107 | 8396.8 | 8292.4 | 16689.1 |
| 11/24/2009 18:55 | 108 | 8788.7 | 8628.5 | 17417.2 |
| 11/24/2009 18:56 | 109 | 8732.7 | 8628.5 | 17361.2 |
| 11/24/2009 18:56 | 110 | 8620.7 | 8516.5 | 17137.2 |
| 11/24/2009 18:57 | 111 | 8620.7 | 8516.5 | 17137.2 |
| 11/24/2009 18:57 | 112 | 8620.7 | 8516.5 | 17137.2 |
| 11/24/2009 18:58 | 113 | 8620.7 | 8460.4 | 17081.2 |
| 11/24/2009 18:58 | 114 | 8620.7 | 8460.4 | 17081.2 |
| 11/24/2009 18:59 | 115 | 8620.7 | 8460.4 | 17081.2 |
| 11/24/2009 18:59 | 116 | 8564.7 | 8404.4 | 16969.1 |
| 11/24/2009 19:00 | 117 | 8564.7 | 8404.4 | 16969.1 |
| 11/24/2009 19:00 | 118 | 8564.7 | 8404.4 | 16969.1 |
| 11/24/2009 19:01 | 119 | 8564.7 | 8404.4 | 16969.1 |
| 11/24/2009 19:01 | 120 | 8564.7 | 8404.4 | 16969.1 |
| 11/24/2009 19:02 | 121 | 8564.7 | 8404.4 | 16969.1 |
| 11/24/2009 19:02 | 122 | 8564.7 | 8404.4 | 16969.1 |
| 11/24/2009 19:03 | 123 | 8564.7 | 8404.4 | 16969.1 |
| 11/24/2009 19:03 | 124 | 8564.7 | 8404.4 | 16969.1 |
| 11/24/2009 19:04 | 125 | 8564.7 | 8404.4 | 16969.1 |
| 11/24/2009 19:04 | 126 | 8508.7 | 8404.4 | 16913.1 |
| 11/24/2009 19:05 | 127 | 8508.7 | 8404.4 | 16913.1 |
| 11/24/2009 19:05 | 128 | 9964.4 | 9861.2 | 19825.6 |
| 11/24/2009 19:06 | 129 | 9852.5 | 9749.1 | 19601.6 |
| 11/24/2009 19:06 | 130 | 9796.5 | 9637.1 | 19433.5 |
| 11/24/2009 19:07 | 131 | 9796.5 | 9637.1 | 19433.5 |
| 11/24/2009 19:07 | 132 | 9796.5 | 9637.1 | 19433.5 |
| 11/24/2009 19:08 | 133 | 9684.5 | 9581.0 | 19265.5 |
| 11/24/2009 19:08 | 134 | 9684.5 | 9581.0 | 19265.5 |

| TIMESTAMP | RECORD # | LoadA lbs | LoadB lbs | TotalLoad lbs |
|---|---|---|---|---|
| 11/24/2009 19:09 | 135 | 9684.5 | 9525.0 | 19209.5 |
| 11/24/2009 19:09 | 136 | 9684.5 | 9525.0 | 19209.5 |
| 11/24/2009 19:10 | 137 | 9684.5 | 9581.0 | 19265.5 |
| 11/24/2009 19:10 | 138 | 9684.5 | 9581.0 | 19265.5 |
| 11/24/2009 19:11 | 139 | 9684.5 | 9525.0 | 19209.5 |
| 11/24/2009 19:11 | 140 | 9684.5 | 9469.0 | 19153.5 |
| 11/24/2009 19:12 | 141 | 9628.5 | 9469.0 | 19097.5 |
| 11/24/2009 19:12 | 142 | 9628.5 | 9469.0 | 19097.5 |
| 11/24/2009 19:13 | 143 | 9628.5 | 9469.0 | 19097.5 |
| 11/24/2009 19:13 | 144 | 9628.5 | 9469.0 | 19097.5 |
| 11/24/2009 19:14 | 145 | 9628.5 | 9469.0 | 19097.5 |
| 11/24/2009 19:14 | 146 | 9628.5 | 9525.0 | 19153.5 |
| 11/24/2009 19:15 | 147 | 9572.5 | 9412.9 | 18985.5 |
| 11/24/2009 19:15 | 148 | 11476.1 | 11374.0 | 22850.1 |
| 11/24/2009 19:16 | 149 | 11196.2 | 11093.8 | 22290.0 |
| 11/24/2009 19:16 | 150 | 11084.2 | 10981.8 | 22066.0 |
| 11/24/2009 19:17 | 151 | 11028.2 | 10981.8 | 22010.0 |
| 11/24/2009 19:17 | 152 | 11028.2 | 10869.7 | 21897.9 |
| 11/24/2009 19:18 | 153 | 10972.2 | 10869.7 | 21841.9 |
| 11/24/2009 19:18 | 154 | 10972.2 | 10869.7 | 21841.9 |
| 11/24/2009 19:19 | 155 | 10972.2 | 10813.7 | 21785.9 |
| 11/24/2009 19:19 | 156 | 10916.2 | 10869.7 | 21785.9 |
| 11/24/2009 19:20 | 157 | 10860.3 | 10813.7 | 21673.9 |
| 11/24/2009 19:20 | 158 | 10860.3 | 10757.6 | 21617.9 |
| 11/24/2009 19:21 | 159 | 10916.2 | 10813.7 | 21729.9 |
| 11/24/2009 19:21 | 160 | 10860.3 | 10757.6 | 21617.9 |
| 11/24/2009 19:22 | 161 | 10860.3 | 10757.6 | 21617.9 |
| 11/24/2009 19:22 | 162 | 10860.3 | 10757.6 | 21617.9 |
| 11/24/2009 19:23 | 163 | 10860.3 | 10757.6 | 21617.9 |
| 11/24/2009 19:23 | 164 | 10804.3 | 10701.6 | 21505.9 |
| 11/24/2009 19:24 | 165 | 10804.3 | 10701.6 | 21505.9 |
| 11/24/2009 19:24 | 166 | 10804.3 | 10701.6 | 21505.9 |
| 11/24/2009 19:25 | 167 | 10804.3 | 10701.6 | 21505.9 |
| 11/24/2009 19:25 | 168 | 10804.3 | 10701.6 | 21505.9 |
| 11/24/2009 19:26 | 169 | 12483.9 | 12382.5 | 24866.4 |
| 11/24/2009 19:26 | 170 | 12316.0 | 12158.4 | 24474.3 |
| 11/24/2009 19:27 | 171 | 12204.0 | 12158.4 | 24362.4 |
| 11/24/2009 19:27 | 172 | 12204.0 | 12102.3 | 24306.3 |
| 11/24/2009 19:28 | 173 | 12204.0 | 12046.3 | 24250.3 |
| 11/24/2009 19:28 | 174 | 12092.0 | 11990.3 | 24082.3 |
| 11/24/2009 19:29 | 175 | 12092.0 | 11990.3 | 24082.3 |
| 11/24/2009 19:29 | 176 | 12092.0 | 11990.3 | 24082.3 |
| 11/24/2009 19:30 | 177 | 12092.0 | 11990.3 | 24082.3 |
| 11/24/2009 19:30 | 178 | 12092.0 | 11990.3 | 24082.3 |
| 11/24/2009 19:31 | 179 | 12036.0 | 11990.3 | 24026.3 |

| TIMESTAMP | RECORD # | LoadA lbs | LoadB lbs | TotalLoad lbs |
|---|---|---|---|---|
| 11/24/2009 19:31 | 180 | 12036.0 | 11934.3 | 23970.3 |
| 11/24/2009 19:32 | 181 | 11980.0 | 11934.3 | 23914.3 |
| 11/24/2009 19:32 | 182 | 11980.0 | 11878.2 | 23858.3 |
| 11/24/2009 19:33 | 183 | 11980.0 | 11878.2 | 23858.3 |
| 11/24/2009 19:33 | 184 | 11980.0 | 11878.2 | 23858.3 |
| 11/24/2009 19:34 | 185 | 11980.0 | 11878.2 | 23858.3 |
| 11/24/2009 19:34 | 186 | 11980.0 | 11878.2 | 23858.3 |
| 11/24/2009 19:35 | 187 | 11980.0 | 11878.2 | 23858.3 |
| 11/24/2009 19:35 | 188 | 11980.0 | 11878.2 | 23858.3 |
| 11/24/2009 19:36 | 189 | 11980.0 | 11934.3 | 23914.3 |
| 11/24/2009 19:36 | 190 | 15059.4 | 14903.8 | 29963.2 |
| 11/24/2009 19:37 | 191 | 14499.5 | 14343.5 | 28843.0 |
| 11/24/2009 19:37 | 192 | 14387.5 | 14175.4 | 28563.0 |
| 11/24/2009 19:38 | 193 | 14275.6 | 14119.4 | 28395.0 |
| 11/24/2009 19:38 | 194 | 14275.6 | 14063.4 | 28338.9 |
| 11/24/2009 19:39 | 195 | 14219.6 | 14063.4 | 28283.0 |
| 11/24/2009 19:39 | 196 | 14163.6 | 14063.4 | 28227.0 |
| 11/24/2009 19:40 | 197 | 14163.6 | 14007.3 | 28170.9 |
| 11/24/2009 19:40 | 198 | 14163.6 | 13951.3 | 28114.9 |
| 11/24/2009 19:41 | 199 | 14107.6 | 13951.3 | 28058.9 |
| 11/24/2009 19:41 | 200 | 14107.6 | 13951.3 | 28058.9 |
| 11/24/2009 19:42 | 201 | 14107.6 | 13895.3 | 28002.9 |
| 11/24/2009 19:42 | 202 | 14107.6 | 13895.3 | 28002.9 |
| 11/24/2009 19:43 | 203 | 14107.6 | 13895.3 | 28002.9 |
| 11/24/2009 19:43 | 204 | 14107.6 | 13895.3 | 28002.9 |
| 11/24/2009 19:44 | 205 | 14107.6 | 13895.3 | 28002.9 |
| 11/24/2009 19:44 | 206 | 14107.6 | 13895.3 | 28002.9 |
| 11/24/2009 19:45 | 207 | 14051.6 | 13895.3 | 27946.9 |
| 11/24/2009 19:45 | 208 | 13995.6 | 13895.3 | 27890.9 |
| 11/24/2009 19:46 | 209 | 13995.6 | 13895.3 | 27890.9 |
| 11/24/2009 19:46 | 210 | 15731.3 | 15576.2 | 31307.4 |
| 11/24/2009 19:47 | 211 | 17466.9 | 17313.1 | 34780.0 |
| 11/24/2009 19:47 | 212 | 17243.0 | 17089.0 | 34331.9 |
| 11/24/2009 19:48 | 213 | 17131.0 | 16976.9 | 34107.9 |
| 11/24/2009 19:48 | 214 | 17075.0 | 16920.9 | 33995.9 |
| 11/24/2009 19:49 | 215 | 17019.0 | 16920.9 | 33939.9 |
| 11/24/2009 19:49 | 216 | 17019.0 | 16808.8 | 33827.8 |
| 11/24/2009 19:50 | 217 | 16907.0 | 16808.8 | 33715.8 |
| 11/24/2009 19:50 | 218 | 16907.0 | 16808.8 | 33715.8 |
| 11/24/2009 19:51 | 219 | 16907.0 | 16752.8 | 33659.8 |
| 11/24/2009 19:51 | 220 | 16850.8 | 16752.6 | 33603.4 |
| 11/24/2009 19:52 | 221 | 16850.8 | 16696.5 | 33547.3 |
| 11/24/2009 19:52 | 222 | 16850.9 | 16696.6 | 33547.4 |
| 11/24/2009 19:53 | 223 | 16794.9 | 16640.5 | 33435.4 |
| 11/24/2009 19:53 | 224 | 16794.9 | 16640.6 | 33435.5 |

| TIMESTAMP | RECORD # | LoadA lbs | LoadB lbs | TotalLoad lbs |
|---|---|---|---|---|
| 11/24/2009 19:54 | 225 | 16794.9 | 16640.6 | 33435.5 |
| 11/24/2009 19:54 | 226 | 16794.9 | 16640.6 | 33435.5 |
| 11/24/2009 19:55 | 227 | 16738.9 | 16640.6 | 33379.6 |
| 11/24/2009 19:55 | 228 | 16738.9 | 16640.6 | 33379.6 |
| 11/24/2009 19:56 | 229 | 16739.0 | 16640.6 | 33379.6 |
| 11/24/2009 19:56 | 230 | 16683.0 | 16584.6 | 33267.6 |
| 11/24/2009 19:57 | 231 | 19818.4 | 19554.2 | 39372.5 |
| 11/24/2009 19:57 | 232 | 20154.3 | 20002.4 | 40156.7 |
| 11/24/2009 19:58 | 233 | 19874.4 | 19778.3 | 39652.7 |
| 11/24/2009 19:58 | 234 | 19762.4 | 19666.2 | 39428.6 |
| 11/24/2009 19:59 | 235 | 19706.4 | 19554.2 | 39260.6 |
| 11/24/2009 19:59 | 236 | 19650.4 | 19498.2 | 39148.6 |
| 11/24/2009 20:00 | 237 | 19594.4 | 19442.1 | 39036.6 |
| 11/24/2009 20:00 | 238 | 19538.5 | 19386.1 | 38924.6 |
| 11/24/2009 20:01 | 239 | 19482.5 | 19386.1 | 38868.6 |
| 11/24/2009 20:01 | 240 | 19482.5 | 19330.1 | 38812.6 |
| 11/24/2009 20:02 | 241 | 19426.5 | 19330.1 | 38756.6 |
| 11/24/2009 20:02 | 242 | 19426.5 | 19274.1 | 38700.6 |
| 11/24/2009 20:03 | 243 | 19370.5 | 19274.1 | 38644.6 |
| 11/24/2009 20:03 | 244 | 19370.5 | 19218.1 | 38588.6 |
| 11/24/2009 20:04 | 245 | 19370.5 | 19218.1 | 38588.6 |
| 11/24/2009 20:04 | 246 | 19371.2 | 19162.7 | 38533.8 |
| 11/24/2009 20:05 | 247 | 19315.2 | 19162.7 | 38477.8 |
| 11/24/2009 20:05 | 248 | 19315.1 | 19162.5 | 38477.6 |
| 11/24/2009 20:06 | 249 | 19315.1 | 19162.5 | 38477.6 |
| 11/24/2009 20:06 | 250 | 19315.3 | 19162.8 | 38478.2 |
| 11/24/2009 20:07 | 251 | 19315.3 | 19106.8 | 38422.1 |
| 11/24/2009 20:07 | 252 | 22842.6 | 22636.6 | 45479.2 |
| 11/24/2009 20:08 | 253 | 22450.7 | 22244.4 | 44695.0 |
| 11/24/2009 20:08 | 254 | 22282.5 | 22076.1 | 44358.7 |
| 11/24/2009 20:09 | 255 | 22226.5 | 21964.1 | 44190.6 |
| 11/24/2009 20:09 | 256 | 22170.4 | 21964.0 | 44134.4 |
| 11/24/2009 20:10 | 257 | 22114.4 | 21851.9 | 43966.4 |
| 11/24/2009 20:10 | 258 | 22058.5 | 21851.9 | 43910.4 |
| 11/24/2009 20:11 | 259 | 22002.4 | 21851.8 | 43854.2 |
| 11/24/2009 20:11 | 260 | 21946.4 | 21739.8 | 43686.1 |
| 11/24/2009 20:12 | 261 | 21946.3 | 21739.7 | 43686.0 |
| 11/24/2009 20:12 | 262 | 21890.3 | 21739.7 | 43630.0 |
| 11/24/2009 20:13 | 263 | 21890.3 | 21683.6 | 43573.9 |
| 11/24/2009 20:13 | 264 | 21890.3 | 21683.6 | 43573.9 |
| 11/24/2009 20:14 | 265 | 21834.2 | 21627.5 | 43461.7 |
| 11/24/2009 20:14 | 266 | 21834.2 | 21627.5 | 43461.7 |
| 11/24/2009 20:15 | 267 | 21834.2 | 21627.5 | 43461.7 |
| 11/24/2009 20:15 | 268 | 21778.2 | 21571.5 | 43349.6 |
| 11/24/2009 20:16 | 269 | 21778.2 | 21571.4 | 43349.6 |

| TIMESTAMP | RECORD # | LoadA lbs | LoadB lbs | TotalLoad lbs |
|---|---|---|---|---|
| 11/24/2009 20:16 | 270 | 21778.2 | 21571.4 | 43349.6 |
| 11/24/2009 20:17 | 271 | 21778.1 | 21571.4 | 43349.5 |
| 11/24/2009 20:17 | 272 | 24857.5 | 24653.0 | 49510.6 |
| 11/24/2009 20:18 | 273 | 24801.5 | 24541.0 | 49342.5 |
| 11/24/2009 20:18 | 274 | 24577.6 | 24372.9 | 48950.4 |
| 11/24/2009 20:19 | 275 | 24465.6 | 24260.8 | 48726.4 |
| 11/24/2009 20:19 | 276 | 24353.6 | 24148.7 | 48502.3 |
| 11/24/2009 20:20 | 277 | 24241.6 | 24092.7 | 48334.3 |
| 11/24/2009 20:20 | 278 | 24185.6 | 24036.6 | 48222.3 |
| 11/24/2009 20:21 | 279 | 24185.6 | 23980.6 | 48166.2 |
| 11/24/2009 20:21 | 280 | 24130.4 | 23925.4 | 48055.8 |
| 11/24/2009 20:22 | 281 | 24074.4 | 23925.4 | 47999.8 |
| 11/24/2009 20:22 | 282 | 24074.3 | 23869.2 | 47943.5 |
| 11/24/2009 20:23 | 283 | 24074.3 | 23869.2 | 47943.5 |
| 11/24/2009 20:23 | 284 | 24018.1 | 23869.0 | 47887.2 |
| 11/24/2009 20:24 | 285 | 23962.2 | 23813.0 | 47775.2 |
| 11/24/2009 20:24 | 286 | 23962.5 | 23757.4 | 47719.9 |
| 11/24/2009 20:25 | 287 | 23962.5 | 23757.4 | 47719.9 |
| 11/24/2009 20:25 | 288 | 23962.3 | 23757.2 | 47719.5 |
| 11/24/2009 20:26 | 289 | 23962.3 | 23757.2 | 47719.5 |
| 11/24/2009 20:26 | 290 | 23962.3 | 23757.2 | 47719.5 |
| 11/24/2009 20:27 | 291 | 23850.2 | 23701.0 | 47551.2 |
| 11/24/2009 20:27 | 292 | 23850.2 | 23645.0 | 47495.2 |
| 11/24/2009 20:28 | 293 | 13212.5 | 13055.5 | 26268.0 |
| 11/24/2009 20:28 | 294 | 13212.5 | 13111.6 | 26324.1 |
| 11/24/2009 20:29 | 295 | 13212.2 | 13111.3 | 26323.4 |
| 11/24/2009 20:29 | 296 | 13212.2 | 13055.2 | 26267.4 |
| 11/24/2009 20:30 | 297 | 13212.1 | 13055.1 | 26267.2 |
| 11/24/2009 20:30 | 298 | 13212.1 | 13055.1 | 26267.2 |
| 11/24/2009 20:31 | 299 | 13211.8 | 13054.9 | 26266.7 |
| 11/24/2009 20:31 | 300 | 13211.8 | 13054.9 | 26266.7 |
| 11/24/2009 20:32 | 301 | 7501.0 | 7395.9 | 14896.9 |
| 11/24/2009 20:32 | 302 | 12316.0 | 12046.4 | 24362.4 |
| 11/24/2009 20:33 | 303 | 110.4 | 56.0 | 166.5 |
| 11/24/2009 20:33 | 304 | 110.4 | 0.0 | 110.4 |
| 11/24/2009 20:34 | 305 | 110.4 | 0.0 | 110.4 |
| 11/24/2009 20:34 | 306 | 110.4 | 0.0 | 110.4 |
| 11/24/2009 20:35 | 307 | 85997.3 | 111218.5 | 197215.8 |

# APPENDIX B
# LATERAL LOAD TEST E

TABLE B.1 Inclinometer measurements for pile 3

ASHE MICROPILE LATERAL LOAD TESTING

MICROPILE NO: 3

DATE: 11/16/09

TIME:

| | Baseline | | |
|---|---|---|---|
| Depth (ft) | A+ | A- | Diff. (A) |
| 14 | -31 | -71 | 40 |
| 12 | 28 | -67 | 95 |
| 10 | 25 | -66 | 91 |
| 8 | 8 | -47 | 55 |
| 6 | 4 | -50 | 54 |
| 4 | 30 | -62 | 92 |
| 2 | -15 | -31 | 16 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 10 kips | | | | | | |
| 14 | 69 | -154 | 223 | 183 | 0.1098 | 0.1098 |
| 12 | 83 | -123 | 206 | 111 | 0.0666 | 0.1764 |
| 10 | 106 | -143 | 249 | 158 | 0.0948 | 0.2712 |
| 8 | 147 | -185 | 332 | 277 | 0.1662 | 0.4374 |
| 6 | 154 | -195 | 349 | 295 | 0.177 | 0.6144 |
| 4 | 181 | -214 | 395 | 303 | 0.1818 | 0.7962 |
| 2 | 193 | -232 | 425 | 409 | 0.2454 | 1.0416 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 20 kips | | | | | | |
| 14 | 68 | -153 | 221 | 181 | -0.1086 | -0.1086 |
| 12 | 85 | -125 | 210 | 115 | 0.069 | -0.0396 |
| 10 | 129 | -168 | 297 | 206 | 0.1236 | 0.084 |
| 8 | 203 | -241 | 444 | 389 | 0.2334 | 0.3174 |
| 6 | 230 | -276 | 506 | 452 | 0.2712 | 0.5886 |
| 4 | 267 | -299 | 566 | 474 | 0.2844 | 0.873 |
| 2 | 268 | -312 | 580 | 564 | 0.3384 | 1.2114 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 30 kips | | | | | | |
| 14 | 68 | -152 | 220 | 180 | 0.108 | 0.108 |
| 12 | 89 | -128 | 217 | 122 | 0.0732 | 0.1812 |
| 10 | 162 | -200 | 362 | 271 | 0.1626 | 0.3438 |
| 8 | 272 | -311 | 583 | 528 | 0.3168 | 0.6606 |
| 6 | 331 | -373 | 704 | 650 | 0.39 | 1.0506 |
| 4 | 371 | -403 | 774 | 682 | 0.4092 | 1.4598 |
| 2 | 385 | -425 | 810 | 794 | 0.4764 | 1.9362 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 40 Kips | | | | | | |
| 14 | 67 | -152 | 219 | 179 | 0.1074 | 0.1074 |
| 12 | 93 | -133 | 226 | 131 | 0.0786 | 0.186 |
| 10 | 197 | -240 | 437 | 346 | 0.2076 | 0.3936 |
| 8 | 346 | -383 | 729 | 674 | 0.4044 | 0.798 |
| 6 | 432 | -473 | 905 | 851 | 0.5106 | 1.3086 |
| 4 | 476 | -507 | 983 | 891 | 0.5346 | 1.8432 |
| 2 | 489 | -522 | 1011 | 995 | 0.597 | 2.4402 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| Final | | | | | | |
| 14 | 64 | -151 | 215 | 175 | 0.105 | 0.105 |
| 12 | 91 | -132 | 223 | 128 | 0.0768 | 0.1818 |
| 10 | 157 | -195 | 352 | 261 | 0.1566 | 0.3384 |
| 8 | 241 | -277 | 518 | 463 | 0.2778 | 0.6162 |
| 6 | 279 | -321 | 600 | 546 | 0.3276 | 0.9438 |
| 4 | 310 | -345 | 655 | 563 | 0.3378 | 1.2816 |
| 2 | 314 | -357 | 671 | 655 | 0.393 | 1.6746 |

TABLE B.2 Inclinometer measurements for pile 15

PROJECT:ASHE MICROPILE LATERAL LOAD TESTING
MICROPILE NO: 15
DATE: DATE :11/24/09
TIME:

| | Baseline | | |
|---|---|---|---|
| Depth (ft) | A+ | A- | Diff. (A) |
| 14 | -14 | -31 | 17 |
| 12 | -12 | 28 | -40 |
| 10 | -10 | 25 | -35 |
| 8 | -8 | 8 | -16 |
| 6 | -6 | 4 | -10 |
| 4 | -4 | 30 | -34 |
| 2 | -2 | -15 | 13 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 10 kips | | | | | | |
| 14 | -32 | -72 | 40 | 23 | 0.0138 | 0.0138 |
| 12 | 29 | -68 | 97 | 137 | 0.0822 | 0.096 |
| 10 | 31 | -74 | 105 | 140 | 0.084 | 0.18 |
| 8 | 55 | -90 | 145 | 161 | 0.0966 | 0.2766 |
| 6 | 77 | -118 | 195 | 205 | 0.123 | 0.3996 |
| 4 | 100 | -135 | 235 | 269 | 0.1614 | 0.561 |
| 2 | 79 | -121 | 200 | 187 | 0.1122 | 0.6732 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 20 kips | | | | | | |
| 14 | -31 | -73 | 42 | 25 | 0.015 | 0.015 |
| 12 | 31 | -68 | 99 | 139 | 0.0834 | 0.0984 |
| 10 | 39 | -79 | 118 | 153 | 0.0918 | 0.1902 |
| 8 | 95 | -131 | 226 | 242 | 0.1452 | 0.3354 |
| 6 | 143 | -180 | 323 | 333 | 0.1998 | 0.5352 |
| 4 | 175 | -205 | 380 | 414 | 0.2484 | 0.7836 |
| 2 | 145 | -198 | 343 | 330 | 0.198 | 0.9816 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 30 kips | | | | | | |
| 14 | -33 | -73 | 40 | 23 | 0.0138 | 0.0138 |
| 12 | 30 | -69 | 99 | 139 | 0.0834 | 0.0972 |
| 10 | 47 | -89 | 136 | 171 | 0.1026 | 0.1998 |
| 8 | 153 | -191 | 344 | 360 | 0.216 | 0.4158 |
| 6 | 228 | -269 | 497 | 507 | 0.3042 | 0.72 |
| 4 | 272 | -304 | 576 | 610 | 0.366 | 1.086 |
| 2 | 251 | -277 | 528 | 515 | 0.309 | 1.395 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 40 kips | | | | | | |
| 14 | -30 | -72 | 42 | 25 | 0.015 | 0.015 |
| 12 | 31 | -70 | 101 | 141 | 0.0846 | 0.0996 |
| 10 | 55 | -99 | 154 | 189 | 0.1134 | 0.213 |
| 8 | 223 | -260 | 483 | 499 | 0.2994 | 0.5124 |
| 6 | 336 | -375 | 711 | 721 | 0.4326 | 0.945 |
| 4 | 387 | -418 | 805 | 839 | 0.5034 | 1.4484 |
| 2 | 357 | -395 | 752 | 739 | 0.4434 | 1.8918 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| Final | | | | | | |
| 14 | -31 | -70 | 39 | 22 | -0.0132 | -0.0132 |
| 12 | 30 | -68 | 98 | 138 | 0.0828 | 0.0696 |
| 10 | 25 | -65 | 90 | 125 | 0.075 | 0.1446 |
| 8 | 976 | -1013 | 1989 | 2005 | 1.203 | 1.3476 |
| 6 | 1220 | -1258 | 2478 | 2488 | 1.4928 | 2.8404 |
| 4 | 1253 | -1284 | 2537 | 2571 | 1.5426 | 4.383 |
| 2 | 1215 | -1261 | 2476 | 2463 | 1.4778 | 5.8608 |

TABLE A.3 Load measurements for load test E

| TIMESTAMP | RECORD # | LoadA lbs | LoadB lbs | Total lbs |
|---|---|---|---|---|
| 11/24/2009 10:20 | 0 | 614.3 | 560.3 | 1174.6 |
| 11/24/2009 10:21 | 1 | 614.3 | 560.3 | 1174.6 |
| 11/24/2009 10:21 | 2 | 614.3 | 560.3 | 1174.6 |
| 11/24/2009 10:22 | 3 | 614.3 | 560.3 | 1174.6 |
| 11/24/2009 10:22 | 4 | 2406.0 | 2297.2 | 4703.2 |
| 11/24/2009 10:23 | 5 | 2518.0 | 2409.3 | 4927.2 |
| 11/24/2009 10:23 | 6 | 2517.9 | 2409.3 | 4927.2 |
| 11/24/2009 10:24 | 7 | 2462.0 | 2409.3 | 4871.2 |
| 11/24/2009 10:24 | 8 | 2517.9 | 2409.3 | 4927.2 |
| 11/24/2009 10:25 | 9 | 2517.9 | 2409.3 | 4927.2 |
| 11/24/2009 10:25 | 10 | 2462.0 | 2409.3 | 4871.2 |
| 11/24/2009 10:26 | 11 | 2462.0 | 2353.2 | 4815.2 |
| 11/24/2009 10:26 | 12 | 2462.0 | 2353.2 | 4815.2 |
| 11/24/2009 10:27 | 13 | 2462.0 | 2353.2 | 4815.2 |
| 11/24/2009 10:27 | 14 | 2462.0 | 2409.3 | 4871.2 |
| 11/24/2009 10:28 | 15 | 2462.0 | 2353.2 | 4815.2 |
| 11/24/2009 10:28 | 16 | 2462.0 | 2353.2 | 4815.2 |
| 11/24/2009 10:29 | 17 | 2461.9 | 2353.2 | 4815.2 |
| 11/24/2009 10:29 | 18 | 2461.9 | 2353.2 | 4815.2 |
| 11/24/2009 10:30 | 19 | 2461.9 | 2353.2 | 4815.2 |
| 11/24/2009 10:30 | 20 | 2461.9 | 2353.2 | 4815.2 |
| 11/24/2009 10:31 | 21 | 2461.9 | 2353.2 | 4815.2 |
| 11/24/2009 10:31 | 22 | 2461.9 | 2353.2 | 4815.2 |
| 11/24/2009 10:32 | 23 | 2461.9 | 2353.2 | 4815.2 |
| 11/24/2009 10:32 | 24 | 2406.0 | 2353.2 | 4759.2 |
| 11/24/2009 10:33 | 25 | 5149.4 | 4930.6 | 10080.0 |
| 11/24/2009 10:33 | 26 | 5037.4 | 4874.6 | 9912.0 |
| 11/24/2009 10:34 | 27 | 5037.4 | 4818.5 | 9856.0 |
| 11/24/2009 10:34 | 28 | 5037.4 | 4818.5 | 9856.0 |
| 11/24/2009 10:35 | 29 | 4981.4 | 4818.5 | 9800.0 |
| 11/24/2009 10:35 | 30 | 4981.4 | 4818.5 | 9800.0 |
| 11/24/2009 10:36 | 31 | 4981.4 | 4818.5 | 9800.0 |
| 11/24/2009 10:36 | 32 | 4981.4 | 4818.5 | 9800.0 |
| 11/24/2009 10:37 | 33 | 4981.4 | 4818.5 | 9800.0 |
| 11/24/2009 10:37 | 34 | 4981.4 | 4818.5 | 9800.0 |
| 11/24/2009 10:38 | 35 | 4981.4 | 4818.5 | 9800.0 |
| 11/24/2009 10:38 | 36 | 4981.4 | 4818.5 | 9800.0 |
| 11/24/2009 10:39 | 37 | 4981.4 | 4818.5 | 9800.0 |
| 11/24/2009 10:39 | 38 | 4981.4 | 4818.5 | 9800.0 |
| 11/24/2009 10:40 | 39 | 4981.4 | 4818.5 | 9800.0 |
| 11/24/2009 10:40 | 40 | 4925.5 | 4818.5 | 9744.0 |
| 11/24/2009 10:41 | 41 | 4981.4 | 4762.5 | 9744.0 |
| 11/24/2009 10:41 | 42 | 4981.4 | 4762.5 | 9744.0 |
| 11/24/2009 10:42 | 43 | 4925.5 | 4762.5 | 9688.0 |
| 11/24/2009 10:42 | 44 | 4925.5 | 4762.5 | 9688.0 |

| TIMESTAMP | RECORD # | LoadA lbs | LoadB lbs | Total lbs |
|---|---|---|---|---|
| 11/24/2009 10:43 | 45 | 4925.5 | 4818.5 | 9744.0 |
| 11/24/2009 10:43 | 46 | 4925.5 | 4818.5 | 9744.0 |
| 11/24/2009 10:44 | 47 | 4981.4 | 4818.5 | 9800.0 |
| 11/24/2009 10:44 | 48 | 4981.4 | 4818.5 | 9800.0 |
| 11/24/2009 10:45 | 49 | 4981.4 | 4818.5 | 9800.0 |
| 11/24/2009 10:45 | 50 | 4981.4 | 4818.5 | 9800.0 |
| 11/24/2009 10:46 | 51 | 4981.4 | 4818.5 | 9800.0 |
| 11/24/2009 10:46 | 52 | 4925.5 | 4818.5 | 9744.0 |
| 11/24/2009 10:47 | 53 | 7724.9 | 7451.9 | 15176.8 |
| 11/24/2009 10:47 | 54 | 7612.9 | 7339.9 | 14952.8 |
| 11/24/2009 10:48 | 55 | 7612.9 | 7339.9 | 14952.8 |
| 11/24/2009 10:48 | 56 | 7500.9 | 7283.8 | 14784.8 |
| 11/24/2009 10:49 | 57 | 7501.0 | 7283.8 | 14784.8 |
| 11/24/2009 10:49 | 58 | 7501.0 | 7283.8 | 14784.8 |
| 11/24/2009 10:50 | 59 | 7501.0 | 7283.8 | 14784.8 |
| 11/24/2009 10:50 | 60 | 7501.0 | 7283.8 | 14784.8 |
| 11/24/2009 10:51 | 61 | 7501.0 | 7283.8 | 14784.8 |
| 11/24/2009 10:51 | 62 | 7445.0 | 7283.8 | 14728.8 |
| 11/24/2009 10:52 | 63 | 7501.0 | 7227.8 | 14728.8 |
| 11/24/2009 10:52 | 64 | 7501.0 | 7227.8 | 14728.8 |
| 11/24/2009 10:53 | 65 | 7501.0 | 7227.8 | 14728.8 |
| 11/24/2009 10:53 | 66 | 7501.0 | 7283.8 | 14784.8 |
| 11/24/2009 10:54 | 67 | 7501.0 | 7283.8 | 14784.8 |
| 11/24/2009 10:54 | 68 | 7501.0 | 7283.8 | 14784.8 |
| 11/24/2009 10:55 | 69 | 7501.0 | 7283.8 | 14784.8 |
| 11/24/2009 10:55 | 70 | 7501.0 | 7227.8 | 14728.8 |
| 11/24/2009 10:56 | 71 | 7501.0 | 7283.8 | 14784.8 |
| 11/24/2009 10:56 | 72 | 7501.0 | 7227.8 | 14728.8 |
| 11/24/2009 10:57 | 73 | 7501.0 | 7227.8 | 14728.8 |
| 11/24/2009 10:57 | 74 | 10244.4 | 9917.2 | 20161.6 |
| 11/24/2009 10:58 | 75 | 10076.4 | 9805.2 | 19881.6 |
| 11/24/2009 10:58 | 76 | 10020.5 | 9805.2 | 19825.6 |
| 11/24/2009 10:59 | 77 | 9964.5 | 9749.1 | 19713.6 |
| 11/24/2009 10:59 | 78 | 9964.5 | 9749.1 | 19713.6 |
| 11/24/2009 11:00 | 79 | 9964.5 | 9693.1 | 19657.6 |
| 11/24/2009 11:00 | 80 | 9964.5 | 9693.1 | 19657.6 |
| 11/24/2009 11:01 | 81 | 9908.5 | 9693.1 | 19601.6 |
| 11/24/2009 11:01 | 82 | 9908.5 | 9693.1 | 19601.6 |
| 11/24/2009 11:02 | 83 | 9908.5 | 9637.1 | 19545.6 |
| 11/24/2009 11:02 | 84 | 9908.5 | 9693.1 | 19601.6 |
| 11/24/2009 11:03 | 85 | 9908.5 | 9693.1 | 19601.6 |
| 11/24/2009 11:03 | 86 | 9908.5 | 9637.1 | 19545.6 |
| 11/24/2009 11:04 | 87 | 9852.1 | 9636.8 | 19488.9 |
| 11/24/2009 11:04 | 88 | 9852.1 | 9636.8 | 19488.9 |
| 11/24/2009 11:05 | 89 | 9851.9 | 9636.5 | 19488.4 |

| TIMESTAMP | RECORD # | LoadA lbs | LoadB lbs | Total lbs |
|---|---|---|---|---|
| 11/24/2009 11:05 | 90 | 9851.9 | 9636.5 | 19488.4 |
| 11/24/2009 11:06 | 91 | 9851.6 | 9636.3 | 19487.9 |
| 11/24/2009 11:06 | 92 | 9851.6 | 9636.3 | 19487.9 |
| 11/24/2009 11:07 | 93 | 9851.5 | 9580.1 | 19431.6 |
| 11/24/2009 11:07 | 94 | 9851.5 | 9580.1 | 19431.6 |
| 11/24/2009 11:08 | 95 | 12594.7 | 12493.4 | 25088.0 |
| 11/24/2009 11:08 | 96 | 12482.5 | 12325.1 | 24807.6 |
| 11/24/2009 11:09 | 97 | 12426.5 | 12269.1 | 24695.6 |
| 11/24/2009 11:09 | 98 | 12370.8 | 12269.4 | 24640.2 |
| 11/24/2009 11:10 | 99 | 12370.8 | 12213.3 | 24584.2 |
| 11/24/2009 11:10 | 100 | 12371.1 | 12213.6 | 24584.6 |
| 11/24/2009 11:11 | 101 | 12315.1 | 12213.6 | 24528.6 |
| 11/24/2009 11:11 | 102 | 12314.8 | 12213.3 | 24528.2 |
| 11/24/2009 11:12 | 103 | 12314.8 | 12213.3 | 24528.2 |
| 11/24/2009 11:12 | 104 | 12315.1 | 12157.5 | 24472.6 |
| 11/24/2009 11:13 | 105 | 12315.1 | 12157.5 | 24472.6 |
| 11/24/2009 11:13 | 106 | 12258.8 | 12157.3 | 24416.1 |
| 11/24/2009 11:14 | 107 | 12258.8 | 12157.3 | 24416.1 |
| 11/24/2009 11:14 | 108 | 12314.6 | 12101.1 | 24415.7 |
| 11/24/2009 11:15 | 109 | 12258.7 | 12157.1 | 24415.8 |
| 11/24/2009 11:15 | 110 | 12258.5 | 12157.0 | 24415.5 |
| 11/24/2009 11:16 | 111 | 12258.5 | 12157.0 | 24415.5 |
| 11/24/2009 11:16 | 112 | 12258.5 | 12100.9 | 24359.4 |
| 11/24/2009 11:17 | 113 | 12258.4 | 12100.8 | 24359.2 |
| 11/24/2009 11:17 | 114 | 12258.4 | 12100.8 | 24359.2 |
| 11/24/2009 11:18 | 115 | 12258.3 | 12100.7 | 24359.0 |
| 11/24/2009 11:18 | 116 | 15225.3 | 15013.9 | 30239.1 |
| 11/24/2009 11:19 | 117 | 15057.2 | 14845.7 | 29902.9 |
| 11/24/2009 11:19 | 118 | 14945.3 | 14789.7 | 29735.0 |
| 11/24/2009 11:20 | 119 | 14945.2 | 14789.6 | 29734.8 |
| 11/24/2009 11:20 | 120 | 14889.2 | 14733.6 | 29622.8 |
| 11/24/2009 11:21 | 121 | 14889.2 | 14733.5 | 29622.7 |
| 11/24/2009 11:21 | 122 | 14889.2 | 14677.5 | 29566.7 |
| 11/24/2009 11:22 | 123 | 14833.1 | 14677.5 | 29510.6 |
| 11/24/2009 11:22 | 124 | 14833.1 | 14677.5 | 29510.6 |
| 11/24/2009 11:23 | 125 | 14833.1 | 14677.4 | 29510.5 |
| 11/24/2009 11:23 | 126 | 14833.1 | 14621.4 | 29454.5 |
| 11/24/2009 11:24 | 127 | 14833.1 | 14621.4 | 29454.5 |
| 11/24/2009 11:24 | 128 | 14777.1 | 14621.4 | 29398.5 |
| 11/24/2009 11:25 | 129 | 14777.1 | 14621.4 | 29398.5 |
| 11/24/2009 11:25 | 130 | 14777.1 | 14621.3 | 29398.4 |
| 11/24/2009 11:26 | 131 | 14777.1 | 14565.3 | 29342.4 |
| 11/24/2009 11:26 | 132 | 14721.1 | 14565.3 | 29286.4 |
| 11/24/2009 11:27 | 133 | 14777.0 | 14621.3 | 29398.4 |
| 11/24/2009 11:27 | 134 | 14721.0 | 14621.3 | 29342.4 |

| TIMESTAMP | RECORD # | LoadA lbs | LoadB lbs | Total lbs |
|---|---|---|---|---|
| 11/24/2009 11:28 | 135 | 14721.0 | 14565.3 | 29286.3 |
| 11/24/2009 11:28 | 136 | 14721.0 | 14565.3 | 29286.3 |
| 11/24/2009 11:29 | 137 | 17464.0 | 17310.3 | 34774.3 |
| 11/24/2009 11:29 | 138 | 17687.9 | 17478.3 | 35166.3 |
| 11/24/2009 11:30 | 139 | 17632.0 | 17422.3 | 35054.3 |
| 11/24/2009 11:30 | 140 | 17575.4 | 17365.7 | 34941.1 |
| 11/24/2009 11:31 | 141 | 17519.4 | 17365.7 | 34885.1 |
| 11/24/2009 11:31 | 142 | 17519.5 | 17365.8 | 34885.3 |
| 11/24/2009 11:32 | 143 | 17519.5 | 17309.8 | 34829.3 |
| 11/24/2009 11:32 | 144 | 17463.5 | 17309.8 | 34773.3 |
| 11/24/2009 11:33 | 145 | 17463.6 | 17253.9 | 34717.5 |
| 11/24/2009 11:33 | 146 | 17463.6 | 17253.9 | 34717.5 |
| 11/24/2009 11:34 | 147 | 17463.7 | 17253.9 | 34717.6 |
| 11/24/2009 11:34 | 148 | 17463.7 | 17197.9 | 34661.6 |
| 11/24/2009 11:35 | 149 | 17407.8 | 17198.0 | 34605.7 |
| 11/24/2009 11:35 | 150 | 17407.8 | 17198.0 | 34605.7 |
| 11/24/2009 11:36 | 151 | 17351.8 | 17198.0 | 34549.8 |
| 11/24/2009 11:36 | 152 | 17407.8 | 17198.0 | 34605.8 |
| 11/24/2009 11:37 | 153 | 17351.9 | 17142.0 | 34493.9 |
| 11/24/2009 11:37 | 154 | 17295.9 | 17142.0 | 34437.9 |
| 11/24/2009 11:38 | 155 | 17295.9 | 17142.0 | 34438.0 |
| 11/24/2009 11:38 | 156 | 17295.9 | 17142.0 | 34438.0 |
| 11/24/2009 11:39 | 157 | 17240.0 | 17142.1 | 34382.0 |
| 11/24/2009 11:39 | 158 | 19815.0 | 19606.9 | 39422.0 |
| 11/24/2009 11:40 | 159 | 20038.9 | 19831.0 | 39869.9 |
| 11/24/2009 11:40 | 160 | 19983.0 | 19775.0 | 39758.0 |
| 11/24/2009 11:41 | 161 | 19983.0 | 19719.0 | 39702.0 |
| 11/24/2009 11:41 | 162 | 19927.0 | 19719.0 | 39646.0 |
| 11/24/2009 11:42 | 163 | 19927.0 | 19719.0 | 39646.0 |
| 11/24/2009 11:42 | 164 | 19926.7 | 19718.8 | 39645.5 |
| 11/24/2009 11:43 | 165 | 19926.7 | 19662.7 | 39589.5 |
| 11/24/2009 11:43 | 166 | 19814.9 | 19662.8 | 39477.7 |
| 11/24/2009 11:44 | 167 | 19870.8 | 19662.8 | 39533.6 |
| 11/24/2009 11:44 | 168 | 19870.9 | 19662.9 | 39533.7 |
| 11/24/2009 11:45 | 169 | 19814.9 | 19662.9 | 39477.8 |
| 11/24/2009 11:45 | 170 | 19815.0 | 19662.9 | 39477.8 |
| 11/24/2009 11:46 | 171 | 19815.0 | 19662.9 | 39477.8 |
| 11/24/2009 11:46 | 172 | 19815.3 | 19663.2 | 39478.5 |
| 11/24/2009 11:47 | 173 | 19815.3 | 19663.2 | 39478.5 |
| 11/24/2009 11:47 | 174 | 19814.6 | 19606.5 | 39421.0 |
| 11/24/2009 11:48 | 175 | 19814.6 | 19606.5 | 39421.0 |
| 11/24/2009 11:48 | 176 | 19814.6 | 19606.5 | 39421.0 |
| 11/24/2009 11:49 | 177 | 19758.0 | 19605.9 | 39364.0 |
| 11/24/2009 11:49 | 178 | 19758.0 | 19605.9 | 39364.0 |
| 11/24/2009 11:50 | 179 | 21604.7 | 21398.0 | 43002.7 |

| TIMESTAMP | RECORD # | LoadA lbs | LoadB lbs | Total lbs |
|---|---|---|---|---|
| 11/24/2009 11:50 | 180 | 11473.3 | 11427.2 | 22900.5 |
| 11/24/2009 11:51 | 181 | 9010.2 | 9018.4 | 18028.6 |
| 11/24/2009 11:51 | 182 | 8674.3 | 8682.3 | 17356.6 |
| 11/24/2009 11:52 | 183 | 8618.5 | 8570.4 | 17189.0 |
| 11/24/2009 11:52 | 184 | 8562.6 | 8570.4 | 17133.0 |
| 11/24/2009 11:53 | 185 | 8562.4 | 8514.2 | 17076.6 |
| 11/24/2009 11:53 | 186 | 8562.4 | 8458.2 | 17020.6 |
| 11/24/2009 11:54 | 187 | 8450.3 | 8458.1 | 16908.4 |
| 11/24/2009 11:54 | 188 | 8450.3 | 8458.1 | 16908.4 |
| 11/24/2009 11:55 | 189 | 8450.5 | 8458.3 | 16908.8 |
| 11/24/2009 11:55 | 190 | 8450.5 | 8458.3 | 16908.8 |
| 11/24/2009 11:56 | 191 | 8394.5 | 8402.3 | 16796.8 |
| 11/24/2009 11:56 | 192 | 8394.4 | 8402.1 | 16796.6 |
| 11/24/2009 11:57 | 193 | 8394.4 | 8402.1 | 16796.6 |
| 11/24/2009 11:57 | 194 | 8394.3 | 8402.0 | 16796.3 |
| 11/24/2009 11:58 | 195 | 8394.3 | 8402.0 | 16796.3 |
| 11/24/2009 11:58 | 196 | 8394.2 | 8345.9 | 16740.1 |
| 11/24/2009 11:59 | 197 | 7442.7 | 7393.7 | 14836.4 |
| 11/24/2009 11:59 | 198 | 54.3 | 56.0 | 110.3 |
| 11/24/2009 12:00 | 199 | 54.3 | 56.0 | 110.3 |
| 11/24/2009 12:00 | 200 | 54.3 | 56.0 | 110.3 |
| 11/24/2009 12:01 | 201 | 54.3 | 56.0 | 110.3 |
| 11/24/2009 12:01 | 202 | 54.3 | 56.0 | 110.3 |
| 11/24/2009 12:02 | 203 | 54.3 | 56.0 | 110.3 |

# APPENDIX C
# LATERAL LOAD TEST F

TABLE C.1 Inclinometer measurements for pile 4

PROJECT:ASHE MICROPILE LATERAL LOAD TESTING

MICROPILE NO: 4

DATE:

TIME:

| | Baseline data | | |
|---|---|---|---|
| Depth (ft) | A+ | A- | Diff. (A) |
| 18 | -309 | 272 | -581 |
| 16 | -289 | 245 | -534 |
| 14 | -254 | 228 | -482 |
| 12 | -274 | 230 | -504 |
| 10 | -307 | 265 | -572 |
| 8 | -333 | 297 | -630 |
| 6 | -391 | 343 | -734 |
| 4 | -421 | 385 | -806 |
| 2 | -483 | 436 | -919 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 10 kips | | | | | | |
| 18 | -310 | 269 | -579 | 2 | 0.0012 | 0.0012 |
| 16 | -288 | 245 | -533 | 1 | 0.0006 | 0.0018 |
| 14 | -254 | 219 | -473 | 9 | 0.0054 | 0.0072 |
| 12 | -270 | 232 | -502 | 2 | 0.0012 | 0.0084 |
| 10 | -306 | 270 | -576 | -4 | -0.0024 | 0.006 |
| 8 | -328 | 298 | -626 | 4 | 0.0024 | 0.0084 |
| 6 | -364 | 316 | -680 | 54 | 0.0324 | 0.0408 |
| 4 | -376 | 353 | -729 | 77 | 0.0462 | 0.087 |
| 2 | -436 | 382 | -818 | 101 | 0.0606 | 0.1476 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 20 kips | | | | | | |
| 18 | -309 | 270 | -579 | 2 | 0.0012 | 0.0012 |
| 16 | -289 | 245 | -534 | 0 | 0 | 0.0012 |
| 14 | -254 | 221 | -475 | 7 | 0.0042 | 0.0054 |
| 12 | -273 | 232 | -505 | -1 | -0.0006 | 0.0048 |
| 10 | -303 | 263 | -566 | 6 | 0.0036 | 0.0084 |
| 8 | -306 | 269 | -575 | 55 | 0.033 | 0.0414 |
| 6 | -311 | 263 | -574 | 160 | 0.096 | 0.1374 |
| 4 | -304 | 268 | -572 | 234 | 0.1404 | 0.2778 |
| 2 | -357 | 313 | -670 | 249 | 0.1494 | 0.4272 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 30 kips | | | | | | |
| 18 | -309 | 269 | -578 | 3 | 0.0018 | 0.0018 |
| 16 | -290 | 246 | -536 | -2 | -0.0012 | 0.0006 |
| 14 | -253 | 223 | -476 | 6 | 0.0036 | 0.0042 |
| 12 | -274 | 231 | -505 | -1 | -0.0006 | 0.0036 |
| 10 | -303 | 260 | -563 | 9 | 0.0054 | 0.009 |
| 8 | -276 | 258 | -534 | 96 | 0.0576 | 0.0666 |
| 6 | -251 | 199 | -450 | 284 | 0.1704 | 0.237 |
| 4 | -224 | 183 | -407 | 399 | 0.2394 | 0.4764 |
| 2 | -268 | 223 | -491 | 428 | 0.2568 | 0.7332 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| Final | | | | | | |
| 18 | -310 | 270 | -580 | 1 | 0.0006 | 0.0006 |
| 16 | -289 | 246 | -535 | -1 | -0.0006 | 0 |
| 14 | -253 | 221 | -474 | 8 | 0.0048 | 0.0048 |
| 12 | -269 | 230 | -499 | 5 | 0.003 | 0.0078 |
| 10 | -290 | 251 | -541 | 31 | 0.0186 | 0.0264 |
| 8 | -268 | 230 | -498 | 132 | 0.0792 | 0.1056 |
| 6 | -256 | 205 | -461 | 273 | 0.1638 | 0.2694 |
| 4 | -249 | 214 | -463 | 343 | 0.2058 | 0.4752 |
| 2 | -302 | 242 | -544 | 375 | 0.225 | 0.7002 |

TABLE C.2 Inclinometer measurements for pile 16

PROJECT:ASHE MICROPILE LATERAL LOAD TESTING

MICROPILE NO: 16

DATE: 11/24/09

TIME:

| | Baseline data | | |
|---|---|---|---|
| Depth (ft) | A+ | A- | Diff. (A) |
| 18 | 246 | -284 | 530 |
| 16 | 252 | -292 | 544 |
| 14 | 286 | -321 | 607 |
| 12 | 269 | -308 | 577 |
| 10 | 269 | -310 | 579 |
| 8 | 280 | -317 | 597 |
| 6 | 269 | -314 | 583 |
| 4 | 290 | -321 | 611 |
| 2 | 355 | -334 | 689 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 10 kips | | | | | | |
| 18 | 242 | -284 | 526 | -4 | -0.0024 | -0.0024 |
| 16 | 252 | -292 | 544 | 0 | 0 | -0.0024 |
| 14 | 290 | -322 | 612 | 5 | 0.003 | 0.0006 |
| 12 | 262 | -307 | 569 | -8 | -0.0048 | -0.0042 |
| 10 | 262 | -309 | 571 | -8 | -0.0048 | -0.009 |
| 8 | 308 | -344 | 652 | 55 | 0.033 | 0.024 |
| 6 | 329 | -375 | 704 | 121 | 0.0726 | 0.0966 |
| 4 | 362 | -393 | 755 | 144 | 0.0864 | 0.183 |
| 2 | 375 | -416 | 791 | 102 | 0.0612 | 0.2442 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 20 kips | | | | | | |
| 18 | 247 | -284 | 531 | 1 | 0.0006 | 0.0006 |
| 16 | 251 | -293 | 544 | 0 | 0 | 0.0006 |
| 14 | 284 | -322 | 606 | -1 | -0.0006 | 0 |
| 12 | 268 | -309 | 577 | 0 | 0 | 0 |
| 10 | 281 | -321 | 602 | 23 | 0.0138 | 0.0138 |
| 8 | 354 | -391 | 745 | 148 | 0.0888 | 0.1026 |
| 6 | 424 | -470 | 894 | 311 | 0.1866 | 0.2892 |
| 4 | 479 | -511 | 990 | 379 | 0.2274 | 0.5166 |
| 2 | 492 | -532 | 1024 | 335 | 0.201 | 0.7176 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 30 kips | | | | | | |
| 18 | 246 | -284 | 530 | 0 | 0 | 0 |
| 16 | 242 | -293 | 535 | -9 | -0.0054 | -0.0054 |
| 14 | 285 | -322 | 607 | 0 | 0 | -0.0054 |
| 12 | 268 | -307 | 575 | -2 | -0.0012 | -0.0066 |
| 10 | 309 | -332 | 641 | 62 | 0.0372 | 0.0306 |
| 8 | 404 | -439 | 843 | 246 | 0.1476 | 0.1782 |
| 6 | 529 | -572 | 1101 | 518 | 0.3108 | 0.489 |
| 4 | 580 | -629 | 1209 | 598 | 0.3588 | 0.8478 |
| 2 | 613 | -652 | 1265 | 576 | 0.3456 | 1.1934 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| Final | | | | | | |
| 18 | 246 | -288 | 534 | 4 | 0.0024 | 0.0024 |
| 16 | 252 | -292 | 544 | 0 | 0 | 0.0024 |
| 14 | 284 | -321 | 605 | -2 | -0.0012 | 0.0012 |
| 12 | 270 | -309 | 579 | 2 | 0.0012 | 0.0024 |
| 10 | 293 | -336 | 629 | 50 | 0.03 | 0.0324 |
| 8 | 411 | -455 | 866 | 269 | 0.1614 | 0.1938 |
| 6 | 1071 | -1115 | 2186 | 1603 | 0.9618 | 1.1556 |
| 4 | 1111 | -1145 | 2256 | 1645 | 0.987 | 2.1426 |
| 2 | 1124 | -1168 | 2292 | 1603 | 0.9618 | 3.1044 |

TABLE C.3 Load measurements for load test F

| TIMESTAMP | RECORD # | LoadA lbs | LoadB lbs | Total lbs |
|---|---|---|---|---|
| 11/24/2009 14:33 | 0 | 334.1573 | 224.0451 | 558.2024 |
| 11/24/2009 14:33 | 1 | 334.1573 | 224.0451 | 558.2024 |
| 11/24/2009 14:34 | 2 | 334.1573 | 224.0451 | 558.2024 |
| 11/24/2009 14:34 | 3 | 446.0869 | 336.0626 | 782.1494 |
| 11/24/2009 14:35 | 4 | 2516.969 | 2520.469 | 5037.438 |
| 11/24/2009 14:35 | 5 | 2516.973 | 2464.463 | 4981.437 |
| 11/24/2009 14:36 | 6 | 2461.003 | 2464.463 | 4925.466 |
| 11/24/2009 14:36 | 7 | 2461.007 | 2408.456 | 4869.463 |
| 11/24/2009 14:37 | 8 | 2461.007 | 2408.456 | 4869.463 |
| 11/24/2009 14:37 | 9 | 2405.04 | 2408.458 | 4813.499 |
| 11/24/2009 14:38 | 10 | 2405.04 | 2408.458 | 4813.499 |
| 11/24/2009 14:38 | 11 | 2405.043 | 2408.46 | 4813.503 |
| 11/24/2009 14:39 | 12 | 2405.043 | 2408.46 | 4813.503 |
| 11/24/2009 14:39 | 13 | 2405.044 | 2352.451 | 4757.496 |
| 11/24/2009 14:40 | 14 | 2349.074 | 2352.451 | 4701.526 |
| 11/24/2009 14:40 | 15 | 2349.076 | 2352.452 | 4701.528 |
| 11/24/2009 14:41 | 16 | 2405.046 | 2352.452 | 4757.498 |
| 11/24/2009 14:41 | 17 | 2405.047 | 2352.453 | 4757.5 |
| 11/24/2009 14:42 | 18 | 2405.047 | 2296.443 | 4701.489 |
| 11/24/2009 14:42 | 19 | 2405.047 | 2296.443 | 4701.489 |
| 11/24/2009 14:43 | 20 | 2349.078 | 2296.443 | 4645.521 |
| 11/24/2009 14:43 | 21 | 2349.078 | 2296.443 | 4645.521 |
| 11/24/2009 14:44 | 22 | 2349.079 | 2296.444 | 4645.523 |
| 11/24/2009 14:44 | 23 | 2349.079 | 2352.455 | 4701.534 |
| 11/24/2009 14:45 | 24 | 2349.079 | 2352.456 | 4701.535 |
| 11/24/2009 14:45 | 25 | 5035.648 | 5040.976 | 10076.63 |
| 11/24/2009 14:46 | 26 | 4923.709 | 4872.945 | 9796.654 |
| 11/24/2009 14:46 | 27 | 4923.709 | 4872.945 | 9796.654 |
| 11/24/2009 14:47 | 28 | 4867.739 | 4816.935 | 9684.674 |
| 11/24/2009 14:47 | 29 | 4867.739 | 4760.923 | 9628.662 |
| 11/24/2009 14:48 | 30 | 4811.77 | 4760.924 | 9572.693 |
| 11/24/2009 14:48 | 31 | 4811.77 | 4760.924 | 9572.693 |
| 11/24/2009 14:49 | 32 | 4755.8 | 4760.924 | 9516.725 |
| 11/24/2009 14:49 | 33 | 4755.8 | 4760.924 | 9516.725 |
| 11/24/2009 14:50 | 34 | 4755.8 | 4760.924 | 9516.725 |
| 11/24/2009 14:50 | 35 | 4811.84 | 4704.978 | 9516.817 |
| 11/24/2009 14:51 | 36 | 4755.869 | 4704.978 | 9460.847 |
| 11/24/2009 14:51 | 37 | 4699.885 | 4704.965 | 9404.85 |
| 11/24/2009 14:52 | 38 | 4755.855 | 4648.953 | 9404.809 |
| 11/24/2009 14:52 | 39 | 4755.775 | 4648.88 | 9404.656 |
| 11/24/2009 14:53 | 40 | 4755.775 | 4648.88 | 9404.656 |
| 11/24/2009 14:53 | 41 | 4699.811 | 4648.885 | 9348.695 |
| 11/24/2009 14:54 | 42 | 4699.811 | 4648.885 | 9348.695 |
| 11/24/2009 14:54 | 43 | 4699.815 | 4592.878 | 9292.693 |
| 11/24/2009 14:55 | 44 | 4699.815 | 4592.878 | 9292.693 |

| TIMESTAMP | RECORD # | LoadA lbs | LoadB lbs | Total lbs |
|---|---|---|---|---|
| 11/24/2009 14:55 | 45 | 4867.729 | 4816.924 | 9684.652 |
| 11/24/2009 14:56 | 46 | 7498.323 | 7393.419 | 14891.74 |
| 11/24/2009 14:56 | 47 | 7386.386 | 7281.4 | 14667.79 |
| 11/24/2009 14:57 | 48 | 7330.416 | 7281.4 | 14611.82 |
| 11/24/2009 14:57 | 49 | 7330.419 | 7225.393 | 14555.81 |
| 11/24/2009 14:58 | 50 | 7274.449 | 7169.382 | 14443.83 |
| 11/24/2009 14:58 | 51 | 7274.449 | 7225.393 | 14499.84 |
| 11/24/2009 14:59 | 52 | 7218.481 | 7113.374 | 14331.86 |
| 11/24/2009 14:59 | 53 | 7218.481 | 7113.374 | 14331.86 |
| 11/24/2009 15:00 | 54 | 7218.483 | 7113.375 | 14331.86 |
| 11/24/2009 15:00 | 55 | 7218.483 | 7113.375 | 14331.86 |
| 11/24/2009 15:01 | 56 | 7218.485 | 7113.377 | 14331.86 |
| 11/24/2009 15:01 | 57 | 7162.516 | 7113.377 | 14275.89 |
| 11/24/2009 15:02 | 58 | 7162.518 | 7113.379 | 14275.9 |
| 11/24/2009 15:02 | 59 | 7162.518 | 7057.369 | 14219.89 |
| 11/24/2009 15:03 | 60 | 7106.649 | 7057.465 | 14164.12 |
| 11/24/2009 15:03 | 61 | 7106.649 | 7057.465 | 14164.12 |
| 11/24/2009 15:04 | 62 | 7106.527 | 7057.35 | 14163.88 |
| 11/24/2009 15:04 | 63 | 7106.527 | 7057.35 | 14163.88 |
| 11/24/2009 15:05 | 64 | 7106.532 | 7057.354 | 14163.89 |
| 11/24/2009 15:05 | 65 | 7106.532 | 6945.333 | 14051.87 |
| 11/24/2009 15:06 | 66 | 7106.532 | 6945.333 | 14051.87 |
| 11/24/2009 15:06 | 67 | 9961.012 | 9913.906 | 19874.92 |
| 11/24/2009 15:07 | 68 | 10072.95 | 9913.906 | 19986.86 |
| 11/24/2009 15:07 | 69 | 9961.016 | 9857.9 | 19818.92 |
| 11/24/2009 15:08 | 70 | 9905.046 | 9801.89 | 19706.94 |
| 11/24/2009 15:08 | 71 | 9905.049 | 9745.882 | 19650.93 |
| 11/24/2009 15:09 | 72 | 9793.108 | 9745.882 | 19538.99 |
| 11/24/2009 15:09 | 73 | 9848.943 | 9689.742 | 19538.69 |
| 11/24/2009 15:10 | 74 | 9792.974 | 9745.753 | 19538.73 |
| 11/24/2009 15:10 | 75 | 9792.866 | 9689.639 | 19482.5 |
| 11/24/2009 15:11 | 76 | 9736.897 | 9633.63 | 19370.53 |
| 11/24/2009 15:11 | 77 | 9736.947 | 9633.678 | 19370.63 |
| 11/24/2009 15:12 | 78 | 9736.947 | 9633.678 | 19370.63 |
| 11/24/2009 15:12 | 79 | 9736.988 | 9633.716 | 19370.7 |
| 11/24/2009 15:13 | 80 | 9736.988 | 9633.716 | 19370.7 |
| 11/24/2009 15:13 | 81 | 9681.188 | 9633.879 | 19315.07 |
| 11/24/2009 15:14 | 82 | 9681.188 | 9633.879 | 19315.07 |
| 11/24/2009 15:14 | 83 | 9681.188 | 9577.867 | 19259.05 |
| 11/24/2009 15:15 | 84 | 9625.08 | 9521.727 | 19146.81 |
| 11/24/2009 15:15 | 85 | 9625.08 | 9521.727 | 19146.81 |
| 11/24/2009 15:16 | 86 | 9625.106 | 9521.751 | 19146.86 |
| 11/24/2009 15:16 | 87 | 9625.106 | 9521.751 | 19146.86 |
| 11/24/2009 15:17 | 88 | 12479.41 | 12378.13 | 24857.54 |
| 11/24/2009 15:17 | 89 | 12423.44 | 12322.12 | 24745.57 |

| TIMESTAMP | RECORD # | LoadA lbs | LoadB lbs | Total lbs |
|---|---|---|---|---|
| 11/24/2009 15:18 | 90 | 12311.56 | 12210.16 | 24521.72 |
| 11/24/2009 15:18 | 91 | 12255.59 | 12154.15 | 24409.74 |
| 11/24/2009 15:19 | 92 | 12199.5 | 12098.02 | 24297.51 |
| 11/24/2009 15:19 | 93 | 12199.5 | 12042.01 | 24241.5 |
| 11/24/2009 15:20 | 94 | 12143.42 | 12041.91 | 24185.34 |
| 11/24/2009 15:20 | 95 | 12143.42 | 12041.91 | 24185.34 |
| 11/24/2009 15:21 | 96 | 12143.34 | 12041.83 | 24185.18 |
| 11/24/2009 15:21 | 97 | 12087.38 | 11985.82 | 24073.2 |
| 11/24/2009 15:22 | 98 | 12031.41 | 11985.82 | 24017.23 |
| 11/24/2009 15:22 | 99 | 12031.34 | 11985.76 | 24017.11 |
| 11/24/2009 15:23 | 100 | 12031.34 | 11985.76 | 24017.11 |
| 11/24/2009 15:23 | 101 | 12031.29 | 11985.71 | 24017.01 |
| 11/24/2009 15:24 | 102 | 12031.29 | 11929.71 | 23961 |
| 11/24/2009 15:24 | 103 | 12031.59 | 11929.99 | 23961.58 |
| 11/24/2009 15:25 | 104 | 11975.62 | 11929.99 | 23905.61 |
| 11/24/2009 15:25 | 105 | 11975.52 | 11873.88 | 23849.41 |
| 11/24/2009 15:26 | 106 | 11975.52 | 11873.88 | 23849.41 |
| 11/24/2009 15:26 | 107 | 11975.78 | 11874.13 | 23849.91 |
| 11/24/2009 15:27 | 108 | 11975.78 | 11874.13 | 23849.91 |
| 11/24/2009 15:27 | 109 | 14606.59 | 14562.86 | 29169.44 |
| 11/24/2009 15:28 | 110 | 14942.41 | 14842.91 | 29785.32 |
| 11/24/2009 15:28 | 111 | 14774.49 | 14674.87 | 29449.36 |
| 11/24/2009 15:29 | 112 | 14662.55 | 14618.86 | 29281.41 |
| 11/24/2009 15:29 | 113 | 14662.75 | 14563.04 | 29225.8 |
| 11/24/2009 15:30 | 114 | 14606.78 | 14563.04 | 29169.82 |
| 11/24/2009 15:30 | 115 | 14606.78 | 14451.02 | 29057.8 |
| 11/24/2009 15:31 | 116 | 14550.97 | 14451.17 | 29002.14 |
| 11/24/2009 15:31 | 117 | 14550.97 | 14451.17 | 29002.14 |
| 11/24/2009 15:32 | 118 | 14495.12 | 14451.3 | 28946.42 |
| 11/24/2009 15:32 | 119 | 14495.12 | 14451.3 | 28946.42 |
| 11/24/2009 15:33 | 120 | 14495.02 | 14395.19 | 28890.21 |
| 11/24/2009 15:33 | 121 | 14495.02 | 14395.19 | 28890.21 |
| 11/24/2009 15:34 | 122 | 14494.94 | 14395.11 | 28890.05 |
| 11/24/2009 15:34 | 123 | 14494.94 | 14395.11 | 28890.05 |
| 11/24/2009 15:35 | 124 | 14438.91 | 14395.05 | 28833.96 |
| 11/24/2009 15:35 | 125 | 14438.91 | 14339.04 | 28777.95 |
| 11/24/2009 15:36 | 126 | 14438.86 | 14282.98 | 28721.83 |
| 11/24/2009 15:36 | 127 | 14382.88 | 14282.98 | 28665.86 |
| 11/24/2009 15:37 | 128 | 14383.04 | 14283.13 | 28666.18 |
| 11/24/2009 15:37 | 129 | 14383.04 | 14283.13 | 28666.18 |
| 11/24/2009 15:38 | 130 | 14383.04 | 14283.13 | 28666.18 |
| 11/24/2009 15:38 | 131 | 17629.31 | 17531.76 | 35161.07 |
| 11/24/2009 15:39 | 132 | 17181.54 | 17083.66 | 34265.2 |
| 11/24/2009 15:39 | 133 | 17069.76 | 16971.8 | 34041.56 |
| 11/24/2009 15:40 | 134 | 17013.79 | 16971.8 | 33985.59 |

| TIMESTAMP | RECORD # | LoadA lbs | LoadB lbs | Total lbs |
|---|---|---|---|---|
| 11/24/2009 15:40 | 135 | 16957.72 | 16859.67 | 33817.39 |
| 11/24/2009 15:41 | 136 | 16901.75 | 16859.67 | 33761.42 |
| 11/24/2009 15:41 | 137 | 16901.66 | 16859.59 | 33761.26 |
| 11/24/2009 15:42 | 138 | 16845.69 | 16803.58 | 33649.27 |
| 11/24/2009 15:42 | 139 | 16845.63 | 16747.51 | 33593.14 |
| 11/24/2009 15:43 | 140 | 16789.66 | 16747.51 | 33537.16 |
| 11/24/2009 15:43 | 141 | 16789.37 | 16747.23 | 33536.6 |
| 11/24/2009 15:44 | 142 | 16789.37 | 16691.22 | 33480.59 |
| 11/24/2009 15:44 | 143 | 16733.64 | 16691.45 | 33425.09 |
| 11/24/2009 15:45 | 144 | 16733.64 | 16691.45 | 33425.09 |
| 11/24/2009 15:45 | 145 | 16733.83 | 16691.64 | 33425.47 |
| 11/24/2009 15:46 | 146 | 16733.83 | 16691.64 | 33425.47 |
| 11/24/2009 15:46 | 147 | 16677.86 | 16691.64 | 33369.5 |
| 11/24/2009 15:47 | 148 | 16677.78 | 16691.56 | 33369.34 |
| 11/24/2009 15:47 | 149 | 16677.78 | 16691.56 | 33369.34 |
| 11/24/2009 15:48 | 150 | 16677.72 | 16579.47 | 33257.19 |
| 11/24/2009 15:48 | 151 | 16677.72 | 16579.47 | 33257.19 |
| 11/24/2009 15:49 | 152 | 19868.01 | 19772.08 | 39640.09 |
| 11/24/2009 15:49 | 153 | 7666.35 | 7673.584 | 15339.93 |
| 11/24/2009 15:50 | 154 | 7722.41 | 7729.682 | 15452.09 |
| 11/24/2009 15:50 | 155 | 7722.41 | 7729.682 | 15452.09 |
| 11/24/2009 15:51 | 156 | 7722.481 | 7729.75 | 15452.23 |
| 11/24/2009 15:51 | 157 | 7722.481 | 7729.75 | 15452.23 |
| 11/24/2009 15:52 | 158 | 7722.431 | 7729.701 | 15452.13 |
| 11/24/2009 15:52 | 159 | 7722.431 | 7729.701 | 15452.13 |
| 11/24/2009 15:53 | 160 | 7722.279 | 7729.556 | 15451.84 |
| 11/24/2009 15:53 | 161 | 7722.279 | 7729.556 | 15451.84 |
| 11/24/2009 15:54 | 162 | 7722.279 | 7729.556 | 15451.84 |
| 11/24/2009 15:54 | 163 | 7722.158 | 7729.44 | 15451.6 |
| 11/24/2009 15:55 | 164 | 7722.158 | 7785.451 | 15507.61 |
| 11/24/2009 15:55 | 165 | 7722.171 | 7785.462 | 15507.63 |
| 11/24/2009 15:56 | 166 | 7722.171 | 7785.462 | 15507.63 |
| 11/24/2009 15:56 | 167 | 7722.29 | 7785.579 | 15507.87 |
| 11/24/2009 15:57 | 168 | 5707.346 | 5545.125 | 11252.47 |
| 11/24/2009 15:57 | 169 | 110.281 | 56.01203 | 166.293 |

# APPENDIX D
# LATERAL LOAD TEST I

TABLE D.1 Inclinometer measurements for pile 10

PROJECT: ASHE MICROPILE LATERAL LOAD TESTING

MICROPILE NO: 10

DATE: 11/25/09

TIME:

| | Baseline data | | |
|---|---|---|---|
| Depth (ft) | A+ | A- | Diff. (A) |
| 18 | 184 | -222 | 406 |
| 16 | 190 | -229 | 419 |
| 14 | 200 | -235 | 435 |
| 12 | 192 | -232 | 424 |
| 10 | 226 | -256 | 482 |
| 8 | 243 | -283 | 526 |
| 6 | 211 | -251 | 462 |
| 4 | 171 | -206 | 377 |
| 2 | 122 | -166 | 288 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 10 kips | | | | | | |
| 17.75 | 184 | -223 | 407 | 1 | 0.0006 | 0.0006 |
| 15.75 | 191 | -230 | 421 | 2 | 0.0012 | 0.0018 |
| 13.75 | 197 | -235 | 432 | -3 | -0.0018 | 0 |
| 11.75 | 193 | -233 | 426 | 2 | 0.0012 | 0.0012 |
| 9.75 | 222 | -259 | 481 | -1 | -0.0006 | 0.0006 |
| 7.75 | 252 | -291 | 543 | 17 | 0.0102 | 0.0108 |
| 5.75 | 232 | -274 | 506 | 44 | 0.0264 | 0.0372 |
| 3.75 | 205 | -243 | 448 | 71 | 0.0426 | 0.0798 |
| 1.75 | 165 | -238 | 403 | 115 | 0.069 | 0.1488 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 20 kips | | | | | | |
| 17.75 | 185 | -222 | 407 | 1 | 0.0006 | 0.0006 |
| 15.75 | 193 | -229 | 422 | 3 | 0.0018 | 0.0024 |
| 13.75 | 198 | -234 | 432 | -3 | -0.0018 | 0.0006 |
| 11.75 | 191 | -231 | 422 | -2 | -0.0012 | -0.0006 |
| 9.75 | 226 | -260 | 486 | 4 | 0.0024 | 0.0018 |
| 7.75 | 267 | -304 | 571 | 45 | 0.027 | 0.0288 |
| 5.75 | 277 | -315 | 592 | 130 | 0.078 | 0.1068 |
| 3.75 | 265 | -303 | 568 | 191 | 0.1146 | 0.2214 |
| 1.75 | 224 | -274 | 498 | 210 | 0.126 | 0.3474 |

| Depth (ft) | A+ | A- | Diff.(A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 30 kips | | | | | | |
| 17.75 | 185 | -223 | 408 | 2 | 0.0012 | 0.0012 |
| 15.75 | 192 | -229 | 421 | 2 | 0.0012 | 0.0024 |
| 13.75 | 197 | -233 | 430 | -5 | -0.003 | -0.0006 |
| 11.75 | 192 | -233 | 425 | 1 | 0.0006 | 0 |
| 9.75 | 232 | -263 | 495 | 13 | 0.0078 | 0.0078 |
| 7.75 | 276 | -326 | 602 | 76 | 0.0456 | 0.0534 |
| 5.75 | 340 | -382 | 722 | 260 | 0.156 | 0.2094 |
| 3.75 | 351 | -392 | 743 | 366 | 0.2196 | 0.429 |
| 1.75 | 328 | -409 | 737 | 449 | 0.2694 | 0.6984 |

TABLE D.2 Inclinometer measurements for pile 10

PROJECT:ASHE MICROPILE LATERAL LOAD TESTING

MICROPILE NO: 11

DATE: 11/25/09

TIME:

| | Baseline data | | |
|---|---|---|---|
| Depth (ft) | A+ | A- | Diff. (A) |
| 18 | -98 | 61 | -159 |
| 16 | -101 | 61 | -162 |
| 14 | -61 | 26 | -87 |
| 12 | -66 | 23 | -89 |
| 10 | -49 | 6 | -55 |
| 8 | -58 | 20 | -78 |
| 6 | -81 | 41 | -122 |
| 4 | -57 | 21 | -78 |
| 2 | -60 | 15 | -75 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 10 kips | | | | | | |
| 17.333 | -99 | 61 | -160 | -1 | -0.0006 | -0.0006 |
| 15.333 | -105 | 62 | -167 | -5 | -0.003 | -0.0036 |
| 13.333 | -61 | 28 | -89 | -2 | -0.0012 | -0.0048 |
| 11.333 | -64 | 25 | -89 | 0 | 0 | -0.0048 |
| 9.333 | -50 | 6 | -56 | -1 | -0.0006 | -0.0054 |
| 7.333 | -53 | 15 | -68 | 10 | 0.006 | 0.0006 |
| 5.333 | -65 | 24 | -89 | 33 | 0.0198 | 0.0204 |
| 3.333 | -14 | -33 | 19 | 97 | 0.0582 | 0.0786 |
| 1.333 | 3 | -55 | 58 | 133 | 0.0798 | 0.1584 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 20 kips | | | | | | |
| 17.333 | -103 | 61 | -164 | -5 | -0.003 | -0.003 |
| 15.333 | -102 | 61 | -163 | -1 | -0.0006 | -0.0036 |
| 13.333 | -61 | 25 | -86 | 1 | 0.0006 | -0.003 |
| 11.333 | -66 | 25 | -91 | -2 | -0.0012 | -0.0042 |
| 9.333 | -49 | 4 | -53 | 2 | 0.0012 | -0.003 |
| 7.333 | -39 | -14 | -25 | 53 | 0.0318 | 0.0288 |
| 5.333 | -18 | -33 | 15 | 137 | 0.0822 | 0.111 |
| 3.333 | 64 | -97 | 161 | 239 | 0.1434 | 0.2544 |
| 1.333 | 78 | -117 | 195 | 270 | 0.162 | 0.4164 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 30 kips | | | | | | |
| 17.333 | -99 | 61 | -160 | -1 | -0.0006 | -0.0006 |
| 15.333 | -102 | 62 | -164 | -2 | -0.0012 | -0.0018 |
| 13.333 | -62 | 27 | -89 | -2 | -0.0012 | -0.003 |
| 11.333 | -66 | 35 | -101 | -12 | -0.0072 | -0.0102 |
| 9.333 | -47 | -22 | -25 | 30 | 0.018 | 0.0078 |
| 7.333 | -17 | -38 | 21 | 99 | 0.0594 | 0.0672 |
| 5.333 | 54 | -95 | 149 | 271 | 0.1626 | 0.2298 |
| 3.333 | 142 | -166 | 308 | 386 | 0.2316 | 0.4614 |
| 1.333 | 162 | -202 | 364 | 439 | 0.2634 | 0.7248 |

TABLE D.3 Load and displacement measurements for load test I

| TIMESTAMP | RECORD # | LoadA lbs | LoadB lbs | TotalLoad lbs | PotA in | PotB in | PotC in | PotD in |
|---|---|---|---|---|---|---|---|---|
| 11/25/2009 11:07 | 0 | 169.5143 | 56.37474 | 225.8891 | 20.64579 | 21.70527 | 20.49618 | 21.41968 |
| 11/25/2009 11:07 | 1 | 169.5143 | 56.37474 | 225.8891 | 20.64579 | 21.70345 | 20.49618 | 21.4215 |
| 11/25/2009 11:08 | 2 | 2141.198 | 2085.865 | 4227.063 | 20.63864 | 21.67985 | 20.48168 | 21.38708 |
| 11/25/2009 11:08 | 3 | 2704.536 | 2705.987 | 5410.523 | 20.62435 | 21.65807 | 20.45993 | 21.36715 |
| 11/25/2009 11:08 | 4 | 2704.433 | 2593.15 | 5297.583 | 20.62463 | 21.66018 | 20.46202 | 21.36926 |
| 11/25/2009 11:08 | 5 | 2704.433 | 2593.15 | 5297.583 | 20.62463 | 21.65836 | 20.46202 | 21.36563 |
| 11/25/2009 11:09 | 6 | 2704.433 | 2593.15 | 5297.583 | 20.62463 | 21.65836 | 20.46383 | 21.36926 |
| 11/25/2009 11:09 | 7 | 2648.101 | 2593.15 | 5241.251 | 20.62463 | 21.65836 | 20.46202 | 21.36744 |
| 11/25/2009 11:09 | 8 | 2591.769 | 2593.15 | 5184.919 | 20.62463 | 21.65836 | 20.4602 | 21.36382 |
| 11/25/2009 11:09 | 9 | 2591.69 | 2593.08 | 5184.771 | 20.62485 | 21.65859 | 20.46042 | 21.36405 |
| 11/25/2009 11:10 | 10 | 2591.69 | 2593.08 | 5184.771 | 20.62485 | 21.65678 | 20.46042 | 21.36405 |
| 11/25/2009 11:10 | 11 | 2591.69 | 2536.709 | 5128.399 | 20.62485 | 21.65859 | 20.46042 | 21.36405 |
| 11/25/2009 11:10 | 12 | 2591.69 | 2480.338 | 5072.028 | 20.62485 | 21.65859 | 20.46042 | 21.36405 |
| 11/25/2009 11:10 | 13 | 2591.627 | 2480.284 | 5071.911 | 20.62075 | 21.65442 | 20.45991 | 21.36351 |
| 11/25/2009 11:11 | 14 | 2591.627 | 2480.284 | 5071.911 | 20.61718 | 21.65079 | 20.45991 | 21.36351 |
| 11/25/2009 11:11 | 15 | 2591.627 | 2480.284 | 5071.911 | 20.61897 | 21.65079 | 20.4581 | 21.3617 |
| 11/25/2009 11:11 | 16 | 2591.627 | 2480.284 | 5071.911 | 20.61718 | 21.65079 | 20.4581 | 21.3617 |
| 11/25/2009 11:11 | 17 | 2591.576 | 2480.241 | 5071.817 | 20.61746 | 21.65108 | 20.45475 | 21.35837 |
| 11/25/2009 11:12 | 18 | 2591.576 | 2480.241 | 5071.817 | 20.61746 | 21.64927 | 20.45294 | 21.35656 |
| 11/25/2009 11:12 | 19 | 2591.576 | 2480.241 | 5071.817 | 20.61746 | 21.64382 | 20.45294 | 21.35837 |
| 11/25/2009 11:12 | 20 | 2591.576 | 2480.241 | 5071.817 | 20.61389 | 21.64382 | 20.45294 | 21.35656 |
| 11/25/2009 11:12 | 21 | 2591.536 | 2480.207 | 5071.742 | 20.6145 | 21.6444 | 20.45177 | 21.35534 |
| 11/25/2009 11:13 | 22 | 2591.536 | 2480.207 | 5071.742 | 20.6145 | 21.64259 | 20.45177 | 21.35534 |
| 11/25/2009 11:13 | 23 | 2591.536 | 2480.207 | 5071.742 | 20.6145 | 21.63533 | 20.45177 | 21.35534 |
| 11/25/2009 11:13 | 24 | 2591.536 | 2480.207 | 5071.742 | 20.59485 | 21.61354 | 20.45721 | 21.36802 |
| 11/25/2009 11:13 | 25 | 2591.536 | 2480.207 | 5071.742 | 20.59485 | 21.61354 | 20.45902 | 21.36802 |
| 11/25/2009 11:14 | 26 | 2591.544 | 2480.213 | 5071.757 | 20.59531 | 21.61403 | 20.45767 | 21.36307 |
| 11/25/2009 11:14 | 27 | 2591.544 | 2480.213 | 5071.757 | 20.59531 | 21.61221 | 20.45586 | 21.36307 |
| 11/25/2009 11:14 | 28 | 2591.544 | 2480.213 | 5071.757 | 20.59531 | 21.61221 | 20.45767 | 21.36307 |
| 11/25/2009 11:14 | 29 | 2591.544 | 2480.213 | 5071.757 | 20.59531 | 21.60858 | 20.45404 | 21.36307 |
| 11/25/2009 11:15 | 30 | 2591.609 | 2480.269 | 5071.877 | 20.59428 | 21.6075 | 20.45121 | 21.362 |
| 11/25/2009 11:15 | 31 | 2591.609 | 2480.269 | 5071.877 | 20.59428 | 21.60568 | 20.45121 | 21.362 |
| 11/25/2009 11:15 | 32 | 2591.609 | 2480.269 | 5071.877 | 20.59071 | 21.60568 | 20.45121 | 21.36019 |
| 11/25/2009 11:15 | 33 | 2591.609 | 2480.269 | 5071.877 | 20.59249 | 21.60568 | 20.45121 | 21.36019 |
| 11/25/2009 11:16 | 34 | 2591.562 | 2480.229 | 5071.79 | 20.58879 | 21.60555 | 20.45108 | 21.35644 |
| 11/25/2009 11:16 | 35 | 2591.562 | 2480.229 | 5071.79 | 20.59058 | 21.60555 | 20.45108 | 21.35644 |
| 11/25/2009 11:16 | 36 | 2591.562 | 2480.229 | 5071.79 | 20.59058 | 21.60374 | 20.45108 | 21.35462 |
| 11/25/2009 11:16 | 37 | 2535.234 | 2480.229 | 5015.462 | 20.58879 | 21.60555 | 20.45108 | 21.35644 |
| 11/25/2009 11:17 | 38 | 2535.234 | 2480.229 | 5015.462 | 20.58879 | 21.60555 | 20.45108 | 21.36006 |
| 11/25/2009 11:17 | 39 | 2535.294 | 2480.281 | 5015.574 | 20.58691 | 21.60545 | 20.45098 | 21.35633 |
| 11/25/2009 11:17 | 40 | 2591.623 | 2480.281 | 5071.903 | 20.58691 | 21.60363 | 20.44736 | 21.35452 |
| 11/25/2009 11:17 | 41 | 2591.623 | 2480.281 | 5071.903 | 20.58691 | 21.60545 | 20.44736 | 21.35452 |
| 11/25/2009 11:18 | 42 | 2591.623 | 2480.281 | 5071.903 | 20.58691 | 21.60182 | 20.44555 | 21.35452 |
| 11/25/2009 11:18 | 43 | 4281.573 | 4171.451 | 8453.023 | 20.58038 | 21.59158 | 20.41535 | 21.30807 |
| 11/25/2009 11:18 | 44 | 5295.514 | 5186.128 | 10481.64 | 20.54107 | 21.54801 | 20.38634 | 21.27547 |

| TIMESTAMP | RECORD | LoadA | LoadB | TotalLoad | PotA | PotB | PotC | PotD |
|---|---|---|---|---|---|---|---|---|
| | # | lbs | lbs | lbs | in | in | in | in |
| 11/25/2009 11:18 | 45 | 5182.854 | 5073.386 | 10256.24 | 20.5375 | 21.54801 | 20.38634 | 21.27547 |
| 11/25/2009 11:19 | 46 | 5070.193 | 4960.644 | 10030.84 | 20.5375 | 21.54801 | 20.38634 | 21.27547 |
| 11/25/2009 11:19 | 47 | 5070.083 | 4960.543 | 10030.63 | 20.53729 | 21.54598 | 20.38614 | 21.27164 |
| 11/25/2009 11:19 | 48 | 5070.083 | 4960.543 | 10030.63 | 20.53729 | 21.54598 | 20.38433 | 21.26982 |
| 11/25/2009 11:19 | 49 | 5070.083 | 4960.543 | 10030.63 | 20.53729 | 21.5478 | 20.38614 | 21.27526 |
| 11/25/2009 11:20 | 50 | 5070.083 | 4960.543 | 10030.63 | 20.53729 | 21.5478 | 20.38614 | 21.26982 |
| 11/25/2009 11:20 | 51 | 5013.667 | 4904.093 | 9917.76 | 20.53783 | 21.54654 | 20.38667 | 21.27219 |
| 11/25/2009 11:20 | 52 | 4957.34 | 4847.724 | 9805.064 | 20.53783 | 21.54836 | 20.38667 | 21.274 |
| 11/25/2009 11:20 | 53 | 4957.34 | 4847.724 | 9805.064 | 20.53783 | 21.5411 | 20.38486 | 21.27219 |
| 11/25/2009 11:21 | 54 | 4957.34 | 4847.724 | 9805.064 | 20.53783 | 21.5411 | 20.38486 | 21.27038 |
| 11/25/2009 11:21 | 55 | 4957.34 | 4847.724 | 9805.064 | 20.53783 | 21.53928 | 20.38486 | 21.26857 |
| 11/25/2009 11:21 | 56 | 4957.449 | 4847.825 | 9805.274 | 20.53111 | 21.53428 | 20.38528 | 21.27082 |
| 11/25/2009 11:21 | 57 | 4957.449 | 4847.825 | 9805.274 | 20.53469 | 21.53428 | 20.3871 | 21.27626 |
| 11/25/2009 11:22 | 58 | 4957.449 | 4847.825 | 9805.274 | 20.53469 | 21.53428 | 20.3871 | 21.27626 |
| 11/25/2009 11:22 | 59 | 4957.449 | 4847.825 | 9805.274 | 20.53826 | 21.53973 | 20.39072 | 21.27807 |
| 11/25/2009 11:22 | 60 | 4957.537 | 4847.906 | 9805.443 | 20.5379 | 21.53573 | 20.39037 | 21.27589 |
| 11/25/2009 11:22 | 61 | 4957.537 | 4847.906 | 9805.443 | 20.5379 | 21.53754 | 20.39218 | 21.27589 |
| 11/25/2009 11:23 | 62 | 4957.537 | 4847.906 | 9805.443 | 20.5379 | 21.53573 | 20.38675 | 21.27589 |
| 11/25/2009 11:23 | 63 | 4957.537 | 4847.906 | 9805.443 | 20.5379 | 21.53573 | 20.38675 | 21.27589 |
| 11/25/2009 11:23 | 64 | 4957.429 | 4847.807 | 9805.235 | 20.53692 | 21.53833 | 20.38577 | 21.27487 |
| 11/25/2009 11:23 | 65 | 4957.429 | 4847.807 | 9805.235 | 20.53514 | 21.5347 | 20.38577 | 21.27487 |
| 11/25/2009 11:24 | 66 | 4957.429 | 4847.807 | 9805.235 | 20.53514 | 21.53833 | 20.38758 | 21.27487 |
| 11/25/2009 11:24 | 67 | 4901.1 | 4847.807 | 9748.906 | 20.53514 | 21.53288 | 20.39302 | 21.2803 |
| 11/25/2009 11:24 | 68 | 4901.191 | 4847.891 | 9749.082 | 20.53326 | 21.53461 | 20.39112 | 21.28021 |
| 11/25/2009 11:24 | 69 | 4901.191 | 4847.891 | 9749.082 | 20.53683 | 21.53279 | 20.39293 | 21.28021 |
| 11/25/2009 11:25 | 70 | 4844.861 | 4847.891 | 9692.752 | 20.53148 | 21.53279 | 20.38931 | 21.2784 |
| 11/25/2009 11:25 | 71 | 4844.861 | 4847.891 | 9692.752 | 20.53505 | 21.53279 | 20.39293 | 21.27116 |
| 11/25/2009 11:25 | 72 | 4844.861 | 4847.891 | 9692.752 | 20.53505 | 21.53279 | 20.39293 | 21.27297 |
| 11/25/2009 11:25 | 73 | 4844.758 | 4791.424 | 9636.182 | 20.53389 | 21.53345 | 20.39174 | 21.27181 |
| 11/25/2009 11:26 | 74 | 4844.758 | 4847.794 | 9692.552 | 20.53032 | 21.53164 | 20.38631 | 21.26818 |
| 11/25/2009 11:26 | 75 | 4844.758 | 4791.424 | 9636.182 | 20.53032 | 21.52982 | 20.38631 | 21.26818 |
| 11/25/2009 11:26 | 76 | 4844.758 | 4791.424 | 9636.182 | 20.52853 | 21.52982 | 20.38631 | 21.26818 |
| 11/25/2009 11:26 | 77 | 4844.675 | 4734.979 | 9579.654 | 20.53012 | 21.53143 | 20.38611 | 21.26798 |
| 11/25/2009 11:27 | 78 | 4844.675 | 4734.979 | 9579.654 | 20.53012 | 21.53325 | 20.38611 | 21.26798 |
| 11/25/2009 11:27 | 79 | 4844.675 | 4734.979 | 9579.654 | 20.53369 | 21.53325 | 20.38792 | 21.2716 |
| 11/25/2009 11:27 | 80 | 4844.675 | 4734.979 | 9579.654 | 20.53191 | 21.53325 | 20.38611 | 21.26798 |
| 11/25/2009 11:27 | 81 | 4844.855 | 4735.144 | 9580 | 20.53066 | 21.53381 | 20.38665 | 21.26855 |
| 11/25/2009 11:28 | 82 | 4844.855 | 4735.144 | 9580 | 20.53066 | 21.53018 | 20.38665 | 21.26855 |
| 11/25/2009 11:28 | 83 | 4844.855 | 4735.144 | 9580 | 20.53066 | 21.53018 | 20.38665 | 21.26855 |
| 11/25/2009 11:28 | 84 | 4844.855 | 4735.144 | 9580 | 20.52887 | 21.53018 | 20.38484 | 21.26673 |
| 11/25/2009 11:28 | 85 | 6647.369 | 6538.97 | 13186.34 | 20.50608 | 21.49614 | 20.34357 | 21.2219 |
| 11/25/2009 11:29 | 86 | 7548.642 | 7440.896 | 14989.54 | 20.45962 | 21.43623 | 20.29825 | 21.16756 |
| 11/25/2009 11:29 | 87 | 7435.982 | 7328.156 | 14764.14 | 20.45962 | 21.43623 | 20.29825 | 21.16756 |
| 11/25/2009 11:29 | 88 | 7435.982 | 7328.156 | 14764.14 | 20.45783 | 21.4326 | 20.30006 | 21.16756 |
| 11/25/2009 11:29 | 89 | 7435.982 | 7328.156 | 14764.14 | 20.45962 | 21.43442 | 20.30006 | 21.16937 |
| 11/25/2009 11:30 | 90 | 7323.182 | 7271.651 | 14594.83 | 20.45996 | 21.43296 | 20.30041 | 21.17154 |
| 11/25/2009 11:30 | 91 | 7323.182 | 7215.281 | 14538.46 | 20.45818 | 21.43296 | 20.29859 | 21.16791 |

| TIMESTAMP | RECORD | LoadA | LoadB | TotalLoad | PotA | PotB | PotC | PotD |
|---|---|---|---|---|---|---|---|---|
| | # | lbs | lbs | lbs | in | in | in | in |
| 11/25/2009 11:30 | 92 | 7323.182 | 7215.281 | 14538.46 | 20.45639 | 21.43478 | 20.29859 | 21.16791 |
| 11/25/2009 11:30 | 93 | 7323.182 | 7215.281 | 14538.46 | 20.45996 | 21.43296 | 20.29678 | 21.16791 |
| 11/25/2009 11:31 | 94 | 7323.327 | 7215.419 | 14538.75 | 20.45845 | 21.43325 | 20.29343 | 21.1682 |
| 11/25/2009 11:31 | 95 | 7323.327 | 7215.419 | 14538.75 | 20.45309 | 21.43325 | 20.29343 | 21.16639 |
| 11/25/2009 11:31 | 96 | 7266.998 | 7215.419 | 14482.42 | 20.45309 | 21.43325 | 20.29343 | 21.16639 |
| 11/25/2009 11:31 | 97 | 7266.998 | 7215.419 | 14482.42 | 20.45309 | 21.42962 | 20.29343 | 21.16276 |
| 11/25/2009 11:32 | 98 | 7210.783 | 7215.528 | 14426.31 | 20.45331 | 21.43167 | 20.29365 | 21.16118 |
| 11/25/2009 11:32 | 99 | 7210.783 | 7215.528 | 14426.31 | 20.45331 | 21.42622 | 20.29365 | 21.16299 |
| 11/25/2009 11:32 | 100 | 7210.783 | 7159.157 | 14369.94 | 20.45331 | 21.42804 | 20.29183 | 21.16118 |
| 11/25/2009 11:32 | 101 | 7210.783 | 7159.157 | 14369.94 | 20.45331 | 21.42985 | 20.29546 | 21.16118 |
| 11/25/2009 11:33 | 102 | 7210.783 | 7102.786 | 14313.57 | 20.45331 | 21.42804 | 20.29365 | 21.16299 |
| 11/25/2009 11:33 | 103 | 7210.875 | 7102.872 | 14313.75 | 20.45349 | 21.43004 | 20.29382 | 21.16317 |
| 11/25/2009 11:33 | 104 | 7210.875 | 7102.872 | 14313.75 | 20.45349 | 21.42822 | 20.29382 | 21.16498 |
| 11/25/2009 11:33 | 105 | 7210.875 | 7102.872 | 14313.75 | 20.45349 | 21.43004 | 20.29382 | 21.16317 |
| 11/25/2009 11:34 | 106 | 7210.875 | 7102.872 | 14313.75 | 20.45349 | 21.43185 | 20.29382 | 21.16317 |
| 11/25/2009 11:34 | 107 | 7211.052 | 7103.039 | 14314.09 | 20.45363 | 21.43382 | 20.29396 | 21.16513 |
| 11/25/2009 11:34 | 108 | 7211.052 | 7103.039 | 14314.09 | 20.45363 | 21.43018 | 20.29396 | 21.16513 |
| 11/25/2009 11:34 | 109 | 7211.052 | 7103.039 | 14314.09 | 20.45363 | 21.43382 | 20.29396 | 21.16694 |
| 11/25/2009 11:35 | 110 | 7211.052 | 7103.039 | 14314.09 | 20.45363 | 21.43018 | 20.29214 | 21.16332 |
| 11/25/2009 11:35 | 111 | 7211.09 | 7103.075 | 14314.16 | 20.45374 | 21.42849 | 20.29226 | 21.16162 |
| 11/25/2009 11:35 | 112 | 7211.09 | 7103.075 | 14314.16 | 20.45374 | 21.42849 | 20.29045 | 21.16162 |
| 11/25/2009 11:35 | 113 | 7211.09 | 7103.075 | 14314.16 | 20.45195 | 21.42849 | 20.28863 | 21.16162 |
| 11/25/2009 11:36 | 114 | 7211.09 | 7103.075 | 14314.16 | 20.44123 | 21.41941 | 20.29226 | 21.16343 |
| 11/25/2009 11:36 | 115 | 7210.865 | 7102.863 | 14313.73 | 20.44311 | 21.4195 | 20.29235 | 21.16172 |
| 11/25/2009 11:36 | 116 | 7210.865 | 7102.863 | 14313.73 | 20.43954 | 21.4195 | 20.29416 | 21.16172 |
| 11/25/2009 11:36 | 117 | 7210.865 | 7102.863 | 14313.73 | 20.43954 | 21.4195 | 20.29235 | 21.16172 |
| 11/25/2009 11:37 | 118 | 7210.865 | 7102.863 | 14313.73 | 20.44132 | 21.4195 | 20.29235 | 21.16172 |
| 11/25/2009 11:37 | 119 | 7210.865 | 7102.863 | 14313.73 | 20.44132 | 21.4195 | 20.29235 | 21.16172 |
| 11/25/2009 11:37 | 120 | 7210.941 | 7102.935 | 14313.88 | 20.43961 | 21.41958 | 20.29423 | 21.16179 |
| 11/25/2009 11:37 | 121 | 7210.941 | 7102.935 | 14313.88 | 20.44139 | 21.41958 | 20.29423 | 21.16179 |
| 11/25/2009 11:38 | 122 | 7154.609 | 7102.935 | 14257.54 | 20.44139 | 21.41595 | 20.29605 | 21.16904 |
| 11/25/2009 11:38 | 123 | 7154.609 | 7102.935 | 14257.54 | 20.43961 | 21.41232 | 20.29423 | 21.16722 |
| 11/25/2009 11:38 | 124 | 7154.669 | 7102.991 | 14257.66 | 20.43966 | 21.41238 | 20.2961 | 21.16729 |
| 11/25/2009 11:38 | 125 | 7154.669 | 7102.991 | 14257.66 | 20.43966 | 21.41238 | 20.29429 | 21.16729 |
| 11/25/2009 11:39 | 126 | 7098.337 | 7102.991 | 14201.33 | 20.43966 | 21.41238 | 20.29429 | 21.16366 |
| 11/25/2009 11:39 | 127 | 10027.6 | 9921.638 | 19949.24 | 20.36282 | 21.31797 | 20.21452 | 21.06765 |
| 11/25/2009 11:39 | 128 | 10027.81 | 9921.837 | 19949.65 | 20.34321 | 21.29442 | 20.19281 | 21.05321 |
| 11/25/2009 11:39 | 129 | 9915.144 | 9809.089 | 19724.23 | 20.345 | 21.29442 | 20.19644 | 21.0514 |
| 11/25/2009 11:40 | 130 | 9858.811 | 9809.089 | 19667.9 | 20.345 | 21.29078 | 20.19281 | 21.04596 |
| 11/25/2009 11:40 | 131 | 9802.477 | 9696.34 | 19498.82 | 20.34321 | 21.28897 | 20.18556 | 21.03872 |
| 11/25/2009 11:40 | 132 | 9802.502 | 9696.364 | 19498.87 | 20.34325 | 21.28901 | 20.18559 | 21.03875 |
| 11/25/2009 11:40 | 133 | 9802.502 | 9696.364 | 19498.87 | 20.33967 | 21.28901 | 20.18559 | 21.03875 |
| 11/25/2009 11:41 | 134 | 9689.836 | 9639.989 | 19329.82 | 20.33967 | 21.28901 | 20.18378 | 21.03875 |
| 11/25/2009 11:41 | 135 | 9689.836 | 9639.989 | 19329.82 | 20.33967 | 21.28901 | 20.18378 | 21.03875 |
| 11/25/2009 11:41 | 136 | 9689.836 | 9583.615 | 19273.45 | 20.3361 | 21.28175 | 20.18741 | 21.03875 |
| 11/25/2009 11:41 | 137 | 9689.854 | 9583.634 | 19273.49 | 20.3397 | 21.28904 | 20.19287 | 21.04603 |
| 11/25/2009 11:42 | 138 | 9689.854 | 9583.634 | 19273.49 | 20.3397 | 21.28904 | 20.19106 | 21.03878 |

| TIMESTAMP | RECORD | LoadA | LoadB | TotalLoad | PotA | PotB | PotC | PotD |
|---|---|---|---|---|---|---|---|---|
| | # | lbs | lbs | lbs | in | in | in | in |
| 11/25/2009 11:42 | 139 | 9689.854 | 9583.634 | 19273.49 | 20.33792 | 21.28177 | 20.18562 | 21.03697 |
| 11/25/2009 11:42 | 140 | 9689.854 | 9583.634 | 19273.49 | 20.33434 | 21.28177 | 20.18562 | 21.03516 |
| 11/25/2009 11:42 | 141 | 9689.869 | 9583.648 | 19273.52 | 20.33437 | 21.2818 | 20.18565 | 21.03156 |
| 11/25/2009 11:43 | 142 | 9633.536 | 9583.648 | 19217.18 | 20.33437 | 21.2818 | 20.18565 | 21.03156 |
| 11/25/2009 11:43 | 143 | 9633.536 | 9583.648 | 19217.18 | 20.33615 | 21.2818 | 20.18565 | 21.037 |
| 11/25/2009 11:43 | 144 | 9577.203 | 9583.648 | 19160.85 | 20.33437 | 21.2818 | 20.18565 | 21.03881 |
| 11/25/2009 11:43 | 145 | 9577.215 | 9583.66 | 19160.88 | 20.33975 | 21.28908 | 20.19292 | 21.04426 |
| 11/25/2009 11:44 | 146 | 9577.215 | 9527.285 | 19104.5 | 20.34689 | 21.29271 | 20.19835 | 21.04789 |
| 11/25/2009 11:44 | 147 | 9577.215 | 9470.911 | 19048.13 | 20.34689 | 21.29453 | 20.19654 | 21.04789 |
| 11/25/2009 11:44 | 148 | 9577.215 | 9470.911 | 19048.13 | 20.34689 | 21.29271 | 20.19473 | 21.04789 |
| 11/25/2009 11:44 | 149 | 9577.224 | 9470.921 | 19048.14 | 20.34155 | 21.2891 | 20.19474 | 21.04609 |
| 11/25/2009 11:45 | 150 | 9577.224 | 9470.921 | 19048.14 | 20.33976 | 21.2891 | 20.19293 | 21.04428 |
| 11/25/2009 11:45 | 151 | 9577.224 | 9470.921 | 19048.14 | 20.33976 | 21.2891 | 20.19112 | 21.04247 |
| 11/25/2009 11:45 | 152 | 9577.224 | 9470.921 | 19048.14 | 20.33797 | 21.28728 | 20.19112 | 21.03884 |
| 11/25/2009 11:45 | 153 | 9577.224 | 9470.921 | 19048.14 | 20.33976 | 21.2891 | 20.19112 | 21.03884 |
| 11/25/2009 11:46 | 154 | 9577.367 | 9471.058 | 19048.43 | 20.33978 | 21.2873 | 20.18569 | 21.03886 |
| 11/25/2009 11:46 | 155 | 9521.033 | 9471.058 | 18992.09 | 20.33978 | 21.28366 | 20.18569 | 21.03886 |
| 11/25/2009 11:46 | 156 | 9464.698 | 9471.058 | 18935.76 | 20.33799 | 21.28366 | 20.18569 | 21.03705 |
| 11/25/2009 11:46 | 157 | 9464.698 | 9471.058 | 18935.76 | 20.3362 | 21.28185 | 20.18569 | 21.03705 |
| 11/25/2009 11:47 | 158 | 9464.347 | 9470.717 | 18935.06 | 20.33264 | 21.28005 | 20.18389 | 21.03162 |
| 11/25/2009 11:47 | 159 | 9464.347 | 9470.717 | 18935.06 | 20.33264 | 21.28186 | 20.18026 | 21.03343 |
| 11/25/2009 11:47 | 160 | 9464.347 | 9470.717 | 18935.06 | 20.33264 | 21.28005 | 20.18208 | 21.03343 |
| 11/25/2009 11:47 | 161 | 9464.347 | 9470.717 | 18935.06 | 20.33264 | 21.27641 | 20.18026 | 21.03162 |
| 11/25/2009 11:48 | 162 | 9464.53 | 9470.895 | 18935.43 | 20.33264 | 21.28005 | 20.18027 | 21.03163 |
| 11/25/2009 11:48 | 163 | 9464.53 | 9470.895 | 18935.43 | 20.33979 | 21.28913 | 20.18571 | 21.03888 |
| 11/25/2009 11:48 | 164 | 9464.53 | 9470.895 | 18935.43 | 20.34336 | 21.28913 | 20.19296 | 21.04612 |
| 11/25/2009 11:48 | 165 | 9464.53 | 9414.52 | 18879.05 | 20.34336 | 21.29276 | 20.19296 | 21.04612 |
| 11/25/2009 11:49 | 166 | 9464.53 | 9358.146 | 18822.68 | 20.33979 | 21.28913 | 20.18752 | 21.03888 |
| 11/25/2009 11:49 | 167 | 9464.543 | 9358.158 | 18822.7 | 20.33732 | 21.28478 | 20.18503 | 21.03817 |
| 11/25/2009 11:49 | 168 | 9464.543 | 9358.158 | 18822.7 | 20.33553 | 21.28297 | 20.18503 | 21.03817 |
| 11/25/2009 11:49 | 169 | 11267.22 | 11162.14 | 22429.36 | 20.31945 | 21.25937 | 20.14152 | 20.99107 |
| 11/25/2009 11:50 | 170 | 12731.89 | 12571.5 | 25303.39 | 20.23189 | 21.15225 | 20.06175 | 20.9005 |
| 11/25/2009 11:50 | 171 | 12394.07 | 12289.81 | 24683.88 | 20.22488 | 21.15059 | 20.06189 | 20.89702 |
| 11/25/2009 11:50 | 172 | 12337.74 | 12233.43 | 24571.17 | 20.22488 | 21.14332 | 20.06008 | 20.8934 |
| 11/25/2009 11:50 | 173 | 12281.41 | 12177.06 | 24458.46 | 20.22488 | 21.13969 | 20.06189 | 20.89521 |
| 11/25/2009 11:51 | 174 | 12281.41 | 12177.06 | 24458.46 | 20.22488 | 21.13969 | 20.06189 | 20.89702 |
| 11/25/2009 11:51 | 175 | 12168.71 | 12120.66 | 24289.38 | 20.22321 | 21.13799 | 20.06019 | 20.89351 |
| 11/25/2009 11:51 | 176 | 12168.71 | 12064.29 | 24233 | 20.21428 | 21.12892 | 20.06201 | 20.89351 |
| 11/25/2009 11:51 | 177 | 12168.71 | 12064.29 | 24233 | 20.21785 | 21.12892 | 20.06382 | 20.89895 |
| 11/25/2009 11:52 | 178 | 12168.71 | 12064.29 | 24233 | 20.22321 | 21.13618 | 20.06926 | 20.90438 |
| 11/25/2009 11:52 | 179 | 12168.69 | 12064.27 | 24232.96 | 20.2233 | 21.13628 | 20.06754 | 20.90086 |
| 11/25/2009 11:52 | 180 | 12056.03 | 12064.27 | 24120.29 | 20.21973 | 21.13083 | 20.06391 | 20.90086 |
| 11/25/2009 11:52 | 181 | 12056.03 | 12064.27 | 24120.29 | 20.21794 | 21.13264 | 20.06391 | 20.90086 |
| 11/25/2009 11:53 | 182 | 12056.03 | 12007.89 | 24063.92 | 20.21973 | 21.13083 | 20.06028 | 20.89904 |
| 11/25/2009 11:53 | 183 | 12056.03 | 11951.52 | 24007.54 | 20.21616 | 21.12901 | 20.06028 | 20.89723 |
| 11/25/2009 11:53 | 184 | 12056.18 | 11951.67 | 24007.85 | 20.21265 | 21.12909 | 20.05673 | 20.89369 |
| 11/25/2009 11:53 | 185 | 12056.18 | 11951.67 | 24007.85 | 20.21265 | 21.12909 | 20.05492 | 20.89369 |

| TIMESTAMP | RECORD | LoadA | LoadB | TotalLoad | PotA | PotB | PotC | PotD |
|---|---|---|---|---|---|---|---|---|
| | # | lbs | lbs | lbs | in | in | in | in |
| 11/25/2009 11:54 | 186 | 12056.18 | 11951.67 | 24007.85 | 20.21265 | 21.12909 | 20.05492 | 20.89369 |
| 11/25/2009 11:54 | 187 | 12056.18 | 11951.67 | 24007.85 | 20.21087 | 21.12909 | 20.05673 | 20.89369 |
| 11/25/2009 11:54 | 188 | 12056.3 | 11951.79 | 24008.09 | 20.2145 | 21.12915 | 20.05679 | 20.89375 |
| 11/25/2009 11:54 | 189 | 11999.97 | 11951.79 | 23951.75 | 20.21093 | 21.12552 | 20.05679 | 20.89375 |
| 11/25/2009 11:55 | 190 | 11943.63 | 11951.79 | 23895.42 | 20.21093 | 21.12734 | 20.05498 | 20.89375 |
| 11/25/2009 11:55 | 191 | 11943.63 | 11951.79 | 23895.42 | 20.21093 | 21.12552 | 20.05498 | 20.89193 |
| 11/25/2009 11:55 | 192 | 11943.56 | 11895.34 | 23838.91 | 20.21276 | 21.1292 | 20.05502 | 20.8938 |
| 11/25/2009 11:55 | 193 | 11943.56 | 11895.34 | 23838.91 | 20.21276 | 21.1292 | 20.05502 | 20.8938 |
| 11/25/2009 11:56 | 194 | 11943.56 | 11895.34 | 23838.91 | 20.21276 | 21.1292 | 20.05502 | 20.8938 |
| 11/25/2009 11:56 | 195 | 11943.56 | 11895.34 | 23838.91 | 20.21633 | 21.1292 | 20.05865 | 20.8938 |
| 11/25/2009 11:56 | 196 | 11943.51 | 11838.91 | 23782.42 | 20.21101 | 21.12742 | 20.05506 | 20.89384 |
| 11/25/2009 11:56 | 197 | 11943.51 | 11838.91 | 23782.42 | 20.2128 | 21.12742 | 20.05506 | 20.89384 |
| 11/25/2009 11:57 | 198 | 11943.51 | 11838.91 | 23782.42 | 20.21101 | 21.12742 | 20.05506 | 20.89384 |
| 11/25/2009 11:57 | 199 | 11943.51 | 11838.91 | 23782.42 | 20.21101 | 21.12561 | 20.05506 | 20.89384 |
| 11/25/2009 11:57 | 200 | 11943.51 | 11838.91 | 23782.42 | 20.21101 | 21.12379 | 20.05506 | 20.89202 |
| 11/25/2009 11:57 | 201 | 11943.46 | 11838.87 | 23782.33 | 20.21104 | 21.12382 | 20.04965 | 20.88843 |
| 11/25/2009 11:58 | 202 | 11943.46 | 11838.87 | 23782.33 | 20.20925 | 21.12382 | 20.05146 | 20.88843 |
| 11/25/2009 11:58 | 203 | 11943.46 | 11838.87 | 23782.33 | 20.21104 | 21.12201 | 20.05146 | 20.88662 |
| 11/25/2009 11:58 | 204 | 11943.46 | 11838.87 | 23782.33 | 20.21104 | 21.12564 | 20.05509 | 20.89386 |
| 11/25/2009 11:58 | 205 | 11943.43 | 11838.83 | 23782.26 | 20.21106 | 21.12748 | 20.0533 | 20.89389 |
| 11/25/2009 11:59 | 206 | 11943.43 | 11838.83 | 23782.26 | 20.21106 | 21.12567 | 20.0533 | 20.89208 |
| 11/25/2009 11:59 | 207 | 11943.43 | 11838.83 | 23782.26 | 20.21821 | 21.12385 | 20.05511 | 20.89389 |
| 11/25/2009 11:59 | 208 | 11943.43 | 11838.83 | 23782.26 | 20.21821 | 21.12385 | 20.05511 | 20.89389 |
| 11/25/2009 11:59 | 209 | 11943.4 | 11838.81 | 23782.21 | 20.21287 | 21.12205 | 20.05513 | 20.89391 |
| 11/25/2009 12:00 | 210 | 11887.06 | 11838.81 | 23725.87 | 20.21108 | 21.12205 | 20.05513 | 20.8921 |
| 11/25/2009 12:00 | 211 | 11830.73 | 11838.81 | 23669.54 | 20.21108 | 21.11842 | 20.04969 | 20.88847 |
| 11/25/2009 12:00 | 212 | 15154.46 | 14995.82 | 30150.28 | 20.10565 | 20.99133 | 19.9391 | 20.75623 |
| 11/25/2009 12:00 | 213 | 15098.09 | 14995.79 | 30093.89 | 20.08243 | 20.9623 | 19.91736 | 20.73632 |
| 11/25/2009 12:01 | 214 | 15154.43 | 14995.79 | 30150.22 | 20.07528 | 20.95504 | 19.91011 | 20.72907 |
| 11/25/2009 12:01 | 215 | 15041.76 | 14939.42 | 29981.18 | 20.07528 | 20.95685 | 19.91011 | 20.72726 |
| 11/25/2009 12:01 | 216 | 14985.42 | 14883.04 | 29868.47 | 20.06813 | 20.94777 | 19.91011 | 20.72726 |
| 11/25/2009 12:01 | 217 | 14872.76 | 14826.67 | 29699.43 | 20.06635 | 20.94777 | 19.91011 | 20.72726 |
| 11/25/2009 12:02 | 218 | 14872.94 | 14770.47 | 29643.42 | 20.06815 | 20.94961 | 19.91193 | 20.72909 |
| 11/25/2009 12:02 | 219 | 14872.94 | 14770.47 | 29643.42 | 20.06815 | 20.94779 | 19.91012 | 20.72909 |
| 11/25/2009 12:02 | 220 | 14816.61 | 14714.1 | 29530.7 | 20.05921 | 20.93327 | 19.91556 | 20.73271 |
| 11/25/2009 12:02 | 221 | 14760.27 | 14657.72 | 29417.99 | 20.05921 | 20.93508 | 19.91737 | 20.73452 |
| 11/25/2009 12:03 | 222 | 14760.21 | 14657.66 | 29417.88 | 20.06101 | 20.93509 | 19.91738 | 20.73272 |
| 11/25/2009 12:03 | 223 | 14760.21 | 14657.66 | 29417.88 | 20.06101 | 20.93328 | 19.91557 | 20.73272 |
| 11/25/2009 12:03 | 224 | 14760.21 | 14657.66 | 29417.88 | 20.05744 | 20.93328 | 19.91376 | 20.7291 |
| 11/25/2009 12:03 | 225 | 14703.88 | 14657.66 | 29361.54 | 20.05744 | 20.93328 | 19.91194 | 20.72729 |
| 11/25/2009 12:04 | 226 | 14647.7 | 14657.82 | 29305.52 | 20.06102 | 20.93328 | 19.91376 | 20.73454 |
| 11/25/2009 12:04 | 227 | 14647.7 | 14601.44 | 29249.14 | 20.06102 | 20.93873 | 19.91739 | 20.73454 |
| 11/25/2009 12:04 | 228 | 14647.7 | 14601.44 | 29249.14 | 20.06102 | 20.94055 | 19.91739 | 20.73454 |
| 11/25/2009 12:04 | 229 | 14647.7 | 14545.07 | 29192.77 | 20.06638 | 20.94055 | 19.92102 | 20.73998 |
| 11/25/2009 12:05 | 230 | 14647.7 | 14545.07 | 29192.77 | 20.06817 | 20.94055 | 19.92102 | 20.74179 |
| 11/25/2009 12:05 | 231 | 14647.62 | 14544.99 | 29192.61 | 20.06817 | 20.94055 | 19.9174 | 20.73455 |
| 11/25/2009 12:05 | 232 | 14647.62 | 14544.99 | 29192.61 | 20.06817 | 20.94055 | 19.91558 | 20.73455 |

| TIMESTAMP | RECORD | LoadA | LoadB | TotalLoad | PotA | PotB | PotC | PotD |
|---|---|---|---|---|---|---|---|---|
| | # | lbs | lbs | lbs | in | in | in | in |
| 11/25/2009 12:05 | 233 | 14647.62 | 14544.99 | 29192.61 | 20.06639 | 20.94237 | 19.9174 | 20.73455 |
| 11/25/2009 12:06 | 234 | 14647.62 | 14544.99 | 29192.61 | 20.0646 | 20.94055 | 19.9174 | 20.73093 |
| 11/25/2009 12:06 | 235 | 14535.09 | 14545.13 | 29080.22 | 20.06281 | 20.93874 | 19.91015 | 20.73093 |
| 11/25/2009 12:06 | 236 | 14535.09 | 14545.13 | 29080.22 | 20.06103 | 20.93693 | 19.91196 | 20.72912 |
| 11/25/2009 12:06 | 237 | 14535.09 | 14545.13 | 29080.22 | 20.06103 | 20.93511 | 19.91015 | 20.72731 |
| 11/25/2009 12:07 | 238 | 14535.09 | 14545.13 | 29080.22 | 20.06103 | 20.93329 | 19.91015 | 20.72731 |
| 11/25/2009 12:07 | 239 | 14535.21 | 14488.86 | 29024.07 | 20.05924 | 20.9333 | 19.91015 | 20.7255 |
| 11/25/2009 12:07 | 240 | 14535.21 | 14432.48 | 28967.69 | 20.05567 | 20.9333 | 19.91015 | 20.7255 |
| 11/25/2009 12:07 | 241 | 14535.21 | 14432.48 | 28967.69 | 20.05746 | 20.93148 | 19.91015 | 20.72188 |
| 11/25/2009 12:08 | 242 | 14535.21 | 14432.48 | 28967.69 | 20.05924 | 20.9333 | 19.91015 | 20.72731 |
| 11/25/2009 12:08 | 243 | 14535.09 | 14432.38 | 28967.47 | 20.06104 | 20.93693 | 19.91015 | 20.72731 |
| 11/25/2009 12:08 | 244 | 14535.09 | 14432.38 | 28967.47 | 20.0664 | 20.94056 | 19.91741 | 20.73094 |
| 11/25/2009 12:08 | 245 | 14535.09 | 14432.38 | 28967.47 | 20.06282 | 20.94056 | 19.91559 | 20.73275 |
| 11/25/2009 12:09 | 246 | 14535.09 | 14432.38 | 28967.47 | 20.06818 | 20.94056 | 19.91559 | 20.73275 |
| 11/25/2009 12:09 | 247 | 14535.09 | 14432.38 | 28967.47 | 20.0664 | 20.94056 | 19.91559 | 20.73094 |
| 11/25/2009 12:09 | 248 | 14535.21 | 14432.48 | 28967.69 | 20.06283 | 20.94057 | 19.9156 | 20.73094 |
| 11/25/2009 12:09 | 249 | 14535.21 | 14432.48 | 28967.69 | 20.06283 | 20.93875 | 19.91378 | 20.72913 |
| 11/25/2009 12:10 | 250 | 14535.21 | 14432.48 | 28967.69 | 20.0664 | 20.94057 | 19.9156 | 20.73275 |
| 11/25/2009 12:10 | 251 | 14478.87 | 14432.48 | 28911.36 | 20.06283 | 20.94057 | 19.91197 | 20.73094 |
| 11/25/2009 12:10 | 252 | 14478.96 | 14432.57 | 28911.53 | 20.06819 | 20.94057 | 19.91741 | 20.73457 |
| 11/25/2009 12:10 | 253 | 14478.96 | 14432.57 | 28911.53 | 20.06819 | 20.94057 | 19.9156 | 20.73457 |
| 11/25/2009 12:11 | 254 | 14478.96 | 14432.57 | 28911.53 | 20.06819 | 20.94057 | 19.91741 | 20.73457 |
| 11/25/2009 12:11 | 255 | 14478.96 | 14432.57 | 28911.53 | 20.0664 | 20.94057 | 19.91741 | 20.73457 |
| 11/25/2009 12:11 | 256 | 16506.92 | 16349.25 | 32856.17 | 20.03245 | 20.90426 | 19.8739 | 20.6766 |
| 11/25/2009 12:11 | 257 | 17464.63 | 17251.28 | 34715.91 | 19.96812 | 20.82801 | 19.82495 | 20.62407 |
| 11/25/2009 12:12 | 258 | 17577.3 | 17364.04 | 34941.34 | 19.93953 | 20.79533 | 19.80138 | 20.58965 |
| 11/25/2009 12:12 | 259 | 17351.96 | 17138.53 | 34490.48 | 19.93953 | 20.79533 | 19.79776 | 20.58602 |
| 11/25/2009 12:12 | 260 | 17239.16 | 17082.03 | 34321.19 | 19.93953 | 20.79351 | 19.79413 | 20.58602 |
| 11/25/2009 12:12 | 261 | 17126.49 | 17025.65 | 34152.14 | 19.93953 | 20.78806 | 19.79413 | 20.5824 |
| 11/25/2009 12:13 | 262 | 17126.49 | 17025.65 | 34152.14 | 19.93595 | 20.78806 | 19.79413 | 20.58059 |
| 11/25/2009 12:13 | 263 | 17013.82 | 16912.9 | 33926.72 | 19.93416 | 20.78806 | 19.79413 | 20.5824 |
| 11/25/2009 12:13 | 264 | 17013.82 | 16912.9 | 33926.72 | 19.92523 | 20.77899 | 19.79232 | 20.57878 |
| 11/25/2009 12:13 | 265 | 17013.72 | 16912.81 | 33926.53 | 19.9288 | 20.7808 | 19.79413 | 20.5824 |
| 11/25/2009 12:14 | 266 | 16901.05 | 16912.81 | 33813.86 | 19.9288 | 20.7808 | 19.79413 | 20.58421 |
| 11/25/2009 12:14 | 267 | 16901.05 | 16800.05 | 33701.11 | 19.92702 | 20.7808 | 19.79413 | 20.5824 |
| 11/25/2009 12:14 | 268 | 16901.05 | 16800.05 | 33701.11 | 19.92523 | 20.7808 | 19.78688 | 20.58059 |
| 11/25/2009 12:14 | 269 | 16901.21 | 16800.21 | 33701.42 | 19.92523 | 20.77899 | 19.78688 | 20.57516 |
| 11/25/2009 12:15 | 270 | 16901.21 | 16800.21 | 33701.42 | 19.92344 | 20.77354 | 19.78507 | 20.57334 |
| 11/25/2009 12:15 | 271 | 16901.21 | 16800.21 | 33701.42 | 19.92523 | 20.77899 | 19.78688 | 20.57516 |
| 11/25/2009 12:15 | 272 | 16844.87 | 16800.21 | 33645.08 | 19.92523 | 20.77717 | 19.78507 | 20.57516 |
| 11/25/2009 12:15 | 273 | 16788.43 | 16800.1 | 33588.53 | 19.92523 | 20.77536 | 19.78507 | 20.57516 |
| 11/25/2009 12:16 | 274 | 16788.43 | 16743.72 | 33532.15 | 19.92523 | 20.77536 | 19.78507 | 20.57334 |
| 11/25/2009 12:16 | 275 | 16788.43 | 16687.35 | 33475.77 | 19.92523 | 20.7808 | 19.78688 | 20.57697 |
| 11/25/2009 12:16 | 276 | 16788.43 | 16687.35 | 33475.77 | 19.92523 | 20.7808 | 19.78688 | 20.57516 |
| 11/25/2009 12:16 | 277 | 16788.34 | 16687.26 | 33475.6 | 19.92702 | 20.7808 | 19.78688 | 20.57516 |
| 11/25/2009 12:17 | 278 | 16788.34 | 16687.26 | 33475.6 | 19.92344 | 20.77354 | 19.78688 | 20.57516 |
| 11/25/2009 12:17 | 279 | 16788.34 | 16687.26 | 33475.6 | 19.92344 | 20.77172 | 19.78688 | 20.57697 |

| TIMESTAMP | RECORD | LoadA | LoadB | TotalLoad | PotA | PotB | PotC | PotD |
|---|---|---|---|---|---|---|---|---|
| | # | lbs | lbs | lbs | in | in | in | in |
| 11/25/2009 12:17 | 280 | 16788.34 | 16687.26 | 33475.6 | 19.91987 | 20.77172 | 19.78688 | 20.57516 |
| 11/25/2009 12:17 | 281 | 16788.34 | 16687.26 | 33475.6 | 19.91808 | 20.76991 | 19.78507 | 20.57334 |
| 11/25/2009 12:18 | 282 | 16732.17 | 16687.42 | 33419.59 | 19.91808 | 20.76628 | 19.78507 | 20.57516 |
| 11/25/2009 12:18 | 283 | 16732.17 | 16687.42 | 33419.59 | 19.91272 | 20.75902 | 19.7615 | 20.56066 |
| 11/25/2009 12:18 | 284 | 16675.83 | 16687.42 | 33363.26 | 19.91093 | 20.75902 | 19.75787 | 20.56066 |
| 11/25/2009 12:18 | 285 | 16675.83 | 16687.42 | 33363.26 | 19.91093 | 20.75902 | 19.75968 | 20.56066 |
| 11/25/2009 12:19 | 286 | 16675.73 | 16687.32 | 33363.05 | 19.91093 | 20.75357 | 19.75787 | 20.56066 |
| 11/25/2009 12:19 | 287 | 16675.73 | 16630.95 | 33306.68 | 19.91093 | 20.75175 | 19.75968 | 20.56247 |
| 11/25/2009 12:19 | 288 | 16675.73 | 16630.95 | 33306.68 | 19.91093 | 20.75357 | 19.7615 | 20.56429 |
| 11/25/2009 12:19 | 289 | 16675.73 | 16574.57 | 33250.3 | 19.91093 | 20.75357 | 19.75968 | 20.56066 |
| 11/25/2009 12:20 | 290 | 16675.65 | 16574.49 | 33250.14 | 19.91093 | 20.75175 | 19.75787 | 20.56066 |
| 11/25/2009 12:20 | 291 | 16675.65 | 16574.49 | 33250.14 | 19.91093 | 20.75175 | 19.75787 | 20.56066 |
| 11/25/2009 12:20 | 292 | 16675.65 | 16574.49 | 33250.14 | 19.90915 | 20.75175 | 19.75787 | 20.56066 |
| 11/25/2009 12:20 | 293 | 16675.65 | 16574.49 | 33250.14 | 19.90915 | 20.75175 | 19.75787 | 20.56066 |
| 11/25/2009 12:21 | 294 | 16675.65 | 16574.49 | 33250.14 | 19.91093 | 20.74994 | 19.75787 | 20.56066 |
| 11/25/2009 12:21 | 295 | 16675.58 | 16574.43 | 33250.01 | 19.90915 | 20.75175 | 19.75787 | 20.56066 |
| 11/25/2009 12:21 | 296 | 16675.58 | 16574.43 | 33250.01 | 19.90557 | 20.74994 | 19.75606 | 20.55885 |
| 11/25/2009 12:21 | 297 | 16675.58 | 16574.43 | 33250.01 | 19.91093 | 20.75175 | 19.75787 | 20.55885 |
| 11/25/2009 12:22 | 298 | 16675.58 | 16574.43 | 33250.01 | 19.91093 | 20.75175 | 19.75606 | 20.55885 |
| 11/25/2009 12:22 | 299 | 16675.53 | 16574.38 | 33249.91 | 19.90557 | 20.74994 | 19.75606 | 20.55885 |
| 11/25/2009 12:22 | 300 | 16675.53 | 16574.38 | 33249.91 | 19.90557 | 20.74631 | 19.75243 | 20.55523 |
| 11/25/2009 12:22 | 301 | 16675.53 | 16574.38 | 33249.91 | 19.90736 | 20.74994 | 19.75425 | 20.55704 |
| 11/25/2009 12:23 | 302 | 16675.53 | 16574.38 | 33249.91 | 19.90736 | 20.74994 | 19.75425 | 20.56066 |
| 11/25/2009 12:23 | 303 | 16675.72 | 16574.56 | 33250.29 | 19.90557 | 20.74812 | 19.75062 | 20.55704 |
| 11/25/2009 12:23 | 304 | 16675.72 | 16574.56 | 33250.29 | 19.90379 | 20.74631 | 19.75062 | 20.55704 |
| 11/25/2009 12:23 | 305 | 16675.72 | 16574.56 | 33250.29 | 19.90379 | 20.74449 | 19.75062 | 20.55342 |
| 11/25/2009 12:24 | 306 | 16675.72 | 16574.56 | 33250.29 | 19.90379 | 20.74449 | 19.74881 | 20.55342 |
| 11/25/2009 12:24 | 307 | 1803.235 | 1860.401 | 3663.637 | 20.31123 | 21.26919 | 20.19117 | 21.09325 |
| 11/25/2009 12:24 | 308 | 113.189 | 56.3758 | 169.5648 | 20.43274 | 21.41625 | 20.34346 | 21.26715 |
| 11/25/2009 12:24 | 309 | 56.85416 | 56.3758 | 113.2299 | 20.45419 | 21.43985 | 20.34346 | 21.26896 |

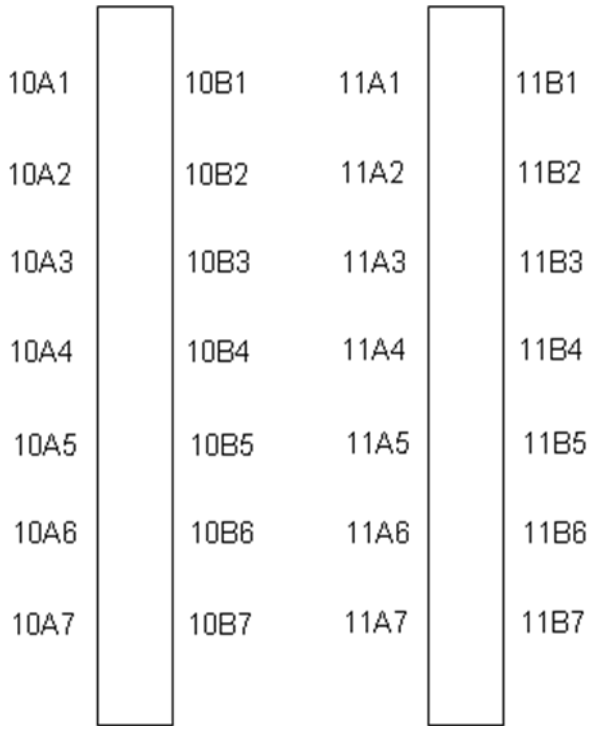


Figure D.1 General positions of strain gauges in piles 10 and 11

# TABLE D.4 Strain gage measurements for pile 10

| TIMESTAMP TS | 10A1 Comp. Strain | 10B1 Tensile Strain | Moment (k*ft) | 10A2 Comp. Strain | 10B2 Tensile Strain | Moment (k*ft) | 10A3 Comp. Strain | 10B3 Tensile Strain | Moment (k*ft) | 10A4 Comp. Strain | 10B4 Tensile Strain | Moment (k*ft) | 10A5 Comp. Strain | 10B5 Tensile Strain | Moment (k*ft) | 10A6 Comp. Strain | 10B6 Tensile Strain | Moment (k*ft) | 10A7 Comp. Strain | 10B7 Tensile Strain | Moment (k*ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11/25/2009 10:50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11/25/2009 10:51 | -0.10743 | -0.04615 | 0.00423 | -0.11611 | -0.04694 | 0.004775 | -0.06671 | -0.11157 | -0.0031 | -0.05352 | -0.04926 | 0.000294 | -0.03718 | -0.0634 | -0.00181 | -0.09027 | -0.08049 | 0.000675 | -0.08738 | -0.0612 | 0.001807 |
| 11/25/2009 10:52 | -0.11299 | -0.07568 | 0.002575 | -0.12901 | -0.06499 | 0.004419 | -0.09025 | -0.17119 | -0.00559 | -0.0669 | -0.05684 | 0.000695 | -0.0587 | -0.07529 | -0.00115 | -0.10793 | -0.09774 | 0.000704 | -0.10226 | -0.07233 | 0.002066 |
| 11/25/2009 10:53 | -0.11299 | -0.0886 | 0.001683 | -0.1327 | -0.06861 | 0.004424 | -0.10203 | -0.20582 | -0.00716 | -0.07072 | -0.06063 | 0.000697 | -0.06653 | -0.07925 | -0.00088 | -0.11971 | -0.10157 | 0.001252 | -0.11155 | -0.07418 | 0.00258 |
| 11/25/2009 10:54 | -0.11114 | -0.09783 | 0.000918 | -0.13454 | -0.07402 | 0.004177 | -0.10988 | -0.23082 | -0.00835 | -0.07263 | -0.06063 | 0.000829 | -0.07435 | -0.08321 | -0.00061 | -0.12167 | -0.1054 | 0.001123 | -0.11341 | -0.07603 | 0.00258 |
| 11/25/2009 10:55 | -0.19819 | -0.12737 | 0.004889 | -0.24327 | -0.14985 | 0.006449 | -0.21975 | -0.42701 | -0.01431 | -0.09748 | -0.09852 | -7.2E-05 | -0.09392 | -0.10303 | -0.00063 | -0.13737 | -0.11882 | 0.001281 | -0.11899 | -0.08345 | 0.002453 |
| 11/25/2009 10:56 | -0.25561 | -0.10891 | 0.010127 | -0.25986 | -0.13721 | 0.008466 | -0.23152 | -0.45009 | -0.01509 | -0.09939 | -0.1061 | -0.00046 | -0.08805 | -0.09312 | -0.00035 | -0.16092 | -0.14565 | 0.001054 | -0.11899 | -0.0816 | 0.002581 |
| 11/25/2009 10:57 | -0.23338 | -0.05907 | 0.012033 | -0.26723 | -0.13902 | 0.008851 | -0.22956 | -0.45971 | -0.01589 | -0.09366 | -0.10231 | -0.0006 | -0.08805 | -0.08321 | 0.000334 | -0.15503 | -0.14756 | 0.000516 | -0.10783 | -0.07418 | 0.002323 |
| 11/25/2009 10:58 | -0.22227 | -0.12921 | 0.006424 | -0.25802 | -0.13902 | 0.008214 | -0.24525 | -0.46933 | -0.01547 | -0.10513 | -0.1042 | 6.39E-05 | -0.09588 | -0.08718 | 0.000601 | -0.17073 | -0.15906 | 0.000806 | -0.11899 | -0.07974 | 0.002709 |
| 11/25/2009 10:59 | -0.12966 | -0.10891 | 0.001432 | -0.16771 | -0.07041 | 0.006717 | -0.16089 | -0.29814 | -0.00947 | -0.08028 | -0.06442 | 0.001095 | -0.08609 | -0.08321 | 0.000199 | -0.16877 | -0.15715 | 0.000802 | -0.11527 | -0.07974 | 0.002452 |
| 11/25/2009 11:00 | -0.12225 | -0.11076 | 0.000794 | -0.16034 | -0.0668 | 0.006457 | -0.16481 | -0.30391 | -0.0096 | -0.08028 | -0.06442 | 0.001095 | -0.09001 | -0.07727 | 0.000879 | -0.16484 | -0.15523 | 0.000664 | -0.11341 | -0.07789 | 0.002452 |
| 11/25/2009 11:01 | -6.20123 | 5.579876 | 0.813233 | -7.04986 | 5.227914 | 0.847517 | -2.01664 | 1.644908 | 0.252751 | 0.005734 | -0.1042 | -0.00759 | -0.09196 | -0.07727 | 0.001014 | -0.19232 | -0.17823 | 0.000973 | -0.13944 | -0.09458 | 0.003097 |
| 11/25/2009 11:02 | -0.53899 | 0.371049 | 0.062819 | -1.18308 | 0.465824 | 0.113821 | -0.86128 | -0.32123 | 0.037279 | -0.09748 | -0.15725 | -0.00413 | -0.10957 | -0.0951 | 0.000999 | -0.18839 | -0.16864 | 0.001363 | -0.12643 | -0.08345 | 0.002966 |
| 11/25/2009 11:03 | -0.74272 | 0.26767 | 0.069746 | -1.39497 | 0.462213 | 0.128198 | -0.83382 | -0.4174 | 0.028745 | -0.08601 | -0.15725 | -0.00492 | -0.10957 | -0.09906 | 0.000726 | -0.18643 | -0.17823 | 0.000566 | -0.12271 | -0.08902 | 0.002326 |
| 11/25/2009 11:04 | -0.72605 | 0.245517 | 0.067066 | -1.35812 | 0.426101 | 0.123162 | -0.86521 | -0.47125 | 0.027194 | -0.10513 | -0.16294 | -0.00399 | -0.1174 | -0.10105 | 0.001129 | -0.18839 | -0.17631 | 0.000834 | -0.12457 | -0.08531 | 0.00271 |
| 11/25/2009 11:05 | -0.71123 | 0.236287 | 0.065406 | -1.33969 | 0.408045 | 0.120644 | -0.86521 | -0.48664 | 0.026132 | -0.09939 | -0.16483 | -0.00452 | -0.11544 | -0.10105 | 0.000994 | -0.18447 | -0.17439 | 0.000696 | -0.12643 | -0.08716 | 0.00271 |
| 11/25/2009 11:06 | -0.61863 | 0.204904 | 0.056847 | -1.21993 | 0.426101 | 0.113623 | -0.81028 | -0.32892 | 0.033227 | -0.08793 | -0.12315 | -0.00243 | -0.10762 | -0.08718 | 0.001411 | -0.17466 | -0.15906 | 0.001076 | -0.11527 | -0.07789 | 0.00258 |
| 11/25/2009 11:07 | -0.61678 | 0.212288 | 0.057229 | -1.20887 | 0.435129 | 0.113483 | -0.78085 | -0.33084 | 0.031063 | -0.08219 | -0.12125 | -0.0027 | -0.1037 | -0.08321 | 0.001414 | -0.17269 | -0.16098 | 0.000809 | -0.11713 | -0.07789 | 0.002709 |
| 11/25/2009 11:08 | -0.61307 | 0.217827 | 0.057356 | -1.19966 | 0.433323 | 0.112722 | -0.77693 | -0.31545 | 0.031855 | -0.08219 | -0.11368 | -0.00217 | -0.10175 | -0.07925 | 0.001553 | -0.16877 | -0.15715 | 0.000802 | -0.11341 | -0.07603 | 0.00258 |
| 11/25/2009 11:09 | -31.7562 | 31.79885 | 4.387114 | -44.1907 | 41.5034 | 5.915345 | -41.7384 | 23.65573 | 4.514063 | -0.18158 | 0.08147 | 0.018158 | -0.08022 | -0.54681 | -0.03221 | -0.29044 | -0.29129 | -5.9E-05 | -0.1729 | -0.11498 | 0.003999 |
| 11/25/2009 11:10 | -30.8306 | 31.16894 | 4.279736 | -43.5425 | 41.20098 | 5.849725 | -42.8771 | 23.80259 | 4.602805 | -0.51033 | 0.269045 | 0.053799 | -0.47546 | -1.0282 | -0.03815 | -0.69074 | -0.7876 | -0.00669 | -0.21752 | -0.16505 | 0.003622 |
| 11/25/2009 11:11 | -30.5269 | 30.89396 | 4.239792 | -43.3125 | 41.06618 | 5.824537 | -43.3111 | 23.87022 | 4.637433 | -0.61354 | 0.329676 | 0.065109 | -0.60459 | -1.07178 | -0.03225 | -1.09298 | -1.12483 | -0.0022 | -0.29003 | -0.19101 | 0.006835 |
| 11/25/2009 11:12 | -30.3207 | 30.72303 | 4.213764 | -43.2285 | 40.97145 | 5.8122 | -43.6011 | 23.91466 | 4.660517 | -0.69954 | 0.346729 | 0.072223 | -0.66328 | -1.14309 | -0.03312 | -1.24406 | -1.25895 | -0.00103 | -0.30304 | -0.20585 | 0.006709 |
| 11/25/2009 11:13 | -30.1459 | 30.57441 | 4.191434 | -43.0988 | 40.88037 | 5.796962 | -43.8171 | 23.94365 | 4.677429 | -0.76261 | 0.354308 | 0.077099 | -0.69263 | -1.18865 | -0.03424 | -1.33627 | -1.33942 | -0.00022 | -0.31234 | -0.20585 | 0.007351 |
| 11/25/2009 11:14 | -30.0649 | 30.55026 | 4.184176 | -43.0696 | 40.90041 | 5.796328 | -43.9981 | 23.96104 | 4.691122 | -0.81039 | 0.352414 | 0.080267 | -0.71024 | -1.22431 | -0.03549 | -1.39906 | -1.3969 | 0.000149 | -0.31234 | -0.20956 | 0.007095 |
| 11/25/2009 11:15 | -29.9968 | 30.49267 | 4.175499 | -43.0367 | 40.88583 | 5.793053 | -44.1557 | 23.9823 | 4.703469 | -0.84862 | 0.354308 | 0.083036 | -0.72784 | -1.25006 | -0.03605 | -1.44614 | -1.44096 | 0.000358 | -0.31978 | -0.21326 | 0.007352 |
| 11/25/2009 11:16 | -29.9213 | 30.4295 | 4.16593 | -42.9892 | 40.86398 | 5.788267 | -44.2997 | 24.01708 | 4.71581 | -0.88684 | 0.354308 | 0.085675 | -0.73958 | -1.26986 | -0.0366 | -1.48146 | -1.47162 | 0.000679 | -0.32163 | -0.21697 | 0.007225 |
| 11/25/2009 11:17 | -29.8569 | 30.38306 | 4.158276 | -42.9509 | 40.85305 | 5.784865 | -44.4184 | 24.04027 | 4.725603 | -0.91742 | 0.359993 | 0.088178 | -0.74741 | -1.28769 | -0.03729 | -1.51089 | -1.49844 | 0.000859 | -0.32349 | -0.21512 | 0.007481 |
| 11/25/2009 11:18 | -29.8182 | 30.35705 | 4.153813 | -42.9454 | 40.86398 | 5.785241 | -44.5468 | 24.03641 | 4.734201 | -0.94799 | 0.352414 | 0.089765 | -0.75719 | -1.30552 | -0.03785 | -1.53639 | -1.52335 | 0.000901 | -0.32721 | -0.21883 | 0.007482 |
| 11/25/2009 11:19 | -54.3296 | 59.62662 | 7.866233 | -96.5249 | 307.0095 | 27.8554 | -108.02 | 21.83389 | 8.96364 | -4.74011 | 1.989751 | 0.464553 | -0.16436 | -2.51567 | -0.16231 | -1.74631 | -1.85095 | -0.00722 | -0.36811 | -0.25035 | 0.008129 |
| 11/25/2009 11:20 | -65.1529 | 58.50162 | 8.535697 | -69.5471 | 310.1036 | 26.20675 | -165.16 | 22.85775 | 12.97859 | -7.80994 | 2.33093 | 0.700009 | -0.12131 | -3.04639 | -0.20191 | -2.78598 | -2.74745 | 0.00266 | -0.47222 | -0.31526 | 0.010835 |
| 11/25/2009 11:21 | -64.5079 | 57.98218 | 8.455317 | -68.9787 | 310.4462 | 26.19116 | -166.83 | 23.02197 | 13.10523 | -8.43017 | 2.33093 | 0.742823 | -0.17806 | -3.26817 | -0.21331 | -3.17826 | -3.09604 | 0.005675 | -0.51498 | -0.34678 | 0.01161 |
| 11/25/2009 11:22 | -64.1022 | 57.75799 | 8.411837 | -68.6754 | 310.6869 | 26.18684 | -167.681 | 23.17847 | 13.17479 | -8.75838 | 2.35178 | 0.766919 | -0.20154 | -3.39291 | -0.2203 | -3.39008 | -3.29906 | 0.006283 | -0.53914 | -0.35976 | 0.012382 |
| 11/25/2009 11:23 | -63.7714 | 57.62534 | 8.379847 | -68.2849 | 311.3241 | 26.20387 | -167.985 | 23.80838 | 13.23925 | -8.89958 | 2.480677 | 0.785563 | -0.18393 | -3.44043 | -0.22479 | -3.50971 | -3.41014 | 0.006873 | -0.54286 | -0.36162 | 0.012511 |
| 11/25/2009 11:24 | -63.5174 | 57.44973 | 8.350188 | -68.0524 | 311.3857 | 26.19207 | -168.371 | 23.96297 | 13.27654 | -9.0446 | 2.503423 | 0.797143 | -0.18197 | -3.49785 | -0.22889 | -3.58816 | -3.49058 | 0.006736 | -0.54844 | -0.36718 | 0.012512 |
| 11/25/2009 11:25 | -63.3255 | 57.3227 | 8.328171 | -67.8563 | 311.4415 | 26.18239 | -168.616 | 24.1311 | 13.30506 | -9.16671 | 2.520483 | 0.80675 | -0.1898 | -3.5434 | -0.23149 | -3.65484 | -3.55953 | 0.006579 | -0.55402 | -0.37089 | 0.012641 |
| 11/25/2009 11:26 | -63.1464 | 57.20501 | 8.307683 | -67.6746 | 311.4512 | 26.17051 | -168.886 | 24.23545 | 13.33088 | -9.26783 | 2.533752 | 0.814647 | -0.1898 | -3.58894 | -0.23464 | -3.70387 | -3.61123 | 0.006394 | -0.55959 | -0.3746 | 0.01277 |
| 11/25/2009 11:27 | -62.9946 | 57.1116 | 8.290762 | -67.5311 | 311.4723 | 26.16207 | -169.112 | 24.32821 | 13.35288 | -9.3556 | 2.548917 | 0.821752 | -0.19175 | -3.62656 | -0.2371 | -3.74309 | -3.65528 | 0.006061 | -0.55959 | -0.37645 | 0.012642 |
| 11/25/2009 11:28 | -62.916 | 57.02381 | 8.279276 | -67.5438 | 311.5262 | 26.16667 | -169.433 | 24.4345 | 13.38238 | -9.46244 | 2.558395 | 0.829781 | -0.20349 | -3.66219 | -0.23875 | -3.78623 | -3.70124 | 0.005867 | -0.56703 | -0.38202 | 0.012771 |
| 11/25/2009 11:29 | -62.7369 | 56.93788 | 8.260979 | -67.3186 | 311.5243 | 26.15098 | -169.547 | 24.55239 | 13.39838 | -9.50442 | 2.571664 | 0.833595 | -0.19567 | -3.69189 | -0.24134 | -3.81369 | -3.73188 | 0.005647 | -0.56703 | -0.37831 | 0.013027 |
| 11/25/2009 11:30 | -94.3388 | 86.59953 | 12.48992 | -123.453 | 436.2695 | 38.63686 | -252.778 | 88.55649 | 23.56185 | -19.0882 | 12.05843 | 2.150005 | 1.976633 | -5.01435 | -0.48258 | -3.95292 | -4.00956 | -0.00391 | -0.60607 | -0.39871 | 0.014314 |
| 11/25/2009 11:31 | -93.2366 | 85.61299 | 12.34573 | -121.901 | 435.2997 | 38.46276 | -254.294 | 89.19225 | 23.71038 | -20.52 | 12.42688 | 2.274274 | 1.980548 | -5.28355 | -0.50143 | -4.14902 | -4.22978 | -0.00557 | -0.63581 | -0.4191 | 0.014959 |
| 11/25/2009 11:32 | -92.7026 | 85.0437 | 12.26957 | -121.156 | 434.8306 | 38.37895 | -254.836 | 89.5757 | 23.77422 | -21.1939 | 12.6206 | 2.334164 | 1.99425 | -5.44784 | -0.51372 | -4.28041 | -4.39063 | -0.00761 | -0.65254 | -0.42467 | 0.01573 |
| 11/25/2009 11:33 | -92.3684 | 84.72244 | 12.22433 | -120.831 | 434.5823 | 38.33938 | -255.168 | 89.80656 | 23.81309 | -21.5974 | 12.77255 | 2.372507 | 2.007952 | -5.55868 | -0.52231 | -4.38041 | -4.52083 | -0.00969 | -0.66184 | -0.43023 | 0.015988 |
| 11/25/2009 11:34 | -92.1686 | 84.51392 | 12.19614 | -120.691 | 434.468 | 38.32182 | -255.45 | 90.0257 | 23.84767 | -21.8714 | 12.89981 | 2.40021 | 2.021654 | -5.63785 | -0.52872 | -4.46081 | -4.61848 | -0.01088 | -0.67485 | -0.43394 | 0.01663 |
| 11/25/2009 11:35 | -91.9506 | 84.30165 | 12.16644 | -120.375 | 434.2926 | 38.2879 | -255.619 | 90.31528 | 23.87938 | -22.0865 | 13.01378 | 2.422922 | 2.035356 | -5.70317 | -0.53418 | -4.52355 | -4.70273 | -0.01237 | -0.67857 | -0.44136 | 0.016375 |
| 11/25/2009 11:36 | -91.7998 | 84.13635 | 12.14462 | -120.28 | 434.204 | 38.27521 | -255.814 | 90.464 | 23.90304 | -22.2654 | 13.09166 | 2.440647 | 2.045143 | -5.75265 | -0.53827 | -4.57846 | -4.77166 | -0.01334 | -0.686 | -0.44877 | 0.016376 |
| 11/25/2009 11:37 | -91.6617 | 84.00111 | 12.12576 | -120.195 | 434.1232 | 38.26381 | -255.985 | 90.61271 | 23.92516 | -22.41 | 13.16384 | 2.455613 | 2.051015 | -5.77046 | -0.53991 | -4.62944 | -4.84059 | -0.01458 | -0.69344 | -0.45063 | 0.016761 |
| 11/25/2009 11:38 | -91.5346 | 83.87714 | 12.10842 | -120.125 | 434.0443 | 38.25353 | -256.134 | 90.72817 | 23.94343 | -22.5375 | 13.22273 | 2.468479 | 2.056888 | -5.81202 | -0.54318 | -4.67258 | -4.89611 | -0.01543 | -0.6953 | -0.45434 | 0.016633 |

| TIMESTAMP TS | 10A1 Comp. Strain | 10B1 Tensile Strain | Moment (k*ft) | 10A2 Comp. Strain | 10B2 Tensile Strain | Moment (k*ft) | 10A3 Comp. Strain | 10B3 Tensile Strain | Moment (k*ft) | 10A4 Comp. Strain | 10B4 Tensile Strain | Moment (k*ft) | 10A5 Comp. Strain | 10B5 Tensile Strain | Moment (k*ft) | 10A6 Comp. Strain | 10B6 Tensile Strain | Moment (k*ft) | 10A7 Comp. Strain | 10B7 Tensile Strain | Moment (k*ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11/25/2009 11:39 | -91.4437 | 83.78699 | 12.09593 | -120.082 | 434.0128 | 38.24838 | -256.28 | 90.84753 | 23.96172 | -22.6498 | 13.28351 | 2.480425 | 2.058845 | -5.84171 | -0.54536 | -4.70787 | -4.94398 | -0.0163 | -0.69716 | -0.45804 | 0.016506 |
| 11/25/2009 11:40 | -105.322 | 79.88553 | 12.78458 | -204.605 | 525.1143 | 50.37148 | -338.791 | 163.5677 | 34.67707 | -33.6728 | 29.46874 | 4.35857 | 6.082912 | -6.63926 | -0.87819 | -4.39806 | -4.8291 | -0.02975 | -0.65626 | -0.40798 | 0.017139 |
| 11/25/2009 11:41 | -100.037 | 80.27028 | 12.44632 | -205.972 | 521.7395 | 50.23289 | -346.326 | 162.3324 | 35.11193 | -39.0757 | 30.82569 | 4.825191 | 6.239628 | -7.16563 | -0.92535 | -4.52748 | -5.07226 | -0.03761 | -0.69344 | -0.42467 | 0.018553 |
| 11/25/2009 11:42 | -98.1955 | 79.93995 | 12.29644 | -205.001 | 520.8546 | 50.10481 | -346.856 | 161.5611 | 35.09534 | -40.3918 | 31.25648 | 4.94578 | 6.255299 | -7.38526 | -0.94159 | -4.60003 | -5.22351 | -0.04304 | -0.71575 | -0.44321 | 0.018813 |
| 11/25/2009 11:43 | -97.3355 | 79.70536 | 12.22088 | -204.455 | 520.3101 | 50.02953 | -347.166 | 161.6365 | 35.1219 | -41.2545 | 31.52717 | 5.024017 | 6.255299 | -7.53563 | -0.95197 | -4.65689 | -5.33263 | -0.04665 | -0.72504 | -0.44321 | 0.019455 |
| 11/25/2009 11:44 | -96.7766 | 79.62842 | 12.17699 | -204.066 | 519.8978 | 49.97419 | -347.411 | 161.7891 | 35.14937 | -41.8839 | 31.78454 | 5.085229 | 6.257258 | -7.63456 | -0.95893 | -4.69807 | -5.41878 | -0.04975 | -0.73062 | -0.44321 | 0.019839 |
| 11/25/2009 11:45 | -96.4173 | 79.53834 | 12.14597 | -203.863 | 519.7077 | 49.94707 | -347.634 | 161.9338 | 35.17477 | -42.3882 | 31.95993 | 5.132142 | 6.257258 | -7.71766 | -0.96467 | -4.73532 | -5.4877 | -0.05194 | -0.73248 | -0.44506 | 0.01984 |
| 11/25/2009 11:46 | -96.1233 | 79.40322 | 12.11635 | -203.673 | 519.5355 | 49.92206 | -347.86 | 162.0845 | 35.20071 | -42.8108 | 32.12389 | 5.172636 | 6.255299 | -7.79878 | -0.97013 | -4.76277 | -5.55279 | -0.05453 | -0.73062 | -0.44877 | 0.019455 |
| 11/25/2009 11:47 | -95.9218 | 79.285 | 12.09428 | -203.671 | 519.4215 | 49.91406 | -348.087 | 162.2193 | 35.22569 | -43.2903 | 32.21541 | 5.212052 | 6.229833 | -7.87989 | -0.97397 | -4.80395 | -5.62171 | -0.05645 | -0.73434 | -0.45063 | 0.019584 |
| 11/25/2009 11:48 | -95.6042 | 79.14051 | 12.06238 | -203.414 | 519.1093 | 49.87475 | -348.262 | 162.2986 | 35.24329 | -43.6295 | 32.33553 | 5.243759 | 6.225915 | -7.93529 | -0.97753 | -4.8314 | -5.66957 | -0.05786 | -0.7362 | -0.45434 | 0.019456 |
| 11/25/2009 11:49 | -95.4299 | 79.07108 | 12.04556 | -203.236 | 518.8951 | 49.84768 | -348.39 | 162.3958 | 35.25884 | -43.9119 | 32.43086 | 5.26983 | 6.225915 | -7.97684 | -0.9804 | -4.85492 | -5.7136 | -0.05927 | -0.7362 | -0.45434 | 0.019456 |
| 11/25/2009 11:50 | -95.1976 | 78.93035 | 12.0198 | -203.009 | 518.637 | 49.81417 | -348.511 | 162.4692 | 35.27224 | -44.162 | 32.5281 | 5.293808 | 6.227874 | -8.02036 | -0.98354 | -4.87061 | -5.7538 | -0.06097 | -0.7362 | -0.45434 | 0.019456 |
| 11/25/2009 11:51 | -117.122 | 189.8302 | 21.18847 | -279.144 | 645.6512 | 63.83732 | -421.84 | 307.4783 | 50.34379 | -77.1996 | 46.43151 | 8.534081 | 11.26477 | -9.75316 | -1.45084 | -4.00979 | -5.21202 | -0.08299 | -0.63581 | -0.34122 | 0.020335 |
| 11/25/2009 11:52 | -114.679 | 189.1435 | 20.9724 | -275.306 | 643.3784 | 63.41549 | -421.867 | 335.7406 | 52.29656 | -85.9349 | 44.99399 | 9.037832 | 10.9236 | -10.4354 | -1.47438 | -4.04313 | -5.38241 | -0.09245 | -0.65626 | -0.34678 | 0.021363 |
| 11/25/2009 11:53 | -113.632 | 188.8864 | 20.8824 | -274.029 | 642.589 | 63.27283 | -421.712 | 337.83 | 52.4301 | -88.6022 | 44.95194 | 9.21905 | 10.81185 | -10.7163 | -1.48605 | -4.05686 | -5.4877 | -0.09877 | -0.66741 | -0.3542 | 0.021621 |
| 11/25/2009 11:54 | -112.981 | 188.6505 | 20.82119 | -273.235 | 642.1043 | 63.18457 | -421.925 | 338.7646 | 52.50928 | -89.9203 | 45.04177 | 9.316237 | 10.74715 | -10.8883 | -1.49346 | -4.06274 | -5.56237 | -0.10352 | -0.67299 | -0.35605 | 0.021878 |
| 11/25/2009 11:55 | -112.473 | 188.4281 | 20.77075 | -272.618 | 641.7158 | 63.11515 | -422.123 | 339.2779 | 52.55839 | -90.8495 | 45.13352 | 9.386712 | 10.69421 | -11.0208 | -1.49895 | -4.06862 | -5.62745 | -0.1076 | -0.68043 | -0.35791 | 0.022263 |
| 11/25/2009 11:56 | -111.856 | 188.0867 | 20.70461 | -271.961 | 641.1678 | 63.03195 | -422.265 | 339.5233 | 52.58516 | -91.619 | 45.20806 | 9.444977 | 10.64716 | -11.1275 | -1.50308 | -4.07451 | -5.67914 | -0.11077 | -0.68043 | -0.35976 | 0.022135 |
| 11/25/2009 11:57 | -111.614 | 188.1174 | 20.69 | -271.688 | 641.1228 | 63.01005 | -422.393 | 339.8752 | 52.61827 | -92.3227 | 45.30555 | 9.500282 | 10.61775 | -11.2047 | -1.50637 | -4.07843 | -5.72126 | -0.1134 | -0.68229 | -0.35791 | 0.022391 |
| 11/25/2009 11:58 | -111.409 | 188.0598 | 20.67192 | -271.496 | 641.0554 | 62.99211 | -422.467 | 340.1554 | 52.64271 | -92.9025 | 45.36289 | 9.544263 | 10.59422 | -11.2719 | -1.50939 | -4.08431 | -5.7672 | -0.11617 | -0.686 | -0.35791 | 0.022648 |
| 11/25/2009 11:59 | -111.19 | 187.9563 | 20.64966 | -271.31 | 640.9306 | 62.97069 | -422.603 | 340.4091 | 52.66967 | -93.4391 | 45.43553 | 9.586316 | 10.57069 | -11.3253 | -1.51145 | -4.08823 | -5.79974 | -0.11814 | -0.68229 | -0.35976 | 0.022263 |
| 11/25/2009 12:00 | -111.024 | 187.893 | 20.6338 | -271.114 | 640.8468 | 62.95137 | -422.706 | 340.6689 | 52.69469 | -93.9512 | 45.51581 | 9.627209 | 10.56481 | -11.3688 | -1.51404 | -4.08039 | -5.82272 | -0.12027 | -0.67857 | -0.3542 | 0.022391 |
| 11/25/2009 12:01 | -129.629 | 240.4713 | 25.5475 | -313.429 | 749.7349 | 73.38869 | -448.342 | 428.3592 | 60.51746 | -101.301 | 44.40725 | 10.05802 | 14.41081 | -12.8554 | -1.88215 | -2.74675 | -4.38105 | -0.11281 | -0.52427 | -0.16319 | 0.024925 |
| 11/25/2009 12:02 | -147.507 | 241.163 | 26.82935 | -365.578 | 771.6809 | 78.50338 | -494.203 | 448.4036 | 65.06678 | -157.5 | 46.49269 | 14.0813 | 14.09691 | -15.1735 | -2.0205 | -1.43437 | -4.4385 | -0.20737 | -0.49825 | -0.13167 | 0.025304 |
| 11/25/2009 12:03 | -145.723 | 239.7624 | 26.6095 | -363.566 | 771.5325 | 78.35422 | -496.251 | 449.3326 | 65.27228 | -162.956 | 46.45445 | 14.45531 | 13.70063 | -15.9006 | -2.04333 | -1.33824 | -4.61274 | -0.22603 | -0.52427 | -0.14465 | 0.026205 |
| 11/25/2009 12:04 | -144.929 | 239.0884 | 26.50819 | -362.155 | 771.6287 | 78.26344 | -497.053 | 449.8806 | 65.36549 | -165.664 | 46.69726 | 14.65903 | 13.57509 | -16.2858 | -2.06125 | -1.25976 | -4.70656 | -0.23793 | -0.52427 | -0.13909 | 0.026589 |
| 11/25/2009 12:05 | -144.326 | 238.5868 | 26.43192 | -361.228 | 771.52 | 78.19199 | -497.616 | 450.2723 | 65.4314 | -167.034 | 46.92096 | 14.76899 | 13.4417 | -16.5446 | -2.06991 | -1.21071 | -4.76975 | -0.24568 | -0.52613 | -0.13167 | 0.027229 |
| 11/25/2009 12:06 | -143.656 | 238.1162 | 26.35319 | -360.296 | 771.5785 | 78.13171 | -497.87 | 450.7307 | 65.48052 | -167.836 | 47.2747 | 14.84876 | 13.38481 | -16.6947 | -2.07634 | -1.14596 | -4.8157 | -0.25332 | -0.52799 | -0.13352 | 0.027229 |
| 11/25/2009 12:07 | -143.268 | 237.7716 | 26.30261 | -359.687 | 771.4928 | 78.08373 | -498.155 | 450.8911 | 65.51127 | -168.508 | 47.45445 | 14.90758 | 13.31027 | -16.8527 | -2.08211 | -1.11064 | -4.85591 | -0.25853 | -0.52613 | -0.12425 | 0.027741 |
| 11/25/2009 12:08 | -142.903 | 237.4172 | 26.25298 | -359.203 | 771.3298 | 78.03908 | -498.394 | 450.962 | 65.53266 | -169.049 | 47.60169 | 14.9551 | 13.23966 | -16.9949 | -2.08705 | -1.07532 | -4.89994 | -0.26401 | -0.52613 | -0.12796 | 0.027485 |
| 11/25/2009 12:09 | -142.691 | 237.3185 | 26.23153 | -358.994 | 771.4364 | 78.03203 | -498.654 | 451.0912 | 65.55954 | -169.54 | 47.66097 | 14.9931 | 13.15139 | -17.1332 | -2.0905 | -1.06551 | -4.94589 | -0.26786 | -0.53357 | -0.12981 | 0.02787 |
| 11/25/2009 12:10 | -142.504 | 237.1946 | 26.21008 | -358.723 | 771.4907 | 78.01702 | -498.87 | 451.3871 | 65.59487 | -169.939 | 47.75085 | 15.02684 | 13.10431 | -17.2181 | -2.09311 | -1.03804 | -4.97653 | -0.27187 | -0.53357 | -0.12981 | 0.02787 |
| 11/25/2009 12:11 | -142.271 | 237.0029 | 26.18073 | -358.421 | 771.4803 | 77.99544 | -499.064 | 451.5705 | 65.62097 | -170.357 | 47.88281 | 15.06475 | 13.06508 | -17.2991 | -2.09599 | -1.00469 | -5.00333 | -0.27602 | -0.53357 | -0.12796 | 0.027998 |
| 11/25/2009 12:12 | -146.057 | 264.7719 | 28.35893 | -367.836 | 814.7085 | 81.62933 | -502.166 | 486.7977 | 68.26677 | -169.88 | 54.36412 | 15.47926 | 13.8713 | -15.8611 | -2.05238 | -0.52003 | -3.94254 | -0.23625 | -0.45735 | 0.012982 | 0.032466 |
| 11/25/2009 12:13 | -178.095 | 280.6573 | 31.66699 | -442.952 | 926.6756 | 94.54341 | -574.297 | 559.8438 | 78.28814 | -209.869 | 64.07346 | 18.90985 | 17.62542 | -18.168 | -2.47077 | 3.879215 | -2.667 | -0.45188 | -0.28073 | 0.168764 | 0.031028 |
| 11/25/2009 12:14 | -174.904 | 277.9037 | 31.2567 | -439.042 | 925.041 | 94.16071 | -577.102 | 562.2109 | 78.64513 | -215.898 | 65.03081 | 19.39211 | 17.15037 | -18.8769 | -2.48691 | 4.311283 | -2.73595 | -0.48646 | -0.29003 | 0.176182 | 0.032182 |
| 11/25/2009 12:15 | -173.561 | 276.6337 | 31.0763 | -437.711 | 924.3449 | 94.02077 | -578.308 | 563.2144 | 78.79766 | -218.757 | 65.49516 | 19.62151 | 16.90108 | -19.2797 | -2.49751 | 4.509653 | -2.7915 | -0.50399 | -0.29189 | 0.18731 | 0.033078 |
| 11/25/2009 12:16 | -172.74 | 275.6878 | 30.95434 | -437.301 | 926.2621 | 94.12484 | -579.125 | 563.3884 | 78.86604 | -220.107 | 65.80027 | 19.73578 | 16.72247 | -19.5561 | -2.50426 | 4.639285 | -2.83747 | -0.51611 | -0.29189 | 0.191019 | 0.033334 |
| 11/25/2009 12:17 | -172.146 | 275.0228 | 30.86741 | -436.632 | 926.2299 | 94.07643 | -579.75 | 563.6622 | 78.9281 | -220.989 | 66.0555 | 19.81431 | 16.59489 | -19.7535 | -2.50908 | 4.741421 | -2.88344 | -0.52633 | -0.29189 | 0.194728 | 0.03359 |
| 11/25/2009 12:18 | -171.623 | 274.549 | 30.7986 | -436.133 | 925.9257 | 94.02095 | -580.212 | 563.8468 | 78.97274 | -221.647 | 66.27812 | 19.87506 | 16.48497 | -19.9055 | -2.51198 | 4.821953 | -2.91026 | -0.53374 | -0.29189 | 0.200292 | 0.033975 |
| 11/25/2009 12:19 | -171.309 | 274.1278 | 30.74784 | -435.712 | 925.84 | 93.98596 | -580.608 | 564.008 | 79.0112 | -222.241 | 66.46045 | 19.92862 | 16.39469 | -20.0397 | -2.51502 | 4.894629 | -2.94473 | -0.54114 | -0.28817 | 0.198437 | 0.03359 |
| 11/25/2009 12:20 | -170.898 | 273.7788 | 30.69541 | -435.154 | 925.6301 | 93.93296 | -580.948 | 564.163 | 79.04539 | -222.765 | 66.61783 | 19.97565 | 16.31226 | -20.1483 | -2.51682 | 4.949628 | -2.96772 | -0.54652 | -0.28817 | 0.200292 | 0.033718 |
| 11/25/2009 12:21 | -170.698 | 273.6112 | 30.67003 | -434.879 | 925.5744 | 93.91015 | -581.249 | 564.3327 | 79.07785 | -223.225 | 66.75218 | 20.01669 | 16.24357 | -20.2411 | -2.51848 | 5.002663 | -2.99262 | -0.5519 | -0.29003 | 0.205856 | 0.03423 |
| 11/25/2009 12:22 | -170.477 | 273.4942 | 30.64667 | -434.622 | 925.5316 | 93.88948 | -581.53 | 564.5068 | 79.10928 | -223.645 | 66.8827 | 20.05468 | 16.18665 | -20.322 | -2.52014 | 5.045878 | -3.01368 | -0.55634 | -0.28817 | 0.205856 | 0.034102 |
| 11/25/2009 12:23 | -170.307 | 273.5605 | 30.63954 | -434.474 | 925.6023 | 93.88413 | -581.78 | 564.7041 | 79.14016 | -224.044 | 67.00938 | 20.09102 | 16.13759 | -20.3931 | -2.52166 | 5.091056 | -3.03092 | -0.56065 | -0.28631 | 0.215129 | 0.034614 |
| 11/25/2009 12:24 | -170.294 | 273.7282 | 30.65025 | -434.557 | 925.8615 | 93.90777 | -582.06 | 564.9843 | 79.17879 | -224.389 | 67.13798 | 20.12371 | 16.09638 | -20.4464 | -2.52249 | 5.126414 | -3.04433 | -0.56401 | -0.28259 | 0.213274 | 0.034229 |

# TABLE D.5 Strain gage measurements for pile 11

| TIMESTAMP TS | 11A1 Comp. Strain | 11B1 Tensile Strain | Moment (k*ft) | 11A2 Comp. Strain | 11B2 Tensile Strain | Moment (k*ft) | 11A3 Comp. Strain | 11B3 Tensile Strain | Moment (k*ft) | 11A4 Comp. Strain | 11B4 Tensile Strain | Moment (k*ft) | 11A5 Comp. Strain | 11B5 Tensile Strain | Moment (k*ft) | 11A6 Comp. Strain | 11B6 Tensile Strain | Moment (k*ft) | 11A7 Comp. Strain | 11B7 Tensile Strain | Moment (k*ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11/25/2009 10:50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11/25/2009 10:51 | -0.09504 | -0.03109 | 0.004415 | -0.11996 | -0.06521 | 0.003779 | -0.09899 | -0.06945 | 0.002039 | -0.07205 | -0.08743 | -0.00106 | -0.07396 | -0.08011 | -0.00042 | -0.05041 | -0.05008 | 2.29E-05 | -0.0767 | -0.06456 | 0.000838 |
| 11/25/2009 10:52 | -0.0931 | -0.03886 | 0.003744 | -0.14705 | -0.09688 | 0.003463 | -0.12649 | -0.0901 | 0.002512 | -0.091 | -0.1079 | -0.00117 | -0.08913 | -0.09875 | -0.00066 | -0.06592 | -0.05393 | 0.000828 | -0.09396 | -0.08165 | 0.00085 |
| 11/25/2009 10:53 | -0.10086 | -0.06217 | 0.002671 | -0.15285 | -0.11551 | 0.002578 | -0.13383 | -0.09948 | 0.002371 | -0.10048 | -0.12092 | -0.00141 | -0.09671 | -0.1062 | -0.00065 | -0.06786 | -0.06356 | 0.000297 | -0.0978 | -0.09114 | 0.000459 |
| 11/25/2009 10:54 | -0.12026 | -0.01943 | 0.00696 | -0.17607 | -0.08384 | 0.006366 | -0.14666 | -0.07133 | 0.0052 | -0.10996 | -0.09859 | 0.000785 | -0.10051 | -0.09688 | 0.00025 | -0.07174 | -0.06356 | 0.000564 | -0.10163 | -0.09494 | 0.000462 |
| 11/25/2009 10:55 | -0.13189 | 0.025257 | 0.010848 | -0.09094 | -0.00745 | 0.005763 | -0.0385 | -0.02816 | 0.000714 | -0.07773 | -0.09487 | -0.00118 | -0.09103 | -0.09502 | -0.00028 | -0.06786 | -0.06356 | 0.000297 | -0.10547 | -0.09874 | 0.000465 |
| 11/25/2009 10:56 | -0.13577 | 0.031085 | 0.011518 | -0.09287 | -0.00373 | 0.006154 | -0.03483 | -0.02816 | 0.000461 | -0.07963 | -0.09487 | -0.00105 | -0.09103 | -0.09688 | -0.0004 | -0.07174 | -0.06356 | 0.000564 | -0.10739 | -0.10064 | 0.000466 |
| 11/25/2009 10:57 | -0.12414 | 0.038857 | 0.011251 | -0.0832 | 0.003726 | 0.006 | -0.02933 | -0.02628 | 0.000211 | -0.07394 | -0.08557 | -0.0008 | -0.08154 | -0.09875 | -0.00119 | -0.0601 | -0.06163 | -0.00011 | -0.09972 | -0.09494 | 0.00033 |
| 11/25/2009 10:58 | -0.13965 | 0.038857 | 0.012322 | -0.09674 | -0.00559 | 0.006292 | -0.04216 | -0.03566 | 0.000449 | -0.08532 | -0.09859 | -0.00092 | -0.09103 | -0.11179 | -0.00143 | -0.0698 | -0.07126 | -0.0001 | -0.10739 | -0.10443 | 0.000204 |
| 11/25/2009 10:59 | -0.14547 | 0.046628 | 0.01326 | -0.14898 | -0.03167 | 0.008098 | -0.10633 | -0.07508 | 0.002157 | -0.08721 | -0.10045 | -0.00091 | -0.09482 | -0.11365 | -0.0013 | -0.06786 | -0.07126 | -0.00024 | -0.1093 | -0.10443 | 0.000336 |
| 11/25/2009 11:00 | -0.14741 | 0.050514 | 0.013662 | -0.13544 | -0.01863 | 0.008063 | -0.09533 | -0.06194 | 0.002305 | -0.11186 | -0.1172 | -0.00037 | -0.10051 | -0.12483 | -0.00168 | -0.07174 | -0.07512 | -0.00023 | -0.1093 | -0.10633 | 0.000205 |
| 11/25/2009 11:01 | -7.77414 | 0.814108 | 0.592834 | -8.47355 | 1.833609 | 0.711488 | -2.40646 | 0.688922 | 0.21367 | -0.05119 | -0.07441 | -0.0016 | -0.07775 | -0.11551 | -0.00261 | -0.06786 | -0.07319 | -0.00037 | -0.11122 | -0.10633 | 0.000337 |
| 11/25/2009 11:02 | -1.64456 | 0.928754 | 0.177632 | -2.01378 | 1.882067 | 0.268925 | -0.66176 | 0.626972 | 0.088959 | -0.08911 | -0.10045 | -0.00078 | -0.09292 | -0.12669 | -0.00233 | -0.06786 | -0.07512 | -0.0005 | -0.11122 | -0.10254 | 0.0006 |
| 11/25/2009 11:03 | -1.6019 | 0.911266 | 0.17348 | -1.97317 | 1.846655 | 0.263677 | -0.65076 | 0.604445 | 0.086645 | -0.08911 | -0.10232 | -0.00091 | -0.09103 | -0.12669 | -0.00246 | -0.0698 | -0.07512 | -0.00037 | -0.11122 | -0.10443 | 0.000469 |
| 11/25/2009 11:04 | -1.57281 | 0.90155 | 0.170802 | -1.95189 | 1.820562 | 0.260407 | -0.6416 | 0.596935 | 0.085494 | -0.091 | -0.10232 | -0.00078 | -0.09103 | -0.13228 | -0.00285 | -0.06786 | -0.07704 | -0.00063 | -0.11122 | -0.10443 | 0.000469 |
| 11/25/2009 11:05 | -1.52046 | 0.884062 | 0.165981 | -1.92288 | 1.781423 | 0.255703 | -0.6416 | 0.598813 | 0.085624 | -0.08911 | -0.08929 | -1.3E-05 | -0.09103 | -0.12855 | -0.00259 | -0.06592 | -0.07512 | -0.00063 | -0.11122 | -0.10254 | 0.0006 |
| 11/25/2009 11:06 | -1.33818 | 0.781075 | 0.146289 | -1.83004 | 1.63978 | 0.239517 | -0.64893 | 0.555636 | 0.083149 | -0.10048 | -0.09859 | 0.00013 | -0.09103 | -0.13042 | -0.00272 | -0.06786 | -0.07512 | -0.0005 | -0.11314 | -0.10443 | 0.000601 |
| 11/25/2009 11:07 | -1.34206 | 0.783018 | 0.146691 | -1.743 | 1.634189 | 0.233123 | -0.6031 | 0.563145 | 0.080504 | -0.08911 | -0.09487 | -0.0004 | -0.08913 | -0.13042 | -0.00285 | -0.06592 | -0.07704 | -0.00077 | -0.1093 | -0.10633 | 0.000205 |
| 11/25/2009 11:08 | -1.33818 | 0.781075 | 0.146289 | -1.74107 | 1.626734 | 0.232475 | -0.6031 | 0.561267 | 0.080375 | -0.091 | -0.09301 | -0.00014 | -0.08534 | -0.13601 | -0.0035 | -0.06592 | -0.07704 | -0.00077 | -0.10739 | -0.10064 | 0.000466 |
| 11/25/2009 11:09 | -43.6165 | 30.45779 | 5.11324 | -53.3882 | 58.09741 | 7.695692 | -21.7635 | 29.58278 | 3.544364 | -0.07205 | 0.723708 | 0.05493 | 0.125163 | -0.13042 | -0.01764 | -0.04459 | -0.06163 | -0.00118 | -0.10163 | -0.09684 | 0.000331 |
| 11/25/2009 11:10 | -43.1606 | 29.95368 | 5.046972 | -53.0224 | 57.83163 | 7.652096 | -22.0135 | 29.7395 | 3.572438 | -0.12703 | 0.723708 | 0.058725 | 0.125163 | -0.13973 | -0.01829 | -0.04653 | -0.06163 | -0.00104 | -0.10163 | -0.09494 | 0.000462 |
| 11/25/2009 11:11 | -42.9297 | 29.67624 | 5.011887 | -52.9343 | 57.70345 | 7.637167 | -22.2507 | 29.84712 | 3.596241 | -0.17822 | 0.714406 | 0.061616 | 0.12137 | -0.1565 | -0.01918 | -0.04459 | -0.06741 | -0.00158 | -0.09972 | -0.09494 | 0.00033 |
| 11/25/2009 11:12 | -42.7758 | 29.48868 | 4.988316 | -52.8136 | 57.58094 | 7.620381 | -22.3383 | 29.89622 | 3.605675 | -0.20097 | 0.716266 | 0.063315 | 0.123266 | -0.16023 | -0.01957 | -0.04265 | -0.06356 | -0.00144 | -0.09972 | -0.09494 | 0.00033 |
| 11/25/2009 11:13 | -42.5988 | 29.32849 | 4.965041 | -52.7121 | 57.46973 | 7.605697 | -22.4295 | 29.91888 | 3.613537 | -0.22561 | 0.703242 | 0.064118 | 0.117577 | -0.17141 | -0.01995 | -0.04653 | -0.06741 | -0.00144 | -0.0978 | -0.09684 | 6.62E-05 |
| 11/25/2009 11:14 | -42.5892 | 29.307 | 4.962893 | -52.7102 | 57.49235 | 7.607126 | -22.4879 | 30.01518 | 3.624214 | -0.22751 | 0.725569 | 0.06579 | 0.123266 | -0.17141 | -0.02034 | -0.04653 | -0.06356 | -0.00118 | -0.0978 | -0.09304 | 0.000328 |
| 11/25/2009 11:15 | -42.5354 | 29.24057 | 4.95459 | -52.6892 | 57.45466 | 7.60307 | -22.5518 | 30.05672 | 3.63149 | -0.24268 | 0.725569 | 0.066837 | 0.119474 | -0.17699 | -0.02046 | -0.04459 | -0.06163 | -0.00118 | -0.09972 | -0.09304 | 0.000461 |
| 11/25/2009 11:16 | -42.4603 | 29.16243 | 4.944016 | -52.6317 | 57.40377 | 7.595591 | -22.5919 | 30.08504 | 3.636216 | -0.24836 | 0.733011 | 0.067743 | 0.127059 | -0.17513 | -0.02086 | -0.04459 | -0.06741 | -0.00158 | -0.09588 | -0.09114 | 0.000327 |
| 11/25/2009 11:17 | -42.4161 | 29.12531 | 4.9384 | -52.6068 | 57.37926 | 7.592181 | -22.6321 | 30.11337 | 3.640942 | -0.25405 | 0.733011 | 0.068135 | 0.123266 | -0.17886 | -0.02086 | -0.04265 | -0.06356 | -0.00144 | -0.09396 | -0.08735 | 0.000457 |
| 11/25/2009 11:18 | -42.393 | 29.07648 | 4.933435 | -52.6068 | 57.36984 | 7.59153 | -22.6758 | 30.15491 | 3.646832 | -0.25974 | 0.742314 | 0.06917 | 0.127059 | -0.18072 | -0.02125 | -0.03878 | -0.06163 | -0.00158 | -0.08821 | -0.09114 | -0.0002 |
| 11/25/2009 11:19 | -88.1208 | 61.46198 | 10.32548 | -118.38 | 119.8739 | 16.44631 | -61.6877 | 75.08484 | 9.441214 | -1.72691 | 4.085061 | 0.401192 | 0.834477 | -0.26828 | -0.07612 | 0.025204 | -0.03467 | -0.00413 | -0.07479 | -0.07595 | -8E-05 |
| 11/25/2009 11:20 | -87.3465 | 60.14339 | 10.18102 | -117.521 | 119.042 | 16.32964 | -63.0245 | 75.61446 | 9.570047 | -2.26704 | 4.321523 | 0.454799 | 0.853444 | -0.33535 | -0.08206 | 0.019388 | -0.03852 | -0.004 | -0.07479 | -0.07595 | -8E-05 |
| 11/25/2009 11:21 | -86.9594 | 59.42233 | 10.10452 | -117.092 | 118.4716 | 16.26063 | -63.3844 | 75.74401 | 9.603833 | -2.49255 | 4.407173 | 0.476278 | 0.862927 | -0.38379 | -0.08606 | 0.019388 | -0.04045 | -0.00413 | -0.07095 | -0.07405 | -0.00021 |
| 11/25/2009 11:22 | -86.6828 | 59.04121 | 10.05912 | -116.816 | 118.1206 | 16.21734 | -63.5797 | 75.81832 | 9.622445 | -2.67447 | 4.463033 | 0.492691 | 0.851547 | -0.41732 | -0.08759 | 0.017449 | -0.04237 | -0.00413 | -0.07287 | -0.07215 | 4.93E-05 |
| 11/25/2009 11:23 | -86.5359 | 58.77405 | 10.03054 | -116.674 | 117.9318 | 16.19452 | -63.605 | 75.89834 | 9.629716 | -2.81279 | 4.505859 | 0.505196 | 0.847754 | -0.449 | -0.08951 | 0.017449 | -0.04623 | -0.0044 | -0.07287 | -0.07215 | 4.93E-05 |
| 11/25/2009 11:24 | -86.4959 | 58.58744 | 10.0149 | -116.75 | 117.9375 | 16.20013 | -63.9667 | 75.94597 | 9.657969 | -2.96628 | 4.498411 | 0.515277 | 0.82689 | -0.49371 | -0.09116 | 0.007755 | -0.05008 | -0.00399 | -0.07287 | -0.07405 | -8.2E-05 |
| 11/25/2009 11:25 | -86.4692 | 58.38709 | 9.999222 | -116.79 | 117.9013 | 16.20037 | -64.1728 | 76.0622 | 9.680221 | -3.05533 | 4.539376 | 0.524252 | 0.824993 | -0.51234 | -0.09231 | 0.009694 | -0.052 | -0.00426 | -0.07095 | -0.07405 | -0.00021 |
| 11/25/2009 11:26 | -86.4272 | 58.34977 | 9.993749 | -116.678 | 117.8956 | 16.19228 | -64.2361 | 76.20129 | 9.694191 | -3.08375 | 4.604547 | 0.530713 | 0.840167 | -0.50861 | -0.0931 | 0.011633 | -0.05393 | -0.00453 | -0.06903 | -0.07215 | -0.00022 |
| 11/25/2009 11:27 | -86.3872 | 58.23191 | 9.982849 | -116.714 | 117.9032 | 16.19528 | -64.435 | 76.2737 | 9.712918 | -3.15576 | 4.61572 | 0.536454 | 0.83258 | -0.53097 | -0.09412 | 0.013572 | -0.05586 | -0.00479 | -0.0652 | -0.07215 | -0.00048 |
| 11/25/2009 11:28 | -86.309 | 58.16317 | 9.972705 | -116.534 | 117.8403 | 16.17854 | -64.397 | 76.42804 | 9.720951 | -3.13302 | 4.701375 | 0.540797 | 0.857237 | -0.5142 | -0.09467 | 0.019388 | -0.052 | -0.00493 | -0.0652 | -0.06456 | 4.42E-05 |
| 11/25/2009 11:29 | -90.073 | 86.89234 | 12.21566 | -128.737 | 238.8333 | 25.37288 | -72.8727 | 140.115 | 14.70224 | -2.90754 | 13.185 | 1.110845 | 1.1721 | -0.09688 | -0.0876 | 0.071736 | 0.065486 | -0.00043 | -0.04602 | -0.03228 | 0.000949 |
| 11/25/2009 11:30 | -155.315 | 77.97252 | 16.10351 | -173.972 | 248.1335 | 29.13737 | -132.413 | 142.7891 | 18.99684 | -8.27276 | 14.72974 | 1.58783 | 2.917472 | -0.32045 | -0.22351 | 0.28695 | 0.050078 | -0.01635 | -0.01534 | -0.03228 | -0.00117 |
| 11/25/2009 11:31 | -154.946 | 76.41735 | 15.97071 | -172.865 | 247.5489 | 29.02061 | -133.277 | 143.1327 | 19.08018 | -8.7592 | 15.02083 | 1.641501 | 2.953524 | -0.40428 | -0.23178 | 0.292767 | 0.040447 | -0.01742 | -0.01534 | -0.02848 | -0.00091 |
| 11/25/2009 11:32 | -154.719 | 75.48327 | 15.89051 | -172.144 | 247.0407 | 28.9357 | -133.797 | 143.4125 | 19.13539 | -9.02983 | 15.22423 | 1.674224 | 2.980089 | -0.44341 | -0.23632 | 0.298584 | 0.034669 | -0.01822 | -0.01534 | -0.03038 | -0.00104 |
| 11/25/2009 11:33 | -154.619 | 75.00842 | 15.85085 | -171.788 | 246.8413 | 28.8974 | -134.226 | 143.675 | 19.18313 | -9.22855 | 15.36793 | 1.697859 | 2.997166 | -0.48439 | -0.24033 | 0.304401 | 0.036595 | -0.01849 | -0.01534 | -0.02658 | -0.00078 |
| 11/25/2009 11:34 | -154.532 | 74.59467 | 15.81632 | -171.5 | 246.6654 | 28.86538 | -134.595 | 143.8777 | 19.22256 | -9.3894 | 15.47803 | 1.716563 | 3.006654 | -0.52165 | -0.24355 | 0.304401 | 0.030817 | -0.01889 | -0.00767 | -0.02658 | -0.00131 |
| 11/25/2009 11:35 | -154.45 | 74.25385 | 15.78707 | -171.296 | 246.5384 | 28.84253 | -134.823 | 144.0302 | 19.24881 | -9.51808 | 15.56388 | 1.731372 | 3.016142 | -0.55146 | -0.24627 | 0.304401 | 0.026965 | -0.01915 | -0.01151 | -0.02468 | -0.00091 |
| 11/25/2009 11:36 | -154.378 | 73.97806 | 15.7631 | -171.132 | 246.4328 | 28.82388 | -135.008 | 144.1518 | 19.26999 | -9.62973 | 15.63293 | 1.743845 | 3.018039 | -0.58313 | -0.24858 | 0.30634 | 0.025039 | -0.01942 | -0.00959 | -0.02279 | -0.00091 |
| 11/25/2009 11:37 | -154.327 | 73.75152 | 15.74396 | -171.01 | 246.3585 | 28.81036 | -135.168 | 144.2638 | 19.28877 | -9.72435 | 15.69825 | 1.754885 | 3.019937 | -0.60362 | -0.25013 | 0.310217 | 0.025039 | -0.01969 | -0.00575 | -0.02279 | -0.00118 |
| 11/25/2009 11:38 | -154.278 | 73.5447 | 15.7263 | -170.902 | 246.2823 | 28.79761 | -135.309 | 144.3583 | 19.30501 | -9.80382 | 15.74864 | 1.76385 | 3.019937 | -0.6297 | -0.25193 | 0.310217 | 0.025039 | -0.01969 | -0.00575 | -0.02089 | -0.00104 |

| TIMESTAMP TS | 11A1 Comp. Strain | 11B1 Tensile Strain | Moment (k*ft) | 11A2 Comp. Strain | 11B2 Tensile Strain | Moment (k*ft) | 11A3 Comp. Strain | 11B3 Tensile Strain | Moment (k*ft) | 11A4 Comp. Strain | 11B4 Tensile Strain | Moment (k*ft) | 11A5 Comp. Strain | 11B5 Tensile Strain | Moment (k*ft) | 11A6 Comp. Strain | 11B6 Tensile Strain | Moment (k*ft) | 11A7 Comp. Strain | 11B7 Tensile Strain | Moment (k*ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11/25/2009 11:39 | -154.243 | 73.35757 | 15.71092 | -170.819 | 246.21 | 28.78694 | -135.439 | 144.4452 | 19.31998 | -9.87194 | 15.7953 | 1.771773 | 3.027527 | -0.64833 | -0.25374 | 0.314095 | 0.019261 | -0.02035 | -0.00384 | -0.01899 | -0.00105 |
| 11/25/2009 11:40 | -219.368 | 92.95771 | 21.55938 | -234.878 | 386.312 | 42.87984 | -196.823 | 359.6074 | 38.40957 | -18.8651 | 24.65905 | 3.00441 | 4.877934 | -1.2351 | -0.42197 | 0.628209 | 0.050078 | -0.03991 | 0.034518 | 0.003798 | -0.00212 |
| 11/25/2009 11:41 | -217.967 | 90.38256 | 21.28496 | -232.389 | 384.0333 | 42.55072 | -201.834 | 362.9085 | 38.98338 | -21.0934 | 26.11577 | 3.258781 | 4.988031 | -1.69144 | -0.46107 | 0.649538 | 0 | -0.04484 | 0.0326 | 0.003798 | -0.00199 |
| 11/25/2009 11:42 | -217.442 | 89.04705 | 21.15648 | -231.543 | 383.0796 | 42.42649 | -203.287 | 364.1981 | 39.17271 | -22.0467 | 26.59832 | 3.357898 | 4.951964 | -1.94846 | -0.47633 | 0.64566 | -0.03852 | -0.04723 | 0.026847 | 0 | -0.00185 |
| 11/25/2009 11:43 | -217.085 | 88.08315 | 21.06532 | -231.036 | 382.5027 | 42.35172 | -203.885 | 365.1424 | 39.27914 | -22.7904 | 26.8976 | 3.42989 | 4.879832 | -2.18125 | -0.48742 | 0.637904 | -0.08282 | -0.04975 | 0.019176 | 0 | -0.00132 |
| 11/25/2009 11:44 | -216.894 | 87.44723 | 21.00822 | -230.646 | 382.082 | 42.29577 | -204.181 | 365.8297 | 39.34702 | -23.6207 | 27.14078 | 3.503995 | 4.710896 | -2.54625 | -0.50095 | 0.603002 | -0.14638 | -0.05173 | 0.009588 | -0.0076 | -0.00119 |
| 11/25/2009 11:45 | -216.66 | 86.94566 | 20.95744 | -230.325 | 381.7115 | 42.248 | -204.169 | 366.2637 | 39.37614 | -24.6868 | 27.30166 | 3.588687 | 4.447061 | -3.03598 | -0.51654 | 0.535136 | -0.24075 | -0.05356 | -0.00767 | -0.01519 | -0.00052 |
| 11/25/2009 11:46 | -216.45 | 86.47769 | 20.91064 | -229.88 | 381.369 | 42.19361 | -203.937 | 366.6295 | 39.38542 | -25.6432 | 27.48312 | 3.667233 | 4.168057 | -3.45491 | -0.5262 | 0.459516 | -0.33127 | -0.05459 | -0.02493 | -0.02468 | 1.69E-05 |
| 11/25/2009 11:47 | -216.132 | 85.95449 | 20.85259 | -229.464 | 380.8162 | 42.12675 | -204.064 | 366.8808 | 39.41147 | -26.1449 | 27.65149 | 3.713488 | 4.052285 | -3.67088 | -0.53312 | 0.428493 | -0.38134 | -0.0559 | -0.03452 | -0.02468 | 0.000679 |
| 11/25/2009 11:48 | -215.866 | 85.55176 | 20.80645 | -229.096 | 380.3597 | 42.06985 | -204.221 | 367.0818 | 39.43623 | -26.5919 | 27.8311 | 3.75674 | 3.953595 | -3.84029 | -0.538 | 0.401347 | -0.43142 | -0.05748 | -0.04602 | -0.03038 | 0.00108 |
| 11/25/2009 11:49 | -215.74 | 85.29118 | 20.77974 | -228.882 | 380.1374 | 42.03971 | -204.418 | 367.2667 | 39.46254 | -26.9407 | 28.03877 | 3.795158 | 3.866295 | -4.01343 | -0.54393 | 0.381958 | -0.48727 | -0.06 | -0.05369 | -0.03038 | 0.001609 |
| 11/25/2009 11:50 | -215.504 | 117.4138 | 22.98082 | -228.567 | 469.7957 | 48.20699 | -204.808 | 427.7781 | 43.66653 | -26.8955 | 29.03237 | 3.860621 | 4.152874 | -4.89017 | -0.62423 | 0.447882 | -0.57778 | -0.0708 | -0.0326 | -0.01139 | 0.001464 |
| 11/25/2009 11:51 | -269.105 | 107.0883 | 25.96809 | -301.202 | 484.1107 | 54.20899 | -280.613 | 445.8975 | 50.14998 | -38.7973 | 30.24143 | 4.765646 | 4.359752 | -5.77793 | -0.69979 | 0.502173 | -0.94176 | -0.09967 | -0.06328 | -0.01329 | 0.003451 |
| 11/25/2009 11:52 | -267.517 | 104.9165 | 25.70857 | -299.509 | 481.3977 | 53.90484 | -281.807 | 446.517 | 50.27516 | -40.099 | 31.05574 | 4.911708 | 4.200322 | -6.15569 | -0.71486 | 0.453699 | -1.10351 | -0.10749 | -0.0767 | -0.01899 | 0.003984 |
| 11/25/2009 11:53 | -266.651 | 103.7141 | 25.56579 | -298.713 | 480.224 | 53.76889 | -282.7 | 447.0957 | 50.37673 | -40.9697 | 31.4901 | 5.001794 | 4.143384 | -6.28409 | -0.71979 | 0.428493 | -1.19594 | -0.11213 | -0.08438 | -0.01899 | 0.004514 |
| 11/25/2009 11:54 | -266.024 | 102.7773 | 25.45785 | -298.246 | 479.3684 | 53.67764 | -283.173 | 447.3382 | 50.42612 | -42.032 | 32.52185 | 5.146345 | 4.078855 | -6.61157 | -0.73794 | 0.370324 | -1.29415 | -0.1149 | -0.09205 | -0.01899 | 0.005043 |
| 11/25/2009 11:55 | -265.463 | 101.9595 | 25.36268 | -297.826 | 478.5617 | 53.59291 | -283.523 | 447.5297 | 50.46356 | -42.7482 | 32.90389 | 5.222157 | 4.035204 | -6.73437 | -0.74341 | 0.312156 | -1.36925 | -0.11606 | -0.10355 | -0.02089 | 0.005706 |
| 11/25/2009 11:56 | -264.777 | 101.2784 | 25.26831 | -297.323 | 477.8468 | 53.50886 | -283.811 | 447.6826 | 50.49393 | -43.1223 | 33.10055 | 5.261552 | 4.014327 | -6.78089 | -0.74518 | 0.285012 | -1.42316 | -0.11791 | -0.10739 | -0.01899 | 0.006102 |
| 11/25/2009 11:57 | -264.66 | 101.0013 | 25.24105 | -297.204 | 477.6391 | 53.48634 | -284.086 | 447.8823 | 50.52671 | -43.3816 | 33.25413 | 5.290058 | 4.008633 | -6.80135 | -0.7462 | 0.271439 | -1.4559 | -0.11924 | -0.10739 | -0.02089 | 0.005971 |
| 11/25/2009 11:58 | -264.432 | 100.6707 | 25.20249 | -297.04 | 477.3235 | 53.45324 | -284.349 | 448.1249 | 50.56161 | -43.6015 | 33.37587 | 5.313641 | 3.999144 | -6.8181 | -0.7467 | 0.261745 | -1.48478 | -0.12056 | -0.10739 | -0.01899 | 0.006102 |
| 11/25/2009 11:59 | -264.227 | 100.3658 | 25.16735 | -296.878 | 477.0547 | 53.42349 | -284.586 | 448.3267 | 50.59192 | -43.7857 | 33.48264 | 5.333724 | 3.989655 | -6.8367 | -0.74733 | 0.255928 | -1.50596 | -0.12162 | -0.10739 | -0.01519 | 0.006364 |
| 11/25/2009 12:00 | -264.056 | 100.0174 | 25.13149 | -296.751 | 476.7309 | 53.39234 | -284.827 | 448.4816 | 50.61923 | -43.953 | 33.55943 | 5.350571 | 3.97637 | -6.84601 | -0.74705 | 0.246234 | -1.52906 | -0.12255 | -0.1093 | -0.01519 | 0.006497 |
| 11/25/2009 12:01 | -315.41 | 137.539 | 31.2664 | -381.332 | 596.8189 | 67.52035 | -377.811 | 554.5173 | 64.35726 | -53.014 | 45.1037 | 6.772925 | 6.227732 | -7.21624 | -0.92802 | 0.701893 | -1.61379 | -0.15985 | -0.0652 | 0.028482 | 0.006467 |
| 11/25/2009 12:02 | -312.27 | 134.7557 | 30.85754 | -378.866 | 591.3782 | 66.9746 | -389.556 | 573.0031 | 66.44406 | -56.4456 | 46.26411 | 7.089902 | 6.267604 | -7.47483 | -0.94862 | 0.829872 | -1.74664 | -0.17785 | -0.06903 | 0.036078 | 0.007256 |
| 11/25/2009 12:03 | -311.074 | 132.8319 | 30.64216 | -377.003 | 589.4191 | 66.71074 | -390.956 | 574.8242 | 66.66641 | -57.4914 | 46.74864 | 7.195543 | 6.242921 | -7.55855 | -0.9527 | 0.860898 | -1.82173 | -0.18518 | -0.07287 | 0.039875 | 0.007783 |
| 11/25/2009 12:04 | -310.427 | 131.6492 | 30.51589 | -375.97 | 588.2883 | 66.56137 | -391.791 | 575.8317 | 66.79364 | -58.063 | 47.04351 | 7.255352 | 6.22963 | -7.60877 | -0.95525 | 0.880289 | -1.87179 | -0.18997 | -0.0767 | 0.045572 | 0.008441 |
| 11/25/2009 12:05 | -310.057 | 130.8331 | 30.43403 | -375.415 | 587.7178 | 66.48367 | -392.444 | 576.5583 | 66.88886 | -58.5427 | 47.21255 | 7.300133 | 6.208745 | -7.6683 | -0.95791 | 0.886106 | -1.90837 | -0.1929 | -0.07479 | 0.045572 | 0.008308 |
| 11/25/2009 12:06 | -309.702 | 130.1265 | 30.36073 | -375.06 | 587.2739 | 66.42855 | -393.043 | 577.2204 | 66.97593 | -58.9717 | 47.32525 | 7.33753 | 6.20115 | -7.70737 | -0.96009 | 0.891923 | -1.9411 | -0.19556 | -0.07479 | 0.045572 | 0.008308 |
| 11/25/2009 12:07 | -309.48 | 129.6389 | 30.31173 | -374.829 | 586.9317 | 66.38897 | -393.517 | 577.7723 | 67.04671 | -59.3408 | 47.35718 | 7.365211 | 6.199251 | -7.74271 | -0.96239 | 0.89968 | -1.96228 | -0.19756 | -0.0767 | 0.04937 | 0.008703 |
| 11/25/2009 12:08 | -309.188 | 129.1096 | 30.25507 | -374.516 | 586.5355 | 66.33999 | -393.91 | 578.2242 | 67.10505 | -59.7024 | 47.31962 | 7.387575 | 6.184062 | -7.77806 | -0.96379 | 0.89968 | -1.98539 | -0.19915 | -0.07479 | 0.04937 | 0.00857 |
| 11/25/2009 12:09 | -308.982 | 128.8509 | 30.22301 | -374.222 | 586.268 | 66.30124 | -394.053 | 579.1677 | 67.18 | -59.974 | 44.00549 | 7.177555 | 6.216339 | -8.17612 | -0.99349 | 0.901619 | -2.04892 | -0.20367 | -0.0767 | 0.053167 | 0.008965 |
| 11/25/2009 12:10 | -308.858 | 128.6122 | 30.19797 | -374.046 | 586.0855 | 66.27653 | -392.096 | 580.0343 | 67.10477 | -62.7137 | 43.5325 | 7.33402 | 5.61259 | -8.32306 | -0.96196 | 0.744552 | -2.14134 | -0.19921 | -0.08438 | 0.051269 | 0.009363 |
| 11/25/2009 12:11 | -308.674 | 128.2879 | 30.16288 | -373.874 | 585.847 | 66.24819 | -391.959 | 580.703 | 67.14145 | -62.9402 | 43.53062 | 7.349527 | 5.580316 | -8.34538 | -0.96127 | 0.703832 | -2.18562 | -0.19945 | -0.08246 | 0.055066 | 0.009493 |
| 11/25/2009 12:12 | -341.654 | 165.8239 | 35.03044 | -433.827 | 682.8794 | 77.08465 | -448.71 | 665.6617 | 76.92348 | -65.8671 | 52.54597 | 8.173888 | 7.232243 | -8.27656 | -1.07055 | 1.045117 | -2.12786 | -0.21903 | -0.02685 | 0.104436 | 0.009062 |
| 11/25/2009 12:13 | -349.63 | 162.2957 | 35.33752 | -448.864 | 688.6437 | 78.52052 | -484.521 | 665.6617 | 79.39549 | -78.2163 | 61.68509 | 9.657195 | 9.295053 | -10.0544 | -1.33567 | 1.324366 | -2.253 | -0.24694 | -0.01726 | 0.121526 | 0.00958 |
| 11/25/2009 12:14 | -347.81 | 159.9361 | 35.04896 | -445.655 | 685.3236 | 78.06984 | -488.239 | 665.6617 | 79.65212 | -80.2202 | 63.34684 | 9.910226 | 9.555338 | -10.3315 | -1.37276 | 1.36897 | -2.32038 | -0.25467 | -0.01726 | 0.127223 | 0.009973 |
| 11/25/2009 12:15 | -346.926 | 158.6297 | 34.89778 | -444.388 | 684.2341 | 77.90714 | -489.961 | 665.6617 | 79.771 | -81.1435 | 64.04411 | 10.02209 | 9.547738 | -10.4207 | -1.37839 | 1.407756 | -2.36081 | -0.26014 | -0.01151 | 0.134818 | 0.010101 |
| 11/25/2009 12:16 | -346.265 | 157.6236 | 34.78267 | -443.335 | 683.3766 | 77.77527 | -491.05 | 665.6617 | 79.84612 | -81.7719 | 64.44179 | 10.09293 | 9.580037 | -10.482 | -1.38486 | 1.436845 | -2.39547 | -0.26454 | -0.01342 | 0.140515 | 0.010626 |
| 11/25/2009 12:17 | -345.778 | 156.8716 | 34.69721 | -442.698 | 682.7003 | 77.68464 | -491.775 | 665.6617 | 79.89623 | -82.2325 | 64.70567 | 10.14293 | 9.597137 | -10.5248 | -1.38899 | 1.458178 | -2.42434 | -0.268 | -0.01151 | 0.144313 | 0.010756 |
| 11/25/2009 12:18 | -345.323 | 156.2497 | 34.62283 | -442.128 | 682.1484 | 77.60721 | -492.351 | 665.6617 | 79.93597 | -82.611 | 64.90359 | 10.18272 | 9.616136 | -10.562 | -1.39287 | 1.473693 | -2.44937 | -0.2708 | -0.00767 | 0.150009 | 0.010884 |
| 11/25/2009 12:19 | -344.931 | 155.6538 | 34.55462 | -441.664 | 681.5881 | 77.53651 | -492.756 | 665.6617 | 79.96389 | -82.9336 | 65.06758 | 10.21631 | 9.635136 | -10.5824 | -1.39559 | 1.489207 | -2.46862 | -0.2732 | -0.00575 | 0.151908 | 0.010883 |
| 11/25/2009 12:20 | -344.627 | 155.286 | 34.50826 | -441.315 | 681.2259 | 77.48738 | -493.155 | 665.6617 | 79.99147 | -83.2207 | 65.20331 | 10.2455 | 9.667435 | -10.5992 | -1.39898 | 1.51248 | -2.48595 | -0.27601 | -0.00575 | 0.157605 | 0.011276 |
| 11/25/2009 12:21 | -344.432 | 155.052 | 34.47864 | -441.119 | 681.0342 | 77.46063 | -493.484 | 665.6617 | 80.0142 | -83.4593 | 65.32772 | 10.27056 | 9.673135 | -10.6252 | -1.40117 | 1.527994 | -2.50327 | -0.27827 | -0.00192 | 0.159504 | 0.011143 |
| 11/25/2009 12:22 | -344.238 | 154.8102 | 34.44859 | -440.937 | 680.792 | 77.43137 | -493.768 | 665.6617 | 80.03378 | -83.6811 | 65.45591 | 10.29472 | 9.676935 | -10.6401 | -1.40245 | 1.535752 | -2.5206 | -0.28 | 0.001918 | 0.1652 | 0.011271 |
| 11/25/2009 12:23 | -344.164 | 154.8102 | 34.44347 | -440.89 | 680.832 | 77.43084 | -494.022 | 665.6617 | 80.05134 | -83.8657 | 65.56903 | 10.31526 | 9.688335 | -10.6475 | -1.40375 | 1.547388 | -2.53215 | -0.2816 | 0.003835 | 0.167099 | 0.01127 |
| 11/25/2009 12:24 | -344.211 | 154.7742 | 34.44423 | -440.983 | 680.8889 | 77.44122 | -494.28 | 665.6617 | 80.06912 | -84.039 | 65.6746 | 10.33452 | 9.695935 | -10.6624 | -1.40531 | 1.560964 | -2.54178 | -0.28321 | 0.005753 | 0.172796 | 0.011531 |

TABLE D.6 Bending moments for pile 10

| Depth (ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) |
|---|---|---|---|---|---|---|---|
| | 5 kips | 10 kips | 15 kips | 20 kips | 25 kips | 30 kips | 35 kips |
| 1.7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2.5 | 4.158 | 8.291 | 12.126 | 12.094 | 20.690 | 26.303 | 30.867 |
| 5 | 5.785 | 26.162 | 38.264 | 49.914 | 63.010 | 78.084 | 94.076 |
| 7.5 | 4.726 | 13.353 | 23.925 | 35.226 | 52.618 | 65.511 | 78.928 |
| 10 | 0.088 | 0.822 | 2.456 | 5.212 | 9.500 | 14.908 | 19.814 |
| 12.5 | -0.037 | -0.237 | -0.540 | -0.974 | -1.506 | -2.082 | -2.509 |
| 15 | 0.001 | 0.006 | -0.015 | -0.056 | -0.113 | -0.259 | -0.526 |
| 17.5 | 0.007 | 0.013 | 0.017 | 0.020 | 0.022 | 0.028 | 0.034 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

TABLE D.7 Bending moments for pile 11

| Depth (ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) |
|---|---|---|---|---|---|---|---|
| | 5 kips | 10 kips | 15 kips | 20 kips | 25 kips | 30 kips | 35 kips |
| 1.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2.5 | 4.938 | 9.983 | 15.744 | 20.853 | 25.241 | 30.312 | 34.697 |
| 5 | 7.592 | 16.195 | 28.810 | 42.127 | 53.486 | 66.389 | 77.685 |
| 7.5 | 3.641 | 9.713 | 19.289 | 39.411 | 50.527 | 67.047 | 79.896 |
| 10 | 0.068 | 0.536 | 1.755 | 3.713 | 5.290 | 7.365 | 10.143 |
| 12.5 | -0.021 | -0.094 | -0.250 | -0.533 | -0.746 | -0.962 | -1.389 |
| 15 | -0.001 | -0.005 | -0.020 | -0.056 | -0.119 | -0.198 | -0.268 |
| 17.5 | 0.000 | 0.000 | -0.001 | 0.001 | 0.006 | 0.009 | 0.011 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# APPENDIX E
# LATERAL LOAD TEST X

TABLE E.1 Inclinometer measurements for pile 5

PROJECT:ASHE MICROPILE LATERAL LOAD TESTING
MICROPILE NO: 5
DATE: 12/10/09

| | Baseline data | | |
|---|---|---|---|
| Depth (ft) | A+ | A- | Diff. (A) |
| 18 | -100 | 65 | -165 |
| 16 | -119 | 81 | -200 |
| 14 | -123 | 87 | -210 |
| 12 | -116 | 78 | -194 |
| 10 | -86 | 46 | -132 |
| 8 | -89 | 51 | -140 |
| 6 | -92 | 52 | -144 |
| 4 | -38 | -11 | -27 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 20 kips | | | | | | |
| 18 | -103 | 66 | -169 | -4 | -0.0024 | -0.0024 |
| 16 | -120 | 79 | -199 | 1 | 0.0006 | -0.0018 |
| 14 | -124 | 85 | -209 | 1 | 0.0006 | -0.0012 |
| 12 | -115 | 77 | -192 | 2 | 0.0012 | 0 |
| 10 | -82 | 44 | -126 | 6 | 0.0036 | 0.0036 |
| 8 | -73 | 38 | -111 | 29 | 0.0174 | 0.021 |
| 6 | -59 | 17 | -76 | 68 | 0.0408 | 0.0618 |
| 4 | 26 | -63 | 89 | 116 | 0.0696 | 0.1314 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 40 kips | | | | | | |
| 18 | -101 | 67 | -168 | -3 | -0.0018 | -0.0018 |
| 16 | -119 | 81 | -200 | 0 | 0 | -0.0018 |
| 14 | -122 | 88 | -210 | 0 | 0 | -0.0018 |
| 12 | -116 | 79 | -195 | -1 | -0.0006 | -0.0024 |
| 10 | -79 | 42 | -121 | 11 | 0.0066 | 0.0042 |
| 8 | -49 | 7 | -56 | 84 | 0.0504 | 0.0546 |
| 6 | 7 | -50 | 57 | 201 | 0.1206 | 0.1752 |
| 4 | 88 | -125 | 213 | 240 | 0.144 | 0.3192 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 60 kips | | | | | | |
| 18 | -102 | 65 | -167 | -2 | -0.0012 | -0.0012 |
| 16 | -119 | 79 | -198 | 2 | 0.0012 | 0 |
| 14 | -124 | 85 | -209 | 1 | 0.0006 | 0.0006 |
| 12 | -118 | 79 | -197 | -3 | -0.0018 | -0.0012 |
| 10 | -76 | 38 | -114 | 18 | 0.0108 | 0.0096 |
| 8 | -22 | -32 | 10 | 150 | 0.09 | 0.0996 |
| 6 | 58 | -97 | 155 | 299 | 0.1794 | 0.279 |
| 4 | 149 | -187 | 336 | 363 | 0.2178 | 0.4968 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 80 kips | | | | | | |
| 18 | -101 | 59 | -160 | 5 | 0.003 | 0.003 |
| 16 | -118 | 81 | -199 | 1 | 0.0006 | 0.0036 |
| 14 | -123 | 88 | -211 | -1 | -0.0006 | 0.003 |
| 12 | -117 | 81 | -198 | -4 | -0.0024 | 0.0006 |
| 10 | -72 | 36 | -108 | 24 | 0.0144 | 0.015 |
| 8 | 20 | -59 | 79 | 219 | 0.1314 | 0.1464 |
| 6 | 109 | -146 | 255 | 399 | 0.2394 | 0.3858 |
| 4 | 219 | -249 | 468 | 495 | 0.297 | 0.6828 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 100 kips | | | | | | |
| 18 | -102 | 65 | -167 | -2 | -0.0012 | -0.0012 |
| 16 | -119 | 80 | -199 | 1 | 0.0006 | -0.0006 |
| 14 | -125 | 87 | -212 | -2 | -0.0012 | -0.0018 |
| 12 | -120 | 80 | -200 | -6 | -0.0036 | -0.0054 |
| 10 | -68 | 27 | -95 | 37 | 0.0222 | 0.0168 |
| 8 | 46 | -87 | 133 | 273 | 0.1638 | 0.1806 |
| 6 | 159 | -202 | 361 | 505 | 0.303 | 0.4836 |
| 4 | 280 | -318 | 598 | 625 | 0.375 | 0.8586 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| Final | | | | | | |
| 18 | -99 | 67 | -166 | -1 | -0.0006 | -0.0006 |
| 16 | -117 | 77 | -194 | 6 | 0.0036 | 0.003 |
| 14 | -120 | 87 | -207 | 3 | 0.0018 | 0.0048 |
| 12 | -113 | 77 | -190 | 4 | 0.0024 | 0.0072 |
| 10 | -76 | 41 | -117 | 15 | 0.009 | 0.0162 |
| 8 | -72 | 35 | -107 | 33 | 0.0198 | 0.036 |
| 6 | -62 | 25 | -87 | 57 | 0.0342 | 0.0702 |
| 4 | 19 | -54 | 73 | 100 | 0.06 | 0.1302 |

TABLE E.2 Inclinometer measurements for pile 6

PROJECT:ASHE MICROPILE LATERAL LOAD TESTING

MICROPILE NO: 6

DATE: 12/10/09

| | Baseline data | | |
|---|---|---|---|
| Depth (ft) | A+ | A- | Diff. (A) |
| 18 | -308 | 274 | -582 |
| 16 | -304 | 264 | -568 |
| 14 | -304 | 267 | -571 |
| 12 | -306 | 271 | -577 |
| 10 | -302 | 263 | -565 |
| 8 | -297 | 262 | -559 |
| 6 | -310 | 268 | -578 |
| 4 | -285 | 250 | -535 |
| 2 | -291 | 249 | -540 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 20 kips | | | | | | |
| 18 | -310 | 275 | -585 | -3 | -0.0018 | -0.0018 |
| 16 | -305 | 263 | -568 | 0 | 0 | -0.0018 |
| 14 | -308 | 271 | -579 | -8 | -0.0048 | -0.0066 |
| 12 | -310 | 270 | -580 | -3 | -0.0018 | -0.0084 |
| 10 | -299 | 260 | -559 | 6 | 0.0036 | -0.0048 |
| 8 | -275 | 235 | -510 | 49 | 0.0294 | 0.0246 |
| 6 | -277 | 236 | -513 | 65 | 0.039 | 0.0636 |
| 4 | -240 | 206 | -446 | 89 | 0.0534 | 0.117 |
| 2 | -244 | 199 | -443 | 97 | 0.0582 | 0.1752 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 40 kips | | | | | | |
| 18 | -306 | 274 | -580 | 2 | 0.0012 | 0.0012 |
| 16 | -305 | 266 | -571 | -3 | -0.0018 | -0.0006 |
| 14 | -305 | 266 | -571 | 0 | 0 | -0.0006 |
| 12 | -309 | 266 | -575 | 2 | 0.0012 | 0.0006 |
| 10 | -291 | 258 | -549 | 16 | 0.0096 | 0.0102 |
| 8 | -245 | 208 | -453 | 106 | 0.0636 | 0.0738 |
| 6 | -219 | 178 | -397 | 181 | 0.1086 | 0.1824 |
| 4 | -171 | 126 | -297 | 238 | 0.1428 | 0.3252 |
| 2 | -167 | 128 | -295 | 245 | 0.147 | 0.4722 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 60 kips | | | | | | |
| 18 | -309 | 270 | -579 | 3 | 0.0018 | 0.0018 |
| 16 | -305 | 245 | -550 | 18 | 0.0108 | 0.0126 |
| 14 | -306 | 260 | -566 | 5 | 0.003 | 0.0156 |
| 12 | -311 | 272 | -583 | -6 | -0.0036 | 0.012 |
| 10 | -289 | 251 | -540 | 25 | 0.015 | 0.027 |
| 8 | -216 | 179 | -395 | 164 | 0.0984 | 0.1254 |
| 6 | -166 | 123 | -289 | 289 | 0.1734 | 0.2988 |
| 4 | -103 | 71 | -174 | 361 | 0.2166 | 0.5154 |
| 2 | -97 | 54 | -151 | 389 | 0.2334 | 0.7488 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 80 kips | | | | | | |
| 18 | -308 | 276 | -584 | -2 | -0.0012 | -0.0012 |
| 16 | -304 | 266 | -570 | -2 | -0.0012 | -0.0024 |
| 14 | -304 | 267 | -571 | 0 | 0 | -0.0024 |
| 12 | -311 | 271 | -582 | -5 | -0.003 | -0.0054 |
| 10 | -285 | 242 | -527 | 38 | 0.0228 | 0.0174 |
| 8 | -186 | 147 | -333 | 226 | 0.1356 | 0.153 |
| 6 | -106 | 64 | -170 | 408 | 0.2448 | 0.3978 |
| 4 | -28 | -17 | -11 | 524 | 0.3144 | 0.7122 |
| 2 | -14 | -44 | 30 | 570 | 0.342 | 1.0542 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 100 kips | | | | | | |
| 18 | -307 | 276 | -583 | -1 | -0.0006 | -0.0006 |
| 16 | -303 | 265 | -568 | 0 | 0 | -0.0006 |
| 14 | -305 | 271 | -576 | -5 | -0.003 | -0.0036 |
| 12 | -313 | 274 | -587 | -10 | -0.006 | -0.0096 |
| 10 | -280 | 239 | -519 | 46 | 0.0276 | 0.018 |
| 8 | -153 | 114 | -267 | 292 | 0.1752 | 0.1932 |
| 6 | -42 | -15 | -27 | 551 | 0.3306 | 0.5238 |
| 4 | 66 | -102 | 168 | 703 | 0.4218 | 0.9456 |
| 2 | 70 | -121 | 191 | 731 | 0.4386 | 1.3842 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| Final | | | | | | |
| 18 | -308 | 272 | -580 | 2 | 0.0012 | 0.0012 |
| 16 | -302 | 261 | -563 | 5 | 0.003 | 0.0042 |
| 14 | -302 | 271 | -573 | -2 | -0.0012 | 0.003 |
| 12 | -306 | 269 | -575 | 2 | 0.0012 | 0.0042 |
| 10 | -291 | 254 | -545 | 20 | 0.012 | 0.0162 |
| 8 | -262 | 222 | -484 | 75 | 0.045 | 0.0612 |
| 6 | -260 | 217 | -477 | 101 | 0.0606 | 0.1218 |
| 4 | -225 | 195 | -420 | 115 | 0.069 | 0.1908 |
| 2 | -230 | 188 | -418 | 122 | 0.0732 | 0.264 |

TABLE E.3 Inclinometer measurements for pile 7

PROJECT: ASHE MICROPILE LATERAL LOAD TESTING

MICROPILE NO: 7

DATE: 12/10/09

| | Baseline data | | |
|---|---|---|---|
| Depth (ft) | A+ | A- | Diff. (A) |
| 18 | -466 | 429 | -895 |
| 16 | -451 | 414 | -865 |
| 14 | -388 | 353 | -741 |
| 12 | -353 | 316 | -669 |
| 10 | -338 | 301 | -639 |
| 8 | -348 | 313 | -661 |
| 6 | -389 | 349 | -738 |
| 4 | -412 | 380 | -792 |
| 2 | -437 | 399 | -836 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 20 kips | | | | | | |
| 18 | -465 | 429 | -894 | 1 | 0.0006 | 0.0006 |
| 16 | -452 | 426 | -878 | -13 | -0.0078 | -0.0072 |
| 14 | -389 | 354 | -743 | -2 | -0.0012 | -0.0084 |
| 12 | -354 | 315 | -669 | 0 | 0 | -0.0084 |
| 10 | -330 | 294 | -624 | 15 | 0.009 | 0.0006 |
| 8 | -326 | 290 | -616 | 45 | 0.027 | 0.0276 |
| 6 | -351 | 309 | -660 | 78 | 0.0468 | 0.0744 |
| 4 | -364 | 330 | -694 | 98 | 0.0588 | 0.1332 |
| 2 | -384 | 348 | -732 | 104 | 0.0624 | 0.1956 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 40 kips | | | | | | |
| 18 | -466 | 428 | -894 | 1 | 0.0006 | 0.0006 |
| 16 | -453 | 414 | -867 | -2 | -0.0012 | -0.0006 |
| 14 | -388 | 356 | -744 | -3 | -0.0018 | -0.0024 |
| 12 | -355 | 315 | -670 | -1 | -0.0006 | -0.003 |
| 10 | -327 | 281 | -608 | 31 | 0.0186 | 0.0156 |
| 8 | -294 | 257 | -551 | 110 | 0.066 | 0.0816 |
| 6 | -294 | 251 | -545 | 193 | 0.1158 | 0.1974 |
| 4 | -296 | 262 | -558 | 234 | 0.1404 | 0.3378 |
| 2 | -312 | 256 | -568 | 268 | 0.1608 | 0.4986 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 60 kips | | | | | | |
| 18 | -465 | 429 | -894 | 1 | 0.0006 | 0.0006 |
| 16 | -452 | 412 | -864 | 1 | 0.0006 | 0.0012 |
| 14 | -389 | 355 | -744 | -3 | -0.0018 | -0.0006 |
| 12 | -354 | 317 | -671 | -2 | -0.0012 | -0.0018 |
| 10 | -314 | 277 | -591 | 48 | 0.0288 | 0.027 |
| 8 | -262 | 226 | -488 | 173 | 0.1038 | 0.1308 |
| 6 | -237 | 196 | -433 | 305 | 0.183 | 0.3138 |
| 4 | -229 | 195 | -424 | 368 | 0.2208 | 0.5346 |
| 2 | -242 | 196 | -438 | 398 | 0.2388 | 0.7734 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 80 kips | | | | | | |
| 18 | -465 | 429 | -894 | 1 | 0.0006 | 0.0006 |
| 16 | -452 | 414 | -866 | -1 | -0.0006 | 0 |
| 14 | -390 | 355 | -745 | -4 | -0.0024 | -0.0024 |
| 12 | -354 | 316 | -670 | -1 | -0.0006 | -0.003 |
| 10 | -304 | 268 | -572 | 67 | 0.0402 | 0.0372 |
| 8 | -228 | 193 | -421 | 240 | 0.144 | 0.1812 |
| 6 | -177 | 135 | -312 | 426 | 0.2556 | 0.4368 |
| 4 | -156 | 128 | -284 | 508 | 0.3048 | 0.7416 |
| 2 | -165 | 126 | -291 | 545 | 0.327 | 1.0686 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 100 kips | | | | | | |
| 18 | -464 | 430 | -894 | 1 | 0.0006 | 0.0006 |
| 16 | -452 | 414 | -866 | -1 | -0.0006 | 0 |
| 14 | -390 | 355 | -745 | -4 | -0.0024 | -0.0024 |
| 12 | -354 | 317 | -671 | -2 | -0.0012 | -0.0036 |
| 10 | -292 | 250 | -542 | 97 | 0.0582 | 0.0546 |
| 8 | -195 | 159 | -354 | 307 | 0.1842 | 0.2388 |
| 6 | -114 | 74 | -188 | 550 | 0.33 | 0.5688 |
| 4 | -82 | 49 | -131 | 661 | 0.3966 | 0.9654 |
| 2 | -87 | 48 | -135 | 701 | 0.4206 | 1.386 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| Final | | | | | | |
| 18 | -466 | 429 | -895 | 0 | 0 | 0 |
| 16 | -452 | 413 | -865 | 0 | 0 | 0 |
| 14 | -388 | 354 | -742 | -1 | -0.0006 | -0.0006 |
| 12 | -351 | 324 | -675 | -6 | -0.0036 | -0.0042 |
| 10 | -307 | 268 | -575 | 64 | 0.0384 | 0.0342 |
| 8 | -291 | 259 | -550 | 111 | 0.0666 | 0.1008 |
| 6 | -325 | 283 | -608 | 130 | 0.078 | 0.1788 |
| 4 | -350 | 315 | -665 | 127 | 0.0762 | 0.255 |
| 2 | -374 | 343 | -717 | 119 | 0.0714 | 0.3264 |

TABLE E.4 Inclinometer measurements for pile 8

PROJECT:ASHE MICROPILE LATERAL LOAD TESTING

MICROPILE NO: 8

DATE: 12/10/09

| | Baseline data | | |
|---|---|---|---|
| Depth (ft) | A+ | A- | Diff. (A) |
| 18 | -767 | 727 | -1494 |
| 16 | -736 | 700 | -1436 |
| 14 | -717 | 680 | -1397 |
| 12 | -688 | 648 | -1336 |
| 10 | -671 | 630 | -1301 |
| 8 | -673 | 633 | -1306 |
| 6 | -704 | 664 | -1368 |
| 4 | -665 | 629 | -1294 |
| 2 | -575 | 530 | -1105 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 20 kips | | | | | | |
| 18 | -765 | 728 | -1493 | 1 | 0.0006 | 0.0006 |
| 16 | -737 | 701 | -1438 | -2 | -0.0012 | -0.0006 |
| 14 | -716 | 681 | -1397 | 0 | 0 | -0.0006 |
| 12 | -688 | 650 | -1338 | -2 | -0.0012 | -0.0018 |
| 10 | -665 | 623 | -1288 | 13 | 0.0078 | 0.006 |
| 8 | -651 | 613 | -1264 | 42 | 0.0252 | 0.0312 |
| 6 | -666 | 628 | -1294 | 74 | 0.0444 | 0.0756 |
| 4 | -617 | 583 | -1200 | 94 | 0.0564 | 0.132 |
| 2 | -517 | 471 | -988 | 117 | 0.0702 | 0.2022 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 40 kips | | | | | | |
| 18 | -766 | 727 | -1493 | 1 | 0.0006 | 0.0006 |
| 16 | -739 | 700 | -1439 | -3 | -0.0018 | -0.0012 |
| 14 | -717 | 679 | -1396 | 1 | 0.0006 | -0.0006 |
| 12 | -689 | 650 | -1339 | -3 | -0.0018 | -0.0024 |
| 10 | -657 | 616 | -1273 | 28 | 0.0168 | 0.0144 |
| 8 | -622 | 582 | -1204 | 102 | 0.0612 | 0.0756 |
| 6 | -612 | 571 | -1183 | 185 | 0.111 | 0.1866 |
| 4 | -554 | 517 | -1071 | 223 | 0.1338 | 0.3204 |
| 2 | -447 | 406 | -853 | 252 | 0.1512 | 0.4716 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 60 kips | | | | | | |
| 18 | -766 | 726 | -1492 | 2 | 0.0012 | 0.0012 |
| 16 | -738 | 702 | -1440 | -4 | -0.0024 | -0.0012 |
| 14 | -716 | 681 | -1397 | 0 | 0 | -0.0012 |
| 12 | -687 | 650 | -1337 | -1 | -0.0006 | -0.0018 |
| 10 | -648 | 608 | -1256 | 45 | 0.027 | 0.0252 |
| 8 | -589 | 553 | -1142 | 164 | 0.0984 | 0.1236 |
| 6 | -557 | 520 | -1077 | 291 | 0.1746 | 0.2982 |
| 4 | -487 | 454 | -941 | 353 | 0.2118 | 0.51 |
| 2 | -375 | 325 | -700 | 405 | 0.243 | 0.753 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 80 kips | | | | | | |
| 18 | -767 | 728 | -1495 | -1 | -0.0006 | -0.0006 |
| 16 | -738 | 700 | -1438 | -2 | -0.0012 | -0.0018 |
| 14 | -718 | 681 | -1399 | -2 | -0.0012 | -0.003 |
| 12 | -690 | 649 | -1339 | -3 | -0.0018 | -0.0048 |
| 10 | -640 | 600 | -1240 | 61 | 0.0366 | 0.0318 |
| 8 | -559 | 519 | -1078 | 228 | 0.1368 | 0.1686 |
| 6 | -501 | 460 | -961 | 407 | 0.2442 | 0.4128 |
| 4 | -431 | 382 | -813 | 481 | 0.2886 | 0.7014 |
| 2 | -302 | 258 | -560 | 545 | 0.327 | 1.0284 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| 100 kips | | | | | | |
| 18 | -766 | 727 | -1493 | 1 | 0.0006 | 0.0006 |
| 16 | -738 | 702 | -1440 | -4 | -0.0024 | -0.0018 |
| 14 | -716 | 682 | -1398 | -1 | -0.0006 | -0.0024 |
| 12 | -689 | 651 | -1340 | -4 | -0.0024 | -0.0048 |
| 10 | -632 | 590 | -1222 | 79 | 0.0474 | 0.0426 |
| 8 | -522 | 485 | -1007 | 299 | 0.1794 | 0.222 |
| 6 | -441 | 403 | -844 | 524 | 0.3144 | 0.5364 |
| 4 | -346 | 313 | -659 | 635 | 0.381 | 0.9174 |
| 2 | -223 | 183 | -406 | 699 | 0.4194 | 1.3368 |

| Depth (ft) | A+ | A- | Diff. (A) | Change | Increment | Total |
|---|---|---|---|---|---|---|
| Final | | | | | | |
| 18 | -767 | 727 | -1494 | 0 | 0 | 0 |
| 16 | -740 | 701 | -1441 | -5 | -0.003 | -0.003 |
| 14 | -718 | 681 | -1399 | -2 | -0.0012 | -0.0042 |
| 12 | -687 | 648 | -1335 | 1 | 0.0006 | -0.0036 |
| 10 | -634 | 591 | -1225 | 76 | 0.0456 | 0.042 |
| 8 | -589 | 553 | -1142 | 164 | 0.0984 | 0.1404 |
| 6 | -621 | 579 | -1200 | 168 | 0.1008 | 0.2412 |
| 4 | -593 | 562 | -1155 | 139 | 0.0834 | 0.3246 |
| 2 | -504 | 524 | -1028 | 77 | 0.0462 | 0.3708 |

TABLE E.5 Load and displacement measurements for load test X

| TIMESTAMP | RECORD # | LoadA lbs | LoadB lbs | PotA in | PotB in | PotC in | PotD in | PotE in | PotF in |
|---|---|---|---|---|---|---|---|---|---|
| 12/10/2009 14:15 | 367 | 790.2 | 959.2 | 6.1104 | 6.5604 | 13.5068 | 8.8263 | 20.3776 | 22.1106 |
| 12/10/2009 14:15 | 369 | 790.2 | 959.2 | 6.1104 | 6.5604 | 13.4742 | 8.8263 | 20.3702 | 22.1034 |
| 12/10/2009 14:16 | 371 | 902.9 | 902.8 | 6.1122 | 6.5586 | 13.4524 | 8.8263 | 20.3739 | 22.1106 |
| 12/10/2009 14:16 | 373 | 733.8 | 1015.6 | 6.1050 | 6.5568 | 13.4470 | 8.8263 | 20.3702 | 22.0962 |
| 12/10/2009 14:17 | 375 | 790.2 | 902.8 | 6.1068 | 6.5459 | 13.5177 | 8.8244 | 20.3813 | 22.1106 |
| 12/10/2009 14:17 | 377 | 564.6 | 733.5 | 6.1068 | 6.5622 | 13.3671 | 8.8263 | 20.3849 | 22.1251 |
| 12/10/2009 14:18 | 379 | 677.4 | 846.4 | 6.1068 | 6.5332 | 13.5667 | 8.8263 | 20.3813 | 22.1142 |
| 12/10/2009 14:18 | 381 | 564.7 | 733.5 | 6.1050 | 6.5568 | 13.3508 | 8.8299 | 20.3886 | 22.1142 |
| 12/10/2009 14:19 | 383 | 564.7 | 733.5 | 6.1086 | 6.5350 | 13.5957 | 8.8208 | 20.3849 | 22.1070 |
| 12/10/2009 14:19 | 385 | 564.6 | 733.5 | 6.1032 | 6.5550 | 13.3817 | 8.8208 | 20.3776 | 22.1106 |
| 12/10/2009 14:20 | 387 | 564.6 | 677.1 | 6.1086 | 6.5295 | 13.5957 | 8.8190 | 20.3849 | 22.1070 |
| 12/10/2009 14:20 | 389 | 451.9 | 620.7 | 6.1032 | 6.5422 | 13.3744 | 8.8244 | 20.3813 | 22.1179 |
| 12/10/2009 14:21 | 391 | 451.9 | 564.2 | 6.1104 | 6.5441 | 13.5975 | 8.8335 | 20.3960 | 22.1106 |
| 12/10/2009 14:21 | 393 | 451.9 | 620.7 | 6.1014 | 6.5386 | 13.3762 | 8.8208 | 20.3702 | 22.1070 |
| 12/10/2009 14:22 | 395 | 451.9 | 564.2 | 6.1140 | 6.5459 | 13.6012 | 8.8317 | 20.3886 | 22.1034 |
| 12/10/2009 14:22 | 397 | 564.6 | 620.7 | 6.1158 | 6.5223 | 13.3889 | 8.8208 | 20.3739 | 22.1106 |
| 12/10/2009 14:23 | 399 | 508.3 | 620.7 | 6.1104 | 6.5604 | 13.5939 | 8.8281 | 20.3886 | 22.1034 |
| 12/10/2009 14:23 | 401 | 564.6 | 677.1 | 6.1122 | 6.5168 | 13.4016 | 8.8299 | 20.3813 | 22.0889 |
| 12/10/2009 14:24 | 403 | 451.9 | 564.2 | 6.1193 | 6.5640 | 13.5776 | 8.8281 | 20.3776 | 22.1034 |
| 12/10/2009 14:24 | 405 | 508.3 | 564.2 | 6.1175 | 6.5313 | 13.4034 | 8.8244 | 20.3776 | 22.0926 |
| 12/10/2009 14:25 | 407 | 508.2 | 789.9 | 6.1175 | 6.5622 | 13.5812 | 8.8263 | 20.3813 | 22.0926 |
| 12/10/2009 14:25 | 409 | 959.3 | 1015.6 | 6.1175 | 6.5531 | 13.4234 | 8.8226 | 20.3739 | 22.1142 |
| 12/10/2009 14:26 | 411 | 902.9 | 959.2 | 6.1122 | 6.5568 | 13.5740 | 8.8263 | 20.3739 | 22.0889 |
| 12/10/2009 14:26 | 413 | 733.8 | 733.5 | 6.1193 | 6.5459 | 13.4161 | 8.8208 | 20.3776 | 22.1142 |
| 12/10/2009 14:27 | 415 | 677.4 | 959.2 | 6.1122 | 6.5604 | 13.5594 | 8.8317 | 20.3702 | 22.0781 |
| 12/10/2009 14:27 | 417 | 959.3 | 959.2 | 6.1211 | 6.5586 | 13.4252 | 8.8208 | 20.3665 | 22.0998 |
| 12/10/2009 14:28 | 419 | 902.9 | 959.2 | 6.1140 | 6.5659 | 13.5703 | 8.8263 | 20.3665 | 22.0817 |
| 12/10/2009 14:28 | 421 | 846.6 | 902.8 | 6.1211 | 6.5622 | 13.3998 | 8.8190 | 20.3665 | 22.0998 |
| 12/10/2009 14:29 | 423 | 677.4 | 677.1 | 6.1068 | 6.5604 | 13.5449 | 8.8281 | 20.3702 | 22.0817 |
| 12/10/2009 14:29 | 425 | 790.2 | 789.9 | 6.1211 | 6.5586 | 13.4669 | 8.8263 | 20.3776 | 22.1034 |
| 12/10/2009 14:30 | 427 | 733.8 | 789.9 | 6.1050 | 6.5622 | 13.5195 | 8.8317 | 20.3849 | 22.1179 |
| 12/10/2009 14:30 | 429 | 846.6 | 846.4 | 6.1175 | 6.5622 | 13.5068 | 8.8281 | 20.3739 | 22.1070 |
| 12/10/2009 14:31 | 431 | 733.8 | 846.4 | 6.1926 | 6.5713 | 13.4996 | 8.8317 | 20.3702 | 22.1070 |
| 12/10/2009 14:31 | 433 | 733.8 | 733.5 | 6.1193 | 6.5750 | 13.5123 | 11.0886 | 20.3665 | 22.1142 |
| 12/10/2009 14:32 | 435 | 508.3 | 620.7 | 6.1140 | 6.5713 | 13.4996 | 8.8426 | 20.3776 | 22.3672 |
| 12/10/2009 14:32 | 437 | 621.0 | 564.3 | 6.1193 | 6.5695 | 13.4814 | 8.8408 | 20.3739 | 22.1179 |
| 12/10/2009 14:33 | 439 | 4793.5 | 4796.1 | 6.1229 | 6.5822 | 13.4869 | 8.8426 | 20.3739 | 22.1070 |
| 12/10/2009 14:33 | 441 | 5131.8 | 4965.4 | 6.1265 | 6.5877 | 13.4905 | 8.8444 | 20.3776 | 22.1251 |
| 12/10/2009 14:34 | 443 | 4906.3 | 4852.6 | 6.1229 | 6.5877 | 13.4506 | 8.8426 | 20.3702 | 22.1034 |
| 12/10/2009 14:34 | 445 | 5019.0 | 4852.6 | 6.1265 | 6.5877 | 13.5159 | 8.8444 | 20.4034 | 22.1142 |
| 12/10/2009 14:35 | 447 | 4906.3 | 4796.2 | 6.1247 | 6.5913 | 13.4506 | 8.8389 | 20.3665 | 22.1034 |
| 12/10/2009 14:35 | 449 | 4906.3 | 4796.2 | 6.1265 | 6.5859 | 13.5159 | 8.8426 | 20.3849 | 22.1142 |
| 12/10/2009 14:36 | 451 | 4793.5 | 4796.2 | 6.1265 | 6.5931 | 13.4324 | 8.8408 | 20.3665 | 22.0998 |
| 12/10/2009 14:36 | 453 | 4906.3 | 4796.2 | 6.1247 | 6.5786 | 13.5123 | 8.8408 | 20.3813 | 22.1179 |
| 12/10/2009 14:37 | 455 | 4737.1 | 4739.7 | 6.1265 | 6.5986 | 13.4125 | 8.8371 | 20.3628 | 22.0962 |
| 12/10/2009 14:37 | 457 | 4793.5 | 4739.7 | 6.1247 | 6.5859 | 13.5068 | 8.8353 | 20.3776 | 22.1070 |

| TIMESTAMP | RECORD # | LoadA lbs | LoadB lbs | PotA in | PotB in | PotC in | PotD in | PotE in | PotF in |
|---|---|---|---|---|---|---|---|---|---|
| 12/10/2009 14:38 | 459 | 4680.7 | 4739.7 | 6.1265 | 6.5986 | 13.3998 | 8.8353 | 20.3628 | 22.1034 |
| 12/10/2009 14:38 | 461 | 4793.4 | 4739.7 | 6.1265 | 6.5840 | 13.5086 | 8.8353 | 20.3739 | 22.1106 |
| 12/10/2009 14:39 | 463 | 4680.7 | 4739.7 | 6.1265 | 6.5913 | 13.3998 | 8.8353 | 20.3628 | 22.0998 |
| 12/10/2009 14:39 | 465 | 4793.6 | 4796.3 | 6.1193 | 6.5786 | 13.5286 | 8.8335 | 20.3702 | 22.1070 |
| 12/10/2009 14:40 | 467 | 4680.9 | 4627.0 | 6.1247 | 6.5949 | 13.4071 | 8.8353 | 20.3628 | 22.0998 |
| 12/10/2009 14:40 | 469 | 4793.6 | 4683.4 | 6.1247 | 6.5786 | 13.5105 | 8.8335 | 20.3776 | 22.1070 |
| 12/10/2009 14:41 | 471 | 4680.8 | 4627.0 | 6.1247 | 6.5986 | 13.3962 | 8.8353 | 20.3628 | 22.0998 |
| 12/10/2009 14:41 | 473 | 4793.6 | 4683.4 | 6.1247 | 6.5822 | 13.5014 | 8.8335 | 20.3739 | 22.1070 |
| 12/10/2009 14:42 | 475 | 4680.8 | 4627.0 | 6.1265 | 6.6058 | 13.4071 | 8.8371 | 20.3628 | 22.1034 |
| 12/10/2009 14:42 | 477 | 4680.8 | 4570.5 | 6.1247 | 6.5859 | 13.5032 | 8.8353 | 20.3776 | 22.1034 |
| 12/10/2009 14:43 | 479 | 3778.6 | 3837.0 | 6.1265 | 6.6058 | 13.4361 | 8.8353 | 20.3628 | 22.1070 |
| 12/10/2009 14:43 | 481 | 3665.9 | 3837.0 | 6.1247 | 6.5913 | 13.5123 | 8.8335 | 20.3739 | 22.1106 |
| 12/10/2009 14:44 | 483 | 5019.1 | 5021.9 | 6.1265 | 6.6077 | 13.3944 | 8.8371 | 20.3628 | 22.0926 |
| 12/10/2009 14:44 | 485 | 4793.6 | 4909.1 | 6.1229 | 6.5913 | 13.5322 | 8.8353 | 20.3776 | 22.1070 |
| 12/10/2009 14:45 | 487 | 4511.6 | 4683.4 | 6.1265 | 6.6058 | 13.4234 | 8.8353 | 20.3628 | 22.0962 |
| 12/10/2009 14:45 | 489 | 4342.5 | 4570.5 | 6.1283 | 6.5931 | 13.5195 | 8.8389 | 20.3776 | 22.1179 |
| 12/10/2009 14:46 | 491 | 4173.3 | 4288.4 | 6.1247 | 6.6004 | 13.4324 | 8.8426 | 20.3665 | 22.0962 |
| 12/10/2009 14:46 | 493 | 4173.3 | 4288.4 | 6.1301 | 6.5931 | 13.5123 | 8.8426 | 20.3849 | 22.1142 |
| 12/10/2009 14:47 | 495 | 4116.9 | 4175.5 | 6.1265 | 6.5949 | 13.4506 | 8.8426 | 20.3702 | 22.1070 |
| 12/10/2009 14:47 | 497 | 4060.5 | 4175.5 | 6.1247 | 6.5986 | 13.5340 | 8.8444 | 20.3997 | 22.1215 |
| 12/10/2009 14:48 | 499 | 4060.5 | 4175.5 | 6.1301 | 6.5968 | 13.4742 | 8.8426 | 20.3813 | 22.1142 |
| 12/10/2009 14:48 | 501 | 4060.7 | 4175.7 | 6.1283 | 6.5968 | 13.4996 | 8.8408 | 20.3665 | 22.1215 |
| 12/10/2009 14:49 | 503 | 4060.7 | 4175.7 | 6.1265 | 6.5931 | 13.5050 | 8.8426 | 20.3776 | 22.1034 |
| 12/10/2009 14:49 | 505 | 4060.8 | 4119.3 | 6.1283 | 6.5968 | 13.5014 | 8.8408 | 20.3739 | 22.1142 |
| 12/10/2009 14:50 | 507 | 4004.4 | 4062.9 | 6.1283 | 6.5968 | 13.5032 | 8.8408 | 20.3776 | 22.1106 |
| 12/10/2009 14:50 | 509 | 4004.5 | 4063.0 | 6.1336 | 6.6004 | 13.5359 | 8.8462 | 20.3739 | 22.1215 |
| 12/10/2009 14:51 | 511 | 4004.5 | 4063.0 | 6.1247 | 6.6022 | 13.5377 | 8.8444 | 20.3813 | 22.1142 |
| 12/10/2009 14:51 | 513 | 3948.2 | 4063.1 | 6.1265 | 6.6004 | 13.5377 | 8.8462 | 20.3776 | 22.1142 |
| 12/10/2009 14:52 | 515 | 4850.4 | 4740.2 | 6.1247 | 6.6004 | 13.5395 | 8.8480 | 20.3776 | 22.1287 |
| 12/10/2009 14:52 | 517 | 10320.4 | 9932.1 | 6.2284 | 6.7257 | 13.6284 | 8.9930 | 20.4993 | 22.2588 |
| 12/10/2009 14:53 | 519 | 10264.1 | 9932.1 | 6.2266 | 6.7294 | 13.6502 | 8.9985 | 20.5066 | 22.2660 |
| 12/10/2009 14:53 | 521 | 10264.2 | 9819.3 | 6.2284 | 6.7257 | 13.6012 | 8.9930 | 20.5103 | 22.2624 |
| 12/10/2009 14:54 | 523 | 10207.8 | 9819.3 | 6.2213 | 6.7276 | 13.6647 | 8.9948 | 20.4993 | 22.2552 |
| 12/10/2009 14:54 | 525 | 10151.5 | 9762.9 | 6.2302 | 6.7276 | 13.5867 | 8.9894 | 20.5066 | 22.2660 |
| 12/10/2009 14:55 | 527 | 10151.5 | 9706.5 | 6.2266 | 6.7257 | 13.6756 | 8.9930 | 20.4956 | 22.2443 |
| 12/10/2009 14:55 | 529 | 10038.8 | 9706.6 | 6.2356 | 6.7257 | 13.5540 | 8.9858 | 20.4956 | 22.2660 |
| 12/10/2009 14:56 | 531 | 10038.8 | 9706.6 | 6.2248 | 6.7257 | 13.7010 | 8.9930 | 20.4993 | 22.2407 |
| 12/10/2009 14:56 | 533 | 10038.8 | 9706.6 | 6.2302 | 6.7276 | 13.5431 | 8.9876 | 20.4956 | 22.2696 |
| 12/10/2009 14:57 | 535 | 9982.4 | 9706.6 | 6.2195 | 6.7276 | 13.6864 | 8.9967 | 20.4956 | 22.2371 |
| 12/10/2009 14:57 | 537 | 9982.4 | 9706.6 | 6.2230 | 6.7276 | 13.5486 | 8.9876 | 20.4993 | 22.2696 |
| 12/10/2009 14:58 | 539 | 9926.1 | 9706.7 | 6.2248 | 6.7239 | 13.6828 | 8.9930 | 20.4956 | 22.2515 |
| 12/10/2009 14:58 | 541 | 9926.1 | 9650.2 | 6.2248 | 6.7257 | 13.5431 | 8.9876 | 20.4956 | 22.2515 |
| 12/10/2009 14:59 | 543 | 9926.1 | 9650.3 | 6.2284 | 6.7294 | 13.6883 | 8.9894 | 20.4956 | 22.2515 |
| 12/10/2009 14:59 | 545 | 9926.1 | 9650.3 | 6.2266 | 6.7312 | 13.5431 | 8.9948 | 20.4993 | 22.2515 |
| 12/10/2009 15:00 | 547 | 9926.1 | 9593.9 | 6.2213 | 6.7294 | 13.6937 | 8.9894 | 20.5103 | 22.2552 |
| 12/10/2009 15:00 | 549 | 9926.1 | 9593.9 | 6.2266 | 6.7330 | 13.5504 | 8.9967 | 20.5103 | 22.2515 |
| 12/10/2009 15:01 | 551 | 9926.2 | 9593.9 | 6.2213 | 6.7239 | 13.6937 | 8.9948 | 20.5103 | 22.2515 |

| TIMESTAMP | RECORD # | LoadA lbs | LoadB lbs | PotA in | PotB in | PotC in | PotD in | PotE in | PotF in |
|---|---|---|---|---|---|---|---|---|---|
| 12/10/2009 15:01 | 553 | 9869.8 | 9593.9 | 6.2266 | 6.7294 | 13.5467 | 8.9840 | 20.5066 | 22.2624 |
| 12/10/2009 15:02 | 555 | 9869.8 | 9593.9 | 6.2230 | 6.7221 | 13.6937 | 8.9948 | 20.5103 | 22.2624 |
| 12/10/2009 15:02 | 557 | 9869.8 | 9593.9 | 6.2302 | 6.7276 | 13.5558 | 8.9858 | 20.5066 | 22.2624 |
| 12/10/2009 15:03 | 559 | 9869.8 | 9593.9 | 6.2195 | 6.7257 | 13.6919 | 8.9948 | 20.5103 | 22.2624 |
| 12/10/2009 15:03 | 561 | 9813.4 | 9593.9 | 6.2302 | 6.7257 | 13.6610 | 8.9876 | 20.4956 | 22.2588 |
| 12/10/2009 15:04 | 563 | 9813.4 | 9593.9 | 6.2266 | 6.7312 | 13.6973 | 8.9858 | 20.4993 | 22.2588 |
| 12/10/2009 15:04 | 565 | 9813.4 | 9593.9 | 6.2248 | 6.7257 | 13.5885 | 8.9894 | 20.4845 | 22.2588 |
| 12/10/2009 15:05 | 567 | 9813.4 | 9593.9 | 6.2248 | 6.7257 | 13.6030 | 8.9912 | 20.4993 | 22.2515 |
| 12/10/2009 15:05 | 569 | 9813.4 | 9593.9 | 6.2248 | 6.7257 | 13.6338 | 8.9894 | 20.4956 | 22.2515 |
| 12/10/2009 15:06 | 571 | 9813.4 | 9593.9 | 6.2284 | 6.7239 | 13.5921 | 8.9930 | 20.5029 | 22.3383 |
| 12/10/2009 15:06 | 573 | 9813.4 | 9593.9 | 6.2266 | 6.7276 | 13.6883 | 8.9912 | 20.4993 | 22.2443 |
| 12/10/2009 15:07 | 575 | 9813.4 | 9593.9 | 6.2266 | 6.7330 | 13.5467 | 8.9912 | 20.5029 | 22.2588 |
| 12/10/2009 15:07 | 577 | 9813.4 | 9537.5 | 6.2195 | 6.7257 | 13.6864 | 8.9948 | 20.5066 | 22.2732 |
| 12/10/2009 15:08 | 579 | 9813.4 | 9594.0 | 6.2230 | 6.7312 | 13.6991 | 8.9894 | 20.4993 | 22.2660 |
| 12/10/2009 15:08 | 581 | 12971.5 | 12528.6 | 6.2713 | 6.7893 | 13.7536 | 9.0655 | 20.5656 | 22.3383 |
| 12/10/2009 15:09 | 583 | 15396.5 | 14786.0 | 6.3196 | 6.8566 | 13.6973 | 9.1362 | 20.6136 | 22.4069 |
| 12/10/2009 15:09 | 585 | 15227.8 | 14673.6 | 6.3196 | 6.8584 | 13.8080 | 9.1308 | 20.6173 | 22.4142 |
| 12/10/2009 15:10 | 587 | 15227.8 | 14560.7 | 6.3178 | 6.8547 | 13.6647 | 9.1326 | 20.6099 | 22.4033 |
| 12/10/2009 15:10 | 589 | 15171.8 | 14561.1 | 6.3232 | 6.8638 | 13.8080 | 9.1344 | 20.6136 | 22.4033 |
| 12/10/2009 15:11 | 591 | 15115.4 | 14561.1 | 6.3250 | 6.8566 | 13.6810 | 9.1326 | 20.6173 | 22.3961 |
| 12/10/2009 15:11 | 593 | 15115.8 | 14505.0 | 6.3232 | 6.8566 | 13.8116 | 9.1380 | 20.6136 | 22.4105 |
| 12/10/2009 15:12 | 595 | 15115.8 | 14448.6 | 6.3232 | 6.8620 | 13.6828 | 9.1399 | 20.6320 | 22.4069 |
| 12/10/2009 15:12 | 597 | 15059.4 | 14448.6 | 6.3268 | 6.8566 | 13.8098 | 9.1399 | 20.6246 | 22.4214 |
| 12/10/2009 15:13 | 599 | 15003.3 | 14448.8 | 6.3268 | 6.8693 | 13.6973 | 9.1417 | 20.6062 | 22.4214 |
| 12/10/2009 15:13 | 601 | 15003.3 | 14448.8 | 6.3321 | 6.8638 | 13.8062 | 9.1417 | 20.6320 | 22.4214 |
| 12/10/2009 15:14 | 603 | 15003.5 | 14449.0 | 6.3321 | 6.8765 | 13.7300 | 9.1471 | 20.6246 | 22.4214 |
| 12/10/2009 15:14 | 605 | 14947.1 | 14449.0 | 6.3339 | 6.8693 | 13.7989 | 9.1453 | 20.6394 | 22.4286 |
| 12/10/2009 15:15 | 607 | 14890.8 | 14392.8 | 6.3286 | 6.8711 | 13.7245 | 9.1453 | 20.6246 | 22.4142 |
| 12/10/2009 15:15 | 609 | 14890.8 | 14392.8 | 6.3321 | 6.8638 | 13.7808 | 9.1471 | 20.6394 | 22.4214 |
| 12/10/2009 15:16 | 611 | 14891.0 | 14336.4 | 6.3290 | 6.8643 | 13.7309 | 9.1495 | 20.6223 | 22.4121 |
| 12/10/2009 15:16 | 613 | 14891.0 | 14336.4 | 6.3254 | 6.8643 | 13.7817 | 9.1459 | 20.6519 | 22.4265 |
| 12/10/2009 15:17 | 615 | 14834.7 | 14336.5 | 6.3311 | 6.8647 | 13.7462 | 9.1482 | 20.6308 | 22.4133 |
| 12/10/2009 15:17 | 617 | 14778.3 | 14336.5 | 6.3329 | 6.8647 | 13.7825 | 9.1482 | 20.6272 | 22.4350 |
| 12/10/2009 15:18 | 619 | 14778.4 | 14336.6 | 6.3314 | 6.8668 | 13.7667 | 9.1504 | 20.6317 | 22.4251 |
| 12/10/2009 15:18 | 621 | 14778.4 | 14336.6 | 6.3368 | 6.8759 | 13.7867 | 9.1468 | 20.6317 | 22.4360 |
| 12/10/2009 15:19 | 623 | 14778.4 | 14336.7 | 6.3316 | 6.8707 | 13.8017 | 9.1526 | 20.6325 | 22.4295 |
| 12/10/2009 15:19 | 625 | 19516.2 | 18852.2 | 6.4139 | 6.9688 | 13.8507 | 9.2632 | 20.7394 | 22.5488 |
| 12/10/2009 15:20 | 627 | 20531.5 | 19868.2 | 6.4336 | 7.0051 | 13.8997 | 9.2994 | 20.7652 | 22.5741 |
| 12/10/2009 15:20 | 629 | 20419.5 | 19756.0 | 6.4355 | 7.0071 | 13.8910 | 9.2997 | 20.7658 | 22.5747 |
| 12/10/2009 15:21 | 631 | 20306.6 | 19643.1 | 6.4320 | 7.0071 | 13.9182 | 9.3015 | 20.7695 | 22.5892 |
| 12/10/2009 15:21 | 633 | 20307.3 | 19530.8 | 6.4393 | 7.0091 | 13.9240 | 9.2981 | 20.7700 | 22.5788 |
| 12/10/2009 15:22 | 635 | 20194.4 | 19530.8 | 6.4321 | 7.0037 | 13.9639 | 9.2999 | 20.7663 | 22.5716 |
| 12/10/2009 15:22 | 637 | 20194.9 | 19531.3 | 6.4358 | 7.0129 | 13.9351 | 9.2928 | 20.7740 | 22.5828 |
| 12/10/2009 15:23 | 639 | 20194.9 | 19474.8 | 6.4322 | 7.0110 | 13.9678 | 9.3037 | 20.7667 | 22.5648 |
| 12/10/2009 15:23 | 641 | 20138.9 | 19418.7 | 6.4395 | 7.0111 | 13.9335 | 9.2948 | 20.7706 | 22.5904 |
| 12/10/2009 15:24 | 643 | 20082.5 | 19418.7 | 6.4341 | 7.0111 | 13.9698 | 9.3020 | 20.7706 | 22.5651 |
| 12/10/2009 15:24 | 645 | 20082.8 | 19419.0 | 6.4415 | 7.0115 | 13.9523 | 9.2952 | 20.7753 | 22.5914 |

| TIMESTAMP | RECORD # | LoadA lbs | LoadB lbs | PotA in | PotB in | PotC in | PotD in | PotE in | PotF in |
|---|---|---|---|---|---|---|---|---|---|
| 12/10/2009 15:25 | 647 | 20082.8 | 19419.0 | 6.4362 | 7.0096 | 13.9595 | 9.3043 | 20.7827 | 22.5770 |
| 12/10/2009 15:25 | 649 | 20026.7 | 19419.3 | 6.4366 | 7.0101 | 13.9623 | 9.2958 | 20.7841 | 22.6002 |
| 12/10/2009 15:26 | 651 | 19970.2 | 19419.3 | 6.4402 | 7.0120 | 13.9587 | 9.2977 | 20.7767 | 22.5822 |
| 12/10/2009 15:26 | 653 | 19970.4 | 19363.0 | 6.4388 | 7.0087 | 13.9468 | 9.2964 | 20.7779 | 22.5762 |
| 12/10/2009 15:27 | 655 | 19970.4 | 19363.0 | 6.4352 | 7.0105 | 13.9595 | 9.2964 | 20.7779 | 22.5870 |
| 12/10/2009 15:27 | 657 | 19970.6 | 19306.7 | 6.4371 | 7.0142 | 13.9433 | 9.3073 | 20.7781 | 22.5801 |
| 12/10/2009 15:28 | 659 | 19970.6 | 19306.7 | 6.4281 | 7.0124 | 13.9633 | 9.2983 | 20.7781 | 22.5764 |
| 12/10/2009 15:28 | 661 | 19914.2 | 19306.7 | 6.4371 | 7.0088 | 13.9197 | 9.2946 | 20.7818 | 22.5692 |
| 12/10/2009 15:29 | 663 | 19857.9 | 19306.8 | 6.4302 | 7.0055 | 13.9602 | 9.2969 | 20.7790 | 22.5774 |
| 12/10/2009 15:29 | 665 | 19857.9 | 19306.8 | 6.4391 | 7.0091 | 13.8913 | 9.2896 | 20.7753 | 22.5738 |
| 12/10/2009 15:30 | 667 | 19858.0 | 19306.9 | 6.4304 | 7.0057 | 13.9535 | 9.2972 | 20.7760 | 22.5782 |
| 12/10/2009 15:30 | 669 | 19858.0 | 19306.9 | 6.4447 | 7.0075 | 13.8246 | 9.2972 | 20.7724 | 22.5818 |
| 12/10/2009 15:31 | 671 | 19858.1 | 19307.0 | 6.4342 | 7.0059 | 13.9575 | 9.2956 | 20.7692 | 22.5897 |
| 12/10/2009 15:31 | 673 | 19858.1 | 19307.0 | 6.4288 | 7.0059 | 13.8631 | 9.2974 | 20.7877 | 22.5752 |
| 12/10/2009 15:32 | 675 | 19858.1 | 19307.1 | 6.4343 | 7.0097 | 13.9541 | 9.3013 | 20.7734 | 22.6299 |
| 12/10/2009 15:32 | 677 | 19858.1 | 19307.1 | 6.4343 | 7.0006 | 13.9033 | 9.2976 | 20.7697 | 22.5829 |
| 12/10/2009 15:33 | 679 | 19801.8 | 19307.1 | 6.4362 | 7.0044 | 13.9272 | 9.2942 | 20.7737 | 22.5833 |
| 12/10/2009 15:33 | 681 | 19801.8 | 19307.1 | 6.4362 | 7.0098 | 13.9417 | 9.3032 | 20.7811 | 22.5869 |
| 12/10/2009 15:34 | 683 | 19745.4 | 19307.1 | 6.4381 | 7.0117 | 13.8057 | 9.2979 | 20.7667 | 22.5872 |
| 12/10/2009 15:34 | 685 | 20873.7 | 20323.3 | 6.4381 | 7.0172 | 13.9673 | 9.3143 | 20.7999 | 22.5909 |
| 12/10/2009 15:35 | 687 | 25161.1 | 24613.8 | 6.5330 | 7.1372 | 14.0255 | 9.4304 | 20.8960 | 22.7285 |
| 12/10/2009 15:35 | 689 | 25273.9 | 24726.7 | 6.5294 | 7.1409 | 14.0582 | 9.4504 | 20.9034 | 22.7430 |
| 12/10/2009 15:36 | 691 | 25161.1 | 24613.8 | 6.5437 | 7.1463 | 14.0219 | 9.4413 | 20.8887 | 22.7430 |
| 12/10/2009 15:36 | 693 | 25161.1 | 24500.9 | 6.5313 | 7.1428 | 14.0602 | 9.4541 | 20.9073 | 22.7359 |
| 12/10/2009 15:37 | 695 | 25161.1 | 24500.9 | 6.5259 | 7.1464 | 13.9948 | 9.4432 | 20.8962 | 22.7287 |
| 12/10/2009 15:37 | 697 | 25048.3 | 24388.1 | 6.5349 | 7.1446 | 14.0603 | 9.4524 | 20.9074 | 22.7397 |
| 12/10/2009 15:38 | 699 | 25048.3 | 24388.1 | 6.5313 | 7.1483 | 13.9858 | 9.4433 | 20.8964 | 22.7470 |
| 12/10/2009 15:38 | 701 | 25048.3 | 24388.1 | 6.5367 | 7.1483 | 14.0712 | 9.4434 | 20.9002 | 22.7543 |
| 12/10/2009 15:39 | 703 | 25048.3 | 24388.1 | 6.5367 | 7.1465 | 13.9786 | 9.4434 | 20.8891 | 22.7399 |
| 12/10/2009 15:39 | 705 | 25048.3 | 24331.6 | 6.5385 | 7.1520 | 14.0695 | 9.4452 | 20.8929 | 22.7327 |
| 12/10/2009 15:40 | 707 | 24935.5 | 24275.2 | 6.5349 | 7.1447 | 13.9878 | 9.4452 | 20.9040 | 22.7291 |
| 12/10/2009 15:40 | 709 | 24935.5 | 24275.2 | 6.5368 | 7.1375 | 14.0677 | 9.4471 | 20.8967 | 22.7437 |
| 12/10/2009 15:41 | 711 | 24935.5 | 24275.2 | 6.5368 | 7.1465 | 14.0005 | 9.4489 | 20.8819 | 22.7437 |
| 12/10/2009 15:41 | 713 | 24936.4 | 24276.0 | 6.5350 | 7.1375 | 14.0678 | 9.4435 | 20.8967 | 22.7401 |
| 12/10/2009 15:42 | 715 | 24936.4 | 24276.0 | 6.5421 | 7.1502 | 13.9824 | 9.4435 | 20.8783 | 22.7329 |
| 12/10/2009 15:42 | 717 | 24937.1 | 24276.7 | 6.5422 | 7.1429 | 14.0496 | 9.4453 | 20.8968 | 22.7402 |
| 12/10/2009 15:43 | 719 | 24824.3 | 24276.7 | 6.5368 | 7.1448 | 14.0151 | 9.4507 | 20.8857 | 22.7293 |
| 12/10/2009 15:43 | 721 | 24824.8 | 24277.2 | 6.5350 | 7.1448 | 14.0460 | 9.4417 | 20.9079 | 22.7438 |
| 12/10/2009 15:44 | 723 | 24824.8 | 24277.2 | 6.5368 | 7.1393 | 14.0224 | 9.4453 | 20.8931 | 22.7294 |
| 12/10/2009 15:44 | 725 | 24824.8 | 24277.2 | 6.5386 | 7.1448 | 14.0333 | 9.4453 | 20.8857 | 22.7402 |
| 12/10/2009 15:45 | 727 | 27306.7 | 26873.9 | 6.5672 | 7.1884 | 14.0751 | 9.5052 | 20.9374 | 22.7836 |
| 12/10/2009 15:45 | 729 | 30184.0 | 29922.6 | 6.6299 | 7.2720 | 14.1386 | 9.6013 | 21.0039 | 22.8849 |
| 12/10/2009 15:46 | 731 | 30015.4 | 29697.4 | 6.6245 | 7.2721 | 14.1623 | 9.6013 | 21.0150 | 22.8994 |
| 12/10/2009 15:46 | 733 | 29902.5 | 29584.5 | 6.6281 | 7.2721 | 14.1223 | 9.5977 | 21.0150 | 22.8849 |
| 12/10/2009 15:47 | 735 | 29903.0 | 29472.1 | 6.6245 | 7.2757 | 14.1641 | 9.5995 | 21.0150 | 22.8668 |
| 12/10/2009 15:47 | 737 | 29903.0 | 29472.1 | 6.6317 | 7.2739 | 14.1514 | 9.5923 | 21.0113 | 22.8885 |
| 12/10/2009 15:48 | 739 | 29790.6 | 29472.5 | 6.6245 | 7.2739 | 14.1732 | 9.6014 | 21.0261 | 22.8741 |

| TIMESTAMP | RECORD # | LoadA lbs | LoadB lbs | PotA in | PotB in | PotC in | PotD in | PotE in | PotF in |
|---|---|---|---|---|---|---|---|---|---|
| 12/10/2009 15:48 | 741 | 29790.6 | 29416.0 | 6.6299 | 7.2757 | 14.1587 | 9.5923 | 21.0261 | 22.8994 |
| 12/10/2009 15:49 | 743 | 29790.9 | 29359.8 | 6.6263 | 7.2739 | 14.1587 | 9.5977 | 21.0224 | 22.8741 |
| 12/10/2009 15:49 | 745 | 29790.9 | 29359.8 | 6.6245 | 7.2739 | 14.1568 | 9.5959 | 21.0187 | 22.8633 |
| 12/10/2009 15:50 | 747 | 29791.2 | 29360.1 | 6.6227 | 7.2757 | 14.1605 | 9.5959 | 21.0113 | 22.8777 |
| 12/10/2009 15:50 | 749 | 29791.2 | 29360.1 | 6.6245 | 7.2775 | 14.1605 | 9.5996 | 21.0187 | 22.8669 |
| 12/10/2009 15:51 | 751 | 29678.5 | 29303.8 | 6.6174 | 7.2757 | 14.1623 | 9.5959 | 21.0261 | 22.8741 |
| 12/10/2009 15:51 | 753 | 29678.5 | 29247.4 | 6.6263 | 7.2775 | 14.1569 | 9.5850 | 21.0224 | 22.8741 |
| 12/10/2009 15:52 | 755 | 29678.5 | 29247.4 | 6.6174 | 7.2703 | 14.1587 | 9.5977 | 21.0261 | 22.8777 |
| 12/10/2009 15:52 | 757 | 29678.7 | 29247.5 | 6.6317 | 7.2757 | 14.1478 | 9.5887 | 21.0150 | 22.8778 |
| 12/10/2009 15:53 | 759 | 29678.7 | 29247.5 | 6.6263 | 7.2721 | 14.1659 | 9.6032 | 21.0261 | 22.8741 |
| 12/10/2009 15:53 | 761 | 29678.8 | 29247.6 | 6.6227 | 7.2775 | 14.1169 | 9.5959 | 21.0187 | 22.8850 |
| 12/10/2009 15:54 | 763 | 29678.8 | 29247.6 | 6.6245 | 7.2721 | 14.1659 | 9.5905 | 21.0335 | 22.8886 |
| 12/10/2009 15:54 | 765 | 29678.9 | 29247.7 | 6.6263 | 7.2757 | 14.0752 | 9.5941 | 21.0150 | 22.8850 |
| 12/10/2009 15:55 | 767 | 29678.9 | 29247.7 | 6.6245 | 7.2775 | 14.1641 | 9.5941 | 21.0224 | 22.8778 |
| 12/10/2009 15:55 | 769 | 29622.6 | 29191.4 | 6.6210 | 7.2739 | 14.1042 | 9.5978 | 21.0261 | 22.8742 |
| 12/10/2009 15:56 | 771 | 29566.2 | 29191.4 | 6.6263 | 7.2648 | 14.1659 | 9.5978 | 21.0150 | 22.8850 |
| 12/10/2009 15:56 | 773 | 29566.2 | 29134.9 | 6.6210 | 7.2757 | 14.0861 | 9.5959 | 21.0151 | 22.8886 |
| 12/10/2009 15:57 | 775 | 29566.2 | 29134.9 | 6.6263 | 7.2685 | 14.1569 | 9.5959 | 21.0261 | 22.8922 |
| 12/10/2009 15:57 | 777 | 29566.3 | 29135.0 | 6.6245 | 7.2812 | 14.1042 | 9.5959 | 21.0077 | 22.8778 |
| 12/10/2009 15:58 | 779 | 29566.3 | 29135.0 | 6.6263 | 7.2721 | 14.1496 | 9.6032 | 21.0298 | 22.8814 |
| 12/10/2009 15:58 | 781 | 29566.3 | 29135.0 | 6.6263 | 7.2685 | 14.1169 | 9.5978 | 21.0114 | 22.8778 |
| 12/10/2009 15:59 | 783 | 29566.3 | 29135.0 | 6.6263 | 7.2721 | 14.1369 | 9.5923 | 21.0298 | 22.8814 |
| 12/10/2009 15:59 | 785 | 29509.9 | 29135.1 | 6.6263 | 7.2775 | 14.1623 | 9.5996 | 21.0261 | 22.8886 |
| 12/10/2009 16:00 | 787 | 29453.5 | 29135.1 | 6.6281 | 7.2794 | 14.0480 | 9.6032 | 21.0224 | 22.8669 |
| 12/10/2009 16:00 | 789 | 29453.5 | 29135.1 | 6.6245 | 7.2739 | 14.1660 | 9.5996 | 21.0335 | 22.8886 |
| 12/10/2009 16:01 | 791 | 29453.5 | 29135.1 | 6.6281 | 7.2830 | 14.1678 | 9.5923 | 21.0151 | 22.8886 |
| 12/10/2009 16:01 | 793 | 30356.3 | 29925.6 | 6.6281 | 7.2775 | 14.1714 | 9.6086 | 21.0335 | 22.8850 |
| 12/10/2009 16:02 | 795 | 35321.5 | 34837.9 | 6.7265 | 7.4157 | 14.2458 | 9.7411 | 21.1368 | 23.0441 |
| 12/10/2009 16:02 | 797 | 35095.8 | 34725.0 | 6.7247 | 7.4139 | 14.2840 | 9.7519 | 21.1590 | 23.0550 |
| 12/10/2009 16:03 | 799 | 34982.9 | 34612.1 | 6.7265 | 7.4157 | 14.2168 | 9.7501 | 21.1442 | 23.0622 |
| 12/10/2009 16:03 | 801 | 34982.9 | 34555.6 | 6.7301 | 7.4212 | 14.2894 | 9.7519 | 21.1516 | 23.0477 |
| 12/10/2009 16:04 | 803 | 34870.1 | 34442.7 | 6.7301 | 7.4175 | 14.2295 | 9.7556 | 21.1590 | 23.0550 |
| 12/10/2009 16:04 | 805 | 34870.1 | 34442.7 | 6.7319 | 7.4066 | 14.2858 | 9.7574 | 21.1553 | 23.0658 |
| 12/10/2009 16:05 | 807 | 34870.1 | 34386.2 | 6.7301 | 7.4175 | 14.2113 | 9.7556 | 21.1405 | 23.0622 |
| 12/10/2009 16:05 | 809 | 34757.3 | 34329.8 | 6.7319 | 7.4139 | 14.2785 | 9.7538 | 21.1590 | 23.0586 |
| 12/10/2009 16:06 | 811 | 34758.5 | 34330.9 | 6.7319 | 7.4212 | 14.2386 | 9.7538 | 21.1405 | 23.0622 |
| 12/10/2009 16:06 | 813 | 34758.5 | 34330.9 | 6.7337 | 7.4103 | 14.2785 | 9.7538 | 21.1664 | 23.0550 |
| 12/10/2009 16:07 | 815 | 34758.2 | 34274.2 | 6.7283 | 7.4103 | 14.2404 | 9.7574 | 21.1442 | 23.0477 |
| 12/10/2009 16:07 | 817 | 34758.2 | 34217.8 | 6.7319 | 7.4139 | 14.2567 | 9.7538 | 21.1700 | 23.0622 |
| 12/10/2009 16:08 | 819 | 34758.2 | 34217.8 | 6.7319 | 7.4121 | 14.2622 | 9.7519 | 21.1700 | 23.0477 |
| 12/10/2009 16:08 | 821 | 34701.6 | 34217.6 | 6.7337 | 7.4139 | 14.2585 | 9.7519 | 21.1664 | 23.0513 |
| 12/10/2009 16:09 | 823 | 34645.2 | 34217.6 | 6.7283 | 7.4121 | 14.2803 | 9.7556 | 21.1700 | 23.0550 |
| 12/10/2009 16:09 | 825 | 34645.0 | 34217.4 | 6.7319 | 7.4139 | 14.2477 | 9.7501 | 21.1737 | 23.0513 |
| 12/10/2009 16:10 | 827 | 34645.0 | 34217.4 | 6.7247 | 7.4121 | 14.2821 | 9.7556 | 21.1700 | 23.0333 |
| 12/10/2009 16:10 | 829 | 34644.9 | 34217.3 | 6.7301 | 7.4139 | 14.2604 | 9.7447 | 21.1627 | 23.0477 |
| 12/10/2009 16:11 | 831 | 34644.9 | 34217.3 | 6.7247 | 7.4157 | 14.2912 | 9.7538 | 21.1700 | 23.0333 |
| 12/10/2009 16:11 | 833 | 34644.8 | 34160.8 | 6.7301 | 7.4121 | 14.2785 | 9.7483 | 21.1774 | 23.0586 |

| TIMESTAMP | RECORD # | LoadA lbs | LoadB lbs | PotA in | PotB in | PotC in | PotD in | PotE in | PotF in |
|---|---|---|---|---|---|---|---|---|---|
| 12/10/2009 16:12 | 835 | 34644.8 | 34104.3 | 6.7265 | 7.4121 | 14.2749 | 9.7556 | 21.1700 | 23.0369 |
| 12/10/2009 16:12 | 837 | 36451.5 | 36025.2 | 6.7516 | 7.4430 | 14.3021 | 9.7864 | 21.1737 | 23.0730 |
| 12/10/2009 16:13 | 839 | 40232.0 | 39752.0 | 6.8250 | 7.5502 | 14.3911 | 9.9043 | 21.2623 | 23.1924 |
| 12/10/2009 16:13 | 841 | 40062.4 | 39638.7 | 6.8321 | 7.5593 | 14.3983 | 9.9170 | 21.2734 | 23.1960 |
| 12/10/2009 16:14 | 843 | 39949.5 | 39525.8 | 6.8250 | 7.5557 | 14.4001 | 9.9079 | 21.2807 | 23.2032 |
| 12/10/2009 16:14 | 845 | 39894.2 | 39413.9 | 6.8339 | 7.5557 | 14.4001 | 9.9025 | 21.2734 | 23.2068 |
| 12/10/2009 16:15 | 847 | 39837.8 | 39413.9 | 6.8232 | 7.5502 | 14.3947 | 9.9116 | 21.2697 | 23.2068 |
| 12/10/2009 16:15 | 849 | 39837.3 | 39300.5 | 6.8375 | 7.5575 | 14.2967 | 9.9007 | 21.2660 | 23.1924 |
| 12/10/2009 16:16 | 851 | 39724.4 | 39300.5 | 6.8250 | 7.5539 | 14.4074 | 9.9134 | 21.2844 | 23.2104 |
| 12/10/2009 16:16 | 853 | 39724.4 | 39300.5 | 6.8267 | 7.5575 | 14.3711 | 9.9079 | 21.2660 | 23.2104 |
| 12/10/2009 16:17 | 855 | 39724.0 | 39187.2 | 6.8303 | 7.5575 | 14.4020 | 9.9061 | 21.2807 | 23.2141 |
| 12/10/2009 16:17 | 857 | 39724.0 | 39187.2 | 6.8339 | 7.5593 | 14.3602 | 9.9152 | 21.2771 | 23.2104 |
| 12/10/2009 16:18 | 859 | 39610.9 | 39186.9 | 6.8321 | 7.5502 | 14.4110 | 9.9152 | 21.2734 | 23.2104 |
| 12/10/2009 16:18 | 861 | 39610.9 | 39186.9 | 6.8321 | 7.5612 | 14.3584 | 9.9134 | 21.2844 | 23.2177 |
| 12/10/2009 16:19 | 863 | 39610.6 | 39186.6 | 6.8303 | 7.5539 | 14.4038 | 9.9152 | 21.2807 | 23.2213 |
| 12/10/2009 16:19 | 865 | 39610.6 | 39073.7 | 6.8339 | 7.5630 | 14.3493 | 9.9152 | 21.2623 | 23.2104 |
| 12/10/2009 16:20 | 867 | 39610.4 | 39073.5 | 6.8339 | 7.5521 | 14.3874 | 9.9134 | 21.2807 | 23.2177 |
| 12/10/2009 16:20 | 869 | 39610.4 | 39073.5 | 6.8303 | 7.5521 | 14.3675 | 9.9134 | 21.2697 | 23.2068 |
| 12/10/2009 16:21 | 871 | 39610.3 | 39073.3 | 6.8321 | 7.5521 | 14.3820 | 9.9152 | 21.2807 | 23.2177 |
| 12/10/2009 16:21 | 873 | 39497.4 | 39073.3 | 6.8357 | 7.5521 | 14.3820 | 9.9134 | 21.2771 | 23.2104 |
| 12/10/2009 16:22 | 875 | 39553.7 | 39073.2 | 6.8357 | 7.5557 | 14.3856 | 9.9152 | 21.2660 | 23.2141 |
| 12/10/2009 16:22 | 877 | 39497.3 | 39016.8 | 6.8321 | 7.5593 | 14.3965 | 9.9188 | 21.2807 | 23.2213 |
| 12/10/2009 16:23 | 879 | 39497.2 | 39016.7 | 6.8339 | 7.5575 | 14.3893 | 9.9170 | 21.2844 | 23.2141 |
| 12/10/2009 16:23 | 881 | 39497.2 | 38960.2 | 6.8303 | 7.5539 | 14.4074 | 9.9134 | 21.2807 | 23.2104 |
| 12/10/2009 16:24 | 883 | 39497.2 | 38960.2 | 6.8393 | 7.5593 | 14.3874 | 9.9116 | 21.2807 | 23.2213 |
| 12/10/2009 16:24 | 885 | 39498.5 | 38961.4 | 6.8321 | 7.5575 | 14.4147 | 9.9188 | 21.2771 | 23.1996 |
| 12/10/2009 16:25 | 887 | 39498.5 | 38961.4 | 6.8321 | 7.5630 | 14.4020 | 9.9152 | 21.2844 | 23.2321 |
| 12/10/2009 16:25 | 889 | 39498.1 | 38961.1 | 6.8321 | 7.5575 | 14.4001 | 9.9206 | 21.2881 | 23.2068 |
| 12/10/2009 16:26 | 891 | 39498.1 | 38961.1 | 6.8321 | 7.5593 | 14.4038 | 9.9134 | 21.2771 | 23.1996 |
| 12/10/2009 16:26 | 893 | 39497.9 | 38960.8 | 6.8285 | 7.5612 | 14.4020 | 9.9116 | 21.2807 | 23.2068 |
| 12/10/2009 16:27 | 895 | 39497.9 | 38960.8 | 6.8321 | 7.5593 | 14.4110 | 9.9225 | 21.2844 | 23.2068 |
| 12/10/2009 16:27 | 897 | 39441.2 | 38960.6 | 6.8303 | 7.5557 | 14.4110 | 9.9170 | 21.2918 | 23.2177 |
| 12/10/2009 16:28 | 899 | 39441.2 | 38904.2 | 6.8357 | 7.5612 | 14.4092 | 9.9061 | 21.2881 | 23.2213 |
| 12/10/2009 16:28 | 901 | 39386.0 | 38905.3 | 6.8285 | 7.5539 | 14.4074 | 9.9170 | 21.2844 | 23.2249 |
| 12/10/2009 16:29 | 903 | 39386.0 | 38848.9 | 6.8375 | 7.5666 | 14.4092 | 9.9061 | 21.2734 | 23.2177 |
| 12/10/2009 16:29 | 905 | 39385.6 | 38848.5 | 6.8339 | 7.5593 | 14.4147 | 9.9279 | 21.2881 | 23.2249 |
| 12/10/2009 16:30 | 907 | 39385.6 | 38848.5 | 6.8303 | 7.5612 | 14.4056 | 9.9152 | 21.2807 | 23.2177 |
| 12/10/2009 16:30 | 909 | 40852.3 | 40655.0 | 6.8464 | 7.5793 | 14.4365 | 9.9406 | 21.3213 | 23.2466 |
| 12/10/2009 16:31 | 911 | 44914.8 | 44833.5 | 6.9305 | 7.6902 | 14.4964 | 10.0640 | 21.4062 | 23.3804 |
| 12/10/2009 16:31 | 913 | 44858.1 | 44833.2 | 6.9466 | 7.7139 | 14.5472 | 10.0767 | 21.4283 | 23.3912 |
| 12/10/2009 16:32 | 915 | 44688.8 | 44720.2 | 6.9466 | 7.7048 | 14.4982 | 10.0839 | 21.4394 | 23.3949 |
| 12/10/2009 16:32 | 917 | 44576.0 | 44607.3 | 6.9466 | 7.6993 | 14.5418 | 10.0803 | 21.4247 | 23.3985 |
| 12/10/2009 16:33 | 919 | 44520.8 | 44552.1 | 6.9449 | 7.7121 | 14.4946 | 10.0821 | 21.4136 | 23.4093 |
| 12/10/2009 16:33 | 921 | 44464.4 | 44495.6 | 6.9520 | 7.7048 | 14.5272 | 10.0803 | 21.4394 | 23.4021 |
| 12/10/2009 16:34 | 923 | 44463.9 | 44438.7 | 6.9520 | 7.7175 | 14.5054 | 10.0857 | 21.4210 | 23.4021 |
| 12/10/2009 16:34 | 925 | 44351.1 | 44382.2 | 6.9520 | 7.7066 | 14.5436 | 10.0894 | 21.4542 | 23.4093 |
| 12/10/2009 16:35 | 927 | 44352.2 | 44383.3 | 6.9520 | 7.7011 | 14.5127 | 10.0894 | 21.4357 | 23.3949 |

| TIMESTAMP | RECORD # | LoadA lbs | LoadB lbs | PotA in | PotB in | PotC in | PotD in | PotE in | PotF in |
|---|---|---|---|---|---|---|---|---|---|
| 12/10/2009 16:35 | 929 | 44352.2 | 44270.4 | 6.9520 | 7.7102 | 14.5182 | 10.0894 | 21.4320 | 23.4165 |
| 12/10/2009 16:36 | 931 | 44353.1 | 44271.3 | 6.9538 | 7.7066 | 14.5327 | 10.0857 | 21.4283 | 23.3985 |
| 12/10/2009 16:36 | 933 | 44296.7 | 44271.3 | 6.9556 | 7.7121 | 14.5254 | 10.0875 | 21.4320 | 23.4057 |
| 12/10/2009 16:37 | 935 | 44241.0 | 44272.0 | 6.9502 | 7.7102 | 14.5490 | 10.0857 | 21.4357 | 23.4129 |
| 12/10/2009 16:37 | 937 | 44241.0 | 44159.1 | 6.9538 | 7.7084 | 14.5182 | 10.0894 | 21.4431 | 23.4093 |
| 12/10/2009 16:38 | 939 | 44241.5 | 44159.6 | 6.9484 | 7.7084 | 14.5490 | 10.0894 | 21.4394 | 23.3912 |
| 12/10/2009 16:38 | 941 | 44241.5 | 44159.6 | 6.9520 | 7.7121 | 14.5272 | 10.0803 | 21.4320 | 23.4021 |
| 12/10/2009 16:39 | 943 | 44242.0 | 44160.1 | 6.9502 | 7.7102 | 14.5472 | 10.0894 | 21.4357 | 23.3876 |
| 12/10/2009 16:39 | 945 | 44242.0 | 44160.1 | 6.9484 | 7.7102 | 14.5399 | 10.0839 | 21.4431 | 23.4129 |
| 12/10/2009 16:40 | 947 | 44185.6 | 44103.6 | 6.9520 | 7.7048 | 14.5381 | 10.0857 | 21.4394 | 23.3949 |
| 12/10/2009 16:40 | 949 | 44185.9 | 44047.5 | 6.9484 | 7.7121 | 14.5418 | 10.0803 | 21.4394 | 23.3912 |
| 12/10/2009 16:41 | 951 | 44129.5 | 44047.5 | 6.9466 | 7.7121 | 14.5399 | 10.0821 | 21.4357 | 23.3912 |
| 12/10/2009 16:41 | 953 | 44129.8 | 44047.8 | 6.9520 | 7.7121 | 14.5436 | 10.0894 | 21.4394 | 23.3912 |
| 12/10/2009 16:42 | 955 | 46217.7 | 46193.7 | 6.9681 | 7.7375 | 14.5799 | 10.1238 | 21.4726 | 23.4382 |
| 12/10/2009 16:42 | 957 | 50113.4 | 49696.9 | 7.0594 | 7.8539 | 14.6598 | 10.2327 | 21.5538 | 23.5503 |
| 12/10/2009 16:43 | 959 | 49944.1 | 49696.9 | 7.0558 | 7.8557 | 14.6688 | 10.2490 | 21.5686 | 23.5576 |
| 12/10/2009 16:43 | 961 | 49774.7 | 49527.4 | 7.0540 | 7.8648 | 14.6725 | 10.2417 | 21.5575 | 23.5540 |
| 12/10/2009 16:44 | 963 | 49661.8 | 49470.9 | 7.0558 | 7.8593 | 14.6725 | 10.2508 | 21.5723 | 23.5648 |
| 12/10/2009 16:44 | 965 | 49550.5 | 49359.5 | 7.0522 | 7.8648 | 14.6325 | 10.2454 | 21.5575 | 23.5612 |
| 12/10/2009 16:45 | 967 | 49437.7 | 49303.0 | 7.0594 | 7.8666 | 14.6743 | 10.2417 | 21.5649 | 23.5648 |
| 12/10/2009 16:45 | 969 | 49438.9 | 49247.8 | 7.0612 | 7.8629 | 14.6289 | 10.2435 | 21.5612 | 23.5648 |
| 12/10/2009 16:46 | 971 | 49382.5 | 49191.3 | 7.0612 | 7.8539 | 14.6815 | 10.2454 | 21.5649 | 23.5648 |
| 12/10/2009 16:46 | 973 | 49327.1 | 49135.9 | 7.0558 | 7.8611 | 14.6144 | 10.2490 | 21.5538 | 23.5684 |
| 12/10/2009 16:47 | 975 | 49327.1 | 49135.9 | 7.0594 | 7.8539 | 14.6525 | 10.2417 | 21.5649 | 23.5684 |
| 12/10/2009 16:47 | 977 | 49327.9 | 49136.7 | 7.0612 | 7.8702 | 14.6362 | 10.2435 | 21.5427 | 23.5503 |
| 12/10/2009 16:48 | 979 | 49215.0 | 49080.2 | 7.0630 | 7.8593 | 14.6598 | 10.2454 | 21.5686 | 23.5612 |
| 12/10/2009 16:48 | 981 | 49215.0 | 49023.7 | 7.0612 | 7.8557 | 14.6471 | 10.2490 | 21.5501 | 23.5540 |
| 12/10/2009 16:49 | 983 | 49215.6 | 49024.3 | 7.0576 | 7.8557 | 14.6325 | 10.2454 | 21.5501 | 23.5648 |
| 12/10/2009 16:49 | 985 | 49215.6 | 49024.3 | 7.0612 | 7.8593 | 14.6489 | 10.2490 | 21.5575 | 23.5540 |
| 12/10/2009 16:50 | 987 | 49216.2 | 48968.4 | 7.0630 | 7.8629 | 14.6489 | 10.2490 | 21.5464 | 23.5648 |
| 12/10/2009 16:50 | 989 | 49159.7 | 48911.9 | 7.0558 | 7.8611 | 14.6707 | 10.2472 | 21.5575 | 23.5720 |
| 12/10/2009 16:51 | 991 | 49103.7 | 48912.3 | 7.0594 | 7.8593 | 14.6452 | 10.2454 | 21.5612 | 23.5648 |
| 12/10/2009 16:51 | 993 | 49103.7 | 48912.3 | 7.0576 | 7.8666 | 14.6761 | 10.2490 | 21.5575 | 23.5431 |
| 12/10/2009 16:52 | 995 | 49104.0 | 48912.6 | 7.0612 | 7.8629 | 14.6670 | 10.2417 | 21.5575 | 23.5648 |
| 12/10/2009 16:52 | 997 | 49104.0 | 48912.6 | 7.0612 | 7.8611 | 14.6743 | 10.2454 | 21.5649 | 23.5576 |
| 12/10/2009 16:53 | 999 | 49104.3 | 48912.9 | 7.0612 | 7.8629 | 14.6198 | 10.2544 | 21.5538 | 23.5612 |
| 12/10/2009 16:53 | 1001 | 49104.3 | 48799.9 | 7.0594 | 7.8593 | 14.6761 | 10.2544 | 21.5759 | 23.5576 |
| 12/10/2009 16:54 | 1003 | 49104.5 | 48800.1 | 7.0630 | 7.8648 | 14.5545 | 10.2435 | 21.5612 | 23.5576 |
| 12/10/2009 16:54 | 1005 | 49104.5 | 48800.1 | 7.0612 | 7.8575 | 14.6634 | 10.2490 | 21.5723 | 23.5612 |
| 12/10/2009 16:55 | 1007 | 48991.7 | 48800.2 | 7.0540 | 7.8539 | 14.6126 | 10.2472 | 21.5649 | 23.5648 |
| 12/10/2009 16:55 | 1009 | 48991.7 | 48800.2 | 7.0630 | 7.8611 | 14.6452 | 10.2435 | 21.5649 | 23.5648 |
| 12/10/2009 16:56 | 1011 | 48991.7 | 48800.2 | 7.0612 | 7.8593 | 14.6743 | 10.2454 | 21.5723 | 23.5503 |
| 12/10/2009 16:56 | 1013 | 48991.9 | 48743.9 | 7.0612 | 7.8666 | 14.6725 | 10.2399 | 21.5723 | 23.5612 |
| 12/10/2009 16:57 | 1015 | 48991.9 | 48687.4 | 7.0576 | 7.8575 | 14.6743 | 10.2508 | 21.5796 | 23.5684 |
| 12/10/2009 16:57 | 1017 | 48992.0 | 48687.5 | 7.0647 | 7.8684 | 14.6761 | 10.2417 | 21.5686 | 23.5576 |
| 12/10/2009 16:58 | 1019 | 48992.0 | 48687.5 | 7.0594 | 7.8648 | 14.6761 | 10.2599 | 21.5796 | 23.5756 |
| 12/10/2009 16:58 | 1021 | 53620.2 | 53206.1 | 7.1238 | 7.9575 | 14.7487 | 10.3506 | 21.6424 | 23.6769 |

| TIMESTAMP | RECORD # | LoadA lbs | LoadB lbs | PotA in | PotB in | PotC in | PotD in | PotE in | PotF in |
|---|---|---|---|---|---|---|---|---|---|
| 12/10/2009 16:59 | 1023 | 54974.8 | 54787.6 | 7.1757 | 8.0120 | 14.8086 | 10.4104 | 21.7125 | 23.7456 |
| 12/10/2009 16:59 | 1025 | 55087.7 | 55013.6 | 7.1828 | 8.0193 | 14.7759 | 10.4195 | 21.7125 | 23.7456 |
| 12/10/2009 17:00 | 1027 | 54749.1 | 54787.7 | 7.1828 | 8.0193 | 14.8195 | 10.4195 | 21.7125 | 23.7420 |
| 12/10/2009 17:00 | 1029 | 54974.9 | 55126.6 | 7.1828 | 8.0320 | 14.7669 | 10.4322 | 21.7236 | 23.7673 |
| 12/10/2009 17:01 | 1031 | 54749.1 | 54957.2 | 7.1882 | 8.0229 | 14.8141 | 10.4304 | 21.7272 | 23.7673 |
| 12/10/2009 17:01 | 1033 | 54636.3 | 54900.7 | 7.1882 | 8.0375 | 14.7669 | 10.4304 | 21.7051 | 23.7456 |
| 12/10/2009 17:02 | 1035 | 54523.4 | 54787.8 | 7.1864 | 8.0266 | 14.7959 | 10.4340 | 21.7236 | 23.7564 |
| 12/10/2009 17:02 | 1037 | 54410.5 | 54731.3 | 7.1828 | 8.0248 | 14.7977 | 10.4322 | 21.7088 | 23.7420 |
| 12/10/2009 17:03 | 1039 | 54410.5 | 54674.8 | 7.1846 | 8.0229 | 14.7923 | 10.4322 | 21.7088 | 23.7637 |
| 12/10/2009 17:03 | 1041 | 54297.7 | 54618.4 | 7.1900 | 8.0266 | 14.7796 | 10.4322 | 21.7088 | 23.7420 |
| 12/10/2009 17:04 | 1043 | 54297.7 | 54561.9 | 7.1846 | 8.0284 | 14.8068 | 10.4322 | 21.7162 | 23.7456 |
| 12/10/2009 17:04 | 1045 | 54184.8 | 54561.9 | 7.1793 | 8.0302 | 14.8068 | 10.4322 | 21.7125 | 23.7673 |
| 12/10/2009 17:05 | 1047 | 54184.8 | 54505.4 | 7.1864 | 8.0266 | 14.7868 | 10.4286 | 21.7162 | 23.7384 |
| 12/10/2009 17:05 | 1049 | 54128.4 | 54449.0 | 7.1828 | 8.0284 | 14.8195 | 10.4340 | 21.7088 | 23.7311 |
| 12/10/2009 17:06 | 1051 | 54072.0 | 54449.0 | 7.1864 | 8.0302 | 14.7959 | 10.4231 | 21.7088 | 23.7456 |
| 12/10/2009 17:06 | 1053 | 54072.0 | 54449.0 | 7.1828 | 8.0266 | 14.8032 | 10.4358 | 21.7199 | 23.7275 |
| 12/10/2009 17:07 | 1055 | 54015.5 | 54392.5 | 7.1811 | 8.0302 | 14.8068 | 10.4268 | 21.7125 | 23.7456 |
| 12/10/2009 17:07 | 1057 | 53959.1 | 54336.0 | 7.1864 | 8.0320 | 14.8050 | 10.4286 | 21.7088 | 23.7384 |
| 12/10/2009 17:08 | 1059 | 53959.1 | 54336.0 | 7.1828 | 8.0320 | 14.8086 | 10.4358 | 21.7162 | 23.7347 |
| 12/10/2009 17:08 | 1061 | 53959.1 | 54336.0 | 7.1757 | 8.0266 | 14.8141 | 10.4286 | 21.7199 | 23.7420 |
| 12/10/2009 17:09 | 1063 | 53959.1 | 54279.6 | 7.1828 | 8.0302 | 14.8068 | 10.4195 | 21.7162 | 23.7420 |
| 12/10/2009 17:09 | 1065 | 53902.7 | 54279.6 | 7.1793 | 8.0248 | 14.8086 | 10.4304 | 21.7162 | 23.7347 |
| 12/10/2009 17:10 | 1067 | 53846.2 | 54223.1 | 7.1775 | 8.0338 | 14.8104 | 10.4231 | 21.7051 | 23.7420 |
| 12/10/2009 17:10 | 1069 | 53846.2 | 54223.1 | 7.1793 | 8.0266 | 14.8123 | 10.4304 | 21.7199 | 23.7456 |
| 12/10/2009 17:11 | 1071 | 53846.2 | 54223.1 | 7.1811 | 8.0284 | 14.7995 | 10.4268 | 21.7088 | 23.7492 |
| 12/10/2009 17:11 | 1073 | 53846.2 | 54223.1 | 7.1828 | 8.0302 | 14.8123 | 10.4231 | 21.7162 | 23.7492 |
| 12/10/2009 17:12 | 1075 | 53789.8 | 54166.6 | 7.1846 | 8.0284 | 14.7723 | 10.4268 | 21.7125 | 23.7384 |
| 12/10/2009 17:12 | 1077 | 53789.8 | 54110.1 | 7.1811 | 8.0211 | 14.8159 | 10.4304 | 21.7125 | 23.7492 |
| 12/10/2009 17:13 | 1079 | 53789.8 | 54223.1 | 7.1828 | 8.0284 | 14.7832 | 10.4304 | 21.7014 | 23.7564 |
| 12/10/2009 17:13 | 1081 | 54184.9 | 57047.2 | 7.1936 | 8.0375 | 14.8359 | 10.4594 | 21.7605 | 23.7818 |
| 12/10/2009 17:14 | 1083 | 53846.3 | 58233.3 | 7.1954 | 8.0557 | 14.8014 | 10.4739 | 21.7494 | 23.7998 |
| 12/10/2009 17:14 | 1085 | 53846.3 | 57273.1 | 7.1990 | 8.0466 | 14.8322 | 10.4739 | 21.7863 | 23.8143 |
| 12/10/2009 17:15 | 1087 | 53846.3 | 57047.2 | 7.1972 | 8.0429 | 14.8322 | 10.4739 | 21.7641 | 23.7998 |
| 12/10/2009 17:15 | 1089 | 53846.3 | 56934.3 | 7.1972 | 8.0448 | 14.8268 | 10.4757 | 21.7531 | 23.8179 |
| 12/10/2009 17:16 | 1091 | 53620.5 | 59306.5 | 7.1990 | 8.0484 | 14.8395 | 10.4812 | 21.7863 | 23.8071 |
| 12/10/2009 17:16 | 1093 | 53281.8 | 59532.4 | 7.2115 | 8.0611 | 14.8377 | 10.4993 | 21.7937 | 23.8360 |
| 12/10/2009 17:17 | 1095 | 53281.8 | 58741.7 | 7.2043 | 8.0611 | 14.8685 | 10.5011 | 21.8010 | 23.8541 |
| 12/10/2009 17:17 | 1097 | 53281.8 | 58515.8 | 7.2097 | 8.0593 | 14.8504 | 10.5011 | 21.8047 | 23.8396 |
| 12/10/2009 17:18 | 1099 | 53281.8 | 58289.8 | 7.2043 | 8.0629 | 14.8685 | 10.4993 | 21.7974 | 23.8215 |
| 12/10/2009 17:18 | 1101 | 53281.8 | 58176.9 | 7.2079 | 8.0611 | 14.8558 | 10.4957 | 21.8010 | 23.8432 |
| 12/10/2009 17:19 | 1103 | 53281.8 | 58063.9 | 7.2061 | 8.0575 | 14.8613 | 10.5029 | 21.8047 | 23.8288 |
| 12/10/2009 17:19 | 1105 | 53281.8 | 57950.9 | 7.2043 | 8.0593 | 14.8576 | 10.4975 | 21.8084 | 23.8505 |
| 12/10/2009 17:20 | 1107 | 53281.8 | 57950.9 | 7.2115 | 8.0611 | 14.8631 | 10.4957 | 21.7974 | 23.8324 |
| 12/10/2009 17:20 | 1109 | 53281.8 | 57838.0 | 7.2061 | 8.0629 | 14.8722 | 10.5084 | 21.7937 | 23.8288 |
| 12/10/2009 17:21 | 1111 | 53225.4 | 57838.0 | 7.2043 | 8.0593 | 14.8722 | 10.5011 | 21.8010 | 23.8360 |
| 12/10/2009 17:21 | 1113 | 47637.7 | 47558.2 | 7.1274 | 7.9520 | 14.7868 | 10.3868 | 21.6940 | 23.7058 |
| 12/10/2009 17:22 | 1115 | 47750.6 | 47784.1 | 7.1310 | 7.9520 | 14.7868 | 10.3814 | 21.6977 | 23.7131 |

| TIMESTAMP | RECORD # | LoadA lbs | LoadB lbs | PotA in | PotB in | PotC in | PotD in | PotE in | PotF in |
|---|---|---|---|---|---|---|---|---|---|
| 12/10/2009 17:22 | 1117 | 23480.8 | 23948.5 | 6.6961 | 7.3594 | 14.3257 | 9.7937 | 21.2623 | 23.1707 |
| 12/10/2009 17:23 | 1119 | 23932.3 | 24061.5 | 6.6961 | 7.3575 | 14.3421 | 9.7937 | 21.2697 | 23.1634 |
| 12/10/2009 17:23 | 1121 | 24045.2 | 24174.5 | 6.6997 | 7.3630 | 14.3221 | 9.7955 | 21.2807 | 23.1707 |
| 12/10/2009 17:24 | 1123 | 24158.1 | 24287.4 | 6.6979 | 7.3557 | 14.3348 | 9.7991 | 21.2697 | 23.1743 |
| 12/10/2009 17:24 | 1125 | 24271.0 | 24400.4 | 6.7015 | 7.3684 | 14.2894 | 9.7955 | 21.2475 | 23.1598 |
| 12/10/2009 17:25 | 1127 | 24383.8 | 24400.4 | 6.6997 | 7.3612 | 14.3221 | 9.7937 | 21.2734 | 23.1671 |
| 12/10/2009 17:25 | 1129 | 24383.8 | 24513.4 | 6.7015 | 7.3594 | 14.3057 | 9.7973 | 21.2512 | 23.1526 |
| 12/10/2009 17:26 | 1131 | 18288.2 | 18639.2 | 6.5959 | 7.2248 | 14.2204 | 9.6685 | 21.1885 | 23.0477 |
| 12/10/2009 17:26 | 1133 | 14224.4 | 14685.4 | 6.5118 | 7.1085 | 14.1260 | 9.5524 | 21.0889 | 22.9248 |
| 12/10/2009 17:27 | 1135 | 14337.3 | 14911.4 | 6.5154 | 7.1085 | 14.1079 | 9.5506 | 21.0778 | 22.9429 |
| 12/10/2009 17:27 | 1137 | 14450.2 | 15024.3 | 6.5154 | 7.1103 | 14.1333 | 9.5488 | 21.0815 | 22.9248 |
| 12/10/2009 17:28 | 1139 | 14619.5 | 15024.3 | 6.5172 | 7.1139 | 14.1242 | 9.5542 | 21.0852 | 22.9284 |
| 12/10/2009 17:28 | 1141 | 14675.9 | 15137.3 | 6.5118 | 7.1121 | 14.1478 | 9.5542 | 21.0962 | 22.9465 |
| 12/10/2009 17:29 | 1143 | 14788.8 | 15137.3 | 6.5154 | 7.1103 | 14.1278 | 9.5506 | 21.0962 | 22.9320 |
| 12/10/2009 17:29 | 1145 | 14788.8 | 15193.8 | 6.5136 | 7.1157 | 14.1514 | 9.5542 | 21.0852 | 22.9176 |
| 12/10/2009 17:30 | 1147 | 1581.5 | 1581.5 | 6.2935 | 6.8121 | 13.8991 | 9.2404 | 20.8748 | 22.6536 |

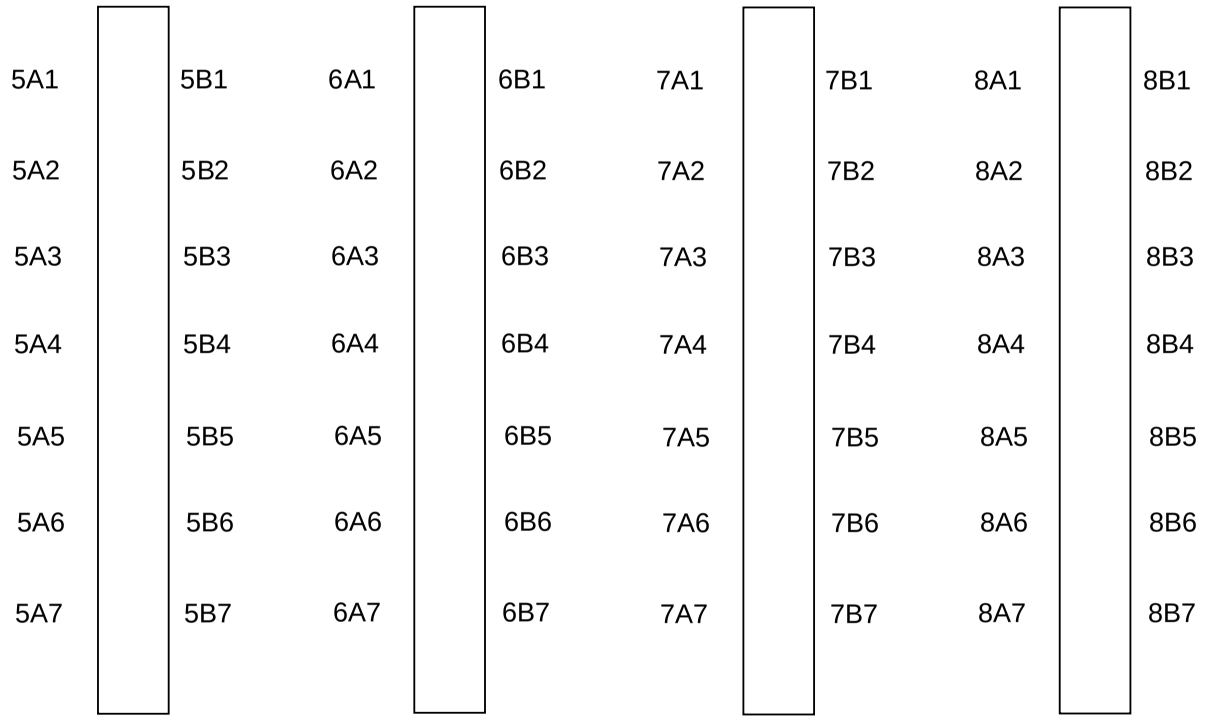


Figure E.1 General position of strain gages in piles 5, 6. 7, and 8

# TABLE E.6 Strain gage measurements for pile 5

| TS | 5A1 Comp. Strain | 5B1 Tensile Strain | Moment (k*ft) | 5A2 Comp. Strain | 5B2 Tensile Strain | Moment (k*ft) | 5A3 Comp. Strain | 5B3 Tensile Strain | Moment (k*ft) | 5A4 Comp. Strain | 5B4 Tensile Strain | Moment (k*ft) | 5A5 Comp. Strain | 5B5 Tensile Strain | Moment (k*ft) | 5A6 Comp. Strain | 5B6 Tensile Strain | Moment (k*ft) | 5A7 Comp. Strain | 5B7 Tensile Strain | Moment (k*ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12/10/2009 14:14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/10/2009 14:14 | -1.30006 | -2.05101 | -0.05184 | -1.62495 | -1.7029 | -0.00538 | -1.31775 | -1.37806 | -0.00416 | -1.15184 | -1.26569 | -0.00786 | -0.59388 | -0.75538 | -0.01115 | -0.1168 | -0.09767 | 0.001321 | 0.050561 | 0.011285 | -0.00271 |
| 12/10/2009 14:15 | -1.33791 | -2.06993 | -0.05053 | -1.6639 | -1.72752 | -0.00439 | -1.32509 | -1.39133 | -0.00457 | -1.14805 | -1.26378 | -0.00799 | -0.5995 | -0.75157 | -0.0105 | -0.11871 | -0.10142 | 0.001194 | 0.048689 | 0.013166 | -0.00245 |
| 12/10/2009 14:16 | -1.42305 | -2.03966 | -0.04256 | -1.70841 | -1.74646 | -0.00263 | -1.35262 | -1.42923 | -0.00529 | -1.1651 | -1.29633 | -0.00906 | -0.60512 | -0.76683 | -0.01116 | -0.12829 | -0.11645 | 0.000817 | 0.048689 | 0.018808 | -0.00206 |
| 12/10/2009 14:17 | -1.66712 | -2.3688 | -0.04844 | -1.96805 | -1.96235 | 0.000393 | -1.55998 | -1.62065 | -0.00419 | -1.3299 | -1.47438 | -0.00997 | -0.66507 | -0.85266 | -0.01295 | -0.1436 | -0.10142 | 0.002912 | 0.043071 | 0.009404 | -0.00232 |
| 12/10/2009 14:18 | -1.6482 | -2.29692 | -0.04478 | -1.91242 | -1.96425 | -0.00358 | -1.5086 | -1.6415 | -0.00917 | -1.328 | -1.46289 | -0.00931 | -0.67818 | -0.84503 | -0.01152 | -0.13595 | -0.12396 | 0.000827 | 0.03558 | 0.011285 | -0.00168 |
| 12/10/2009 14:19 | -1.73334 | -2.36691 | -0.04373 | -1.93838 | -1.93395 | 0.000306 | -1.49208 | -1.6794 | -0.01293 | -1.328 | -1.43992 | -0.00773 | -0.66507 | -0.84694 | -0.01255 | -0.13595 | -0.12396 | 0.000827 | 0.046816 | 0.007523 | -0.00271 |
| 12/10/2009 14:20 | -1.78632 | -2.24963 | -0.03198 | -1.92911 | -1.98508 | -0.00386 | -1.44254 | -1.65666 | -0.01478 | -1.2958 | -1.43226 | -0.00942 | -0.66132 | -0.83359 | -0.01189 | -0.14169 | -0.10518 | 0.00252 | 0.039325 | 0 | -0.00271 |
| 12/10/2009 14:21 | -1.71253 | -2.31962 | -0.04191 | -1.94024 | -2.03811 | -0.00676 | -1.43703 | -1.67371 | -0.01634 | -1.29959 | -1.43609 | -0.00942 | -0.67256 | -0.83549 | -0.01125 | -0.13403 | -0.11269 | 0.001473 | 0.046816 | 0.007523 | -0.00271 |
| 12/10/2009 14:22 | -1.71253 | -2.28368 | -0.03943 | -1.86234 | -2.03053 | -0.01161 | -1.40033 | -1.69835 | -0.02057 | -1.28823 | -1.44375 | -0.01074 | -0.66507 | -0.83549 | -0.01176 | -0.14169 | -0.11833 | 0.001613 | 0.044943 | 0.011285 | -0.00232 |
| 12/10/2009 14:23 | -1.87335 | -2.41042 | -0.03707 | -1.79743 | -2.09302 | -0.0204 | -1.37464 | -1.72867 | -0.02444 | -1.28633 | -1.46289 | -0.01219 | -0.66881 | -0.84694 | -0.0123 | -0.14169 | -0.11081 | 0.002131 | 0.043071 | 0.013166 | -0.00206 |
| 12/10/2009 14:24 | -1.49306 | -1.9621 | -0.03238 | -1.44134 | -1.84304 | -0.02773 | -1.1269 | -1.50504 | -0.0261 | -1.10448 | -1.2408 | -0.00941 | -0.5995 | -0.74966 | -0.01037 | -0.12446 | -0.10893 | 0.001072 | 0.044943 | 0.009404 | -0.00245 |
| 12/10/2009 14:25 | -1.45522 | -1.94507 | -0.03381 | -1.41723 | -1.84873 | -0.02979 | -1.12323 | -1.51073 | -0.02675 | -1.09691 | -1.23506 | -0.00954 | -0.59388 | -0.74012 | -0.01009 | -0.12637 | -0.10518 | 0.001463 | 0.048689 | 0.007523 | -0.00284 |
| 12/10/2009 14:26 | -1.44386 | -1.91859 | -0.03277 | -1.42836 | -1.86198 | -0.02993 | -1.10488 | -1.53347 | -0.02958 | -1.09501 | -1.22932 | -0.00927 | -0.59201 | -0.74012 | -0.01022 | -0.1302 | -0.11269 | 0.001209 | 0.046816 | 0.007523 | -0.00271 |
| 12/10/2009 14:27 | -2.16848 | -0.6661 | 0.103707 | -1.84936 | -0.81837 | 0.071168 | -1.15076 | -1.14114 | 0.000664 | -1.11964 | -1.35568 | -0.01629 | -0.60699 | -0.80688 | -0.0138 | -0.13786 | -0.11269 | 0.001737 | 0.037453 | 0.003762 | -0.00233 |
| 12/10/2009 14:28 | -1.6501 | -1.53266 | 0.008106 | -2.01442 | -1.42638 | 0.040591 | -1.32326 | -1.32499 | -0.00012 | -1.12722 | -1.24846 | -0.00837 | -0.60137 | -0.75729 | -0.01076 | -0.12637 | -0.12396 | 0.000167 | 0.044943 | 0.003762 | -0.00284 |
| 12/10/2009 14:29 | -2.74923 | -0.53365 | 0.152938 | -3.30127 | -0.59674 | 0.18669 | -1.78567 | -0.9933 | 0.054696 | -1.24845 | -1.33845 | -0.00621 | -0.63884 | -0.80497 | -0.01147 | -0.13403 | -0.12772 | 0.000436 | 0.037453 | -0.00188 | -0.00272 |
| 12/10/2009 14:30 | -2.70005 | -0.53175 | 0.149674 | -3.29757 | -0.57022 | 0.188265 | -1.78567 | -0.98382 | 0.05535 | -1.23898 | -1.3327 | -0.00647 | -0.63322 | -0.80688 | -0.01199 | -0.13403 | -0.11081 | 0.001603 | 0.043071 | 0.009404 | -0.00232 |
| 12/10/2009 14:31 | -2.71896 | -0.51851 | 0.151894 | -3.25678 | -0.57591 | 0.185057 | -1.80402 | -0.96297 | 0.058056 | -1.23898 | -1.32313 | -0.00581 | -0.63135 | -0.80879 | -0.01225 | -0.13403 | -0.12208 | 0.000825 | 0.039325 | -0.00188 | -0.00284 |
| 12/10/2009 14:32 | -2.70194 | -0.51283 | 0.151111 | -3.19745 | -0.57401 | 0.181092 | -1.782 | -0.93265 | 0.05863 | -1.21246 | -1.30016 | -0.00605 | -0.62947 | -0.79735 | -0.01159 | -0.1302 | -0.11833 | 0.00082 | 0.044943 | 0.001881 | -0.00297 |
| 12/10/2009 14:33 | -2.67546 | -0.50905 | 0.149544 | -3.15666 | -0.58348 | 0.177623 | -1.7765 | -0.92886 | 0.058511 | -1.20867 | -1.29824 | -0.00618 | -0.62947 | -0.79925 | -0.01172 | -0.13403 | -0.10893 | 0.001732 | 0.044943 | 0.011285 | -0.00232 |
| 12/10/2009 14:34 | -2.45981 | -0.75693 | 0.117547 | -2.85073 | -0.75776 | 0.144475 | -1.68292 | -0.94592 | 0.050874 | -1.17268 | -1.25229 | -0.0055 | -0.61074 | -0.77636 | -0.01143 | -0.12637 | -0.17843 | -0.00359 | 0.048689 | -0.00564 | -0.00375 |
| 12/10/2009 14:35 | -21.0338 | 19.98646 | 2.831567 | -43.0214 | 36.69979 | 5.503041 | -27.5465 | 27.07962 | 3.770762 | -4.75908 | 1.731498 | 0.448035 | -0.42902 | -1.97406 | -0.10665 | -0.19722 | -0.18594 | 0.000779 | 0.013108 | -0.01881 | -0.0022 |
| 12/10/2009 14:36 | -20.981 | 19.99026 | 2.828187 | -42.6022 | 36.46125 | 5.457636 | -27.4516 | 27.03959 | 3.761449 | -4.82344 | 1.821536 | 0.458693 | -0.41404 | -1.99504 | -0.10913 | -0.1953 | -0.17467 | 0.001424 | 0.013108 | -0.01128 | -0.00168 |
| 12/10/2009 14:37 | -20.9301 | 19.97696 | 2.823756 | -42.3999 | 36.29142 | 5.43195 | -27.4023 | 26.95764 | 3.75239 | -4.84048 | 1.863682 | 0.462778 | -0.39718 | -1.99885 | -0.11056 | -0.19147 | -0.16903 | 0.001549 | 0.011236 | -0.02633 | -0.00259 |
| 12/10/2009 14:38 | -20.9169 | 19.96556 | 2.822059 | -42.1572 | 36.11968 | 5.40334 | -27.291 | 26.98813 | 3.746811 | -4.83101 | 1.888587 | 0.463844 | -0.39156 | -1.99885 | -0.11095 | -0.19147 | -0.16528 | 0.001808 | 0.011236 | -0.01317 | -0.00168 |
| 12/10/2009 14:39 | -20.8924 | 19.96746 | 2.820499 | -41.8905 | 35.88117 | 5.368468 | -27.1359 | 26.66414 | 3.713739 | -4.81965 | 1.898166 | 0.463721 | -0.38781 | -1.99313 | -0.11081 | -0.18764 | -0.16528 | 0.001544 | 0.016854 | -0.0094 | -0.00181 |
| 12/10/2009 14:40 | -20.932 | 19.97886 | 2.824018 | -41.7121 | 35.82775 | 5.352466 | -27.0775 | 26.63556 | 3.707734 | -4.81776 | 1.810042 | 0.457508 | -0.38406 | -1.98741 | -0.11068 | -0.19147 | -0.17279 | 0.00129 | 0.016854 | -0.01881 | -0.00246 |
| 12/10/2009 14:41 | -20.9791 | 20.04536 | 2.83186 | -41.6422 | 35.84301 | 5.348695 | -27.0592 | 26.62222 | 3.705553 | -4.82155 | 1.827283 | 0.458959 | -0.38219 | -1.9855 | -0.11067 | -0.18956 | -0.15964 | 0.002065 | 0.020599 | -0.00752 | -0.00194 |
| 12/10/2009 14:42 | -20.8811 | 19.95416 | 2.8188 | -41.6606 | 35.85637 | 5.350887 | -27.0811 | 26.68892 | 3.711669 | -4.82344 | 1.844525 | 0.46028 | -0.37282 | -1.98169 | -0.11106 | -0.18764 | -0.15964 | 0.001933 | 0.014981 | -0.00564 | -0.00142 |
| 12/10/2009 14:43 | -20.8623 | 20.03016 | 2.822745 | -41.5135 | 35.79913 | 5.336779 | -27.0282 | 26.6508 | 3.705385 | -4.81019 | 1.857935 | 0.460291 | -0.37095 | -1.9855 | -0.11145 | -0.18764 | -0.1634 | 0.001673 | 0.022472 | -0.00188 | -0.00168 |
| 12/10/2009 14:44 | -20.8415 | 20.00926 | 2.819871 | -41.3958 | 35.72853 | 5.32378 | -26.9917 | 26.62031 | 3.700761 | -4.81208 | 1.867514 | 0.461083 | -0.3747 | -1.97788 | -0.11067 | -0.18381 | -0.14086 | 0.002965 | 0.024344 | -0.00376 | -0.00194 |
| 12/10/2009 14:45 | -16.7349 | 14.96529 | 2.188218 | -33.2463 | 27.96704 | 4.225467 | -22.1436 | 21.0776 | 2.9835 | -4.30477 | 1.597401 | 0.407419 | -0.38781 | -1.8215 | -0.09897 | -0.16658 | -0.14838 | 0.001257 | 0.028089 | 0 | -0.00194 |
| 12/10/2009 14:46 | -22.2756 | 21.4554 | 3.018688 | -43.5068 | 37.79149 | 5.611904 | -28.1523 | 28.04982 | 3.879552 | -4.93701 | 2.059092 | 0.482931 | -0.3391 | -1.99694 | -0.11444 | -0.17424 | -0.14838 | 0.001785 | 0.028089 | -0.0094 | -0.00259 |
| 12/10/2009 14:47 | -21.8064 | 20.75223 | 2.937762 | -41.0242 | 35.39274 | 5.274953 | -26.6449 | 26.15914 | 3.644989 | -4.77423 | 1.957554 | 0.464685 | -0.33535 | -1.94546 | -0.11114 | -0.17807 | -0.13898 | 0.002698 | 0.031835 | 0.003762 | -0.00194 |
| 12/10/2009 14:48 | -21.3146 | 20.37028 | 2.877446 | -40.224 | 34.70786 | 5.172439 | -26.216 | 25.70373 | 3.583944 | -4.72312 | 1.94606 | 0.460364 | -0.33535 | -1.92829 | -0.10996 | -0.17233 | -0.13147 | 0.00282 | 0.03558 | -0.00188 | -0.00259 |
| 12/10/2009 14:49 | -21.0828 | 20.11567 | 2.843869 | -39.7677 | 34.1852 | 5.104865 | -25.9093 | 25.34934 | 3.538311 | -4.6758 | 1.932649 | 0.456171 | -0.33348 | -1.91304 | -0.10903 | -0.16467 | -0.12208 | 0.00294 | 0.033707 | -0.00188 | -0.00246 |
| 12/10/2009 14:50 | -20.8151 | 19.87246 | 2.808607 | -39.2985 | 33.80183 | 5.046013 | -25.6592 | 25.09404 | 3.503424 | -4.64172 | 1.930734 | 0.453687 | -0.32973 | -1.89969 | -0.10837 | -0.16084 | -0.11457 | 0.003194 | 0.039325 | 0.003762 | -0.00245 |
| 12/10/2009 14:51 | -20.6757 | 19.70716 | 2.787569 | -39.0832 | 33.54054 | 5.013115 | -25.5077 | 24.89019 | 3.478893 | -4.62279 | 1.930734 | 0.452381 | -0.32599 | -1.89016 | -0.10797 | -0.15701 | -0.11645 | 0.0028 | 0.043071 | 0.007523 | -0.00245 |
| 12/10/2009 14:52 | -20.5362 | 19.61027 | 2.771253 | -38.8477 | 33.36508 | 4.984744 | -25.3342 | 24.80446 | 3.461003 | -4.60197 | 1.934565 | 0.451208 | -0.32599 | -1.88062 | -0.10731 | -0.16275 | -0.1202 | 0.002937 | 0.039325 | 0.016927 | -0.00155 |
| 12/10/2009 14:53 | -20.4457 | 19.50388 | 2.757663 | -38.6986 | 33.17437 | 4.96129 | -25.2119 | 24.61586 | 3.439541 | -4.58304 | 1.923071 | 0.449108 | -0.32599 | -1.87109 | -0.10666 | -0.16084 | 0.274225 | 0.030032 | 0.052434 | 0.02257 | -0.00206 |
| 12/10/2009 14:54 | -42.7406 | 62.3786 | 7.256227 | -101.62 | 136.058 | 16.40656 | -80.8533 | 129.8503 | 14.54457 | -12.9144 | 23.52998 | 2.515706 | 3.776666 | -3.58136 | -0.50791 | 0.365732 | 0.266711 | -0.00684 | 0.106741 | 0.094042 | -0.00088 |
| 12/10/2009 14:55 | -60.0441 | 63.85604 | 8.552649 | -132.013 | 138.3208 | 18.66075 | -104.447 | 133.1986 | 16.40434 | -17.4647 | 24.78249 | 2.916267 | 4.83053 | -3.82918 | -0.59777 | 0.54765 | 0.281738 | -0.01836 | 0.125468 | 0.107208 | -0.00126 |
| 12/10/2009 14:56 | -59.859 | 63.58007 | 8.520821 | -131.428 | 137.6261 | 18.57245 | -104.131 | 132.6171 | 16.3424 | -17.6063 | 24.85754 | 2.931221 | 4.824903 | -3.87874 | -0.6008 | 0.545735 | 0.272346 | -0.01887 | 0.132958 | 0.103446 | -0.00204 |
| 12/10/2009 14:57 | -59.7973 | 63.45167 | 8.507698 | -130.676 | 137.1066 | 18.48466 | -103.584 | 131.987 | 16.26111 | -17.6422 | 24.64588 | 2.919087 | 4.811776 | -3.99311 | -0.60779 | 0.553395 | 0.276103 | -0.01914 | 0.129213 | 0.103446 | -0.00178 |
| 12/10/2009 14:58 | -60.1918 | 63.18913 | 8.516809 | -130.748 | 136.7058 | 18.46197 | -103.604 | 131.5631 | 16.23322 | -17.8574 | 24.66319 | 2.935138 | 4.710505 | -4.02552 | -0.60304 | 0.539991 | 0.281738 | -0.01783 | 0.131086 | 0.099685 | -0.00217 |
| 12/10/2009 14:59 | -60.1301 | 63.19105 | 8.512682 | -130.553 | 136.5871 | 18.44033 | -103.53 | 131.5028 | 16.22397 | -17.8971 | 24.7113 | 2.941196 | 4.699253 | -4.04267 | -0.60344 | 0.545735 | 0.287373 | -0.01783 | 0.131086 | 0.097804 | -0.0023 |
| 12/10/2009 15:00 | -59.9525 | 63.50916 | 8.52238 | -130.258 | 136.8225 | 18.43615 | -103.184 | 131.6758 | 16.21201 | -17.7574 | 24.94413 | 2.947624 | 4.796772 | -3.96642 | -0.60491 | 0.55914 | 0.304278 | -0.01759 | 0.136704 | 0.107208 | -0.00204 |
| 12/10/2009 15:01 | -59.9973 | 63.49958 | 8.524816 | -130.126 | 136.7855 | 18.42451 | -103.275 | 131.6739 | 16.21819 | -17.7687 | 24.99031 | 2.951594 | 4.804274 | -3.96452 | -0.6053 | 0.57063 | 0.309912 | -0.018 | 0.138576 | 0.118493 | -0.00139 |
| 12/10/2009 15:02 | -59.9375 | 63.47466 | 8.518966 | -130.066 | 136.7097 | 18.41516 | -103.252 | 131.6408 | 16.2143 | -17.78 | 25.00763 | 2.953572 | 4.804274 | -3.96452 | -0.6053 | 0.564885 | 0.319304 | -0.01695 | 0.144194 | 0.118493 | -0.00177 |
| 12/10/2009 15:03 | -59.9263 | 63.48808 | 8.519118 | -129.967 | 136.7778 | 18.41301 | -103.194 | 131.6369 | 16.21007 | -17.7612 | 25.09423 | 2.958246 | 4.815526 | -3.95689 | -0.60555 | 0.576375 | 0.324939 | -0.01736 | 0.157303 | 0.122255 | -0.00242 |
| 12/10/2009 15:04 | -59.8197 | 63.41334 | 8.506601 | -129.873 | 136.6455 | 18.3974 | -103.121 | 131.5767 | 16.20082 | -17.7781 | 25.10962 | 2.960481 | 4.83053 | -3.95499 | -0.60645 | 0.58212 | 0.324939 | -0.01775 | 0.15543 | 0.13354 | -0.00151 |
| 12/10/2009 15:05 | -59.8122 | 63.40376 | 8.505424 | -129.817 | 136.6104 | 18.39112 | -103.088 | 131.5942 | 16.1998 | -17.7895 | 25.12694 | 2.962459 | 4.841782 | -3.95308 | -0.6071 | 0.58978 | 0.332452 | -0.01776 | 0.157303 | 0.131659 | -0.00177 |

| TS | 5A1 Comp. Strain | 5B1 Tensile Strain | Moment (k*ft) | 5A2 Comp. Strain | 5B2 Tensile Strain | Moment (k*ft) | 5A3 Comp. Strain | 5B3 Tensile Strain | Moment (k*ft) | 5A4 Comp. Strain | 5B4 Tensile Strain | Moment (k*ft) | 5A5 Comp. Strain | 5B5 Tensile Strain | Moment (k*ft) | 5A6 Comp. Strain | 5B6 Tensile Strain | Moment (k*ft) | 5A7 Comp. Strain | 5B7 Tensile Strain | Moment (k*ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12/10/2009 15:06 | -59.6813 | 63.36543 | 8.493743 | -129.637 | 136.5988 | 18.37786 | -103.013 | 131.5417 | 16.19097 | -17.7932 | 25.15581 | 2.964712 | 4.83428 | -3.9588 | -0.60697 | 0.595525 | 0.341844 | -0.01751 | 0.151685 | 0.129779 | -0.00151 |
| 12/10/2009 15:07 | -59.7617 | 63.33094 | 8.496912 | -129.676 | 136.5424 | 18.3767 | -103.044 | 131.5611 | 16.19442 | -17.8065 | 25.19429 | 2.968281 | 4.845533 | -3.95308 | -0.60736 | 0.599355 | 0.347479 | -0.01739 | 0.159176 | 0.13354 | -0.00177 |
| 12/10/2009 15:08 | -59.7935 | 63.32519 | 8.498709 | -129.669 | 136.4957 | 18.37298 | -103.027 | 131.565 | 16.19357 | -17.8065 | 25.22508 | 2.970406 | 4.836156 | -3.95118 | -0.60658 | 0.603185 | 0.353114 | -0.01726 | 0.162921 | 0.135421 | -0.0019 |
| 12/10/2009 15:09 | -59.7038 | 63.27153 | 8.48881 | -129.483 | 136.4295 | 18.35558 | -102.979 | 131.5514 | 16.18929 | -17.8084 | 25.2424 | 2.971732 | 4.849284 | -3.94736 | -0.60722 | 0.6051 | 0.811449 | 0.014244 | 0.168539 | 0.146706 | -0.00151 |
| 12/10/2009 15:10 | -64.4697 | 83.50173 | 10.21426 | -143.217 | 187.922 | 22.85803 | -118.484 | 194.7529 | 21.6223 | -19.8034 | 39.018 | 4.060359 | 6.391114 | -4.13226 | -0.72641 | 0.903846 | 0.97676 | 0.005033 | 0.20412 | 0.229466 | 0.00175 |
| 12/10/2009 15:11 | -97.6136 | 106.4487 | 14.08613 | -207.553 | 232.1826 | 30.3543 | -173.393 | 239.0698 | 28.47173 | -28.2391 | 47.84113 | 5.251712 | 10.40177 | -4.66023 | -1.03971 | 1.635465 | 0.984274 | -0.04495 | 0.279029 | 0.274608 | -0.00031 |
| 12/10/2009 15:12 | -97.2778 | 106.0429 | 14.03494 | -206.85 | 231.6162 | 30.26672 | -172.995 | 238.7525 | 28.42238 | -28.4972 | 48.07499 | 5.28567 | 10.38299 | -4.73838 | -1.04381 | 1.650788 | 0.98991 | -0.04562 | 0.297756 | 0.276489 | -0.00147 |
| 12/10/2009 15:13 | -97.1572 | 105.9637 | 14.02114 | -206.611 | 231.4242 | 30.23693 | -172.84 | 238.6494 | 28.40452 | -28.6234 | 48.22575 | 5.304789 | 10.38862 | -4.77649 | -1.04683 | 1.658449 | 1.014332 | -0.04446 | 0.295884 | 0.280251 | -0.00108 |
| 12/10/2009 15:14 | -97.1293 | 105.9019 | 14.01495 | -206.46 | 231.3113 | 30.21873 | -172.748 | 238.5919 | 28.39421 | -28.6931 | 48.35332 | 5.318406 | 10.40364 | -4.79555 | -1.04918 | 1.671857 | 1.01621 | -0.04526 | 0.299629 | 0.285893 | -0.00095 |
| 12/10/2009 15:15 | -97.133 | 105.869 | 14.01294 | -206.355 | 231.2024 | 30.20399 | -172.654 | 238.5344 | 28.38377 | -28.7459 | 48.43837 | 5.327918 | 10.41491 | -4.80889 | -1.05088 | 1.675688 | 1.014332 | -0.04565 | 0.295884 | 0.282131 | -0.00095 |
| 12/10/2009 15:16 | -97.1794 | 105.8594 | 14.01548 | -206.286 | 231.1311 | 30.19429 | -172.571 | 238.5344 | 28.37804 | -28.776 | 48.53309 | 5.336536 | 10.42054 | -4.81652 | -1.05179 | 1.689096 | 1.023725 | -0.04593 | 0.303375 | 0.287774 | -0.00108 |
| 12/10/2009 15:17 | -97.1831 | 105.8342 | 14.014 | -206.194 | 231.0381 | 30.1815 | -172.467 | 238.459 | 28.36564 | -28.808 | 48.60847 | 5.34395 | 10.42993 | -4.81842 | -1.05257 | 1.689096 | 1.027482 | -0.04567 | 0.312738 | 0.306584 | -0.00042 |
| 12/10/2009 15:18 | -97.211 | 105.8342 | 14.01592 | -206.148 | 230.9589 | 30.17285 | -172.375 | 238.4055 | 28.3556 | -28.8287 | 48.67226 | 5.349784 | 10.42993 | -4.82224 | -1.05284 | 1.704419 | 1.040632 | -0.04582 | 0.305247 | 0.297179 | -0.00056 |
| 12/10/2009 15:19 | -97.2314 | 105.8826 | 14.02066 | -206.082 | 230.8935 | 30.16381 | -172.296 | 238.3499 | 28.34628 | -28.8438 | 48.73992 | 5.355494 | 10.43556 | -4.82224 | -1.05322 | 1.702503 | 1.055661 | -0.04465 | 0.320229 | 0.302822 | -0.0012 |
| 12/10/2009 15:20 | -97.2666 | 105.8806 | 14.02296 | -205.981 | 230.8302 | 30.15245 | -172.202 | 238.3043 | 28.33666 | -28.8514 | 48.79791 | 5.360017 | 10.44307 | -4.82033 | -1.05361 | 1.715911 | 1.732004 | 0.001111 | 0.318357 | 0.314107 | -0.00029 |
| 12/10/2009 15:21 | -107.496 | 140.1408 | 17.09402 | -232.548 | 309.7415 | 37.43346 | -200.047 | 331.4749 | 36.69018 | -32.7847 | 67.48499 | 6.921473 | 13.28839 | -4.77268 | -1.24673 | 2.279069 | 1.795886 | -0.03335 | 0.402631 | 0.438251 | 0.002459 |
| 12/10/2009 15:22 | -137.27 | 152.3125 | 19.98944 | -284.463 | 328.8294 | 42.3347 | -242.053 | 346.6056 | 40.63425 | -39.4673 | 70.87316 | 7.616645 | 15.69927 | -5.15766 | -1.43972 | 2.83271 | 1.812796 | -0.0704 | 0.456942 | 0.462704 | 0.000398 |
| 12/10/2009 15:23 | -136.96 | 151.9675 | 19.94428 | -283.804 | 328.4445 | 42.26267 | -241.868 | 346.3469 | 40.60366 | -39.8357 | 71.20122 | 7.66472 | 15.68047 | -5.17672 | -1.43974 | 2.846121 | 1.810917 | -0.07146 | 0.458815 | 0.472109 | 0.000918 |
| 12/10/2009 15:24 | -136.948 | 151.948 | 19.94205 | -283.56 | 328.3478 | 42.23915 | -241.75 | 346.3206 | 40.59369 | -39.9635 | 71.4303 | 7.689354 | 15.69927 | -5.21864 | -1.44393 | 2.863363 | 1.829706 | -0.07135 | 0.473797 | 0.475871 | 0.000143 |
| 12/10/2009 15:25 | -136.843 | 151.8388 | 19.92727 | -283.472 | 328.2471 | 42.22606 | -241.681 | 346.2863 | 40.58651 | -40.065 | 71.61085 | 7.708822 | 15.71055 | -5.23961 | -1.44616 | 2.874858 | 1.835342 | -0.07176 | 0.470051 | 0.496562 | 0.00183 |
| 12/10/2009 15:26 | -136.753 | 151.8349 | 19.92078 | -283.248 | 328.1584 | 42.20455 | -241.609 | 346.2276 | 40.57754 | -40.1326 | 71.74675 | 7.722874 | 15.71994 | -5.25485 | -1.44786 | 2.895933 | 1.844737 | -0.07256 | 0.485034 | 0.498443 | 0.000926 |
| 12/10/2009 15:27 | -136.699 | 151.909 | 19.92221 | -283.008 | 328.0456 | 42.18015 | -241.501 | 346.1488 | 40.56466 | -40.1571 | 71.86906 | 7.733003 | 15.7237 | -5.26247 | -1.44865 | 2.899764 | 1.859768 | -0.07179 | 0.486907 | 0.490919 | 0.000277 |
| 12/10/2009 15:28 | -136.605 | 151.7706 | 19.90618 | -282.848 | 327.9348 | 42.16144 | -241.446 | 346.0882 | 40.55663 | -40.2153 | 71.9739 | 7.744262 | 15.73122 | -5.2701 | -1.44969 | 2.911259 | 1.859768 | -0.07258 | 0.492525 | 0.496562 | 0.000279 |
| 12/10/2009 15:29 | -136.5 | 151.6731 | 19.89221 | -282.703 | 327.7757 | 42.14046 | -241.361 | 345.9952 | 40.54433 | -40.2379 | 72.0671 | 7.752252 | 15.74062 | -5.27772 | -1.45087 | 2.915091 | 1.857889 | -0.07298 | 0.488779 | 0.500324 | 0.000797 |
| 12/10/2009 15:30 | -136.605 | 151.7043 | 19.9016 | -282.638 | 327.7334 | 42.13309 | -241.331 | 345.9426 | 40.53866 | -40.2773 | 72.12341 | 7.758862 | 15.73686 | -5.29297 | -1.45166 | 2.922754 | 1.871042 | -0.0726 | 0.496271 | 0.507848 | 0.000799 |
| 12/10/2009 15:31 | -136.602 | 151.6478 | 19.89745 | -282.509 | 327.6709 | 42.11988 | -241.275 | 345.8941 | 40.53147 | -40.3112 | 72.19913 | 7.766424 | 15.7425 | -5.29487 | -1.45218 | 2.932334 | 1.869163 | -0.07339 | 0.498144 | 0.507848 | 0.00067 |
| 12/10/2009 15:32 | -136.508 | 151.6439 | 19.8907 | -282.426 | 327.5682 | 42.10701 | -241.192 | 345.9406 | 40.52891 | -40.3281 | 72.26126 | 7.771881 | 15.7425 | -5.31774 | -1.45376 | 2.939997 | 1.863526 | -0.07431 | 0.505635 | 0.504086 | -0.00011 |
| 12/10/2009 15:33 | -136.839 | 151.4802 | 19.90226 | -282.748 | 327.3103 | 42.11147 | -241.31 | 345.5425 | 40.50959 | -40.4953 | 72.08651 | 7.771363 | 15.65792 | -5.38825 | -1.45279 | 2.922754 | 1.859768 | -0.07338 | 0.496271 | 0.505967 | 0.000669 |
| 12/10/2009 15:34 | -136.846 | 151.4353 | 19.89968 | -282.74 | 327.3345 | 42.11254 | -241.383 | 345.5505 | 40.5152 | -40.5085 | 72.1467 | 7.776426 | 15.65792 | -5.39778 | -1.45344 | 2.934249 | 1.861647 | -0.07404 | 0.511253 | 0.524777 | 0.000934 |
| 12/10/2009 15:35 | -136.903 | 151.5113 | 19.90886 | -282.558 | 327.2841 | 42.09655 | -241.347 | 345.591 | 40.51546 | -40.5273 | 72.20301 | 7.78161 | 15.67296 | -5.39968 | -1.45461 | 2.930418 | 2.100274 | -0.0573 | 0.500016 | 0.509729 | 0.00067 |
| 12/10/2009 15:36 | -136.565 | 155.1399 | 20.13596 | -282.021 | 339.2261 | 42.88382 | -241.014 | 363.9028 | 41.75657 | -40.3882 | 76.54629 | 8.071821 | 15.75566 | -5.15575 | -1.44348 | 2.961071 | 2.671524 | -0.01999 | 0.514999 | 0.579327 | 0.00444 |
| 12/10/2009 15:37 | -175.943 | 197.891 | 25.80519 | -358.812 | 423.7466 | 54.01893 | -308.571 | 450.5362 | 52.4001 | -49.6983 | 93.40708 | 9.878357 | 20.56974 | -5.46066 | -1.79684 | 4.051313 | 2.692195 | -0.09382 | 0.647971 | 0.688429 | 0.002793 |
| 12/10/2009 15:38 | -175.568 | 197.4899 | 25.75168 | -357.797 | 423.255 | 53.91492 | -308.349 | 450.2749 | 52.3667 | -50.4166 | 93.88665 | 9.961044 | 20.5735 | -5.59977 | -1.8067 | 4.087723 | 2.697833 | -0.09594 | 0.661081 | 0.694072 | 0.002277 |
| 12/10/2009 15:39 | -175.426 | 197.3601 | 25.7329 | -357.41 | 423.0215 | 53.87209 | -308.241 | 450.1865 | 52.35315 | -50.7935 | 94.1596 | 10.0059 | 20.58291 | -5.66647 | -1.81196 | 4.106885 | 2.712867 | -0.09623 | 0.662954 | 0.699715 | 0.002538 |
| 12/10/2009 15:40 | -175.353 | 197.2717 | 25.72175 | -357.09 | 422.8679 | 53.83938 | -308.083 | 450.0774 | 52.33475 | -50.981 | 94.37211 | 10.03352 | 20.60172 | -5.70458 | -1.81589 | 4.131797 | 2.724142 | -0.09717 | 0.661081 | 0.699715 | 0.002667 |
| 12/10/2009 15:41 | -175.359 | 197.2166 | 25.71833 | -356.956 | 422.743 | 53.82154 | -308.025 | 450.0239 | 52.32704 | -51.1123 | 94.52809 | 10.05334 | 20.60737 | -5.73316 | -1.81825 | 4.147128 | 2.726021 | -0.0981 | 0.674191 | 0.714764 | 0.002801 |
| 12/10/2009 15:42 | -175.324 | 197.2147 | 25.7158 | -356.775 | 422.6426 | 53.80208 | -307.936 | 449.9725 | 52.31735 | -51.221 | 94.67433 | 10.07095 | 20.61301 | -5.75222 | -1.81995 | 4.158626 | 2.739176 | -0.09798 | 0.677937 | 0.716645 | 0.002672 |
| 12/10/2009 15:43 | -175.236 | 197.1282 | 25.70378 | -356.58 | 422.53 | 53.78083 | -307.871 | 449.9272 | 52.30973 | -51.3054 | 94.80887 | 10.08606 | 20.63182 | -5.76746 | -1.82231 | 4.168207 | 2.746693 | -0.09813 | 0.683556 | 0.72417 | 0.002804 |
| 12/10/2009 15:44 | -175.196 | 197.1026 | 25.69925 | -356.444 | 422.4214 | 53.764 | -307.792 | 449.8573 | 52.29947 | -51.3729 | 94.90246 | 10.09718 | 20.63559 | -5.78461 | -1.82375 | 4.177789 | 2.741055 | -0.09918 | 0.685429 | 0.712883 | 0.001895 |
| 12/10/2009 15:45 | -175.141 | 197.0613 | 25.69262 | -356.278 | 422.3231 | 53.74575 | -307.71 | 449.7976 | 52.28968 | -51.4291 | 95.00581 | 10.10819 | 20.64688 | -5.79224 | -1.82505 | 4.18737 | 2.756089 | -0.0988 | 0.687301 | 0.714764 | 0.001896 |
| 12/10/2009 15:46 | -175.116 | 196.9414 | 25.68258 | -356.134 | 422.2126 | 53.72818 | -307.64 | 449.8017 | 52.28512 | -51.4835 | 95.09746 | 10.11827 | 20.65064 | -5.80367 | -1.8261 | 4.193119 | 3.601825 | -0.04082 | 0.687301 | 0.714764 | 0.001896 |
| 12/10/2009 15:47 | -214.179 | 243.462 | 31.5903 | -432.595 | 516.3306 | 65.50294 | -374.392 | 553.5138 | 64.052 | -60.6731 | 112.4961 | 11.95363 | 25.81416 | -5.87608 | -2.18753 | 5.293206 | 3.645056 | -0.11377 | 0.831516 | 0.895352 | 0.004407 |
| 12/10/2009 15:48 | -214.351 | 242.5719 | 31.54072 | -431.675 | 514.111 | 65.28627 | -374.331 | 553.2815 | 64.03178 | -62.4544 | 113.2494 | 12.12858 | 25.84241 | -6.15046 | -2.20842 | 5.39671 | 3.661972 | -0.11975 | 0.844626 | 0.900996 | 0.003891 |
| 12/10/2009 15:49 | -214.161 | 242.332 | 31.51105 | -430.919 | 513.3145 | 65.17907 | -372.645 | 553.0241 | 63.89762 | -62.937 | 113.6485 | 12.18945 | 25.85936 | -6.25144 | -2.21656 | 5.436963 | 3.675129 | -0.12162 | 0.857737 | 0.917926 | 0.004155 |
| 12/10/2009 15:50 | -214.002 | 242.1576 | 31.48801 | -430.611 | 512.8945 | 65.12883 | -371.204 | 552.8609 | 63.7869 | -63.2886 | 113.9421 | 12.23398 | 25.88384 | -6.31241 | -2.22246 | 5.459964 | 3.660092 | -0.12424 | 0.853991 | 0.910402 | 0.003894 |
| 12/10/2009 15:51 | -214.271 | 241.8246 | 31.48364 | -430.599 | 512.2707 | 65.08496 | -370.439 | 552.3754 | 63.70056 | -63.7169 | 113.8618 | 12.25801 | 25.77837 | -6.46674 | -2.22583 | 5.454214 | 3.660092 | -0.12385 | 0.822151 | 0.885947 | 0.004404 |
| 12/10/2009 15:52 | -214.199 | 241.7869 | 31.47604 | -430.228 | 512.0545 | 65.04438 | -370.176 | 552.1976 | 63.67013 | -63.902 | 114.0379 | 12.28294 | 25.78591 | -6.51056 | -2.22938 | 5.471465 | 3.699564 | -0.12231 | 0.833389 | 0.897234 | 0.004407 |
| 12/10/2009 15:53 | -213.866 | 241.9177 | 31.46209 | -429.676 | 512.1023 | 65.00961 | -369.635 | 552.2896 | 63.63913 | -63.9207 | 114.4352 | 12.31166 | 25.88196 | -6.46103 | -2.23259 | 5.502134 | 3.695805 | -0.12469 | 0.835262 | 0.889709 | 0.003758 |
| 12/10/2009 15:54 | -213.705 | 241.8048 | 31.44317 | -429.318 | 511.7198 | 64.95847 | -369.476 | 552.1997 | 63.62198 | -64.0348 | 114.5781 | 12.32939 | 25.89891 | -6.47627 | -2.23481 | 5.523219 | 3.707083 | -0.12537 | 0.842753 | 0.897234 | 0.003761 |
| 12/10/2009 15:55 | -213.649 | 241.8048 | 31.4393 | -429.06 | 511.6907 | 64.9387 | -369.343 | 552.0888 | 63.60512 | -64.1302 | 114.7327 | 12.34665 | 25.91963 | -6.4858 | -2.2369 | 5.53472 | 3.72024 | -0.12525 | 0.844626 | 0.895352 | 0.003502 |
| 12/10/2009 15:56 | -213.594 | 241.8266 | 31.43705 | -428.793 | 511.5867 | 64.91306 | -369.178 | 552.0469 | 63.59083 | -64.1826 | 114.8951 | 12.36148 | 25.94788 | -6.47436 | -2.23806 | 5.555805 | 3.744675 | -0.12502 | 0.846499 | 0.902877 | 0.003892 |
| 12/10/2009 15:57 | -213.596 | 241.8642 | 31.43978 | -428.652 | 511.5306 | 64.89943 | -369.075 | 552.0239 | 63.58214 | -64.2499 | 115.0341 | 12.37572 | 25.96483 | -6.48199 | -2.23976 | 5.567306 | 3.748434 | -0.12555 | 0.848372 | 0.916045 | 0.004671 |
| 12/10/2009 15:58 | -213.547 | 241.9098 | 31.43955 | -428.531 | 511.4183 | 64.88332 | -368.964 | 551.98 | 63.57142 | -64.3135 | 115.1515 | 12.38821 | 25.97802 | -6.49151 | -2.24133 | 5.580724 | 3.752194 | -0.12622 | 0.846499 | 0.917926 | 0.004931 |

| TS | 5A1 Comp. Strain | 5B1 Tensile Strain | Moment (k*ft) | 5A2 Comp. Strain | 5B2 Tensile Strain | Moment (k*ft) | 5A3 Comp. Strain | 5B3 Tensile Strain | Moment (k*ft) | 5A4 Comp. Strain | 5B4 Tensile Strain | Moment (k*ft) | 5A5 Comp. Strain | 5B5 Tensile Strain | Moment (k*ft) | 5A6 Comp. Strain | 5B6 Tensile Strain | Moment (k*ft) | 5A7 Comp. Strain | 5B7 Tensile Strain | Moment (k*ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12/10/2009 15:59 | -213.54 | 241.8781 | 31.43686 | -428.394 | 511.3248 | 64.86746 | -368.915 | 551.9277 | 63.56444 | -64.3826 | 115.2455 | 12.39947 | 25.98555 | -6.49342 | -2.24198 | 5.594142 | 3.755953 | -0.12689 | 0.855864 | 0.916045 | 0.004154 |
| 12/10/2009 16:00 | -213.569 | 241.89 | 31.43968 | -428.271 | 511.2728 | 64.8554 | -368.809 | 551.9025 | 63.55537 | -64.435 | 115.3492 | 12.41025 | 26.01569 | -6.49723 | -2.24432 | 5.603726 | 3.77099 | -0.12651 | 0.857737 | 0.925451 | 0.004674 |
| 12/10/2009 16:01 | -213.544 | 241.9118 | 31.43944 | -428.189 | 511.1709 | 64.84267 | -368.734 | 551.8649 | 63.54765 | -64.4855 | 115.4255 | 12.419 | 26.01192 | -6.50485 | -2.24459 | 5.617144 | 3.778509 | -0.12692 | 0.855864 | 0.919808 | 0.004414 |
| 12/10/2009 16:02 | -213.469 | 241.9415 | 31.43637 | -427.969 | 511.1107 | 64.8233 | -368.625 | 551.8105 | 63.53633 | -64.536 | 115.5195 | 12.42897 | 26.04582 | -6.50104 | -2.24666 | 5.626728 | 4.01159 | -0.11149 | 0.868975 | 0.927332 | 0.004028 |
| 12/10/2009 16:03 | -213.578 | 243.3034 | 31.53787 | -427.992 | 519.8789 | 65.43018 | -368.577 | 568.8547 | 64.7096 | -64.5827 | 118.76 | 12.65589 | 26.04582 | -6.26478 | -2.23035 | 5.636312 | 4.912063 | -0.04999 | 0.872721 | 0.980005 | 0.007406 |
| 12/10/2009 16:04 | -253.837 | 285.7222 | 37.24501 | -507.217 | 585.0669 | 75.39881 | -439.952 | 658.9122 | 75.85305 | -76.8502 | 138.2418 | 14.84749 | 31.3564 | -6.66298 | -2.62442 | 7.135515 | 4.949665 | -0.15089 | 1.033798 | 1.149316 | 0.007974 |
| 12/10/2009 16:05 | -253.577 | 285.2607 | 37.19519 | -505.875 | 583.8845 | 75.22454 | -439.244 | 657.8758 | 75.73258 | -77.9355 | 138.9495 | 14.97126 | 31.39411 | -6.8554 | -2.64031 | 7.239057 | 4.964706 | -0.157 | 1.058147 | 1.160603 | 0.007072 |
| 12/10/2009 16:06 | -253.281 | 284.8771 | 37.14828 | -505.151 | 583.1461 | 75.1236 | -438.766 | 657.3332 | 75.66219 | -78.4334 | 139.3879 | 15.03589 | 31.42239 | -6.95066 | -2.64884 | 7.294664 | 4.991027 | -0.15902 | 1.052528 | 1.168128 | 0.00798 |
| 12/10/2009 16:07 | -253.143 | 284.6774 | 37.12496 | -504.694 | 582.6603 | 75.05852 | -438.475 | 657.1821 | 75.63163 | -78.7074 | 139.7359 | 15.07883 | 31.44125 | -7.01734 | -2.65474 | 7.331096 | 4.998547 | -0.16101 | 1.063766 | 1.183178 | 0.008243 |
| 12/10/2009 16:08 | -253.051 | 284.5475 | 37.10968 | -504.362 | 582.2796 | 75.00935 | -438.291 | 656.8651 | 75.59706 | -78.9722 | 139.9994 | 15.11529 | 31.46765 | -7.06306 | -2.65972 | 7.363693 | 5.022989 | -0.16158 | 1.076877 | 1.179416 | 0.007078 |
| 12/10/2009 16:09 | -252.933 | 284.3558 | 37.08826 | -504.052 | 581.9726 | 74.96675 | -438.097 | 656.6204 | 75.56678 | -79.181 | 140.2196 | 15.14491 | 31.49593 | -7.10878 | -2.66483 | 7.392456 | 5.019229 | -0.16382 | 1.082496 | 1.18506 | 0.00708 |
| 12/10/2009 16:10 | -252.847 | 284.0602 | 37.06191 | -503.775 | 581.6802 | 74.92743 | -438.011 | 656.4672 | 75.55026 | -79.4084 | 140.3553 | 15.16997 | 31.49216 | -7.16783 | -2.66864 | 7.405878 | 5.053071 | -0.16241 | 1.082496 | 1.196347 | 0.007859 |
| 12/10/2009 16:11 | -252.732 | 284.2 | 37.06364 | -503.521 | 581.5583 | 74.90147 | -437.84 | 656.4204 | 75.53525 | -79.5314 | 140.5932 | 15.19489 | 31.5261 | -7.17164 | -2.67125 | 7.434641 | 5.054951 | -0.16427 | 1.089988 | 1.203872 | 0.007861 |
| 12/10/2009 16:12 | -252.619 | 284.1161 | 37.05004 | -503.339 | 581.3774 | 74.87646 | -437.757 | 656.3289 | 75.52322 | -79.6656 | 140.7564 | 15.21542 | 31.53553 | -7.19641 | -2.67361 | 7.451899 | 5.064352 | -0.16481 | 1.089988 | 1.207635 | 0.008121 |
| 12/10/2009 16:13 | -252.547 | 284.0742 | 37.04219 | -503.14 | 581.2197 | 74.85179 | -437.64 | 656.2417 | 75.50907 | -79.7793 | 140.9059 | 15.23359 | 31.55061 | -7.20974 | -2.67557 | 7.472992 | 5.540048 | -0.13343 | 1.101227 | 1.213279 | 0.007735 |
| 12/10/2009 16:14 | -252.49 | 294.7542 | 37.77545 | -502.952 | 606.6162 | 76.59188 | -437.53 | 694.6974 | 78.15607 | -79.9061 | 148.1537 | 15.74264 | 31.71278 | -6.8916 | -2.66481 | 7.549664 | 6.37686 | -0.08096 | 1.125576 | 1.314869 | 0.013067 |
| 12/10/2009 16:15 | -292.811 | 344.6545 | 44.0033 | -582.84 | 668.608 | 86.38569 | -509.413 | 764.1578 | 87.91275 | -92.9934 | 165.5814 | 17.84904 | 36.684 | -7.33928 | -3.03886 | 9.293063 | 6.408831 | -0.19909 | 1.305393 | 1.46914 | 0.011303 |
| 12/10/2009 16:16 | -292.193 | 343.8773 | 43.90705 | -580.689 | 666.8512 | 86.11595 | -508.237 | 762.8514 | 87.74141 | -94.4913 | 166.5692 | 18.02064 | 36.70099 | -7.5412 | -3.05398 | 9.415831 | 6.431398 | -0.20601 | 1.311012 | 1.495479 | 0.012733 |
| 12/10/2009 16:17 | -291.793 | 343.203 | 43.83288 | -579.598 | 665.8003 | 85.96808 | -507.642 | 762.2113 | 87.65613 | -95.2736 | 167.1205 | 18.11269 | 36.69721 | -7.63454 | -3.06016 | 9.484889 | 6.450205 | -0.20948 | 1.329743 | 1.501123 | 0.01183 |
| 12/10/2009 16:18 | -291.663 | 342.9184 | 43.80427 | -579.11 | 665.2611 | 85.89715 | -507.354 | 761.9064 | 87.6152 | -95.7733 | 167.575 | 18.17856 | 36.71043 | -7.6993 | -3.06554 | 9.525173 | 6.461489 | -0.21148 | 1.342855 | 1.512411 | 0.011704 |
| 12/10/2009 16:19 | -291.466 | 342.6177 | 43.76988 | -578.597 | 664.7923 | 85.8294 | -507.061 | 761.6491 | 87.57722 | -96.156 | 167.8971 | 18.22721 | 36.71798 | -7.76216 | -3.0704 | 9.563539 | 6.476534 | -0.21309 | 1.337236 | 1.5237 | 0.012871 |
| 12/10/2009 16:20 | -291.402 | 342.428 | 43.75237 | -578.261 | 664.43 | 85.78117 | -506.826 | 761.368 | 87.54165 | -96.4569 | 168.2035 | 18.26913 | 36.73685 | -7.79073 | -3.07368 | 9.584641 | 6.480296 | -0.21429 | 1.346601 | 1.53687 | 0.013134 |
| 12/10/2009 16:21 | -291.222 | 342.2 | 43.72422 | -577.95 | 664.0912 | 85.73635 | -506.641 | 761.1172 | 87.51153 | -96.6798 | 168.4565 | 18.30198 | 36.75384 | -7.8193 | -3.07682 | 9.615334 | 6.497222 | -0.21524 | 1.367206 | 1.542514 | 0.012101 |
| 12/10/2009 16:22 | -291.087 | 342.1071 | 43.70848 | -577.714 | 663.8526 | 85.70357 | -506.498 | 760.9204 | 87.48806 | -96.873 | 168.6838 | 18.331 | 36.76517 | -7.85168 | -3.07984 | 9.636436 | 6.502864 | -0.21631 | 1.367206 | 1.550039 | 0.012621 |
| 12/10/2009 16:23 | -290.824 | 342.1535 | 43.69351 | -577.669 | 663.7354 | 85.69235 | -506.384 | 760.821 | 87.47333 | -97.0476 | 168.8735 | 18.35615 | 36.76894 | -7.87835 | -3.08194 | 9.657538 | 6.514148 | -0.21698 | 1.370952 | 1.546277 | 0.012102 |
| 12/10/2009 16:24 | -291.108 | 341.9235 | 43.69728 | -577.47 | 663.4371 | 85.65803 | -506.296 | 760.6523 | 87.45563 | -97.2222 | 169.0455 | 18.38008 | 36.77083 | -7.90883 | -3.08417 | 9.680558 | 6.514148 | -0.21857 | 1.374699 | 1.557565 | 0.012623 |
| 12/10/2009 16:25 | -291.034 | 341.7459 | 43.67986 | -577.289 | 663.224 | 85.63081 | -506.195 | 760.5183 | 87.43941 | -97.3652 | 169.2175 | 18.40182 | 36.78971 | -7.92787 | -3.08679 | 9.69015 | 6.527313 | -0.21833 | 1.380318 | 1.563209 | 0.012625 |
| 12/10/2009 16:26 | -290.998 | 341.5804 | 43.66598 | -577.138 | 663.0643 | 85.6094 | -506.099 | 760.3648 | 87.42219 | -97.4933 | 169.3796 | 18.42185 | 36.79537 | -7.9393 | -3.08797 | 9.707415 | 6.499102 | -0.22147 | 1.376572 | 1.563209 | 0.012883 |
| 12/10/2009 16:27 | -291.354 | 341.425 | 43.67982 | -577.361 | 662.7255 | 85.60143 | -506.306 | 760.1075 | 87.41869 | -97.7997 | 169.2946 | 18.43714 | 36.71043 | -8.04596 | -3.08947 | 9.703579 | 6.508506 | -0.22055 | 1.384064 | 1.566972 | 0.012626 |
| 12/10/2009 16:28 | -291.332 | 341.3645 | 43.67417 | -577.25 | 662.6084 | 85.58563 | -506.205 | 760.0794 | 87.40979 | -97.9185 | 169.433 | 18.45489 | 36.71798 | -8.07644 | -3.09209 | 9.707415 | 6.516029 | -0.2203 | 1.391557 | 1.566972 | 0.012109 |
| 12/10/2009 16:29 | -291.316 | 341.2777 | 43.66707 | -577.161 | 662.4656 | 85.56964 | -506.143 | 760.0167 | 87.40119 | -98.0002 | 169.5753 | 18.47036 | 36.71798 | -8.09358 | -3.09328 | 9.724681 | 6.538597 | -0.21993 | 1.395303 | 1.576379 | 0.012499 |
| 12/10/2009 16:30 | -291.404 | 341.4291 | 43.68354 | -577.099 | 662.5935 | 85.57422 | -506.172 | 760.3518 | 87.42635 | -97.9742 | 169.9924 | 18.49736 | 36.81613 | -8.02882 | -3.09558 | 9.74962 | 6.540478 | -0.22152 | 1.395303 | 1.585786 | 0.013149 |
| 12/10/2009 16:31 | -291.08 | 341.5986 | 43.67289 | -576.593 | 662.5658 | 85.53734 | -505.783 | 760.2697 | 87.39382 | -97.9817 | 170.1269 | 18.50715 | 36.85577 | -8.02501 | -3.09806 | 9.772641 | 6.717266 | -0.21091 | 1.410288 | 1.580142 | 0.011725 |
| 12/10/2009 16:32 | -291.044 | 351.119 | 44.32761 | -576.457 | 682.1091 | 86.87701 | -506.324 | 786.0374 | 89.20983 | -98.1042 | 174.0034 | 18.7832 | 37.07285 | -7.82883 | -3.0995 | 9.847459 | 7.738627 | -0.14557 | 1.414035 | 1.632822 | 0.015103 |
| 12/10/2009 16:33 | -334.846 | 398.031 | 50.58943 | -659.284 | 754.5874 | 97.59753 | -581.126 | 870.1292 | 100.1781 | -110.884 | 195.9113 | 21.17766 | 42.58991 | -7.8574 | -3.48231 | 11.42273 | 7.766845 | -0.25236 | 1.597608 | 1.849192 | 0.017367 |
| 12/10/2009 16:34 | -333.692 | 397.4991 | 50.47307 | -656.506 | 752.0271 | 97.22904 | -579.539 | 867.9055 | 99.91503 | -112.641 | 197.447 | 21.40495 | 42.56156 | -8.05739 | -3.49415 | 11.56282 | 7.77625 | -0.26138 | 1.601354 | 1.852955 | 0.017368 |
| 12/10/2009 16:35 | -333.073 | 397.7844 | 50.45007 | -655.335 | 750.7873 | 97.06261 | -578.671 | 866.8072 | 99.77931 | -113.448 | 198.3928 | 21.52595 | 42.54077 | -8.16024 | -3.49982 | 11.61271 | 7.783775 | -0.26431 | 1.610721 | 1.83414 | 0.015422 |
| 12/10/2009 16:36 | -332.839 | 397.1466 | 50.38987 | -654.602 | 749.9818 | 96.9564 | -578.132 | 866.1131 | 99.69417 | -113.993 | 199.5098 | 21.64061 | 42.55022 | -8.24024 | -3.50599 | 11.65877 | 7.796943 | -0.26658 | 1.603228 | 1.839785 | 0.016329 |
| 12/10/2009 16:37 | -332.659 | 396.8389 | 50.35622 | -653.956 | 749.3836 | 96.87051 | -577.751 | 865.6541 | 99.63616 | -114.429 | 200.6925 | 21.75241 | 42.53322 | -8.28214 | -3.50771 | 11.69332 | 7.802587 | -0.26857 | 1.597608 | 1.847311 | 0.017237 |
| 12/10/2009 16:38 | -332.49 | 396.5843 | 50.32696 | -653.438 | 748.941 | 96.80421 | -577.431 | 865.3181 | 99.59093 | -114.766 | 201.1617 | 21.80804 | 42.5351 | -8.32214 | -3.5106 | 11.71827 | 7.810112 | -0.26977 | 1.610721 | 1.851074 | 0.016591 |
| 12/10/2009 16:39 | -332.395 | 396.3805 | 50.30633 | -653.037 | 748.5977 | 96.75285 | -577.189 | 865.0655 | 99.55675 | -115.047 | 201.6091 | 21.85834 | 42.53888 | -8.36404 | -3.51376 | 11.74321 | 7.819517 | -0.27085 | 1.612594 | 1.851074 | 0.016462 |
| 12/10/2009 16:40 | -332.222 | 396.189 | 50.28119 | -652.63 | 748.3063 | 96.70462 | -576.973 | 864.8525 | 99.52718 | -115.282 | 201.9631 | 21.89899 | 42.54644 | -8.39451 | -3.51638 | 11.77008 | 7.821399 | -0.27257 | 1.612594 | 1.860482 | 0.017111 |
| 12/10/2009 16:41 | -332.09 | 396.024 | 50.26067 | -652.3 | 748.0494 | 96.66414 | -576.798 | 864.6659 | 99.50217 | -115.488 | 202.2633 | 21.93389 | 42.55589 | -8.41736 | -3.51861 | 11.78927 | 7.838329 | -0.27273 | 1.62758 | 1.864245 | 0.016337 |
| 12/10/2009 16:42 | -332.035 | 395.8834 | 50.2472 | -652.002 | 747.84 | 96.62912 | -576.609 | 864.51 | 99.47841 | -115.669 | 202.5318 | 21.96494 | 42.55589 | -8.4326 | -3.51966 | 11.80271 | 7.830805 | -0.27417 | 1.635073 | 1.868008 | 0.016079 |
| 12/10/2009 16:43 | -331.949 | 395.7592 | 50.23266 | -651.766 | 747.6176 | 96.59748 | -576.507 | 864.387 | 99.46287 | -115.834 | 202.7307 | 21.99003 | 42.55967 | -8.45545 | -3.5215 | 11.81998 | 8.940831 | -0.19874 | 1.629453 | 1.869889 | 0.016597 |
| 12/10/2009 16:44 | -365.613 | 441.9151 | 55.74251 | -724.58 | 836.4273 | 107.7541 | -644.02 | 975.5347 | 111.7955 | -126.104 | 229.3863 | 24.539 | 47.3318 | -7.98882 | -3.8187 | 13.28643 | 9.027386 | -0.294 | 1.753089 | 2.1446 | 0.027025 |
| 12/10/2009 16:45 | -373.039 | 440.9809 | 56.19064 | -732.527 | 836.2544 | 108.2908 | -652.359 | 976.4117 | 112.4317 | -132.461 | 233.5563 | 25.26563 | 47.70067 | -8.24595 | -3.86192 | 13.71454 | 9.025505 | -0.32368 | 1.796175 | 2.202931 | 0.028078 |
| 12/10/2009 16:46 | -372.397 | 439.5994 | 56.05093 | -730.843 | 834.3666 | 108.0442 | -651.542 | 974.5887 | 112.2495 | -133.987 | 234.3683 | 25.42702 | 47.56258 | -8.45545 | -3.86684 | 13.78174 | 9.023623 | -0.32845 | 1.798048 | 2.204813 | 0.028078 |
| 12/10/2009 16:47 | -372.343 | 439.1499 | 56.01617 | -729.45 | 833.5267 | 107.8901 | -650.976 | 973.9194 | 112.1642 | -134.681 | 235.0323 | 25.52081 | 47.52853 | -8.55639 | -3.87146 | 13.82781 | 9.038676 | -0.33059 | 1.805541 | 2.208576 | 0.027821 |
| 12/10/2009 16:48 | -372.028 | 438.7826 | 55.96911 | -728.66 | 832.6585 | 107.7756 | -650.586 | 973.2077 | 112.0881 | -135.195 | 235.5444 | 25.59165 | 47.49826 | -8.62114 | -3.87384 | 13.86429 | 9.049966 | -0.33233 | 1.803668 | 2.217984 | 0.0286 |
| 12/10/2009 16:49 | -371.726 | 438.5568 | 55.93268 | -728.026 | 832.3109 | 107.7078 | -650.226 | 972.9044 | 112.0424 | -135.553 | 236.0025 | 25.64794 | 47.50393 | -8.6021 | -3.87292 | 13.89885 | 9.063138 | -0.3338 | 1.813034 | 2.223629 | 0.028343 |
| 12/10/2009 16:50 | -371.216 | 438.2777 | 55.87821 | -727.24 | 832.055 | 107.6359 | -649.762 | 972.601 | 111.9894 | -135.698 | 236.4487 | 25.68878 | 47.56636 | -8.61353 | -3.87802 | 13.94685 | 9.068783 | -0.33673 | 1.831767 | 2.234919 | 0.027829 |
| 12/10/2009 16:51 | -371.089 | 437.9453 | 55.84646 | -726.835 | 831.6855 | 107.5825 | -649.505 | 972.4092 | 111.9584 | -135.918 | 236.7668 | 25.72588 | 47.5796 | -8.63638 | -3.88051 | 13.97565 | 9.085718 | -0.33754 | 1.820528 | 2.246209 | 0.029384 |

| TS | 5A1 Comp. Strain | 5B1 Tensile Strain | Moment (k*ft) | 5A2 Comp. Strain | 5B2 Tensile Strain | Moment (k*ft) | 5A3 Comp. Strain | 5B3 Tensile Strain | Moment (k*ft) | 5A4 Comp. Strain | 5B4 Tensile Strain | Moment (k*ft) | 5A5 Comp. Strain | 5B5 Tensile Strain | Moment (k*ft) | 5A6 Comp. Strain | 5B6 Tensile Strain | Moment (k*ft) | 5A7 Comp. Strain | 5B7 Tensile Strain | Moment (k*ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12/10/2009 16:52 | -370.883 | 437.7668 | 55.81991 | -726.412 | 831.3926 | 107.533 | -649.21 | 972.5742 | 111.9494 | -136.08 | 237.091 | 25.75944 | 47.59095 | -8.64019 | -3.88156 | 14.00637 | 9.089481 | -0.33941 | 1.843007 | 2.248091 | 0.027962 |
| 12/10/2009 16:53 | -370.764 | 437.5555 | 55.79713 | -725.996 | 831.0384 | 107.4799 | -648.98 | 972.3512 | 111.9182 | -136.258 | 237.3932 | 25.79263 | 47.59663 | -8.65923 | -3.88326 | 14.02941 | 9.100771 | -0.34022 | 1.843007 | 2.261263 | 0.028872 |
| 12/10/2009 16:54 | -370.676 | 437.4385 | 55.78302 | -725.705 | 830.8854 | 107.4492 | -648.824 | 972.2441 | 111.9 | -136.426 | 237.6393 | 25.82119 | 47.60609 | -8.67447 | -3.88497 | 14.04861 | 9.098889 | -0.34167 | 1.841134 | 2.265026 | 0.029261 |
| 12/10/2009 16:55 | -370.463 | 437.1841 | 55.75075 | -725.368 | 830.5553 | 107.4032 | -648.641 | 972.0367 | 111.873 | -136.551 | 237.8855 | 25.84683 | 47.60041 | -8.6878 | -3.88549 | 14.06589 | 9.112061 | -0.34196 | 1.843007 | 2.270671 | 0.029521 |
| 12/10/2009 16:56 | -370.556 | 437.1739 | 55.75643 | -725.283 | 830.4307 | 107.3887 | -648.527 | 971.9497 | 111.8592 | -136.684 | 238.1096 | 25.87146 | 47.60798 | -8.70494 | -3.8872 | 14.08509 | 9.112061 | -0.34328 | 1.844881 | 2.272553 | 0.029522 |
| 12/10/2009 16:57 | -370.5 | 437.1349 | 55.74988 | -725.126 | 830.2951 | 107.3685 | -648.386 | 971.8115 | 111.8399 | -136.793 | 238.3117 | 25.89291 | 47.62122 | -8.71827 | -3.88903 | 14.10045 | 9.119588 | -0.34382 | 1.869234 | 2.276316 | 0.0281 |
| 12/10/2009 16:58 | -370.24 | 436.9954 | 55.72229 | -724.811 | 830.8941 | 107.3881 | -648.223 | 971.7178 | 111.8222 | -136.903 | 238.4999 | 25.91353 | 47.62122 | -8.72018 | -3.88917 | 14.11965 | 9.13276 | -0.34424 | 1.871107 | 2.281961 | 0.028361 |
| 12/10/2009 16:59 | -370.418 | 436.8866 | 55.72708 | -724.769 | 830.7608 | 107.376 | -648.117 | 971.5862 | 111.8058 | -137.004 | 238.69 | 25.93364 | 47.63446 | -8.7297 | -3.89074 | 14.13309 | 9.853498 | -0.29541 | 1.861741 | 2.289488 | 0.029527 |
| 12/10/2009 17:00 | -386.415 | 470.8099 | 59.17304 | -761.704 | 896.3936 | 114.4561 | -683.646 | 1058.327 | 120.2459 | -140.292 | 255.5726 | 27.32598 | 49.99399 | -8.11453 | -4.01115 | 14.71105 | 10.17909 | -0.31283 | 1.955408 | 2.487069 | 0.0367 |
| 12/10/2009 17:01 | -416.564 | 490.8274 | 62.63595 | -812.931 | 927.8096 | 120.1608 | -730.113 | 1092.353 | 125.8022 | -152.705 | 268.832 | 29.09811 | 52.79585 | -8.20595 | -4.21087 | 15.89981 | 10.22238 | -0.39191 | 2.1109 | 2.671485 | 0.038696 |
| 12/10/2009 17:02 | -418.216 | 491.9351 | 62.82641 | -814.453 | 929.7148 | 120.3974 | -732.446 | 1095.327 | 126.1685 | -152.988 | 271.1768 | 29.27947 | 52.9625 | -8.28785 | -4.22802 | 16.0746 | 10.24496 | -0.40241 | 2.139002 | 2.712885 | 0.039614 |
| 12/10/2009 17:03 | -417.133 | 490.6245 | 62.66118 | -812.026 | 927.2973 | 120.063 | -730.957 | 1093.185 | 125.9179 | -153.551 | 272.1008 | 29.38215 | 52.9 | -8.36213 | -4.22884 | 16.15911 | 10.24684 | -0.40812 | 2.148369 | 2.733586 | 0.040397 |
| 12/10/2009 17:04 | -416.549 | 489.8213 | 62.56543 | -810.586 | 925.8672 | 119.8649 | -730.073 | 1092.008 | 125.7757 | -153.993 | 272.7653 | 29.45855 | 52.8716 | -8.42308 | -4.23108 | 16.20713 | 10.2619 | -0.41039 | 2.174597 | 2.739231 | 0.038976 |
| 12/10/2009 17:05 | -416.234 | 489.1858 | 62.49985 | -809.478 | 924.843 | 119.7177 | -729.423 | 1091.119 | 125.6694 | -154.337 | 273.2345 | 29.51462 | 52.83183 | -8.46879 | -4.23149 | 16.24747 | 10.26755 | -0.41279 | 2.16523 | 2.750523 | 0.040402 |
| 12/10/2009 17:06 | -415.87 | 488.7471 | 62.4444 | -808.738 | 924.085 | 119.6143 | -728.925 | 1090.486 | 125.5914 | -154.61 | 273.6252 | 29.56046 | 52.81479 | -8.50688 | -4.23295 | 16.2782 | 10.27696 | -0.41426 | 2.172724 | 2.75805 | 0.040404 |
| 12/10/2009 17:07 | -415.576 | 488.3621 | 62.39754 | -808.023 | 923.4999 | 119.5245 | -728.518 | 1090.01 | 125.5303 | -154.938 | 273.9958 | 29.60871 | 52.79396 | -8.53544 | -4.23348 | 16.30701 | 10.28449 | -0.41573 | 2.193331 | 2.763696 | 0.039371 |
| 12/10/2009 17:08 | -415.33 | 488.0227 | 62.35718 | -807.421 | 922.9946 | 119.4481 | -728.156 | 1089.586 | 125.4761 | -155.153 | 274.2939 | 29.6441 | 52.77881 | -8.55068 | -4.23349 | 16.32814 | 10.29578 | -0.41641 | 2.200825 | 2.780632 | 0.040023 |
| 12/10/2009 17:09 | -415.118 | 487.7475 | 62.3235 | -806.869 | 922.5913 | 119.3821 | -727.846 | 1089.225 | 125.4298 | -155.331 | 274.5678 | 29.67529 | 52.77691 | -8.57353 | -4.23493 | 16.35119 | 10.30143 | -0.41761 | 2.206446 | 2.786278 | 0.040025 |
| 12/10/2009 17:10 | -414.952 | 487.4702 | 62.29291 | -806.393 | 922.1503 | 119.3189 | -727.551 | 1088.908 | 125.3875 | -155.501 | 274.8176 | 29.70431 | 52.77123 | -8.58686 | -4.23546 | 16.3704 | 10.30707 | -0.41854 | 2.212066 | 2.793806 | 0.040157 |
| 12/10/2009 17:11 | -414.738 | 487.2737 | 62.26454 | -806.047 | 921.7847 | 119.2697 | -727.354 | 1088.631 | 125.3548 | -155.67 | 275.0331 | 29.73084 | 52.74283 | -8.60781 | -4.23495 | 16.38192 | 10.30895 | -0.41921 | 2.202699 | 2.805097 | 0.041583 |
| 12/10/2009 17:12 | -414.615 | 487.0192 | 62.2385 | -805.588 | 921.4524 | 119.2151 | -727.062 | 1088.411 | 125.3195 | -155.771 | 275.2487 | 29.75268 | 52.76745 | -8.61543 | -4.23717 | 16.40305 | 10.30895 | -0.42067 | 2.212066 | 2.808861 | 0.041196 |
| 12/10/2009 17:13 | -414.513 | 486.8288 | 62.21832 | -805.294 | 921.1621 | 119.1748 | -726.86 | 1088.203 | 125.2912 | -155.907 | 275.438 | 29.77512 | 52.76745 | -8.62495 | -4.23783 | 16.42226 | 10.32213 | -0.42108 | 2.21956 | 2.812624 | 0.040938 |
| 12/10/2009 17:14 | -414.426 | 486.6551 | 62.20036 | -805.028 | 920.914 | 119.1393 | -726.672 | 1087.996 | 125.264 | -156.008 | 275.6274 | 29.79516 | 52.76555 | -8.63448 | -4.23836 | 16.43955 | 10.40306 | -0.41669 | 2.238295 | 2.823916 | 0.040425 |
| 12/10/2009 17:15 | -436.114 | 509.1613 | 65.25099 | -823.606 | 940.3106 | 121.7607 | -736.078 | 1101.899 | 126.873 | -156.461 | 277.3623 | 29.94618 | 53.23899 | -8.55258 | -4.26538 | 16.52599 | 10.42753 | -0.42097 | 2.238295 | 2.838971 | 0.041464 |
| 12/10/2009 17:16 | -439.043 | 513.767 | 65.77114 | -825.2 | 943.026 | 122.0581 | -737.165 | 1103.655 | 127.0692 | -156.787 | 277.9729 | 30.01087 | 53.36967 | -8.55258 | -4.2744 | 16.57978 | 10.43318 | -0.42429 | 2.245789 | 2.852144 | 0.041856 |
| 12/10/2009 17:17 | -436.276 | 510.6089 | 65.36208 | -823.432 | 941.1505 | 121.8066 | -736.706 | 1102.946 | 126.9886 | -157.029 | 278.2712 | 30.04817 | 53.38671 | -8.57544 | -4.27716 | 16.60667 | 10.48588 | -0.42251 | 2.260776 | 2.854026 | 0.040951 |
| 12/10/2009 17:18 | -457.712 | 531.3019 | 68.27023 | -836.951 | 956.8618 | 123.8244 | -740.778 | 1109.794 | 127.7424 | -157.225 | 278.9848 | 30.11097 | 53.63103 | -8.54497 | -4.29192 | 16.66622 | 10.48776 | -0.42649 | 2.270144 | 2.870963 | 0.041474 |
| 12/10/2009 17:19 | -452.147 | 524.1403 | 67.3917 | -833.789 | 952.9902 | 123.3388 | -740.056 | 1108.705 | 127.6173 | -157.543 | 279.2731 | 30.15276 | 53.63103 | -8.56401 | -4.29323 | 16.68927 | 10.5047 | -0.42691 | 2.285132 | 2.886018 | 0.041478 |
| 12/10/2009 17:20 | -450.293 | 522.2794 | 67.13527 | -832.529 | 951.7127 | 123.1637 | -739.716 | 1108.284 | 127.5648 | -157.739 | 279.521 | 30.18342 | 53.66134 | -8.57734 | -4.29625 | 16.71616 | 10.51788 | -0.42786 | 2.287005 | 2.889782 | 0.041609 |
| 12/10/2009 17:21 | -449.27 | 521.2597 | 66.99425 | -831.621 | 950.8382 | 123.0406 | -739.491 | 1108.037 | 127.5322 | -157.924 | 279.7549 | 30.21235 | 53.67081 | -8.59067 | -4.29782 | 16.73537 | 10.51788 | -0.42919 | 2.283258 | 2.89731 | 0.042387 |
| 12/10/2009 17:22 | -448.544 | 520.4669 | 66.88946 | -830.924 | 950.1641 | 122.946 | -739.293 | 1107.837 | 127.5047 | -158.071 | 279.9807 | 30.23806 | 53.69353 | -8.6002 | -4.30005 | 16.75843 | 10.06428 | -0.46209 | 2.298246 | 2.901074 | 0.041612 |
| 12/10/2009 17:23 | -447.996 | 456.9891 | 62.46981 | -830.358 | 863.4215 | 116.9192 | -739.132 | 1017.939 | 121.2881 | -158.208 | 269.7879 | 29.54396 | 53.70869 | -9.27243 | -4.3475 | 16.77764 | 5.476118 | -0.78013 | 2.30012 | 2.820152 | 0.035897 |
| 12/10/2009 17:24 | -251.285 | 280.4083 | 36.70204 | -409.948 | 482.4384 | 61.60017 | -361.663 | 563.7899 | 63.88272 | -114.157 | 182.1054 | 20.45059 | 26.68437 | -9.6723 | -2.50965 | 11.20013 | 5.449794 | -0.39694 | 1.56951 | 1.958322 | 0.026839 |
| 12/10/2009 17:25 | -251.011 | 280.2007 | 36.66876 | -410.911 | 483.2039 | 61.71951 | -361.537 | 564.1757 | 63.9006 | -112.208 | 180.8612 | 20.23016 | 26.60526 | -9.37335 | -2.48355 | 11.14832 | 5.434752 | -0.3944 | 1.547031 | 1.947032 | 0.027612 |
| 12/10/2009 17:26 | -251 | 280.2087 | 36.66856 | -411.413 | 483.6529 | 61.78514 | -361.665 | 564.444 | 63.92799 | -111.708 | 180.3343 | 20.15928 | 26.56005 | -9.29147 | -2.47478 | 11.1368 | 5.42347 | -0.39438 | 1.547031 | 1.943269 | 0.027352 |
| 12/10/2009 17:27 | -250.976 | 280.2246 | 36.66805 | -411.728 | 483.9178 | 61.82512 | -361.728 | 564.6055 | 63.94345 | -111.466 | 180.0214 | 20.12094 | 26.53368 | -9.24577 | -2.4698 | 11.11953 | 3.30862 | -0.53918 | 1.537665 | 1.93198 | 0.027219 |
| 12/10/2009 17:28 | -195.084 | 211.967 | 28.09815 | -279.002 | 317.5165 | 41.17685 | -233.144 | 376.8365 | 42.1061 | -86.8869 | 134.147 | 15.25765 | 16.12031 | -8.36784 | -1.69038 | 8.220889 | 3.278549 | -0.34116 | 1.221103 | 1.525581 | 0.021018 |
| 12/10/2009 17:29 | -194.541 | 211.555 | 28.0322 | -279.562 | 318.154 | 41.25951 | -232.973 | 376.7552 | 42.0887 | -85.8948 | 133.1198 | 15.11827 | 15.98309 | -8.19262 | -1.66881 | 8.124998 | 3.257875 | -0.33597 | 1.198626 | 1.506767 | 0.021271 |
| 12/10/2009 17:30 | -194.301 | 211.3698 | 28.00285 | -279.981 | 318.5523 | 41.3159 | -233.088 | 376.8141 | 42.10071 | -85.5579 | 132.6112 | 15.0599 | 15.92858 | -8.12025 | -1.66006 | 8.092396 | 2.248718 | -0.40338 | 1.191134 | 1.508649 | 0.021918 |

TABLE E.7 Strain gage measurements for pile 6

| TS | 6A1 Comp. Strain | 6B1 Tensile Strain | Moment (k*ft) | 6A2 Comp. Strain | 6B2 Tensile Strain | Moment (k*ft) | 6A3 Comp. Strain | 6B3 Tensile Strain | Moment (k*ft) | 6A4 Comp. Strain | 6B4 Tensile Strain | Moment (k*ft) | 6A6 Comp. Strain | 6B6 Tensile Strain | Moment (k*ft) | 6A6 Comp. Strain | 6B6 Tensile Strain | Moment (k*ft) | 6A7 Comp. Strain | 6B7 Tensile Strain | Moment (k*ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12/10/2009 14:14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/10/2009 14:14 | 0.507024 | 3.055022 | 0.175885 | 2.148646 | 4.087064 | 0.133806 | 2.31779 | 1.865757 | -0.0312 | 2.408801 | 0.139978 | -0.15661 | 1.37033 | 1.898496 | 0.036459 | 0.584832 | 0.611706 | 0.001855 | 0.168728 | 0.166582 | -0.00015 |
| 12/10/2009 14:15 | 0.532651 | 3.042394 | 0.173244 | 2.238271 | 4.101602 | 0.128623 | 2.332224 | 1.882637 | -0.03103 | 2.41809 | 0.138087 | -0.15739 | 1.355593 | 1.902286 | 0.037737 | 0.582882 | 0.609806 | 0.001859 | 0.157479 | 0.149349 | -0.00056 |
| 12/10/2009 14:16 | 0.613195 | 3.233626 | 0.180885 | 2.187056 | 4.350578 | 0.149345 | 2.408001 | 2.051435 | -0.02461 | 2.509117 | 0.189161 | -0.16014 | 1.401645 | 1.955348 | 0.038221 | 0.606277 | 0.642104 | 0.002473 | 0.170603 | 0.164667 | -0.00041 |
| 12/10/2009 14:17 | 0.679095 | 3.202956 | 0.174218 | 2.377284 | 4.383291 | 0.138472 | 2.485583 | 2.111453 | -0.02583 | 2.55556 | 0.21186 | -0.16178 | 1.412698 | 1.974299 | 0.038767 | 0.621873 | 0.649703 | 0.001921 | 0.179977 | 0.158923 | -0.00145 |
| 12/10/2009 14:18 | 0.704724 | 3.168678 | 0.170083 | 2.395575 | 4.357847 | 0.135453 | 2.487387 | 2.118955 | -0.02543 | 2.546271 | 0.230777 | -0.15984 | 1.418225 | 1.978089 | 0.038647 | 0.639419 | 0.664902 | 0.001759 | 0.187476 | 0.164667 | -0.00157 |
| 12/10/2009 14:19 | 0.750488 | 3.16507 | 0.166675 | 2.331555 | 4.410552 | 0.14351 | 2.463932 | 2.124582 | -0.02342 | 2.540698 | 0.230777 | -0.15945 | 1.420067 | 1.98188 | 0.038781 | 0.643319 | 0.670601 | 0.001883 | 0.183727 | 0.160838 | -0.00158 |
| 12/10/2009 14:20 | 0.746827 | 3.098319 | 0.16232 | 2.302289 | 4.330586 | 0.14001 | 2.409805 | 2.103951 | -0.02111 | 2.486824 | 0.251585 | -0.1543 | 1.397961 | 1.961034 | 0.038868 | 0.651117 | 0.6839 | 0.002263 | 0.187476 | 0.162752 | -0.00171 |
| 12/10/2009 14:21 | 0.772456 | 3.055022 | 0.157562 | 2.360821 | 4.366934 | 0.138479 | 2.417022 | 2.107702 | -0.02135 | 2.509117 | 0.24591 | -0.15623 | 1.40533 | 1.962929 | 0.03849 | 0.662814 | 0.6858 | 0.001587 | 0.189351 | 0.158923 | -0.0021 |
| 12/10/2009 14:22 | 0.735844 | 3.051414 | 0.159841 | 2.324239 | 4.297874 | 0.136237 | 2.389958 | 2.109577 | -0.01935 | 2.483109 | 0.251585 | -0.15404 | 1.407172 | 1.964824 | 0.038494 | 0.662814 | 0.693399 | 0.002111 | 0.187476 | 0.158923 | -0.00197 |
| 12/10/2009 14:23 | 0.78344 | 3.101927 | 0.160042 | 2.377284 | 4.366934 | 0.137343 | 2.44589 | 2.162094 | -0.01959 | 2.523979 | 0.228885 | -0.15843 | 1.431119 | 1.99704 | 0.039065 | 0.68231 | 0.712398 | 0.002077 | 0.198725 | 0.164667 | -0.00235 |
| 12/10/2009 14:24 | 0.801746 | 3.091103 | 0.158031 | 2.3846 | 4.372386 | 0.137214 | 2.458519 | 2.175223 | -0.01956 | 2.523979 | 0.253477 | -0.15673 | 1.44033 | 2.015991 | 0.039737 | 0.692058 | 0.721897 | 0.00206 | 0.198725 | 0.168497 | -0.00209 |
| 12/10/2009 14:25 | 0.834697 | 3.080279 | 0.155009 | 2.395575 | 4.366934 | 0.13608 | 2.458519 | 2.184601 | -0.01891 | 2.518406 | 0.255368 | -0.15621 | 1.445856 | 2.031152 | 0.040402 | 0.701806 | 0.735196 | 0.002305 | 0.2006 | 0.172326 | -0.00195 |
| 12/10/2009 14:26 | 0.87131 | 3.035178 | 0.149369 | 2.362651 | 4.31423 | 0.134715 | 2.43326 | 2.18085 | -0.01742 | 2.488682 | 0.242127 | -0.15508 | 1.445856 | 2.031152 | 0.040402 | 0.703756 | 0.735196 | 0.00217 | 0.191226 | 0.164667 | -0.00183 |
| 12/10/2009 14:27 | 0.043928 | 3.486208 | 0.237616 | 0.941625 | 5.590203 | 0.320885 | 1.340025 | 2.77358 | 0.098956 | 2.020563 | 0.444539 | -0.10879 | 1.375856 | 1.906076 | 0.0366 | 0.676461 | 0.708598 | 0.002218 | 0.183727 | 0.149349 | -0.00237 |
| 12/10/2009 14:28 | 0.675434 | 3.150637 | 0.17086 | 1.938309 | 4.72134 | 0.192109 | 2.027325 | 2.4622 | 0.030019 | 2.276908 | 0.376437 | -0.13119 | 1.436646 | 1.98946 | 0.03816 | 0.694008 | 0.733296 | 0.002712 | 0.187476 | 0.153179 | -0.00237 |
| 12/10/2009 14:29 | -0.00366 | 3.57642 | 0.247128 | 0.727685 | 5.879255 | 0.355605 | 1.16506 | 2.942408 | 0.122688 | 1.931402 | 0.516425 | -0.09767 | 1.377698 | 1.881441 | 0.034773 | 0.68426 | 0.729497 | 0.003123 | 0.185601 | 0.153179 | -0.00224 |
| 12/10/2009 14:30 | 0.025624 | 3.569203 | 0.244608 | 0.771569 | 5.879255 | 0.352576 | 1.166863 | 2.964919 | 0.124117 | 1.927687 | 0.537235 | -0.09598 | 1.385066 | 1.881441 | 0.034264 | 0.690108 | 0.733296 | 0.002981 | 0.189351 | 0.153179 | -0.0025 |
| 12/10/2009 14:31 | 0.05491 | 3.560182 | 0.241964 | 0.755113 | 5.873801 | 0.353336 | 1.168667 | 2.989306 | 0.125676 | 1.920258 | 0.54291 | -0.09508 | 1.385066 | 1.887126 | 0.034656 | 0.695957 | 0.754195 | 0.00402 | 0.189351 | 0.157008 | -0.00223 |
| 12/10/2009 14:32 | 0.084195 | 3.556573 | 0.239693 | 0.879453 | 5.910161 | 0.347263 | 1.154237 | 3.017445 | 0.128615 | 1.901683 | 0.56372 | -0.09236 | 1.381382 | 1.889021 | 0.035042 | 0.709604 | 0.752295 | 0.002947 | 0.19685 | 0.162752 | -0.00235 |
| 12/10/2009 14:33 | 0.11165 | 3.540335 | 0.236677 | 0.87031 | 5.917433 | 0.348396 | 1.130789 | 3.049336 | 0.132435 | 1.883108 | 0.588313 | -0.08938 | 1.390593 | 1.890916 | 0.034537 | 0.709604 | 0.763694 | 0.003734 | 0.19685 | 0.166582 | -0.00209 |
| 12/10/2009 14:34 | -3.20744 | 11.45515 | 1.012138 | -6.95478 | 30.00345 | 2.551174 | -8.0084 | 21.02193 | 2.003922 | -2.66369 | 11.4419 | 0.973689 | 0.965084 | 0.179967 | -0.0542 | 0.502952 | 0.585109 | 0.005671 | 0.069365 | -0.01149 | -0.00558 |
| 12/10/2009 14:35 | -15.364 | 14.97182 | 2.094036 | -25.708 | 40.08402 | 4.541532 | -27.9681 | 29.71886 | 3.982046 | -10.9312 | 18.56788 | 2.036278 | 0.300186 | -0.27467 | -0.03968 | 0.485406 | 0.592708 | 0.007407 | 0.043119 | -0.00383 | -0.00324 |
| 12/10/2009 14:36 | -15.2253 | 14.84159 | 2.075476 | -25.5008 | 39.81664 | 4.508767 | -27.8767 | 29.68114 | 3.973133 | -11.0053 | 18.84128 | 2.060265 | 0.28177 | -0.27657 | -0.03854 | 0.501002 | 0.600307 | 0.006855 | 0.050618 | -0.00574 | -0.00389 |
| 12/10/2009 14:37 | -15.145 | 14.75659 | 2.064067 | -25.3462 | 39.65548 | 4.486975 | -27.8444 | 29.66039 | 3.969474 | -11.0831 | 19.00836 | 2.07717 | 0.265194 | -0.27657 | -0.0374 | 0.504901 | 0.609806 | 0.007241 | 0.054367 | 0.003829 | -0.00349 |
| 12/10/2009 14:38 | -15.0429 | 14.70594 | 2.053518 | -25.1044 | 39.45953 | 4.456756 | -27.6813 | 29.67359 | 3.959128 | -11.0534 | 19.03874 | 2.077221 | 0.261511 | -0.27657 | -0.03714 | 0.520497 | 0.625005 | 0.007214 | 0.061866 | 0.009574 | -0.00361 |
| 12/10/2009 14:39 | -14.9754 | 14.64264 | 2.044489 | -25.0462 | 39.34416 | 4.444775 | -27.5935 | 29.53402 | 3.943431 | -11.0405 | 19.1052 | 2.080913 | 0.250461 | -0.27846 | -0.03651 | 0.524396 | 0.611706 | 0.006027 | 0.059992 | 0.001915 | -0.00401 |
| 12/10/2009 14:40 | -14.9316 | 14.61009 | 2.039219 | -24.9771 | 39.23429 | 4.432422 | -27.5989 | 29.57363 | 3.946537 | -11.0868 | 19.16026 | 2.087911 | 0.235728 | -0.28793 | -0.03615 | 0.506851 | 0.611706 | 0.007238 | 0.046868 | -0.00383 | -0.0035 |
| 12/10/2009 14:41 | -14.9298 | 14.49434 | 2.031103 | -25.0498 | 39.06949 | 4.426066 | -27.6992 | 29.54156 | 3.951251 | -11.1905 | 19.23242 | 2.100052 | 0.220994 | -0.30688 | -0.03644 | 0.512699 | 0.615506 | 0.007097 | 0.052493 | 0.001915 | -0.00349 |
| 12/10/2009 14:42 | -14.8641 | 14.46178 | 2.024322 | -24.9826 | 39.04569 | 4.419779 | -27.701 | 29.58117 | 3.954109 | -11.2165 | 19.30647 | 2.106954 | 0.222836 | -0.30119 | -0.03617 | 0.518548 | 0.628805 | 0.007611 | 0.052493 | 0.005744 | -0.00323 |
| 12/10/2009 14:43 | -14.8075 | 14.48168 | 2.021791 | -24.9117 | 39.08231 | 4.417412 | -27.6007 | 29.61701 | 3.949655 | -11.1701 | 19.33875 | 2.105986 | 0.237569 | -0.27467 | -0.03536 | 0.541942 | 0.651603 | 0.00757 | 0.061866 | 0.009574 | -0.00361 |
| 12/10/2009 14:44 | -14.7619 | 12.74037 | 1.898443 | -23.8732 | 33.68005 | 3.972822 | -25.9587 | 25.19982 | 3.5314 | -10.4032 | 16.49507 | 1.856748 | 0.241253 | -0.01137 | -0.01744 | 0.563387 | 0.672501 | 0.007532 | 0.076864 | 0.038294 | -0.00266 |
| 12/10/2009 14:45 | -11.4766 | 11.47142 | 1.584068 | -19.375 | 31.57904 | 3.517285 | -20.8999 | 24.0561 | 3.103252 | -8.55567 | 16.75507 | 1.747164 | 0.283611 | -0.19322 | -0.03291 | 0.586781 | 0.638304 | 0.003557 | 0.089988 | -0.02298 | -0.0078 |
| 12/10/2009 14:46 | -15.5409 | 15.00257 | 2.108373 | -26.1825 | 40.38257 | 4.594893 | -28.993 | 30.59222 | 4.113083 | -11.8573 | 20.18002 | 2.211493 | 0.173111 | -0.35802 | -0.03666 | 0.534144 | 0.634504 | 0.006928 | 0.037495 | -0.02298 | -0.00417 |
| 12/10/2009 14:47 | -14.7601 | 14.41476 | 2.013898 | -24.7316 | 38.8992 | 4.392345 | -27.3354 | 29.46801 | 3.921059 | -11.1905 | 19.51535 | 2.119583 | 0.176795 | -0.30498 | -0.03326 | 0.538043 | 0.644003 | 0.007314 | 0.037495 | -0.01723 | -0.00378 |
| 12/10/2009 14:48 | -14.4645 | 14.28455 | 1.984506 | -24.3297 | 38.34627 | 4.326435 | -26.8981 | 29.07195 | 3.863531 | -11.0182 | 19.36914 | 2.097598 | 0.169428 | -0.28793 | -0.03157 | 0.539993 | 0.642104 | 0.007049 | 0.041244 | -0.02298 | -0.00443 |
| 12/10/2009 14:49 | -14.2528 | 14.10009 | 1.957162 | -24.0642 | 37.85747 | 4.274365 | -26.5862 | 28.76456 | 3.820781 | -10.9516 | 19.24381 | 2.084343 | 0.162061 | -0.28793 | -0.03106 | 0.538043 | 0.651603 | 0.007839 | 0.037495 | -0.01915 | -0.00391 |
| 12/10/2009 14:50 | -14.0813 | 13.92648 | 1.933338 | -23.8514 | 37.5719 | 4.239964 | -26.3388 | 28.53638 | 3.787954 | -10.8348 | 19.08241 | 2.065146 | 0.184161 | -0.26331 | -0.03089 | 0.547791 | 0.655402 | 0.007428 | 0.039369 | -0.01915 | -0.00404 |
| 12/10/2009 14:51 | -13.9298 | 13.79628 | 1.913895 | -23.6386 | 37.27354 | 4.204679 | -26.1344 | 28.36667 | 3.762131 | -10.7682 | 19.01406 | 2.055824 | 0.169428 | -0.24815 | -0.02883 | 0.553639 | 0.664902 | 0.00768 | 0.039369 | -0.01915 | -0.00404 |
| 12/10/2009 14:52 | -13.835 | 13.6896 | 1.89998 | -23.6095 | 37.06854 | 4.188519 | -26.0358 | 28.24222 | 3.746734 | -10.7348 | 18.9533 | 2.049328 | 0.176795 | -0.24058 | -0.02881 | 0.559488 | 0.676301 | 0.008063 | 0.044994 | -0.00191 | -0.00324 |
| 12/10/2009 14:53 | -13.7236 | 13.57387 | 1.884308 | -23.4331 | 36.86904 | 4.162569 | -25.9031 | 28.11589 | 3.728855 | -10.7052 | 18.91343 | 2.044529 | 0.184161 | -0.23679 | -0.02906 | 0.575084 | 0.682 | 0.00738 | 0.056242 | -0.02106 | -0.00534 |
| 12/10/2009 14:54 | -39.502 | 31.61533 | 4.909129 | -82.9572 | 128.629 | 14.60549 | -117.309 | 127.3144 | 16.88598 | -42.6569 | 105.2186 | 10.20764 | -3.30633 | -8.31125 | -0.34548 | 0.522447 | 0.414129 | -0.00748 | -0.04499 | -0.10339 | -0.00403 |
| 12/10/2009 14:55 | -39.1536 | 31.29403 | 4.862897 | -82.2067 | 127.6439 | 14.48569 | -116.497 | 126.3684 | 16.76468 | -42.6845 | 105.6627 | 10.2402 | -3.53452 | -8.37177 | -0.33391 | 0.51075 | 0.389432 | -0.00837 | -0.04124 | -0.10148 | -0.00416 |
| 12/10/2009 14:56 | -38.9467 | 31.15063 | 4.838716 | -81.7093 | 127.0563 | 14.41079 | -115.874 | 125.7512 | 16.67904 | -42.6109 | 105.767 | 10.24232 | -3.62469 | -8.38501 | -0.3286 | 0.506851 | 0.376134 | -0.00902 | -0.04499 | -0.11105 | -0.00456 |
| 12/10/2009 14:57 | -38.8468 | 31.02176 | 4.82293 | -81.3915 | 126.5284 | 14.35241 | -115.422 | 125.1265 | 16.60475 | -42.552 | 105.7052 | 10.23399 | -3.70198 | -8.39068 | -0.32365 | 0.499053 | 0.366635 | -0.00914 | -0.05249 | -0.1168 | -0.00444 |
| 12/10/2009 14:58 | -38.8087 | 30.9183 | 4.813157 | -81.3107 | 126.3493 | 14.33447 | -115.34 | 124.9515 | 16.58698 | -42.5667 | 105.7883 | 10.24073 | -3.74062 | -8.39825 | -0.32151 | 0.499053 | 0.368535 | -0.00901 | -0.05249 | -0.11297 | -0.00417 |
| 12/10/2009 14:59 | -38.7597 | 30.92374 | 4.81015 | -81.2963 | 126.2225 | 14.32473 | -115.317 | 124.7516 | 16.5716 | -42.587 | 105.8636 | 10.24733 | -3.77374 | -8.40203 | -0.31948 | 0.502952 | 0.362836 | -0.00967 | -0.05062 | -0.10722 | -0.00391 |
| 12/10/2009 15:00 | -38.9485 | 30.79306 | 4.814159 | -81.5926 | 125.9707 | 14.3278 | -115.517 | 124.5171 | 16.56924 | -42.679 | 105.8616 | 10.25355 | -3.87679 | -8.50415 | -0.31942 | 0.477608 | 0.340039 | -0.0095 | -0.05624 | -0.12063 | -0.00444 |
| 12/10/2009 15:01 | -38.914 | 30.79125 | 4.811654 | -81.6052 | 125.9185 | 14.32506 | -115.547 | 124.5441 | 16.57316 | -42.69 | 105.9408 | 10.25978 | -3.91175 | -8.52117 | -0.31818 | 0.46981 | 0.33434 | -0.00935 | -0.06187 | -0.12637 | -0.00445 |
| 12/10/2009 15:02 | -38.8668 | 30.73317 | 4.804387 | -81.5333 | 125.7861 | 14.31097 | -115.549 | 124.4672 | 16.56797 | -42.6937 | 106.0181 | 10.26536 | -3.93935 | -8.54576 | -0.31797 | 0.471759 | 0.336239 | -0.00935 | -0.06561 | -0.12828 | -0.00433 |
| 12/10/2009 15:03 | -38.6109 | 30.72591 | 4.786219 | -81.2388 | 125.6444 | 14.28085 | -115.396 | 124.6132 | 16.56751 | -42.6348 | 106.159 | 10.27103 | -3.90439 | -8.48524 | -0.31621 | 0.499053 | 0.364735 | -0.00927 | -0.05812 | -0.11871 | -0.00418 |
| 12/10/2009 15:04 | -38.6254 | 30.70595 | 4.785844 | -81.2478 | 125.7171 | 14.28649 | -115.37 | 124.6229 | 16.56635 | -42.6514 | 106.2093 | 10.27564 | -3.92279 | -8.48902 | -0.3152 | 0.504901 | 0.362836 | -0.00981 | -0.06187 | -0.11871 | -0.00392 |
| 12/10/2009 15:05 | -38.5546 | 30.66783 | 4.778326 | -81.255 | 125.6332 | 14.2812 | -115.35 | 124.6325 | 16.56568 | -42.6679 | 106.2324 | 10.27838 | -3.93199 | -8.49659 | -0.31509 | 0.51075 | 0.362836 | -0.01021 | -0.05812 | -0.11871 | -0.00418 |

| TS | 6A1 Comp. Strain | 6B1 Tensile Strain | Moment (k*ft) | 6A2 Comp. Strain | 6B2 Tensile Strain | Moment (k*ft) | 6A3 Comp. Strain | 6B3 Tensile Strain | Moment (k*ft) | 6A4 Comp. Strain | 6B4 Tensile Strain | Moment (k*ft) | 6A6 Comp. Strain | 6B6 Tensile Strain | Moment (k*ft) | 6A6 Comp. Strain | 6B6 Tensile Strain | Moment (k*ft) | 6A7 Comp. Strain | 6B7 Tensile Strain | Moment (k*ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12/10/2009 15:06 | -38.4366 | 30.58798 | 4.764669 | -81.1023 | 125.5847 | 14.26731 | -115.228 | 124.6421 | 16.55785 | -42.6661 | 106.3058 | 10.28332 | -3.93015 | -8.47011 | -0.31339 | 0.516598 | 0.366635 | -0.01035 | -0.05437 | -0.11488 | -0.00418 |
| 12/10/2009 15:07 | -38.4693 | 30.57527 | 4.766048 | -81.2263 | 125.5045 | 14.27033 | -115.264 | 124.694 | 16.56398 | -42.6882 | 106.3464 | 10.28764 | -3.94119 | -8.47011 | -0.31263 | 0.522447 | 0.372334 | -0.01036 | -0.05062 | -0.10914 | -0.00404 |
| 12/10/2009 15:08 | -38.4275 | 30.51175 | 4.758781 | -81.1939 | 125.4057 | 14.26128 | -115.189 | 124.6863 | 16.55824 | -42.6992 | 106.3715 | 10.29014 | -3.95039 | -8.472 | -0.31212 | 0.524396 | 0.370435 | -0.01063 | -0.07686 | -0.11297 | -0.00249 |
| 12/10/2009 15:09 | -38.384 | 30.39197 | 4.747505 | -81.237 | 125.1633 | 14.24752 | -115.15 | 124.6152 | 16.55066 | -42.7103 | 106.3927 | 10.29237 | -3.96695 | -8.47579 | -0.31124 | 0.522447 | 0.374234 | -0.01023 | -0.12748 | -0.08999 | 0.002588 |
| 12/10/2009 15:10 | -55.5313 | 40.40797 | 6.622551 | -133.096 | 208.0901 | 23.5516 | -210.1 | 242.7724 | 31.26115 | -65.3192 | 168.3356 | 16.12885 | -3.03211 | -16.69 | -0.94278 | 1.093688 | 0.714298 | -0.02619 | -0.19122 | -0.1436 | 0.003287 |
| 12/10/2009 15:11 | -57.9016 | 40.02786 | 6.759929 | -136.945 | 209.2261 | 23.89567 | -215.88 | 241.593 | 31.57872 | -67.4119 | 169.813 | 16.3753 | -3.17382 | -17.1016 | -0.96141 | 1.14828 | 0.693399 | -0.0314 | -0.18185 | -0.12063 | 0.004226 |
| 12/10/2009 15:12 | -57.7281 | 39.83691 | 6.73477 | -136.531 | 208.5092 | 23.81765 | -215.323 | 240.86 | 31.48965 | -67.5016 | 170.1708 | 16.40618 | -3.27136 | -17.2149 | -0.9625 | 1.158029 | 0.678201 | -0.03312 | -0.1781 | -0.11871 | 0.004099 |
| 12/10/2009 15:13 | -57.663 | 39.67689 | 6.719232 | -136.436 | 208.1526 | 23.78643 | -215.136 | 240.5181 | 31.45314 | -67.5839 | 170.4112 | 16.42846 | -3.33209 | -17.2847 | -0.96313 | 1.15218 | 0.672501 | -0.03311 | -0.18185 | -0.11105 | 0.004887 |
| 12/10/2009 15:14 | -57.6322 | 39.54232 | 6.707822 | -136.379 | 207.8663 | 23.76274 | -215.043 | 240.2882 | 31.43088 | -67.6498 | 170.6008 | 16.4461 | -3.38178 | -17.3451 | -0.96387 | 1.156079 | 0.661102 | -0.03417 | -0.18934 | -0.11297 | 0.005272 |
| 12/10/2009 15:15 | -57.6033 | 39.43503 | 6.698419 | -136.375 | 207.616 | 23.74522 | -214.939 | 240.133 | 31.41294 | -67.7029 | 170.7318 | 16.45881 | -3.41674 | -17.3904 | -0.96458 | 1.15413 | 0.655402 | -0.03443 | -0.18559 | -0.11488 | 0.004881 |
| 12/10/2009 15:16 | -57.5834 | 39.32411 | 6.68939 | -136.377 | 207.3676 | 23.7282 | -214.868 | 239.9817 | 31.39764 | -67.7542 | 170.8315 | 16.46923 | -3.45723 | -17.432 | -0.96466 | 1.156079 | 0.647803 | -0.03509 | -0.19122 | -0.11105 | 0.005534 |
| 12/10/2009 15:17 | -57.5636 | 39.24411 | 6.682495 | -136.359 | 207.1818 | 23.71415 | -214.794 | 239.8913 | 31.38631 | -67.7835 | 170.9449 | 16.47908 | -3.48851 | -17.4622 | -0.96458 | 1.15413 | 0.647803 | -0.03495 | -0.19122 | -0.11297 | 0.005402 |
| 12/10/2009 15:18 | -57.5473 | 39.15683 | 6.675347 | -136.354 | 207.032 | 23.70344 | -214.743 | 239.7872 | 31.37557 | -67.8347 | 171.0329 | 16.48869 | -3.51796 | -17.4943 | -0.96476 | 1.156079 | 0.638304 | -0.03574 | -0.18934 | -0.11488 | 0.00514 |
| 12/10/2009 15:19 | -57.5383 | 39.08592 | 6.669828 | -136.382 | 206.8689 | 23.69414 | -214.707 | 239.7184 | 31.36834 | -67.8622 | 171.1052 | 16.49558 | -3.54188 | -17.515 | -0.96455 | 1.15413 | 0.640204 | -0.03548 | -0.18934 | -0.11297 | 0.005272 |
| 12/10/2009 15:20 | -57.522 | 39.00955 | 6.663434 | -136.375 | 206.7286 | 23.68397 | -214.656 | 239.6614 | 31.36085 | -67.8896 | 171.1697 | 16.50192 | -3.56948 | -17.5358 | -0.96407 | 1.15023 | 0.630705 | -0.03586 | -0.18934 | -0.10914 | 0.005537 |
| 12/10/2009 15:21 | -75.4423 | 45.04268 | 8.316903 | -193.661 | 290.6472 | 33.4311 | -320.842 | 369.3883 | 47.64562 | -97.4172 | 225.5055 | 22.29089 | -0.98146 | -26.3816 | -1.75334 | 2.04134 | 1.371692 | -0.04622 | -0.22496 | -0.13786 | 0.006013 |
| 12/10/2009 15:22 | -76.1462 | 44.73683 | 8.344384 | -195.521 | 291.4916 | 33.61778 | -324.784 | 371.1427 | 48.0388 | -99.2646 | 228.1485 | 22.60086 | -0.97778 | -26.8263 | -1.78429 | 2.123244 | 1.396393 | -0.05017 | -0.20996 | -0.12637 | 0.005771 |
| 12/10/2009 15:23 | -76.0202 | 44.51656 | 8.32048 | -195.238 | 290.8227 | 33.55205 | -324.381 | 370.6437 | 47.97659 | -99.5355 | 228.7017 | 22.65775 | -1.06984 | -26.9714 | -1.78795 | 2.132995 | 1.394493 | -0.05098 | -0.21559 | -0.12254 | 0.006423 |
| 12/10/2009 15:24 | -76.0562 | 44.40006 | 8.314924 | -195.162 | 290.5297 | 33.52663 | -324.25 | 370.3419 | 47.94666 | -99.7118 | 229.0673 | 22.69515 | -1.11402 | -27.0713 | -1.79179 | 2.136895 | 1.377392 | -0.05243 | -0.21371 | -0.12828 | 0.005897 |
| 12/10/2009 15:25 | -76.0058 | 44.30358 | 8.304784 | -195.014 | 290.1885 | 33.49281 | -324.054 | 370.1286 | 47.91846 | -99.8318 | 229.3242 | 22.72117 | -1.16926 | -27.1372 | -1.79253 | 2.144695 | 1.371692 | -0.05336 | -0.21559 | -0.12637 | 0.006159 |
| 12/10/2009 15:26 | -75.9014 | 44.14886 | 8.286896 | -194.849 | 289.9187 | 33.46284 | -323.829 | 369.8872 | 47.88624 | -99.9245 | 229.4804 | 22.73835 | -1.20608 | -27.2032 | -1.79454 | 2.144695 | 1.346991 | -0.05506 | -0.21371 | -0.13211 | 0.005633 |
| 12/10/2009 15:27 | -76.0166 | 44.08151 | 8.290201 | -194.898 | 289.593 | 33.44374 | -323.826 | 369.7444 | 47.87615 | -100.041 | 229.6345 | 22.75702 | -1.26315 | -27.254 | -1.79411 | 2.131044 | 1.352691 | -0.05373 | -0.22684 | -0.12828 | 0.006803 |
| 12/10/2009 15:28 | -75.968 | 44.00142 | 8.281317 | -194.884 | 289.3367 | 33.42508 | -323.706 | 369.6297 | 47.85994 | -100.099 | 229.7748 | 22.77072 | -1.29814 | -27.2861 | -1.79391 | 2.131044 | 1.33559 | -0.05491 | -0.22496 | -0.13211 | 0.006409 |
| 12/10/2009 15:29 | -76.103 | 43.77391 | 8.274932 | -194.807 | 288.8589 | 33.38678 | -323.729 | 369.2837 | 47.83767 | -100.253 | 229.7472 | 22.77947 | -1.38098 | -27.3539 | -1.79287 | 2.113494 | 1.314689 | -0.05514 | -0.22871 | -0.1436 | 0.005875 |
| 12/10/2009 15:30 | -76.0508 | 43.76845 | 8.270952 | -194.933 | 288.776 | 33.38975 | -323.716 | 369.2093 | 47.83161 | -100.323 | 229.8598 | 22.79202 | -1.42149 | -27.4066 | -1.79372 | 2.111543 | 1.305189 | -0.05566 | -0.23246 | -0.14169 | 0.006266 |
| 12/10/2009 15:31 | -75.9986 | 43.68108 | 8.261317 | -194.837 | 288.5583 | 33.36808 | -323.699 | 369.169 | 47.82768 | -100.375 | 229.9507 | 22.80193 | -1.4491 | -27.4443 | -1.79441 | 2.109593 | 1.303289 | -0.05566 | -0.23996 | -0.14552 | 0.006519 |
| 12/10/2009 15:32 | -75.8978 | 43.69929 | 8.255614 | -194.718 | 288.5814 | 33.36146 | -323.53 | 369.3179 | 47.82632 | -100.368 | 230.1247 | 22.81344 | -1.44174 | -27.4556 | -1.7957 | 2.134945 | 1.32609 | -0.05583 | -0.22871 | -0.13211 | 0.006668 |
| 12/10/2009 15:33 | -75.8366 | 43.71203 | 8.252268 | -194.606 | 288.4986 | 33.34802 | -323.429 | 369.3923 | 47.82443 | -100.372 | 230.2492 | 22.82228 | -1.44358 | -27.4688 | -1.79648 | 2.150546 | 1.324189 | -0.05704 | -0.22309 | -0.13211 | 0.00628 |
| 12/10/2009 15:34 | -75.8096 | 43.67198 | 8.24764 | -194.676 | 288.383 | 33.34487 | -323.427 | 369.4185 | 47.82612 | -100.428 | 230.3223 | 22.83122 | -1.46199 | -27.4877 | -1.79651 | 2.158346 | 1.33369 | -0.05692 | -0.22309 | -0.1302 | 0.006412 |
| 12/10/2009 15:35 | -75.7807 | 43.57916 | 8.239244 | -194.678 | 288.2635 | 33.33674 | -323.423 | 369.4004 | 47.82464 | -100.473 | 230.3955 | 22.8394 | -1.4896 | -27.5121 | -1.7963 | 2.158346 | 1.33179 | -0.05706 | -0.22496 | -0.1302 | 0.006541 |
| 12/10/2009 15:36 | -84.3516 | 48.44478 | 9.166747 | -227.479 | 368.9425 | 41.17013 | -391.24 | 486.0385 | 60.55728 | -120.238 | 277.6094 | 27.46281 | 1.497437 | -32.6679 | -2.35838 | 2.831179 | 2.344638 | -0.03359 | -0.24371 | -0.13594 | 0.007439 |
| 12/10/2009 15:37 | -93.1574 | 47.89277 | 9.73649 | -250.281 | 371.5766 | 42.92591 | -431.677 | 488.3342 | 63.50702 | -132.436 | 282.029 | 28.60996 | 2.236197 | -33.5166 | -2.46797 | 3.231018 | 2.407354 | -0.05686 | -0.22496 | -0.1168 | 0.007467 |
| 12/10/2009 15:38 | -93.0354 | 47.58127 | 9.706569 | -249.723 | 370.7114 | 42.82768 | -430.969 | 487.5641 | 63.40505 | -132.808 | 282.6396 | 28.67777 | 2.099859 | -33.7218 | -2.47271 | 3.260275 | 2.407354 | -0.05888 | -0.20996 | -0.11105 | 0.006828 |
| 12/10/2009 15:39 | -92.9708 | 47.42462 | 9.691298 | -249.514 | 370.228 | 42.77989 | -430.629 | 487.1821 | 63.35517 | -133.034 | 283.0945 | 28.72474 | 2.016952 | -33.8516 | -2.47595 | 3.270028 | 2.395951 | -0.06034 | -0.20809 | -0.10914 | 0.006831 |
| 12/10/2009 15:40 | -92.9081 | 47.33172 | 9.680552 | -249.382 | 369.8308 | 42.74341 | -430.346 | 486.8618 | 63.31357 | -133.167 | 283.334 | 28.75049 | 1.95247 | -33.9344 | -2.47722 | 3.281731 | 2.394051 | -0.06128 | -0.20247 | -0.09382 | 0.0075 |
| 12/10/2009 15:41 | -92.8758 | 47.22972 | 9.671283 | -249.294 | 369.5236 | 42.71612 | -430.116 | 486.6544 | 63.28336 | -133.283 | 283.5515 | 28.77348 | 1.895358 | -34.0153 | -2.47886 | 3.279781 | 2.380747 | -0.06206 | -0.21184 | -0.09765 | 0.007882 |
| 12/10/2009 15:42 | -92.8345 | 47.16597 | 9.664034 | -249.158 | 369.2986 | 42.69117 | -429.92 | 486.4696 | 63.25705 | -133.384 | 283.6912 | 28.7901 | 1.841932 | -34.0698 | -2.47894 | 3.297335 | 2.39025 | -0.06261 | -0.20434 | -0.09191 | 0.007761 |
| 12/10/2009 15:43 | -92.7897 | 47.08947 | 9.655658 | -249.013 | 369.0559 | 42.6644 | -429.704 | 486.3033 | 63.23067 | -133.454 | 283.8409 | 28.80529 | 1.810613 | -34.1188 | -2.48015 | 3.297335 | 2.375046 | -0.06366 | -0.20434 | -0.08616 | 0.008158 |
| 12/10/2009 15:44 | -92.7556 | 47.01115 | 9.6479 | -248.98 | 368.8603 | 42.64863 | -429.53 | 486.1699 | 63.20948 | -133.519 | 283.9407 | 28.81666 | 1.766399 | -34.1677 | -2.48048 | 3.281731 | 2.354141 | -0.06403 | -0.22121 | -0.11105 | 0.007604 |
| 12/10/2009 15:45 | -92.7215 | 46.9128 | 9.638758 | -248.925 | 368.6353 | 42.62929 | -429.387 | 486.02 | 63.18927 | -133.59 | 284.0545 | 28.82937 | 1.725869 | -34.2128 | -2.4808 | 3.289533 | 2.331335 | -0.06614 | -0.21746 | -0.11105 | 0.007345 |
| 12/10/2009 15:46 | -92.6641 | 47.56487 | 9.679808 | -248.859 | 375.5968 | 43.1053 | -429.313 | 500.7871 | 64.20347 | -133.658 | 290.6209 | 29.28737 | 1.677971 | -34.8092 | -2.51866 | 3.273929 | 2.5746 | -0.04827 | -0.22309 | -0.12254 | 0.006941 |
| 12/10/2009 15:47 | -110.889 | 46.7416 | 10.88099 | -300.795 | 416.3171 | 49.50119 | -537.966 | 592.2175 | 78.01492 | -167.873 | 334.6769 | 34.69032 | 5.487364 | -40.7561 | -3.19212 | 4.555575 | 3.612406 | -0.06511 | -0.20622 | -0.08233 | 0.008552 |
| 12/10/2009 15:48 | -110.776 | 46.37008 | 10.84758 | -299.967 | 415.5197 | 49.38904 | -536.347 | 590.6336 | 77.79387 | -168.421 | 335.8471 | 34.80892 | 5.210818 | -41.192 | -3.20312 | 4.553624 | 3.568685 | -0.06799 | -0.21934 | -0.07276 | 0.010118 |
| 12/10/2009 15:49 | -110.708 | 46.25171 | 10.83472 | -299.635 | 415.1191 | 49.33842 | -535.73 | 589.8229 | 77.69531 | -168.666 | 336.3547 | 34.86089 | 5.063334 | -41.41 | -3.20799 | 4.577036 | 3.534469 | -0.07197 | -0.20059 | -0.07467 | 0.008692 |
| 12/10/2009 15:50 | -110.644 | 46.15337 | 10.82349 | -299.416 | 414.8527 | 49.30496 | -535.155 | 589.7164 | 77.64827 | -168.869 | 336.7516 | 34.90225 | 4.943506 | -41.5753 | -3.21113 | 4.543869 | 3.464135 | -0.07453 | -0.22684 | -0.09765 | 0.008918 |
| 12/10/2009 15:51 | -110.662 | 46.07143 | 10.81907 | -299.355 | 414.4995 | 49.27634 | -534.791 | 589.2944 | 77.59402 | -168.987 | 337.0256 | 34.92932 | 4.856863 | -41.6937 | -3.21332 | 4.549722 | 3.456532 | -0.07546 | -0.21746 | -0.08425 | 0.009196 |
| 12/10/2009 15:52 | -110.622 | 45.96399 | 10.80894 | -299.232 | 414.3416 | 49.25696 | -534.509 | 589.0292 | 77.55624 | -169.093 | 337.2553 | 34.95247 | 4.766535 | -41.7876 | -3.21356 | 4.539967 | 3.426118 | -0.07689 | -0.21371 | -0.08808 | 0.008673 |
| 12/10/2009 15:53 | -110.706 | 45.66718 | 10.79425 | -299.355 | 413.9372 | 49.23752 | -534.556 | 588.6448 | 77.53298 | -169.306 | 337.3359 | 34.97273 | 4.639341 | -41.9134 | -3.21347 | 4.495095 | 3.365291 | -0.07799 | -0.22684 | -0.09956 | 0.008785 |
| 12/10/2009 15:54 | -110.503 | 45.51059 | 10.76938 | -299.041 | 413.6984 | 49.19937 | -534.585 | 588.1937 | 77.50379 | -169.374 | 337.5112 | 34.98953 | 4.58404 | -41.9942 | -3.21523 | 4.502899 | 3.351985 | -0.07945 | -0.22496 | -0.09191 | 0.009185 |
| 12/10/2009 15:55 | -110.446 | 45.35037 | 10.75437 | -298.952 | 413.7754 | 49.19856 | -534.645 | 587.9577 | 77.49164 | -169.449 | 337.6684 | 35.00557 | 4.604317 | -42.06 | -3.22117 | 4.500948 | 3.357687 | -0.07892 | -0.22684 | -0.08808 | 0.009578 |
| 12/10/2009 15:56 | -110.267 | 45.5634 | 10.75675 | -298.672 | 413.7458 | 49.17719 | -534.424 | 587.9222 | 77.47396 | -169.438 | 337.9182 | 35.02208 | 4.591414 | -42.0844 | -3.22196 | 4.528261 | 3.357687 | -0.0808 | -0.21184 | -0.08425 | 0.008808 |
| 12/10/2009 15:57 | -110.269 | 45.49421 | 10.75209 | -298.609 | 413.5959 | 49.16249 | -534.274 | 587.7447 | 77.45138 | -169.49 | 338.0331 | 35.03359 | 4.558234 | -42.152 | -3.22434 | 4.530212 | 3.359588 | -0.08081 | -0.21559 | -0.08616 | 0.008934 |
| 12/10/2009 15:58 | -110.296 | 45.42866 | 10.74942 | -298.592 | 413.3867 | 49.14687 | -534.077 | 587.6257 | 77.42956 | -169.554 | 338.156 | 35.04652 | 4.51215 | -42.1952 | -3.22414 | 4.528261 | 3.353886 | -0.08107 | -0.21559 | -0.08042 | 0.009331 |

| TS | 6A1 Comp. Strain | 6B1 Tensile Strain | Moment (k*ft) | 6A2 Comp. Strain | 6B2 Tensile Strain | Moment (k*ft) | 6A3 Comp. Strain | 6B3 Tensile Strain | Moment (k*ft) | 6A4 Comp. Strain | 6B4 Tensile Strain | Moment (k*ft) | 6A6 Comp. Strain | 6B6 Tensile Strain | Moment (k*ft) | 6A6 Comp. Strain | 6B6 Tensile Strain | Moment (k*ft) | 6A7 Comp. Strain | 6B7 Tensile Strain | Moment (k*ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12/10/2009 15:59 | -110.279 | 45.46143 | 10.75057 | -298.512 | 413.438 | 49.14488 | -533.992 | 587.4941 | 77.41461 | -169.597 | 338.2729 | 35.05755 | 4.477128 | -42.2347 | -3.22445 | 4.538016 | 3.346282 | -0.08226 | -0.20996 | -0.07659 | 0.009207 |
| 12/10/2009 16:00 | -110.26 | 45.4232 | 10.74657 | -298.548 | 413.3236 | 49.13945 | -533.865 | 587.3605 | 77.39657 | -169.649 | 338.3616 | 35.06726 | 4.432889 | -42.2722 | -3.22399 | 4.536065 | 3.336778 | -0.08279 | -0.20809 | -0.07659 | 0.009077 |
| 12/10/2009 16:01 | -110.244 | 45.30849 | 10.73755 | -298.476 | 413.3137 | 49.13382 | -533.788 | 587.2185 | 77.38144 | -169.721 | 338.418 | 35.0761 | 4.397866 | -42.3324 | -3.22572 | 4.532163 | 3.31967 | -0.0837 | -0.20809 | -0.07659 | 0.009077 |
| 12/10/2009 16:02 | -110.267 | 45.35401 | 10.74229 | -298.479 | 413.2309 | 49.12834 | -533.663 | 587.1078 | 77.36521 | -169.771 | 338.5026 | 35.0854 | 4.353628 | -42.3643 | -3.22487 | 4.524359 | 3.31967 | -0.08316 | -0.21371 | -0.06701 | 0.010126 |
| 12/10/2009 16:03 | -117.54 | 48.34275 | 11.45064 | -331.547 | 485.8073 | 56.4208 | -605.736 | 694.6633 | 89.76469 | -189.86 | 386.5551 | 39.78911 | 8.111655 | -47.0637 | -3.80868 | 5.482374 | 4.8957 | -0.0405 | -0.19872 | -0.03829 | 0.011074 |
| 12/10/2009 16:04 | -124.774 | 45.2029 | 11.73327 | -355.363 | 494.0054 | 58.6307 | -647.762 | 697.6856 | 92.87434 | -204.91 | 392.5757 | 41.2436 | 9.404965 | -48.5835 | -4.00286 | 6.042433 | 4.802532 | -0.08559 | -0.17622 | -0.02681 | 0.010314 |
| 12/10/2009 16:05 | -124.908 | 45.37768 | 11.75456 | -355 | 493.543 | 58.57369 | -646.236 | 696.2295 | 92.66847 | -205.432 | 393.5706 | 41.34831 | 9.216758 | -48.8912 | -4.01111 | 6.009257 | 4.677042 | -0.09196 | -0.1706 | -0.01915 | 0.010454 |
| 12/10/2009 16:06 | -124.847 | 45.27208 | 11.74309 | -354.651 | 492.7063 | 58.49189 | -645.319 | 695.3242 | 92.54266 | -205.684 | 394.1546 | 41.40603 | 9.087601 | -49.0638 | -4.01411 | 5.981936 | 4.593384 | -0.09585 | -0.1781 | -0.01532 | 0.011236 |
| 12/10/2009 16:07 | -124.747 | 45.21382 | 11.73218 | -354.461 | 492.3901 | 58.45694 | -644.791 | 694.8396 | 92.47281 | -205.901 | 394.5555 | 41.44865 | 8.987968 | -49.1838 | -4.01552 | 5.966324 | 4.52874 | -0.09923 | -0.17435 | -0.02489 | 0.010317 |
| 12/10/2009 16:08 | -124.662 | 45.11186 | 11.71924 | -354.305 | 491.9858 | 58.41823 | -644.326 | 694.3509 | 92.40698 | -206.068 | 394.8486 | 41.4804 | 8.882802 | -49.2851 | -4.01525 | 5.927294 | 4.462196 | -0.10113 | -0.19872 | -0.04021 | 0.010942 |
| 12/10/2009 16:09 | -124.667 | 45.09548 | 11.71848 | -354.089 | 491.8037 | 58.39078 | -643.941 | 693.96 | 92.35337 | -206.201 | 395.0887 | 41.50617 | 8.814538 | -49.2926 | -4.01106 | 5.929246 | 4.424171 | -0.10389 | -0.18372 | -0.02106 | 0.011228 |
| 12/10/2009 16:10 | -124.592 | 45.04632 | 11.70993 | -353.956 | 491.6736 | 58.37263 | -643.683 | 693.6625 | 92.31505 | -206.307 | 395.3045 | 41.52841 | 8.748119 | -49.3583 | -4.011 | 5.909731 | 4.370937 | -0.10622 | -0.19122 | -0.02489 | 0.011481 |
| 12/10/2009 16:11 | -124.498 | 44.95165 | 11.69688 | -353.849 | 491.5255 | 58.35497 | -643.477 | 693.4395 | 92.28545 | -206.43 | 395.4429 | 41.54642 | 8.689081 | -49.4277 | -4.01172 | 5.884362 | 4.310098 | -0.10867 | -0.18934 | -0.03638 | 0.010559 |
| 12/10/2009 16:12 | -124.455 | 44.91706 | 11.69154 | -353.754 | 491.3754 | 58.3381 | -643.294 | 693.2249 | 92.258 | -206.524 | 395.624 | 41.56542 | 8.630044 | -49.4615 | -4.00997 | 5.874604 | 4.300592 | -0.10865 | -0.18934 | -0.02489 | 0.011352 |
| 12/10/2009 16:13 | -124.404 | 44.87155 | 11.68483 | -353.689 | 491.2153 | 58.32252 | -643.107 | 693.0273 | 92.23142 | -206.611 | 395.7502 | 41.58014 | 8.580232 | -49.5084 | -4.00977 | 5.866798 | 4.273975 | -0.10995 | -0.18372 | -0.01532 | 0.011625 |
| 12/10/2009 16:14 | -133.465 | 47.68328 | 12.50441 | -395.002 | 575.1671 | 66.96936 | -732.046 | 800.1542 | 105.7656 | -232.03 | 446.7638 | 46.85618 | 13.85765 | -53.7756 | -4.66863 | 7.108072 | 6.097535 | -0.06976 | -0.16122 | 0.024891 | 0.012847 |
| 12/10/2009 16:15 | -139.617 | 46.82537 | 12.86988 | -413.249 | 579.8626 | 68.5531 | -755.927 | 799.3463 | 107.3583 | -244.707 | 452.5014 | 48.12732 | 14.66112 | -54.8456 | -4.79795 | 7.44186 | 5.814165 | -0.11236 | -0.15935 | 0.03638 | 0.013511 |
| 12/10/2009 16:16 | -139.534 | 46.56858 | 12.84639 | -412.28 | 579.0028 | 68.42681 | -753.804 | 798.1519 | 107.1293 | -245.073 | 453.486 | 48.22054 | 14.34526 | -55.0873 | -4.79283 | 7.426244 | 5.604977 | -0.12572 | -0.1481 | 0.045953 | 0.013395 |
| 12/10/2009 16:17 | -139.447 | 46.35187 | 12.82543 | -411.658 | 578.3952 | 68.34195 | -752.899 | 797.4112 | 107.0157 | -245.295 | 454.0719 | 48.27629 | 14.131 | -55.2278 | -4.78774 | 7.402819 | 5.456648 | -0.13434 | -0.14623 | 0.034465 | 0.012473 |
| 12/10/2009 16:18 | -139.454 | 46.38465 | 12.82818 | -411.46 | 577.9725 | 68.29915 | -752.097 | 796.7288 | 106.9132 | -245.469 | 454.4728 | 48.31598 | 13.97585 | -55.329 | -4.78401 | 7.379395 | 5.334946 | -0.14113 | -0.15185 | 0.03638 | 0.012993 |
| 12/10/2009 16:19 | -139.456 | 46.31362 | 12.8234 | -411.328 | 577.5621 | 68.26166 | -751.518 | 796.2927 | 106.8431 | -245.613 | 454.7853 | 48.34751 | 13.82256 | -55.4208 | -4.77977 | 7.348163 | 5.217049 | -0.14711 | -0.16122 | 0.019147 | 0.012451 |
| 12/10/2009 16:20 | -139.493 | 46.09874 | 12.81114 | -411.174 | 577.107 | 68.2196 | -751.036 | 795.8587 | 106.7799 | -245.738 | 454.9909 | 48.37033 | 13.69882 | -55.4957 | -4.7764 | 7.332547 | 5.139087 | -0.15141 | -0.15373 | 0.03255 | 0.012858 |
| 12/10/2009 16:21 | -139.458 | 46.08053 | 12.80743 | -410.955 | 576.9424 | 68.19313 | -750.666 | 795.5695 | 106.7344 | -245.854 | 455.1883 | 48.39197 | 13.57139 | -55.5632 | -4.77226 | 7.311075 | 5.06683 | -0.15492 | -0.16497 | 0.028721 | 0.01337 |
| 12/10/2009 16:22 | -139.435 | 46.01315 | 12.80119 | -410.809 | 576.7088 | 68.16692 | -750.291 | 795.3147 | 106.6909 | -245.942 | 455.3692 | 48.41053 | 13.48459 | -55.61 | -4.7695 | 7.291555 | 5.004082 | -0.1579 | -0.1631 | 0.024891 | 0.012977 |
| 12/10/2009 16:23 | -139.569 | 45.88933 | 12.80195 | -410.968 | 576.3411 | 68.15253 | -750.174 | 794.9823 | 106.6599 | -246.12 | 455.4021 | 48.42507 | 13.34054 | -55.6812 | -4.76447 | 7.25642 | 4.90901 | -0.16204 | -0.16872 | 0.015318 | 0.012704 |
| 12/10/2009 16:24 | -139.671 | 45.81103 | 12.80353 | -410.958 | 576.1461 | 68.13838 | -750.037 | 794.8204 | 106.6393 | -246.213 | 455.5296 | 48.4403 | 13.2519 | -55.743 | -4.76262 | 7.231044 | 4.859573 | -0.1637 | -0.1781 | 0.011488 | 0.013087 |
| 12/10/2009 16:25 | -139.648 | 45.75094 | 12.79779 | -410.809 | 576.0648 | 68.12247 | -749.872 | 794.6715 | 106.6176 | -246.292 | 455.6633 | 48.45499 | 13.17988 | -55.773 | -4.75972 | 7.223236 | 4.80063 | -0.16723 | -0.17997 | 0.013403 | 0.013348 |
| 12/10/2009 16:26 | -139.809 | 45.88933 | 12.81849 | -410.89 | 576.1237 | 68.13215 | -749.644 | 794.7297 | 106.6059 | -246.273 | 455.8915 | 48.46941 | 13.14849 | -55.8048 | -4.75975 | 7.238852 | 4.802532 | -0.16818 | -0.17435 | 0.017232 | 0.013224 |
| 12/10/2009 16:27 | -139.582 | 45.83288 | 12.79892 | -410.547 | 575.9755 | 68.09821 | -749.365 | 794.6045 | 106.578 | -246.319 | 456.0273 | 48.48194 | 13.09678 | -55.8329 | -4.75812 | 7.240804 | 4.775912 | -0.17015 | -0.16872 | 0.015318 | 0.012704 |
| 12/10/2009 16:28 | -139.632 | 45.79829 | 12.79996 | -410.623 | 575.7927 | 68.09086 | -749.244 | 794.4858 | 106.5615 | -246.373 | 456.128 | 48.49266 | 13.04692 | -55.8723 | -4.75739 | 7.2369 | 4.743589 | -0.17211 | -0.17247 | 0.007659 | 0.012434 |
| 12/10/2009 16:29 | -139.681 | 45.74548 | 12.79974 | -410.698 | 575.6017 | 68.08283 | -749.061 | 794.393 | 106.5424 | -246.435 | 456.198 | 48.50173 | 12.98414 | -55.8929 | -4.75448 | 7.232996 | 4.728378 | -0.17289 | -0.16497 | 0.019147 | 0.01271 |
| 12/10/2009 16:30 | -139.632 | 45.6162 | 12.78739 | -410.601 | 575.4352 | 68.0647 | -748.979 | 794.3088 | 106.5309 | -246.486 | 456.3214 | 48.51377 | 12.93982 | -55.8479 | -4.74832 | 7.234948 | 4.715069 | -0.17394 | -0.16872 | 0.026806 | 0.013497 |
| 12/10/2009 16:31 | -140.159 | 42.22163 | 12.58945 | -408.016 | 561.9526 | 66.95557 | -748.769 | 793.9765 | 106.4935 | -246.563 | 456.3502 | 48.5211 | 12.88073 | -55.8816 | -4.74657 | 7.234948 | 4.675141 | -0.1767 | -0.16122 | 0.019147 | 0.012451 |
| 12/10/2009 16:32 | -145.933 | 43.6556 | 13.08704 | -430.9 | 623.7308 | 72.79968 | -801.68 | 886.9593 | 116.5644 | -258.582 | 495.4038 | 52.04656 | 16.23706 | -58.8855 | -5.1856 | 7.910368 | 6.407547 | -0.10374 | -0.14248 | 0.082333 | 0.015518 |
| 12/10/2009 16:33 | -157.56 | 41.51755 | 13.74203 | -466.955 | 655.5652 | 77.48596 | -869.957 | 912.0383 | 123.0086 | -283.187 | 511.8673 | 54.88143 | 20.03769 | -60.5926 | -5.56579 | 8.960757 | 6.633887 | -0.16062 | -0.10686 | 0.10148 | 0.014381 |
| 12/10/2009 16:34 | -157.546 | 41.24286 | 13.7221 | -465.342 | 655.0752 | 77.34078 | -867.186 | 909.8985 | 122.6696 | -283.767 | 512.7455 | 54.98213 | 19.84352 | -60.8303 | -5.5688 | 8.986141 | 6.436077 | -0.17603 | -0.09748 | 0.114884 | 0.014659 |
| 12/10/2009 16:35 | -157.516 | 41.05368 | 13.70696 | -464.603 | 654.513 | 77.25097 | -865.691 | 908.7322 | 122.4859 | -284.083 | 513.223 | 55.03688 | 19.68264 | -60.9575 | -5.56648 | 8.972472 | 6.291528 | -0.18506 | -0.10311 | 0.116798 | 0.01518 |
| 12/10/2009 16:36 | -157.507 | 40.92817 | 13.69769 | -464.009 | 654.0601 | 77.17873 | -864.603 | 907.8757 | 122.3517 | -284.313 | 513.6528 | 55.08243 | 19.53841 | -61.0492 | -5.56285 | 8.958804 | 6.13367 | -0.19501 | -0.11248 | 0.109139 | 0.015298 |
| 12/10/2009 16:37 | -157.5 | 40.8354 | 13.6908 | -463.62 | 653.7389 | 77.1297 | -863.59 | 907.3136 | 122.2429 | -284.496 | 513.9726 | 55.11714 | 19.41083 | -61.1147 | -5.55856 | 8.945136 | 6.040479 | -0.2005 | -0.11061 | 0.107225 | 0.015037 |
| 12/10/2009 16:38 | -157.502 | 40.76264 | 13.6859 | -463.322 | 653.4775 | 77.0911 | -862.914 | 906.813 | 122.1617 | -284.653 | 514.1948 | 55.14331 | 19.31283 | -61.1802 | -5.55632 | 8.935373 | 5.924468 | -0.20784 | -0.11061 | 0.103395 | 0.014772 |
| 12/10/2009 16:39 | -157.5 | 40.68625 | 13.6805 | -463.123 | 653.2325 | 77.06042 | -862.401 | 906.3849 | 122.0967 | -284.787 | 514.3983 | 55.16662 | 19.21853 | -61.2289 | -5.55317 | 8.927563 | 5.859808 | -0.21176 | -0.11061 | 0.114884 | 0.015565 |
| 12/10/2009 16:40 | -157.472 | 40.6135 | 13.67353 | -462.876 | 653.0802 | 77.03285 | -861.892 | 906.016 | 122.0361 | -284.916 | 514.5644 | 55.18699 | 19.12978 | -61.2775 | -5.5504 | 8.931468 | 5.79705 | -0.21636 | -0.09936 | 0.120628 | 0.015185 |
| 12/10/2009 16:41 | -157.456 | 40.54074 | 13.66741 | -462.756 | 652.7962 | 77.005 | -861.466 | 905.7241 | 121.9866 | -285.035 | 514.6849 | 55.20349 | 19.05952 | -61.3131 | -5.54801 | 8.925611 | 5.724784 | -0.22095 | -0.09936 | 0.128287 | 0.015714 |
| 12/10/2009 16:42 | -157.447 | 40.47345 | 13.66215 | -462.691 | 652.578 | 76.98542 | -861.157 | 905.4585 | 121.9469 | -285.153 | 514.8053 | 55.21999 | 18.98372 | -61.3542 | -5.54561 | 8.906085 | 5.662027 | -0.22393 | -0.11061 | 0.130202 | 0.016623 |
| 12/10/2009 16:43 | -157.45 | 40.71899 | 13.67935 | -462.58 | 656.5002 | 77.24849 | -860.869 | 914.5019 | 122.5513 | -285.244 | 518.4762 | 55.47964 | 18.9227 | -61.5732 | -5.55651 | 8.908037 | 5.850299 | -0.21107 | -0.11248 | 0.114884 | 0.015695 |
| 12/10/2009 16:44 | -174.063 | 40.53347 | 14.81327 | -522.468 | 747.7134 | 87.6788 | -985.2 | 1028.156 | 138.9791 | -320.222 | 569.6244 | 61.42482 | 26.27382 | -65.329 | -6.32321 | 10.63438 | 8.022579 | -0.18029 | -0.03374 | 0.224025 | 0.017794 |
| 12/10/2009 16:45 | -174.543 | 40.04969 | 14.81306 | -520.568 | 749.5309 | 87.67315 | -981.261 | 1024.53 | 138.4569 | -322.019 | 570.7603 | 61.62729 | 26.11458 | -65.6337 | -6.33325 | 10.70274 | 7.737201 | -0.20471 | -0.03562 | 0.218281 | 0.017526 |
| 12/10/2009 16:46 | -174.461 | 39.90966 | 14.79768 | -519.576 | 748.985 | 87.56698 | -978.609 | 1022.812 | 138.1552 | -322.669 | 571.2236 | 61.70411 | 25.86091 | -65.7739 | -6.32542 | 10.67931 | 7.470862 | -0.22147 | -0.05249 | 0.206792 | 0.017898 |
| 12/10/2009 16:47 | -174.649 | 39.83873 | 14.80579 | -518.924 | 748.4872 | 87.48759 | -977.626 | 1021.479 | 137.9954 | -322.995 | 571.5443 | 61.74879 | 25.70539 | -65.8562 | -6.32037 | 10.69298 | 7.280628 | -0.23555 | -0.04687 | 0.216366 | 0.018171 |
| 12/10/2009 16:48 | -174.614 | 39.71507 | 14.79482 | -518.441 | 748.1881 | 87.43358 | -976.588 | 1020.622 | 137.8646 | -323.246 | 571.7958 | 61.78344 | 25.55727 | -65.9216 | -6.31466 | 10.69298 | 7.149371 | -0.24461 | -0.05062 | 0.212537 | 0.018165 |
| 12/10/2009 16:49 | -174.672 | 39.42049 | 14.7785 | -518.212 | 747.8326 | 87.39325 | -976.087 | 1019.782 | 137.772 | -323.603 | 571.8398 | 61.81116 | 25.37399 | -66.0095 | -6.30807 | 10.6461 | 6.932519 | -0.25634 | -0.06749 | 0.195304 | 0.01814 |
| 12/10/2009 16:50 | -174.735 | 39.42412 | 14.78312 | -517.895 | 747.3788 | 87.34001 | -975.015 | 1019.101 | 137.651 | -323.766 | 572.0516 | 61.83698 | 25.25365 | -66.0562 | -6.30299 | 10.63634 | 6.803173 | -0.2646 | -0.06561 | 0.195304 | 0.018011 |
| 12/10/2009 16:51 | -174.72 | 39.31502 | 14.7745 | -517.724 | 747.0233 | 87.30368 | -974.109 | 1018.537 | 137.5495 | -323.94 | 572.1417 | 61.85524 | 25.15368 | -66.103 | -6.29932 | 10.6422 | 6.744208 | -0.26907 | -0.05812 | 0.201048 | 0.01789 |

| TS | 6A1 Comp. Strain | 6B1 Tensile Strain | Moment (k*ft) | 6A2 Comp. Strain | 6B2 Tensile Strain | Moment (k*ft) | 6A3 Comp. Strain | 6B3 Tensile Strain | Moment (k*ft) | 6A4 Comp. Strain | 6B4 Tensile Strain | Moment (k*ft) | 6A6 Comp. Strain | 6B6 Tensile Strain | Moment (k*ft) | 6A6 Comp. Strain | 6B6 Tensile Strain | Moment (k*ft) | 6A7 Comp. Strain | 6B7 Tensile Strain | Moment (k*ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12/10/2009 16:52 | -174.596 | 39.5405 | 14.78156 | -517.405 | 746.8853 | 87.27213 | -973.33 | 1018.331 | 137.4815 | -323.987 | 572.4331 | 61.87858 | 25.10555 | -66.116 | -6.2969 | 10.65977 | 6.694754 | -0.2737 | -0.06187 | 0.208707 | 0.018677 |
| 12/10/2009 16:53 | -174.554 | 39.29866 | 14.76195 | -517.205 | 746.5549 | 87.23553 | -972.772 | 1017.912 | 137.4141 | -324.099 | 572.5044 | 61.89124 | 25.03706 | -66.1403 | -6.29385 | 10.67149 | 6.624377 | -0.27937 | -0.05249 | 0.210622 | 0.018162 |
| 12/10/2009 16:54 | -174.589 | 39.18774 | 14.75672 | -517.082 | 746.1284 | 87.19763 | -972.448 | 1017.452 | 137.36 | -324.23 | 572.5883 | 61.90609 | 24.95745 | -66.1721 | -6.29054 | 10.66368 | 6.550197 | -0.28395 | -0.05812 | 0.210622 | 0.018551 |
| 12/10/2009 16:55 | -174.593 | 39.26956 | 14.76261 | -516.915 | 746.2601 | 87.19515 | -972.118 | 1017.419 | 137.3349 | -324.32 | 572.733 | 61.92228 | 24.91488 | -66.1908 | -6.2889 | 10.67149 | 6.506451 | -0.28751 | -0.05249 | 0.218281 | 0.018691 |
| 12/10/2009 16:56 | -174.556 | 39.25865 | 14.75931 | -516.731 | 746.051 | 87.16804 | -971.885 | 1017.207 | 137.3042 | -324.432 | 572.8357 | 61.93712 | 24.85379 | -66.2114 | -6.2861 | 10.67149 | 6.453195 | -0.29118 | -0.05437 | 0.214451 | 0.018556 |
| 12/10/2009 16:57 | -174.526 | 39.14047 | 14.74908 | -516.57 | 745.7124 | 87.13353 | -971.47 | 1016.85 | 137.2509 | -324.529 | 572.8818 | 61.94698 | 24.7927 | -66.2357 | -6.28356 | 10.66368 | 6.401841 | -0.29419 | -0.05624 | 0.218281 | 0.01895 |
| 12/10/2009 16:58 | -174.626 | 39.10592 | 14.75362 | -516.729 | 745.5096 | 87.13055 | -971.368 | 1016.696 | 137.2332 | -324.636 | 572.9384 | 61.95827 | 24.73717 | -66.2656 | -6.28179 | 10.65977 | 6.318155 | -0.2997 | -0.05999 | 0.208707 | 0.018548 |
| 12/10/2009 16:59 | -174.661 | 39.08228 | 14.75442 | -516.612 | 745.2232 | 87.10266 | -971.021 | 1016.528 | 137.1977 | -324.72 | 573.0118 | 61.96918 | 24.68719 | -66.2787 | -6.27924 | 10.65977 | 6.29343 | -0.3014 | -0.05249 | 0.218281 | 0.018691 |
| 12/10/2009 17:00 | -189.252 | 40.58621 | 15.8654 | -575.812 | 837.7278 | 97.57465 | -1096.41 | 1135.888 | 154.0925 | -355.551 | 628.3331 | 67.91613 | 32.68117 | -69.775 | -7.0724 | 12.35737 | 8.96444 | -0.23421 | 0.03187 | 0.335084 | 0.02093 |
| 12/10/2009 17:01 | -193.514 | 40.488 | 16.15281 | -581.154 | 841.3363 | 98.19246 | -1105.52 | 1134.454 | 154.6222 | -362.674 | 595.2184 | 66.12196 | 33.45255 | -71.2598 | -7.22815 | 12.6231 | 8.84646 | -0.2607 | 0.037495 | 0.346573 | 0.021335 |
| 12/10/2009 17:02 | -194.439 | 40.62623 | 16.22624 | -582.565 | 842.7293 | 98.38606 | -1107.44 | 1134.973 | 154.7908 | -366.975 | 600.1886 | 66.76189 | 33.50447 | -71.835 | -7.27143 | 12.66609 | 8.688523 | -0.27457 | 0.020622 | 0.338914 | 0.021971 |
| 12/10/2009 17:03 | -194.336 | 40.41888 | 16.20479 | -580.715 | 841.1961 | 98.15252 | -1103.96 | 1132.936 | 154.4101 | -367.357 | 600.4603 | 66.80707 | 33.33572 | -72.0609 | -7.27538 | 12.69735 | 8.5363 | -0.28723 | 0.033745 | 0.358062 | 0.022387 |
| 12/10/2009 17:04 | -194.227 | 40.25883 | 16.18624 | -579.811 | 840.175 | 98.01962 | -1101.98 | 1131.536 | 154.1766 | -367.595 | 600.614 | 66.83408 | 33.19294 | -72.1953 | -7.2748 | 12.69735 | 8.393594 | -0.29708 | 0.033745 | 0.358062 | 0.022387 |
| 12/10/2009 17:05 | -194.227 | 40.0606 | 16.17256 | -578.124 | 840.6441 | 97.93557 | -1100.44 | 1130.475 | 153.9966 | -367.754 | 600.7088 | 66.85159 | 33.07426 | -72.3036 | -7.27409 | 12.69539 | 8.250893 | -0.3068 | 0.03562 | 0.356147 | 0.022126 |
| 12/10/2009 17:06 | -194.241 | 39.91693 | 16.16361 | -577.483 | 840.1325 | 97.85596 | -1099.21 | 1129.634 | 153.8541 | -367.884 | 600.8015 | 66.86695 | 32.98155 | -72.3783 | -7.27284 | 12.68172 | 8.100585 | -0.31623 | 0.024371 | 0.352318 | 0.022638 |
| 12/10/2009 17:07 | -194.248 | 39.88601 | 16.16196 | -577.088 | 839.5169 | 97.78623 | -1098.37 | 1128.947 | 153.7486 | -367.996 | 600.8731 | 66.87968 | 32.8944 | -72.4474 | -7.27159 | 12.68172 | 7.997845 | -0.32332 | 0.026246 | 0.354232 | 0.02264 |
| 12/10/2009 17:08 | -194.248 | 39.78599 | 16.15505 | -576.662 | 839.0563 | 97.72501 | -1097.04 | 1128.359 | 153.616 | -368.099 | 600.9426 | 66.89155 | 32.81838 | -72.4922 | -7.26944 | 12.67586 | 7.885595 | -0.33066 | 0.029996 | 0.359977 | 0.022778 |
| 12/10/2009 17:09 | -194.248 | 39.69325 | 16.14865 | -576.34 | 838.67 | 97.67613 | -1096.15 | 1127.888 | 153.5219 | -368.191 | 601.0142 | 66.90286 | 32.73679 | -72.5482 | -7.26767 | 12.66413 | 7.786665 | -0.33668 | 0.022497 | 0.344658 | 0.022238 |
| 12/10/2009 17:10 | -194.241 | 39.61142 | 16.14252 | -576.08 | 838.2244 | 97.62742 | -1095.44 | 1127.296 | 153.4326 | -368.275 | 601.0605 | 66.91184 | 32.66633 | -72.5725 | -7.26448 | 12.66218 | 7.712469 | -0.34167 | 0.028121 | 0.359977 | 0.022908 |
| 12/10/2009 17:11 | -194.25 | 39.52777 | 16.13735 | -575.869 | 837.8657 | 97.58811 | -1095.01 | 1126.943 | 153.378 | -368.352 | 601.1174 | 66.92107 | 32.60515 | -72.6135 | -7.2631 | 12.65632 | 7.678224 | -0.34363 | 0.026246 | 0.363807 | 0.023301 |
| 12/10/2009 17:12 | -194.289 | 39.43503 | 16.13361 | -575.776 | 837.3501 | 97.54606 | -1094.53 | 1126.598 | 153.3213 | -368.43 | 601.1806 | 66.93086 | 32.53655 | -72.6472 | -7.26068 | 12.65045 | 7.575493 | -0.35032 | 0.024371 | 0.354232 | 0.02277 |
| 12/10/2009 17:13 | -194.318 | 39.33139 | 16.12851 | -575.641 | 836.9109 | 97.50644 | -1094.15 | 1126.607 | 153.2954 | -368.502 | 601.2185 | 66.93843 | 32.48278 | -72.6714 | -7.25864 | 12.64655 | 7.505105 | -0.35491 | 0.022497 | 0.352318 | 0.022767 |
| 12/10/2009 17:14 | -194.35 | 39.23683 | 16.12416 | -575.543 | 836.4547 | 97.46817 | -1093.73 | 1127.047 | 153.2972 | -368.567 | 601.2733 | 66.94669 | 32.42716 | -72.705 | -7.25712 | 12.65045 | 7.457545 | -0.35846 | 0.033745 | 0.367636 | 0.023048 |
| 12/10/2009 17:15 | -202.574 | 46.32455 | 17.18112 | -593.709 | 862.2233 | 100.5009 | -1124.63 | 1155.404 | 157.3876 | -373.156 | 609.0336 | 67.79917 | 33.57309 | -73.1979 | -7.37025 | 12.87125 | 7.809495 | -0.34941 | 0.03562 | 0.38487 | 0.024108 |
| 12/10/2009 17:16 | -203.757 | 44.86063 | 17.16169 | -592.92 | 859.3076 | 100.2452 | -1123.4 | 1151.564 | 157.0374 | -374.214 | 609.0885 | 67.87597 | 33.71959 | -73.3117 | -7.38822 | 12.91424 | 7.777153 | -0.35461 | 0.058117 | 0.392529 | 0.023084 |
| 12/10/2009 17:17 | -203.23 | 46.15155 | 17.21446 | -591.527 | 862.7496 | 100.3866 | -1121.46 | 1157.171 | 157.2906 | -374.436 | 610.586 | 67.99465 | 33.67323 | -73.4275 | -7.39301 | 12.9201 | 7.822812 | -0.35186 | 0.050618 | 0.382955 | 0.022941 |
| 12/10/2009 17:18 | -211.809 | 49.71118 | 18.05237 | -604.035 | 872.9031 | 101.9509 | -1140.24 | 1165.226 | 159.1428 | -377.998 | 614.0571 | 68.48013 | 34.49856 | -73.7728 | -7.47382 | 13.0901 | 7.976917 | -0.35296 | 0.061866 | 0.409763 | 0.024015 |
| 12/10/2009 17:19 | -210.632 | 47.75797 | 17.83632 | -601.186 | 869.4962 | 101.5191 | -1136.81 | 1163.055 | 158.7563 | -378.294 | 614.1247 | 68.50526 | 34.47074 | -73.8512 | -7.47731 | 13.0862 | 7.917938 | -0.35676 | 0.059992 | 0.404018 | 0.023748 |
| 12/10/2009 17:20 | -210.449 | 47.07125 | 17.77627 | -599.752 | 867.9906 | 101.3162 | -1134.9 | 1162.007 | 158.552 | -378.5 | 614.2471 | 68.52794 | 34.44106 | -73.9034 | -7.47887 | 13.09987 | 7.898913 | -0.35901 | 0.069365 | 0.413593 | 0.023762 |
| 12/10/2009 17:21 | -210.423 | 46.57404 | 17.74014 | -598.635 | 866.4406 | 101.1321 | -1133.83 | 1161.228 | 158.4243 | -378.702 | 614.3779 | 68.55086 | 34.40767 | -73.9501 | -7.47978 | 13.08815 | 7.82852 | -0.36306 | 0.063741 | 0.405933 | 0.023621 |
| 12/10/2009 17:22 | -210.461 | 46.37736 | 17.72921 | -598.059 | 865.556 | 101.0312 | -1132.92 | 1160.593 | 158.3179 | -378.863 | 614.456 | 68.56742 | 34.37429 | -73.9986 | -7.48083 | 13.09987 | 7.786665 | -0.36676 | 0.063741 | 0.402104 | 0.023357 |
| 12/10/2009 17:23 | -188.313 | 33.72883 | 15.32724 | -533.592 | 787.8339 | 91.21616 | -1013.47 | 1063.593 | 143.3765 | -361.868 | 587.0087 | 65.49963 | 28.86316 | -72.1991 | -6.97618 | 12.02719 | 5.44714 | -0.45421 | 0.041244 | 0.38487 | 0.02372 |
| 12/10/2009 17:24 | -117.52 | 21.85929 | 9.621169 | -299.952 | 442.7383 | 51.26684 | -511.998 | 607.2811 | 77.26227 | -229.022 | 401.8069 | 43.54522 | -8.72845 | -54.4858 | -3.15857 | 0.214431 | -14.373 | -1.00695 | -0.73671 | -0.45759 | 0.019267 |
| 12/10/2009 17:25 | -117.752 | 21.95349 | 9.643678 | -300.52 | 443.5476 | 51.36192 | -512.58 | 607.8175 | 77.33946 | -227.955 | 400.8697 | 43.40689 | -9.21371 | -54.1823 | -3.10412 | -0.08967 | -14.892 | -1.02178 | -0.78732 | -0.50546 | 0.019457 |
| 12/10/2009 17:26 | -117.872 | 21.98428 | 9.654052 | -300.788 | 444.0575 | 51.4156 | -513.007 | 608.1108 | 77.38915 | -227.508 | 400.4031 | 43.34384 | -9.4067 | -54.0192 | -3.07954 | -0.30214 | -15.2026 | -1.02856 | -0.82669 | -0.53609 | 0.020059 |
| 12/10/2009 17:27 | -117.929 | 21.99334 | 9.658617 | -300.912 | 444.361 | 51.44515 | -513.284 | 608.3204 | 77.42276 | -227.247 | 400.12 | 43.30624 | -9.56292 | -51.5131 | -2.89576 | -0.4074 | -18.1487 | -1.22466 | -0.84356 | -0.63373 | 0.014484 |
| 12/10/2009 17:28 | -84.8835 | 17.75996 | 7.085333 | -210.167 | 296.7725 | 34.99333 | -321.542 | 400.5298 | 49.84358 | -171.959 | 318.8654 | 33.88093 | -21.8828 | -47.6623 | -1.77952 | -5.87208 | -23.2965 | -1.20278 | -1.08535 | -0.91515 | 0.011749 |
| 12/10/2009 17:29 | -85.0111 | 17.86674 | 7.10151 | -210.526 | 297.118 | 35.04196 | -321.59 | 400.6876 | 49.85781 | -171.195 | 318.0561 | 33.77233 | -22.1431 | -47.4597 | -1.74757 | -6.2323 | -23.7371 | -1.20833 | -1.13221 | -0.95726 | 0.012076 |
| 12/10/2009 17:30 | -85.0794 | 17.89389 | 7.108097 | -210.786 | 297.3573 | 35.07641 | -321.744 | 400.8717 | 49.88113 | -170.847 | 317.6324 | 33.719 | -22.2861 | -47.3508 | -1.73018 | -6.43089 | -24.015 | -1.2138 | -1.15845 | -0.98407 | 0.012037 |

# TABLE E.8 Strain gage measurements for pile 7

| TS | 7A1 Comp. Strain | 7B1 Tensile Strain | Moment (k*ft) | 7A2 Comp. Strain | 7B2 Tensile Strain | Moment (k*ft) | 7A3 Comp. Strain | 7B3 Tensile Strain | Moment (k*ft) | 7A4 Comp. Strain | 7B4 Tensile Strain | Moment (k*ft) | 7A7 Comp. Strain | 7B7 Tensile Strain | Moment (k*ft) | 7A7 Comp. Strain | 7B7 Tensile Strain | Moment (k*ft) | 7A7 Comp. Strain | 7B7 Tensile Strain | Moment (k*ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12/10/2009 14:14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/10/2009 14:14 | 0.737733 | -3.25431 | -0.27556 | -2.15427 | -1.44626 | 0.048873 | -2.89066 | -0.74757 | 0.147935 | -1.64595 | -0.96489 | 0.047012 | -0.44904 | -0.43555 | 0.000931 | -0.20706 | -0.14052 | 0.004593 | -0.06369 | -0.06668 | -0.00021 |
| 12/10/2009 14:15 | 0.722676 | -3.26926 | -0.27556 | -2.20643 | -1.41972 | 0.054306 | -2.94191 | -0.74948 | 0.15134 | -1.66417 | -0.96296 | 0.048403 | -0.46382 | -0.44667 | 0.001184 | -0.2109 | -0.13103 | 0.005513 | -0.0579 | -0.06483 | -0.00048 |
| 12/10/2009 14:16 | 0.764082 | -3.19638 | -0.27339 | -2.16544 | -1.33633 | 0.057232 | -2.8321 | -0.68623 | 0.148126 | -1.57669 | -0.92437 | 0.045029 | -0.42317 | -0.40961 | 0.000936 | -0.18981 | -0.12533 | 0.004451 | -0.0579 | -0.06113 | -0.00022 |
| 12/10/2009 14:17 | 0.784785 | -3.18891 | -0.2743 | -2.18408 | -1.41025 | 0.053416 | -2.84491 | -0.69198 | 0.148614 | -1.57487 | -0.94174 | 0.043704 | -0.42502 | -0.40775 | 0.001192 | -0.18789 | -0.11773 | 0.004843 | -0.06176 | -0.06298 | -8.4E-05 |
| 12/10/2009 14:18 | 0.732086 | -3.25805 | -0.27543 | -2.25301 | -1.37424 | 0.060661 | -2.87419 | -0.70732 | 0.149576 | -1.5931 | -0.94946 | 0.04443 | -0.42871 | -0.41517 | 0.000935 | -0.19364 | -0.12153 | 0.004978 | -0.05404 | -0.06298 | -0.00062 |
| 12/10/2009 14:19 | 0.713265 | -3.3141 | -0.278 | -2.33871 | -1.4292 | 0.062783 | -2.96021 | -0.78015 | 0.150486 | -1.70426 | -1.0112 | 0.047841 | -0.46382 | -0.45223 | 0.0008 | -0.21665 | -0.13862 | 0.005386 | -0.0772 | -0.06853 | 0.000598 |
| 12/10/2009 14:20 | 0.781021 | -3.30476 | -0.28204 | -2.33685 | -1.49364 | 0.058206 | -3.0023 | -0.79932 | 0.152069 | -1.68057 | -1.02278 | 0.045406 | -0.47306 | -0.45594 | 0.001182 | -0.21665 | -0.14242 | 0.005124 | -0.06948 | -0.07039 | -6.3E-05 |
| 12/10/2009 14:21 | 0.771611 | -3.44303 | -0.29093 | -2.42255 | -1.56186 | 0.059412 | -3.10295 | -0.81082 | 0.158223 | -1.74436 | -1.02857 | 0.04941 | -0.48045 | -0.47076 | 0.000669 | -0.22815 | -0.14622 | 0.005656 | -0.06562 | -0.06853 | -0.0002 |
| 12/10/2009 14:22 | 0.65492 | -3.42622 | -0.28172 | -2.37039 | -1.46142 | 0.062745 | -2.99315 | -0.75523 | 0.15448 | -1.66417 | -1.00155 | 0.045739 | -0.45643 | -0.43741 | 0.001313 | -0.20515 | -0.13293 | 0.004985 | -0.07141 | -0.06853 | 0.000198 |
| 12/10/2009 14:23 | 0.707619 | -3.36455 | -0.2811 | -2.42814 | -1.4671 | 0.066339 | -3.01145 | -0.7859 | 0.153627 | -1.68057 | -1.02664 | 0.04514 | -0.46382 | -0.44667 | 0.001184 | -0.21281 | -0.13672 | 0.005252 | -0.07141 | -0.06853 | 0.000198 |
| 12/10/2009 14:24 | 0.715147 | -3.40006 | -0.28407 | -2.43932 | -1.48985 | 0.065541 | -3.04073 | -0.79932 | 0.154722 | -1.69697 | -1.04401 | 0.045074 | -0.46382 | -0.44853 | 0.001056 | -0.21665 | -0.13862 | 0.005386 | -0.07334 | -0.06483 | 0.000587 |
| 12/10/2009 14:25 | 0.700091 | -3.43182 | -0.28522 | -2.48776 | -1.51448 | 0.067184 | -3.07367 | -0.8089 | 0.156334 | -1.72431 | -1.07102 | 0.045096 | -0.48045 | -0.47076 | 0.000669 | -0.2224 | -0.14812 | 0.005128 | -0.06369 | -0.06483 | -7.9E-05 |
| 12/10/2009 14:26 | 0.378263 | -2.97401 | -0.2314 | -3.45643 | -0.34502 | 0.214777 | -4.1917 | -0.32396 | 0.266985 | -1.95757 | -1.19837 | 0.052407 | -0.5636 | -0.56528 | -0.00012 | -0.278 | -0.1842 | 0.006475 | -0.08878 | -0.0778 | 0.000758 |
| 12/10/2009 14:27 | 0.468598 | -3.39071 | -0.2664 | -2.9982 | -1.13733 | 0.128453 | -3.59704 | -0.59806 | 0.207015 | -1.97397 | -1.11926 | 0.059 | -0.53034 | -0.52451 | 0.000402 | -0.25499 | -0.16521 | 0.006198 | -0.08299 | -0.07594 | 0.000486 |
| 12/10/2009 14:28 | -0.43657 | -2.94785 | -0.17335 | -4.36718 | -0.21611 | 0.286543 | -4.5631 | -0.2492 | 0.297783 | -2.11429 | -1.21766 | 0.061893 | -0.58762 | -0.5764 | 0.000774 | -0.28183 | -0.1842 | 0.00674 | -0.08685 | -0.0815 | 0.000369 |
| 12/10/2009 14:29 | -0.41587 | -2.97588 | -0.17671 | -4.38767 | -0.22938 | 0.287041 | -4.6125 | -0.24153 | 0.301722 | -2.12887 | -1.22538 | 0.062366 | -0.58577 | -0.58382 | 0.000135 | -0.27992 | -0.18609 | 0.006476 | -0.08492 | -0.08335 | 0.000108 |
| 12/10/2009 14:30 | -0.4121 | -3.01138 | -0.17942 | -4.42119 | -0.24644 | 0.288177 | -4.65275 | -0.25303 | 0.303706 | -2.14345 | -1.23503 | 0.062707 | -0.59316 | -0.58752 | 0.000389 | -0.278 | -0.19559 | 0.005689 | -0.07913 | -0.08891 | -0.00068 |
| 12/10/2009 14:31 | -0.39141 | -3.05063 | -0.18356 | -4.4305 | -0.27109 | 0.287118 | -4.67653 | -0.25303 | 0.305348 | -2.16167 | -1.24468 | 0.063299 | -0.60425 | -0.58752 | 0.001155 | -0.29142 | -0.19559 | 0.006615 | -0.08492 | -0.08891 | -0.00028 |
| 12/10/2009 14:32 | -0.35754 | -3.10295 | -0.18951 | -4.43795 | -0.29763 | 0.285801 | -4.74056 | -0.26645 | 0.308841 | -2.22362 | -1.27362 | 0.065577 | -0.61349 | -0.60976 | 0.000257 | -0.29909 | -0.20129 | 0.006751 | -0.08492 | -0.08521 | -2E-05 |
| 12/10/2009 14:33 | -0.17689 | -3.19825 | -0.20856 | -4.16232 | -0.51562 | 0.251727 | -4.50639 | -0.33354 | 0.288046 | -2.14709 | -1.22924 | 0.063358 | -0.6024 | -0.58752 | 0.001027 | -0.28375 | -0.19179 | 0.006348 | -0.08878 | -0.10558 | -0.00116 |
| 12/10/2009 14:34 | -11.6838 | 7.220897 | 1.304966 | -35.3914 | 32.99252 | 4.720447 | -40.4784 | 27.68124 | 4.704962 | -12.6934 | 8.597358 | 1.469672 | -1.11975 | -1.05638 | 0.004374 | -0.52339 | -0.42535 | 0.006768 | -0.15054 | -0.15744 | -0.00048 |
| 12/10/2009 14:35 | -11.1619 | 6.863255 | 1.244249 | -34.9436 | 32.55368 | 4.65924 | -40.6527 | 27.79689 | 4.724975 | -13.1661 | 8.974335 | 1.528325 | -1.16039 | -1.05452 | 0.007308 | -0.53106 | -0.43105 | 0.006904 | -0.14089 | -0.15559 | -0.00102 |
| 12/10/2009 14:36 | -11.0192 | 6.638572 | 1.218889 | -34.7881 | 32.30566 | 4.631389 | -40.758 | 27.83544 | 4.734904 | -13.3588 | 9.138668 | 1.552971 | -1.17148 | -1.06194 | 0.007561 | -0.53681 | -0.43484 | 0.007039 | -0.16019 | -0.1593 | 6.14E-05 |
| 12/10/2009 14:37 | -10.884 | 6.479427 | 1.198571 | -34.6179 | 32.0939 | 4.605017 | -40.7398 | 27.91832 | 4.739372 | -13.4388 | 9.235336 | 1.565165 | -1.18256 | -1.06194 | 0.008327 | -0.53873 | -0.43674 | 0.00704 | -0.16212 | -0.1593 | 0.000195 |
| 12/10/2009 14:38 | -10.7206 | 6.309054 | 1.175533 | -34.4605 | 31.84399 | 4.576907 | -40.6999 | 27.77183 | 4.726504 | -13.497 | 9.283671 | 1.572517 | -1.18626 | -1.06564 | 0.008326 | -0.54256 | -0.44054 | 0.007043 | -0.16212 | -0.1593 | 0.000195 |
| 12/10/2009 14:39 | -10.6455 | 6.183619 | 1.16169 | -34.3958 | 31.75242 | 4.566115 | -40.7344 | 27.77761 | 4.729284 | -13.5752 | 9.318472 | 1.580315 | -1.21027 | -1.08603 | 0.008577 | -0.55215 | -0.44813 | 0.00718 | -0.16405 | -0.15744 | 0.000456 |
| 12/10/2009 14:40 | -10.6117 | 6.153664 | 1.157289 | -34.3828 | 31.73335 | 4.563903 | -40.7943 | 27.83351 | 4.737277 | -13.6333 | 9.355207 | 1.586866 | -1.21766 | -1.08232 | 0.009343 | -0.55407 | -0.45573 | 0.006788 | -0.16405 | -0.1593 | 0.000328 |
| 12/10/2009 14:41 | -10.5535 | 6.06193 | 1.146938 | -34.3643 | 31.62461 | 4.55512 | -40.8524 | 27.79689 | 4.738759 | -13.6951 | 9.374542 | 1.592467 | -1.2269 | -1.09344 | 0.009213 | -0.55982 | -0.45573 | 0.007185 | -0.16405 | -0.1593 | 0.000328 |
| 12/10/2009 14:42 | -10.5047 | 6.048826 | 1.142663 | -34.2995 | 31.60172 | 4.549068 | -40.8269 | 27.81616 | 4.738335 | -13.7188 | 9.422878 | 1.597435 | -1.22505 | -1.08973 | 0.009341 | -0.5579 | -0.45383 | 0.007184 | -0.16212 | -0.15559 | 0.00045 |
| 12/10/2009 14:43 | -10.4727 | 5.96271 | 1.134515 | -34.2643 | 31.46057 | 4.536897 | -40.8542 | 27.76798 | 4.736889 | -13.7588 | 9.432545 | 1.600863 | -1.23429 | -1.08788 | 0.010107 | -0.55407 | -0.45003 | 0.007181 | -0.16212 | -0.1593 | 0.000195 |
| 12/10/2009 14:44 | -8.07032 | 3.38554 | 0.790782 | -27.4518 | 24.06099 | 3.555856 | -33.5873 | 21.6367 | 3.812032 | -12.197 | 7.708184 | 1.374029 | -1.21766 | -1.06008 | 0.010878 | -0.54448 | -0.43864 | 0.007306 | -0.15826 | -0.15374 | 0.000312 |
| 12/10/2009 14:45 | -11.16 | 6.588019 | 1.22512 | -35.8873 | 33.44857 | 4.786159 | -42.6963 | 29.22145 | 4.964382 | -14.564 | 10.34328 | 1.719312 | -1.29895 | -1.12494 | 0.012012 | -0.57707 | -0.47852 | 0.006803 | -0.16598 | -0.16485 | 7.75E-05 |
| 12/10/2009 14:46 | -10.191 | 5.605158 | 1.090389 | -34.294 | 31.14965 | 4.517479 | -41.3878 | 28.04553 | 4.792886 | -14.4168 | 10.12284 | 1.693933 | -1.32667 | -1.13606 | 0.013157 | -0.58666 | -0.48801 | 0.006809 | -0.1544 | -0.16671 | -0.00085 |
| 12/10/2009 14:47 | -9.91684 | 5.354326 | 1.054147 | -33.6202 | 30.44015 | 4.421993 | -40.7543 | 27.55404 | 4.715229 | -14.3186 | 10.00101 | 1.678749 | -1.3359 | -1.13606 | 0.013795 | -0.59049 | -0.48801 | 0.007074 | -0.1544 | -0.16485 | -0.00072 |
| 12/10/2009 14:48 | -9.77223 | 5.135325 | 1.029047 | -33.2351 | 29.90619 | 4.358554 | -40.3676 | 27.18401 | 4.662994 | -14.2459 | 9.896596 | 1.666522 | -1.35438 | -1.14903 | 0.014175 | -0.59049 | -0.49371 | 0.006681 | -0.16598 | -0.17041 | -0.00031 |
| 12/10/2009 14:49 | -9.61258 | 4.970613 | 1.006657 | -32.8352 | 29.47143 | 4.300938 | -40.0227 | 26.8853 | 4.618563 | -14.1896 | 9.809583 | 1.656627 | -1.35438 | -1.17127 | 0.01264 | -0.59241 | -0.4975 | 0.006551 | -0.16598 | -0.16485 | 7.75E-05 |
| 12/10/2009 14:50 | -9.53933 | 4.841468 | 0.992686 | -32.6278 | 29.18542 | 4.266881 | -39.8538 | 26.68296 | 4.59294 | -14.1696 | 9.745775 | 1.650842 | -1.36731 | -1.15274 | 0.014812 | -0.59624 | -0.49371 | 0.007078 | -0.15633 | -0.16856 | -0.00084 |
| 12/10/2009 14:51 | -9.45856 | 4.747887 | 0.980651 | -32.4279 | 28.96616 | 4.237942 | -39.6505 | 26.53266 | 4.568527 | -14.1368 | 9.699369 | 1.64538 | -1.37655 | -1.16571 | 0.014554 | -0.60583 | -0.4975 | 0.007477 | -0.15826 | -0.17411 | -0.00109 |
| 12/10/2009 14:52 | -9.40597 | 4.654307 | 0.970561 | -32.2927 | 28.75644 | 4.214135 | -39.5161 | 26.3708 | 4.548078 | -14.1259 | 9.652964 | 1.641424 | -1.38579 | -1.16941 | 0.014936 | -0.60583 | -0.4956 | 0.007609 | -0.16791 | -0.16485 | 0.000211 |
| 12/10/2009 14:53 | -21.1203 | 24.75417 | 3.166651 | -68.917 | 96.64492 | 11.4285 | -108.594 | 119.84 | 15.76845 | -52.279 | 79.85176 | 9.120798 | -0.3973 | 1.646182 | 0.141059 | 0.868603 | 0.30954 | -0.03859 | 0.09071 | 0.203758 | 0.007804 |
| 12/10/2009 14:54 | -26.5254 | 24.47232 | 3.520302 | -87.3572 | 97.56638 | 12.76501 | -139.745 | 122.5575 | 18.10636 | -66.2609 | 83.10333 | 10.3104 | -0.23469 | 1.807493 | 0.140969 | 1.267481 | 0.279155 | -0.06822 | 0.12931 | 0.209316 | 0.005523 |
| 12/10/2009 14:55 | -26.3251 | 24.16417 | 3.485205 | -86.9399 | 96.79945 | 12.68326 | -139.216 | 121.9708 | 18.02932 | -66.4928 | 83.06804 | 10.32397 | -0.33078 | 1.813056 | 0.147986 | 1.261728 | 0.265861 | -0.06874 | 0.13124 | 0.205611 | 0.005134 |
| 12/10/2009 14:56 | -26.0556 | 23.91992 | 3.449737 | -86.5096 | 96.27986 | 12.6177 | -138.731 | 121.5175 | 17.96455 | -66.5772 | 82.98374 | 10.32398 | -0.40469 | 1.803785 | 0.152448 | 1.255974 | 0.244972 | -0.06979 | 0.11966 | 0.201906 | 0.005677 |
| 12/10/2009 14:57 | -25.9638 | 23.83162 | 3.43731 | -86.354 | 96.13114 | 12.59669 | -138.58 | 121.3742 | 17.94424 | -66.6815 | 82.94257 | 10.32833 | -0.46936 | 1.787097 | 0.15576 | 1.236797 | 0.231678 | -0.06938 | 0.11966 | 0.205611 | 0.005933 |
| 12/10/2009 14:58 | -25.9039 | 23.77338 | 3.429154 | -86.2844 | 95.98435 | 12.58175 | -138.535 | 121.2938 | 17.93562 | -66.7606 | 82.91512 | 10.3319 | -0.50632 | 1.775972 | 0.157543 | 1.232962 | 0.224082 | -0.06964 | 0.11773 | 0.201906 | 0.005811 |
| 12/10/2009 14:59 | -26.0144 | 23.73768 | 3.434314 | -86.2789 | 95.92641 | 12.57737 | -138.509 | 121.1761 | 17.92566 | -66.8935 | 82.86415 | 10.33756 | -0.56545 | 1.75743 | 0.160345 | 1.213784 | 0.210789 | -0.06924 | 0.12931 | 0.196349 | 0.004628 |
| 12/10/2009 15:00 | -25.99 | 23.67381 | 3.428225 | -86.4254 | 95.84336 | 12.58175 | -138.686 | 121.1662 | 17.93724 | -66.9618 | 82.87199 | 10.34282 | -0.59132 | 1.751868 | 0.161747 | 1.208031 | 0.206991 | -0.0691 | 0.12738 | 0.200054 | 0.005017 |
| 12/10/2009 15:01 | -25.9376 | 23.63999 | 3.422273 | -86.4071 | 95.76032 | 12.57475 | -138.668 | 121.0976 | 17.93128 | -67.0211 | 82.85042 | 10.34542 | -0.61164 | 1.746306 | 0.162766 | 1.209949 | 0.199395 | -0.06976 | 0.12352 | 0.200054 | 0.005283 |
| 12/10/2009 15:02 | -26.0893 | 23.45964 | 3.42029 | -86.5664 | 95.61161 | 12.57549 | -138.86 | 120.8837 | 17.92976 | -67.1811 | 82.67791 | 10.34455 | -0.68925 | 1.692535 | 0.164411 | 1.169676 | 0.174707 | -0.06868 | 0.11773 | 0.196349 | 0.005427 |
| 12/10/2009 15:03 | -26.0443 | 23.39577 | 3.41278 | -86.5334 | 95.43394 | 12.56095 | -138.782 | 120.7778 | 17.91705 | -67.2116 | 82.66418 | 10.34571 | -0.71327 | 1.692535 | 0.166069 | 1.163923 | 0.16901 | -0.06868 | 0.1158 | 0.188939 | 0.005049 |
| 12/10/2009 15:04 | -26.0275 | 23.34693 | 3.408245 | -86.4913 | 95.37987 | 12.55431 | -138.747 | 120.7503 | 17.9127 | -67.2476 | 82.66026 | 10.34792 | -0.73544 | 1.692535 | 0.1676 | 1.165841 | 0.165212 | -0.06907 | 0.11387 | 0.188939 | 0.005182 |
| 12/10/2009 15:05 | -25.8777 | 23.44461 | 3.404651 | -86.3998 | 95.59423 | 12.56278 | -138.683 | 120.8445 | 17.91479 | -67.2781 | 82.79749 | 10.35951 | -0.75761 | 1.729618 | 0.17169 | 1.165841 | 0.186101 | -0.06763 | 0.10808 | 0.192644 | 0.005837 |

| TS | 7A1 Comp. Strain | 7B1 Tensile Strain | Moment (k*ft) | 7A2 Comp. Strain | 7B2 Tensile Strain | Moment (k*ft) | 7A3 Comp. Strain | 7B3 Tensile Strain | Moment (k*ft) | 7A4 Comp. Strain | 7B4 Tensile Strain | Moment (k*ft) | 7A7 Comp. Strain | 7B7 Tensile Strain | Moment (k*ft) | 7A7 Comp. Strain | 7B7 Tensile Strain | Moment (k*ft) | 7A7 Comp. Strain | 7B7 Tensile Strain | Moment (k*ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12/10/2009 15:06 | -25.8272 | 23.40516 | 3.398438 | -86.2496 | 95.46097 | 12.54322 | -138.501 | 120.819 | 17.90052 | -67.1793 | 82.79749 | 10.35268 | -0.70957 | 1.738889 | 0.169014 | 1.186936 | 0.184202 | -0.06922 | 0.10808 | 0.192644 | 0.005837 |
| 12/10/2009 15:07 | -25.7879 | 23.39389 | 3.394946 | -86.235 | 95.38952 | 12.53728 | -138.491 | 120.7758 | 17.8968 | -67.208 | 82.77593 | 10.35318 | -0.71142 | 1.733326 | 0.168757 | 1.192689 | 0.182303 | -0.06975 | 0.11387 | 0.190792 | 0.00531 |
| 12/10/2009 15:08 | -25.7617 | 23.34317 | 3.389636 | -86.191 | 95.28524 | 12.52705 | -138.409 | 120.6738 | 17.88412 | -67.2296 | 82.74652 | 10.35264 | -0.73913 | 1.718493 | 0.169647 | 1.179265 | 0.180404 | -0.06895 | 0.12352 | 0.196349 | 0.005027 |
| 12/10/2009 15:09 | -28.715 | 32.56789 | 4.230272 | -94.8749 | 129.099 | 15.4606 | -158.201 | 176.7404 | 23.12051 | -75.6053 | 122.0665 | 13.64501 | 0.208826 | 3.255826 | 0.21033 | 1.848593 | 1.00085 | -0.05852 | 0.250903 | 0.598333 | 0.023983 |
| 12/10/2009 15:10 | -40.1637 | 40.52002 | 5.569481 | -134.398 | 157.798 | 20.16989 | -233.938 | 218.7523 | 31.24856 | -109.41 | 146.1243 | 17.63916 | 2.778304 | 4.079397 | 0.089813 | 3.500225 | 1.234473 | -0.1564 | 0.499888 | 0.737275 | 0.016387 |
| 12/10/2009 15:11 | -39.9061 | 40.22032 | 5.531011 | -133.815 | 157.1122 | 20.08226 | -233.253 | 218.177 | 31.16157 | -109.748 | 146.1699 | 17.66566 | 2.680306 | 4.092383 | 0.097474 | 3.509817 | 1.21358 | -0.15851 | 0.507608 | 0.735423 | 0.015726 |
| 12/10/2009 15:12 | -39.8183 | 40.10911 | 5.517278 | -133.648 | 156.8544 | 20.05295 | -233.027 | 217.9333 | 31.12915 | -109.928 | 146.1738 | 17.67835 | 2.619289 | 4.097948 | 0.10207 | 3.504062 | 1.202183 | -0.1589 | 0.517259 | 0.739128 | 0.015315 |
| 12/10/2009 15:13 | -39.7511 | 40.03372 | 5.507434 | -133.566 | 156.6824 | 20.03545 | -232.925 | 217.7955 | 31.11256 | -110.058 | 146.1877 | 17.68828 | 2.571216 | 4.101658 | 0.105644 | 3.509817 | 1.196485 | -0.15969 | 0.507608 | 0.740981 | 0.016109 |
| 12/10/2009 15:14 | -39.7287 | 39.95268 | 5.500293 | -133.517 | 156.5359 | 20.02196 | -232.867 | 217.6756 | 31.10033 | -110.181 | 146.1937 | 17.69717 | 2.537935 | 4.097948 | 0.107685 | 3.507899 | 1.186988 | -0.16021 | 0.517259 | 0.742833 | 0.015571 |
| 12/10/2009 15:15 | -39.6839 | 39.8754 | 5.491866 | -133.499 | 156.4246 | 20.01302 | -232.829 | 217.5858 | 31.09149 | -110.273 | 146.1976 | 17.70383 | 2.506503 | 4.099803 | 0.109983 | 3.504062 | 1.177491 | -0.1606 | 0.507608 | 0.735423 | 0.015726 |
| 12/10/2009 15:16 | -39.6522 | 39.8019 | 5.484602 | -133.479 | 156.3035 | 20.00329 | -232.779 | 217.4959 | 31.0818 | -110.345 | 146.1877 | 17.70806 | 2.484316 | 4.101658 | 0.111643 | 3.502143 | 1.173692 | -0.16073 | 0.517259 | 0.739128 | 0.015315 |
| 12/10/2009 15:17 | -39.6204 | 39.73216 | 5.477597 | -133.477 | 156.2156 | 19.99709 | -232.768 | 217.416 | 31.07557 | -110.421 | 146.1857 | 17.71321 | 2.456582 | 4.097948 | 0.113301 | 3.504062 | 1.164195 | -0.16152 | 0.519189 | 0.735423 | 0.014926 |
| 12/10/2009 15:18 | -39.5924 | 39.67939 | 5.472022 | -133.476 | 156.1316 | 19.99117 | -232.756 | 217.3601 | 31.07087 | -110.473 | 146.1877 | 17.71691 | 2.421453 | 4.097948 | 0.115726 | 3.504062 | 1.160396 | -0.16178 | 0.52112 | 0.740981 | 0.015177 |
| 12/10/2009 15:19 | -39.5719 | 39.62851 | 5.467091 | -133.494 | 156.0456 | 19.98649 | -232.827 | 217.3002 | 31.07165 | -110.532 | 146.1917 | 17.72124 | 2.404813 | 4.097948 | 0.116875 | 3.504062 | 1.156598 | -0.16204 | 0.519189 | 0.744686 | 0.015566 |
| 12/10/2009 15:20 | -44.4888 | 53.92864 | 6.793616 | -150.915 | 209.565 | 24.88345 | -270.425 | 304.9685 | 39.71862 | -126.091 | 199.6656 | 22.48654 | 4.559248 | 6.150071 | 0.109812 | 4.760881 | 2.364752 | -0.1654 | 0.773978 | 1.346816 | 0.039542 |
| 12/10/2009 15:21 | -54.6709 | 58.16582 | 7.788954 | -182.57 | 221.0125 | 27.85873 | -330.104 | 320.1605 | 44.88685 | -151.328 | 208.1031 | 24.81102 | 6.673924 | 6.485989 | -0.01297 | 6.021842 | 2.381851 | -0.25126 | 0.978589 | 1.320877 | 0.023628 |
| 12/10/2009 15:22 | -54.4308 | 57.86885 | 7.751882 | -182.075 | 220.4116 | 27.78308 | -329.551 | 319.6785 | 44.81536 | -151.914 | 208.2576 | 24.8621 | 6.555492 | 6.472997 | -0.00569 | 6.033359 | 2.338155 | -0.25507 | 0.972798 | 1.319024 | 0.023899 |
| 12/10/2009 15:23 | -54.3247 | 57.62108 | 7.727455 | -181.831 | 220.127 | 27.74659 | -329.564 | 319.5524 | 44.80759 | -152.319 | 208.39 | 24.89924 | 6.459269 | 6.493413 | 0.002357 | 6.021842 | 2.330555 | -0.2548 | 0.972798 | 1.320877 | 0.024027 |
| 12/10/2009 15:24 | -54.2577 | 57.50571 | 7.714865 | -181.865 | 219.957 | 27.73721 | -329.413 | 319.4284 | 44.78859 | -152.543 | 208.4822 | 24.92107 | 6.405607 | 6.504548 | 0.00683 | 6.035279 | 2.321056 | -0.25639 | 0.986311 | 1.32273 | 0.023223 |
| 12/10/2009 15:25 | -54.2055 | 57.4433 | 7.706959 | -181.74 | 219.8226 | 27.71927 | -329.408 | 319.288 | 44.77856 | -152.697 | 208.4943 | 24.93249 | 6.357496 | 6.504548 | 0.010151 | 6.035279 | 2.311557 | -0.25704 | 0.98245 | 1.326435 | 0.023745 |
| 12/10/2009 15:26 | -54.3135 | 57.23337 | 7.699921 | -181.854 | 219.4629 | 27.70236 | -329.427 | 318.9748 | 44.75823 | -152.952 | 208.3458 | 24.9399 | 6.248325 | 6.454438 | 0.014228 | 5.994969 | 2.27736 | -0.25662 | 0.992102 | 1.317171 | 0.022439 |
| 12/10/2009 15:27 | -54.2502 | 57.1199 | 7.68772 | -181.783 | 219.3424 | 27.68909 | -329.45 | 318.8854 | 44.75369 | -153.067 | 208.3458 | 24.94781 | 6.205767 | 6.447014 | 0.016653 | 5.994969 | 2.267861 | -0.25728 | 0.98052 | 1.317171 | 0.023239 |
| 12/10/2009 15:28 | -54.079 | 56.97428 | 7.665847 | -181.68 | 219.1171 | 27.66648 | -329.352 | 318.7532 | 44.73777 | -153.175 | 208.3639 | 24.95648 | 6.179862 | 6.456293 | 0.019082 | 5.99305 | 2.262162 | -0.25754 | 0.976659 | 1.311613 | 0.023121 |
| 12/10/2009 15:29 | -54.0101 | 57.11234 | 7.670622 | -181.51 | 219.3108 | 27.66809 | -329.168 | 318.8528 | 44.73199 | -153.18 | 208.5143 | 24.96723 | 6.194665 | 6.495269 | 0.02075 | 6.016084 | 2.273561 | -0.25834 | 0.98245 | 1.320877 | 0.023361 |
| 12/10/2009 15:30 | -53.9784 | 56.9913 | 7.660083 | -181.447 | 219.2139 | 27.65707 | -329.124 | 318.7796 | 44.72388 | -153.249 | 208.5243 | 24.97267 | 6.16876 | 6.504548 | 0.023179 | 6.021842 | 2.271661 | -0.25887 | 0.992102 | 1.32273 | 0.022823 |
| 12/10/2009 15:31 | -53.9691 | 56.9081 | 7.653697 | -181.39 | 219.044 | 27.64137 | -329.053 | 318.7491 | 44.71685 | -153.25 | 208.5404 | 24.9739 | 6.133604 | 6.50826 | 0.025862 | 6.018003 | 2.269761 | -0.25874 | 0.98052 | 1.32273 | 0.023622 |
| 12/10/2009 15:32 | -53.9207 | 57.05938 | 7.660799 | -181.363 | 219.0479 | 27.63979 | -328.988 | 318.7654 | 44.71352 | -153.257 | 208.6166 | 24.97965 | 6.148407 | 6.534244 | 0.026634 | 6.037198 | 2.271661 | -0.25993 | 0.992102 | 1.32273 | 0.022823 |
| 12/10/2009 15:33 | -53.8742 | 56.96861 | 7.651321 | -181.338 | 219.0973 | 27.64147 | -329.028 | 318.7349 | 44.71411 | -153.331 | 208.6447 | 24.9867 | 6.128053 | 6.541668 | 0.028551 | 6.037198 | 2.269761 | -0.26006 | 0.994032 | 1.326435 | 0.022945 |
| 12/10/2009 15:34 | -53.8761 | 56.9497 | 7.650144 | -181.356 | 219.0578 | 27.63998 | -329.043 | 318.6922 | 44.71222 | -153.398 | 208.6407 | 24.99105 | 6.103999 | 6.537956 | 0.029955 | 6.035279 | 2.265962 | -0.26019 | 1.001753 | 1.328288 | 0.02254 |
| 12/10/2009 15:35 | -53.8184 | 59.15708 | 7.798533 | -181.284 | 228.4523 | 28.28351 | -328.943 | 335.7498 | 45.88277 | -153.427 | 220.0094 | 25.77776 | 6.1077 | 7.150469 | 0.071981 | 6.050635 | 2.701035 | -0.23122 | 0.999823 | 1.552484 | 0.038149 |
| 12/10/2009 15:36 | -68.5841 | 74.90497 | 9.904845 | -228.964 | 282.8463 | 35.32951 | -423.292 | 418.1811 | 58.08566 | -191.834 | 267.4181 | 31.70151 | 10.75416 | 9.319012 | -0.09907 | 8.613815 | 3.546589 | -0.34978 | 1.513319 | 2.054646 | 0.037367 |
| 12/10/2009 15:37 | -68.2537 | 74.52164 | 9.855579 | -228.284 | 282.0648 | 35.22863 | -422.439 | 417.4303 | 57.97498 | -192.657 | 267.8336 | 31.78702 | 10.56895 | 9.391437 | -0.08128 | 8.652224 | 3.516184 | -0.35453 | 1.526833 | 2.060206 | 0.036818 |
| 12/10/2009 15:38 | -68.0978 | 74.25978 | 9.826741 | -228.083 | 281.6511 | 35.18622 | -422.26 | 417.1366 | 57.94234 | -193.12 | 268.0566 | 31.83437 | 10.4245 | 9.380294 | -0.07208 | 8.644542 | 3.48578 | -0.3561 | 1.528764 | 2.063912 | 0.036941 |
| 12/10/2009 15:39 | -67.9475 | 74.18768 | 9.811386 | -227.872 | 281.4493 | 35.1577 | -422.111 | 416.8677 | 57.91348 | -193.422 | 268.1802 | 31.86377 | 10.35042 | 9.43415 | -0.06325 | 8.656065 | 3.478179 | -0.35742 | 1.524902 | 2.065765 | 0.037335 |
| 12/10/2009 15:40 | -67.979 | 74.10229 | 9.80767 | -227.769 | 281.2534 | 35.13708 | -421.895 | 416.6609 | 57.88431 | -193.587 | 268.2471 | 31.87973 | 10.28005 | 9.406293 | -0.06031 | 8.663747 | 3.453476 | -0.35966 | 1.528764 | 2.063912 | 0.036941 |
| 12/10/2009 15:41 | -67.9103 | 73.99604 | 9.795594 | -227.675 | 281.1056 | 35.12037 | -421.794 | 416.5369 | 57.86876 | -193.753 | 268.3424 | 31.89776 | 10.22635 | 9.456435 | -0.05315 | 8.673349 | 3.462977 | -0.35966 | 1.546138 | 2.067618 | 0.035997 |
| 12/10/2009 15:42 | -67.8639 | 73.94481 | 9.788855 | -227.579 | 280.9617 | 35.10382 | -421.681 | 416.3735 | 57.8497 | -193.894 | 268.389 | 31.91075 | 10.17635 | 9.475006 | -0.04841 | 8.669508 | 3.453476 | -0.36006 | 1.546138 | 2.069471 | 0.036125 |
| 12/10/2009 15:43 | -67.8212 | 73.8765 | 9.781193 | -227.506 | 280.8218 | 35.08914 | -421.581 | 416.2349 | 57.83326 | -194.008 | 268.4275 | 31.92124 | 10.13376 | 9.475006 | -0.04547 | 8.679111 | 3.445875 | -0.36124 | 1.549999 | 2.073177 | 0.036114 |
| 12/10/2009 15:44 | -67.786 | 73.81958 | 9.774829 | -227.43 | 280.7039 | 35.07573 | -421.49 | 416.0985 | 57.81754 | -194.121 | 268.4438 | 31.9302 | 10.05968 | 9.482434 | -0.03985 | 8.671429 | 3.438274 | -0.36124 | 1.546138 | 2.07503 | 0.036509 |
| 12/10/2009 15:45 | -67.7507 | 73.65831 | 9.761262 | -227.376 | 280.5561 | 35.06185 | -421.429 | 415.9847 | 57.80545 | -194.247 | 268.4539 | 31.93958 | 10.03931 | 9.497291 | -0.03742 | 8.67527 | 3.428773 | -0.36216 | 1.542277 | 2.069471 | 0.036391 |
| 12/10/2009 15:46 | -82.0506 | 91.21154 | 11.96004 | -275.496 | 344.4395 | 42.79329 | -516.788 | 515.939 | 71.28765 | -232.258 | 329.5792 | 38.78284 | 14.63947 | 12.49744 | -0.14786 | 11.84502 | 4.901666 | -0.47929 | 2.156225 | 2.864515 | 0.048892 |
| 12/10/2009 15:47 | -81.7508 | 90.69374 | 11.9036 | -274.147 | 343.0111 | 42.60156 | -515.995 | 513.9484 | 71.09552 | -234.895 | 330.8024 | 39.04925 | 14.12606 | 12.68327 | -0.09959 | 11.97569 | 4.823735 | -0.49369 | 2.179394 | 2.873782 | 0.047933 |
| 12/10/2009 15:48 | -81.5546 | 90.47864 | 11.87521 | -273.569 | 342.5021 | 42.52651 | -515.501 | 513.2738 | 71.01488 | -235.493 | 331.1241 | 39.11279 | 13.88143 | 12.75946 | -0.07745 | 11.99107 | 4.776216 | -0.49803 | 2.179394 | 2.873782 | 0.047933 |
| 12/10/2009 15:49 | -81.4953 | 90.3435 | 11.86179 | -273.239 | 342.1647 | 42.48042 | -515.158 | 512.7968 | 70.95826 | -235.848 | 331.3659 | 39.15397 | 13.73688 | 12.79105 | -0.06529 | 11.99683 | 4.747705 | -0.5004 | 2.196771 | 2.871929 | 0.046605 |
| 12/10/2009 15:50 | -81.3787 | 90.27117 | 11.84875 | -272.947 | 341.9506 | 42.44551 | -514.875 | 512.5425 | 70.92116 | -236.135 | 331.5667 | 39.18765 | 13.61828 | 12.84309 | -0.05351 | 12.00452 | 4.730599 | -0.50211 | 2.194841 | 2.870076 | 0.046611 |
| 12/10/2009 15:51 | -81.2769 | 90.19313 | 11.83633 | -272.727 | 341.7749 | 42.41821 | -514.632 | 512.3009 | 70.88772 | -236.345 | 331.7306 | 39.21342 | 13.52377 | 12.88397 | -0.04416 | 12.01028 | 4.719195 | -0.50329 | 2.206425 | 2.871929 | 0.045939 |
| 12/10/2009 15:52 | -81.2528 | 90.01611 | 11.82245 | -272.631 | 341.5427 | 42.3955 | -514.538 | 512.0929 | 70.86688 | -236.561 | 331.8495 | 39.23655 | 13.43482 | 12.88955 | -0.03764 | 12.00452 | 4.696386 | -0.50447 | 2.208356 | 2.871929 | 0.045805 |
| 12/10/2009 15:53 | -81.3843 | 90.08463 | 11.83625 | -271.147 | 341.3286 | 42.27831 | -513.876 | 511.8912 | 70.80725 | -236.858 | 332.9153 | 39.33066 | 13.49597 | 13.06982 | -0.02942 | 12.11214 | 4.749606 | -0.50822 | 2.229595 | 2.897877 | 0.046131 |
| 12/10/2009 15:54 | -81.4472 | 90.00089 | 11.83482 | -271.161 | 341.1913 | 42.2698 | -513.967 | 511.6055 | 70.79378 | -237.073 | 333.0116 | 39.35211 | 13.42185 | 13.10884 | -0.02161 | 12.11982 | 4.743904 | -0.50915 | 2.239249 | 2.892317 | 0.04508 |
| 12/10/2009 15:55 | -81.6397 | 89.80104 | 11.83431 | -271.441 | 340.8278 | 42.264 | -514.033 | 511.221 | 70.77183 | -237.292 | 332.9276 | 39.36147 | 13.29769 | 13.09398 | -0.01406 | 12.09676 | 4.715393 | -0.50953 | 2.233456 | 2.896023 | 0.045736 |
| 12/10/2009 15:56 | -81.7063 | 89.75346 | 11.83562 | -271.636 | 340.7147 | 42.26967 | -513.883 | 511.1433 | 70.75607 | -237.419 | 333.0096 | 39.37585 | 13.24581 | 13.11814 | -0.00881 | 12.10253 | 4.709691 | -0.51032 | 2.233456 | 2.892317 | 0.04548 |
| 12/10/2009 15:57 | -81.7582 | 89.69446 | 11.83513 | -271.913 | 340.5067 | 42.27449 | -513.69 | 510.9795 | 70.73146 | -237.502 | 333.0608 | 39.38512 | 13.19948 | 13.14044 | -0.00408 | 12.10637 | 4.700188 | -0.51124 | 2.229595 | 2.892317 | 0.045747 |
| 12/10/2009 15:58 | -81.6249 | 89.81437 | 11.83421 | -271.741 | 340.5955 | 42.26873 | -513.291 | 511.074 | 70.71049 | -237.493 | 333.2904 | 39.40037 | 13.23099 | 13.21478 | -0.00112 | 12.15441 | 4.726798 | -0.51272 | 2.252764 | 2.901584 | 0.044787 |

| TS | 7A1 Comp. Strain | 7B1 Tensile Strain | Moment (k*ft) | 7A2 Comp. Strain | 7B2 Tensile Strain | Moment (k*ft) | 7A3 Comp. Strain | 7B3 Tensile Strain | Moment (k*ft) | 7A4 Comp. Strain | 7B4 Tensile Strain | Moment (k*ft) | 7A7 Comp. Strain | 7B7 Tensile Strain | Moment (k*ft) | 7A7 Comp. Strain | 7B7 Tensile Strain | Moment (k*ft) | 7A7 Comp. Strain | 7B7 Tensile Strain | Moment (k*ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12/10/2009 15:59 | -81.7285 | 89.76298 | 11.83781 | -272.052 | 340.4501 | 42.28017 | -513.117 | 510.9543 | 70.69015 | -237.557 | 333.358 | 39.40945 | 13.19763 | 13.23708 | 0.002723 | 12.17363 | 4.722996 | -0.51431 | 2.24311 | 2.907144 | 0.045837 |
| 12/10/2009 16:00 | -81.7415 | 89.70398 | 11.83464 | -272.107 | 340.2725 | 42.27167 | -512.992 | 510.8618 | 70.67516 | -237.633 | 333.3826 | 39.41641 | 13.15872 | 13.25195 | 0.006436 | 12.17363 | 4.721095 | -0.51444 | 2.245041 | 2.90529 | 0.045576 |
| 12/10/2009 16:01 | -81.6749 | 89.67924 | 11.82833 | -272.103 | 340.1998 | 42.26641 | -512.833 | 510.8072 | 70.66043 | -237.666 | 333.4626 | 39.42419 | 13.15131 | 13.29841 | 0.010155 | 12.19669 | 4.730599 | -0.51537 | 2.262418 | 2.914558 | 0.045016 |
| 12/10/2009 16:02 | -81.8322 | 91.02878 | 11.93235 | -272.295 | 346.7395 | 42.73106 | -512.791 | 526.4323 | 71.7361 | -237.721 | 342.2675 | 40.03581 | 13.12166 | 13.82069 | 0.048253 | 12.20822 | 5.188692 | -0.48455 | 2.270142 | 3.127706 | 0.059196 |
| 12/10/2009 16:03 | -96.4413 | 106.8575 | 14.03342 | -321.436 | 408.8241 | 50.40884 | -611.748 | 614.1813 | 84.62415 | -279.046 | 399.3715 | 46.83016 | 16.70659 | 16.34367 | -0.02505 | 15.40319 | 6.190559 | -0.63593 | 2.990382 | 3.715301 | 0.05004 |
| 12/10/2009 16:04 | -96.5742 | 106.9969 | 14.05222 | -320.362 | 407.6535 | 50.25389 | -609.425 | 612.9618 | 84.37962 | -280.14 | 400.6256 | 46.99226 | 16.23376 | 16.54452 | 0.021451 | 15.46857 | 6.120212 | -0.6453 | 3.001968 | 3.717155 | 0.049368 |
| 12/10/2009 16:05 | -96.5668 | 106.8155 | 14.03919 | -319.992 | 406.6935 | 50.16206 | -608.298 | 612.0907 | 84.24165 | -280.593 | 401.1481 | 47.05965 | 15.97419 | 16.65425 | 0.046944 | 15.48973 | 6.072682 | -0.65005 | 3.021279 | 3.715301 | 0.047907 |
| 12/10/2009 16:06 | -96.6314 | 106.7448 | 14.03877 | -319.735 | 405.9113 | 50.0903 | -607.635 | 611.67 | 84.16689 | -281.023 | 401.5006 | 47.11364 | 15.80177 | 16.73423 | 0.064366 | 15.50511 | 6.046065 | -0.65294 | 3.025141 | 3.717155 | 0.047769 |
| 12/10/2009 16:07 | -96.6369 | 106.6398 | 14.0319 | -319.573 | 405.4416 | 50.04672 | -607.184 | 611.3114 | 84.11099 | -281.311 | 401.6437 | 47.14337 | 15.65345 | 16.78444 | 0.078071 | 15.50896 | 6.015646 | -0.65531 | 3.030935 | 3.717155 | 0.047369 |
| 12/10/2009 16:08 | -96.5871 | 106.5195 | 14.02016 | -319.321 | 405.0618 | 50.0031 | -606.843 | 610.9869 | 84.06507 | -281.537 | 401.7598 | 47.16698 | 15.53295 | 16.83094 | 0.089598 | 15.51473 | 5.998535 | -0.65689 | 3.038659 | 3.715301 | 0.046708 |
| 12/10/2009 16:09 | -96.552 | 106.4909 | 14.01576 | -319.121 | 404.7964 | 49.97098 | -606.569 | 610.7094 | 84.02696 | -281.651 | 401.8635 | 47.18205 | 15.44211 | 16.89232 | 0.100106 | 15.53396 | 5.985227 | -0.65914 | 3.046383 | 3.720862 | 0.046558 |
| 12/10/2009 16:10 | -96.5668 | 106.4107 | 14.01124 | -318.947 | 404.5044 | 49.93882 | -606.322 | 610.4981 | 83.99538 | -281.797 | 401.932 | 47.19682 | 15.35127 | 16.91278 | 0.107788 | 15.53588 | 5.964314 | -0.66071 | 3.050245 | 3.720862 | 0.046292 |
| 12/10/2009 16:11 | -96.5428 | 106.3591 | 14.00603 | -318.73 | 404.3431 | 49.91268 | -606.157 | 610.3038 | 83.97053 | -281.942 | 402.019 | 47.21287 | 15.27341 | 16.96113 | 0.116501 | 15.54357 | 5.95861 | -0.66164 | 3.061832 | 3.720862 | 0.045492 |
| 12/10/2009 16:12 | -96.5373 | 106.3076 | 14.00209 | -318.604 | 404.141 | 49.89008 | -605.975 | 610.1331 | 83.94622 | -282.067 | 402.0813 | 47.22579 | 15.20297 | 16.98717 | 0.123161 | 15.55319 | 5.949104 | -0.66296 | 3.065694 | 3.720862 | 0.045225 |
| 12/10/2009 16:13 | -96.552 | 111.343 | 14.3507 | -318.523 | 425.4357 | 51.35439 | -605.906 | 649.486 | 86.6579 | -282.231 | 423.8995 | 48.74321 | 15.25488 | 17.96561 | 0.187118 | 15.68972 | 6.819914 | -0.61227 | 3.112041 | 4.115723 | 0.069283 |
| 12/10/2009 16:14 | -110.598 | 123.631 | 16.16849 | -367.626 | 471.881 | 57.94997 | -707.485 | 717.0261 | 98.33196 | -325.53 | 472.6845 | 55.09958 | 18.13833 | 20.28226 | 0.147993 | 18.50198 | 7.479775 | -0.76085 | 3.942486 | 4.547695 | 0.041777 |
| 12/10/2009 16:15 | -110.158 | 123.1502 | 16.10494 | -366.041 | 470.7186 | 57.7603 | -705.225 | 715.11 | 98.04369 | -327.143 | 473.2279 | 55.24847 | 17.55408 | 20.52236 | 0.204896 | 18.56163 | 7.367574 | -0.77271 | 3.967594 | 4.542133 | 0.03966 |
| 12/10/2009 16:16 | -109.932 | 122.8207 | 16.06658 | -365.222 | 469.8474 | 57.64365 | -704.155 | 714.0426 | 97.89615 | -327.714 | 473.2909 | 55.29219 | 17.21099 | 20.65638 | 0.23783 | 18.58664 | 7.299113 | -0.77916 | 3.990771 | 4.534717 | 0.037548 |
| 12/10/2009 16:17 | -109.961 | 122.7001 | 16.06028 | -365.005 | 469.4408 | 57.60062 | -703.621 | 713.4396 | 97.81769 | -328.194 | 473.3307 | 55.32812 | 16.9458 | 20.742 | 0.262046 | 18.58279 | 7.245867 | -0.78257 | 3.984977 | 4.534717 | 0.037948 |
| 12/10/2009 16:18 | -109.985 | 122.5507 | 16.05162 | -364.632 | 468.9722 | 57.54251 | -702.91 | 712.9212 | 97.73278 | -328.489 | 473.3874 | 55.35236 | 16.7548 | 20.80901 | 0.279856 | 18.59049 | 7.207834 | -0.78573 | 3.98884 | 4.529155 | 0.037297 |
| 12/10/2009 16:19 | -110.015 | 122.5124 | 16.05101 | -364.46 | 468.7019 | 57.51197 | -702.322 | 712.3443 | 97.65241 | -328.756 | 473.358 | 55.36879 | 16.59719 | 20.83693 | 0.292663 | 18.60011 | 7.15649 | -0.78994 | 3.996566 | 4.523593 | 0.03638 |
| 12/10/2009 16:20 | -110.085 | 122.1523 | 16.03098 | -364.369 | 468.221 | 57.47248 | -702.209 | 711.9669 | 97.61852 | -329.1 | 473.3496 | 55.39192 | 16.40064 | 20.87044 | 0.308544 | 18.57895 | 7.118458 | -0.7911 | 3.996566 | 4.516177 | 0.035868 |
| 12/10/2009 16:21 | -110.07 | 122.0297 | 16.0215 | -364.106 | 468.0023 | 57.43921 | -701.865 | 711.6351 | 97.5719 | -329.299 | 473.4105 | 55.4099 | 16.28939 | 20.91511 | 0.319307 | 18.57895 | 7.101343 | -0.79228 | 3.998497 | 4.514323 | 0.035607 |
| 12/10/2009 16:22 | -109.899 | 122.2193 | 16.02278 | -364.123 | 468.0064 | 57.44068 | -701.501 | 711.453 | 97.53422 | -329.348 | 473.5573 | 55.42343 | 16.19112 | 20.98026 | 0.330588 | 18.58857 | 7.09754 | -0.79321 | 4.006223 | 4.519885 | 0.035457 |
| 12/10/2009 16:23 | -110.02 | 122.0776 | 16.02138 | -363.784 | 467.8103 | 57.40375 | -701.135 | 711.3142 | 97.49932 | -329.431 | 473.6476 | 55.43538 | 16.13179 | 21.0361 | 0.338538 | 18.61166 | 7.093737 | -0.79507 | 4.012017 | 4.519885 | 0.035057 |
| 12/10/2009 16:24 | -109.989 | 121.978 | 16.01234 | -363.586 | 467.6515 | 57.37913 | -700.924 | 711.106 | 97.47044 | -329.56 | 473.6853 | 55.44686 | 16.05948 | 21.06775 | 0.345714 | 18.62128 | 7.082327 | -0.79652 | 4.023606 | 4.519885 | 0.034257 |
| 12/10/2009 16:25 | -109.991 | 121.821 | 16.00163 | -363.484 | 467.4575 | 57.35873 | -700.72 | 710.7851 | 97.4342 | -329.673 | 473.7042 | 55.45599 | 15.97975 | 21.09753 | 0.353273 | 18.6309 | 7.065213 | -0.79836 | 4.023606 | 4.523593 | 0.034513 |
| 12/10/2009 16:26 | -110.009 | 121.9972 | 16.01506 | -363.374 | 467.5483 | 57.35739 | -700.501 | 710.8589 | 97.42414 | -329.736 | 473.8595 | 55.47103 | 15.93896 | 21.15152 | 0.359815 | 18.64052 | 7.072819 | -0.7985 | 4.027469 | 4.525447 | 0.034375 |
| 12/10/2009 16:27 | -109.974 | 121.8478 | 16.00234 | -363.355 | 467.2388 | 57.33472 | -700.349 | 710.7028 | 97.40287 | -329.847 | 473.8994 | 55.48149 | 15.87407 | 21.1813 | 0.366351 | 18.65206 | 7.06141 | -0.80009 | 4.039058 | 4.529155 | 0.033831 |
| 12/10/2009 16:28 | -110.013 | 121.7578 | 15.99879 | -363.381 | 466.9994 | 57.31998 | -700.186 | 710.4946 | 97.37727 | -329.944 | 473.9036 | 55.48843 | 15.80362 | 21.20178 | 0.372627 | 18.65399 | 7.05 | -0.80101 | 4.046783 | 4.529155 | 0.033297 |
| 12/10/2009 16:29 | -110.02 | 121.6697 | 15.99322 | -363.338 | 466.562 | 57.28682 | -700.066 | 710.4035 | 97.36272 | -330.013 | 473.9854 | 55.49887 | 15.77396 | 21.24087 | 0.377373 | 18.67323 | 7.042394 | -0.80286 | 4.054509 | 4.532863 | 0.03302 |
| 12/10/2009 16:30 | -110.096 | 121.7731 | 16.00557 | -363.328 | 466.5847 | 57.28767 | -699.907 | 710.293 | 97.34407 | -330.082 | 474.0463 | 55.50786 | 15.7239 | 21.28369 | 0.383784 | 18.67708 | 7.053803 | -0.80234 | 4.056441 | 4.538425 | 0.033271 |
| 12/10/2009 16:31 | -110.09 | 125.7559 | 16.28011 | -363.207 | 483.4268 | 58.44195 | -700.748 | 738.199 | 99.32845 | -330.636 | 486.3115 | 56.39269 | 15.87036 | 21.78262 | 0.408114 | 18.81177 | 7.455053 | -0.78394 | 4.114385 | 4.664501 | 0.037974 |
| 12/10/2009 16:32 | -124.605 | 139.4958 | 18.23047 | -414.768 | 540.6611 | 65.95192 | -807.739 | 822.6473 | 112.5432 | -374.07 | 543.7112 | 63.35311 | 19.04358 | 25.04553 | 0.414306 | 21.56795 | 8.717957 | -0.88702 | 5.082146 | 5.411756 | 0.022753 |
| 12/10/2009 16:33 | -123.931 | 138.8464 | 18.13916 | -412.604 | 538.7442 | 65.67021 | -804.57 | 819.9773 | 112.1402 | -375.494 | 543.4651 | 63.4344 | 18.16244 | 25.35666 | 0.496607 | 21.61223 | 8.575294 | -0.89992 | 5.113055 | 5.402484 | 0.019979 |
| 12/10/2009 16:34 | -123.733 | 138.5082 | 18.10214 | -411.786 | 537.5898 | 65.53405 | -803.049 | 818.5381 | 111.9359 | -376.059 | 543.0067 | 63.44178 | 17.68947 | 25.54112 | 0.541988 | 21.61223 | 8.493502 | -0.90557 | 5.114987 | 5.395067 | 0.019333 |
| 12/10/2009 16:35 | -123.662 | 138.2431 | 18.0789 | -411.369 | 536.7653 | 65.44837 | -802.044 | 817.5641 | 111.7992 | -376.514 | 543.0534 | 63.4764 | 17.44466 | 25.65291 | 0.566604 | 21.62378 | 8.436439 | -0.9103 | 5.124646 | 5.385795 | 0.018027 |
| 12/10/2009 16:36 | -123.606 | 138.0722 | 18.0633 | -411.015 | 536.3166 | 65.39298 | -801.29 | 816.87 | 111.6993 | -376.79 | 543.151 | 63.50219 | 17.20913 | 25.76284 | 0.59045 | 21.62763 | 8.398397 | -0.9132 | 5.134306 | 5.38394 | 0.017232 |
| 12/10/2009 16:37 | -123.548 | 137.9358 | 18.04984 | -410.73 | 535.8951 | 65.34415 | -800.649 | 816.2928 | 111.6152 | -377.191 | 543.3038 | 63.54043 | 17.02925 | 25.84855 | 0.608784 | 21.63341 | 8.36416 | -0.91596 | 5.140101 | 5.378377 | 0.016448 |
| 12/10/2009 16:38 | -123.498 | 137.736 | 18.03263 | -410.548 | 535.2607 | 65.28779 | -800.076 | 815.8037 | 111.5419 | -377.448 | 543.3675 | 63.5626 | 16.8605 | 25.92122 | 0.625449 | 21.64111 | 8.335629 | -0.91846 | 5.145897 | 5.382086 | 0.016304 |
| 12/10/2009 16:39 | -123.451 | 137.6342 | 18.0223 | -410.405 | 534.9853 | 65.25891 | -799.777 | 815.3984 | 111.4933 | -377.657 | 543.4354 | 63.58172 | 16.72699 | 25.98085 | 0.638781 | 21.64881 | 8.312804 | -0.92057 | 5.149761 | 5.380232 | 0.015909 |
| 12/10/2009 16:40 | -123.44 | 137.5458 | 18.01545 | -410.27 | 534.7224 | 65.23149 | -799.445 | 815.0526 | 111.4465 | -377.85 | 543.4905 | 63.59879 | 16.60831 | 26.05166 | 0.651861 | 21.65844 | 8.293784 | -0.92254 | 5.157488 | 5.378377 | 0.015248 |
| 12/10/2009 16:41 | -123.44 | 137.4613 | 18.00961 | -410.148 | 534.4908 | 65.20705 | -799.197 | 814.7354 | 111.4074 | -378.017 | 543.5308 | 63.61312 | 16.49335 | 26.09079 | 0.662498 | 21.66229 | 8.269058 | -0.92452 | 5.161352 | 5.378377 | 0.014981 |
| 12/10/2009 16:42 | -123.454 | 137.3922 | 18.00585 | -410.064 | 534.2988 | 65.18804 | -798.957 | 814.4491 | 111.3711 | -378.186 | 543.5924 | 63.62902 | 16.38766 | 26.14483 | 0.673524 | 21.66229 | 8.253841 | -0.92557 | 5.172943 | 5.376523 | 0.014053 |
| 12/10/2009 16:43 | -136.991 | 156.7983 | 20.27988 | -455.633 | 607.4329 | 73.38194 | -894.785 | 924.1252 | 125.5568 | -413.678 | 609.1202 | 70.60227 | 20.11971 | 29.52625 | 0.64932 | 24.51628 | 9.851792 | -1.01227 | 6.179542 | 6.3075 | 0.008833 |
| 12/10/2009 16:44 | -139.143 | 156.4089 | 20.4015 | -460.189 | 607.7454 | 73.71796 | -903.961 | 923.9551 | 126.1784 | -424.682 | 613.6844 | 71.67695 | 18.88775 | 30.13977 | 0.776711 | 24.91889 | 9.709098 | -1.04991 | 6.289681 | 6.329756 | 0.002766 |
| 12/10/2009 16:45 | -138.66 | 155.9174 | 20.33424 | -458.758 | 606.2741 | 73.51766 | -901.529 | 921.7912 | 125.8612 | -425.818 | 613.9891 | 71.77642 | 18.18841 | 30.33 | 0.838117 | 24.92852 | 9.577822 | -1.05964 | 6.303207 | 6.313064 | 0.00068 |
| 12/10/2009 16:46 | -138.495 | 155.7034 | 20.30811 | -457.854 | 605.5164 | 73.40291 | -900.225 | 920.6816 | 125.6946 | -426.396 | 614.1436 | 71.82698 | 17.85269 | 30.51464 | 0.874037 | 24.94779 | 9.526455 | -1.06451 | 6.314801 | 6.313064 | -0.00012 |
| 12/10/2009 16:47 | -138.353 | 155.5435 | 20.28722 | -457.134 | 604.8812 | 73.30938 | -899.333 | 919.5609 | 125.5556 | -426.807 | 613.914 | 71.83952 | 17.63569 | 30.62468 | 0.896612 | 24.95742 | 9.46938 | -1.06912 | 6.330259 | 6.30379 | -0.00183 |
| 12/10/2009 16:48 | -138.248 | 155.3295 | 20.26526 | -456.543 | 604.4761 | 73.24066 | -898.716 | 919.1159 | 125.4824 | -427.157 | 613.9226 | 71.86427 | 17.38531 | 30.69369 | 0.918658 | 24.96512 | 9.425623 | -1.07267 | 6.336056 | 6.298226 | -0.00261 |
| 12/10/2009 16:49 | -138.17 | 155.1214 | 20.24546 | -456.18 | 603.9655 | 73.18033 | -898.246 | 918.2459 | 125.3898 | -427.453 | 613.8818 | 71.88185 | 17.18317 | 30.7683 | 0.937762 | 24.95356 | 9.391379 | -1.07424 | 6.33992 | 6.292662 | -0.00326 |
| 12/10/2009 16:50 | -138.074 | 154.9923 | 20.22998 | -455.975 | 603.5119 | 73.13485 | -897.772 | 917.8121 | 125.3272 | -427.674 | 613.8647 | 71.89594 | 17.007 | 30.84291 | 0.955073 | 24.95934 | 9.427526 | -1.07214 | 6.34765 | 6.290807 | -0.00392 |
| 12/10/2009 16:51 | -138.265 | 154.682 | 20.22169 | -456.126 | 602.9359 | 73.10555 | -897.698 | 917.2464 | 125.283 | -427.948 | 613.708 | 71.90404 | 16.80301 | 30.84664 | 0.969411 | 24.93237 | 9.381867 | -1.07343 | 6.345717 | 6.283389 | -0.0043 |

| TS | 7A1 Comp. Strain | 7B1 Tensile Strain | Moment (k*ft) | 7A2 Comp. Strain | 7B2 Tensile Strain | Moment (k*ft) | 7A3 Comp. Strain | 7B3 Tensile Strain | Moment (k*ft) | 7A4 Comp. Strain | 7B4 Tensile Strain | Moment (k*ft) | 7A7 Comp. Strain | 7B7 Tensile Strain | Moment (k*ft) | 7A7 Comp. Strain | 7B7 Tensile Strain | Moment (k*ft) | 7A7 Comp. Strain | 7B7 Tensile Strain | Moment (k*ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12/10/2009 16:52 | -138.157 | 154.6107 | 20.20932 | -455.81 | 602.6511 | 73.06406 | -897.2 | 916.7344 | 125.2133 | -428.12 | 613.6952 | 71.915 | 16.6695 | 30.897 | 0.982104 | 24.94008 | 9.351428 | -1.07606 | 6.349582 | 6.27597 | -0.00508 |
| 12/10/2009 16:53 | -138.166 | 154.5433 | 20.2053 | -455.69 | 602.4782 | 73.04387 | -896.946 | 916.5108 | 125.1803 | -428.272 | 613.7252 | 71.92756 | 16.55454 | 30.90073 | 0.990297 | 24.94393 | 9.334306 | -1.07751 | 6.345717 | 6.27597 | -0.00481 |
| 12/10/2009 16:54 | -137.976 | 154.6204 | 20.19749 | -455.214 | 602.4381 | 73.00823 | -896.25 | 916.2694 | 125.1156 | -428.311 | 613.8175 | 71.93666 | 16.49706 | 31.00705 | 1.001604 | 24.98054 | 9.35333 | -1.07872 | 6.355379 | 6.281534 | -0.0051 |
| 12/10/2009 16:55 | -137.937 | 154.5934 | 20.19297 | -455.066 | 602.4065 | 72.99583 | -896.119 | 916.1889 | 125.101 | -428.433 | 613.9591 | 71.95486 | 16.42474 | 31.05554 | 1.009943 | 24.99402 | 9.345721 | -1.08018 | 6.370837 | 6.285243 | -0.00591 |
| 12/10/2009 16:56 | -137.935 | 154.5568 | 20.19032 | -455.007 | 602.2862 | 72.98346 | -895.934 | 915.8021 | 125.0616 | -428.549 | 613.9119 | 71.95958 | 16.33945 | 31.09099 | 1.018278 | 25.00173 | 9.328599 | -1.08189 | 6.378566 | 6.279679 | -0.00683 |
| 12/10/2009 16:57 | -137.828 | 154.4681 | 20.17675 | -454.911 | 602.0626 | 72.96141 | -895.614 | 915.7127 | 125.0333 | -428.63 | 613.9848 | 71.9702 | 16.2727 | 31.15627 | 1.027392 | 25.02099 | 9.334306 | -1.08283 | 6.382431 | 6.285243 | -0.00671 |
| 12/10/2009 16:58 | -137.972 | 154.4122 | 20.18287 | -454.98 | 601.7378 | 72.94375 | -895.443 | 915.3171 | 124.9942 | -428.735 | 613.9569 | 71.97556 | 16.19112 | 31.17119 | 1.034053 | 25.01714 | 9.313379 | -1.08401 | 6.386296 | 6.283389 | -0.0071 |
| 12/10/2009 16:59 | -144.982 | 167.8484 | 21.59426 | -479.65 | 656.3021 | 78.41315 | -948.271 | 1002.185 | 134.6372 | -443.431 | 660.2934 | 76.18853 | 18.45923 | 33.51274 | 1.039122 | 26.52193 | 10.65095 | -1.09555 | 6.894518 | 7.053151 | 0.01095 |
| 12/10/2009 17:00 | -154.635 | 174.7108 | 22.73429 | -511.253 | 683.7726 | 82.49088 | -1012.68 | 1038.115 | 141.5635 | -476.691 | 687.5192 | 80.36379 | 19.57234 | 35.45399 | 1.096287 | 28.60353 | 10.95543 | -1.21822 | 7.590263 | 7.383352 | -0.01428 |
| 12/10/2009 17:01 | -154.655 | 174.6237 | 22.72967 | -512.127 | 685.4265 | 82.6654 | -1016.03 | 1040.358 | 141.9498 | -480.363 | 690.7165 | 80.83796 | 18.86177 | 35.91328 | 1.177041 | 28.80981 | 10.91737 | -1.23509 | 7.655977 | 7.405614 | -0.01728 |
| 12/10/2009 17:02 | -153.95 | 173.8849 | 22.62997 | -510.272 | 683.5141 | 82.40535 | -1012.63 | 1037.526 | 141.5191 | -481.376 | 690.8446 | 80.9167 | 18.26075 | 36.128 | 1.233351 | 28.83295 | 10.84886 | -1.24142 | 7.673372 | 7.401903 | -0.01874 |
| 12/10/2009 17:03 | -153.602 | 173.4807 | 22.57803 | -509.241 | 682.4096 | 82.25796 | -1010.99 | 1035.752 | 141.2836 | -481.9 | 690.7968 | 80.94958 | 17.87124 | 36.28298 | 1.270937 | 28.85608 | 10.78606 | -1.24735 | 7.684969 | 7.394483 | -0.02005 |
| 12/10/2009 17:04 | -153.343 | 173.179 | 22.53933 | -508.474 | 681.5616 | 82.14649 | -1009.8 | 1034.426 | 141.1102 | -482.251 | 690.723 | 80.96875 | 17.63754 | 36.40062 | 1.295189 | 28.85608 | 10.72897 | -1.25129 | 7.6927 | 7.388917 | -0.02097 |
| 12/10/2009 17:05 | -153.139 | 172.9489 | 22.50935 | -507.87 | 680.9786 | 82.06452 | -1008.76 | 1033.39 | 140.9664 | -482.515 | 690.6861 | 80.9844 | 17.39459 | 36.48839 | 1.318018 | 28.85994 | 10.69853 | -1.25366 | 7.70623 | 7.383352 | -0.02229 |
| 12/10/2009 17:06 | -152.984 | 172.8174 | 22.48957 | -507.397 | 680.4618 | 81.99618 | -1007.99 | 1032.596 | 140.8588 | -482.725 | 690.6275 | 80.99484 | 17.17761 | 36.56308 | 1.338151 | 28.86379 | 10.66237 | -1.25642 | 7.713961 | 7.379642 | -0.02308 |
| 12/10/2009 17:07 | -152.86 | 172.6531 | 22.46967 | -506.973 | 680.1094 | 81.94262 | -1007.37 | 1031.887 | 140.7673 | -482.91 | 690.5776 | 81.0042 | 17.00514 | 36.62657 | 1.354439 | 28.86379 | 10.63383 | -1.25839 | 7.721692 | 7.374076 | -0.024 |
| 12/10/2009 17:08 | -152.763 | 172.5081 | 22.45299 | -506.623 | 679.7251 | 81.8919 | -1006.91 | 1031.265 | 140.6922 | -483.055 | 690.5407 | 81.01165 | 16.83454 | 36.69193 | 1.370727 | 28.86572 | 10.60528 | -1.26049 | 7.729423 | 7.370366 | -0.02479 |
| 12/10/2009 17:09 | -152.677 | 172.3746 | 22.43786 | -506.342 | 679.3642 | 81.84761 | -1006.38 | 1030.647 | 140.6129 | -483.197 | 690.4777 | 81.01707 | 16.66023 | 36.73301 | 1.385595 | 28.85994 | 10.59006 | -1.26114 | 7.721692 | 7.366656 | -0.02451 |
| 12/10/2009 17:10 | -152.619 | 172.278 | 22.42716 | -506.038 | 679.0824 | 81.80718 | -1005.84 | 1030.185 | 140.5442 | -483.316 | 690.5059 | 81.02722 | 16.55268 | 36.7853 | 1.396629 | 28.86572 | 10.57674 | -1.26246 | 7.72749 | 7.368511 | -0.02478 |
| 12/10/2009 17:11 | -152.571 | 172.1581 | 22.41561 | -505.864 | 678.7472 | 81.772 | -1005.41 | 1029.701 | 140.4811 | -483.408 | 690.4668 | 81.03092 | 16.43216 | 36.82825 | 1.407913 | 28.86765 | 10.5501 | -1.26443 | 7.739087 | 7.366656 | -0.02571 |
| 12/10/2009 17:12 | -152.557 | 172.046 | 22.40686 | -505.759 | 678.4612 | 81.74503 | -1005 | 1029.247 | 140.4212 | -483.47 | 690.4451 | 81.03369 | 16.32091 | 36.86747 | 1.4183 | 28.86572 | 10.53868 | -1.26509 | 7.74102 | 7.361091 | -0.02623 |
| 12/10/2009 17:13 | -152.546 | 171.9396 | 22.39877 | -505.689 | 678.1879 | 81.72135 | -1004.64 | 1028.834 | 140.3675 | -483.558 | 690.4972 | 81.04335 | 16.22078 | 36.90295 | 1.427661 | 28.87343 | 10.51585 | -1.2672 | 7.742953 | 7.361091 | -0.02636 |
| 12/10/2009 17:14 | -152.796 | 172.4481 | 22.45111 | -519.612 | 695.1063 | 83.85026 | -1037.91 | 1060.304 | 144.8365 | -492.375 | 706.006 | 82.72252 | 17.41128 | 37.58464 | 1.392538 | 29.57716 | 10.95353 | -1.28556 | 7.903378 | 7.53733 | -0.02527 |
| 12/10/2009 17:15 | -152.23 | 172.4965 | 22.41543 | -519.604 | 697.5895 | 84.02111 | -1040.01 | 1064.868 | 145.2964 | -496.513 | 711.379 | 83.37906 | 17.39088 | 37.94139 | 1.418573 | 29.83747 | 11.04297 | -1.29736 | 8.003888 | 7.620814 | -0.02644 |
| 12/10/2009 17:16 | -152.307 | 172.4655 | 22.41858 | -517.868 | 695.6414 | 83.76684 | -1035.99 | 1061.372 | 144.7776 | -496.709 | 710.8999 | 83.35953 | 17.07561 | 37.99556 | 1.444074 | 29.82204 | 10.99159 | -1.29984 | 8.009687 | 7.617103 | -0.0271 |
| 12/10/2009 17:17 | -152.203 | 173.3009 | 22.46906 | -528.64 | 711.2473 | 85.58767 | -1063.87 | 1088.945 | 148.6056 | -504.735 | 726.0026 | 84.95607 | 18.26631 | 38.89037 | 1.423649 | 30.63775 | 11.4274 | -1.32606 | 8.268703 | 7.843444 | -0.02935 |
| 12/10/2009 17:18 | -151.893 | 173.0282 | 22.42884 | -524.526 | 706.9917 | 85.00988 | -1053.9 | 1081.54 | 147.4067 | -505.505 | 724.859 | 84.93027 | 17.65053 | 38.98005 | 1.472346 | 30.58568 | 11.33415 | -1.32891 | 8.280301 | 7.845299 | -0.03003 |
| 12/10/2009 17:19 | -151.975 | 173.0108 | 22.4333 | -523.376 | 705.8746 | 84.85344 | -1051.21 | 1079.044 | 147.0483 | -505.646 | 724.5273 | 84.91708 | 17.36121 | 39.06599 | 1.49825 | 30.58568 | 11.29989 | -1.33127 | 8.289966 | 7.841589 | -0.03095 |
| 12/10/2009 17:20 | -152.017 | 172.9566 | 22.43246 | -522.688 | 705.2207 | 84.76081 | -1049.92 | 1077.493 | 146.8524 | -505.762 | 724.2305 | 84.90464 | 17.13866 | 39.13512 | 1.518384 | 30.57796 | 11.25802 | -1.33363 | 8.295765 | 7.837878 | -0.03161 |
| 12/10/2009 17:21 | -152.033 | 172.8909 | 22.42906 | -522.339 | 704.6977 | 84.70061 | -1048.87 | 1076.382 | 146.7031 | -505.888 | 723.997 | 84.89723 | 16.905 | 39.15754 | 1.536061 | 30.55096 | 11.20283 | -1.33557 | 8.291899 | 7.886116 | -0.02801 |
| 12/10/2009 17:22 | -152.083 | 157.2051 | 21.34969 | -521.954 | 622.4159 | 78.9942 | -1047.93 | 956.1571 | 138.339 | -505.934 | 680.8431 | 81.9215 | 16.7752 | 37.64254 | 1.440443 | 30.57603 | 9.60636 | -1.44751 | 8.299631 | 7.383352 | -0.06325 |
| 12/10/2009 17:23 | -57.5474 | 64.94771 | 8.455666 | -225.87 | 310.8541 | 37.04932 | -506.952 | 538.0153 | 72.13263 | -371.346 | 491.0737 | 59.53163 | -12.2846 | 34.77633 | 3.248548 | 19.39868 | 2.868234 | -1.14107 | 5.385453 | 4.48095 | -0.06244 |
| 12/10/2009 17:24 | -58.4458 | 65.49702 | 8.555595 | -227.55 | 312.4392 | 37.27471 | -507.082 | 538.2284 | 72.1563 | -368.757 | 488.4586 | 59.17237 | -12.8302 | 34.90327 | 3.294971 | 19.17546 | 2.750434 | -1.1338 | 5.298516 | 4.391958 | -0.06258 |
| 12/10/2009 17:25 | -58.7768 | 65.77927 | 8.597929 | -228.19 | 313.1626 | 37.36877 | -507.29 | 538.488 | 72.18855 | -368.041 | 487.4891 | 59.05605 | -13.0513 | 34.9686 | 3.314748 | 19.09271 | 2.756134 | -1.12769 | 5.271469 | 4.351171 | -0.06353 |
| 12/10/2009 17:26 | -58.987 | 65.98955 | 8.62695 | -228.518 | 313.6188 | 37.42294 | -507.392 | 538.6357 | 72.2058 | -367.641 | 486.8392 | 58.98354 | -13.1951 | 35.00034 | 3.326862 | 19.03691 | 2.716235 | -1.12659 | 5.246354 | 4.327069 | -0.06346 |
| 12/10/2009 17:27 | -24.5783 | 27.85188 | 3.619182 | -136.223 | 193.8574 | 22.78497 | -341.425 | 375.4934 | 49.48783 | -313.427 | 404.9562 | 49.58898 | -21.7499 | 34.03717 | 3.850902 | 15.65703 | 0.725454 | -1.03071 | 4.044852 | 3.027618 | -0.07022 |
| 12/10/2009 17:28 | -25.4284 | 28.41975 | 3.717061 | -137.927 | 194.9197 | 22.97595 | -341.392 | 374.9554 | 49.44847 | -310.982 | 402.494 | 49.25025 | -22.1289 | 34.08943 | 3.880669 | 15.44934 | 0.649486 | -1.02161 | 3.969526 | 2.957186 | -0.06988 |
| 12/10/2009 17:29 | -25.9414 | 28.8015 | 3.778823 | -138.574 | 195.5217 | 23.06213 | -341.315 | 374.7541 | 49.4292 | -310.136 | 401.4156 | 49.11739 | -22.2889 | 34.12116 | 3.893907 | 15.36281 | 0.605804 | -1.01866 | 3.946349 | 2.923825 | -0.07058 |
| 12/10/2009 17:30 | -26.2952 | 29.04975 | 3.820382 | -139.032 | 195.9133 | 23.12078 | -341.362 | 374.6905 | 49.42808 | -309.628 | 398.6957 | 48.89455 | -22.4011 | 34.24248 | 3.910027 | 15.30128 | -0.12913 | -1.06514 | 3.925103 | 2.278876 | -0.11364 |

# TABLE E.9 Strain gage measurements for pile 8

| TS | 8A1 Comp. Strain | 8B1 Tensile Strain | Moment (k*ft) | 8A2 Comp. Strain | 8B2 Tensile Strain | Moment (k*ft) | 8A3 Comp. Strain | 8B3 Tensile Strain | Moment (k*ft) | 8A4 Comp. Strain | 8B4 Tensile Strain | Moment (k*ft) | 8A8 Comp. Strain | 8B8 Tensile Strain | Moment (k*ft) | 8A8 Comp. Strain | 8B8 Tensile Strain | Moment (k*ft) | 8A8 Comp. Strain | 8B8 Tensile Strain | Moment (k*ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12/10/2009 14:14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12/10/2009 14:14 | 2.431796 | -1.47703 | -0.26982 | -0.20203 | 0.121935 | 0.022363 | -0.38837 | 1.047005 | 0.099082 | 0.207289 | 0.456394 | 0.017195 | 0.258195 | 0.185194 | -0.00504 | 0.270937 | 0.195196 | -0.00523 | -0.09005 | -0.04452 | 0.003143 |
| 12/10/2009 14:15 | 2.54088 | -1.59867 | -0.28575 | -0.18349 | 0.052526 | 0.016292 | -0.39405 | 1.061964 | 0.100507 | 0.203486 | 0.458257 | 0.017586 | 0.261857 | 0.189013 | -0.00503 | 0.265331 | 0.191406 | -0.0051 | -0.0843 | -0.03871 | 0.003147 |
| 12/10/2009 14:16 | 2.54088 | -1.56636 | -0.28352 | -0.20759 | 0.069409 | 0.019121 | -0.38647 | 1.11619 | 0.103727 | 0.224405 | 0.484338 | 0.017943 | 0.265519 | 0.19474 | -0.00489 | 0.274674 | 0.197091 | -0.00536 | -0.08047 | -0.04452 | 0.002482 |
| 12/10/2009 14:17 | 2.552363 | -1.56066 | -0.28392 | -0.21315 | 0.060029 | 0.018857 | -0.377 | 1.149848 | 0.105396 | 0.233914 | 0.497378 | 0.018187 | 0.271013 | 0.200468 | -0.00487 | 0.272805 | 0.195196 | -0.00536 | -0.07472 | -0.03677 | 0.00262 |
| 12/10/2009 14:18 | 2.552363 | -1.61578 | -0.28772 | -0.23353 | -0.01688 | 0.014955 | -0.35427 | 1.168546 | 0.105118 | 0.258637 | 0.516008 | 0.017766 | 0.282 | 0.206196 | -0.00523 | 0.276543 | 0.193301 | -0.00575 | -0.06706 | -0.04064 | 0.001823 |
| 12/10/2009 14:19 | 2.546621 | -1.63668 | -0.28877 | -0.22241 | -0.05253 | 0.011727 | -0.32964 | 1.189115 | 0.104838 | 0.273852 | 0.517871 | 0.016844 | 0.287494 | 0.213833 | -0.00508 | 0.274674 | 0.198987 | -0.00522 | -0.06514 | -0.02129 | 0.003027 |
| 12/10/2009 14:20 | 2.590639 | -1.60247 | -0.28944 | -0.22797 | -0.00188 | 0.015607 | -0.33153 | 1.220904 | 0.107163 | 0.289066 | 0.540226 | 0.017337 | 0.29665 | 0.219561 | -0.00532 | 0.276543 | 0.191406 | -0.00588 | -0.06514 | -0.02323 | 0.002894 |
| 12/10/2009 14:21 | 2.646139 | -1.59487 | -0.29275 | -0.20388 | 0.035642 | 0.016534 | -0.34101 | 1.271392 | 0.111302 | 0.29287 | 0.560719 | 0.018489 | 0.307638 | 0.223379 | -0.00582 | 0.285885 | 0.195196 | -0.00626 | -0.0594 | -0.03871 | 0.001428 |
| 12/10/2009 14:22 | 2.684416 | -1.63858 | -0.29841 | -0.19091 | 0.037518 | 0.015768 | -0.32964 | 1.30879 | 0.113099 | 0.315692 | 0.581211 | 0.018328 | 0.309469 | 0.231016 | -0.00542 | 0.289623 | 0.195196 | -0.00652 | -0.06131 | -0.02323 | 0.002629 |
| 12/10/2009 14:23 | 2.720779 | -1.61578 | -0.29935 | -0.18534 | 0.144447 | 0.022765 | -0.32964 | 1.346189 | 0.11568 | 0.321397 | 0.594252 | 0.018835 | 0.318625 | 0.238653 | -0.00552 | 0.295228 | 0.198987 | -0.00664 | -0.05748 | -0.01742 | 0.002765 |
| 12/10/2009 14:24 | 2.751401 | -1.60247 | -0.30054 | -0.15754 | 0.09192 | 0.01722 | -0.32206 | 1.385459 | 0.117868 | 0.338513 | 0.618471 | 0.019325 | 0.329613 | 0.250109 | -0.00549 | 0.291491 | 0.198987 | -0.00639 | -0.05556 | -0.0271 | 0.001965 |
| 12/10/2009 14:25 | 2.703554 | -1.57396 | -0.29527 | -0.17052 | 0.073161 | 0.016821 | -0.32775 | 1.400418 | 0.119293 | 0.342317 | 0.620334 | 0.019191 | 0.333275 | 0.24629 | -0.006 | 0.297097 | 0.200882 | -0.00664 | -0.05365 | -0.01935 | 0.002367 |
| 12/10/2009 14:26 | 4.252085 | -3.39634 | -0.52796 | 1.173397 | -1.15917 | -0.16101 | -0.00758 | 0.562738 | 0.039368 | 0.114103 | 0.441491 | 0.022599 | 0.294819 | 0.219561 | -0.00519 | 0.282148 | 0.187616 | -0.00653 | -0.05556 | -0.01548 | 0.002767 |
| 12/10/2009 14:27 | 3.275825 | -2.13272 | -0.37334 | 0.363296 | -0.26262 | -0.04321 | -0.14019 | 1.073183 | 0.083758 | 0.285263 | 0.577485 | 0.020172 | 0.329613 | 0.240563 | -0.00615 | 0.295228 | 0.193301 | -0.00704 | -0.05173 | -0.02129 | 0.002101 |
| 12/10/2009 14:28 | 4.663701 | -3.80862 | -0.58483 | 1.390311 | -1.35609 | -0.18958 | 0.028418 | 0.523475 | 0.034173 | 0.108398 | 0.486201 | 0.026079 | 0.305806 | 0.223379 | -0.00569 | 0.297097 | 0.187616 | -0.00756 | -0.0479 | -0.00387 | 0.003039 |
| 12/10/2009 14:29 | 4.667531 | -3.75922 | -0.58169 | 1.419976 | -1.31859 | -0.18904 | 0.060626 | 0.527214 | 0.032208 | 0.129317 | 0.50483 | 0.025921 | 0.309469 | 0.232926 | -0.00528 | 0.289623 | 0.187616 | -0.00704 | -0.04598 | -0.00194 | 0.003041 |
| 12/10/2009 14:30 | 4.682847 | -3.74023 | -0.58143 | 1.436662 | -1.2792 | -0.18747 | 0.092834 | 0.560868 | 0.032308 | 0.140728 | 0.527185 | 0.026677 | 0.316794 | 0.238653 | -0.00539 | 0.295228 | 0.187616 | -0.00743 | -0.0364 | 0.001935 | 0.002647 |
| 12/10/2009 14:31 | 4.715395 | -3.68133 | -0.57961 | 1.453348 | -1.11604 | -0.17736 | 0.11178 | 0.566477 | 0.031387 | 0.159745 | 0.549541 | 0.026907 | 0.324119 | 0.236744 | -0.00603 | 0.297097 | 0.189511 | -0.00743 | -0.03066 | -0.00581 | 0.001715 |
| 12/10/2009 14:32 | 4.715395 | -3.66993 | -0.57883 | 1.501553 | -1.24544 | -0.18962 | 0.119358 | 0.540302 | 0.029057 | 0.173057 | 0.543952 | 0.025602 | 0.331444 | 0.238653 | -0.00641 | 0.312046 | 0.185721 | -0.00872 | -0.02491 | 0.015484 | 0.002788 |
| 12/10/2009 14:33 | 12.5539 | -24.1342 | -2.53253 | 11.41599 | -22.7304 | -2.35707 | 5.506657 | -17.2067 | -1.56787 | -0.66175 | -3.17868 | -0.17374 | 0.060427 | -0.1661 | -0.01564 | 0.250382 | 0.10044 | -0.01035 | -0.04598 | -0.01742 | 0.001972 |
| 12/10/2009 14:34 | 31.73912 | -26.7524 | -4.03759 | 46.29764 | -30.615 | -5.30917 | 44.11209 | -28.6232 | -5.02081 | 5.630199 | -6.45947 | -0.83453 | -0.23438 | -0.3131 | -0.00543 | 0.231697 | 0.09665 | -0.00932 | -0.05365 | -0.00968 | 0.003035 |
| 12/10/2009 14:35 | 30.69612 | -25.994 | -3.91324 | 45.90473 | -30.3503 | -5.26378 | 44.90905 | -28.8444 | -5.09109 | 6.153763 | -6.65107 | -0.8839 | -0.24903 | -0.32646 | -0.00535 | 0.226091 | 0.092859 | -0.0092 | -0.04598 | -0.01161 | 0.002373 |
| 12/10/2009 14:36 | 30.18431 | -25.5986 | -3.85062 | 45.73823 | -30.2067 | -5.24237 | 45.3219 | -28.9689 | -5.12819 | 6.363204 | -6.75152 | -0.90529 | -0.25635 | -0.32264 | -0.00458 | 0.226091 | 0.089069 | -0.00946 | -0.03832 | 0 | 0.002645 |
| 12/10/2009 14:37 | 29.70141 | -25.1616 | -3.78712 | 45.47632 | -29.9439 | -5.20615 | 45.56275 | -29.0061 | -5.14738 | 6.58027 | -6.82035 | -0.92503 | -0.26001 | -0.32646 | -0.00459 | 0.22796 | 0.089069 | -0.00959 | -0.03449 | -0.01548 | 0.001312 |
| 12/10/2009 14:38 | 29.36284 | -24.9327 | -3.74794 | 45.33228 | -29.8786 | -5.1917 | 45.71759 | -29.0377 | -5.16025 | 6.736411 | -6.86127 | -0.93863 | -0.25818 | -0.32455 | -0.00458 | 0.229828 | 0.092859 | -0.00945 | -0.03257 | 0.001935 | 0.002382 |
| 12/10/2009 14:39 | 29.24164 | -24.8154 | -3.73148 | 45.23687 | -29.7816 | -5.17842 | 45.84567 | -29.0581 | -5.1705 | 6.84495 | -6.88731 | -0.94792 | -0.25635 | -0.33028 | -0.0051 | 0.231697 | 0.090964 | -0.00971 | -0.02682 | 0.007742 | 0.002386 |
| 12/10/2009 14:40 | 29.22048 | -24.6962 | -3.72179 | 45.3117 | -29.7126 | -5.17882 | 46.02919 | -29.0451 | -5.18227 | 6.942067 | -6.90033 | -0.95552 | -0.24903 | -0.32264 | -0.00508 | 0.233565 | 0.087174 | -0.01011 | -0.02491 | 0.003871 | 0.001987 |
| 12/10/2009 14:41 | 29.22818 | -24.6413 | -3.71853 | 45.24061 | -29.5747 | -5.16439 | 46.03684 | -29.06 | -5.18383 | 6.999195 | -6.91522 | -0.96049 | -0.24536 | -0.32646 | -0.0056 | 0.250382 | 0.087174 | -0.01127 | -0.01916 | 0.011613 | 0.002124 |
| 12/10/2009 14:42 | 29.15701 | -24.507 | -3.70435 | 45.19759 | -29.5448 | -5.15936 | 46.11522 | -29.0804 | -5.19065 | 7.071558 | -6.94312 | -0.96741 | -0.24353 | -0.32837 | -0.00586 | 0.25412 | 0.089069 | -0.01139 | -0.02108 | 0.009677 | 0.002123 |
| 12/10/2009 14:43 | 29.07621 | -20.1248 | -3.39627 | 44.03233 | -25.1535 | -4.7758 | 45.45571 | -25.2633 | -4.88163 | 7.294367 | -6.39994 | -0.9453 | -0.21424 | -0.2711 | -0.00393 | 0.255988 | 0.102335 | -0.01061 | -0.01341 | 0.02129 | 0.002395 |
| 12/10/2009 14:44 | 21.64496 | -18.9524 | -2.80238 | 35.25775 | -23.1841 | -4.03416 | 37.53289 | -23.2858 | -4.19822 | 6.530763 | -6.15437 | -0.87564 | -0.15381 | -0.29019 | -0.00941 | 0.272805 | 0.092859 | -0.01242 | -0.00383 | 0.027096 | 0.002135 |
| 12/10/2009 14:45 | 30.35747 | -24.7832 | -3.80628 | 47.76662 | -30.6896 | -5.41572 | 49.01234 | -30.4946 | -5.48825 | 7.732395 | -7.33744 | -1.04025 | -0.2417 | -0.31501 | -0.00506 | 0.2672 | 0.094755 | -0.0119 | -0.00958 | 0.025161 | 0.002398 |
| 12/10/2009 14:46 | 27.33182 | -23.0782 | -3.47973 | 45.12838 | -29.3434 | -5.14068 | 47.94892 | -29.6733 | -5.35815 | 7.972374 | -7.28536 | -1.05322 | -0.22522 | -0.29401 | -0.00475 | 0.269068 | 0.098545 | -0.01177 | 0 | 0.009677 | 0.000668 |
| 12/10/2009 14:47 | 26.77228 | -22.6448 | -3.41119 | 44.30351 | -28.9127 | -5.05401 | 47.36374 | -29.2923 | -5.29146 | 7.993325 | -7.23328 | -1.05107 | -0.21424 | -0.28828 | -0.00511 | 0.272805 | 0.106125 | -0.01151 | 0.001916 | 0.038709 | 0.00254 |
| 12/10/2009 14:48 | 26.41274 | -22.4365 | -3.372 | 43.79108 | -28.5136 | -4.99109 | 46.91631 | -28.9689 | -5.23825 | 7.997134 | -7.18306 | -1.04787 | -0.20874 | -0.28064 | -0.00496 | 0.284017 | 0.10044 | -0.01267 | 0.001916 | 0.034838 | 0.002273 |
| 12/10/2009 14:49 | 26.22241 | -22.1867 | -3.34161 | 43.36098 | -28.1928 | -4.93925 | 46.53773 | -28.7031 | -5.19377 | 7.99142 | -7.13842 | -1.04439 | -0.20325 | -0.27682 | -0.00508 | 0.278411 | 0.102335 | -0.01215 | 0.003832 | 0.04258 | 0.002675 |
| 12/10/2009 14:50 | 25.99556 | -22.0106 | -3.3138 | 43.06928 | -27.9801 | -4.90444 | 46.25669 | -28.4819 | -5.1591 | 7.99142 | -7.09564 | -1.04144 | -0.19593 | -0.26919 | -0.00506 | 0.289623 | 0.109915 | -0.0124 | 0.00958 | 0.04258 | 0.002278 |
| 12/10/2009 14:51 | 26.02824 | -21.9898 | -3.31462 | 42.86547 | -27.8216 | -4.87943 | 46.0311 | -28.337 | -5.13352 | 7.989515 | -7.05286 | -1.03835 | -0.18494 | -0.26346 | -0.00542 | 0.291491 | 0.10802 | -0.01266 | 0.011496 | 0.030967 | 0.001344 |
| 12/10/2009 14:52 | 25.83792 | -21.8024 | -3.28854 | 42.6542 | -27.6817 | -4.85519 | 45.83229 | -28.1752 | -5.10863 | 7.995229 | -7.01752 | -1.03631 | -0.17945 | -0.24628 | -0.00461 | 0.297097 | 0.115601 | -0.01253 | 0.01916 | 0.034838 | 0.001082 |
| 12/10/2009 14:53 | 65.12825 | -52.6633 | -8.13098 | 132.0483 | -84.6388 | -14.9576 | 212.2184 | -120.031 | -22.9347 | 79.29716 | -49.896 | -8.91802 | -3.14667 | -0.49255 | 0.18321 | 0.28028 | 0.363867 | 0.00577 | 0.017244 | 0.032903 | 0.001081 |
| 12/10/2009 14:54 | 62.91108 | -51.6396 | -7.90727 | 130.5983 | -83.9788 | -14.8119 | 212.0527 | -119.717 | -22.9016 | 81.06602 | -50.2739 | -9.06621 | -3.29855 | -0.6109 | 0.185524 | 0.274674 | 0.371448 | 0.00668 | 0.017244 | 0.050322 | 0.002283 |
| 12/10/2009 14:55 | 61.96447 | -50.9677 | -7.79554 | 129.9077 | -83.3334 | -14.7197 | 211.674 | -119.405 | -22.8539 | 81.66671 | -50.3863 | -9.11543 | -3.34795 | -0.66817 | 0.184982 | 0.2672 | 0.373343 | 0.007327 | 0.022992 | 0.04258 | 0.001352 |
| 12/10/2009 14:56 | 61.25413 | -50.4124 | -7.70818 | 129.358 | -83.0291 | -14.6608 | 211.3801 | -119.112 | -22.8134 | 82.02601 | -50.4453 | -9.14431 | -3.37357 | -0.70444 | 0.184246 | 0.276543 | 0.373343 | 0.006682 | 0.024908 | 0.054193 | 0.002021 |
| 12/10/2009 14:57 | 61.10511 | -50.2768 | -7.68854 | 129.1716 | -82.9554 | -14.6428 | 211.3131 | -119.011 | -22.8018 | 82.29452 | -50.4841 | -9.16552 | -3.39919 | -0.73307 | 0.184038 | 0.269068 | 0.375238 | 0.007329 | 0.026824 | 0.052257 | 0.001756 |
| 12/10/2009 14:58 | 60.99673 | -50.1846 | -7.67469 | 129.0746 | -82.8115 | -14.6262 | 211.2914 | -118.953 | -22.7963 | 82.51669 | -50.5283 | -9.18391 | -3.40651 | -0.75216 | 0.183226 | 0.2672 | 0.380924 | 0.00785 | 0.02874 | 0.054193 | 0.001757 |
| 12/10/2009 14:59 | 61.07221 | -50.2561 | -7.68483 | 129.0746 | -82.9093 | -14.6329 | 211.3111 | -118.889 | -22.7932 | 82.70023 | -50.5541 | -9.19836 | -3.41932 | -0.76743 | 0.183056 | 0.269068 | 0.382819 | 0.007852 | 0.032572 | 0.061935 | 0.002027 |
| 12/10/2009 15:00 | 61.04899 | -50.3239 | -7.68791 | 129.046 | -82.9222 | -14.6319 | 211.3407 | -118.818 | -22.7904 | 82.85672 | -50.5725 | -9.21043 | -3.42481 | -0.77889 | 0.182644 | 0.2672 | 0.38661 | 0.008243 | 0.032572 | 0.061935 | 0.002027 |
| 12/10/2009 15:01 | 61.05092 | -50.2599 | -7.68363 | 129.0061 | -82.6917 | -14.6132 | 211.3289 | -118.741 | -22.7843 | 82.99969 | -50.5854 | -9.22119 | -3.43396 | -0.7808 | 0.183144 | 0.2672 | 0.388505 | 0.008374 | 0.03832 | 0.067741 | 0.002031 |
| 12/10/2009 15:02 | 60.84772 | -50.1902 | -7.66479 | 128.7645 | -82.7341 | -14.5994 | 211.1277 | -118.603 | -22.7608 | 83.05766 | -50.6186 | -9.22748 | -3.4486 | -0.80561 | 0.182441 | 0.2672 | 0.384714 | 0.008112 | 0.040237 | 0.069676 | 0.002032 |
| 12/10/2009 15:03 | 60.95803 | -50.1902 | -7.6724 | 128.7132 | -82.6751 | -14.5918 | 211.0962 | -118.608 | -22.759 | 83.14074 | -50.6186 | -9.23322 | -3.45225 | -0.81516 | 0.182035 | 0.263462 | 0.38661 | 0.008501 | 0.044069 | 0.071612 | 0.001901 |
| 12/10/2009 15:04 | 60.91545 | -50.1639 | -7.66765 | 128.7151 | -82.6031 | -14.587 | 211.0449 | -118.542 | -22.7509 | 83.23155 | -50.626 | -9.24 | -3.45774 | -0.81897 | 0.182151 | 0.270937 | 0.392295 | 0.008377 | 0.042153 | 0.073547 | 0.002167 |
| 12/10/2009 15:05 | 60.61549 | -50.3276 | -7.65825 | 128.2472 | -82.9037 | -14.5755 | 210.5381 | -118.747 | -22.7301 | 83.10596 | -50.7643 | -9.24087 | -3.49617 | -0.87624 | 0.18085 | 0.257857 | 0.379029 | 0.008364 | 0.040237 | 0.069676 | 0.002032 |

| TS | 8A1 Comp. Strain | 8B1 Tensile Strain | Moment (k*ft) | 8A2 Comp. Strain | 8B2 Tensile Strain | Moment (k*ft) | 8A3 Comp. Strain | 8B3 Tensile Strain | Moment (k*ft) | 8A4 Comp. Strain | 8B4 Tensile Strain | Moment (k*ft) | 8A8 Comp. Strain | 8B8 Tensile Strain | Moment (k*ft) | 8A8 Comp. Strain | 8B8 Tensile Strain | Moment (k*ft) | 8A8 Comp. Strain | 8B8 Tensile Strain | Moment (k*ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12/10/2009 15:06 | 60.75483 | -50.4312 | -7.67501 | 128.2986 | -82.8613 | -14.5761 | 210.5164 | -118.69 | -22.7247 | 83.16006 | -50.7643 | -9.2446 | -3.50349 | -0.8896 | 0.180433 | 0.257857 | 0.380924 | 0.008495 | 0.036404 | 0.069676 | 0.002297 |
| 12/10/2009 15:07 | 60.73548 | -50.3521 | -7.66822 | 128.2396 | -82.8152 | -14.5688 | 210.4592 | -118.606 | -22.7149 | 83.21996 | -50.7643 | -9.24874 | -3.51081 | -0.89915 | 0.180279 | 0.265331 | 0.388505 | 0.008503 | 0.03832 | 0.065806 | 0.001897 |
| 12/10/2009 15:08 | 60.73548 | -50.2448 | -7.66081 | 128.175 | -82.758 | -14.5604 | 210.3251 | -118.416 | -22.6926 | 83.2644 | -50.7458 | -9.25053 | -3.51264 | -0.90869 | 0.179747 | 0.263462 | 0.3904 | 0.008762 | 0.03832 | 0.069676 | 0.002164 |
| 12/10/2009 15:09 | 93.93468 | -77.1331 | -11.8086 | 196.7865 | -130.869 | -22.6176 | 329.4898 | -202.152 | -36.6985 | 141.2687 | -89.2582 | -15.9129 | -4.9671 | 0.30166 | 0.363695 | 0.362498 | 0.833901 | 0.03254 | 0.055565 | 0.090967 | 0.002444 |
| 12/10/2009 15:10 | 95.11098 | -76.502 | -11.8462 | 201.6776 | -131.568 | -23.0035 | 337.383 | -202.597 | -37.274 | 148.154 | -90.4867 | -16.473 | -5.34939 | 0.07064 | 0.374137 | 0.351286 | 0.843377 | 0.033968 | 0.051733 | 0.090967 | 0.002708 |
| 12/10/2009 15:11 | 94.42932 | -76.0544 | -11.7682 | 201.0372 | -131.124 | -22.9287 | 336.9615 | -202.136 | -37.2131 | 148.8052 | -90.6714 | -16.5307 | -5.42256 | -0.021 | 0.372862 | 0.334469 | 0.839587 | 0.034868 | 0.049817 | 0.073547 | 0.001638 |
| 12/10/2009 15:12 | 94.16836 | -75.8915 | -11.739 | 200.7673 | -130.968 | -22.8992 | 336.7981 | -201.932 | -37.1878 | 149.1084 | -90.7938 | -16.5601 | -5.46645 | -0.07446 | 0.372202 | 0.334469 | 0.845273 | 0.03526 | 0.047901 | 0.075483 | 0.001904 |
| 12/10/2009 15:13 | 93.96194 | -75.7753 | -11.7167 | 200.5841 | -130.882 | -22.8806 | 336.7295 | -201.803 | -37.1741 | 149.3979 | -90.8779 | -16.5859 | -5.49389 | -0.11646 | 0.371196 | 0.340075 | 0.849064 | 0.035135 | 0.049817 | 0.077418 | 0.001905 |
| 12/10/2009 15:14 | 93.79447 | -75.6892 | -11.6992 | 200.4375 | -130.849 | -22.8682 | 336.665 | -201.751 | -37.1661 | 149.6326 | -90.9364 | -16.6061 | -5.5195 | -0.1451 | 0.370987 | 0.330732 | 0.852854 | 0.036041 | 0.044069 | 0.087096 | 0.00297 |
| 12/10/2009 15:15 | 93.67959 | -75.5936 | -11.6847 | 200.3353 | -130.723 | -22.8525 | 336.6166 | -201.625 | -37.1541 | 149.8321 | -90.9821 | -16.6231 | -5.53779 | -0.17182 | 0.370405 | 0.334469 | 0.849064 | 0.035522 | 0.045985 | 0.077418 | 0.00217 |
| 12/10/2009 15:16 | 93.60559 | -75.5075 | -11.6736 | 200.2524 | -130.621 | -22.8397 | 336.5904 | -201.573 | -37.1487 | 150.0043 | -91.0242 | -16.6378 | -5.55242 | -0.18901 | 0.370229 | 0.328863 | 0.85475 | 0.036301 | 0.045985 | 0.073547 | 0.001903 |
| 12/10/2009 15:17 | 93.50045 | -75.3876 | -11.6581 | 200.1907 | -130.559 | -22.8311 | 336.5702 | -201.498 | -37.1421 | 150.153 | -91.0571 | -16.6504 | -5.56522 | -0.21764 | 0.369136 | 0.3326 | 0.862331 | 0.036567 | 0.042153 | 0.079354 | 0.002568 |
| 12/10/2009 15:18 | 93.40114 | -75.3464 | -11.6484 | 200.1136 | -130.606 | -22.8291 | 336.546 | -201.401 | -37.1337 | 150.2899 | -91.0863 | -16.6619 | -5.5762 | -0.22719 | 0.369234 | 0.362498 | 0.866122 | 0.034764 | 0.044069 | 0.092902 | 0.003371 |
| 12/10/2009 15:19 | 93.33689 | -75.2696 | -11.6387 | 200.0557 | -130.533 | -22.8201 | 336.5339 | -201.301 | -37.126 | 150.4151 | -91.1119 | -16.6723 | -5.58351 | -0.24246 | 0.368685 | 0.330732 | 0.871808 | 0.03735 | 0.036404 | 0.090967 | 0.003766 |
| 12/10/2009 15:20 | 127.5898 | -102.124 | -15.8569 | 268.0096 | -180.328 | -30.9481 | 448.4373 | -288.107 | -50.8426 | 206.091 | -129.341 | -23.1544 | -6.27482 | 1.147546 | 0.512356 | 0.426031 | 1.358949 | 0.064398 | 0.059397 | 0.116128 | 0.003916 |
| 12/10/2009 15:21 | 127.1039 | -101.525 | -15.7819 | 269.916 | -180.777 | -31.1107 | 452.9576 | -290.277 | -51.3044 | 210.5019 | -131.281 | -23.5928 | -6.51073 | 0.962318 | 0.515854 | 0.405476 | 1.385487 | 0.067649 | 0.059397 | 0.10258 | 0.002981 |
| 12/10/2009 15:22 | 126.377 | -101.126 | -15.7042 | 269.5253 | -180.566 | -31.0692 | 452.7724 | -290.094 | -51.279 | 211.1725 | -131.692 | -23.6674 | -6.52536 | 0.842018 | 0.508559 | 0.448455 | 1.387383 | 0.064813 | 0.055565 | 0.100644 | 0.003112 |
| 12/10/2009 15:23 | 125.7991 | -101.148 | -15.6658 | 269.0623 | -180.68 | -31.0451 | 452.4824 | -290.34 | -51.276 | 211.4296 | -132.114 | -23.7143 | -6.6241 | 0.72745 | 0.507467 | 0.435375 | 1.374113 | 0.0648 | 0.036404 | 0.108386 | 0.004969 |
| 12/10/2009 15:24 | 125.4975 | -101.01 | -15.6355 | 268.8201 | -180.555 | -31.0197 | 452.3466 | -290.179 | -51.2555 | 211.7402 | -132.277 | -23.747 | -6.67347 | 0.649163 | 0.505471 | 0.424163 | 1.372218 | 0.065443 | 0.036404 | 0.094838 | 0.004034 |
| 12/10/2009 15:25 | 125.1116 | -100.535 | -15.5761 | 268.6775 | -180.188 | -30.9846 | 452.252 | -289.72 | -51.2173 | 211.9954 | -132.279 | -23.7648 | -6.70639 | 0.637706 | 0.506952 | 0.420425 | 1.387383 | 0.066748 | 0.034488 | 0.116128 | 0.005635 |
| 12/10/2009 15:26 | 125.4642 | -100.555 | -15.6018 | 268.8553 | -179.999 | -30.9838 | 452.5091 | -289.558 | -51.2238 | 212.407 | -132.355 | -23.7984 | -6.70273 | 0.605246 | 0.504459 | 0.422294 | 1.394965 | 0.067142 | 0.030656 | 0.114192 | 0.005766 |
| 12/10/2009 15:27 | 125.3486 | -100.412 | -15.5839 | 268.7186 | -179.867 | -30.9652 | 452.4495 | -289.433 | -51.2111 | 212.5949 | -132.426 | -23.8163 | -6.72467 | 0.582334 | 0.504392 | 0.424163 | 1.391174 | 0.066751 | 0.036404 | 0.116128 | 0.005503 |
| 12/10/2009 15:28 | 125.3897 | -100.183 | -15.5709 | 268.5174 | -179.632 | -30.9351 | 452.433 | -289.259 | -51.198 | 212.8027 | -132.456 | -23.8327 | -6.73016 | 0.553693 | 0.502794 | 0.422294 | 1.400652 | 0.067535 | 0.036404 | 0.116128 | 0.005503 |
| 12/10/2009 15:29 | 125.186 | -100.153 | -15.5548 | 268.6014 | -179.507 | -30.9323 | 452.4207 | -289.175 | -51.1913 | 212.955 | -132.524 | -23.8479 | -6.74844 | 0.534599 | 0.502738 | 0.420425 | 1.398756 | 0.067533 | 0.03832 | 0.125805 | 0.006039 |
| 12/10/2009 15:30 | 125.0861 | -100.035 | -15.5398 | 268.5193 | -179.498 | -30.926 | 452.3857 | -289.124 | -51.1853 | 213.0955 | -132.562 | -23.8602 | -6.75759 | 0.511686 | 0.501788 | 0.4279 | 1.402547 | 0.067279 | 0.032572 | 0.119999 | 0.006035 |
| 12/10/2009 15:31 | 125.0058 | -99.9032 | -15.5251 | 268.5096 | -179.349 | -30.915 | 452.3507 | -289.104 | -51.1816 | 213.2123 | -132.62 | -23.8723 | -6.76673 | 0.488774 | 0.500837 | 0.422294 | 1.408234 | 0.068058 | 0.032572 | 0.119999 | 0.006035 |
| 12/10/2009 15:32 | 125.0333 | -99.9255 | -15.5286 | 268.4549 | -179.345 | -30.911 | 452.3404 | -289.057 | -51.1776 | 213.333 | -132.654 | -23.883 | -6.77404 | 0.473499 | 0.500288 | 0.429769 | 1.413921 | 0.067935 | 0.030656 | 0.129676 | 0.006835 |
| 12/10/2009 15:33 | 124.9902 | -99.9293 | -15.5259 | 268.4295 | -179.444 | -30.9161 | 452.3445 | -289.001 | -51.174 | 213.4557 | -132.692 | -23.8941 | -6.7777 | 0.462043 | 0.499749 | 0.4279 | 1.419608 | 0.068456 | 0.034488 | 0.135483 | 0.006972 |
| 12/10/2009 15:34 | 124.9138 | -99.8733 | -15.5167 | 268.4022 | -179.368 | -30.909 | 452.3384 | -288.932 | -51.1688 | 213.5527 | -132.726 | -23.9032 | -6.78867 | 0.452496 | 0.499848 | 0.426031 | 1.413921 | 0.068193 | 0.034488 | 0.129676 | 0.006571 |
| 12/10/2009 15:35 | 145.4624 | -125.019 | -18.671 | 306.0445 | -226.895 | -36.7881 | 519.0509 | -374.653 | -61.6911 | 244.277 | -166.436 | -28.351 | -6.88376 | 1.861789 | 0.603692 | 0.504515 | 1.874572 | 0.094573 | 0.049817 | 0.150967 | 0.006982 |
| 12/10/2009 15:36 | 157.5959 | -125.466 | -19.5394 | 333.0533 | -229.115 | -38.8057 | 560.8409 | -378.225 | -64.8224 | 266.0518 | -170.391 | -30.127 | -7.42131 | 1.439725 | 0.611664 | 0.502646 | 1.923862 | 0.098105 | 0.059397 | 0.137418 | 0.005386 |
| 12/10/2009 15:37 | 156.7881 | -124.954 | -19.4483 | 332.3913 | -228.725 | -38.7331 | 560.4493 | -377.862 | -64.7703 | 266.8409 | -170.979 | -30.2221 | -7.52918 | 1.258305 | 0.606587 | 0.478353 | 1.927654 | 0.100043 | 0.061313 | 0.141289 | 0.005521 |
| 12/10/2009 15:38 | 156.2996 | -124.643 | -19.3931 | 332.0652 | -228.515 | -38.696 | 560.3488 | -377.707 | -64.7526 | 267.2784 | -171.327 | -30.2763 | -7.58585 | 1.139908 | 0.602327 | 0.467142 | 1.925758 | 0.100686 | 0.065145 | 0.158709 | 0.006459 |
| 12/10/2009 15:39 | 155.945 | -124.546 | -19.3619 | 331.8084 | -228.415 | -38.6714 | 560.2022 | -377.476 | -64.7266 | 267.6241 | -171.568 | -30.3168 | -7.62607 | 1.059705 | 0.599567 | 0.461536 | 1.937133 | 0.101858 | 0.067061 | 0.160644 | 0.00646 |
| 12/10/2009 15:40 | 155.7756 | -124.402 | -19.3402 | 331.6266 | -228.348 | -38.6543 | 560.0996 | -377.286 | -64.7064 | 267.8878 | -171.733 | -30.3464 | -7.65532 | 0.998599 | 0.597368 | 0.450324 | 1.940925 | 0.102894 | 0.074725 | 0.154838 | 0.00553 |
| 12/10/2009 15:41 | 155.5846 | -124.239 | -19.3158 | 331.4606 | -228.141 | -38.6285 | 560.0577 | -377.166 | -64.6952 | 268.1156 | -171.873 | -30.3718 | -7.67909 | 0.939403 | 0.594922 | 0.448455 | 1.946612 | 0.103416 | 0.082389 | 0.172257 | 0.006203 |
| 12/10/2009 15:42 | 155.4171 | -124.075 | -19.293 | 331.2966 | -228.084 | -38.6132 | 559.9656 | -377.059 | -64.6815 | 268.2795 | -172.017 | -30.393 | -7.70469 | 0.878299 | 0.592471 | 0.444718 | 1.952299 | 0.104066 | 0.09197 | 0.154838 | 0.00434 |
| 12/10/2009 15:43 | 155.3108 | -123.994 | -19.28 | 331.1702 | -227.809 | -38.5855 | 559.8965 | -376.885 | -64.6647 | 268.4653 | -172.083 | -30.4104 | -7.70834 | 0.849656 | 0.590746 | 0.452192 | 1.957987 | 0.103943 | 0.095802 | 0.185806 | 0.006213 |
| 12/10/2009 15:44 | 155.2025 | -123.881 | -19.2647 | 331.0596 | -227.735 | -38.5728 | 559.8274 | -376.771 | -64.6521 | 268.6072 | -172.164 | -30.4258 | -7.72114 | 0.815285 | 0.589257 | 0.446586 | 1.961778 | 0.104592 | 0.10155 | 0.174193 | 0.005014 |
| 12/10/2009 15:45 | 155.1138 | -126.069 | -19.4096 | 330.9529 | -232.721 | -38.9096 | 559.7792 | -387.76 | -65.4073 | 268.7331 | -175.97 | -30.6972 | -7.73211 | 1.105535 | 0.61005 | 0.448455 | 2.062257 | 0.111398 | 0.11113 | 0.176128 | 0.004487 |
| 12/10/2009 15:46 | 185.3961 | -147.996 | -23.0136 | 394.2395 | -278.213 | -46.4185 | 657.2387 | -464.889 | -77.4589 | 318.087 | -211.484 | -36.5555 | -8.3829 | 1.000509 | 0.647723 | 0.517595 | 2.551407 | 0.140391 | 0.132207 | 0.191613 | 0.004101 |
| 12/10/2009 15:47 | 183.636 | -147.182 | -22.8359 | 392.913 | -277.409 | -46.2714 | 655.9798 | -463.857 | -77.3007 | 317.6072 | -212.723 | -36.608 | -8.49806 | 0.586152 | 0.62707 | 0.424163 | 2.579847 | 0.148804 | 0.134123 | 0.191613 | 0.003968 |
| 12/10/2009 15:48 | 182.8105 | -146.602 | -22.7389 | 392.3417 | -276.987 | -46.2028 | 655.6333 | -463.388 | -77.2444 | 317.8027 | -213.35 | -36.6647 | -8.5858 | 0.35703 | 0.61731 | 0.394265 | 2.591223 | 0.151653 | 0.132207 | 0.193548 | 0.004234 |
| 12/10/2009 15:49 | 182.4305 | -146.442 | -22.7016 | 391.9522 | -276.798 | -46.1628 | 655.4568 | -462.991 | -77.2049 | 318.0144 | -213.727 | -36.7054 | -8.63332 | 0.208105 | 0.610311 | 0.431637 | 2.595016 | 0.149335 | 0.136039 | 0.214839 | 0.005439 |
| 12/10/2009 15:50 | 182.0129 | -146.137 | -22.6517 | 391.7026 | -276.456 | -46.1221 | 655.257 | -462.677 | -77.1694 | 318.2482 | -214.024 | -36.742 | -8.67353 | 0.093551 | 0.605179 | 0.424163 | 2.606392 | 0.150636 | 0.143703 | 0.212903 | 0.004777 |
| 12/10/2009 15:51 | 181.7081 | -145.88 | -22.613 | 391.5328 | -276.313 | -46.1005 | 655.1571 | -462.446 | -77.1465 | 318.4579 | -214.266 | -36.7732 | -8.70826 | 0.001909 | 0.601251 | 0.426031 | 2.608288 | 0.150638 | 0.147535 | 0.214839 | 0.004646 |
| 12/10/2009 15:52 | 181.3697 | -145.489 | -22.5626 | 391.3371 | -276.151 | -46.0757 | 655.1804 | -462.392 | -77.1444 | 318.7199 | -214.508 | -36.808 | -8.73019 | -0.084 | 0.596834 | 0.411082 | 2.619664 | 0.152455 | 0.157116 | 0.205161 | 0.003317 |
| 12/10/2009 15:53 | 181.4113 | -145.396 | -22.5591 | 391.427 | -273.965 | -45.931 | 655.1719 | -462.586 | -77.1572 | 319.2421 | -214.75 | -36.8607 | -8.71557 | -0.11837 | 0.593453 | 0.418557 | 2.638625 | 0.153248 | 0.168612 | 0.21871 | 0.003458 |
| 12/10/2009 15:54 | 181.0353 | -145.166 | -22.5172 | 391.2053 | -274.531 | -45.9548 | 654.9806 | -462.448 | -77.1345 | 319.4336 | -214.919 | -36.8856 | -8.73202 | -0.17946 | 0.590371 | 0.407345 | 2.642417 | 0.154284 | 0.17436 | 0.240001 | 0.004531 |
| 12/10/2009 15:55 | 180.7979 | -145.086 | -22.4953 | 390.9397 | -274.678 | -45.9466 | 654.7723 | -462.313 | -77.1108 | 319.5405 | -215.088 | -36.9047 | -8.75396 | -0.2501 | 0.587009 | 0.411082 | 2.642417 | 0.154026 | 0.182025 | 0.226452 | 0.003067 |
| 12/10/2009 15:56 | 180.6337 | -144.914 | -22.4721 | 390.9577 | -274.941 | -45.966 | 654.6702 | -462.122 | -77.0906 | 319.6655 | -215.215 | -36.922 | -8.76858 | -0.29973 | 0.584592 | 0.409214 | 2.650001 | 0.154678 | 0.189689 | 0.241936 | 0.003607 |
| 12/10/2009 15:57 | 180.5011 | -144.802 | -22.4552 | 390.8579 | -275.109 | -45.9708 | 654.5002 | -462.201 | -77.0843 | 319.7663 | -215.439 | -36.9444 | -8.78686 | -0.38564 | 0.579924 | 0.411082 | 2.636729 | 0.153633 | 0.191605 | 0.230323 | 0.002673 |
| 12/10/2009 15:58 | 180.1252 | -144.986 | -22.442 | 390.6083 | -275.815 | -46.0022 | 654.1218 | -462.044 | -77.0473 | 319.6876 | -215.553 | -36.9469 | -8.83072 | -0.45246 | 0.57834 | 0.396133 | 2.650001 | 0.155581 | 0.191605 | 0.234194 | 0.00294 |

| TS | 8A1 Comp. Strain | 8B1 Tensile Strain | Moment (k*ft) | 8A2 Comp. Strain | 8B2 Tensile Strain | Moment (k*ft) | 8A3 Comp. Strain | 8B3 Tensile Strain | Moment (k*ft) | 8A4 Comp. Strain | 8B4 Tensile Strain | Moment (k*ft) | 8A8 Comp. Strain | 8B8 Tensile Strain | Moment (k*ft) | 8A8 Comp. Strain | 8B8 Tensile Strain | Moment (k*ft) | 8A8 Comp. Strain | 8B8 Tensile Strain | Moment (k*ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12/10/2009 15:59 | 179.9432 | -144.925 | -22.4252 | 390.4545 | -275.958 | -46.0015 | 654.0049 | -461.858 | -77.0265 | 319.7663 | -215.643 | -36.9586 | -8.84535 | -0.49636 | 0.576318 | 0.398002 | 2.646209 | 0.155191 | 0.191605 | 0.251614 | 0.004142 |
| 12/10/2009 16:00 | 179.781 | -144.648 | -22.3949 | 390.2788 | -276.372 | -46.0179 | 653.8965 | -461.663 | -77.0055 | 319.859 | -215.731 | -36.971 | -8.85997 | -0.546 | 0.573901 | 0.396133 | 2.644313 | 0.155189 | 0.185857 | 0.255485 | 0.004806 |
| 12/10/2009 16:01 | 179.9412 | -144.369 | -22.3867 | 390.5064 | -276.205 | -46.0222 | 654.1771 | -461.072 | -76.984 | 320.1756 | -215.643 | -36.9868 | -8.82158 | -0.53073 | 0.572306 | 0.403608 | 2.667065 | 0.156243 | 0.19927 | 0.245807 | 0.003212 |
| 12/10/2009 16:02 | 198.4734 | -169.655 | -25.4114 | 426.0972 | -327.142 | -51.995 | 718.3101 | -548.47 | -87.444 | 346.8961 | -251.891 | -41.3335 | -8.88556 | 0.131735 | 0.622451 | 0.442849 | 3.211265 | 0.1911 | 0.203102 | 0.261292 | 0.004017 |
| 12/10/2009 16:03 | 210.2865 | -170.488 | -26.2843 | 456.7758 | -330.19 | -54.3231 | 755.8088 | -549.784 | -90.1232 | 370.9094 | -259.016 | -43.4828 | -9.57457 | -1.36298 | 0.566834 | 0.381184 | 3.296598 | 0.201247 | 0.206934 | 0.245807 | 0.002683 |
| 12/10/2009 16:04 | 197.8403 | -169.35 | -25.3466 | 424.3454 | -327.886 | -51.9255 | 753.6066 | -547.414 | -89.8076 | 371.6743 | -259.954 | -43.6004 | -9.66777 | -1.8573 | 0.539145 | 0.317652 | 3.294701 | 0.205501 | 0.19927 | 0.25742 | 0.004014 |
| 12/10/2009 16:05 | 197.1615 | -168.944 | -25.2718 | 424.0803 | -327.579 | -51.886 | 752.9224 | -546.753 | -89.7147 | 372.2195 | -260.439 | -43.6715 | -9.71894 | -2.15883 | 0.521863 | 0.287754 | 3.304183 | 0.20822 | 0.203102 | 0.261292 | 0.004017 |
| 12/10/2009 16:06 | 196.7805 | -168.724 | -25.2302 | 423.9959 | -327.2 | -51.854 | 752.5792 | -546.303 | -89.66 | 372.6854 | -260.853 | -43.7322 | -9.75731 | -2.36684 | 0.510153 | 0.261594 | 3.294701 | 0.209371 | 0.201186 | 0.259356 | 0.004015 |
| 12/10/2009 16:07 | 196.4809 | -168.545 | -25.1972 | 423.8855 | -326.719 | -51.8132 | 752.2404 | -545.897 | -89.6085 | 373.0699 | -261.178 | -43.7813 | -9.7829 | -2.53477 | 0.500328 | 0.244777 | 3.304183 | 0.211186 | 0.195437 | 0.251614 | 0.003878 |
| 12/10/2009 16:08 | 196.1277 | -168.202 | -25.1491 | 423.765 | -326.37 | -51.7807 | 752.0246 | -545.847 | -89.5902 | 373.2775 | -261.548 | -43.8211 | -9.82858 | -2.69506 | 0.492417 | 0.226091 | 3.307975 | 0.212738 | 0.195437 | 0.255485 | 0.004145 |
| 12/10/2009 16:09 | 196.0682 | -168.119 | -25.1393 | 423.7449 | -326.099 | -51.7606 | 751.8433 | -545.315 | -89.541 | 373.5949 | -261.677 | -43.8519 | -9.82675 | -2.7962 | 0.485309 | 0.222354 | 3.323146 | 0.214043 | 0.195437 | 0.253549 | 0.004011 |
| 12/10/2009 16:10 | 195.9392 | -167.987 | -25.1213 | 423.6726 | -326.071 | -51.7537 | 751.6621 | -545.002 | -89.5069 | 373.8371 | -261.851 | -43.8806 | -9.84503 | -2.89542 | 0.479722 | 0.220485 | 3.33642 | 0.215089 | 0.197354 | 0.259356 | 0.00428 |
| 12/10/2009 16:11 | 195.8182 | -167.893 | -25.1065 | 423.6304 | -325.795 | -51.7317 | 751.5218 | -544.776 | -89.4816 | 374.0447 | -262.018 | -43.9065 | -9.8633 | -2.99273 | 0.474266 | 0.203668 | 3.334524 | 0.216118 | 0.195437 | 0.269034 | 0.00508 |
| 12/10/2009 16:12 | 195.717 | -167.801 | -25.0931 | 423.5882 | -325.704 | -51.7226 | 751.4376 | -544.521 | -89.4582 | 374.2421 | -262.161 | -43.93 | -9.87609 | -3.07478 | 0.469485 | 0.196194 | 3.353487 | 0.217943 | 0.195437 | 0.261292 | 0.004546 |
| 12/10/2009 16:13 | 217.1552 | -195.438 | -28.4807 | 461.7633 | -379.949 | -58.1022 | 829.7859 | -635.604 | -101.154 | 410.1779 | -303.135 | -49.239 | -10.0533 | -3.30946 | 0.465521 | 0.308309 | 3.93 | 0.25 | 0.214598 | 0.270969 | 0.003891 |
| 12/10/2009 16:14 | 223.4303 | -193.118 | -28.7537 | 480.3769 | -379.356 | -59.3461 | 849.5426 | -634.598 | -102.448 | 429.6548 | -308.52 | -50.9551 | -10.4535 | -5.45928 | 0.344744 | -0.01868 | 4.000173 | 0.277416 | 0.205018 | 0.270969 | 0.004553 |
| 12/10/2009 16:15 | 221.9869 | -192.443 | -28.6075 | 479.7725 | -378.377 | -59.2368 | 847.5939 | -633.679 | -102.25 | 431.3868 | -309.624 | -51.1509 | -10.5229 | -6.18395 | 0.299514 | -0.15695 | 4.062759 | 0.29128 | 0.195437 | 0.243872 | 0.003343 |
| 12/10/2009 16:16 | 220.805 | -192.326 | -28.5178 | 479.154 | -377.978 | -59.1666 | 846.8671 | -633.194 | -102.167 | 432.1101 | -310.339 | -51.2502 | -10.6417 | -6.68926 | 0.272832 | -0.22234 | 4.070346 | 0.296318 | 0.187773 | 0.240001 | 0.003605 |
| 12/10/2009 16:17 | 220.3567 | -192.158 | -28.4753 | 478.9674 | -377.783 | -59.1403 | 846.2848 | -632.617 | -102.086 | 432.7554 | -310.807 | -51.3271 | -10.6947 | -7.01148 | 0.254246 | -0.24663 | 4.064656 | 0.297602 | 0.176277 | 0.247743 | 0.004933 |
| 12/10/2009 16:18 | 219.9581 | -192.101 | -28.4439 | 478.6856 | -377.55 | -59.1047 | 846.0047 | -632.16 | -102.036 | 433.2528 | -311.147 | -51.3848 | -10.7312 | -7.2517 | 0.240186 | -0.27653 | 4.081725 | 0.300844 | 0.178193 | 0.240001 | 0.004267 |
| 12/10/2009 16:19 | 219.8206 | -191.463 | -28.3903 | 478.6998 | -376.683 | -59.0458 | 846.0287 | -631.55 | -101.995 | 433.8222 | -311.316 | -51.4358 | -10.7312 | -7.3985 | 0.230053 | -0.28774 | 4.104484 | 0.303189 | 0.178193 | 0.259356 | 0.005603 |
| 12/10/2009 16:20 | 219.6094 | -191.529 | -28.3803 | 478.6836 | -376.287 | -59.0174 | 846.8364 | -631.251 | -102.03 | 434.2621 | -311.54 | -51.4817 | -10.7367 | -7.5453 | 0.220299 | -0.30082 | 4.117761 | 0.305008 | 0.178193 | 0.261292 | 0.005736 |
| 12/10/2009 16:21 | 219.4162 | -191.432 | -28.3602 | 478.5761 | -376.009 | -58.9908 | 848.1456 | -631.006 | -102.104 | 434.5951 | -311.744 | -51.5187 | -10.7513 | -7.68065 | 0.211964 | -0.31576 | 4.131037 | 0.306956 | 0.180109 | 0.261292 | 0.005604 |
| 12/10/2009 16:22 | 219.2568 | -191.406 | -28.3475 | 478.5112 | -375.678 | -58.9634 | 848.5835 | -630.742 | -102.116 | 434.9385 | -311.918 | -51.5544 | -10.7623 | -7.79122 | 0.205089 | -0.32324 | 4.13483 | 0.307734 | 0.183941 | 0.253549 | 0.004805 |
| 12/10/2009 16:23 | 219.201 | -191.318 | -28.3376 | 478.5274 | -375.47 | -58.9503 | 848.7806 | -630.564 | -102.117 | 435.2325 | -312.095 | -51.587 | -10.7732 | -7.89797 | 0.198477 | -0.33445 | 4.138623 | 0.30877 | 0.187773 | 0.265163 | 0.005342 |
| 12/10/2009 16:24 | 218.9858 | -191.23 | -28.3166 | 478.4889 | -375.206 | -58.9293 | 848.8485 | -630.381 | -102.109 | 435.4854 | -312.24 | -51.6144 | -10.7824 | -7.99137 | 0.19266 | -0.34566 | 4.150003 | 0.310329 | 0.189689 | 0.259356 | 0.004809 |
| 12/10/2009 16:25 | 219.1034 | -191.216 | -28.3237 | 478.5396 | -375.178 | -58.9309 | 848.866 | -630.186 | -102.097 | 435.7054 | -312.388 | -51.6398 | -10.7933 | -8.08096 | 0.187232 | -0.355 | 4.148106 | 0.310843 | 0.195437 | 0.263227 | 0.004679 |
| 12/10/2009 16:26 | 218.9041 | -191.212 | -28.3097 | 478.4788 | -374.937 | -58.91 | 848.8923 | -630.019 | -102.087 | 435.9337 | -312.52 | -51.6647 | -10.8007 | -8.16293 | 0.182078 | -0.355 | 4.150003 | 0.310974 | 0.195437 | 0.27484 | 0.005481 |
| 12/10/2009 16:27 | 218.8225 | -191.221 | -28.3047 | 478.4423 | -374.945 | -58.9081 | 848.8923 | -629.849 | -102.075 | 436.1434 | -312.647 | -51.6879 | -10.808 | -8.23727 | 0.177451 | -0.36621 | 4.159486 | 0.312402 | 0.19927 | 0.282583 | 0.005751 |
| 12/10/2009 16:28 | 218.695 | -191.232 | -28.2967 | 478.4038 | -374.8 | -58.8954 | 848.8616 | -629.699 | -102.063 | 436.3347 | -312.762 | -51.709 | -10.8116 | -8.30589 | 0.172967 | -0.37181 | 4.165176 | 0.313182 | 0.205018 | 0.280647 | 0.005221 |
| 12/10/2009 16:29 | 218.5834 | -191.19 | -28.2861 | 478.3957 | -374.75 | -58.8914 | 848.8791 | -629.553 | -102.054 | 436.5239 | -312.861 | -51.729 | -10.8153 | -8.36879 | 0.168877 | -0.37555 | 4.180349 | 0.314487 | 0.216514 | 0.27484 | 0.004026 |
| 12/10/2009 16:30 | 218.6252 | -191.272 | -28.2947 | 478.42 | -374.724 | -58.8913 | 848.8791 | -629.439 | -102.046 | 436.6843 | -312.983 | -51.7484 | -10.8244 | -8.4355 | 0.164902 | -0.37555 | 4.195522 | 0.315535 | 0.220347 | 0.296131 | 0.005231 |
| 12/10/2009 16:31 | 231.1537 | -211.483 | -30.5546 | 500.1816 | -417.243 | -63.3285 | 891.0916 | -704.679 | -110.154 | 456.7653 | -343.198 | -55.2203 | -10.6819 | -7.74165 | 0.202961 | -0.2784 | 4.658321 | 0.340774 | 0.228011 | 0.311616 | 0.005771 |
| 12/10/2009 16:32 | 247.0268 | -217.37 | -32.0566 | 540.1069 | -430.82 | -67.0217 | 947.5295 | -723.608 | -115.356 | 499.768 | -360.564 | -59.3875 | -11.4565 | -9.5066 | 0.1346 | -0.37555 | 4.958025 | 0.368169 | 0.251004 | 0.300002 | 0.003382 |
| 12/10/2009 16:33 | 244.9709 | -216.422 | -31.8493 | 539.396 | -429.551 | -66.885 | 945.9725 | -721.59 | -115.109 | 505.0879 | -361.526 | -59.8211 | -11.5643 | -10.2269 | 0.092319 | -0.4372 | 4.988375 | 0.37452 | 0.254837 | 0.298067 | 0.002984 |
| 12/10/2009 16:34 | 243.8722 | -216.052 | -31.7479 | 538.8388 | -429.105 | -66.8157 | 945.6149 | -720.408 | -115.003 | 506.3941 | -362.332 | -59.9669 | -11.6118 | -10.6442 | 0.066794 | -0.47831 | 5.024417 | 0.379845 | 0.256753 | 0.30968 | 0.003654 |
| 12/10/2009 16:35 | 243.1739 | -215.783 | -31.6811 | 538.5336 | -428.627 | -66.7617 | 945.7504 | -719.646 | -114.96 | 507.2409 | -362.872 | -60.0627 | -11.6483 | -10.9509 | 0.048142 | -0.51754 | 5.02252 | 0.382423 | 0.262501 | 0.315487 | 0.003658 |
| 12/10/2009 16:36 | 242.6457 | -215.574 | -31.6302 | 538.3082 | -428.332 | -66.7258 | 945.6327 | -718.821 | -114.895 | 512.8109 | -363.228 | -60.4717 | -11.6666 | -11.1871 | 0.033097 | -0.53809 | 5.043387 | 0.385282 | 0.266333 | 0.313551 | 0.003259 |
| 12/10/2009 16:37 | 242.2936 | -215.435 | -31.5964 | 538.2099 | -428.013 | -66.697 | 945.4706 | -718.191 | -114.84 | 514.1 | -363.534 | -60.5818 | -11.6867 | -11.3814 | 0.021071 | -0.55864 | 5.06615 | 0.388271 | 0.268249 | 0.319358 | 0.003528 |
| 12/10/2009 16:38 | 242.0015 | -215.315 | -31.5679 | 538.0932 | -427.793 | -66.6737 | 945.3173 | -717.662 | -114.793 | 514.9145 | -363.809 | -60.657 | -11.7031 | -11.4881 | 0.014842 | -0.57359 | 5.06615 | 0.389303 | 0.273998 | 0.3271 | 0.003666 |
| 12/10/2009 16:39 | 241.7575 | -215.166 | -31.5408 | 538.0584 | -427.602 | -66.6582 | 945.1863 | -717.299 | -114.759 | 515.4915 | -364.048 | -60.7134 | -11.7141 | -11.6253 | 0.006131 | -0.58106 | 5.087017 | 0.391259 | 0.27783 | 0.323229 | 0.003134 |
| 12/10/2009 16:40 | 241.5374 | -215.055 | -31.5179 | 538.001 | -427.394 | -66.6398 | 945.0708 | -716.918 | -114.725 | 515.9561 | -364.27 | -60.7607 | -11.725 | -11.751 | -0.00179 | -0.59788 | 5.104089 | 0.393599 | 0.283578 | 0.336778 | 0.003672 |
| 12/10/2009 16:41 | 241.3334 | -214.964 | -31.4976 | 537.9437 | -427.157 | -66.6195 | 944.9687 | -716.691 | -114.702 | 516.3457 | -364.421 | -60.7981 | -11.7287 | -11.8691 | -0.00969 | -0.60161 | 5.100295 | 0.393595 | 0.293159 | 0.340649 | 0.003278 |
| 12/10/2009 16:42 | 241.1794 | -216.696 | -31.6065 | 537.8884 | -430.235 | -66.8282 | 944.9021 | -723.025 | -115.135 | 516.6937 | -366.586 | -60.9715 | -11.736 | -11.7738 | -0.00261 | -0.60722 | 5.172381 | 0.398957 | 0.298907 | 0.34452 | 0.003149 |
| 12/10/2009 16:43 | 273.8191 | -245.267 | -35.8318 | 634.4356 | -485.045 | -77.2761 | 1043.67 | -809.754 | -127.939 | 578.1344 | -409.265 | -68.1587 | -11.5771 | -12.2234 | -0.04461 | -0.88932 | 5.955899 | 0.472515 | 0.318069 | 0.305809 | -0.00085 |
| 12/10/2009 16:44 | 269.8917 | -243.133 | -35.4134 | 635.1662 | -482.368 | -77.1418 | 1042.312 | -806.525 | -127.623 | 582.5908 | -411.636 | -68.63 | -11.6191 | -13.1204 | -0.10363 | -1.11162 | 6.03938 | 0.493623 | 0.310404 | 0.294196 | -0.00112 |
| 12/10/2009 16:45 | 268.1028 | -242.335 | -35.2348 | 634.5813 | -481.32 | -77.0291 | 1041.031 | -805.104 | -127.436 | 583.9618 | -412.58 | -68.7899 | -11.7031 | -13.6136 | -0.13188 | -1.19382 | 6.10389 | 0.50375 | 0.308488 | 0.288389 | -0.00139 |
| 12/10/2009 16:46 | 267.5462 | -241.948 | -35.1696 | 634.3711 | -480.746 | -76.9749 | 1040.484 | -803.951 | -127.319 | 584.8402 | -413.26 | -68.8974 | -11.747 | -13.9601 | -0.15277 | -1.23491 | 6.141836 | 0.509206 | 0.316152 | 0.301938 | -0.00098 |
| 12/10/2009 16:47 | 266.9092 | -241.584 | -35.1006 | 633.984 | -480.325 | -76.9191 | 1040.689 | -802.176 | -127.21 | 585.6154 | -413.693 | -68.9808 | -11.7762 | -14.2343 | -0.16968 | -1.26106 | 6.155118 | 0.511928 | 0.316152 | 0.296131 | -0.00138 |
| 12/10/2009 16:48 | 266.3226 | -241.193 | -35.0331 | 633.7572 | -480.187 | -76.894 | 1040.457 | -801.521 | -127.149 | 586.1906 | -414.124 | -69.0503 | -11.8018 | -14.4532 | -0.18303 | -1.27974 | 6.175989 | 0.514659 | 0.318069 | 0.30968 | -0.00058 |
| 12/10/2009 16:49 | 266.0353 | -241.117 | -35.008 | 633.5803 | -479.695 | -76.8478 | 1040.106 | -800.986 | -127.088 | 586.6184 | -414.465 | -69.1034 | -11.8164 | -14.6436 | -0.19516 | -1.29656 | 6.20445 | 0.517784 | 0.321901 | 0.311616 | -0.00071 |
| 12/10/2009 16:50 | 265.6275 | -240.945 | -34.968 | 633.2974 | -479.68 | -76.8272 | 1039.809 | -800.542 | -127.037 | 586.985 | -414.771 | -69.1498 | -11.8292 | -14.8073 | -0.20558 | -1.31337 | 6.219629 | 0.519992 | 0.335314 | 0.313551 | -0.0015 |
| 12/10/2009 16:51 | 265.3423 | -241.141 | -34.9618 | 633.0789 | -479.432 | -76.7951 | 1039.527 | -800.181 | -126.992 | 587.2569 | -415.07 | -69.1892 | -11.8511 | -14.9653 | -0.21497 | -1.32644 | 6.221526 | 0.521026 | 0.33723 | 0.315487 | -0.0015 |

| TS | 8A1 Comp. Strain | 8B1 Tensile Strain | Moment (k*ft) | 8A2 Comp. Strain | 8B2 Tensile Strain | Moment (k*ft) | 8A3 Comp. Strain | 8B3 Tensile Strain | Moment (k*ft) | 8A4 Comp. Strain | 8B4 Tensile Strain | Moment (k*ft) | 8A8 Comp. Strain | 8B8 Tensile Strain | Moment (k*ft) | 8A8 Comp. Strain | 8B8 Tensile Strain | Moment (k*ft) | 8A8 Comp. Strain | 8B8 Tensile Strain | Moment (k*ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12/10/2009 16:52 | 265.0671 | -240.735 | -34.9148 | 632.9187 | -479.191 | -76.7674 | 1039.289 | -799.824 | -126.951 | 587.5245 | -415.297 | -69.2233 | -11.8547 | -15.0967 | -0.22379 | -1.33018 | 6.242397 | 0.522724 | 0.341062 | 0.301938 | -0.0027 |
| 12/10/2009 16:53 | 264.9024 | -240.522 | -34.8887 | 632.8063 | -479.001 | -76.7465 | 1039.129 | -799.498 | -126.918 | 587.7753 | -415.509 | -69.2553 | -11.8657 | -15.2185 | -0.23144 | -1.34326 | 6.238602 | 0.523365 | 0.339146 | 0.30968 | -0.00203 |
| 12/10/2009 16:54 | 264.5429 | -240.858 | -34.8871 | 632.4713 | -479.257 | -76.741 | 1038.708 | -799.603 | -126.896 | 587.7943 | -415.829 | -69.2786 | -11.9114 | -15.3746 | -0.23906 | -1.36754 | 6.2405 | 0.525172 | 0.339146 | 0.313551 | -0.00177 |
| 12/10/2009 16:55 | 264.2577 | -240.795 | -34.8631 | 632.334 | -479.112 | -76.7215 | 1038.641 | -799.458 | -126.881 | 588.0134 | -416.029 | -69.3076 | -11.9223 | -15.4774 | -0.2454 | -1.37314 | 6.2405 | 0.525559 | 0.333398 | 0.315487 | -0.00124 |
| 12/10/2009 16:56 | 263.9484 | -240.592 | -34.8277 | 632.1593 | -478.807 | -76.6884 | 1038.416 | -799.183 | -126.847 | 588.1842 | -416.187 | -69.3303 | -11.9333 | -15.5821 | -0.25187 | -1.37875 | 6.244295 | 0.526208 | 0.331482 | 0.315487 | -0.0011 |
| 12/10/2009 16:57 | 264.2517 | -240.42 | -34.8368 | 632.4693 | -478.543 | -76.6916 | 1038.733 | -798.73 | -126.837 | 588.6036 | -416.156 | -69.3571 | -11.8894 | -15.6106 | -0.25687 | -1.37128 | 6.259474 | 0.52674 | 0.344895 | 0.319358 | -0.00176 |
| 12/10/2009 16:58 | 264.079 | -240.377 | -34.8219 | 632.3403 | -478.504 | -76.68 | 1038.645 | -798.522 | -126.817 | 588.7933 | -416.278 | -69.3787 | -11.8913 | -15.6791 | -0.26147 | -1.36754 | 6.287935 | 0.528446 | 0.341062 | 0.332907 | -0.00056 |
| 12/10/2009 16:59 | 296.2484 | -271.215 | -39.1712 | 697.9261 | -539.155 | -85.394 | 1140.275 | -897.652 | -140.675 | 645.8703 | -459.714 | -76.3169 | -11.8164 | -15.0186 | -0.22105 | -1.14338 | 6.917913 | 0.556459 | 0.381301 | 0.352263 | -0.002 |
| 12/10/2009 17:00 | 298.531 | -269.834 | -39.2334 | 707.1127 | -539.585 | -86.0577 | 1150.476 | -899.304 | -141.493 | 660.1654 | -466.529 | -77.7741 | -12.22 | -15.9837 | -0.2598 | -1.2648 | 7.092499 | 0.576892 | 0.381301 | 0.346456 | -0.00241 |
| 12/10/2009 17:01 | 297.5694 | -269.991 | -39.1779 | 708.8017 | -540.732 | -86.2535 | 1153.53 | -901.533 | -141.858 | 664.5066 | -469.895 | -78.3061 | -12.3077 | -16.5375 | -0.29198 | -1.33392 | 7.168408 | 0.586903 | 0.38705 | 0.338714 | -0.00334 |
| 12/10/2009 17:02 | 295.992 | -268.969 | -38.9984 | 707.6918 | -539.273 | -86.0762 | 1151.875 | -899.753 | -141.621 | 665.7737 | -470.902 | -78.4631 | -12.3662 | -16.9942 | -0.31947 | -1.37688 | 7.193079 | 0.591572 | 0.381301 | 0.332907 | -0.00334 |
| 12/10/2009 17:03 | 295.0268 | -268.346 | -38.8888 | 706.9422 | -538.374 | -85.9624 | 1150.678 | -898.46 | -141.449 | 666.5439 | -471.531 | -78.5597 | -12.3954 | -17.3634 | -0.34293 | -1.41237 | 7.221545 | 0.595987 | 0.379385 | 0.334843 | -0.00307 |
| 12/10/2009 17:04 | 294.3242 | -267.9 | -38.8095 | 706.3821 | -537.735 | -85.8796 | 1149.795 | -897.426 | -141.317 | 667.2117 | -472.016 | -78.6393 | -12.4118 | -17.6621 | -0.36242 | -1.44599 | 7.24242 | 0.599749 | 0.381301 | 0.350327 | -0.00214 |
| 12/10/2009 17:05 | 293.8013 | -267.564 | -38.7502 | 706.2937 | -537.138 | -85.8323 | 1149.083 | -896.592 | -141.21 | 667.7601 | -472.493 | -78.7101 | -12.4228 | -17.917 | -0.37926 | -1.43852 | 7.24242 | 0.599233 | 0.354475 | 0.336778 | -0.00122 |
| 12/10/2009 17:06 | 293.4016 | -267.292 | -38.7039 | 706.1231 | -536.623 | -85.785 | 1148.591 | -895.921 | -141.13 | 668.2104 | -472.902 | -78.7693 | -12.4283 | -18.132 | -0.39372 | -1.44226 | 7.250011 | 0.600015 | 0.321901 | 0.365812 | 0.003031 |
| 12/10/2009 17:07 | 293.0585 | -267.051 | -38.6635 | 705.8726 | -536.18 | -85.7371 | 1148.137 | -895.384 | -141.061 | 668.5903 | -473.25 | -78.8196 | -12.4319 | -18.2576 | -0.40214 | -1.45907 | 7.274682 | 0.602878 | 0.321901 | 0.358069 | 0.002497 |
| 12/10/2009 17:08 | 292.7456 | -266.853 | -38.6283 | 705.6242 | -535.863 | -85.6981 | 1147.728 | -894.878 | -140.998 | 668.9211 | -473.561 | -78.8639 | -12.4356 | -18.4098 | -0.41239 | -1.47214 | 7.265193 | 0.603126 | 0.319985 | 0.354198 | 0.002362 |
| 12/10/2009 17:09 | 292.5378 | -266.692 | -38.6029 | 705.4074 | -535.493 | -85.6576 | 1147.284 | -894.347 | -140.931 | 669.1837 | -473.815 | -78.8996 | -12.4429 | -18.562 | -0.42239 | -1.48335 | 7.278478 | 0.604817 | 0.321901 | 0.356134 | 0.002363 |
| 12/10/2009 17:10 | 292.2835 | -266.507 | -38.5725 | 705.2179 | -535.174 | -85.6225 | 1147.006 | -893.968 | -140.886 | 669.4526 | -474.058 | -78.9349 | -12.441 | -18.7065 | -0.4325 | -1.49456 | 7.284171 | 0.605983 | 0.318069 | 0.356134 | 0.002628 |
| 12/10/2009 17:11 | 292.011 | -266.404 | -38.5466 | 704.9969 | -534.96 | -85.5924 | 1146.743 | -893.589 | -140.841 | 669.6981 | -474.287 | -78.9677 | -12.441 | -18.8416 | -0.44182 | -1.50203 | 7.287967 | 0.606761 | 0.323817 | 0.361941 | 0.002632 |
| 12/10/2009 17:12 | 291.7689 | -266.291 | -38.5221 | 704.778 | -534.721 | -85.5608 | 1146.496 | -893.202 | -140.797 | 669.9201 | -474.489 | -78.997 | -12.4374 | -18.95 | -0.44956 | -1.51324 | 7.297456 | 0.60819 | 0.319985 | 0.371618 | 0.003564 |
| 12/10/2009 17:13 | 291.5731 | -266.219 | -38.5036 | 704.5927 | -534.56 | -85.5369 | 1146.266 | -892.803 | -140.754 | 670.1251 | -474.667 | -79.0233 | -12.4356 | -19.0603 | -0.4573 | -1.52445 | 7.306944 | 0.609618 | 0.321901 | 0.373554 | 0.003566 |
| 12/10/2009 17:14 | 288.8396 | -262.109 | -38.0312 | 720.1878 | -549.371 | -87.6358 | 1185.673 | -933.454 | -146.28 | 693.6266 | -492.403 | -81.87 | -12.1853 | -18.4878 | -0.43505 | -1.41611 | 7.568846 | 0.620218 | 0.335314 | 0.381296 | 0.003174 |
| 12/10/2009 17:15 | 286.2504 | -261.952 | -37.8416 | 719.2573 | -546.119 | -87.3471 | 1184.796 | -926.76 | -145.758 | 698.3568 | -493.098 | -82.2444 | -12.262 | -18.969 | -0.46297 | -1.43292 | 7.597314 | 0.623344 | 0.346811 | 0.400652 | 0.003717 |
| 12/10/2009 17:16 | 286.5468 | -262.819 | -37.9219 | 718.0633 | -549.012 | -87.4644 | 1181.954 | -935.572 | -146.17 | 701.771 | -496.203 | -82.6944 | -12.3187 | -18.9938 | -0.46077 | -1.46281 | 7.686516 | 0.631565 | 0.344895 | 0.394845 | 0.003448 |
| 12/10/2009 17:17 | 281.4583 | -257.653 | -37.2141 | 728.8829 | -552.795 | -88.4724 | 1210.146 | -948.024 | -148.975 | 739.1644 | -505.713 | -85.9321 | -12.2109 | -19.2353 | -0.48489 | -1.39929 | 7.855434 | 0.638841 | 0.369805 | 0.412266 | 0.002931 |
| 12/10/2009 17:18 | 282.0022 | -258.131 | -37.2846 | 726.6584 | -551.131 | -88.2039 | 1204.793 | -943.333 | -148.282 | 738.8214 | -505.826 | -85.9162 | -12.3442 | -19.669 | -0.50562 | -1.46841 | 7.89719 | 0.646494 | 0.373637 | 0.416137 | 0.002934 |
| 12/10/2009 17:19 | 282.1735 | -258.291 | -37.3075 | 725.7903 | -550.281 | -88.0854 | 1202.648 | -941.524 | -148.009 | 738.5776 | -505.962 | -85.9088 | -12.4027 | -19.9809 | -0.52311 | -1.4983 | 7.914272 | 0.649736 | 0.377469 | 0.418073 | 0.002803 |
| 12/10/2009 17:20 | 282.2944 | -258.379 | -37.3219 | 725.2983 | -549.698 | -88.0112 | 1201.355 | -940.301 | -147.835 | 738.4697 | -506.098 | -85.9108 | -12.4374 | -20.2528 | -0.53949 | -1.51884 | 7.927558 | 0.652072 | 0.375553 | 0.416137 | 0.002801 |
| 12/10/2009 17:21 | 282.3044 | -258.417 | -37.3253 | 724.9182 | -549.283 | -87.9563 | 1200.402 | -939.369 | -147.705 | 738.4007 | -506.204 | -85.9133 | -12.4611 | -20.4658 | -0.55255 | -1.54126 | 7.937048 | 0.654274 | 0.379385 | 0.421944 | 0.002938 |
| 12/10/2009 17:22 | 255.8813 | -235.977 | -33.9523 | 653.1571 | -480.67 | -78.2665 | 1096.422 | -837.373 | -133.487 | 707.4174 | -483.682 | -82.2199 | -12.8118 | -22.7358 | -0.68504 | -1.79155 | 7.631476 | 0.650458 | 0.379385 | 0.421944 | 0.002938 |
| 12/10/2009 17:23 | 60.60582 | -79.6865 | -9.68418 | 278.9902 | -186.176 | -32.1097 | 692.6195 | -480.098 | -80.951 | 600.279 | -397.296 | -68.8611 | -11.7305 | -27.3184 | -1.07601 | -2.34066 | 6.978638 | 0.643298 | 0.463697 | 0.514853 | 0.003531 |
| 12/10/2009 17:24 | 62.67102 | -81.0395 | -9.92013 | 280.8221 | -187.519 | -32.329 | 691.8304 | -479.518 | -80.8565 | 598.0747 | -396.069 | -68.6243 | -11.6227 | -27.4703 | -1.09393 | -2.3556 | 6.988126 | 0.644984 | 0.459865 | 0.514853 | 0.003796 |
| 12/10/2009 17:25 | 63.7107 | -81.7037 | -10.0377 | 281.7442 | -188.378 | -32.4518 | 691.5247 | -479.229 | -80.8154 | 596.9898 | -395.384 | -68.5021 | -11.5734 | -27.5842 | -1.1052 | -2.37241 | 6.967252 | 0.644703 | 0.465613 | 0.52066 | 0.0038 |
| 12/10/2009 17:26 | 64.41749 | -82.1583 | -10.1179 | 282.3943 | -189.054 | -32.5434 | 691.2938 | -479.035 | -80.7862 | 596.2406 | -394.879 | -68.4156 | -11.5369 | -27.7267 | -1.11756 | -2.38174 | 6.97674 | 0.646003 | 0.467529 | 0.559373 | 0.00634 |
| 12/10/2009 17:27 | -10.5367 | -17.9237 | -0.50992 | 122.475 | -72.9053 | -13.4868 | 518.8117 | -338.634 | -59.1883 | 549.834 | -357.234 | -62.6136 | -10.6874 | -29.0519 | -1.26768 | -2.45458 | 6.802158 | 0.638979 | 0.526932 | 0.584537 | 0.003976 |
| 12/10/2009 17:28 | -8.85269 | -19.1115 | -0.70815 | 124.5631 | -75.0245 | -13.7772 | 517.6242 | -337.659 | -59.039 | 547.0003 | -355.381 | -62.2901 | -10.6399 | -29.2038 | -1.28144 | -2.48259 | 6.773694 | 0.638948 | 0.526932 | 0.588408 | 0.004244 |
| 12/10/2009 17:29 | -7.82334 | -19.9259 | -0.83542 | 125.9106 | -76.1899 | -13.9507 | 516.911 | -337.115 | -58.9522 | 545.361 | -354.437 | -62.1118 | -10.6198 | -29.3082 | -1.29004 | -2.49006 | 6.781285 | 0.639988 | 0.530764 | 0.576794 | 0.003177 |
| 12/10/2009 17:30 | -64.924 | 59.57872 | 8.594243 | -39.5672 | 58.57489 | 6.77461 | 371.978 | -201.937 | -39.6165 | 505.6162 | -310.786 | -56.3551 | -9.28764 | -30.4793 | -1.46283 | -2.44151 | 6.701587 | 0.631135 | 0.624659 | 0.661963 | 0.002575 |

## TABLE E.10 Bending moments for pile 5

| Depth (ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 5 kips | 10 kips | 15 kips | 20 kips | 30 kips | 40 kips | 50 kips | 60 kips | 70 kips | 80 kips | 90 kips | 100 kips | 110 kips |
| 0.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2.5 | 0.151 | 2.820 | 8.519 | 14.035 | 19.989 | 19.891 | 25.716 | 31.47604 | 31.43637 | 37.05004 | 43.70848 | 44.32761 | 50.2472 |
| 5 | 0.181 | 5.324 | 18.415 | 30.267 | 42.335 | 42.107 | 53.802 | 65.04438 | 64.8233 | 74.87646 | 85.70357 | 86.87701 | 96.62912 |
| 7.5 | 0.059 | 3.701 | 16.214 | 28.422 | 40.634 | 40.529 | 52.317 | 63.67013 | 63.53633 | 75.52322 | 87.48806 | 89.20983 | 99.47841 |
| 10 | -0.006 | 0.461 | 2.954 | 5.286 | 7.617 | 7.772 | 10.071 | 12.28294 | 12.42897 | 15.21542 | 18.331 | 18.7832 | 21.96494 |
| 12.5 | -0.012 | -0.111 | -0.605 | -1.044 | -1.440 | -1.454 | -1.820 | -2.22938 | -2.24666 | -2.67361 | -3.07984 | -3.0995 | -3.51966 |
| 15 | 0.001 | 0.003 | -0.017 | -0.046 | -0.070 | -0.074 | -0.098 | -0.12231 | -0.11149 | -0.16481 | -0.21631 | -0.14557 | -0.27417 |
| 17.5 | -0.003 | -0.002 | -0.002 | -0.001 | 0.000 | 0.000 | 0.003 | 0.004407 | 0.004028 | 0.008121 | 0.012621 | 0.015103 | 0.016079 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

## TABLE E.11 Bending moments for pile 6

| Depth (ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 5 kips | 10 kips | 15 kips | 20 kips | 30 kips | 40 kips | 50 kips | 60 kips | 70 kips | 80 kips | 90 kips | 100 kips | 110 kips |
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2.5 | 0.240 | 1.898 | 4.804 | 6.735 | 8.344 | 8.256 | 9.664 | 10.80894 | 10.74229 | 11.69154 | 12.80119 | 13.08704 | 13.66215 |
| 5 | 0.347 | 3.973 | 14.311 | 23.818 | 33.618 | 33.361 | 42.691 | 49.25696 | 49.12834 | 58.3381 | 68.16692 | 72.79968 | 76.98542 |
| 7.5 | 0.129 | 3.531 | 16.568 | 31.490 | 48.039 | 47.826 | 63.257 | 77.55624 | 77.36521 | 92.258 | 106.6909 | 116.5644 | 121.9469 |
| 10 | -0.092 | 1.857 | 10.265 | 16.406 | 22.601 | 22.813 | 28.790 | 34.95247 | 35.0854 | 41.56542 | 48.41053 | 52.04656 | 55.21999 |
| 12.5 | 0.035 | -0.017 | -0.318 | -0.962 | -1.784 | -1.796 | -2.479 | -3.21356 | -3.22487 | -4.00997 | -4.7695 | -5.1856 | -5.54561 |
| 15 | 0.003 | 0.008 | -0.009 | -0.033 | -0.050 | -0.056 | -0.063 | -0.07689 | -0.08316 | -0.10865 | -0.1579 | -0.10374 | -0.22393 |
| 17.5 | -0.002 | -0.003 | -0.004 | 0.004 | 0.006 | 0.007 | 0.008 | 0.008673 | 0.010126 | 0.011352 | 0.012977 | 0.015518 | 0.016623 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

## TABLE E.12 Bending moments for pile 7

| Depth (ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 5 kips | 10 kips | 15 kips | 20 kips | 30 kips | 40 kips | 50 kips | 60 kips | 70 kips | 80 kips | 90 kips | 100 kips | 110 kips |
| 1.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2.5 | -0.190 | 0.791 | 3.420 | 5.517 | 7.752 | 7.661 | 9.789 | 11.82245 | 11.93235 | 14.00209 | 16.02278 | 18.23047 | 18.00585 |
| 5 | 0.286 | 3.556 | 12.575 | 20.053 | 27.783 | 27.640 | 35.104 | 42.3955 | 42.73106 | 49.89008 | 57.44068 | 65.95192 | 65.18804 |
| 7.5 | 0.309 | 3.812 | 17.930 | 31.129 | 44.815 | 44.714 | 57.850 | 70.86688 | 71.7361 | 83.94622 | 97.53422 | 112.5432 | 111.3711 |
| 10 | 0.066 | 1.374 | 10.345 | 17.678 | 24.862 | 24.980 | 31.911 | 39.23655 | 40.03581 | 47.22579 | 55.42343 | 63.35311 | 63.62902 |
| 12.5 | 0.000 | 0.011 | 0.164 | 0.102 | -0.006 | 0.027 | -0.048 | -0.03764 | 0.048253 | 0.123161 | 0.330588 | 0.414306 | 0.673524 |
| 15 | 0.007 | 0.007 | -0.069 | -0.159 | -0.255 | -0.260 | -0.360 | -0.50447 | -0.48455 | -0.66296 | -0.79321 | -0.88702 | -0.92557 |
| 17.5 | 0.000 | 0.000 | 0.005 | 0.015 | 0.024 | 0.023 | 0.036 | 0.045805 | 0.059196 | 0.045225 | 0.035457 | 0.022753 | 0.014053 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

## TABLE E.13 Bending moments for pile 8

| Depth (ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) | Moment (k-ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 5 kips | 10 kips | 15 kips | 20 kips | 30 kips | 40 kips | 50 kips | 60 kips | 70 kips | 80 kips | 90 kips | 100 kips | 110 kips |
| 0.9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2.5 | -0.579 | -2.802 | -7.665 | -11.739 | -15.704 | -15.529 | -19.293 | -22.5626 | -25.4114 | -25.0931 | -28.3475 | -32.0566 | -31.6065 |
| 5 | -0.190 | -4.034 | -14.599 | -22.899 | -31.069 | -30.911 | -38.613 | -46.0757 | -51.995 | -51.7226 | -58.9634 | -67.0217 | -66.8282 |
| 7.5 | 0.029 | -4.198 | -22.761 | -37.188 | -51.279 | -51.178 | -64.681 | -77.1444 | -87.444 | -89.4582 | -102.116 | -115.356 | -115.135 |
| 10 | 0.026 | -0.876 | -9.227 | -16.560 | -23.667 | -23.883 | -30.393 | -36.808 | -41.3335 | -43.93 | -51.5544 | -59.3875 | -60.9715 |
| 12.5 | -0.006 | -0.009 | 0.182 | 0.372 | 0.509 | 0.500 | 0.592 | 0.596834 | 0.622451 | 0.469485 | 0.205089 | 0.1346 | -0.00261 |
| 15 | -0.009 | -0.012 | 0.008 | 0.035 | 0.065 | 0.068 | 0.104 | 0.152455 | 0.1911 | 0.217943 | 0.307734 | 0.368169 | 0.398957 |
| 17.5 | 0.003 | 0.002 | 0.002 | 0.002 | 0.003 | 0.007 | 0.004 | 0.003317 | 0.004017 | 0.004546 | 0.004805 | 0.003382 | 0.003149 |
| 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# APPENDIX F
# LABORATORY BENDING TESTS

TABLE F.1 Load and displacement measurements for lab pile 1

| | Distance from Left End of Pile | | |
|---|---|---|---|
| Total Load | 2 ft | 3 ft | 4 ft |
| (kips) | Vertical Displacement (in) | | |
| 0.1 | 0.0000 | 0.0012 | 0.0013 |
| 16.0 | 0.0120 | 0.0146 | 0.0092 |
| 23.4 | 0.0229 | 0.0251 | 0.0166 |
| 25.4 | 0.0253 | 0.0252 | 0.0174 |
| 31.3 | 0.0384 | 0.0406 | 0.0227 |
| 38.1 | 0.0469 | 0.0516 | 0.0299 |
| 45.5 | 0.0616 | 0.0653 | 0.0359 |
| 53.5 | 0.0698 | 0.0774 | 0.0430 |
| 62.2 | 0.0842 | 0.0886 | 0.0506 |
| 71.2 | 0.0937 | 0.1044 | 0.0579 |
| 80.4 | 0.1076 | 0.1184 | 0.0655 |
| 89.8 | 0.1192 | 0.1336 | 0.0736 |
| 99.8 | 0.1310 | 0.1487 | 0.0799 |
| 110.3 | 0.1432 | 0.1623 | 0.0907 |
| 121.4 | 0.1546 | 0.1765 | 0.0992 |
| 132.8 | 0.1670 | 0.1920 | 0.1089 |
| 147.9 | 0.1832 | 0.2133 | 0.1211 |
| 163.3 | 0.2037 | 0.2369 | 0.1335 |
| 176.1 | 0.2176 | 0.2620 | 0.1441 |
| 182.8 | 0.2246 | 0.4580 | 0.1498 |

TABLE F.2 Bending moments for lab pile 1

| Distance from | Total Load (kips) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Left End | 25 kips | 50 kips | 75 kips | 100 kips | 125 kips | 150 kips | 175 kips | 200 kips | 225 kips | 250 kips | 275 kips | 300 kips |
| (ft) | Bending Moment (k*ft) | | | | | | | | | | | |
| 0.5 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.5 | 4.39 | 5.92 | 7.60 | 3.56 | 4.54 | 5.22 | 10.32 | 12.48 | 13.84 | 14.84 | 15.58 | 4.35 |
| 2 | 12.43 | 14.86 | 21.37 | 31.16 | 41.04 | 51.03 | 65.91 | 76.63 | 86.21 | 97.01 | 106.33 | 28.42 |
| 3 | 31.29 | 43.40 | 66.59 | 90.69 | 99.59 | 107.92 | 119.15 | 128.28 | 135.44 | 77.16 | 85.09 | 4.44 |
| 4 | 12.71 | 20.01 | 30.06 | 40.40 | 60.27 | 75.64 | 93.84 | 108.13 | 120.96 | 132.78 | 141.15 | 66.43 |
| 4.5 | 6.95 | 10.77 | 15.57 | 20.92 | 26.44 | 32.08 | 35.95 | 39.68 | 43.98 | 50.32 | 55.44 | 18.81 |
| 5.5 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

TABLE F.3 Load and displacement measurements for lab pile 2

| | Distance from Left End of Pile | | | |
|---|---|---|---|---|
| Total Load (kips) | 1.5 ft | 2.5 ft | 3.5 ft | 4.5 ft |
| | Vertical Displacement (in) | | | |
| 5.0 | 0.0040 | 0.0104 | -0.0343 | 0.0194 |
| 10.0 | 0.0120 | 0.0196 | -0.0082 | 0.0256 |
| 20.0 | 0.0228 | 0.0336 | 0.1451 | 0.0440 |
| 30.0 | 0.0283 | 0.0462 | 0.1173 | 0.0586 |
| 40.0 | 0.0414 | 0.0601 | 0.1756 | 0.0692 |
| 50.0 | 0.0496 | 0.0706 | 0.1070 | 0.0808 |
| 60.0 | 0.0583 | 0.0832 | 0.1475 | 0.0956 |
| 70.0 | 0.0644 | 0.0923 | 0.2611 | 0.1029 |
| 80.0 | 0.0727 | 0.1047 | 0.1390 | 0.1172 |
| 90.0 | 0.0837 | 0.1170 | 0.2714 | 0.1276 |
| 100.0 | 0.0899 | 0.1278 | 0.1866 | 0.1401 |
| 110.0 | 0.0955 | 0.1395 | 0.2326 | 0.1479 |
| 120.0 | 0.1044 | 0.1499 | 0.1958 | 0.1582 |
| 130.0 | 0.1109 | 0.1604 | 0.2179 | 0.1698 |
| 140.0 | 0.1191 | 0.1690 | 0.2204 | 0.1787 |
| 150.0 | 0.1251 | 0.1786 | 0.2224 | 0.1875 |
| 160.0 | 0.1326 | 0.1871 | 0.1437 | 0.1965 |
| 170.0 | 0.1364 | 0.1956 | 0.0929 | 0.2048 |
| 180.0 | 0.1429 | 0.2027 | 0.0553 | 0.2125 |
| 190.0 | 0.1532 | 0.2113 | 0.1859 | 0.2191 |
| 200.0 | 0.1586 | 0.2204 | 0.1679 | 0.2279 |
| 210.0 | 0.1629 | 0.2313 | 0.2004 | 0.2361 |
| 220.0 | 0.1709 | 0.2402 | 0.1897 | 0.2423 |
| 230.0 | 0.1814 | 0.2496 | 0.2236 | 0.2539 |
| 240.0 | 0.1834 | 0.2588 | 0.2067 | 0.2597 |
| 250.0 | 0.1952 | 0.2675 | 0.2406 | 0.2671 |
| 260.0 | 0.1990 | 0.2766 | 0.2769 | 0.2746 |
| 270.0 | 0.2068 | 0.2866 | 0.2102 | 0.2823 |
| 280.0 | 0.2139 | 0.2979 | 0.2330 | 0.2910 |
| 290.0 | 0.2254 | 0.3084 | 0.2490 | 0.3000 |
| 300.0 | 0.2314 | 0.3221 | 0.2991 | 0.3119 |
| 303.6 | 0.2382 | 0.3298 | 0.3307 | 0.3167 |

TABLE F.4 Bending moments for lab pile 2

| Distance from | Total Load (kips) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Left End | 25 kips | 50 kips | 75 kips | 100 kips | 125 kips | 150 kips | 175 kips | 200 kips | 225 kips | 250 kips | 275 kips | 300 kips |
| (ft) | Bending Moment (k*ft) | | | | | | | | | | | |
| 0.5 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.5 | 10.18 | 18.00 | 23.32 | 29.19 | 35.48 | 39.09 | 43.33 | 47.04 | 52.74 | 55.83 | 59.79 | 63.55 |
| 2 | 29.05 | 45.07 | 58.63 | 73.02 | 75.19 | 76.67 | 78.48 | 80.06 | 10.47 | 12.10 | 12.69 | 14.38 |
| 3 | 29.88 | 47.84 | 59.97 | 75.35 | 89.83 | 102.03 | 111.44 | 118.93 | 127.61 | 131.74 | 137.10 | 65.18 |
| 4 | 11.76 | 21.92 | 30.20 | 39.96 | 47.55 | 55.19 | 61.24 | 66.31 | 72.08 | 75.67 | 78.71 | 80.58 |
| 4.5 | 6.68 | 4.52 | 7.16 | 8.89 | 12.90 | 17.16 | 20.80 | 23.68 | 28.55 | 31.27 | 33.12 | 34.59 |
| 5.5 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

TABLE F.5 Load and displacement measurements for lab pile 3

| | Distance from Left End of Pile | | | |
|---|---|---|---|---|
| Total Load | 1.5 ft | 2.5 ft | 3.5 ft | 4.5 ft |
| (kips) | Vertical Displacement (in) | | | |
| 10.0 | 0.0125 | 0.0141 | 0.0169 | 0.0103 |
| 20.0 | 0.0231 | 0.0362 | 0.0395 | 0.0332 |
| 30.0 | 0.0399 | 0.0555 | 0.0580 | 0.0495 |
| 40.0 | 0.0505 | 0.0689 | 0.0738 | 0.0622 |
| 50.0 | 0.0609 | 0.0846 | 0.0886 | 0.0756 |
| 60.0 | 0.0714 | 0.0978 | 0.1021 | 0.0873 |
| 70.0 | 0.0809 | 0.1111 | 0.1165 | 0.1009 |
| 80.0 | 0.0903 | 0.1224 | 0.1312 | 0.1106 |
| 90.0 | 0.0995 | 0.1335 | 0.1424 | 0.1214 |
| 100.0 | 0.1071 | 0.1479 | 0.1526 | 0.1331 |
| 110.0 | 0.1141 | 0.1609 | 0.1646 | 0.1412 |
| 120.0 | 0.1259 | 0.1730 | 0.1765 | 0.1521 |
| 130.0 | 0.1324 | 0.1818 | 0.1839 | 0.1609 |
| 140.0 | 0.1400 | 0.1969 | 0.1972 | 0.1728 |
| 150.0 | 0.1485 | 0.2033 | 0.2062 | 0.1793 |
| 160.0 | 0.1559 | 0.2167 | 0.2170 | 0.1878 |
| 170.0 | 0.1646 | 0.2271 | 0.2269 | 0.1959 |
| 180.0 | 0.1726 | 0.2362 | 0.2363 | 0.2058 |
| 190.0 | 0.1787 | 0.2456 | 0.2459 | 0.2133 |
| 200.0 | 0.1858 | 0.2573 | 0.2555 | 0.2204 |
| 210.0 | 0.1971 | 0.2682 | 0.2646 | 0.2283 |
| 220.0 | 0.2025 | 0.2781 | 0.2748 | 0.2397 |
| 230.0 | 0.2091 | 0.2890 | 0.2846 | 0.2469 |
| 240.0 | 0.2225 | 0.2989 | 0.2949 | 0.2550 |
| 250.0 | 0.2260 | 0.3101 | 0.3069 | 0.2605 |
| 260.0 | 0.2380 | 0.3225 | 0.3175 | 0.2701 |
| 270.0 | 0.2426 | 0.3371 | 0.3306 | 0.2796 |
| 275.0 | 0.2521 | 0.3452 | 0.3363 | 0.2863 |

TABLE F.6 Bending moments for lab pile 3

| Distance from | Total Load (kips) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Left End | 50 kips | 75 kips | 100 kips | 125 kips | 150 kips | 175 kips | 200 kips | 225 kips | 250 kips | 275 kips | 278 kips |
| (ft) | Bending Moment (k*ft) | | | | | | | | | | |
| 0.5 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.5 | 2.98 | 4.61 | 4.97 | 5.12 | 5.10 | 5.24 | 5.66 | 6.50 | 7.71 | 8.65 | 8.74 |
| 2 | 21.12 | 31.49 | 43.99 | 54.40 | 56.13 | 58.04 | 62.71 | 67.96 | 73.65 | 78.61 | 78.66 |
| 3 | 52.62 | 78.65 | 84.52 | 83.94 | 90.19 | 90.92 | 90.20 | 25.41 | 98.13 | 6.98 | 6.42 |
| 4 | 40.21 | 56.45 | 80.82 | 96.27 | 99.62 | 100.91 | 104.17 | 108.87 | 113.84 | 47.50 | 118.74 |
| 4.5 | 3.28 | 5.04 | 4.17 | 11.01 | 12.26 | 13.05 | 15.30 | 17.07 | 19.52 | 17.89 | 17.87 |
| 5.5 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

TABLE F.7 Load and displacement measurements for lab pile 4

| | Distance from Left End of Pile | | | |
|---|---|---|---|---|
| Total Load | 1.5 ft | 2.5 ft | 3.5 ft | 4.5 ft |
| (kips) | Vertical Displacement (in) | | | |
| 5.0 | 0.0000 | 0.0023 | -0.0004 | 0.0003 |
| 10.0 | 0.0000 | -0.0004 | 0.0112 | 0.0159 |
| 20.0 | 0.0146 | 0.0205 | 0.0349 | 0.0316 |
| 30.0 | 0.0259 | 0.0360 | 0.0557 | 0.0510 |
| 40.0 | 0.0368 | 0.0512 | 0.0715 | 0.0631 |
| 50.0 | 0.0448 | 0.0659 | 0.0859 | 0.0752 |
| 60.0 | 0.0544 | 0.0784 | 0.1019 | 0.0885 |
| 70.0 | 0.0658 | 0.0894 | 0.1141 | 0.1012 |
| 80.0 | 0.0720 | 0.1015 | 0.1283 | 0.1123 |
| 90.0 | 0.0820 | 0.1135 | 0.1412 | 0.1235 |
| 100.0 | 0.0892 | 0.1218 | 0.1524 | 0.1349 |
| 110.0 | 0.0982 | 0.1332 | 0.1651 | 0.1458 |
| 120.0 | 0.1051 | 0.1448 | 0.1765 | 0.1555 |
| 130.0 | 0.1136 | 0.1549 | 0.1890 | 0.1661 |
| 140.0 | 0.1188 | 0.1638 | 0.1997 | 0.1761 |
| 150.0 | 0.1308 | 0.1730 | 0.2122 | 0.1864 |
| 160.0 | 0.1371 | 0.1825 | 0.2230 | 0.1945 |
| 170.0 | 0.1409 | 0.1941 | 0.2356 | 0.2031 |
| 180.0 | 0.1494 | 0.2040 | 0.2453 | 0.2127 |
| 190.0 | 0.1594 | 0.2121 | 0.2555 | 0.2209 |
| 200.0 | 0.1628 | 0.2226 | 0.2665 | 0.2291 |
| 210.0 | 0.1747 | 0.2326 | 0.2777 | 0.2370 |
| 220.0 | 0.1780 | 0.2415 | 0.2880 | 0.2457 |
| 230.0 | 0.1873 | 0.2509 | 0.2995 | 0.2563 |
| 240.0 | 0.1927 | 0.2612 | 0.3097 | 0.2632 |
| 250.0 | 0.2051 | 0.2706 | 0.3201 | 0.2726 |
| 260.0 | 0.2097 | 0.2821 | 0.3320 | 0.2816 |
| 270.0 | 0.2209 | 0.2941 | 0.3438 | 0.2907 |
| 280.0 | 0.2293 | 0.3103 | 0.3546 | 0.3022 |
| 290.0 | 0.2441 | 0.3253 | 0.3712 | 0.3132 |
| 295.0 | 0.2526 | 0.3387 | 0.3870 | 0.3242 |

TABLE F.8 Bending moments for lab pile 4

| Distance from | Total Load (kips) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Left End | 25 kips | 50 kips | 75 kips | 100 kips | 125 kips | 150 kips | 175 kips | 200 kips | 225 kips | 250 kips | 275 kips | 295 kips |
| (ft) | Bending Moment (k*ft) | | | | | | | | | | | |
| 0.5 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.5 | 15.37 | 30.89 | 43.52 | 56.29 | 69.23 | 85.31 | 94.83 | 106.75 | 117.54 | 127.35 | 139.16 | 148.01 |
| 2 | 15.80 | 37.55 | 52.36 | 65.15 | 78.06 | 90.40 | 97.74 | 106.98 | 116.46 | 124.21 | 133.96 | 141.44 |
| 3 | 17.70 | 43.14 | 59.96 | 75.87 | 91.91 | 110.42 | 121.34 | 133.61 | 141.65 | 119.92 | 34.96 | 34.96 |
| 4 | 40.56 | 58.80 | 80.75 | 94.81 | 99.45 | 106.25 | 109.17 | 44.80 | 119.61 | 53.83 | 59.48 | 13.33 |
| 4.5 | 8.69 | 53.35 | 66.40 | 79.42 | 91.15 | 111.37 | 120.80 | 135.33 | 146.90 | 146.90 | 146.90 | 146.90 |
| 5.5 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

TABLE F.9 Load and displacement measurements for lab pile 5

| | Distance from Left End of Pile | | | |
|---|---|---|---|---|
| Total Load (kips) | 1.5 ft | 2.5 ft | 3.5 ft | 4.5 ft |
| | Vertical Displacement (in) | | | |
| 5.0 | 0.0053 | 0.0119 | 0.0092 | 0.0094 |
| 10.0 | 0.0092 | 0.0205 | 0.0192 | 0.0202 |
| 20.0 | 0.0211 | 0.0324 | 0.0343 | 0.0378 |
| 30.0 | 0.0323 | 0.0479 | 0.0501 | 0.0468 |
| 40.0 | 0.0381 | 0.0601 | 0.0640 | 0.0594 |
| 50.0 | 0.0486 | 0.0722 | 0.0767 | 0.0714 |
| 60.0 | 0.0620 | 0.0854 | 0.0881 | 0.0815 |
| 70.0 | 0.0653 | 0.0957 | 0.1002 | 0.0926 |
| 80.0 | 0.0758 | 0.1077 | 0.1110 | 0.1031 |
| 90.0 | 0.0843 | 0.1215 | 0.1241 | 0.1149 |
| 100.0 | 0.0935 | 0.1325 | 0.1362 | 0.1233 |
| 110.0 | 0.1006 | 0.1429 | 0.1453 | 0.1319 |
| 120.0 | 0.1090 | 0.1558 | 0.1565 | 0.1422 |
| 130.0 | 0.1144 | 0.1660 | 0.1682 | 0.1519 |
| 140.0 | 0.1265 | 0.1761 | 0.1789 | 0.1618 |
| 150.0 | 0.1335 | 0.1863 | 0.1906 | 0.1709 |
| 160.0 | 0.1371 | 0.1989 | 0.2014 | 0.1785 |
| 170.0 | 0.1469 | 0.2074 | 0.2118 | 0.1890 |
| 180.0 | 0.1573 | 0.2202 | 0.2219 | 0.1964 |
| 190.0 | 0.1600 | 0.2286 | 0.2335 | 0.2061 |
| 200.0 | 0.1711 | 0.2398 | 0.2417 | 0.2133 |
| 210.0 | 0.1761 | 0.2490 | 0.2511 | 0.2194 |
| 220.0 | 0.1862 | 0.2602 | 0.2611 | 0.2284 |
| 230.0 | 0.1929 | 0.2700 | 0.2682 | 0.2364 |
| 240.0 | 0.2015 | 0.2787 | 0.2796 | 0.2455 |
| 250.0 | 0.2084 | 0.2915 | 0.2895 | 0.2526 |
| 260.0 | 0.2192 | 0.3051 | 0.3006 | 0.2611 |
| 269.0 | 0.2306 | 0.3248 | 0.3159 | 0.2748 |

TABLE F.10 Bending moments for lab pile 5

| Distance from | Total Load (kips) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Left End | 25 kips | 50 kips | 75 kips | 100 kips | 125 kips | 150 kips | 175 kips | 200 kips | 225 kips | 250 kips | 275 kips | 300 kips |
| (ft) | Bending Moment (k*ft) | | | | | | | | | | | |
| 0.5 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.5 | 4.39 | 5.92 | 7.60 | 3.56 | 4.54 | 5.22 | 10.32 | 12.48 | 13.84 | 14.84 | 15.58 | 4.35 |
| 2 | 12.43 | 14.86 | 21.37 | 31.16 | 41.04 | 51.03 | 65.91 | 76.63 | 86.21 | 97.01 | 106.33 | 28.42 |
| 3 | 31.29 | 43.40 | 66.59 | 90.69 | 99.59 | 107.92 | 119.15 | 128.28 | 135.44 | 77.16 | 85.09 | 4.44 |
| 4 | 12.71 | 20.01 | 30.06 | 40.40 | 60.27 | 75.64 | 93.84 | 108.13 | 120.96 | 132.78 | 141.15 | 66.43 |
| 4.5 | 6.95 | 10.77 | 15.57 | 20.92 | 26.44 | 32.08 | 35.95 | 39.68 | 43.98 | 50.32 | 55.44 | 18.81 |
| 5.5 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

TABLE F.11 Load and displacement measurements for lab pile 6

| | Distance from Left End of Pile | | | |
|---|---|---|---|---|
| Total Load | 1.5 ft | 2.5 ft | 3.5 ft | 4.5 ft |
| (kips) | Vertical Displacement (in) | | | |
| 5.0 | -0.0015 | 0.0003 | 0.0008 | 0.0005 |
| 10.0 | 0.0056 | 0.0111 | 0.0096 | 0.0084 |
| 20.0 | 0.0197 | 0.0307 | 0.0269 | 0.0272 |
| 30.0 | 0.0293 | 0.0466 | 0.0482 | 0.0485 |
| 40.0 | 0.0396 | 0.0652 | 0.0623 | 0.0590 |
| 50.0 | 0.0539 | 0.0776 | 0.0751 | 0.0698 |
| 60.0 | 0.0617 | 0.0889 | 0.0904 | 0.0820 |
| 70.0 | 0.0701 | 0.1072 | 0.1060 | 0.0946 |
| 80.0 | 0.0785 | 0.1151 | 0.1186 | 0.1042 |
| 90.0 | 0.0893 | 0.1318 | 0.1328 | 0.1151 |
| 100.0 | 0.1008 | 0.1473 | 0.1456 | 0.1282 |
| 110.0 | 0.1065 | 0.1587 | 0.1599 | 0.1358 |
| 120.0 | 0.1162 | 0.1739 | 0.1712 | 0.1477 |
| 130.0 | 0.1270 | 0.1829 | 0.1818 | 0.1542 |
| 140.0 | 0.1299 | 0.1983 | 0.1921 | 0.1643 |
| 150.0 | 0.1399 | 0.2106 | 0.2049 | 0.1751 |
| 160.0 | 0.1515 | 0.2204 | 0.2166 | 0.1825 |
| 170.0 | 0.1534 | 0.2305 | 0.2268 | 0.1923 |
| 180.0 | 0.1651 | 0.2420 | 0.2364 | 0.2008 |
| 190.0 | 0.1695 | 0.2527 | 0.2484 | 0.2094 |
| 200.0 | 0.1787 | 0.2639 | 0.2591 | 0.2173 |
| 210.0 | 0.1846 | 0.2743 | 0.2677 | 0.2250 |
| 220.0 | 0.1967 | 0.2867 | 0.2798 | 0.2330 |
| 230.0 | 0.1987 | 0.2955 | 0.2893 | 0.2403 |
| 240.0 | 0.2085 | 0.3076 | 0.3006 | 0.2484 |
| 250.0 | 0.2172 | 0.3177 | 0.3106 | 0.2561 |
| 260.0 | 0.2217 | 0.3275 | 0.3213 | 0.2637 |
| 270.0 | 0.2359 | 0.3420 | 0.3345 | 0.2723 |
| 280.0 | 0.2439 | 0.3538 | 0.3448 | 0.2805 |
| 290.0 | 0.2501 | 0.3678 | 0.3567 | 0.2882 |
| 300.0 | 0.2617 | 0.3831 | 0.3711 | 0.2998 |
| 302.6 | 0.2672 | 0.3937 | 0.3805 | 0.3046 |

TABLE F.12 Load and displace ment measurements for lab pile 7

| | Distance from Left End of Pile | | | |
|---|---|---|---|---|
| Total Load | 1.5 ft | 2.5 ft | 3.5 ft | 4.5 ft |
| (kips) | Vertical Displacement (in) | | | |
| 5.0 | 0.0059 | 0.0062 | 0.0100 | 0.0168 |
| 10.0 | 0.0151 | 0.0131 | 0.0190 | 0.0238 |
| 20.0 | 0.0252 | 0.0367 | 0.0422 | 0.0417 |
| 30.0 | 0.0401 | 0.0549 | 0.0569 | 0.0564 |
| 40.0 | 0.0492 | 0.0679 | 0.0723 | 0.0691 |
| 50.0 | 0.0605 | 0.0840 | 0.0872 | 0.0827 |
| 60.0 | 0.0698 | 0.1010 | 0.1016 | 0.0947 |
| 70.0 | 0.0798 | 0.1151 | 0.1142 | 0.1043 |
| 80.0 | 0.0898 | 0.1294 | 0.1266 | 0.1180 |
| 90.0 | 0.0970 | 0.1412 | 0.1399 | 0.1245 |
| 100.0 | 0.1045 | 0.1526 | 0.1514 | 0.1367 |
| 110.0 | 0.1148 | 0.1655 | 0.1630 | 0.1488 |
| 120.0 | 0.1265 | 0.1761 | 0.1757 | 0.1560 |
| 130.0 | 0.1315 | 0.1878 | 0.1887 | 0.1683 |
| 140.0 | 0.1400 | 0.2025 | 0.2013 | 0.1780 |
| 150.0 | 0.1492 | 0.2127 | 0.2141 | 0.1871 |
| 160.0 | 0.1589 | 0.2231 | 0.2252 | 0.1943 |
| 170.0 | 0.1670 | 0.2376 | 0.2384 | 0.2048 |
| 180.0 | 0.1745 | 0.2480 | 0.2486 | 0.2138 |
| 190.0 | 0.1799 | 0.2595 | 0.2609 | 0.2241 |
| 200.0 | 0.1937 | 0.2728 | 0.2722 | 0.2315 |
| 210.0 | 0.2000 | 0.2852 | 0.2820 | 0.2402 |
| 220.0 | 0.2041 | 0.2970 | 0.2932 | 0.2486 |
| 230.0 | 0.2207 | 0.3100 | 0.3080 | 0.2574 |
| 234.8 | 0.2235 | 0.3216 | 0.3179 | 0.2658 |

TABLE F.13 Load and displacement measurements for lab pile 8

| | Distance from Left End of Pile | | | |
|---|---|---|---|---|
| Total Load | 1.5 ft | 2.5 ft | 3.5 ft | 4.5 ft |
| (kips) | Vertical Displacement (in) | | | |
| 5.0 | 0.0037 | 0.0066 | 0.0042 | 0.0055 |
| 10.0 | 0.0089 | 0.0123 | 0.0099 | 0.0124 |
| 20.0 | 0.0183 | 0.0263 | 0.0287 | 0.0282 |
| 30.0 | 0.0290 | 0.0424 | 0.0463 | 0.0439 |
| 40.0 | 0.0397 | 0.0607 | 0.0669 | 0.0631 |
| 50.0 | 0.0482 | 0.0748 | 0.0790 | 0.0698 |
| 60.0 | 0.0567 | 0.0875 | 0.0920 | 0.0815 |
| 70.0 | 0.0647 | 0.1009 | 0.1041 | 0.0928 |
| 80.0 | 0.0718 | 0.1141 | 0.1161 | 0.1011 |
| 90.0 | 0.0803 | 0.1248 | 0.1287 | 0.1136 |
| 100.0 | 0.0894 | 0.1355 | 0.1387 | 0.1222 |
| 110.0 | 0.1001 | 0.1477 | 0.1505 | 0.1319 |
| 120.0 | 0.1152 | 0.1721 | 0.1795 | 0.1591 |
| 130.0 | 0.1211 | 0.1836 | 0.1884 | 0.1697 |
| 140.0 | 0.1299 | 0.1933 | 0.1984 | 0.1758 |
| 150.0 | 0.1361 | 0.2029 | 0.2085 | 0.1840 |
| 160.0 | 0.1440 | 0.2138 | 0.2197 | 0.1935 |
| 170.0 | 0.1497 | 0.2235 | 0.2306 | 0.2021 |
| 180.0 | 0.1611 | 0.2334 | 0.2418 | 0.2114 |
| 190.0 | 0.1681 | 0.2448 | 0.2516 | 0.2170 |
| 200.0 | 0.1730 | 0.2572 | 0.2628 | 0.2255 |
| 210.0 | 0.1815 | 0.2685 | 0.2743 | 0.2333 |
| 220.0 | 0.1926 | 0.2796 | 0.2857 | 0.2412 |
| 230.0 | 0.1964 | 0.2911 | 0.2964 | 0.2501 |
| 240.0 | 0.2083 | 0.3033 | 0.3075 | 0.2584 |
| 250.0 | 0.2133 | 0.3131 | 0.3177 | 0.2653 |
| 260.0 | 0.2245 | 0.3269 | 0.3309 | 0.2760 |
| 270.0 | 0.2376 | 0.3429 | 0.3443 | 0.2850 |
| 279.6 | 0.2487 | 0.3676 | 0.3621 | 0.2984 |

TABLE F.14 Load and displacement measurements for lab pile 9

| | Distance from Left End of Pile | | | |
|---|---|---|---|---|
| Total Load | 1.5 ft | 2.5 ft | 3.5 ft | 4.5 ft |
| (kips) | Vertical Displacement (in) | | | |
| 5.0 | 0.0024 | 0.0005 | 0.0055 | 0.0029 |
| 10.0 | 0.0064 | 0.0075 | 0.0129 | 0.0100 |
| 20.0 | 0.0166 | 0.0256 | 0.0304 | 0.0231 |
| 30.0 | 0.0250 | 0.0400 | 0.0486 | 0.0397 |
| 40.0 | 0.0318 | 0.0557 | 0.0627 | 0.0527 |
| 50.0 | 0.0427 | 0.0650 | 0.0775 | 0.0667 |
| 60.0 | 0.0505 | 0.0778 | 0.0922 | 0.0770 |
| 70.0 | 0.0581 | 0.0913 | 0.1071 | 0.0888 |
| 80.0 | 0.0665 | 0.1032 | 0.1201 | 0.1007 |
| 90.0 | 0.0809 | 0.1236 | 0.1368 | 0.1179 |
| 100.0 | 0.0893 | 0.1352 | 0.1485 | 0.1294 |
| 110.0 | 0.0934 | 0.1448 | 0.1620 | 0.1400 |
| 120.0 | 0.1037 | 0.1559 | 0.1740 | 0.1511 |
| 130.0 | 0.1096 | 0.1673 | 0.1864 | 0.1566 |
| 140.0 | 0.1180 | 0.1778 | 0.2020 | 0.1681 |
| 150.0 | 0.1254 | 0.1886 | 0.2123 | 0.1781 |
| 160.0 | 0.1339 | 0.1993 | 0.2238 | 0.1886 |
| 170.0 | 0.1382 | 0.2098 | 0.2359 | 0.1991 |
| 180.0 | 0.1492 | 0.2206 | 0.2483 | 0.2101 |
| 190.0 | 0.1557 | 0.2308 | 0.2593 | 0.2194 |
| 200.0 | 0.1608 | 0.2371 | 0.2721 | 0.2290 |
| 210.0 | 0.1676 | 0.2514 | 0.2832 | 0.2385 |
| 220.0 | 0.1795 | 0.2610 | 0.2982 | 0.2473 |
| 230.0 | 0.1827 | 0.2729 | 0.3115 | 0.2585 |
| 240.0 | 0.1943 | 0.2845 | 0.3228 | 0.2684 |
| 250.0 | 0.1985 | 0.2948 | 0.3358 | 0.2776 |
| 260.0 | 0.2082 | 0.3055 | 0.3488 | 0.2865 |
| 270.0 | 0.2171 | 0.3164 | 0.3640 | 0.2990 |
| 279.7 | 0.2282 | 0.3360 | 0.3871 | 0.3161 |

# APPENDIX G
# FB-MULTIPIER INPUT FILES

```
PROBLEM
Single Pile
Units are Kips and Inches
NCDOT
Micropile Research
Anderson
12/26/10
JBA
Preliminary Single Pile Model
:
TIME
Analysis Time - 3 second(s)
:
PRINT
L=0 M=0 D=1 O=0 S=0 P=1 T=0 F=0 C=1 B=0 J=0 H=0 I=1 R=0 N=0 \
X=1 G=0 A=0 E=0 K=0 Q=0 V=0
:
CONTROL
7 U= 0 D= 0 S= 0 K= 0 R= 0 N= 17 Z= 0 E= 0 H= 0 P= 0 V=1.0 F= 0 \
L= 0 Y= 0 B= 0 G= 0 A= 1
S= 0 T= 0 0 P= 2 F= 1
I= 100 T= 1 M= 512 X= 0 V= 4.14 L= a
:
SWFACT
1 F= 0 0
2 F= 0 0
3 F= 0 0
4 F= 0 0
5 F= 0 0
6 F= 0 0
7 F= 0 0
:
PILE
NSET= 1 N= 17 S= 0 M= 0 NSEG= 5
C Custom
C T=2 D=2 U=0 : Drilled Shaft - nonlinear
K= 1 L= 5.8 M= 1 C= 4 , 2000 \
S= 50,0,0,80,29000,0,0,30000
NL= 1 NG= 0 D= 10.75 V= 0 S= 0 TH= 0.5 IC= 0 T= 1 HPI= 0 \
BM= 0 X= 0 Z= -1 : (round)
0 1 D= 0 A= 0 : prest, # bars, diam, area
C Custom
C T=2 D=2 U=0 : Drilled Shaft - nonlinear
K= 1 L= 0.2 M= 1 C= 2 , 2000 \
S= 50,0,0,80,29000,0,0,30000
NL= 1 NG= 0 D= 10.75 V= 0 S= 0 TH= 0.2 IC= 0 T= 1 HPI= 0 \
BM= 0 X= 0 Z= -1 : (round)
0 0 D= 0 A= 0 : prest, # bars, diam, area
C Custom
C T=2 D=2 U=0 : Drilled Shaft - nonlinear
K= 1 L= 5.8 M= 1 C= 4 , 2000 \
S= 50,0,0,80,29000,0,0,30000
NL= 1 NG= 0 D= 10.75 V= 0 S= 0 TH= 0.5 IC= 0 T= 1 HPI= 0 \
BM= 0 X= 0 Z= -1 : (round)
0 0 D= 0 A= 0 : prest, # bars, diam, area
C Custom
C T=2 D=2 U=0 : Drilled Shaft - nonlinear
```

```
K= 1 L= 0.2 M= 1 C= 4 , 2000 \
S= 50,0,0,80,29000,0,0,30000
NL= 1 NG= 0 D= 10.75 V= 0 S= 0 TH= 0.2 IC= 0 T= 1 HPI= 0 \
BM= 0 X= 0 Z= -1 : (round)
0 0 D= 0 A= 0 : prest, # bars, diam, area
C Custom
C T=2 D=2 U=0 : Drilled Shaft - nonlinear
K= 1 L= 5.8 M= 1 C= 4 , 2000 \
S= 50,0,0,80,29000,0,0,30000
NL= 1 NG= 0 D= 10.75 V= 0 S= 0 TH= 0.5 IC= 0 T= 1 HPI= 0 \
BM= 0 X= 0 Z= -1 : (round)
0 0 D= 0 A= 0 : prest, # bars, diam, area
E= 0 H= 1 A= 1 S= 1 G= 0 C= 0
1 1 1 1 : NPX, NPY, GSX, GSY
1
1
:
SOIL
NSET= 1 L= 2 R= 2 C= 0 W= 0 O= 0 S= 0 B= 0 \
X= 0 : Nlayers,kcyc
35 25 110 0 0 0 6 0.3 1026 5.84 \
2 1 1 1 0 0 0 0 0 \
E=-2,-7.84 B=-25 S=0 A=0
35 25 110 0 0 0 6 0.3 1026
35 150 168.4 0 4.176e+006 0 8047 0.137 440568 32.16 \
8 1 1 1 2.592e+006 0 0 0 0 \
E=-7.84,-40 B=-25 S=2 A=0
35 150 168.4 0 4.176e+006 0 8047 0.137 440568
8047 0.137 1756 1 : Soil set 1 tip info
:
SOILSET
:
PILESET
:
LOAD
1 L= 1 F= 5 0 0 0 0 0
1 L= 2 F= 10 0 0 0 0 0
1 L= 3 F= 15 0 0 0 0 0
1 L= 4 F= 20 0 0 0 0 0
1 L= 5 F= 25 0 0 0 0 0
1 L= 6 F= 26 0 0 0 0 0
1 L= 7 F= 26.6 0 0 0 0 0
:
PADBC
:
```

```
PROBLEM
Pile And Cap
Units are Kips and Inches
NCDOT
Micropile Research
Anderson
12/26/10
JBA
Preliminary Micropile Bent Model
:
TIME
Analysis Time - 7 second(s)
:
PRINT
L=0 M=0 D=1 O=0 S=0 P=1 T=0 F=0 C=1 B=0 J=0 H=0 I=1 R=0 N=0 \
X=1 G=0 A=0 E=0 K=0 Q=0 V=0
:
CONTROL
6 U= 0 D= 0 S= 0 K= 0 R= 0 N= 17 Z= 0 E= 0 H= 0 P= 0 V=1.0 F= 0 \
L= 0 Y= 0 B= 0 G= 0 A= 1
S= 0 T= 0 0 P= 2 F= 1
I= 100 T= 1 M= 512 X= 0 V= 4.14 L= a
:
SWFACT
1 F= 0 0
2 F= 0 0
3 F= 0 0
4 F= 0 0
5 F= 0 0
6 F= 0 0
:
PILE
NSET= 1 N= 17 S= 0 M= 0 NSEG= 5
C Custom
C T=2 D=2 U=0 : Drilled Shaft - nonlinear
K= 1 L= 5.8 M= 1 C= 4 , 2000 \
S= 50,0,0,80,29000,0,0,30000
NL= 1 NG= 0 D= 10.75 V= 0 S= 0 TH= 0.5 IC= 0 T= 1 HPI= 0 \
BM= 0 X= 0 Z= -1 : (round)
0 1 D= 0 A= 0 : prest, # bars, diam, area
C Custom
C T=2 D=2 U=0 : Drilled Shaft - nonlinear
K= 1 L= 0.2 M= 1 C= 2 , 2000 \
```

```
S= 50,0,0,80,29000,0,0,30000
NL= 1 NG= 0 D= 10.75 V= 0 S= 0 TH= 0.2 IC= 0 T= 1 HPI= 0 \
BM= 0 X= 0 Z= -1 : (round)
0 0 D= 0 A= 0 : prest, # bars, diam, area
C Custom
C T=2 D=2 U=0 : Drilled Shaft - nonlinear
K= 1 L= 5.8 M= 1 C= 4 , 2000 \
S= 50,0,0,80,29000,0,0,30000
NL= 1 NG= 0 D= 10.75 V= 0 S= 0 TH= 0.5 IC= 0 T= 1 HPI= 0 \
BM= 0 X= 0 Z= -1 : (round)
0 0 D= 0 A= 0 : prest, # bars, diam, area
C Custom
C T=2 D=2 U=0 : Drilled Shaft - nonlinear
K= 1 L= 0.2 M= 1 C= 4 , 2000 \
S= 50,0,0,80,29000,0,0,30000
NL= 1 NG= 0 D= 10.75 V= 0 S= 0 TH= 0.2 IC= 0 T= 1 HPI= 0 \
BM= 0 X= 0 Z= -1 : (round)
0 0 D= 0 A= 0 : prest, # bars, diam, area
C Custom
C T=2 D=2 U=0 : Drilled Shaft - nonlinear
K= 1 L= 5.8 M= 1 C= 4 , 2000 \
S= 50,0,0,80,29000,0,0,30000
NL= 1 NG= 0 D= 10.75 V= 0 S= 0 TH= 0.5 IC= 0 T= 1 HPI= 0 \
BM= 0 X= 0 Z= -1 : (round)
0 0 D= 0 A= 0 : prest, # bars, diam, area
E= 0 H= 1 A= 1 S= 10 G= 0 C= 0
3 6 1 1 : NPX, NPY, GSX, GSY
17.5 17.5
32.25 120 120 120 24
1
0.3 0.3 0.3 1
:
MISSING
14 : number of missing piles
1 1
2 1
3 1
1 2
3 2
1 3
3 3
1 4
3 4
1 5
3 5
1 6
2 6
3 6
:
SOIL
NSET= 1 L= 1 R= 1 C= 0 W= 0 O= 0 S= 0 B= 0 \
X= 0 : Nlayers,kcyc
35 150 168.4 0 4.176e+006 0 8047 0.137 440568 32.16 \
8 1 1 1 2.592e+006 0 0 0 0 \
E=-7.84,-40 B=-25 S=2 A=0
35 150 168.4 0 4.176e+006 0 8047 0.137 440568
8047 0.137 1756 1 : Soil set 1 tip info
```

```
:
SOILSET
:
PILESET
:
CAP
E= 4400 U= 0.2 T= 2.5 S= 150
:
LOAD
28 L= 1 F= 10 0 0 0 0 0
42 L= 1 F= 10 0 0 0 0 0
28 L= 2 F= 20 0 0 0 0 0
42 L= 2 F= 20 0 0 0 0 0
28 L= 3 F= 30 0 0 0 0 0
42 L= 3 F= 30 0 0 0 0 0
28 L= 4 F= 40 0 0 0 0 0
42 L= 4 F= 40 0 0 0 0 0
28 L= 5 F= 50 0 0 0 0 0
42 L= 5 F= 50 0 0 0 0 0
28 L= 6 F= 51 0 0 0 0 0
42 L= 6 F= 51 0 0 0 0 0
:
PADBC
:



PROBLEM
Single Pile
Units are Kips and Inches
NCDOT
Micropile Research
Anderson
01/14/08
JBA
Micropile #10&11
:
TIME
Analysis Time - 2 second(s)
:
PRINT
L=0 M=0 D=1 O=0 S=0 P=1 T=0 F=0 C=1 B=0 J=0 H=0 I=1 R=0 N=0 \
X=1 G=0 A=0 E=0 K=0 Q=0 V=0
:
CONTROL
4 U= 0 D= 0 S= 0 K= 0 R= 0 N= 17 Z= 0 E= 0 H= 0 P= 0 V=1.0 F= 0 \
L= 0 Y= 0 B= 0 G= 0 A= 1
S= 0 T= 0 0 P= 2 F= 1
I= 100 T= 1 M= 512 X= 0 V= 4.14 L= a
:
SWFACT
1 F= 0 0
2 F= 0 0
3 F= 0 0
4 F= 0 0
:
```

```
PILE
NSET= 1 N= 17 S= 0 M= 0 NSEG= 5
C Custom
C T=2 D=2 U=0 : Drilled Shaft - nonlinear
K= 1 L= 5.07 M= 1 C= 4 , 2000 \
S= 50,0,0,105,29000,0,0,30000
NL= 1 NG= 0 D= 10.75 V= 0 S= 490 TH= 0.5 IC= 0 T= 1 HPI= 0 \
BM= 0 X= 0 Z= -1 : (round)
0 1 D= 0 A= 0 : prest, # bars, diam, area
C Custom
C T=2 D=2 U=0 : Drilled Shaft - nonlinear
K= 1 L= 0.2 M= 1 C= 2 , 2000 \
S= 50,0,0,105,29000,0,0,30000
NL= 1 NG= 0 D= 10.75 V= 0 S= 490 TH= 0.2 IC= 0 T= 1 HPI= 0 \
BM= 0 X= 0 Z= -1 : (round)
0 0 D= 0 A= 0 : prest, # bars, diam, area
C Custom
C T=2 D=2 U=0 : Drilled Shaft - nonlinear
K= 1 L= 6.36 M= 1 C= 4 , 2000 \
S= 50,0,0,105,29000,0,0,30000
NL= 1 NG= 0 D= 10.75 V= 0 S= 490 TH= 0.5 IC= 0 T= 1 HPI= 0 \
BM= 0 X= 0 Z= -1 : (round)
0 0 D= 0 A= 0 : prest, # bars, diam, area
C Custom
C T=2 D=2 U=0 : Drilled Shaft - nonlinear
K= 1 L= 0.2 M= 1 C= 4 , 2000 \
S= 50,0,0,105,29000,0,0,30000
NL= 1 NG= 0 D= 10.75 V= 0 S= 490 TH= 0.2 IC= 0 T= 1 HPI= 0 \
BM= 0 X= 0 Z= -1 : (round)
0 0 D= 0 A= 0 : prest, # bars, diam, area
C Custom
C T=2 D=2 U=0 : Drilled Shaft - nonlinear
K= 1 L= 6.36 M= 1 C= 4 , 2000 \
S= 50,0,0,105,29000,0,0,30000
NL= 1 NG= 0 D= 10.75 V= 0 S= 490 TH= 0.5 IC= 0 T= 1 HPI= 0 \
BM= 0 X= 0 Z= -1 : (round)
0 0 D= 0 A= 0 : prest, # bars, diam, area
E= 0 H= 1 A= 1 S= 1 G= 0 C= 0
1 1 1 1 : NPX, NPY, GSX, GSY
1
1
:
SOIL
NSET= 1 L= 2 R= 2 C= 0 W= 0 O= 0 S= 0 B= 0 \
X= 0 : Nlayers,kcyc
50 350 110 0 0 0 6 0.3 1026 8.043 \
2 1 1 1 0 0 0 0 0 \
E=-0.167,-8.21 B=-25 S=0 A=0
50 350 110 0 0 0 6 0.3 1026
35 150 168.4 0 4.176e+006 0 8047 0.137 440568 31.79 \
8 1 1 1 2.592e+006 0 0 0 0 \
E=-8.21,-40 B=-25 S=2 A=0
35 150 168.4 0 4.176e+006 0 8047 0.137 440568
8047 0.137 1756 1 : Soil set 1 tip info
:
SOILSET
:
```

```
PILESET
:
LOAD
1 L= 1 F= 10 0 0 0 0 0
1 L= 2 F= 20 0 0 0 0 0
1 L= 3 F= 30 0 0 0 0 0
1 L= 4 F= 35 0 0 0 0 0
:
PADBC
:
```

```
PROBLEM
Single Pile
Units are Kips and Inches
NCDOT
Micropile Research
Anderson
01/14/08
JBA
Micropile #Y
:
TIME
Analysis Time - 3 second(s)
:
PRINT
L=0 M=0 D=1 O=0 S=0 P=1 T=0 F=0 C=1 B=0 J=0 H=0 I=1 R=0 N=0 \
```

```
X=1 G=0 A=0 E=0 K=0 Q=0 V=0
:
CONTROL
4 U= 0 D= 0 S= 0 K= 0 R= 0 N= 17 Z= 0 E= 0 H= 0 P= 0 V=1.0 F= 0 \
L= 0 Y= 0 B= 0 G= 0 A= 1
S= 0 T= 0 0 P= 2 F= 1
I= 100 T= 1 M= 512 X= 0 V= 4.14 L= a
:
SWFACT
1 F= 0 0
2 F= 0 0
3 F= 0 0
4 F= 0 0
:
PILE
NSET= 1 N= 17 S= 0 M= 0 NSEG= 5
C Custom
C T=2 D=2 U=0 : Drilled Shaft - nonlinear
K= 1 L= 3.99 M= 1 C= 4 , 2000 \
S= 50,0,0,115,29000,0,0,30000
NL= 1 NG= 0 D= 10.75 V= 0 S= 490 TH= 0.5 IC= 0 T= 1 HPI= 0 \
BM= 0 X= 0 Z= -1 : (round)
0 1 D= 0 A= 0 : prest, # bars, diam, area
C Custom
C T=2 D=2 U=0 : Drilled Shaft - nonlinear
K= 1 L= 0.2 M= 1 C= 2 , 2000 \
S= 50,0,0,100,29000,0,0,30000
NL= 1 NG= 0 D= 10.75 V= 0 S= 490 TH= 0.14 IC= 0 T= 1 HPI= 0 \
BM= 0 X= 0 Z= -1 : (round)
0 0 D= 0 A= 0 : prest, # bars, diam, area
C Custom
C T=2 D=2 U=0 : Drilled Shaft - nonlinear
K= 1 L= 6.36 M= 1 C= 4 , 2000 \
S= 50,0,0,115,29000,0,0,30000
NL= 1 NG= 0 D= 10.75 V= 0 S= 490 TH= 0.5 IC= 0 T= 1 HPI= 0 \
BM= 0 X= 0 Z= -1 : (round)
0 0 D= 0 A= 0 : prest, # bars, diam, area
C Custom
C T=2 D=2 U=0 : Drilled Shaft - nonlinear
K= 1 L= 0.2 M= 1 C= 4 , 2000 \
S= 50,0,0,100,29000,0,0,30000
NL= 1 NG= 0 D= 10.75 V= 0 S= 490 TH= 0.14 IC= 0 T= 1 HPI= 0 \
BM= 0 X= 0 Z= -1 : (round)
0 0 D= 0 A= 0 : prest, # bars, diam, area
C Custom
C T=2 D=2 U=0 : Drilled Shaft - nonlinear
K= 1 L= 6.36 M= 1 C= 4 , 2000 \
S= 50,0,0,115,29000,0,0,30000
NL= 1 NG= 0 D= 10.75 V= 0 S= 490 TH= 0.5 IC= 0 T= 1 HPI= 0 \
BM= 0 X= 0 Z= -1 : (round)
0 0 D= 0 A= 0 : prest, # bars, diam, area
E= 0 H= 1 A= 1 S= 1 G= 0 C= 0
1 1 1 1 : NPX, NPY, GSX, GSY
1
1
:
SOIL
```

```
NSET= 1 L= 2 R= 2 C= 0 W= 0 O= 0 S= 0 B= 0 \
X= 0 : Nlayers,kcyc
50 350 110 0 0 0 6 0.3 1026 6.455 \
2 1 1 1 0 0 0 0 0 \
E=-0.67,-7.125 B=-25 S=0 A=0
50 350 110 0 0 0 6 0.3 1026
35 150 168.4 0 4.176e+006 0 8047 0.137 440568 32.875 \
8 1 1 1 2.592e+006 0 0 0 0 \
E=-7.125,-40 B=-25 S=2 A=0
35 150 168.4 0 4.176e+006 0 8047 0.137 440568
8047 0.137 1756 1 : Soil set 1 tip info
:
SOILSET
:
PILESET
:
LOAD
1 L= 1 F= 10 0 0 0 0 0
1 L= 2 F= 20 0 0 0 0 0
1 L= 3 F= 30 0 0 0 0 0
1 L= 4 F= 40 0 0 0 0 0
:
PADBC
:
```

PROBLEM

```
Single Pile
Units are Kips and Inches
NCDOT
Micropile Research
Anderson
12/26/10
JBA
Micropile #3
:
TIME
Analysis Time - 4 second(s)
:
PRINT
L=0 M=0 D=1 O=0 S=0 P=1 T=0 F=0 C=1 B=0 J=0 H=0 I=1 R=0 N=0 \
X=1 G=0 A=0 E=0 K=0 Q=0 V=0
:
CONTROL
4 U= 0 D= 0 S= 0 K= 0 R= 0 N= 17 Z= 0 E= 0 H= 0 P= 0 V=1.0 F= 0 \
L= 0 Y= 0 B= 0 G= 0 A= 1
S= 0 T= 0 0 P= 2 F= 1
I= 100 T= 1 M= 512 X= 0 V= 4.14 L= a
:
SWFACT
1 F= 0 0
2 F= 0 0
3 F= 0 0
4 F= 0 0
:
PILE
NSET= 1 N= 17 S= 0 M= 0 NSEG= 3
C Custom
C T=2 D=2 U=0 : Drilled Shaft - nonlinear
K= 1 L= 4.57 M= 1 C= 4 , 2000 \
S= 50,0,0,115,29000,0,0,30000
NL= 1 NG= 0 D= 10.75 V= 0 S= 490 TH= 0.5 IC= 0 T= 1 HPI= 0 \
BM= 0 X= 0 Z= -1 : (round)
0 1 D= 0 A= 0 : prest, # bars, diam, area
C Custom
C T=2 D=2 U=0 : Drilled Shaft - nonlinear
K= 1 L= 0.2 M= 1 C= 2 , 2000 \
S= 50,0,0,115,29000,0,0,30000
NL= 1 NG= 0 D= 10.75 V= 0 S= 490 TH= 0.14 IC= 0 T= 1 HPI= 0 \
BM= 0 X= 0 Z= -1 : (round)
0 0 D= 0 A= 0 : prest, # bars, diam, area
C Custom
C T=2 D=2 U=0 : Drilled Shaft - nonlinear
K= 1 L= 6.4 M= 1 C= 4 , 2000 \
S= 50,0,0,115,29000,0,0,30000
NL= 1 NG= 0 D= 10.75 V= 0 S= 490 TH= 0.5 IC= 0 T= 1 HPI= 0 \
BM= 0 X= 0 Z= -1 : (round)
0 0 D= 0 A= 0 : prest, # bars, diam, area
E= 0 H= 1 A= 1 S= 1 G= 0 C= 0
1 1 1 1 : NPX, NPY, GSX, GSY
1
1
:
SOIL
```

```
NSET= 1 L= 2 R= 2 C= 0 W= 0 O= 0 S= 0 B= 0 \
X= 0 : Nlayers,kcyc
50 350 110 0 0 0 6 0.3 1026 5.837 \
2 1 1 1 0 0 0 0 0 \
E=-0.333,-6.17 B=-25 S=0 A=0
50 350 110 0 0 0 6 0.3 1026
35 150 168.4 0 4.176e+006 0 8047 0.137 440568 8.83 \
8 1 1 1 2.592e+006 0 0 0 0 \
E=-6.17,-15 B=-25 S=2 A=0
35 150 168.4 0 4.176e+006 0 8047 0.137 440568
8047 0.137 1756 1 : Soil set 1 tip info
:
SOILSET
:
PILESET
:
LOAD
1 L= 1 F= 10 0 0 0 0 0
1 L= 2 F= 20 0 0 0 0 0
1 L= 3 F= 30 0 0 0 0 0
1 L= 4 F= 40 0 0 0 0 0
:
PADBC
:
```

```
PROBLEM
Single Pile
Units are Kips and Inches
NCDOT
Micropile Research
Anderson
12/26/10
JBA
Micropile #2
:
TIME
Analysis Time - 2 second(s)
:
PRINT
L=0 M=0 D=1 O=0 S=0 P=1 T=0 F=0 C=1 B=0 J=0 H=0 I=1 R=0 N=0 \
X=1 G=0 A=0 E=0 K=0 Q=0 V=0
:
CONTROL
5 U= 0 D= 0 S= 0 K= 0 R= 0 N= 17 Z= 0 E= 0 H= 0 P= 0 V=1.0 F= 0 \
L= 0 Y= 0 B= 0 G= 0 A= 1
S= 0 T= 0 0 P= 2 F= 1
I= 100 T= 1 M= 512 X= 0 V= 4.14 L= a
:
SWFACT
1 F= 0 0
2 F= 0 0
3 F= 0 0
4 F= 0 0
5 F= 0 0
:
PILE
NSET= 1 N= 17 S= 0 M= 0 NSEG= 3
C Custom
C T=2 D=2 U=0 : Drilled Shaft - nonlinear
K= 1 L= 4.4 M= 1 C= 4 , 2000 \
S= 50,0,0,115,29000,0,0,30000
NL= 1 NG= 0 D= 10.75 V= 0 S= 490 TH= 0.5 IC= 0 T= 1 HPI= 0 \
BM= 0 X= 0 Z= -1 : (round)
0 1 D= 0 A= 0 : prest, # bars, diam, area
C Custom
C T=2 D=2 U=0 : Drilled Shaft - nonlinear
K= 1 L= 0.2 M= 1 C= 2 , 2000 \
S= 50,0,0,115,29000,0,0,30000
NL= 1 NG= 0 D= 10.75 V= 0 S= 490 TH= 0.2 IC= 0 T= 1 HPI= 0 \
```

```
BM= 0 X= 0 Z= -1 : (round)
0 0 D= 0 A= 0 : prest, # bars, diam, area
C Custom
C T=2 D=2 U=0 : Drilled Shaft - nonlinear
K= 1 L= 6.4 M= 1 C= 4 , 2000 \
S= 50,0,0,115,29000,0,0,30000
NL= 1 NG= 0 D= 10.75 V= 0 S= 490 TH= 0.5 IC= 0 T= 1 HPI= 0 \
BM= 0 X= 0 Z= -1 : (round)
0 0 D= 0 A= 0 : prest, # bars, diam, area
E= 0 H= 1 A= 1 S= 1 G= 0 C= 0
1 1 1 1 : NPX, NPY, GSX, GSY
1
1
:
SOIL
NSET= 1 L= 2 R= 2 C= 0 W= 0 O= 0 S= 0 B= 0 \
X= 0 : Nlayers,kcyc
50 350 110 0 0 0 6 0.3 1026 8.375 \
2 1 1 1 0 0 0 0 0 \
E=-0.625,-9 B=-25 S=0 A=0
50 350 110 0 0 0 6 0.3 1026
35 150 168.4 0 4.176e+006 0 8047 0.137 440568 6 \
8 1 1 1 2.592e+006 0 0 0 0 \
E=-9,-15 B=-25 S=2 A=0
35 150 168.4 0 4.176e+006 0 8047 0.137 440568
8047 0.137 1756 1 : Soil set 1 tip info
:
SOILSET
:
PILESET
:
LOAD
1 L= 1 F= 10 0 0 0 0 0
1 L= 2 F= 20 0 0 0 0 0
1 L= 3 F= 30 0 0 0 0 0
1 L= 4 F= 40 0 0 0 0 0
1 L= 5 F= 50 0 0 0 0 0
:
PADBC
:
```

```
PROBLEM
Single Pile
Units are Kips and Inches
NCDOT
Micropile Research
Anderson
01/14/08
JBA
Micropile #1
:
TIME
Analysis Time - 1 second(s)
:
PRINT
L=0 M=0 D=1 O=0 S=0 P=1 T=0 F=0 C=1 B=0 J=0 H=0 I=1 R=0 N=0 \
X=1 G=0 A=0 E=0 K=0 Q=0 V=0
:
CONTROL
5 U= 0 D= 0 S= 0 K= 0 R= 0 N= 17 Z= 0 E= 0 H= 0 P= 0 V=1.0 F= 0 \
L= 0 Y= 0 B= 0 G= 0 A= 1
S= 0 T= 0 0 P= 2 F= 1
I= 100 T= 1 M= 512 X= 0 V= 4.14 L= a
:
SWFACT
1 F= 0 0
2 F= 0 0
3 F= 0 0
4 F= 0 0
5 F= 0 0
:
PILE
NSET= 1 N= 17 S= 0 M= 0 NSEG= 1
C Custom
```

```
C T=2 D=2 U=0 : Drilled Shaft - nonlinear
K= 1 L= 3.79 M= 1 C= 4 , 2000 \
S= 50,0,0,115,29000,0,0,30000
NL= 1 NG= 0 D= 10.75 V= 0 S= 490 TH= 0.4 IC= 0 T= 1 HPI= 0 \
BM= 0 X= 0 Z= -1 : (round)
0 1 D= 0 A= 0 : prest, # bars, diam, area
E= 0 H= 1 A= 1 S= 1 G= 0 C= 0
1 1 1 1 : NPX, NPY, GSX, GSY
1
1
:
SOIL
NSET= 1 L= 2 R= 2 C= 0 W= 0 O= 0 S= 0 B= 0 \
X= 0 : Nlayers,kcyc
50 350 110 0 0 0 6 0.3 1026 2.58 \
2 1 1 1 0 0 0 0 0 \
E=-0.21,-2.79 B=-25 S=0 A=0
50 350 110 0 0 0 6 0.3 1026
35 150 168.4 0 4.176e+006 0 8047 0.137 440568 7.21 \
8 1 1 1 2.592e+006 0 0 0 0 \
E=-2.79,-10 B=-25 S=2 A=0
35 150 168.4 0 4.176e+006 0 8047 0.137 440568
8047 0.137 1756 1 : Soil set 1 tip info
:
SOILSET
:
PILESET
:
LOAD
1 L= 1 F= 10 0 0 0 0 0
1 L= 2 F= 20 0 0 0 0 0
1 L= 3 F= 30 0 0 0 0 0
1 L= 4 F= 40 0 0 0 0 0
1 L= 5 F= 45 0 0 0 0 0
:
PADBC
:

PROBLEM
Pile And Cap
Units are Kips and Inches
NCDOT
Micropile Research
Anderson
01/14/08
JBA
Micropile Bent Piles 5, 6, 7, & 8
:
TIME
Analysis Time - 4 second(s)
:
PRINT
L=0 M=0 D=1 O=0 S=0 P=1 T=0 F=0 C=1 B=0 J=0 H=0 I=1 R=0 N=0 \
X=1 G=0 A=0 E=0 K=0 Q=0 V=0
:
CONTROL
6 U= 0 D= 0 S= 0 K= 0 R= 0 N= 17 Z= 0 E= 0 H= 0 P= 0 V=1.0 F= 0 \
L= 0 Y= 0 B= 0 G= 0 A= 1
S= 0 T= 0 0 P= 2 F= 1
I= 100 T= 1 M= 512 X= 0 V= 4.14 L= a
```

```
:
SWFACT
1 F= 0 0
2 F= 0 0
3 F= 0 0
4 F= 0 0
5 F= 0 0
6 F= 0 0
:
PILE
NSET= 1 N= 17 S= 0 M= 0 NSEG= 5
C Custom
C T=2 D=2 U=0 : Drilled Shaft - nonlinear
K= 1 L= 5.13 M= 1 C= 4 , 2000 \
S= 50,0,0,115,29000,0,0,30000
NL= 1 NG= 0 D= 10.75 V= 0 S= 490 TH= 0.5 IC= 0 T= 1 HPI= 0 \
BM= 0 X= 0 Z= -1 : (round)
0 1 D= 0 A= 0 : prest, # bars, diam, area
C Custom
C T=2 D=2 U=0 : Drilled Shaft - nonlinear
K= 1 L= 0.2 M= 1 C= 2 , 2000 \
S= 50,0,0,115,29000,0,0,30000
NL= 1 NG= 0 D= 10.75 V= 0 S= 490 TH= 0.25 IC= 0 T= 1 HPI= 0 \
BM= 0 X= 0 Z= -1 : (round)
0 0 D= 0 A= 0 : prest, # bars, diam, area
C Custom
C T=2 D=2 U=0 : Drilled Shaft - nonlinear
K= 1 L= 6.36 M= 1 C= 4 , 2000 \
S= 50,0,0,115,29000,0,0,30000
NL= 1 NG= 0 D= 10.75 V= 0 S= 490 TH= 0.5 IC= 0 T= 1 HPI= 0 \
BM= 0 X= 0 Z= -1 : (round)
0 0 D= 0 A= 0 : prest, # bars, diam, area
C Custom
C T=2 D=2 U=0 : Drilled Shaft - nonlinear
K= 1 L= 0.2 M= 1 C= 4 , 2000 \
S= 50,0,0,115,29000,0,0,30000
NL= 1 NG= 0 D= 10.75 V= 0 S= 490 TH= 0.25 IC= 0 T= 1 HPI= 0 \
BM= 0 X= 0 Z= -1 : (round)
0 0 D= 0 A= 0 : prest, # bars, diam, area
C Custom
C T=2 D=2 U=0 : Drilled Shaft - nonlinear
K= 1 L= 6.36 M= 1 C= 4 , 2000 \
S= 50,0,0,115,29000,0,0,30000
NL= 1 NG= 0 D= 10.75 V= 0 S= 490 TH= 0.5 IC= 0 T= 1 HPI= 0 \
BM= 0 X= 0 Z= -1 : (round)
0 0 D= 0 A= 0 : prest, # bars, diam, area
E= 0 H= 1 A= 1 S= 10 G= 0 C= 0
3 6 1 1 : NPX, NPY, GSX, GSY
17.5 17.5
32.25 120 120 120 24
1
0.3 0.3 0.3 1
:
MISSING
14 : number of missing piles
1 1
2 1
```

```
3 1
1 2
3 2
1 3
3 3
1 4
3 4
1 5
3 5
1 6
2 6
3 6
:
SOIL
NSET= 1 L= 2 R= 2 C= 0 W= 0 O= 0 S= 0 B= 0 \
X= 0 : Nlayers,kcyc
35 100 110 0 0 0 8047 0.137 440568 6.75 \
1 1 1 1 2.592e+006 0 0 0 0 \
E=-1.5,-8.25 B=-25 S=0 A=0
35 100 110 0 0 0 8047 0.137 440568
35 150 168.4 0 4.176e+006 0 8047 0.137 440568 21.75 \
8 1 1 1 2.592e+006 0 0 0 0 \
E=-8.25,-30 B=-25 S=2 A=0
35 150 168.4 0 4.176e+006 0 8047 0.137 440568
8047 0.137 1756 1 : Soil set 1 tip info
:
SOILSET
:
PILESET
:
CAP
E= 4400 U= 0.2 T= 2.5 S= 150
:
LOAD
28 L= 1 F= 10 0 0 0 0 0
42 L= 1 F= 10 0 0 0 0 0
28 L= 2 F= 20 0 0 0 0 0
42 L= 2 F= 20 0 0 0 0 0
28 L= 3 F= 30 0 0 0 0 0
42 L= 3 F= 30 0 0 0 0 0
28 L= 4 F= 40 0 0 0 0 0
42 L= 4 F= 40 0 0 0 0 0
28 L= 5 F= 50 0 0 0 0 0
42 L= 5 F= 50 0 0 0 0 0
28 L= 6 F= 55 0 0 0 0 0
42 L= 6 F= 55 0 0 0 0 0
:
PADBC
:
```